Auckland-wide Network Discharge Consent
2023-2024 Annual Performance Report

Final - September 2024

Watercare

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KEY POINTS

This document is a summary of Watercare's performance against its Auckland-wide Network Discharge Consents. Watercare has eight consents that, when combined, cover Auckland's wastewater network from Wellsford and Helensville in the north down to Waiuku in the south.

Network performance

The overall performance of the wastewater network has improved compared to the previous four years, based on overflow figures. There has been a substantial decrease in dry weather overflows, but wet weather overflows have almost doubled since the 2019-20 reporting period. This highlights the importance of improving the resilience of our wastewater network to better withstand higher frequencies of wet weather days and also increased occurrence of extreme weather events.

- We recorded a total of 213 wet weather overflows across 421 Type 1 EOPs, giving an average of 0.51 overflows per Type 1 EOP per year
- Of the 421 Type 1 EOPs, there are 25 that did not meet their wet weather overflow target based on their 5-year average.
- Analysis of Type 3 (uncontrolled) overflows in dry weather conditions, identified fats and roots as the main cause of blockages (for those that could be identified). These are the same causes as the previous reporting period
- Of the uncontrolled overflows, 6% resulted in pollution to a waterway or inside private property (Level 2 and above), which is a decrease from the 7% reported in the previous period.
- There was also a decrease in significant and major overflow incidents (Levels 3 and 4), resulting in obvious or prolonged contamination of waterbodies or causing internal household damage. These Level 3 and 4 overflows accounted for 1% of all uncontrolled overflows during this reporting period, compared to 2.4% reported in 2022-23.

The catchments with the highest frequency of dry weather overflows remained consistent with previous years and include:

- Western Isthmus
- Hobson Bay
- Henderson Creek
- Upper Tāmaki River

The catchments with the highest frequency of wet weather overflows were the same as in previous years and included:

- Hobson Bay
- Upper Tāmaki River and Western Isthmus
- Henderson Creek
- East Coast Bays

There are a number of ongoing projects to improve the performance of Auckland's wastewater network, these include:

- The Central Interceptor Programme in the Western Isthmus, which aims to reduce the annual volume of wet weather overflows within the catchment by up to 80%

- The Western and Eastern Isthmus Water Quality Improvement Programmes cover several catchments and will enable continued growth and reduce wet weather overflows, resulting in improved watercourse and beach water quality
- The poorer performing catchments as listed above, have several ongoing projects to reduce overflows, such as the Newmarket Gully in Hobson Bay, Northern Interceptor through Henderson Creek, Otara Capacity upgrades in Upper Tāmaki River and the Wairau Valley Diversion in East Coast Bays.

The Ōrākei Main Sewer collapse resulted in a very large volume of raw sewage to flow into the Waitematā from three locations. This was a Level 4 incident caused by a sinkhole at St Georges Bay Road in September 2023. By 26 October a bypass was in place to prevent any further overflows into the environment, while a permanent solution could be completed. Water quality testing was conducted during and following the event and results indicated noticeably poorer water quality during the event, which returned to a more "normal" state shortly after overflows ceased in October.

Watercare commissioned three independent assessments following the Ōrākei Main Sewer collapse incident including an assessment of water quality and ecology, emerging contaminants and an independent network failure analysis. Main findings are summarised as:

- Water quality and ecology: The overflows caused localised spikes in microbial contaminants, particularly near Brigham Street, but these effects diminished after the discharges ceased. Shellfish near the outfalls showed high *Escherichia coli* levels, posing a temporary health risk. However, sediment quality remained largely unaffected, and no significant long-term ecological damage was observed. Overall, the study concluded that the impacts were temporary and localised, with minimal lasting environmental effects
- Emerging contaminants: The study focused on emerging organic contaminants (EOCs) and found that ibuprofen and 17β-estradiol posed the highest ecological risks, particularly in areas closest to the discharge points. The risk from ibuprofen was notable even outside the Port area, while 17β-estradiol showed potential for adverse effects under worst-case scenarios. However, as time has passed and degradation processes have likely reduced EOC concentrations, the report concludes that further monitoring should prioritise ibuprofen. Other EOCs showed negligible risk in most cases, and the overall impact was localised around the discharge points.
- Network failure analysis: The analysis found that the incident was caused by a combination of factors, including general deterioration over 110 years of service, exceptionally wet weather in 2023, and weak blockwork at the site of the failure. Heavy rain events, including the Auckland Anniversary floods and Cyclone Gabrielle, accelerated the erosion and corrosion of the sewer, particularly at the arch section, which led to the formation of a sinkhole and eventual collapse. Repair efforts included installing a steel caisson, bypass pumping, and planned rehabilitation using segmented slip-lining. The report recommends improvements in Watercare's condition assessment practices, including more detailed inspections and better use of profiling data

Inflow & Infiltration

The 2023-2024 Inflow and Infiltration (I&I) programme focused on identifying and reducing stormwater and groundwater inflows into Auckland's wastewater network to mitigate overflows, particularly in sensitive environments and private properties. In collaboration with Auckland

Council's healthy Waters, Watercare undertook a series of investigations, including targeted inspections of both private and public drainage networks. Key initiatives included Watercare's standalone investigations, joint projects under the Western and Eastern Isthmus Water Quality Improvement Programmes, and a new 'smart' wastewater monitoring strategy using low-cost manhole sensors. These efforts addressed common issues such as illegal stormwater connections, poorly sealed manholes, and backflow risks, particularly in flood-prone areas. Successful interventions reduced overflows at problematic sites, and ongoing monitoring continues to improve network performance.

Network Improvements

The Network Improvements section details Watercare's efforts to enhance Auckland's wastewater infrastructure as part of the Wastewater Network Strategy (WWNS), targeting capacity constraints, overflow reduction, and system performance. In 2023-2024, key projects completed include upgrades to the Sidmouth Wastewater Pump Station in Mairangi Bay and the Dunkirk Road Wastewater Capacity Upgrade, both aimed at mitigating overflows and supporting growth. Ongoing multi-year projects span key catchments such as East Coast Bays and Tāmaki River, with further improvements planned for 2024-2025 to address anticipated population growth and reduce overflow events in high-risk areas. These initiatives are vital for maintaining the resilience and efficiency of the wastewater network.

New Assets

In the 2023-2024 reporting period, Watercare commissioned several new wastewater assets to support Auckland's growing infrastructure needs. Two major pump stations were completed: one in Mairangi Bay to replace the Sidmouth Pump Station for capacity growth, and another in Three Kings to service a new development. Alongside these complex assets, substantial numbers of new manholes, fittings, and wastewater network pipes were installed, particularly in high-growth areas like Pahurehure Inlet, Upper Tāmaki River, and Henderson Creek. In total, 2,230 new manholes, 1,502 fittings, and 2,956 new wastewater pipes were added, covering approximately 80,900 meters of network. These installations primarily targeted existing urban areas, with some projects extending into future urban zones to accommodate ongoing and anticipated growth.

Public Information

The Public Information section outlines Watercare's efforts to provide accessible information to the public as required by NDC. This includes resources on how to avoid wastewater overflows, proper connections between stormwater and wastewater systems, and preventing accidental damage to wastewater infrastructure. Key materials available on Watercare's website cover wastewater network functions, cross-connections, and Engineered Overflow Points (EOPs). Additionally, public education initiatives such as newsletters, community events, school programmes, and social media campaigns aim to raise awareness about reducing wastewater overflows and their impact on the environment. Watercare also launched a chatbot, H2Bro, and updated its website for improved customer interaction, enhancing public access to information on managing accounts and wastewater issues.

Targeted Monitoring Plan

AECOM and Tonkin & Taylor (T+T) were commissioned to develop a pilot monitoring plan to assess the ecological impacts of wastewater overflows in line with the Network Discharge Consent (NDC). The aim is to establish a framework that ensures consistent measurement of ecological effects across high-risk receiving environments. Key findings of the revised programme include using biological indicators to evaluate long-term ecological responses, focusing on high and very high-risk sites, including estuaries and small waterways. Routine monitoring, rather than event-based sampling, will track key ecological drivers such as water quality and habitat conditions. A one-year pilot study, designed to refine the Targeted Monitoring Programme (TMP), is included in this report to Council for approval. It is envisaged that the pilot study will be implemented during 2024-2025 to inform future monitoring strategies.

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1 INTRODUCTION

1.1 Background

Watercare Services Limited (Watercare) provides wastewater (ww) services across Auckland, from Wellsford in the north to Waiuku in the south. The network that conveys wastewater to Watercare's wastewater treatment plants can overflow where blockages or surcharging occurs, and Watercare has resource consents for managing the associated discharges to the environment. These consents are known as Watercare's Auckland Wastewater Network Comprehensive Discharge Permits – the Auckland-Wide Network Discharge Consent (NDC). Auckland Council granted the NDC consent in June 2014, and this is the ninth annual report submitted.

The reporting condition is identical over all eight consents and states:

"The Consent Holder shall provide an Annual Wastewater Network Performance Report to the Manager on 30 September of each year. This report shall provide the information specified in the Template for the Annual Network Performance Report (Attachment 9) and include the annually updated version of Attachment 2."

As such, this Annual Performance Report (APR) satisfies condition 57 of:

- DIS60083245 (R/REG/2013/3743) and CST60083182 (R/REG/2013/3755), which are the principal NDC consents
- CST60047515 (COA-63609), which extends the NDC to cover the network in Waiwera
- DIS60047640 (REG-63613), which extends the NDC to cover the network in Parakai
- DIS60047654 (REG-63614), which extends the NDC to cover the network in Helensville
- DIS60050020 (REG-67901), which extends the NDC to cover new pump stations in the Warkworth – Snells Beach catchment
- DIS60083293 (R/REG/2013/3755) and CST60083186 (R/REG/2013/3764) which are specific to the Western Isthmus and the Central Interceptor project

This report provides a summary of overflows that occurred between 1 July 2023 and 30 June 2024, as well as a brief overview of works in each geographical catchment area. These consents do not include Kawakawa Bay, for which the sewerage is transported within a vacuum system, and as such has a separate consent.

1.2 Scope

This report summarises the performance of Watercare's wastewater network, based on the recorded and reported overflows that occurred over the reporting period (1 July 2023 – 30 June 2024). Specifically, this report provides information on the following:

- Wastewater overflows from Watercare's wastewater network, both during times of dry weather and wet weather flows from both types of engineered overflow points:
  - Type 1 pump stations (PS)
  - Type 2 network relief points with telemetry
- Uncontrolled (Type 3) overflows which are typically reported through customer contact
- Watercare's Inflow and Infiltration Programme (I&I)
- The upgrade and improvement projects Watercare undertake to improve network performance
- Additions to the network in response to population growth and urban intensification

- Any updates or additions to the public information made available by Watercare

1.3 Data limitations

Ongoing improvements are being made to Watercare's data collection processes, and as such there are variations in the accuracy and detail of data analysed and presented in each annual report. Further improvements are necessary for consolidating all Type 2 overflow alarm data.

1.4 Definition, abbreviations and acronyms

This report uses technical language and abbreviations for some terms. Watercare has made all efforts to define these terms in the text. For ease of reading Table 1-1 lists key technical terms and common abbreviations in this document. See Appendix A for further definitions.

Table 1-1 Abbreviations and terms

Abbreviation/ term	Description
Ammonia testing	Semi-quantitative instant tests for ammoniacal nitrogen (NH_4) and ammonia (NH_3)
Controlled overflow	A discharge from the network that occurs from an engineered overflow point, either during times of dry or wet weather flows
DWF	Dry weather flow
DWO	Dry weather overflow, which occurs when less than 10 mm of rainfall fell during the preceding 24 hours
EOP	Engineered overflow point
GWI	Groundwater infiltration
I&I	Inflow and infiltration
Level	The impact of the overflow from Level One spill to Level Five catastrophe (refer to Appendix A for more details)
LIM	Land Information Memorandum
NDC	Auckland-wide Network Discharge Consent
RDII	Rainfall derived inflow and infiltration
Repeat DWO	A Dry Weather Overflow that occurs more than once at the same location within a 12 month period
SCADA	Supervisory Control and Data Acquisition
SMA	Strategic Management Area
Type 1	Engineered overflow points at pump stations
Type 2	Engineered overflow points along the wastewater network
Type 3	Uncontrolled overflows from the wastewater network
Uncontrolled overflow	A spill from any point in the network, during dry or wet weather flows
WIWQP	Western Isthmus Water Quality Programme
WWO	Wet weather overflow, which occurs when 10 mm or more rainfall fell during the preceding 24 hours
WWPS	Wastewater pump station
WWTP	Wastewater treatment plant

1.5 Watercare's wastewater network

The primary purpose of a wastewater network is to transport the untreated wastewater generated by residential, commercial, and industrial properties to a wastewater treatment plant (WWTP). These flows comprise dry weather flow and inflow and infiltration.

Dry weather flow (DWF) is a combination of domestic, commercial, and industrial loads. Dry weather flow also includes groundwater infiltration (GWI); water entering the network from the groundwater table. When an overflow occurs in relatively dry weather (≤ 10 mm in the preceding 24 hours), Watercare classifies it as a dry weather overflow (DWO).

Rainfall Derived Inflow and Infiltration (RDII) is rainfall that enters the wastewater network. Sources of RDII include, but are not limited to, cracked pipes, unsealed manholes, and private stormwater pipes illegally connected to the wastewater system. When an overflow occurs in wet weather (> 10 mm) or determined to be caused by surcharging, Watercare classifies it as a wet weather overflow (WWO).

To minimise the risk of wastewater spilling onto private homes and property, Watercare has designed its wastewater network to overflow at engineered overflow points (EOPs) during wet weather events. Such a design is a common approach taken by many international water utilities.

1.6 Sewerage types

There are two key sewerage types within the Auckland region: combined networks, predominantly found in the older areas of metropolitan Auckland, and separated networks.

1.6.1 Combined networks

The combined networks collect wastewater and stormwater in a single pipe. Combined networks are designed to overflow during rainfall events when increased stormwater flows restrict capacity.

To ensure that these overflows occur in a controlled manner, rather than on private properties and buildings, the network has dedicated Type 2 Engineered Overflow Points (EOPs) at points on the network. These Type 2 EOPs discharge through a piped system or designated flow path to the local receiving environment.

The sewerage that is conveyed to Māngere, which Watercare defines as the Māngere Strategic Management Area (SMA), is the only area within the network that has combined networks. This SMA encompass parts of the Western Isthmus (Central Interceptor), Cox's Bay, the central business district (CBD) and Hobson Bay geographic catchments. All other SMAs are separated systems, including the Rosedale SMA that services most of the North Shore.

1.6.2 Separate networks

Separate networks should only receive dry weather flows, except where there are infiltration and inflow issues. The influence of wet weather flow results from:

- Inflow, where water enters the separated wastewater system through wrongful or illegally connected downpipes from roofs, overland flow, flooded manholes or low-lying gully traps on private property.
- Infiltration, which occurs when surface and groundwater above the pipe level enters the wastewater system through cracked or disjointed pipes. Infiltration affects both public and private wastewater pipes.

Separate wastewater systems have engineered overflow structures at pump stations (Type 1 EOPs) and within the network (Type 2 EOPs). These EOPs provide relief points where lack of capacity could otherwise result in uncontrolled overflows at a private property, and instead direct spills to locations that present lower risks to public health and the environment.

1.7 Watercare's response to overflows

Watercare manages its wastewater overflows in two ways:

- Immediate responses
- Investigation and remediation

Watercare has in place an agreed protocol with Auckland Council for responding to and reporting on wastewater overflows. The Wastewater Overflow Regional Response Manual, developed in conjunction with the Pollution Response and Licencing and Compliance Teams, was signed in 2014, and is currently being updated to align better with today's company structure and processes.

1.7.1 Immediate response

Overflows are categorised according to risks, as identified in Appendix A. In addition, Watercare uses ammoniacal nitrogen testing to indicate the presence of sewage contamination, using this tool along with visual and odour indicators. Ammonia testing occurs only when safe and when samplers have access to the receiving watercourse. Where possible, ammoniacal testing occurs at the point of entry, 5 m downstream and 100 m downstream.

Watercare records and reports overflow pollution events through "wastewater overflow incident assessment forms". The overflow manual requires Watercare to issue these forms to Auckland Council within ten working days for Level 3 and above incidents.

Where ammonia testing indicates concentrations >6 ppm, further sampling may be needed to confirm repairs have been completed. Additional sampling may also be undertaken by the Auckland Council Environmental Health Officer if required.

1.7.2 Repeat issues

Investigating repeat dry weather overflows may identify a systemic network asset or operational issue. A repeat DWO is one that occurs twice or more within 12 months. Repeat overflows caused by blockages are initially investigated by contracted service providers on site after responding to an overflow call out. To prevent further repeats, the service providers often flush the lines to remove any buildup of debris or materials causing the blockage and if this has not resolved the issue CCTV may be requested to determine the cause. This process is time-consuming and is not cost-effective for all overflow jobs.

Watercare tracks any repeat overflows that are not resolved within the reporting year and prioritises investigations into issues with three or more spills over a rolling 24-month period. For dry weather repeats, the source of the blockage or damage is investigated and mitigated. For wet weather repeats, an investigation is conducted to confirm whether there are infiltration or capacity issues, rather than a blockage. These issues are then escalated to the relevant team, either to Planning or Inflow and Infiltration, as the issues cannot be solved by simple operational remediations. In some instances, new overflow points may be added to the Type 3 EOP list (see Appendix C for full details) to better track incidents and improvements. The engineer-led investigations assigned during the 2023-2024 period in response to repeat overflows are listed in Appendix D.

2 OVERVIEW OF THE NETWORK

2.1 Introduction

The Network Discharge Consents authorise discharges in 36 catchments across Auckland. This chapter provides an overview of each catchment. Figure 2-1 (at the end of this section) displays the full consented area and Appendix B presents individual catchment maps.

Watercare reports metrics and tracks improvement projects and investigations at the catchment scale. By understanding the geography, population trends and developments occurring within each catchment, Watercare can ensure that the wastewater network provides appropriate services to all areas and communities within Auckland.

2.2 Catchment details

Metrics for the 2023-24 reporting period are detailed below for each individual catchment.

Catchment 1 – Wellsford

- 32.33 km wastewater pipes
- 859 connections (26.6 connections per km pipe)
- 6 EOPs (0.19 EOPs per km pipe)
- 0.2 Type 3 overflows per 100 connections

Wellsford is a rural township in a predominantly rural pastoral area. Wellsford is approximately 20 km inland from the Kaipara Harbour. Auckland Council has identified two indicative future urban areas to the north and south of Wellsford.

This catchment performs well and as such, there were no significant improvement works completed or immediately planned for the network here.

Catchment 2 – Omaha

- 63.11 km wastewater pipes
- 1,797 connections (28.5 connections per km pipe)
- 9 EOPs (0.14 EOPs per km pipe)
- 0.8 Type 3 overflows per 100 connections

Omaha is a small beach town on Omaha Bay, north of Auckland city, approximately 75 km north of Auckland on a sandspit that adjoins Tāwharanui Peninsula. The Omaha catchment also includes the Matakana and Point Wells townships.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 3 – Warkworth

- 58.68 km wastewater pipes
- 2,249 connections (38.3 connections per km pipe)
- 5 EOPs (0.09 EOPs per km pipe)
- 0.4 Type 3 overflows per 100 connections

Warkworth is on the banks of the Mahurangi River at the head of the Mahurangi Harbour. The surrounding land use comprises rural pastoral land in lowland areas and plantation and native

forestry in the high country. Auckland Council has identified two indicative future urban areas in Warkworth.

Warkworth's population is expected to grow significantly, and the network is already struggling with capacity constraint. The north-west growth servicing pipeline is in the planning phase and will alleviate growth restrictions in north Warkworth and reduce overflows at the Elizabeth St engineered overflow point. We do not have a firm construction completion date for this project yet. Further details can be found in Section 6.

Catchment 4 – Snells Beach/Algies Bay

- 67.17 km wastewater pipes
- 2,153 connections (32.1 connections per km pipe)
- 9 EOPs (0.13 EOPs per km pipe)
- 0.5 Type 3 overflows per 100 connections

Snells Beach and Algies Bay are adjacent settlements on the east coast of the Mahurangi Peninsula, approximately 10 km from Warkworth.

To cater for growth in the region, a new conveyance sewer is under construction, to increase capacity at the pump station and treatment plant. See Section 6 for further details. Additionally, two reactive I&I projects were completed in Mahurangi East and Tamatea during this reporting period (see Section 5 for number of public and private issues identified).

Catchment 5 – Waiwera

- 4.17 km wastewater pipes
- 125 connections (30 connections per km pipe)
- 3 EOPs (0.72 EOPs per km pipe)
- 1.6 overflows per 100 connections

Waiwera is at the southern end of the Waiwera estuary and is characterised by geothermal springs and estuarine environments. The township is surrounded by native bush, small farms, and lifestyle blocks.

A new pipeline and pump station will be built here to bring the treatment plant under compliance, see Section 6 for further details.

Catchment 6 - Helensville

- 38.87 km wastewater pipes
- 1,628 connections (41.9 connections per km pipe)
- 8 EOPs (0.21 EOPs per km pipe)
- 0.9 overflows per 100 connections

Helensville is on the banks of the Kaipara River at the southern end of the Kaipara Harbour. The Kaipara River catchment comprises mostly rural land uses with plantation forest, horticulture, and lifestyle blocks. The Auckland Council has identified two future urban areas north and south of the current catchment boundary.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 7 – Orewa

- 217.30 km wastewater pipes
- 10,191 connections (46.9 connections per km pipe)
- 12 EOPs (0.06 EOPs per km pipe)
- 0.5 Type 3 overflows per 100 connections

Orewa is on the Hibiscus Coast, north of the Whangaparāoa Peninsula and approximately 40 km north of central Auckland. The Orewa wastewater network also serves Hatfield Beach and Silverdale North. Parts of the existing urban area are currently undeveloped and therefore not serviced by wastewater infrastructure. Furthermore, there is an extensive area of an indicative future urban area in the west of this catchment.

There are several improvement projects underway in this catchment including designing of the new Penlink wastewater pipeline, a new rising main in the Silverdale West and Dairy Flat area and as previously mentioned, a new conveyance pipeline and pump station in Waiwera. Details of all these improvement projects can be found in Section 6.

Catchment 8 – Weiti

- 47.21 km wastewater pipes
- 1,372 connections (29.1 connections per km pipe)
- 9 EOPs (0.19 EOPs per km pipe)
- 0.7 Type 3 overflows per 100 connections

The Weiti catchment comprises two town centres: Silverdale and Stillwater. Both Silverdale and Stillwater are on the banks of the Weiti River, with the surrounding land in rural pastoral land use, lifestyle blocks, or forestry. The Weiti Forest lies immediately south of Stillwater town.

Both the Penlink pipeline and the new rising main around Silverdale West and Dairy Flat projects will improve performance in this catchment also, see Section 6 for further details.

Catchment 9 – Whangaparāoa

- 293.17 km wastewater pipes
- 12,266 connections (41.8 connections per km pipe)
- 21 EOPs (0.07 EOPs per km pipe)
- 0.4 Type 3 overflows per 100 connections

Whangaparāoa Peninsula is 25 km north of Auckland, extending east for 11 km into the Hauraki Gulf. The town of Whangaparāoa sits on the peninsula's south-western shore.

There are several improvement projects underway in this catchment to improve resilience and resolve capacity issues for future growth. Details of these can be found in Section 6. Additionally, a joint WSL I&I and Healthy Waters (HW) investigation was conducted and completed during this reporting period, identifying a large number of private drainage issues (see Section 5).

Catchment 10 – Long Bay

- 76.90 km wastewater pipes
- 3,547 connections (46.1 connections per km pipe)
- 7 EOPs (0.09 EOPs per km pipe)
- 1 Type 3 overflow per 100 connections

The Long Bay catchment is on Auckland's North Shore, with the Okura River to the north and Long Bay Beach to the east. The catchment is predominantly urban, and at present, the wastewater system covers the residential suburbs and Okura.

The Torbay Network Upgrade programme is looking to resolve multiple overflow issues across the East Bay Coast and Long Bay catchments. Details of this can be found in Section 6.

Catchment 11 – East Coast Bays

- 507.89 km wastewater pipes
- 30,621 connections (60.3 connections per km pipe)
- 32 EOPs (0.06 EOPs per km pipe)
- 1.3 Type 3 overflows per 100 connections

The East Coast Bays catchment is on Auckland's North Shore. Taiaotea Creek contains the commercial areas of Browns Bay that comprise a significant proportion of the lower catchment, with the rest of the lower catchment being residential. The upper catchment, Wairau Creek, also contains residential land use but has a significant proportion of commercial land use to the west of the Northern Motorway.

Given the high number of overflows reported in this catchment, improving network performance here is a high priority. As such, there are a number of ongoing projects underway in this catchment designed to reduce overflows, increase capacity and improve the water quality of swimmable areas. Of the nine ongoing projects in this catchment, there are two that are very close to completion, these being the East Coast Bays Link Sewer Upgrade and Rerouting of Alma PS Transmission Trunk. In addition, the Sidmouth PS project was completed during this reporting period, which will allow for growth and addressed localised flooding issues at Mairangi Bay. Details of all these projects can be found in Section 6.

Catchment 12 – Devonport-Takapuna

- 36.49 km wastewater pipes
- 2,474 connections (67.8 connections per km pipe)
- 7 EOPs (0.19 EOPs per km pipe)
- 1.3 overflows per 100 connections

The Devonport-Takapuna catchment is on Auckland's North Shore and comprises the peninsula's eastern and southern coastal strips. There are no notable surface watercourses within the catchment, and all discharges are to the marine environment.

The Wairau Pump Station Upgrade is scheduled to be completed by 2032 and will reduce high volume overflows in the area, see Section 6 for further details.

Catchment 13 – Shoal Bay

- 288.11 km wastewater pipes
- 17,409 connections (60.4 connections per km pipe)
- 35 EOPs (0.12 EOPs per km pipe)
- 1.1 overflows per 100 connections

The Shoal Bay catchment is on Auckland's North Shore and is predominantly urban, with significant residential development. The Chelsea Sugar factory is a notable large industrial site within the catchment.

There are a number of improvement projects planned for the Shoal Bay catchment targeted to reduce overflows from many EOPs as well as reduce uncontrolled overflows. Further details can be found in Section 6.

Catchment 14 – Upper Harbour North

- 342.75 km wastewater pipes
- 14,676 connections (42.8 connections per km pipe)
- 20 EOPs (0.06 EOPs per km pipe)
- 0.8 overflows per 100 connections

The Upper Harbour North catchment is on Auckland's North Shore. This catchment contains a mix of urban and rural land uses, including many intensifying residential areas. There are widespread subdivisions, medium-density developments in specially zoned areas, and infill growth throughout this catchment.

There are two improvement projects underway in this catchment to alleviate capacity constraints and reduce uncontrolled and controlled overflows from the network (see Section 6 for details).

Catchment 15 – Upper Harbour South

- 223.57 km wastewater pipes
- 13,523 connections (60.5 connections per km pipe)
- 16 EOPs (0.07 EOPs per km pipe)
- 1.1 overflows per 100 connections

The Upper Harbour South catchment is on Auckland's North Shore. Land use within the Upper Harbour South catchment is predominantly residential, with minor commercial activities and several schools.

There are two improvement projects due to be completed within the next three years in the Upper Harbour South catchment, involving upgrade and replacement work around Kahika rising main and pump station (see Section 6).

Catchment 16 – Upper Harbour West

- 180.34 km wastewater pipes
- 9,563 connections (53 connection per km pipe)
- 15 EOPs (0.08 EOPs per km pipe)
- 0.4 overflows per 100 connections

The Upper Harbour West catchment is on the western side of Waitematā Harbour. Land use within the catchment is predominantly residential on the south-eastern side of Hobsonville Road and at Herald Island. The remaining area comprises lifestyle blocks and farmland on the northwest of the catchment and horticultural land use in the northeast towards Hobsonville. Parts of the existing urban area are currently not serviced, but some areas identified as a future urban area.

There are three wastewater network projects currently planned for the catchment, including catering for future developments and growth, as well as targeting reduction of overflows through the diversion of flow to the Rosedale WWTP by the Northern Interceptor.

Catchment 17 – Henderson Creek

- 785.59 km wastewater pipes

- 43,886 connections (55.9 connections per km pipe)
- 17 EOPs (0.02 EOPs per km pipe)
- 1 overflow per 100 connections

The Henderson Creek catchment is to the west of central Auckland. The catchment contains several notable watercourses, including the Waikumete Stream and Oratia Stream, converging on the Henderson Creek. Land use within the catchment is predominantly residential, with commercial areas. Light industrial uses concentrate in the Henderson Valley and Lincoln areas.

The Northern interceptor will also reduce capacity constraints in Henderson Creek by providing additional capacity in the Western Interceptor. Additionally, the Takapu St project is almost complete and will address a number of uncontrolled overflows (see Section 6). Furthermore, the reactive Joint WSL I&I and HW Safe Networks investigation was completed for Pixie Stream in Te Atatu South, which identified many public and private drainage issues (see Section 5).

Catchment 18 – Whau River

- 362.8 km wastewater pipes
- 22,261 connections (61 connections per km pipe)
- 18 EOPs (0.05 EOPs per km pipe)
- 0.6 overflows per 100 connections

The Whau River catchment covers approximately 25 km² in the western part of the Auckland Isthmus. The catchment's current land use is predominantly residential, with substantial light industrial and commercial development pockets.

The Northern Interceptor will alleviate capacity constraints in this catchment also. No other network improvement plans are taking place in this catchment currently. However, two joint WSL I&I and HW Safe Networks investigation was completed during this reporting period at Flounder Bay and Heafy St, a number of private and public issues were identified in both areas (see Section 5).

Catchment 19 - Laingholm

- 103.74 km wastewater pipes
- 3,003 connections (28.9 connections per km pipe)
- 2 EOPs (0.02 EOPs per km pipe)
- 1.5 overflows per 100 connections

The Laingholm catchment is in the west of Auckland, along the northern border of the Manukau Harbour. Land use in the catchment is characterised by residential living in a bush environment, with regenerating bush in the Waitākere Ranges Regional Park bordering the catchment to the west.

No major works or improvement projects have taken place during the reporting period.

Catchment 20 – Cox's Bay

- 98.38 km wastewater pipes
- 7,510 connections (76.3 connections per km pipe)
- 60 EOPs (0.61 EOPs per km pipe)
- 0.9 overflows per 100 connections

The Cox's Bay catchment covers approximately 25 km² in the western part of the central Auckland Isthmus. The catchment area is highly developed, being residential, with pockets of open space dotted throughout the catchment. The bulk of wastewater network in the Cox's Bay area uses a

combined stormwater-sewer system, and the catchment has a correspondingly high number of Type 2 EOPs.

As much of Cox's Bay is on a combined network, overflow frequencies are expected to be higher here. To deal with this, a large number of network improvement projects are planned and underway in this catchment. These include the Grey Lynn Tunnel, upgrade to Branch 5 Herne Bay, CI and link sewers, and further projects under the Western Isthmus Water Quality Improvement Programme (WIWQIP). Details of all these can be found in Section 6.

Catchment 21 – Central Auckland (CBD)

- 112.79 km wastewater pipes
- 4,429 connections (39.3 connections per km pipe)
- 65 EOPs (0.58 EOPs per km pipe)
- 1.9 overflows per 100 connections

The Central Auckland (CBD) catchment is approximately 9 km², extending from Westhaven Marina in the west to Mechanics Bay in the east, and bordered by the Waitematā Harbour in the north. The catchment is characterised by commercial development (low and high-rise office blocks and retail shops), cafes and restaurants, industrial activities (light, automotive), hotels, low, medium, and high-density residential living, entertainment complexes, car parks, churches, and reserve areas. The harbour edge also incorporates port, ferry, and marina activities. Significant open spaces within the catchment include the Auckland Domain, Albert Park, and Victoria Park.

The wastewater network in the CBD is a mix of combined areas, areas for which separation has occurred, and areas developed with separate stormwater and sewerage. The catchment thus has a disproportionate number of EOPs for its size.

The only improvement project currently in progress is the Queen Street Diversion which targets the reduction of overflows from a number of EOPs in Central Auckland (see Section 6).

Catchment 22 – Hobson Bay

- 444.84 km wastewater pipes
- 31,407 connections (70.6 connections per km pipe)
- 97 EOPs (0.22 EOPs per km pipe)
- 1 overflow per 100 connections

The Hobson Bay catchment is in the central part of the Auckland Isthmus immediately to the east of the CBD. The catchment is mainly residential, with some business and industrial activity centred around Newmarket and Parnell.

The wastewater network in this catchment is a mix of combined areas, separated from historically combined sewers and developed as separated areas. This mix is reflected in the number of EOPs in the catchment.

The Newmarket Gulley is a large project designed to significantly increase storage capacity of the combined network, thus reducing overflows from many EOPs as well as uncontrolled points along the network. Furthermore, joint WSL I&I and HW Safe Networks investigations were completed in Hapua and Judges Bay during this reporting period, identifying drainage issues in both public and private networks. The joint WSL & HW Eastern Water Quality Improvement Programme also saw

three investigations completed in Hobson South, Newmarket and Portland Road (see Section 5 for further details).

Catchment 23 – Onehunga

- 265.81 km wastewater pipes
- 18,235 connections (68.6 connections per km pipe)
- 19 EOPs (0.07 EOPs per km pipe)
- 1.1 overflows per 100 connections

The Onehunga catchment covers approximately 23 km² on the northern shores of Māngere Inlet and the Manukau Harbour. The catchment is heavily developed, with a large business and industrial activity area along the coastal margins of Māngere Inlet and Onehunga Township. Further to the north, the catchment is mainly residential and open space zoned land.

There is a single network improvement project in Onehunga which is to ensure level of service is met for a large-scale development (see Section 6). Additionally, the I&I investigation in the North East was completed during this reporting period and 63 issues were identified (see Section 5).

Catchment 24 - Māngere

- 328.47 km wastewater pipes
- 13,736 connections (41.8 connections per km pipe)
- 20 EOPs (0.06 EOPs per km pipe)
- 1 overflow per 100 connections

The Māngere catchment is to the south of central Auckland and contains the suburbs of Otahuhu, Māngere East, Māngere, and Māngere Bridge. Several watercourses in the area, including Tararata Creek, Harania Creek, and Tui Creek, converge in the Māngere Inlet. Land use within the catchment is mainly urban, with commercial/industrial services focused around the Māngere Inlet.

There are a number of network improvement projects currently underway in Māngere, including catering for growth and reducing capacity constraints and WWOs with new pipelines. See Section 6 for further details.

Catchment 25 – Lower Tāmaki River

- 315.37 km wastewater pipes
- 19,393 connections (61.5 connections per km pipe)
- 24 EOPs (0.08 EOPs per km pipe)
- 1 overflow per 100 connections

The Lower Tāmaki River catchment is in the east of Auckland and covers areas around the Tāmaki River Estuary. Land use within the bay is predominantly residential, with commercial/ industrial land areas in the southwest of the catchment. There has recently been significant residential development adjacent to Mt Wellington in the former Mt Wellington quarry.

During this reporting period, the Dunkirk Road Capacity Upgrade was completed, so a reduction in overflows from EOP 163 and S55 should be observed going forwards. In addition, there are a number of ongoing projects planned for the catchment, to further cater for growth and reduce both controlled and uncontrolled overflows. Section 6 provides further details of these. Furthermore, one of four I&I investigations planned within this catchment was completed during the reporting year, the remaining 3 areas will be completed over the next three years. A joint investigation by WSL and

HW was also conducted and completed along Bucklands Beach Rd. See Section 5 for further details of these.

Catchment 26 – Upper Tāmaki River

- 1,150.45 km wastewater pipes
- 62,480 connections (54.3 connections per km pipe)
- 55 EOPs (0.05 EOPs per km pipe)
- 0.5 overflows per 100 connections

The Upper Tāmaki River catchment is in the southeast of Auckland. It is the largest geographical catchment of the Auckland wastewater network.

Land use within the catchment includes large industrial/commercial land areas around Mt Wellington and Richmond and significant areas of East Tāmaki. There are also areas of the catchment which have very recently developed through expansion and growth.

There are two ongoing network improvement projects looking to accommodate continued growth in the region by improving capacity (see Section 6).

Catchment 27 – Cockle Bay

- 106.87 km wastewater pipes
- 5,035 connections (47.1 connections per km pipe)
- 7 EOPs (0.07 EOPs per km pipe)
- 0.8 overflows per 100 connections

The Cockle Bay catchment is along the eastern coast of the Bucklands Beach peninsula. Land use is predominantly low to medium density residential, with pockets of open space and local retail and commercial areas. There are no industrial sites within the catchment.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 28 – Puhinui

- 400.96 km wastewater pipes
- 19,682 connections (49.1 connections per km pipe)
- 13 EOPs (0.03 EOPs per km pipe)
- 0.7 overflows per 100 connections

The Puhinui catchment is about 18 km southeast of Auckland city centre, to the northeast of Manukau Harbour. The catchment consists predominantly of residential, industrial, and commercial land uses, with some land in horticulture. The Auckland Airport is to the west of the catchment, on the northern side of the Manukau Harbour.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 29 – Pahurehure Inlet

- 708.41 km wastewater pipes
- 15,067 connections (21.3 connections per km pipe)
- 19 EOPs (0.03 EOPs per km pipe)
- 1 overflow per 100 connections

The Pahurehure Inlet catchment is in south Auckland, with commercial areas in Manurewa and Papakura and a large industrial/commercial zone in Takanini. Substantial growth is expected in this region.

To cater for growth in this region, there are two ongoing, long-term projects currently in design to cater for new developments and to divert flows away from the constrained Southern Interceptor (see Section 6).

Catchment 30 – Oneroa

- 3.08 km wastewater pipes
- 37 connections (12 connections per km pipe)
- 1 EOP (0.32 EOPs per km pipe)
- No overflows

Waiheke Island is in the Hauraki Gulf, approximately 17 km east of the Auckland CBD. Only a small proportion of the island, comprising Oneroa, Blackpool, and part of Surfdale, is currently serviced.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 31 – Beachlands-Maraetai

- 111.06 km wastewater pipes
- 3,416 connections (30.8 connections per km pipe)
- *11 EOPs (0.1 EOPs per km pipe)*
- *0.2* overflows per 100 connections

The Beachlands-Maraetai catchment includes two seaside suburbs located about 23 km east of central Auckland. Land use within the catchment is predominantly residential. Beachlands has marina facilities at Pine Harbour Marina, and Maraetai has a small boat ramp and breakwater.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 32 – Clarks Beach

- 28.65 km wastewater pipes
- 810 connections (28.3 connections per km pipe)
- 13 EOPs (0.45 EOPs per km pipe)
- 0.6 overflows per 100 connections

Clarks Beach is a small coastal village located on the south-western shore of the Manukau Harbour between the Waiuku River and Clarks Creek. Land use includes residential properties, the Clarks Beach Golf Club, Clarks Beach Camping Ground, and surrounding rural activities.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 33 - Waiuku

- 70.13 km wastewater pipes
- 2,884 connections (41.1 connections per km pipe)
- 12 EOPs (0.17 EOPs per km pipe)
- 0.3 overflows per 100 connections

Waiuku Township is at the southern end of the Waiuku Estuary, a tidal arm of the Manukau Harbour. The Waiuku Catchment is 420 ha of predominantly residential and rural land, with some light commercial land. The catchment has one golf course, eight parks of significant size, and several schools.

There were no significant improvement works completed, nor imminently planned for the network here.

Catchment 34 - Pukekohe

- 230.42 km wastewater pipes
- 8,857 connections (38.4 connections per km pipe)
- 19 EOPs (0.08 EOPs per km pipe)
- 0.6 overflows per 100 connections

The Pukekohe catchment is on the southern edge of the Auckland Region, approximately 50 km south of central Auckland. The catchment comprises the Pukekohe urban area, Patumahoe Township and the Paerata Business Park to the north, and Buckland and Tuakau townships to the south.

To support population growth there are ongoing projects in design to ensure new developments and growth are catered for. Section 6 provides further details.

Catchment 35 – Kumeū-Huapai-Riverhead

- 81.42 km wastewater pipes
- 3,102 connections (38.1 connections per km pipe)
- No EOPs
- No overflows

The Kumeū-Huapai-Riverhead catchment covers approximately 1,270 ha in rural northwest Auckland. There are no existing EOPs in the catchment. However, Watercare has plans for engineered overflow points to cater for future growth identified in the Auckland Plan and proposed Auckland Unitary Plan.

The Northern Interceptor is the only current network project improving performance within this catchment, and is due to be completed in 2025.

Catchment 36 – Western Isthmus

- 630.24 km wastewater pipes
- 45,035 connections (71.5 connections per km pipe)
- 119 EOPs (0.19 EOPs per km pipe)
- 0.4 overflows per 100 connections

The Western Isthmus catchment is to the west of central Auckland, with predominantly residential land use. The Central Interceptor, including the additional extension and collector sewers are currently underway to improve performance of the wastewater network here.

Furthermore, there are a number of projects under WIWQIP aimed to reduce overflow and improve the water quality of the many streams and waterbodies here.

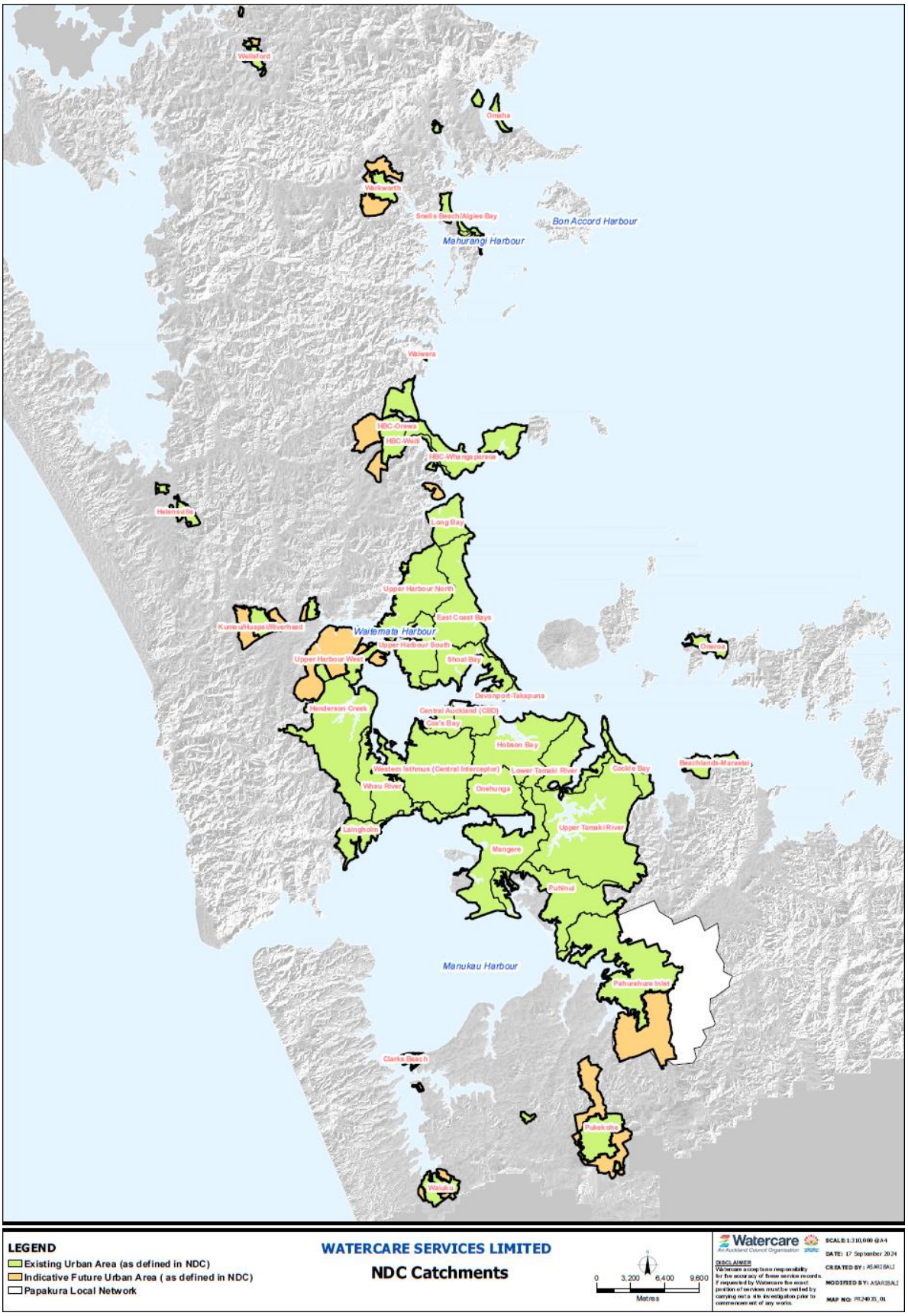


Figure 2-1 Map showing all 36 consented catchments in the NDC and associated consents

3 DRY WEATHER OVERFLOWS

3.1 Introduction

This section presents the analysis of dry weather overflows from the NDC catchments in the 2023-2024 reporting period. The details of Type 1, Type 2, and Type 3 overflows are presented separately for the monitoring year as well for longer-term trends. Appendix D has details of all overflow events from the reporting year.

There are no performance targets set for the frequency of DWOs under the NDC. However, analysis of overflow data, particularly Type 3 overflows, allows for better decision making around network flushing schedules, maintenance and asset renewals programmes, repeat engineer-led investigations and local community campaigns to increase public awareness of how to care for their local wastewater network. Comparing historical DWO frequencies also allows us to better understand how the performance of our network has improved or declined over time, this is explored further in Section 3.3.

3.2 Dry weather overflows 2023-2024

Table 3-1 summarises the DWOs that occurred during the reporting period. When comparing DWOs totals with the previous reporting period (2022-23) a substantial decrease is observed in controlled overflows from both Type 1 (pump stations) and Type 2 EOPs, whereas an increase is observed in uncontrolled Type 3 overflows. The increase in uncontrolled DWOs can likely be attributed to the fewer wet weather days experienced during this reporting period compared to the previous which included the Auckland Anniversary floods and Cyclone Gabrielle.

Table 3-1 Comparison of causes of DWOs in between 2022-23 and 2023-24

	Type 1		Type 2		Type 3	
Cause	*2022-23*	**2023-24**	*2022-23*	**2023-24**	*2022-23*	**2023-24**
Broken pipe	*0*	6	Not recorded		*234*	270
Fats	*0*	0			*440*	641
Foreign objects	*0*	0			*98*	128
Rags/ wet wipes	*0*	0			*128*	218
Roots	*0*	0			*667*	694
Rubbish	*0*	0			*10*	46
Silt	*0*	0			*31*	71
3rd party damage	*0*	0			*41*	54
Unknown	*40*	5			*1622*	1563
Power failure	*1*	4			*3*	6
Mechanical	*10*	12				1
Total overflows	***51***	**27**	***803***	**559**	***3274***	**3692**

3.2.1 Type 1 overflows

Telemetry devices are used to monitor imminent and actual overflows at all 421 Watercare pump stations and storage tanks (Type 1 EOPs). Following DWO alarms, staff visit the pump station to validate the overflow alarm, carry out any remedial work and perform any necessary clean-up of overflows.

There were 27 controlled DWOs from 17 pump stations during this reporting period, with the majority caused by a mechanical failure (12 overflows). Total Type 1 overflows per catchment is presented in Figure 3-1, the catchment that reported the highest number of Type 1 overflows was Central Auckland with six overflows, followed by Pukekohe with five. The six overflows in Central Auckland were all from PS 13 Constitution Hill, as a result of the Ōrākei Sewer Main (OMS) break that occurred in September/October 2023. This pump station was intentionally shut down in order to divert flows from the collapsed pipe. The five overflows in Pukekohe were the result of the Cape Hill Road WWPS rising main breaking in September, followed by the pumps failing after the repair was made. The totals of all pump station overflows can be found in Table 3-2. Further details of all Type 1 DWOs can be found in Appendix D.

Table 3-2 Summarising cause and number of overflows from Type 1 EOPs

Catchment	Facility Name	EOP ID	Cause	Overflows
Wellsford	Kellys Hill Pump Station	1132	Power Failure	1
	Worker Road Pump Station	1128	Unknown	1
Snells Beach/Algies Bay	Cornel Pump Station	1107	Power Failure	1
	Daltons Pump Station	1106	Broken pipe	1
	Daltons Pump Station	1106	Mechanical	1
Weiti	Stillwater Pump Station	817	Unknown	1
Shoal Bay	Lake Road Pump Station	830	Broken pipe	1
Upper Harbour North	Atlas Pump Station	826	Unknown	1
Henderson Creek	PS 42 Te Atatu North	692	Power Failure	1
	PS 44 Western	690	Mechanical	1
Whau River	Endeavour Street Pump Station	609	Unknown	1
	Kenley Place Pump Station	621	Unknown	1
	PS 25 St George	695	Mechanical	2
Central Auckland	PS 13 Constitution Hill	528	Mechanical	6
Pahurehure Inlet	PS 47 Weymouth	708	Broken pipe	1
Oneroa	Oneroa Waiheke Pump Station	657	Mechanical	1
Pukekohe	Cape Hill Road Pump Station	1247	Broken pipe	3
	Cape Hill Road Pump Station	1247	Mechanical	1
	Franklin Road Pump Station	825	Power Failure	1

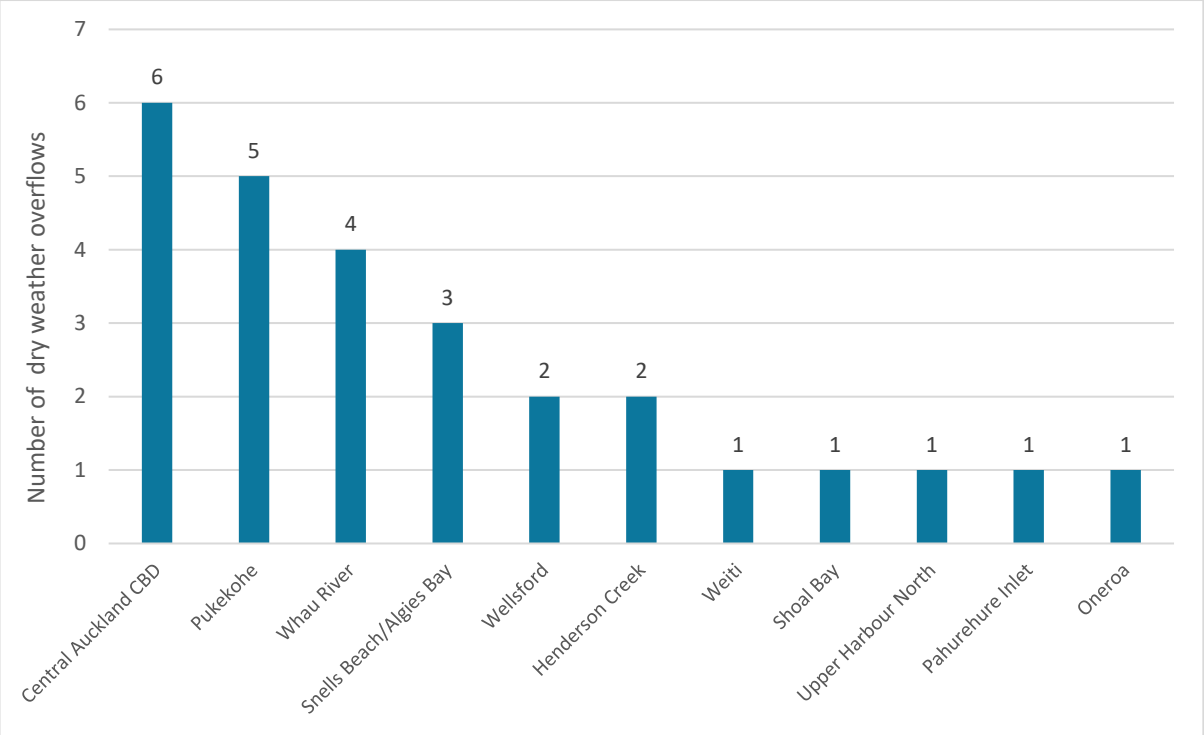


Figure 3-1 Total number of Type 1 DWOs per catchment

3.2.2 Type 2 overflows

Type 2 overflows occur from EOPs distributed along the local and transmission wastewater network. Of the 385 Type 2 EOPs, 96 have telemetry devices installed to alert and record potential overflow events. As such, the telemetered EOPs discussed in this report are not a complete representation of the overall network performance. The Type 2 data presented in the report is sourced directly from the alarms, and as such has not been validated or assigned a cause. Therefore, all overflows that occurred following 10 mm or less of rain during the previous 24 hours are categorised as a DWO, even if the cause could have been attributed to surcharging. It is also expected that a small proportion of these alarms were false and did not result in an actual overflow. As such, the reliability and accuracy of this dataset is low; however, these records can be used to indicate poorly performing EOPs.

There were 559 Type 2 DWO alarms across 46 EOP sites in the 2023-24 reporting period, with the worst performing catchments being Hobson Bay with 204 overflow alarms and Western Isthmus with 144 overflow alarms. Figure 3-2 presents total dry weather Type 2 overflow alarms per catchment. The highest number of DWO alarms were recorded at the following Type 2 EOPs:

- *EOP 712, Branch 5 Herne Bay MH2A with 61 DWOs*
- *EOP 201, 97 Sarsfield St with 59 DWOs*
- *EOP 728, Branch 8 Mt Albert MH31 with 52 DWOs*

Two of these worst performing EOPs are on the combined transmission network and appear to overflow regularly in dry weather conditions (following 10 mm or less of rainfall during the previous 24 hours). As these branches are part of the combined wastewater network, it is not uncommon for low volumes of rain to cause surcharging and overflows.

EOP 728 is in Mt Albert alongside the Central Interceptor tunnel, and as such overflows from here are expected to reduce dramatically following completion of this major programme of works. In addition, the Herne Bay Branch 5 Upgrade project aims to address the high overflow frequencies observed in the Herne Bay area, including EOP 201 and 712. Further details about these and other improvement projects can be found in Section 6.

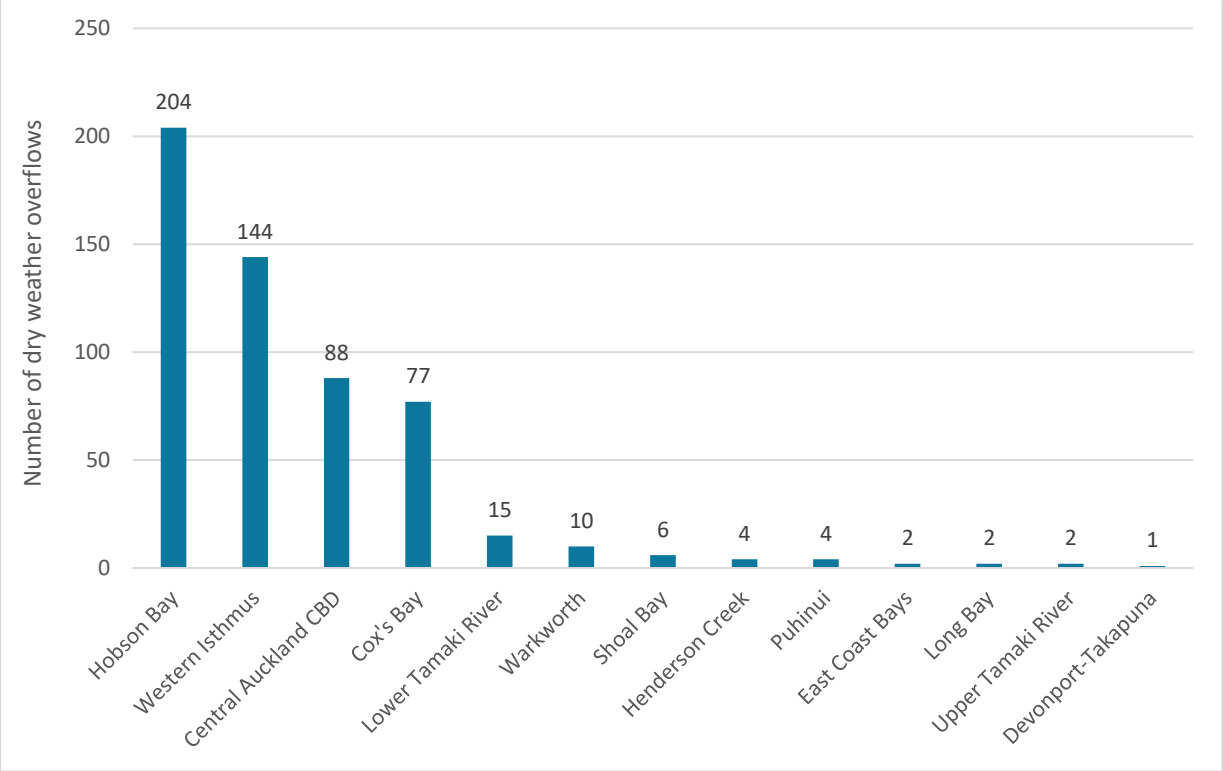


Figure 3-2 Total DWO alarms by catchment

The high number of Type 2 DWO alarms does not indicate numerous blockages along the network. These EOPs are designed to overflow in wet weather conditions and as indicated earlier, most of these overflows would likely have been caused by surcharging in low rain conditions. A summary to improve wet weather performance of the poorest performing EOPs can be found in Table 4-4 in Section 4.2.

Comparison of overflow alarm frequencies with historic data can provide insight into sites that may have improved or declined over time. Unfortunately, our historic data for Type 2 EOPs is not as reliable or complete as our Type 1 data, especially as telemetry at these sites are not always permanent. As such, the overflows from the 46 sites have been compared only with last year's frequency data, as presented in Figure 3-3. Overall, a decrease in alarm frequencies are observed between the previous and current reporting period. The EOPs with the most notable decrease are EOPs 728, 734, 739 in Western Isthmus, EOPs 230 and 198 in Cox's Bay, and EOPs 511 and 711 in Hobson Bay.

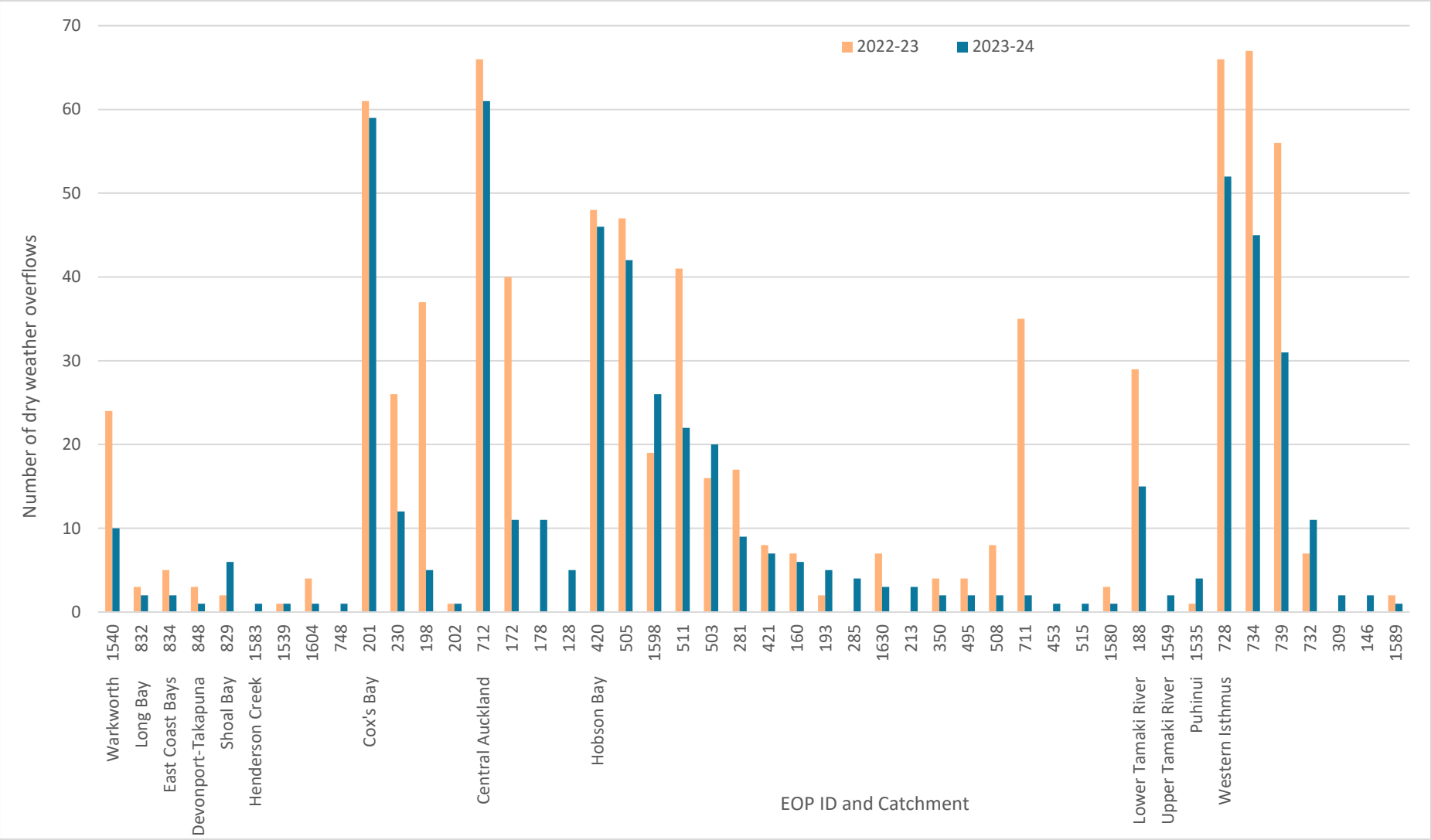


Figure 3-3 Comparison of Type 2 EOP overflow alarms recorded in2023-24 against the 2022-23 frequencies

3.2.3 Type 3 overflows

Type 3 overflows account for all reported uncontrolled spills onto private and public property from the public network. Overflows typically spill from gully traps and manholes but also from broken or faulty pipes. The Type 3 data presented in this Section, and in Section 4 (wet weather overflows) comprise the reported and attended uncontrolled overflows from the public, gravity-fed network (i.e., the Watercare network). This data does not include call outs that were found to be private issues.

There were 3,692 Type 3 DWOs in 2023-2024, a 12% increase from last year's 3,274 recorded overflows. Of these 3,692 overflows, only nine were from the transmission network.

For over 40% of the reported DWOs (1,563), the responding crew were unable to identify the cause. As most blockages are resolved through flushing, it is not always possible to determine the cause of the blockage. For blockages that are not resolved this way, CCTV is often requested, which can isolate the cause of the issue. However, it is not practicable to use CCTV for every overflow attended.

Of the known causes, the blockage type that resulted in the most overflows was roots (694), accounting for 19% of all Type 3 DWOs and 33% of those with known causes. This is closely followed by fat or grease, accounting for 17% of all the overflows and 30% of the known causes.

Close to half (51%) of all Type 3 DWOs occurred within the following six catchments:

- Upper Tāmaki River (396 overflows)
- Henderson Creek (395 overflows)
- Western Isthmus (325 overflows)
- East Coast Bays (317 overflows)
- Hobson Bay (255 overflows)
- Whau River (203 overflows)

The Upper Tāmaki River catchment remains the poorest performing catchment across Auckland, and of the overflows with known causes, almost half of these were caused by fat or grease causing blockages within the network. Watercare is running initiatives to raise awareness about the importance of not pouring fats, oil, or grease down the drain. These efforts include using social media to target online community groups within the catchment area.

As the majority of overflows occur within the local network, comparing the number of local DWOs per 1 km of local network pipeline within each catchment can help determine which areas may be in need of increased flushing schedules or targeted education. The catchment with the highest number of DWOs per 1 km of local pipeline is Devonport-Takapuna with a ratio of 0.77 overflows per km. Catchment ratios across the whole local network is presented in Figure 3-5.

Of the 3,692 DWOs, 234 reached either the stormwater network or a natural waterbody, with only 58 leading to a DWO Level 3 pollution incident and two Level 4 incidents. Both these figures have decreased from the previous reporting period. In 2022-2023 there were 76 Level 3 and seven Level 4 overflows.

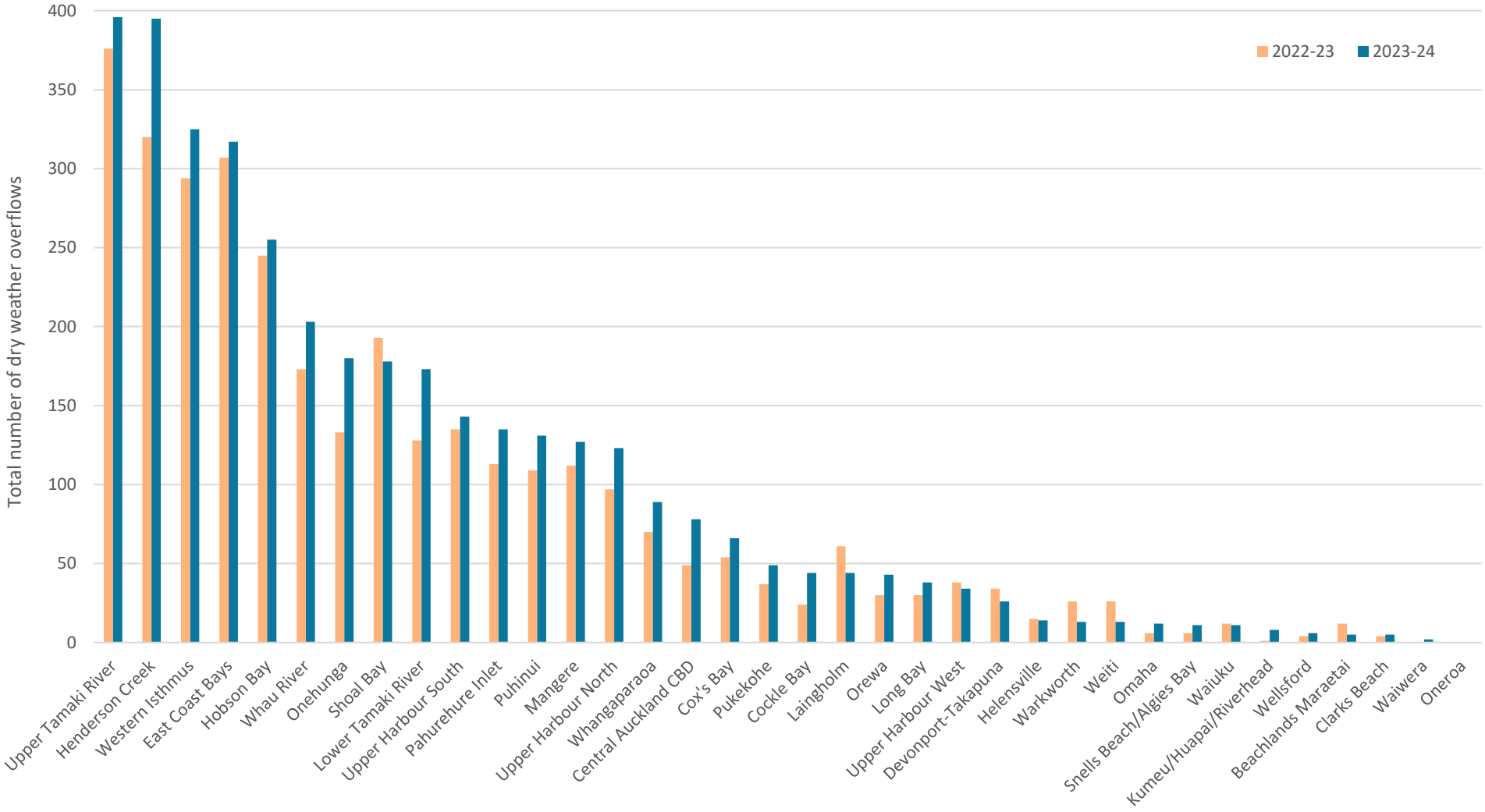


Figure 3-4 Comparison of total number of Type 3 DWOs per catchment during current and previous reporting periods

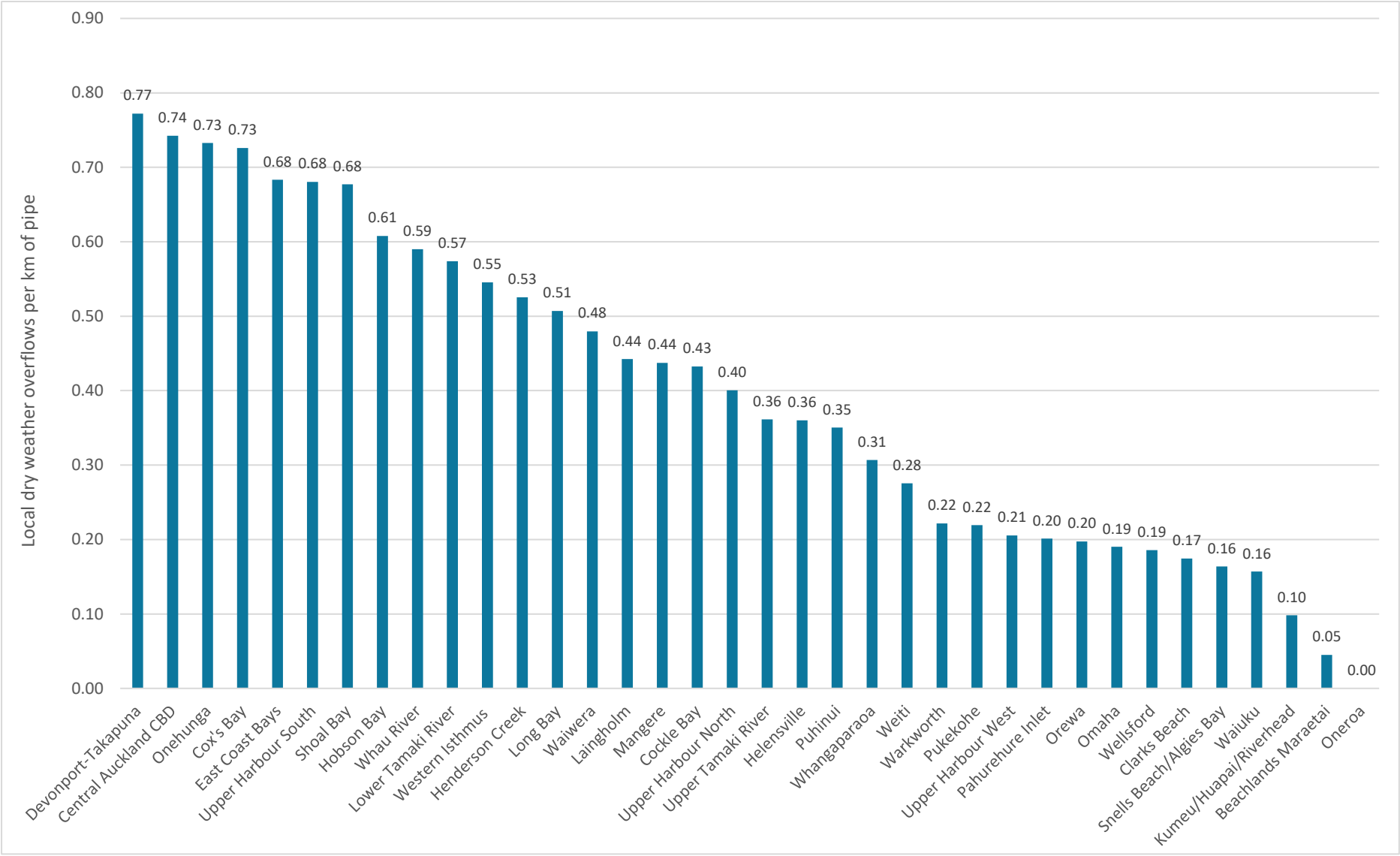


Figure 3-5 Local type 3 DWOs per 1 km of local network wastewater pipe per catchment in 2023-2024

A repeat DWO is one that occurs twice or more within 12 months and may indicate a systemic network issue. The catchments with the highest number of repeat DWO issues were Henderson Creek with 18 sites, followed by East Coast Bays, Hobson Bay and Western Isthmus, each with 14 sites overflowing twice or more during the reporting period. Table 3-3 summarises the number of repeat overflow sites and the number of engineer-led investigations per catchment. Henderson Creek also had the highest number of investigations conducted. Further details of these engineer-led investigations can be found in Appendix D.

Table 3-3 Summarising number of repeat DWOs and engineer-led investigations per catchment

Catchment	No. of repeat overflow sites	No. of Engineer-led Investigations
Henderson Creek	18	11
East Coast Bays	14	10
Hobson Bay	14	10
Western Isthmus	14	7
Onehunga	11	4
Upper Tāmaki River	10	5
Māngere	7	6
Puhinui	7	4
Whau River	7	3
Shoal Bay	6	2
Lower Tāmaki River	5	4
Upper Harbour North	5	2
Cox's Bay	4	2
Pahurehure Inlet	4	3
Pukekohe	4	3
Cockle Bay	3	2
Whangaparāoa	3	1
Devonport-Takapuna	2	1
Omaha	2	2
Upper Harbour South	2	0
Central Auckland CBD	1	1
Laingholm	1	1
Long Bay	1	0
Orewa	1	0

Ōrākei main sewer collapse

A Level 4 dry weather incident did occur in late September 2023. The OMS collapsed because of a sinkhole. As a result of this collapse, raw sewage spilled into the Waitematā for almost a month. The discharges persisted until temporary bypass pumping and over-pumping systems were implemented.

Watercare commissioned three independent assessments following the incident including an assessment of water quality and ecology, emerging contaminants and an independent network

failure analysis. Our Incident Summary Report along with these independent assessments can be found in Appendix G. The main findings are discussed in the following sections:

Water quality and ecology:

This study evaluated the impacts on coastal water quality, sediment, shellfish, and benthic ecology.

Key findings include:

- Water quality: Significant spikes in microbial contaminants, such as enterococci, were observed near the outfalls, but these were localised and diminished after the discharges ceased
- Shellfish contamination: High levels of *E. coli* were detected in caged oysters near the outfalls, indicating an increased health risk, particularly near Brigham Street
- Sediment quality: Little evidence was found to suggest lasting impacts on sediment characteristics from the overflows
- Ecology: No major ecological effects were observed, with no evidence of widespread mortality or habitat degradation

Overall, the effects in water quality and marine ecology were assessed as localised and temporary, with no significant long-term environmental effects expected.

Emerging contaminants:

The Emerging contaminant assessment evaluated the risk of emerging organic contaminants (EOCs) in the environment following the incident. The findings identified ibuprofen and 17β-estradiol as the main contaminants of concern. Ibuprofen showed a potential for adverse effects outside the Port area across all discharge and dilution scenarios. While risks from most EOCs were confined to the Port area, 17β-estradiol posed a minor risk under specific high concentration and low dilution scenarios. However, its short half-life suggested a diminishing risk over time. The study concluded that ongoing monitoring of ibuprofen concentrations is recommended, while further measurements of 17β-estradiol were deemed unnecessary due to the likely degradation of the contaminant.

OMS network failure analysis:

The OMS Failure Analysis Report provides an investigation into the collapse of the OMS in September 2023. The report identifies the likely cause of the failure, reviews Watercare's condition assessment and maintenance practices for interceptor sewers and compares these to best practices. Recommendations for improvements are proposed.

Key findings include:

- Incident overview: The OMS is a 13 km long transmission main sewer serving central Auckland. A sinkhole formed on 26 September 2023, leading to a full collapse of the sewer and significant blockages. This resulted in wastewater discharge into Waitematā Harbour via two overflow points
- Cause of failure: The collapse was attributed to long-term deterioration of the sewer, with specific damage to the concrete block arch structure. Rainfall and adjacent construction activities may have contributed to the sinkhole's formation
- Repair works: Temporary bypass pumping was quickly implemented to avoid further environmental damage. Relining of the damaged section will be complete in August 2024. In September 2024, all temporary bypass pumps and pipes will be removed and land affected will soon be reinstated

- Condition assessment: The report highlights the limitations in previous CCTV inspections and recommends improvements in inspection resolution and methodology to better assess the condition of aging assets
- Recommendations: The report suggests updates to Watercare's asset management practices, including enhanced condition inspections, structural analyses of sewers, and prioritization of assets for renewal based on updated risk assessments

3.3 Trend Analysis

3.3.1 Introduction

The trend analysis performed on historical Type 1 DWOs uses a rolling 5-year average**.** The trend analysis used for Type 3 DWOs uses annualised data and two techniques:

- Visual assessment
- Statistical analysis using simple linear models

Analyses used a p-value of <0.05 as the threshold for significance. Since the data are for annual totals, there is insufficient data to analyse using more complicated statistical techniques, such as Kendall tests. Additionally, there is inadequate data to assess statistical trends in Type 2 overflow data.

3.3.2 Type 1 trends

Of the 421 operational Type 1 EOPs, there have been overflows from 136 during the period between July 2017 and June 2024. Although, as stated in Section 3.2.1, only 17 of these pump stations recorded a DWO during the 2023-24 reporting period.

A comparison between the previous and current 5-year rolling averages is used to determine whether there is an increasing, decreasing, or static trend in DWO frequencies (see Figure 3-6 and further details in Appendix D). Of the 136 pump stations analysed, there are 13 pump stations that show a decrease in overflows, 108 EOPs that remain static, and 15 EOPs that have an increasing trend in overflow frequencies, although remain low in frequency (below 2). Additionally, there are 28 Type 1 EOPs that have not recorded a DWO since July 2019.

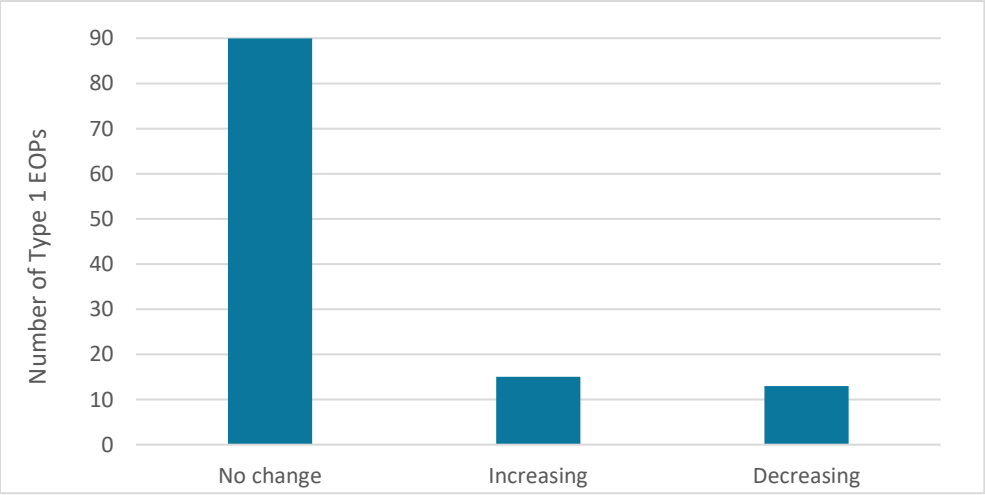


Figure 3-6 Bar graph showing the trend in the number of Type 1 WWOs for the rolling 5-year average

3.3.3 Type 3 trends

The number of DWOs for different causes and each catchment over the 5-year period are presented in Appendix D. The data has been statistically analysed using a linear regression model with significance set as ($p<0.05$). The regression model explained 32% of the total variance and identified the following significant trends:

- Decreasing trend for “Fat” (β= -0.02)
- Decreasing trend for “Roots” (β= -0.01)
- Increasing trend for “Unknown” (β=0.03)

The summary output of the regression analysis is provided in Appendix E.

By comparing the annual number of overflows across the Auckland region by cause category, we can observe prospective trends over time. Of the known causes, overflows attributed to fats and roots remain the main contributors across the past five years, although there are notable improvements in both these causes, along with rags, since the 2020-21 reporting period. Overflows attributed to silts and foreign objects have fluctuated over the 5-year period, whereas third party damage remains stable, and the number of broken pipes has steadily increased, highlighting a rising risk here. Total frequencies of overflow cause across the Auckland region over the past five years are presented in Figure 3-7.

Separate linear regressions were conducted for each catchment to identify catchment-specific trends in the various causes of overflows. A significant increasing trend in broken pipes has been found in three catchments, highlighting the importance for our rehabilitation and relining programmes to service areas of aging infrastructure. These were Onehunga (β=3), East Coast Bays (β=2.9), and Upper Harbour South (β=2.4). Additionally, a significant decreasing trend in DWOs caused by fats has been found in four catchments: East Coast Bays (β= -14), Pukekohe (β= -3.3), Shoal Bay (β= -9.3) and Weiti (β= -0.9). A decreasing trend in DWOs caused by rubbish has also been observed in Henderson Creek (β= -4.2). Output summaries are provided in Appendix E.

By visually presenting trends within the under-performing catchments, we can prioritise what sort of improvements and interventions are needed in the areas of the network that perform poorly. For more detailed visual representations of these trends, refer to the graphs provided in Appendix D, where each of these catchment’s specific trends are plotted. Key observations for the worst performing catchment include the following:

- The Upper Tāmaki River, Henderson Creek and Western Isthmus catchments reported the highest DWO frequencies, not only during the 2023-24 reporting period, but in total, over the past 5 years
- In Upper Tāmaki River, fats remain a dominant cause throughout the 5 years, along with roots, both peaking in 2020-21 then declining after
- Fat build up and roots dominate the known causes of overflows in Henderson Creek and Western Isthmus
- Although broken pipes make up a small proportion in Henderson Creek, there is a steady increase over the five years, whereas this becomes a more dominant cause in Western Isthmus and remains relatively stable in Upper Tāmaki River. The other causes follow a more fluctuating pattern across all three catchments

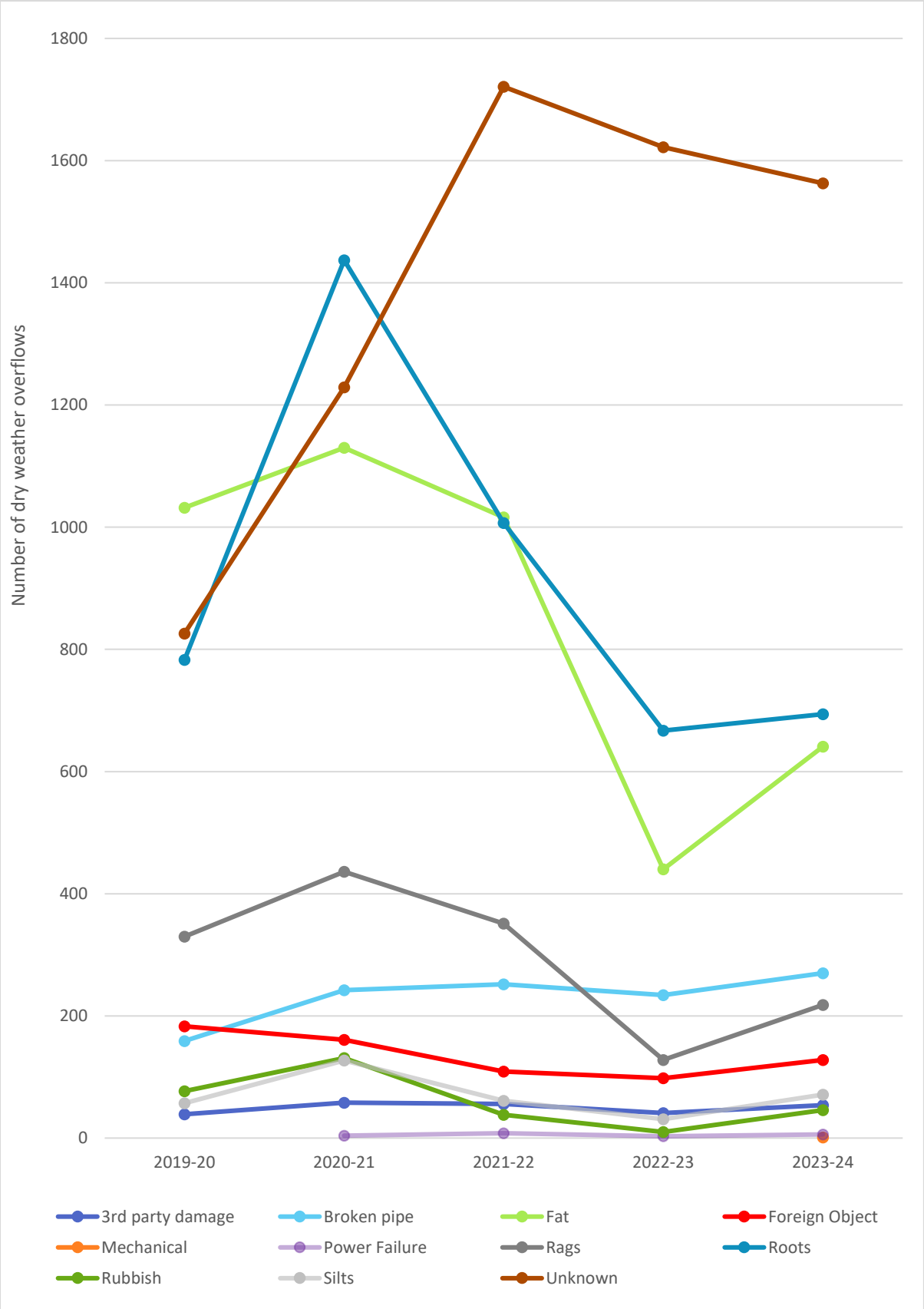


Figure 3-7 Line graph showing the number of DWOs per year for the period 2020-2024 for different causes

Figure 3-8 Bar graph showing the DWO frequencies at Upper Tāmaki River, Henderson Creek and Western Isthmus for the period 2020-2024

4 WET WEATHER OVERFLOWS

4.1 Introduction

This section presents the analysis of WWOs from the NDC catchments in 2023-2024. The details of Type 1, Type 2, and Type 3 overflows are presented separately for the monitoring year as well for longer-term trends. Appendix D has details of all individual WWO events from the monitoring year.

4.2 Wet weather overflows 2022-2023

Table 4-1 summarises the WWOs that occurred during the reporting period 1 July 2023 to 30 June 2024. There was a marked increase observed in the previous reporting year due to the Auckland Anniversary flood and February's Cyclone Gabrielle events that inundated the wastewater network. As expected, there has been a substantial decrease in total WWOs this period, with figures more closely aligned with previous years before the storm incidents.

The number of controlled WWOs from Type 1 EOPs has reduced drastically, by more than 70%, since the 2022-23 reporting period, from 777 to 213 WWOs. When compared to the 2021-22 reporting period, the number of WWOs from Type 1 EOPs has also decreased by 15%. The number of Type 2 WWOs have almost halved since last year's 642 recorded overflow alarms.

The number of Type 3uncontrolled WWOs recorded this year is just over a third (36%) of the number of Type 3 overflows recorded in the previous reporting period, and very close to the recorded 799 during the 2021-22 period.

The decrease observed in WWOs suggest, that after last year's storm damage, our wastewater network has returned to performing to a similar standard previously seen.

Table 4-1 Summary and comparison of causes of WWOs in between 2021-22 and 2022-23

	Type 1		Type 2		Type 3	
Cause	*2022-23*	**2023-24**	*2022-23*	**2023-24**	*2022-23*	**2023-24**
Broken pipe	0				63	37
Fats	0				96	111
Foreign objects	0				26	19
Rags/ wet wipes	1				32	38
Roots	0				152	94
Rubbish	0				5	4
Silt	0		*Not recorded*		7	13
Surcharge/ heavy rain	386	208			801	284
Storm effects	248				734	n/a
Third party damage	0				14	8
Unknown	141	1			394	225
Power failure	1	1			2	3
Mechanical	1	3				
Total overflows	*777*	**213**	*642*	**337**	**2326**	**836**

4.2.1 Type 1 overflows

During wet weather events, particularly during very heavy rain, multiple pump stations may overflow at the same time. As such, most wet weather data has been validated through assessment of rain gauge data and the flow and level data provided from telemetry devices. The procedure for recording and validating pump station overflows continues to improve and as such, it is likely more overflows are being captured now than in previous years.

The NDC requires that an average of no more than two, or the determined alternative discharge frequency (ADF), of WWOs should occur from an EOP per year. We recorded a total of 213 T1 WWOs this reporting year and have 421 Type 1 EOPs across the network. We can therefore state, that on average, our Type 1 EOPs overflow 0.51 times per year.

The 213 Type 1 WWOs were almost evenly split between the network types, with 102 overflows occurring from the local network and 112 from the transmission. The catchment that reported the highest frequency of Type 1 WWOs was Upper Tāmaki River with 32 overflows, followed by East Coast Bays with 30 overflows. The totals for the 24 catchments that recorded an overflow this reporting period are presented below in Figure 4-1. There were 12 catchments that did not record a controlled WWO. Of the 421 Type 1 EOPs, only 76 of these reported a WWO.

To determine which of our individual pump stations are not performing as well, we use a rolling 5-year average and compare this figure to their specific ADF or the NDC target of no more than 2 WWOs per year. Based on the 5-year averages, we have determined that there are 25 underperforming Type 1 EOPs. Of these twenty-five EOPs, eight recorded two or fewer overflows, including no overflows, during the 2023-24 reporting period. The poorest performing pump station was Lake Road in Shoal Bay, followed by Te Atatu North and Seabreeze in Henderson Creek and Shoal Bay respectively. Details of the poorly performing EOPs can be found in Table 4-2, and highlights the need to create a resilient network that can withstand the more frequent 1-in-100+-year events.

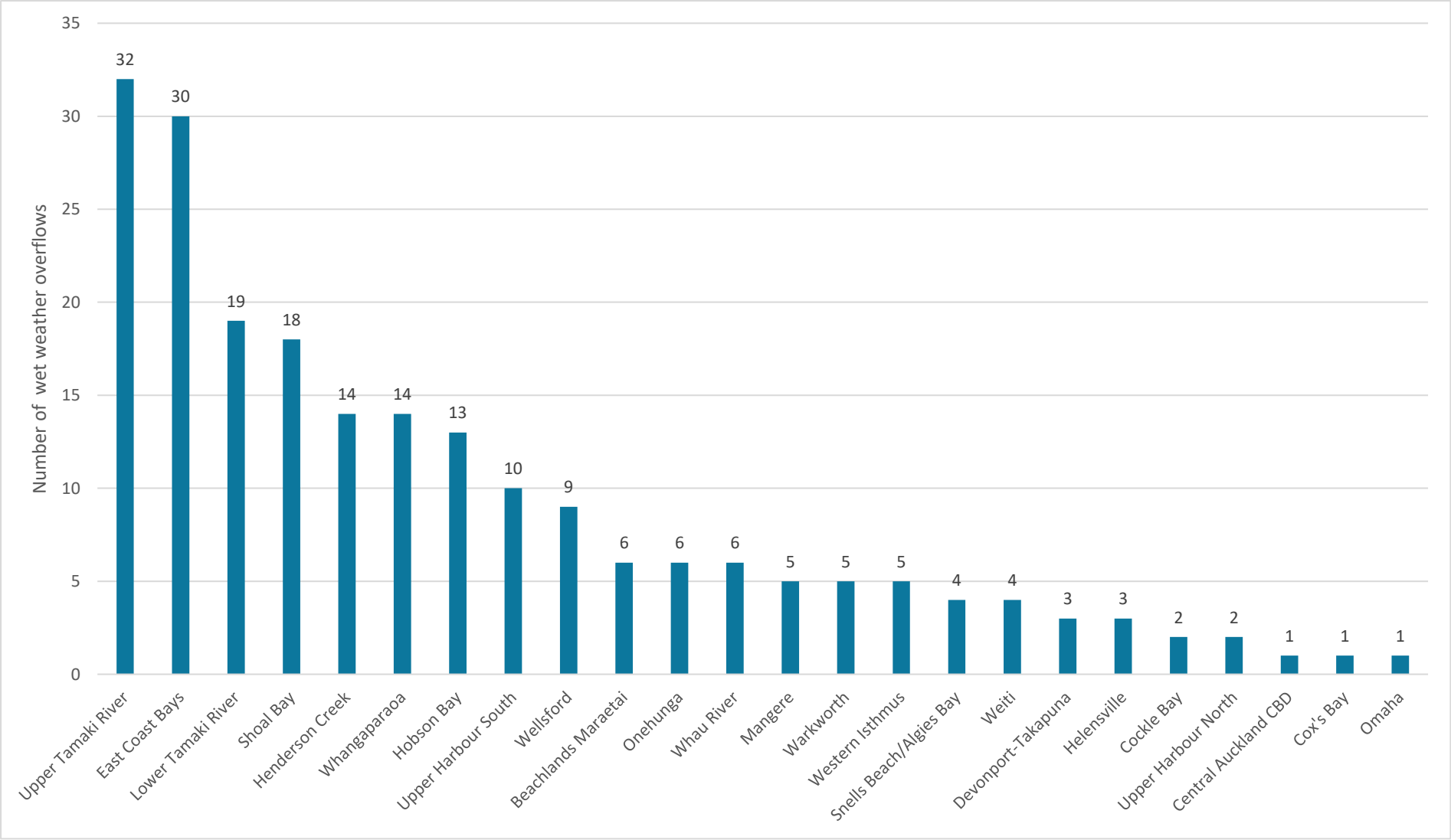


Figure 4-1 Total Type 1 WWOs per catchment for the reporting period 2023-2024

Table 4-2 Summary of poorly performing Type 1 EOPs based on 5-year averages

Facility	Name	EOP ID	Catchment	2022-23	2023-24	Limit	5-year ave	Comments and planned improvement projects
DPPUR	Purewa Road PS	632	Hobson Bay	6	5	2.0	3	Before the extreme weather events in 2022-23, annual WWOs remained within the NDC limit. However, frequency of WWOs was high this year, so further investigation is recommended
DPOTW	Otahuhu West (PS19)	680	Māngere	16	4	3.5	4.4	The average doesn't meet the performance target because of increased WWOS in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low
DPENG	Pt England (PS15)	681	Lower Tāmaki River	1	10	4.0	5.2	The newly commissioned (June 24) Glen Innes pump station will alleviate pressure on the ww network in the area, reducing the number of overflows from EOP 681. This should be evident in the next annual performance report
DPOTB	Otara PS (PS31)	683	Upper Tāmaki River	19	9	3.0	6.6	The Otara Catchment WW Capacity Upgrades project is currently in the execution stage and will improve capacity constraints within the catchment.
DPFLN	Western (PS44)	690	Henderson Creek	20	5	5.3	8.8	The Northern Interceptor project is due to be completed in 2025 and will reduce controlled overflows from EOPs and provide additional capacity to the Western Interceptor which DPFLN feeds into
DPTEN	Te Atatu North (PS42)	692	Henderson Creek	25	8	3.0	9.4	There are known capacity constraints in the local network that feed into this pump station. The Northern Interceptor is planned to divert catchments away from the Western Interceptors, reducing WWOs at various EOPs including Te Atatu
DPPAL	Palmer PS	790	Warkworth	26	4	5.3	10	The diversion of wet weather flows from the Western interceptors by the Northern Interceptor should reduce overflows in this area
DPBAY	Bay Street PS	794	Whangaparāoa	10	3	2.9	3.8	The average does not meet the performance target because of increased WWOS in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low
DPSTA	Stanmore PS	816	Whangaparāoa	11	5	2.0	3.8	This PS is currently unmaintainable and WWOs are high and into a bathing beach. The Stanmore PS and Rising Main upgrade is in the Feasibility stage and due to be completed in 2029. Until then, WWOs will likely remain high. However, due to the overflow configuration, it is likely we have over-reported the number of overflows from this site, data accuracy will improve after the installation of a new sensor at the discharge point

Facility	Name	EOP ID	Catchment	2022-23	2023-24	Limit	5-year ave	Comments and planned improvement projects
DPWAD	Wade PS	821	Weiti	18	1	2.0	4.2	The average does not meet the performance target because of increased WWOs in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low.
DPWEI	Weiti PS	822	Weiti	21	3	2.0	7	There are currently no specific improvement projects in place that would reduce WWOs at this PS. However, there are growth-related projects in Weiti aimed to remove bottlenecks within the network and improve capacity, which may reduce overflows here
DPLNO	Lake Road PS	830	Shoal Bay	15	6	2.0	9	This transmission pump station is an ageing asset that needs an upgrade. Both the pump station and the remainder of the rising main will be renewed by the end of 2024. After renewal, there should be fewer capacity related overflows from this pump station
DPSEA	Seabreeze PS	849	Shoal Bay	15	8	2.0	8.2	WWOs have been increasing at this pump station so further investigation is needed here
DPALM	Alma PS	853	East Coast Bays	11	0	2.0	2.8	The average does not meet the performance target because of increased WWOs in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low and within the 2 and under target
DPBRB	Browns Bay PS	869	East Coast Bays	8	2	2.2	3	The average does not meet the performance target because of increased WWOs in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low and within the 2 and under target
DPCBY	Castor Bay PS	871	East Coast Bays	6	6	3.8	4	The average doesn't meet the performance target because of increased WWOS in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low.
DPCRO	Cronin PS	901	Upper Harbour South	25	8	4.5	9	The high number of overflows is due to the configuration of the local network involving multiple gravity catchments entering the transmission branch here. Capacity in the transmission branch has been diminished by roots and gravel and flushing is ongoing. The planned Beach Haven Diversion will increase capacity in parts of the catchment and may alleviate some pressure here, but further investigation is required
DPALC	Albany Church PS	930	East Coast Bays	17	6	2.0	5.4	WWOs have increased over the past few years so further investigation in recommended. There are a number of improvement projects in place within the East Coast Bays and the

Facility	Name	EOP ID	Catchment	2022-23	2023-24	Limit	5-year ave	Comments and planned improvement projects
								Wairau Valley Diversion providing conveyance through a storage tunnel directly to Rosedale should help alleviate capacity issues in the surrounding area
DPBLA	Black Rock PS	947	East Coast Bays	20	5	3.3	7.6	Wairau PS replacement should significantly reduce Black Rock overflow frequencies, as it should not need the current interlock system
DPDAL	Daltons PS	1106	Snells Beach/ Algies Bay	9	2	2.0	2.8	The average doesn't meet the performance target because of increased WWOs in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low
DPWOR	Worker Road PS	1128	Wellsford	10	3	2.8	5.8	WWOs returned to lower frequencies during this reporting period. There are no improvement projects planned here
DPARM	Armitage PS	1129	Wellsford	12	2	2.3	5.4	WWOs returned to lower frequencies during this reporting period. There are no improvement projects planned here
DPKYH	Kellys Hill PS	1132	Wellsford	3	2	2.0	2.4	WWOs returned to lower frequencies during this reporting period. There are no improvement projects planned here
DPTHA	Te Hana PS	1133	Wellsford	13	2	2.0	3.4	The average does not meet the performance target because of increased WWOs in 2022-23 in response to the extreme weather events in 2022-23. The remaining annual WWOs remain low and within NDC's target of 2 or less
DPLIL	Lilburn PS	1258	Warkworth	8	1	2.0	3.4	WWOs returned to lower frequencies during this reporting period. The Warkworth to Snells transfer Pipeline should alleviate capacity constraints here, reducing the number of overflows

4.2.2 Type 2 overflows

Type 2 engineered overflow points are designed to spill during increased flows, acting as a relief point in the network to prevent spills on private property. As mentioned in Section 3.2.2, overflow alarms from Type 2 EOPs are not validated and therefore this data is used to only indicate problem sites and areas. Dry and wet weather overflows are determined solely by the total rainfall of the preceding 24 hours and not a cause such as surcharging. In addition, Watercare only has a small proportion of Type 2 EOPs installed with telemetry devices and as such the overflow frequencies presented in this report are not representative of the overall network system performance.

There were 337 Type 2 WWO alarms across 63 of the 96 telemetered sites in the 2023-24 reporting period. The poorest performing catchment was Hobson Bay with 110 alarms across 27 EOP sites.

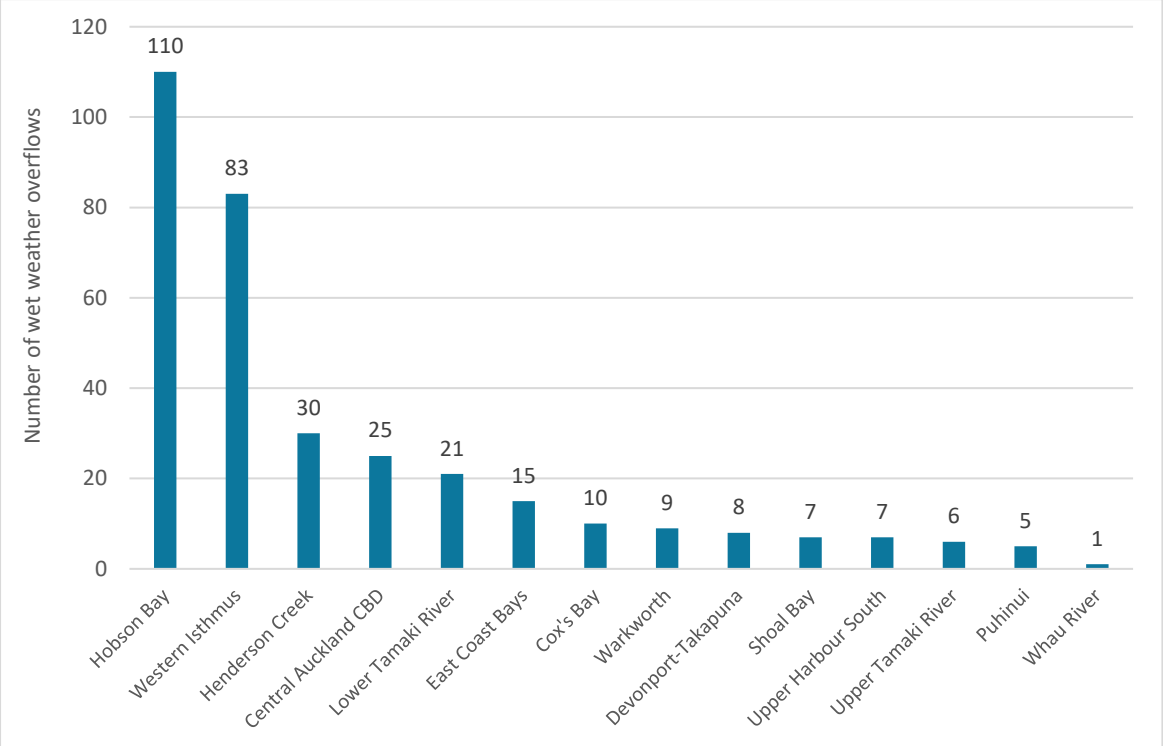


Figure 4-2 Total type 2 WWOs per catchment for reporting period 2023-2024

As historic data for Type 2 overflows is not as reliable as our other datasets, only the past two reporting periods of data will be used to calculate the average of overflows per EOP per year. To determine which of our Type 2 EOPs are not performing well, we compare this 2-year average to their specific ADF or the NDC limit of no more than 2 WWOs per year. Based on the 2-year averages, we have determined that there are twenty-one underperforming Type 2 EOPs. Of these twenty-one EOPs, six recorded two or fewer overflow alarms during this reporting period. The poorest performing EOP was 1629 in Western Isthmus followed by 1595 in East Coast Bays.

Following completion of the Glendowie Branch Sewer Upgrade during the 2022-23 reporting period, a substantial decrease in WWOs from EOP 188 is observed (highlighted green in Table 4-3). Full details of Type 2 overflows can be found in Appendix D, and a summary of their performance can be found in Table 4-3.

Table 4-3 Summary of Type 2 EOP performance based on annual average WWOs for each EOP over two years

Catchment	EOP ID	Asset Name/ Address	22-23 overflows	23-24 overflows	ADF/ NDC limit	Average	Performance target
Warkworth	1540	Elizabeth Street	20	9	20.5	14.5	Achieved
East Coast Bays	1595	11 Jonathan Place	13	7	2	10.0	Under
East Coast Bays	834	28 Penning Road	5	6	2	5.5	Under
East Coast Bays	1576	16 Jutland St	4	2	2	3.0	Under
Devonport-Takapuna	848	1 Old Lake Road	11	8	3	9.5	Under
Shoal Bay	829	28 Waitematā Road	10	7	2	8.5	Under
Upper Harbour South	844	28 Gazelle Road	10	7	16	8.5	Achieved
Henderson Creek	1539	Blethyn Place Reserve	15	4	2	9.5	Under
Henderson Creek	1583	16 Matipo Rd	20	7	13	13.5	Under
Henderson Creek	6	50 Kingdale Road	17	7	33	12.0	Achieved
Henderson Creek	1604	10 Celsmere Lane	18	8	30	13.0	Achieved
Henderson Creek	748	Glen Eden Branch MH16	0	4	10	2.0	Achieved
Whau River	752	Rosebank Siphon MH1A	6	1	2	3.5	Under
Cox's Bay	202	69 Hamilton Road	5	2	29	3.5	Achieved
Cox's Bay	230	42 Wharf Road	9	2	45	5.5	Achieved
Cox's Bay	198	22 Marine Parade	13	6	74	9.5	Achieved
Central Auckland CBD	172	1 London Street	9	2	64	5.5	Achieved
Central Auckland CBD	712	Branch 5 Herne Bay MH2A	12	17	62	14.5	Achieved
Central Auckland CBD	128	11 Victoria Street East	0	4	56	2.0	Achieved
Central Auckland CBD	178	43 College Hill	0	2	2	1.0	Achieved
Hobson Bay	193	35 Yattendon Road	23	10	10	16.5	Under
Hobson Bay	711	Branch 3 Newmarket MH29	12	6	4	9.0	Under
Hobson Bay	1598	21 Ayr Street	9	1	2	5.0	Under
Hobson Bay	453	12a Okahu Street	7	3	2	5.0	Under
Hobson Bay	454	34-36 Apihai Street	6	5	3	5.5	Under

Catchment	EOP ID	Asset Name/ Address	22-23 overflows	23-24 overflows	ADF/ NDC limit	Average	Performance target
Hobson Bay	215	74 Hawera Road	5	4	2	4.5	Under
Hobson Bay	1630	35 James Cook Cres	6	2	2	4.0	Under
Hobson Bay	1580	4 St Marks Rd	6	1	2	3.5	Under
Hobson Bay	503	68 Portland Road	14	6	9	10.0	Under
Hobson Bay	455	63 Reihana Street	3	2	2	2.5	Under
Hobson Bay	506	20 Hapua Road	3	1	23	2.0	Achieved
Hobson Bay	515	11 Purewa Road	3	1	3	2.0	Achieved
Hobson Bay	495	43 Tohunga Street	6	2	8	4.0	Achieved
Hobson Bay	504	20 Standen Avenue	7	1	12	4.0	Achieved
Hobson Bay	514	63 Tahapa Crescent	7	4	8	5.5	Achieved
Hobson Bay	458	88 Paritai Drive	8	4	34	6.0	Achieved
Hobson Bay	285	77 Meadowbank Road	9	4	56	6.5	Achieved
Hobson Bay	353	2b Nihill Crescent	9	5	30	7.0	Achieved
Hobson Bay	421	29 Ayr Street A	9	3	10	6.0	Achieved
Hobson Bay	511	158 Bassett Road	13	5	40	9.0	Achieved
Hobson Bay	160	45 Ascot Avenue	14	5	38	9.5	Achieved
Hobson Bay	508	32 Hapua Street	14	6	41	10.0	Achieved
Hobson Bay	350	44 Rukutai Street	17	4	33	10.5	Achieved
Hobson Bay	420	14 Mahuru Street	19	3	60	11.0	Achieved
Hobson Bay	505	9 Scherff Road	24	3	16	13.5	Achieved
Hobson Bay	281	49 Ngapuhi Road	27	12	34	19.5	Achieved
Hobson Bay	213	59 Baddeley Avenue	0	7	5	3.5	Achieved
Lower Tāmaki River	1406	61 - 67 Felton Matthew Ave	2	2	3	2.0	Achieved
Lower Tāmaki River	596	197-209 Taniwha Street	8	5	7	6.5	Achieved
Lower Tāmaki River	188	6 Concord Place	30	14	63	22.0	Achieved
Upper Tāmaki River	1534	22 Graeme Avenue	5	2	6	3.5	Achieved

Catchment	EOP ID	Asset Name/ Address	22-23 overflows	23-24 overflows	ADF/ NDC limit	Average	Performance target
Upper Tāmaki River	1549	14 McLean Ave	5	3	7	4.0	Achieved
Upper Tāmaki River	747	Otahuhu East Div. Branch MH4A	9	1	5	5.0	Achieved
Puhinui	1535	145-147 Wyllie Road	13	5	2	9.0	Under
Western Isthmus	1629	2/29 Raven Ave	21	7	2	14.0	Under
Western Isthmus	309	29 Euston Road	5	3	2	4.0	Under
Western Isthmus	732	Ōrākei Main Sewer MH38	2	11	25	6.5	Achieved
Western Isthmus	1589	153 Whitney Street	3	7	6	5.0	Achieved
Western Isthmus	734	Edendale Branch MH1	7	14	64	10.5	Achieved
Western Isthmus	1531	68 Olsen Ave	7	2	5	4.5	Achieved
Western Isthmus	728	Branch 8 Mt Albert MH31	9	15	68	12.0	Achieved
Western Isthmus	739	Branch 8 Mt Albert MH7	9	15	66	12.0	Achieved
Western Isthmus	146	68 Smale Street	0	9	18	4.5	Achieved

The poorest performing EOPs that have not met their performance target based on both the average and this year's frequencies are presented in Table 4-4. This table provides details about the EOPs and the projects planned to reduce capacity constraints and subsequent overflows.

Table 4-4 Poorest performing EOPs and the projects planned to improve performance

EOP# and Location	EOP and Catchment Details	Solutions to Improve Performance
#1540, Elizabeth St	On the separate local network in Warkworth	Elizabeth St EOP is consistently known to overflow in low levels of rain due to capacity constraints in the network here. This EOP has a detrimental effect on the environment and the communities who work on and along the Mahurangi River. Both the Warkworth Growth Servicing and Warkworth to Snells Transfer Pipeline projects target the reduction of overflows from this EOP
#834, 28 Penning Road	On the separate local network in East Coast Bays	The Forrest Hill WW Catchment Diversion will help reduce controlled overflows into local swim areas within the Forest Hill and Milford areas
#1629, 2/29 Raven Ave	On the separate local network in **Western Isthmus**	This EOP was discovered in 2021, it is located in Mount Roskill in the Western Isthmus catchment, and adjacent to the Central Interceptor. CI remains on track for completion at the end of 2026
#1595, 11 Jonathan Place	On the separate local network in East Coast Bays	Jonathan Place Pipe Upgrades project is in Design and estimated to be complete in 2026. This project will ensure this EOP will reach 2 or less NDC target
#1539, Blethyn Place Reserve	On the separate local network in Henderson Creek	The Norther Interceptor will divert wet weather flows from the Western Interceptors, reducing capacity constraints and overflows in Te Atatu.
#1535, 145-147 Wyllie Road	On the separate local network in Puhinui	There are no improvement projects planned for this catchment. The sudden increase in overflows reported this year will require localised investigation
#848, 1 Old Lake Road	On the separate local network in Devonport-Takapuna	There are no improvement projects planned for this specific area, although the Forrest Hill Catchment Diversion may help alleviate capacity constraints. Localised investigation is recommended, if WWO frequency doesn't continue to drop
#829, 28 Waitematā Road	On the separate local network in Shoal Bay	There are no improvement projects planned for this specific area. Localised investigation is recommended
#711, Branch 3 Newmarket MH29	On the combined transmission network in Hobson Bay	This are known wet weather issues here as a result of the system being combined. This will continue unless separation goes ahead
#453, 12a Okahu Street	On the separate local network in Hobson Bay	There are no improvement projects planned for this specific area of Hobson Bay. WWO frequency is much lower this reporting period, localised investigation may be needed
#454, 34-36 Apihai Street	On the separate local network in Hobson Bay	There are no improvement projects planned for this specific area of Hobson Bay. WWO frequency has decreased, but localised investigation may be needed
#215, 74 Hawera Road	On the separate local network in Hobson Bay	There are no improvement projects planned for this specific area of Hobson Bay. WWO frequency has decreased, but localised investigation may be needed
#309, 29 Euston Road	On the separate local network in **Western Isthmus**	This EOP is located in Sandringham in the Western Isthmus catchment, and adjacent to the Central Interceptor. CI remains on track for completion at the end of 2026

The completion of the St Mary's Bay Tunnel which pumps flows back to Branch 5 has resulted in the decommissioning of a number of EOPs as these can no longer overflow to the environment, and instead are diverted back into the wastewater network. These EOPs are 180, 194 and 196. All details of newly commissioned, installed and decommissioned Type 2 EOPs can be find in the Overflow Point Schedule in Appendix D.

4.2.3 Type 3 overflows

Type 3 WWOs account for all uncontrolled spills onto private and public property from the public network that occurred following a 24 hr period that received more than 10 mm of rain or can be attributed to a surcharging event. Unlike controlled overflows from EOPs, there are no targets set for frequencies of Type 3 uncontrolled WWOs. However, analysis of this data allows us to determine locations of capacity constraints, where to direct I&I investigations and to track the performance of our wastewater network.

There were 836 Type 3 WWOs reported during the 2023-24 reporting period, a substantial decrease from last year's 2,326 but very similar to the 799 recorded in the 2021-22 period. We have recorded 29 Type 3 WWOs from the transmission network, compared to 47 in the previous reporting period.

Of the 836 Type 3 WWOs reported, 611 of these have known causes. Of these 611 WWOs, only 284 are attributed to surcharging caused by wet weather, whereas 327 overflows can be attributed to breaks or blockages within the network, i.e. roots, fats, rags, broken pipes etc.

Table 4-5 Comparison of WWO totals and causes per year for the period 2021 to 2024

	2021-2022	2022-2023	2023-2024
Total overflows	801	2,326	836
Known blockages & broken pipes	25%	17%	39%
Surcharging	60%	66%	34%

Full details of Type 2 overflows are provided in Appendix D**.** The poorest performing catchments are:

- Upper Tāmaki River (114 overflows)
- Henderson Creek (103 overflows)
- East Coast bays (98 overflows)
- Hobson Bay (69 overflows)
- Western Isthmus 64overflows)

A total of 448 WWOs were recorded across these five catchments, which equates to 54% of all Type 3 WWOs in 2023-2024. In addition, the following catchments did not record any uncontrolled WWOs: Oneroa, Kumeū/Huapai/Riverhead, Waiwera and Weiti. A comparison of catchment totals between the 2022-23 and 2023-24 periods are presented in Figure 4-3. There is a noticeable drop in WWOs in all the poorer performing catchments compared to the previous period. The biggest decreases can be observed in Henderson Creek, Western Isthmus, Whau River and Upper Tāmaki River.

When comparing local WWO frequency against pipe length, the worst performing catchment is the same as that for dry weather. Devonport-Takapuna has the highest overflow per 1 km ratio of 0.24 overflows per 1 km of local pipe, followed by East Coast Bays with 0.21 overflows per 1 km pipe. Details of all catchment frequency ratios is presented in Figure 4-4.

There were 84 reported WWOs that spilled into the stormwater network or natural waterways, with only 4 of these classified as a Level 3 incidence (significant overflow), and none were classified as a Level 4 incident (major overflow). This result is a large decrease from the previously reported 143 and 201 during the prior two reporting periods.

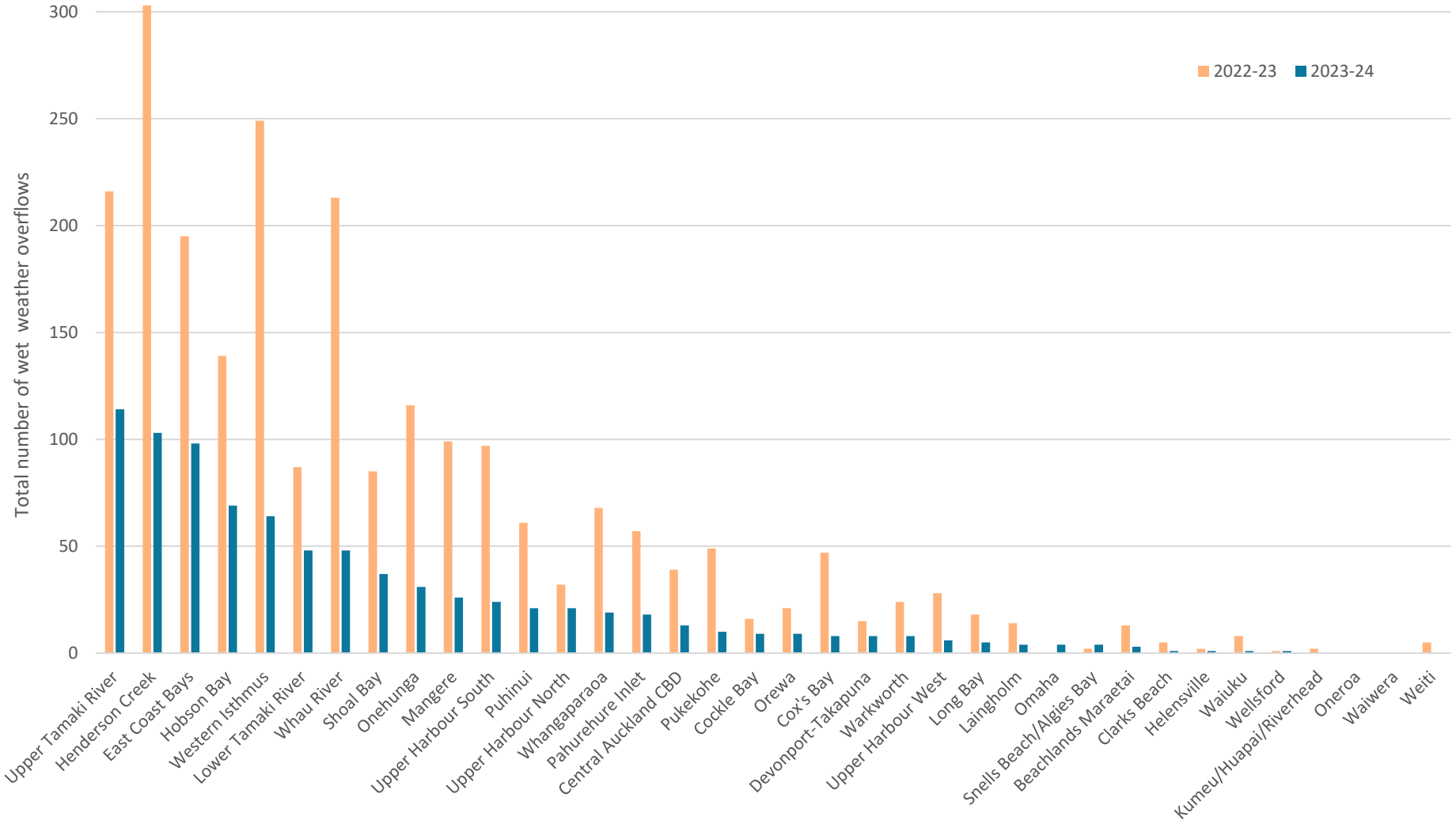


Figure 4-3 Total number of Type 3 WWOs per catchment during 2023-2024

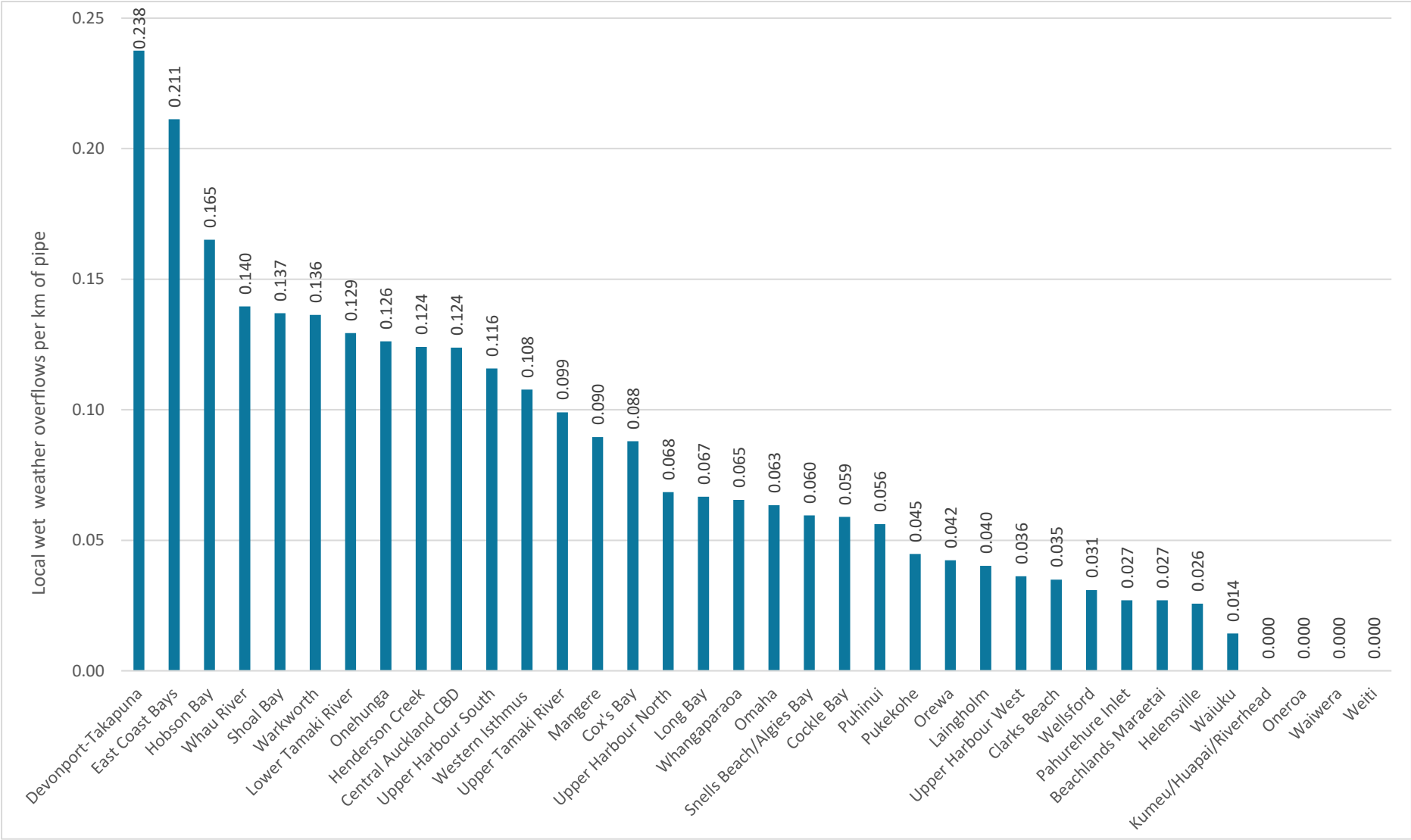


Figure 4-4 Local Type 3 WWOs per 1 km of local network wastewater pipe per catchment in 2023-2024

Repeat WWOs can suggest capacity constraints or infiltration and inflow issues that may need further investigating to resolve. The catchments with the highest number of repeat WWO sites are:

- Henderson Creek with 10 sites
- East Coast Bays with 9 sites
- Upper Tāmaki River with 7 sites

A summary of the number of repeat wet weather issues and engineer-led investigations can be found in Table 4-6. The catchments with the highest number of engineer-led investigations were also Henderson Creek and East Coast Bays. Further details of these repeat overflow engineer-led investigations can be found in Appendix D.

Table 4-6 Summarising number of wet weather engineer-led investigations per catchment for the reporting period 2023-2024

Catchment	No. of repeat sites	No. of Engineer Investigations
Henderson Creek	10	5
East Coast Bays	9	5
Upper Tāmaki River	7	3
Lower Tāmaki River	4	3
Western Isthmus	4	3
Whau River	4	2
Hobson Bay	3	2
Onehunga	3	1
Pukekohe	3	2
Cockle Bay	2	0
Māngere	2	2
Omaha	2	2
Shoal Bay	2	1
Devonport-Takapuna	1	1
Laingholm	1	1
Upper Harbour North	1	0
Whangaparāoa	1	0

4.3 Trend Analysis

4.3.1 Introduction

The trend analysis performed on historical Type 1 WWOs uses a rolling 5-year average. The trend analysis used for Type 3 WWOs uses annualised data and two techniques:

- Visual assessment
- Statistical analysis using simple linear regression models

Analyses were conducted using a p-value threshold of <0.05 for significance. Due to the limited data available (annual totals), more complex statistical methods, such as Kendall tests, could not be applied. As per the dry weather trend analysis, there is inadequate data to assess statistical trends in Type 2 WWO data.

4.3.2 Type 1 trends

Of the 420 operational Type 1 EOPs, there have been overflows from 252 between July 2017 and June 2024. Furthermore, as stated in Section 4.2.1, only 76 Type 1 EOPs overflowed during the 2023-2024 reporting period. Analysis of the 252 pump stations indicates that 15 have not recorded a WWO since July 2019, and 37 pump stations haven't recorded an overflow since July 2021. Details of the rolling 5-year averages for each of the 252 Type 1 EOPs and the trends observed is provided in Appendix D and summarised in Figure 4-5.

Comparison of the latest 5-year averages, ADFs and the consent's more than 2 overflows per year spill target, has been discussed in Section 4.2.1. From this we concluded that 25 Type 1 EOPs were found to be under performing. From the trend analysis provided in Appendix D, we have determined three of these EOPs show no change in overflow frequencies, 17 show an increasing trend of overflows and the following five show a decreasing trend towards their performance target:

- Armitage WWPS in Wellsford
- Lilburn WWPS in Warkworth
- Otahuhu West WWPS in Māngere
- Alma WWPS in East Coast Bays
- Browns Bay WWPS in East Coast Bays.

All of the 25 under-performing pump stations are listed in Table 4-2 along with planned projects aimed to mitigate these high overflow frequencies.

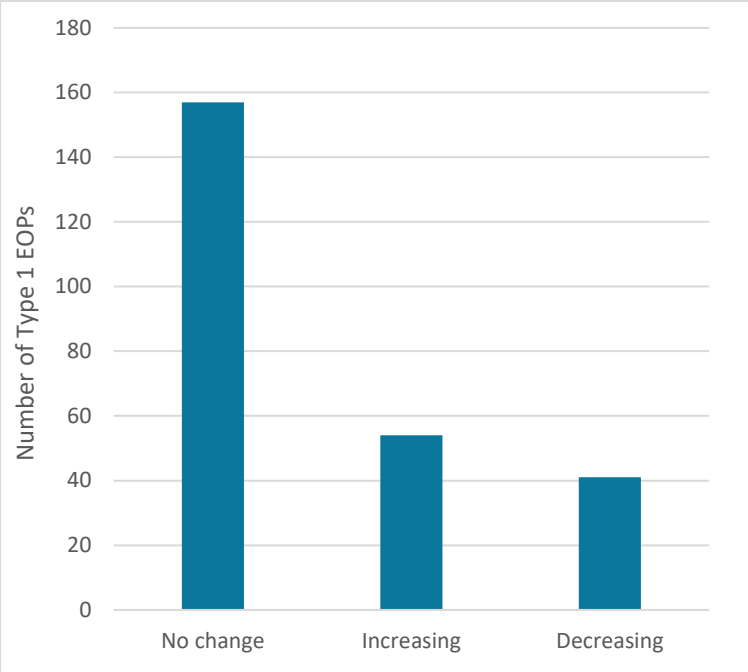


Figure 4-5 Bar graph showing the trend in the number of Type 1 WWOs for the rolling 5-year average

4.3.3 Type 3 trends

Total frequencies of overflow cause across the Auckland region over the past five years are presented in Figure 4-6. The data has been statistically analysed using a linear regression model with significance set as ($p<0.05$). However, we include the causes that had a notable influence on the model (reflected some detectible trend over time), even though they were not statistically significant. The regression model explained 26% of the total variance and identified the following notable trends:

- Increasing trend for “Unknown” ($p=0.01$; $\beta=0.09$)
- Increasing trend for “Power failure” ($p=0.04$; $\beta=1.33$)
- Decreasing trend for “Rags” ($p=0.057$; $\beta=-0.18$)
- Increasing trend for “Broken pipe” ($p=0.06$; $\beta=0.21$)

Details of the regression analysis is provided in Table E-4 in Appendix E.

Frequency of WWOs over the 5-year period have been statistically analysed using linear regression models for each individual catchment. Significant increasing trends ($p<0.05$), in blockage & breakage-related WWOs (those not caused by surcharging), have been found in three catchments: Devonport-Takapuna ($\beta=1.9$), Puhinui ($\beta=1.8$) and Upper Harbour North ($\beta=2.6$). No statistical trends were found in the frequency of surcharging overflows over the 5-year period.

By comparing the annual number of WWOs across the Auckland region by cause category, we can observe notable trends or patterns over time. Figure 4-6 presents the total number and cause of overflows across the years and highlights the dramatic increase in surcharging during the 2022-23 period when the extreme weather events occurred. In the previous years there is a more even distribution between surcharging and the other causes of overflows, but from the 2021-22 reporting period there is a shift to higher proportion of surcharging overflows compared to blockages. Of the blockage and breaks-related overflows, fats and roots contribute most to overflow frequencies, and

both show an increasing trend over time. As seen with DWOs, there has been a higher proportion of overflows with an unknown cause over the past 2 years.

By visually analysing trends within the under-performing catchments, we can prioritise what sort of improvements and interventions are needed in the areas that overflow the most. For a more detailed visual representations of these trends, refer to the graphs provided in Appendix D, where each catchment's specific trends are plotted for WWOs. Key observations for the worst performing catchment include the following:

- The Upper Tāmaki River, Henderson Creek and East Coast Bay catchments reported the highest WWO frequencies during the 2023-24 reporting period and have consistently reported high overflow frequencies over the past five years (Figure 4-7)
- The majority of these overflows have been contributed to surcharging, but other causes have also been identified.
- Overall, these three catchments show a steady increase in uncontrolled WWOs during the first three reporting periods, followed by a sudden peak in the 2022-23 period aligning with the January and February storm events, then dropping back down in the current reporting period

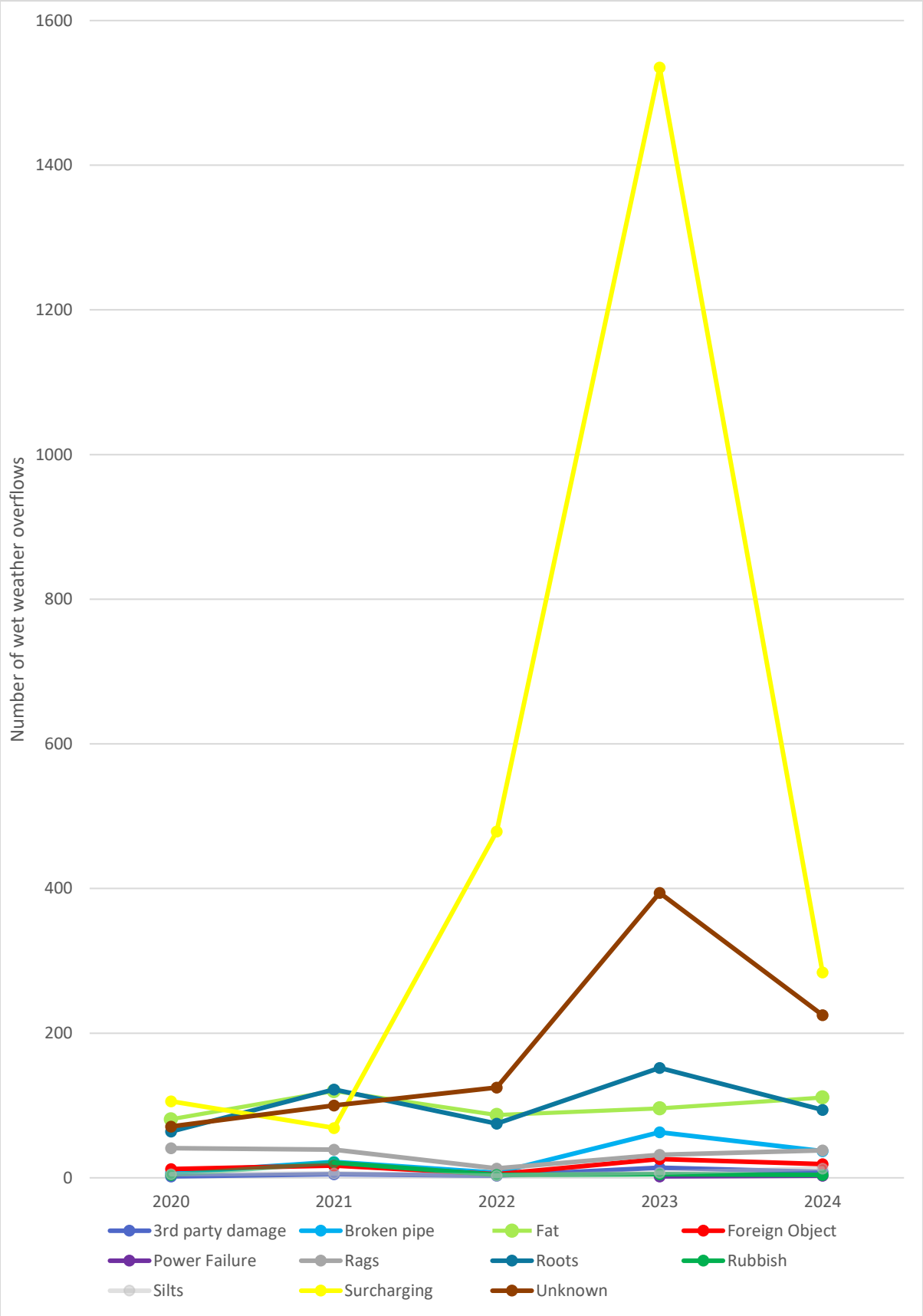


Figure 4-6 Line graph showing the number of WWOs per year for the period 2020-2024 for different causes

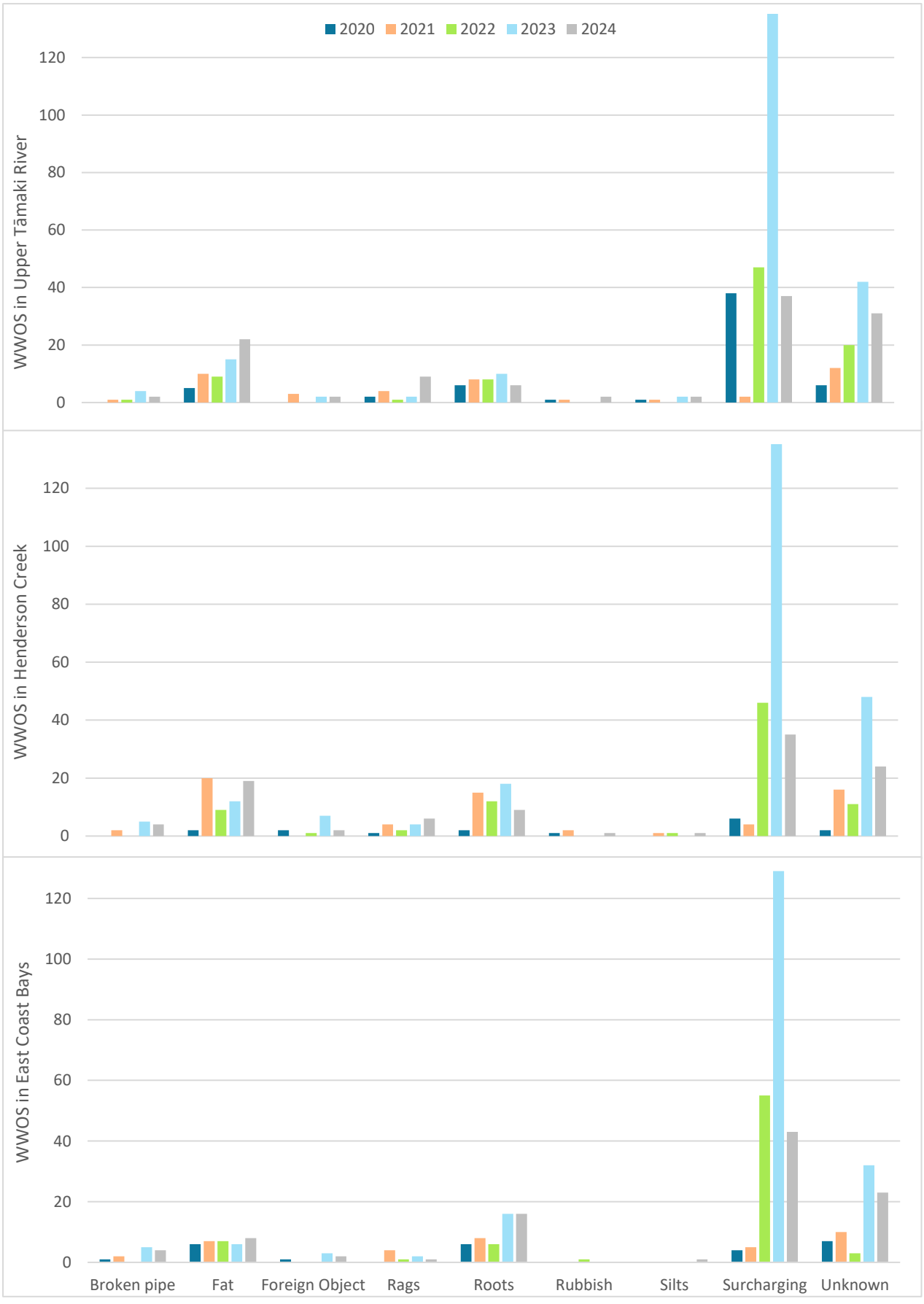


Figure 4-7 Overflow frequencies at Upper Tāmaki River, Henderson Creek and East Coast Bays

5 INFLOW AND INFILTRATION

5.1 Introduction

This chapter describes the I&I reduction programme for the 2023-2024 reporting period. The focus of the I&I programme is to work closely and collaboratively with the Auckland Council HW Safe Networks and Watercare Network Service Delivery teams to identify sources of rainfall derived inflow and infiltration (RDII) and groundwater infiltration (GWI) to the wastewater network that lead to wastewater overflows and discharges to the environment. The emphasis continues to be on the more frequent overflow sites, and those with larger volume discharges, with added emphasis on wastewater overflows to private property and sensitive receiving environments.

5.1.1 Programme summary

The I&I programme comprises four separate bodies of work:

- Watercare's I&I investigations
- Joint Watercare and Auckland Council's HW Safe Networks investigations
- Joint Watercare and HW Western Isthmus Water Quality Improvement Programme (WIWQIP)
- Joint Watercare and HW Eastern Isthmus Water Quality Improvement Programme (EIWQIP)

This year in addition to Watercare's usual I&I investigations that focus on reducing I&I by identifying private property and public wastewater network issues, Watercare has initiated the early stages of a 'smart' wastewater monitoring strategy. The objective being to extend the wastewater manhole monitoring programme to include all Watercare's overflow points and a substantial number of additional wastewater manholes across the Auckland region. A trial using over 100 low-cost wastewater manhole level monitoring devices is currently underway and will be reported on in more detail in the next reporting period.

5.1.2 Watercare's I&I investigations

For separate sewer networks, Watercare Network Improvements Inflow and Infiltration Team (I&I Team) investigates and identifies sources of stormwater inflow to the wastewater network. Once identified, Watercare and Auckland Council, as appropriate, can remove these sources, which improves network performance and reduces the frequency of overflows to properties, waterways, beaches and other coastal areas.

Sources of direct flow

Reactive I&I investigations target WWOs and high wet weather flows that cause ongoing operational issues. Such investigations target obvious sources of direct inflow, such as illegal connections and low-lying gully traps as well as localised problems within public networks (including leaky wastewater pipes and manholes, poorly sealed low lying wastewater manholes prone to surface flooding, and street catchpits incorrectly directed to wastewater manholes).

Additional investigations this year into the likelihood of direct stormwater backflow via unprotected overflow pipes has confirmed that some EOPs that lie within 'flood-prone' or 'tidal' areas are at high risk of stormwater backflow under certain conditions. Water level monitoring devices installed in adjacent wastewater and stormwater manholes have confirmed direct stormwater inflow into the wastewater network. Figure 5-1 below shows the relative water levels in the adjacent stormwater

(SW) and wastewater (WW) manholes connected via an EOP. While no backflow occurred during this instance, backflow has been observed in subsequent events.

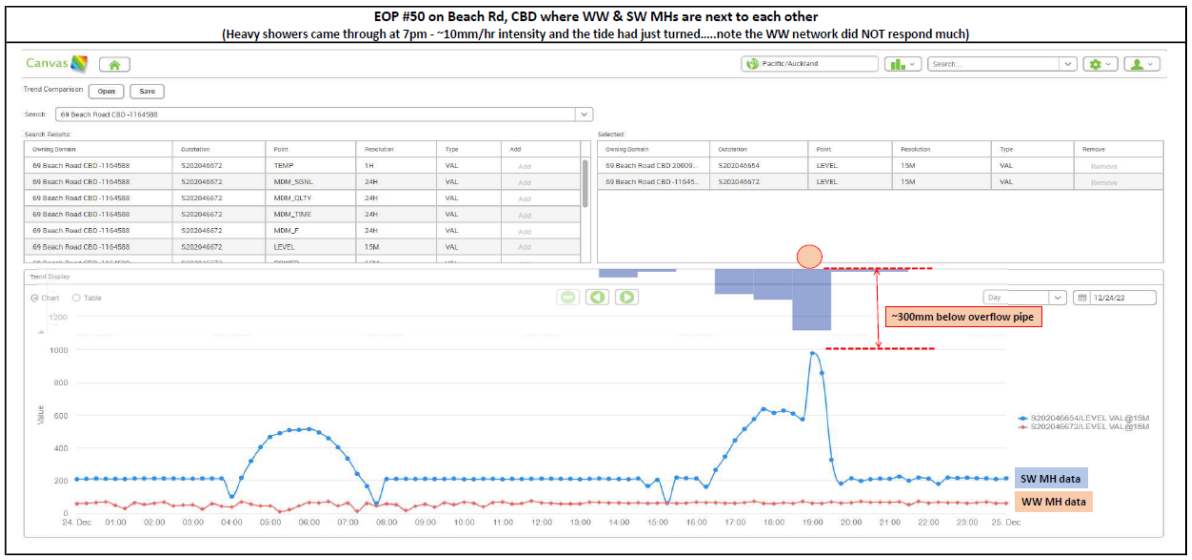


Figure 5-1– High risk of stormwater inflow to the wastewater network in the CBD

Planned I&I investigations

Planned I&I investigations follow a more detailed catchment or sub-catchment investigation and analysis methodology. These works involve identifying all private defects, including both above-ground issues and private drains, as well as conducting a detailed investigation and rehabilitation of the public network and manholes within the target area. These investigations are typically initiated in response to either:

- Persistent overflows to the environment
- Known system performance issues following detailed WW modelling that identify areas with unacceptably high levels of Inflow and Infiltration

Watercare also carries out desktop assessments using Supervisory Control and Data Acquisition (SCADA) data from telemetered pump stations and monitored EOPs. The purpose of these assessments is to better understand inflow and infiltration of critical wastewater assets. These desktop assessments, along with overflow reports, also assist in prioritising areas for future field investigation.

Planned inflow and infiltration investigations of large building complexes such as schools and similar facilities

Following on from the planned investigation areas described above has been a new focus on large building complexes such as schools and colleges. These building complexes are usually quite old and have developed bit by bit over the years, with temporary classrooms added in the middle of playgrounds or other areas within the property boundary where stormwater and WW networks are difficult to connect to. When investigating smallish catchments with frequent Type 3 overflows, it is not uncommon to find a school or similar institution upstream raising a ‘red flag’. A recent study area in the Kelston suburb highlighted this very issue with downpipes from the roof of a temporary classroom plumbed directly into the wastewater lateral. This direct source of inflow to the local wastewater network was made worse by the fact that the roof guttering on many of the buildings

was in very poor condition allowing stormwater to pond over wastewater inspection chambers with poorly fitting metal covers. In one example, improvements to the have already reduced the incidence of surcharging in the wastewater network downstream, although wastewater network monitoring is ongoing (see Figure 5-2 below).

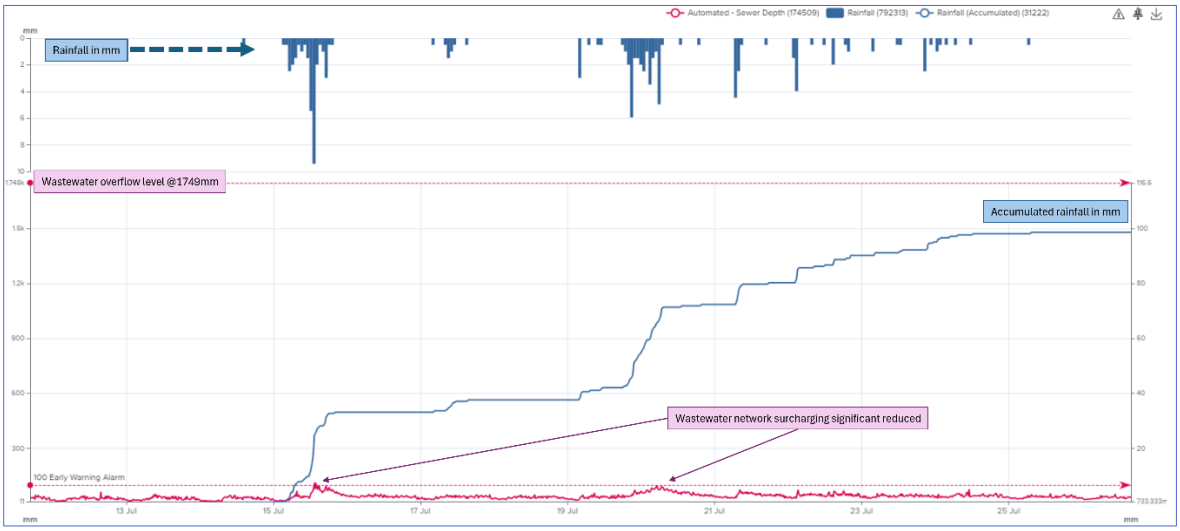


Figure 5-2 Wastewater network surcharging showing signs of significant improvement

5.1.3 Safe Networks investigations

Where water quality issues consistently pose a risk to public health in watercourses and at beaches, as indicated by Auckland Council's Safeswim programme, the HW Safe Networks team monitors and investigates to identify and track contaminants to their source.

When contaminant sources are confirmed to be derived from human waste, Watercare and Auckland Council's HW Safe Networks and Compliance teams collaborate and inspect private and public drainage networks to diagnose and fix these issues. Investigations are also classified as either reactive and planned, depending on the urgency and complexity of the need being addressed and scoped.

Some recent successful investigations include:

- 9 Hiriri Ave in Remuera where stormwater and wastewater laterals were found joined at the property boundary and drained to the stormwater network. This was the result of a "failed" separation project, with Watercare's maintenance contractor MSN able to carry out a simple fix at the property boundary diverting the wastewater lateral to the laid but not in-service wastewater lateral
- 78 Glidepath Place in Hobsonville had an incorrectly drawn up 'as built' drainage plan, meant that the wastewater lateral was connected to the stormwater. This was quickly remedied by the original drainlayer with photo evidence provided to Auckland Council's Compliance team.
- 11 Dawn Lane in Albany Heights, where the drainlayer of a new build had incorrectly connected the wastewater lateral to stormwater
- Badly broken wastewater pipes on Rosario Cres in Red Beach and Silverton Ave in Wai O Taiki Bay areas had been causing wastewater to leak into nearby stormwater pipes and local beaches. Confirmed by CCTV, Watercare are currently scoping up the localised repairs (see Figure 5-3 below of the break close to Silverton Ave)

Figure 5-3 Bad break (still flowing) on the local wastewater network requiring urgent repair

5.1.4 WIWQIP and EIWQIP separation investigations

For I&I control in combined sewer networks (i.e. removal of stormwater runoff and 'legal' stormwater connections), Watercare is building upon their foundation Asset Management Programmes of work including the Central Interceptor to improve wastewater transmission capacity and alleviate the high frequency Combined Sewer Overflow discharges. This is now complemented with the Western and Eastern Isthmus Water Quality Improvement Programmes (WIWQIP and EIWQIP).

The WIWQIP and EIWQIP were considered and approved as part of Auckland Council's 2018-2028 Long-term Plan process. Watercare and Auckland Council's HW are currently investigating and developing WIWQIP and EIWQIP catchment-specific programmes of improvement work, which will include new stormwater and wastewater enhancements to enable separation and local catchment capacity augmentation.

Such intervention will alleviate uncontrolled local catchment discharges and optimise the benefits of the wastewater transmission solutions to meet growth needs and achieve discharge consent targets in those parts of Auckland. As part of the WIWQP and EIWQIP programme of works, field separation investigations are conducted to map existing private drainage and develop separation solutions. In addition, illegal private drainage connections and other network issues are identified and remedied.

One recent discovery by the EIWQIP investigation team was of a large stormwater catchment connected to the local wastewater network downstream, where a wastewater manhole had been overflowing significantly in a back garden during moderate to severe wet weather events. Luckily, a large property within this stormwater catchment ended up needing to divert this stormwater pipe and outfall, and working with Auckland Council's stormwater operations teams, a pragmatic solution was rapidly developed and implemented. This solution will significantly reduce the likelihood of

future overflows from the local wastewater network and underlines the benefit of stakeholders working collaboratively together.

5.1.5 Remediation

All Inflow and Infiltration programme data is digitally collected into GIS-based software, including details regarding the identification and remediation of issues. All urgent identified public network faults affecting service are passed on to Watercare's Service Delivery teams to be promptly fixed, and other faults are included in Watercare's renewals programme for prioritisation and repair.

Auckland Council's Compliance team (on behalf of Watercare) issues 'Compliance Letters' and 'Notices to Fix' defective private drainage as identified through the I&I programmes and follows-up with property owners. Generally, property owners fix their issues in the permitted time. Depending on the severity of the issue and impact, Auckland Council can issue fines for significant delayed repairs. In some cases, private property issues that owners do not address go on the property's Land Information Memorandum (LIM). Consequently, owners often address these ongoing drainage issues when intending to sell their house. Recent auditing on reportedly 'resolved' private property issues has flagged some ineffective remediation works, and Watercare is working with Auckland Council's Compliance team to tighten up on the follow-up process.

5.1.6 Enhanced I&I network monitoring

New wastewater network monitoring technologies are continuously entering the market, and Watercare have continued to investigate the pros and cons of new 'easy-to-deploy', cost-effective wastewater manhole level monitoring devices. These new technologies are already being deployed in large numbers across water utility providers in the UK, Australia and elsewhere, and are helping these utility providers better understand the root-cause of wastewater overflows to the environment, leading to more effective operational and network planning solutions.

Watercare has procured 135 units, most of which were deployed towards the end of 2023. These units are now being used in several ways including:

- Permanent installs at critical EOPs
- Semi-permanent installations at or close to regular Type 3 overflow EOPs to private property
- 'Lift and shift' installs, where the monitors are deployed for several weeks or months to help gain insight into the response of a smallish wastewater catchment to wet weather events.
    - The data from these temporary installations is already being used to help prioritise the next set of catchments for detailed I&I investigations

Table 5-1 below presents examples of where the data collected has brought awareness to previously unknown operational issues and confirmed desired effects of operational improvements.

Table 5-1 Examples of operational insight obtained from the enhanced network monitoring

Site	Data collected	Outcome
Onehunga Transmission main	Large dip in DN375 pipe highlighted by unexpected surcharging high up in the catchment	Main flushed significantly improving performance
Takapuna Transmission main	Partial blockages identified at the most downstream level sensor	Operations investigating root cause
Elizabeth St pipe bridge in Warkworth	Regular surcharging upstream but not downstream	Confirmed the pipe-bridge as a significant throttle in the network
Beach Rd in Auckland Central	Stormwater backflow to the wastewater network confirmed when high tide coincides with moderate wet weather	NRV on the overflow pipe to be replaced
Whiteacres Dr in Sunnyhills	Suspected backflow of stormwater to the wastewater network	New NRV installed on the overflow, further monitoring in progress.
Beachlands	Significant inflow response during wet weather, rain tank overflows are thought to be part of the problem	Re-visits by the I&I investigation team underway with a focus on the rain tank overflow pipes
Bay St WWPS	Overflow manhole relatively far distant from the pump station with overflows difficult to confirm	Level monitors close to the overflow location confirmed wastewater overflows where the pump station SCADA was inconclusive
Kohekohe St in Kelston	Level monitor is showing improvements in network performance	Confirms successful I&I reduction works in the upstream catchment
Cape Hill Rd in Pukekohe	Level monitor confirmed significant wet weather surcharging	I&I investigation planned for FY25
Bucklands Beach Rd	Both stormwater and wastewater level monitoring showing stormwater flooding has reduced following stormwater pipe upgrade	Confirms wastewater surcharging in the local network was a result of Transmission mains capacity issues downstream
Connell St in Blockhouse Bay	Level monitoring confirmed wastewater surcharging was made significantly worse by allowing the Endeavour St WWPS to “double-pump” during wet weather	Endeavour St WWPS reconfigured to Duty/Standby not Duty/Assist
Marellen Dr in Red Beach	Level monitoring confirmed wastewater surcharging was made significantly worse by allowing the Glenelg WWPS to “double-pump” during wet weather	Glenelg WWPS reconfigured to Duty/Standby not Duty/Assist.
Cobham Cres in Kelston	Level monitoring being used to monitor the performance of a siphon on the local wastewater network	Regular flushing to be linked to network performance rather than “planned” routine flushing round

5.1.7 Optimising wastewater pump station controls in response to I&I

Optimising how our wastewater pumps operate during moderate to severe wet weather events is making the difference between creating or avoiding wastewater overflows to the environment. Analysis of several of our network wastewater pump stations showed that there was the potential to convey excessive amounts of wastewater downstream early into a wet weather event when the upstream network was still coping well, using built storage capacity adjacent to the pump station (where available). Successful changes to the operating controls of several wastewater pump stations were implemented in June 2023 with trials on-going. Analysis of the last 12-months of pump station and overflow data suggests these low-cost improvements have been remarkedly successful: Heaphy Street in Whau River; Whitney Steet in Western Isthmus, Michaels Avenue in Hobson Bay, Glenelg

WWPS in Red Beach and Janese Place in Puhinui catchment. As more wastewater manhole monitors are deployed over the next 12-18 months, more opportunities to optimise the operation of local network wastewater pumps stations will be realised.

5.1.8 Completed, planned and future investigations

Table 5-2 summarises the number of projects within the four I&I bodies of work and Table 5-3 provides further details of all started/completed/delayed/rescheduled inflow and infiltration investigations during the reporting year, including projects continuing into the next reporting period. Due to the reactive nature of some of the I&I investigation works, some of the catchment investigations planned for FY24 were either not started or their completion was delayed to FY25.

With regard to future investigations, some of the focus is moving away from the larger-sized catchments, where capacity constraints on Transmission wastewater pump stations or the larger Transmission mains may be the cause of multiple local network overflows during severe wet weather, to smaller catchments with localised Type 2 or Type 3 overflows that can be more easily investigated and remedied within the course of the investigation year.

An example of this is the Heaphy St I&I catchments, where operational changes at the upstream Endeavour St Wastewater Pump Station, along with compliance actions targeting properties with stormwater-to-wastewater cross-connections, are already showing improvements. Approximately 10% of properties in the catchment were found to have some form of cross-connection. Since this I&I investigation work was completed, modifications to the pump station operating controls have been completed and numerous stormwater to wastewater cross-connections have been resolved through compliance, including the repair of several public faults on the local wastewater network.

Commentary on the rescheduled projects and projects for future FYs

As evident from Table 5-2 and Table 5-3 below, a few projects planned from previous reporting periods are yet to start. What is also noticeable is that many smaller catchment investigations are now planned for the upcoming reporting period and beyond. This shift from historically large investigation areas such as the Otara catchments to smaller more contained catchments is in part a response to Watercare's service delivery teams appreciating the value of the I&I reduction investigations, with these teams now sharing more of their problematic wastewater catchments with the I&I team and requesting assistance. A number of these smaller catchment areas are currently underway, including Mt Wellington Aranui 1, Wellsford and Warkworth re-visits and Takapuna Beach 02 & 03.

Whitney St / Dundale Ave

Planned for FY23, a large part of this investigation area is yet to get underway. The following undertakings are in progress/ completed:

- The operation of the upstream (u/s) Lewis St WWPS has been modified to restrict the pump station operation to Duty/Standby. This means that even during severe wet weather, with the High-Level alarm triggered at the pump station, the second pump will remain off
- There is a storage tank at the Lewis St WWPS, and similar to the Endeavour St WWPS, the available storage was not always being fully utilized. The expectation now is that the use of the storage will become an integral part of the pump station operation

- The Lewis St WWPS catchment to the south (also known as the Flounder Bay catchment) was prioritised ahead of the two larger catchments to the north of Donovan St. This investigation is nearing completion, with SW into WW issues found at approximately 15% of all properties inspected. The Auckland Council Compliance team are currently in the process of issuing compliance letters to property owners

Otara North and South

Planned for FY22, these two large catchment investigation areas are yet to get underway. The operational performance of the local Otara wastewater catchments is closely tied to the operation of the PS32 Otara Transmission WWPS. The operation of this pump station is constrained by capacity issues downstream towards the Southern Interceptor.

- Otara North sub-catchment 1 East & West are currently underway or planned for FY25
- Following completion of these two sub-catchments, the I&I team will review the findings and liaise with Watercare's Planning team to agree next steps

Onehunga Central/East/West

These sub-catchments had been potential reactive candidates for FY23 and FY24 but had been pushed back while the Watercare I&I and Network Planning teams gathered more information on the local network pipe condition and hydraulic performance of the wider catchment. The following undertakings are in progress/ completed:

- The wastewater manhole level sensor trial has targeted the Onehunga and Royal Oak wastewater catchments, with over a dozen level sensors installed to date. Valuable network performance data is being collected and will be used by the I&I and Network Planning teams to prioritise further I&I reduction investigations and resolution of localised hydraulic constraints
- In addition, the operational controls of the upstream wastewater pump stations, including Abbotts Way and Grand Drive are being switched from Duty/Assist to Duty/Standby, and monitored for their performance during wet weather events

CBD and Ports of Auckland

This large and strategic catchment area within Central Auckland has been under investigation for a few years now and will continue to be for the foreseeable future. The local wastewater network is old, deep and in need of extensive rehabilitation and renewal, including upgrading in some parts. The following undertakings are in progress/ completed:

- The interaction between the stormwater and wastewater networks is being monitored with level sensors installed in adjacent stormwater and wastewater manholes. What has been observed is that on occasions where wet weather coincides with high tide, there is a very real risk of stormwater backflow to the wastewater network
    - There is currently a project underway to replace faulty non-return valves installed on the wastewater networks EOPs
- The operation and capacity of the PS13 Constitution Hill WWPS is being investigated with one option being to upgrade
- Alternatively, there is compelling evidence that the local wastewater network is experiencing extremely high groundwater infiltration (i.e. seawater), most notably during exceptional high tides

- It's likely Watercare will adopt a combined approach of remediating the leaky local wastewater network whilst upgrading the wastewater pump station to cater for growth in this large and strategic catchment area.

Table 5-2 Summary of I&I projects planned for 2025 and completed in the 2023-24 reporting period

I&I programmes	Planned for FY24	In-Progress FY24	Completed FY24	Planned for FY25
WSL I&I Only Investigation Projects	5	1	5	14
Joint WSL I&I and HW Safe Networks Investigation Projects	9	0	9	14
Joint WSL and HW Western Water Quality Improvement Programmes	1	1	0	0
Joint WSL and HW Eastern Water Quality Improvement Programme	7	5	3	5

Commentary on projects completed in the reporting period

As previously detailed in Section 5.1.5, all details regarding the identification of public and private drainage issues are collected on GIS-based software. This software allows us to track which properties within the catchment have been visited, and the status of each issue identified. Table 5-4 summarises the number of properties, along with the number of private and public issues identified within each investigation area completed during this reporting period.

The largest investigation completed was in Kohimarama, which contained 2,883 properties. There were 293 private drainage issues found in this catchment, compared to just 38 public issues identified. The total of 331 issues within this investigation area is the equivalent of 1.15 drainage issues for every 10 houses. The investigation area with the highest ratio of drainage issues was Kawakawa Bay with 5.25 issues for every 10 houses. Of the 145 issues found, 140 were on the public network. See Table 5-4 for further investigation figures.

Table 5-3 Detail of all 2023-24 I&I investigation projects

Programmes / Investigation Projects	Planned 2023-24	In Progress 2023-24	Completed 2023- 24	Planned 2024-25	Comments
WSL I&I Only Investigation Projects					
Snells Beach -Mahurangi East FY24 (Reactive)	1		1		Completed in FY24
Snells Beach -Tamatea FY24 (Reactive)	1		1		Completed in FY24
Onehunga North East Sub-catchment 1 (Planned) FY24	1		1		Completed in FY24
Kawakawa Bay (Reactive) FY24	1		1		Completed in FY24
Glendowie WWPS Catchment Area 1 (Planned) FY24	1		1		Completed in FY24
Glendowie WWPS Catchment Area 2 (Planned) FY25					Area 1 has been completed in FY24, remaining areas (sub-catchments) investigations to be programmed each FY25
Glendowie WWPS Catchment Area 3 (Planned) FY25					Area 1 has been completed in FY24, remaining areas (sub-catchments) investigations to be programmed each year, FY26
Glendowie WWPS Catchment Area 4 (Planned) FY25					Area 1 has been completed in FY24, remaining areas (sub-catchments) investigations to be programmed each year, FY 27
Whitney St / Dundale Ave - FY23 (Planned)					This investigation area has been divided into sub-catchments, with investigations in Flounder Bay completed in FY24 as a Joint Project. Remaining sub-catchment investigations are planned for FY25.
Otara South (Sub catchment 6)-FY22 (Planned)					Investigations planned for FY26
Otara North (Sub-catchment 1, East)-FY22 (Planned)		1			Investigations started in April 2024
Otara North (Sub-catchment 1, West)-FY22 (Planned)					Investigations in the East area started in April 2024, West area to follow this, at the start of FY25

Programmes / Investigation Projects	Planned 2023-24	In Progress 2023-24	Completed 2023- 24	Planned 2024-25	Comments
Onehunga Central (Sub-catchment 3) (Planned) FY25				1	Planned for FY25
Onehunga East (Subcatchmnet 2) (Planned) FY25				1	Planned for FY25
Onehunga West (Sub-catchment 4) (Planned) FY25				1	Planned for FY25
Mt Wellington Aranui Rd 01 (Planned) FY25				1	Planned for FY25
Oakley Phase 3 (Planned) FY25				1	Planned for FY25
Wellsford Revists (Reactive) FY25				1	Planned for FY25
Warkworth Revists (Reactive) FY25				1	Planned for FY25
Stanley Pt PS Catchment (Naval Base) (Planned) FY25				1	Planned for FY25
Portland Stream 02 (Planned) FY25				1	Planned for FY25
Walter St (Planned) FY25				1	Planned for FY25
Waiata Stream 02 (Planned) FY25				1	Planned for FY25
Cape Hill Rd, Pukekohe (Planned) FY25				1	Planned for FY25
EOP NRV Installations				1	Planned for FY25
EOP Weir raising				1	Planned for FY25
Sub-total	***5***	***1***	***5***	***14***	
Joint WSL I&I and HW Safe Networks Investigation Projects					
Hobson Bay- Hapua HAP006 FY24	1		1		Completed in FY24
Judges Bay FY24			1		Completed in FY24
Flounder Bay -FY 24	1		1		Completed in FY24
Red Beach -FY24	1		1		Completed in FY24
Kohimarama - FY23			1		Completed in FY24

Programmes / Investigation Projects	Planned 2023-24	In Progress 2023-24	Completed 2023- 24	Planned 2024-25	Comments
Heapfy St North, Blockhouse Bay FY24	1		1		Completed in FY24
Heapfy St South, Blockhouse Bay FY24	1		1		Completed in FY24
Bucklands Beach Road FY24	1		1		Completed in FY24
Pixie Stream, Te Atatu South - FY23	1		1		Completed in FY24
Wairau Outlet-Milford FY24	1				Ongoing targeted investigations
Wairau Outlet-Lower Forest Hill FY24	1				Ongoing targeted investigations
CBD - Ports of Auckland FY22					On-going Investigations
Lynfield Cove FY25				1	Planned for FY25
Henderson Creek East -FY25				1	Planned for FY25
Henderson Creek West -FY25				1	Planned for FY25
Takapuna Beach 02-FY25				1	Planned for FY25
Takapuna Beach 03-FY25				1	Planned for FY25
Glenveagh-FY25				1	Planned for FY25
Manutewhau FY25				1	Planned for FY25
Rarawaru FY25				1	Planned for FY25
Te Ara-rata FY25					Planned for FY25
CBD 01- FY25				1	Planned for FY25
CBD 02- FY25				1	Planned for FY25
CBD 03-FY25				1	Planned for FY25
Wai O Taiki 02 FY25				1	Planned for FY25
Te Ara-rata 07				1	Planned for FY25
Te Ara-rata 10				1	Planned for FY25
Sub-total	***9***	***0***	***9***	***14***	

Programmes / Investigation Projects	Planned 2023-24	In Progress 2023-24	Completed 2023- 24	Planned 2024-25	Comments
Joint WSL and HW Western Water Quality Improvement Programmes					
WIWQIP Waterview Private Issues Review and follow up field visits	1	1			In Progress
Sub-total	***1***	***1***	***0***	***0***	
Joint WSL and HW Eastern Water Quality Improvement Programme					
EIWQIP- Hobson South - Ascot Ave, St Vincents Ave FY23			1		Started in FY23 and Completed in FY24
EIWQIP-Newmarket - Arney Crescent HAP005 FY24	1		1		Completed in FY24
EIWQIP Hobson Branch 2 Portland Rd- FY24	1		1		Completed in FY24
EIWQIP Hobson Branch 1 Greenland East - FY24	1	1			In Progress
EIWQIP- Hobson Bay South- Abbotts Way FY24	1	1			In Progress
EIWQIP-Stanley, Parnell- Gladstone Rd FY24	1	1			In Progress
EIWQIP- Stanley, Parnell -St Georges Bay Road FY24	1	1			In Progress
EIWQIP- Hobson South- Kelvin Rd FY24	1	1			In Progress
EIWQIP Auckland University -FY25				1	Planned for FY25
Shore Rd / Victoria Ave- FY25				1	Planned for FY25
Burwoord Crescent- FY25				1	Planned for FY25
Spencer Rd, Ingram Rd, Aldred St- FY25				2	Planned for FY25
Sub-total	**7**	**5**	**3**	**5**	

Table 5-4 Details of I&I investigations completed during the 2023-24 reporting period

Programmes / Investigation Projects Completed	Approx. No. of Properties	Total Private Drainage Issues	Total Public Drainage Issues	Comments
WSL I&I Only Investigations Projects				
Snells Beach -Mahurangi East and Tamatea FY24 (Reactive)	500	31	31	Completed in FY24
Onehunga Northeast (Sub-catchment 1) Planned) FY24	1278	129	30	Completed in FY24
Kawakawa Bay (Reactive) FY24	276	5	140	Completed in FY24, 140 public issues, which some requiring re-visits to find the manholes, lid replacements, minor clean up works on manholes
Glendowie WWPS Catchment Area 1 (Planned) FY24	816	65	99	Completed in FY24, 25 operational public issues, the reminder of the public issues are to do with unable to find manholes
Joint WSL I&I and HW Safe Networks Investigations Projects				
Hobson Bay- Hapua HAP006 FY24	261	23	14	Completed in FY24
Flounder Bay -FY 24	353	58	19	Completed in FY24
Red Beach -FY24	386	27	8	Completed in FY24
Kohimarama - FY23	2883	293	38	Investigations started in FY23 and was Completed in FY24
Pixie Stream, Te Atatu South - FY23 (Reactive)	382	18	22	Completed in FY24
Heaphy St North and South, Blockhouse Bay (Reactive) FY24	638	69	36	Completed in FY24
Bucklands Beach Road	225	30	10	Completed in FY24
Joint WSL and HW Eastern Water Quality Improvement Programme				
EIWQIP- Hobson South - Ascot Ave, St Vincents Ave FY23	266	16	0	Completed in FY24

Programmes / Investigation Projects Completed	Approx. No. of Properties	Total Private Drainage Issues	Total Public Drainage Issues	Comments
EIWQIP-Newmarket - Arney Crescent HAP005 FY24	38	4	0	Completed in FY24
EIWQIP Hobson Branch 2 Portland Rd- FY24	127	22	10	Completed in FY24

Note: Although many investigations are shown as Completed, compliance activities can be on-going for several months or even years afterwards.

6 NETWORK IMPROVEMENTS

6.1 Introduction

The summary tables in this section comprise of improvement works projects that are either completed, in progress, or planned, that come from Watercare's Improvement Works Programme. This programme tracks significant network improvement projects across Auckland, and so the projects summarised in Section 6.3, Section 6.4, and Section 6.5 include major works only. Project dates listed in this Section depend on current work plans and all dates are subject to change.

6.1.1 Wastewater Network Strategy

Condition 13 of the NDC requires Watercare to prepare, review and update its Wastewater Network Strategy (WWNS) every six years, and implement the Wastewater Network Improvement Works Programme as set out in the WWNS. Conditions 15, 16, 17, 18, 20, 21 and 22 of the consents outline the requirements of the WWNS. These sections describe network improvement planning and prioritisation of network improvements for a period of six years. Watercare completed the first WWNS in 2017 and the second was completed in June 2023. The next iteration of the WWNS will be started in 2027 with submission in 2029.

6.1.2 Informing catchment analyses and improvements

Condition 9 requires the existing network to achieve an average of no more than two WWO events per EOP per year. If this is not Achieved, an alternative discharge frequency using Best Practicable Option methodology for that EOP must be determined.

System performance analysis is completed during modelling of both the transmission and local networks. This analysis provides a baseline and expected future performance of the network and EOPs. Watercare's modellers can then compare developments and changes to flows within a network to identify any changes to EOP performance.

The frequency and volume of EOPs and overall level of service within a catchment helps to determine the prioritisation of improvements, future projects, and catchment analysis. For each wastewater catchment, multiple criteria are assessed, including, but not limited to:

- EOP overflow volumes and frequencies
- Type 3 overflows (uncontrolled)
- Growth
- Level of service
- System performance
- Operational issues

Watercare's planners and engineers rank these criteria to set a prioritisation programme for catchment studies, options analysis and current and future improvement works within the Asset Management Plan and subsequently the WWNS.

In addition, the network performance is assessed against expected wet weather responses to identify where unexpected issues are occurring. Departures from expected performance feed into inflow and infiltration programmes.

6.2 Central Interceptor Programme

Projects that are specific to the Central Interceptor programme have not been included in this section as there are a high number of these projects and the nature of this programme is complex and extensive.

Information regarding site-specific Central Interceptor works can be found on the Watercare website (https://www.watercare.co.nz/Central-interceptor).

Consent to extend the Central Interceptor to Point Erin was granted in September 2023. Works commenced onsite on 24 June 2024. As of 11 September 2024, Hiwa-i-te-Rangi has broken through at Western Springs and is expected to complete her 16.2 km journey in April/May 2025. The southern section of the tunnel is due for completion by the end of this year. Weekly updates of the TBM's progress at available at https://www.watercare.co.nz/Centralinterceptor/Constructing-the-Central-Interceptor. The programme remains on track for completion at the end of 2026.

6.3 Works completed between 1 July 2023 and 30 June 2024

Table 6-1 lists wastewater network improvement projects completed during the reporting year. These projects included sewerage upgrades and relining.

Table 6-1 Wastewater network improvement projects completed in 2023-2024

Project Name	Reason for Project	Anticipated Outcome	NDC Catchment
Sidmouth WWPS Mairangi Bay Upgrades	This project was required due to poor asset condition and to provide for growth (EOPs 854 and 855). Project included increasing the pump station capacity from 320 l/s to 600 l/s and construction of a 230 m3 storage tank.	Increased system capacity and performance that complies with the Network Discharge Consent. In addition, the WWPS will provide for growth, reduce the current overflow frequency and addressed localised flooding issues at Mairangi Bay.	East Coast Bays
Dunkirk Road WW Capacity Upgrade	Mitigation of five EOPs that were previously exceeding the target Level of Service, and performance improvement at other locations in the network including suspected Type 3 locations	Allow for growth and reduce overflows. Provide trunk capacity to support additional local upgrades where they may be required, such as EOP 163 and the Type 3 location S55	Lower Tāmaki River

6.4 Works in progress between 1 July 2023 and 30 June 2024

Table 6-2 provides a summary of all wastewater network improvement projects that took place, but were not completed, during the reporting year. There are many multi-year projects that continue to progress across the entire Auckland region, with a focus on East Coast Bays, Lower and Upper Tāmaki River and Western Isthmus catchments.

Figure 6-1 Bar graph showing a summary of the projects associated with ww network upgrade and improvements per catchment that were underway during the reporting year 2023-2024

6.5 Works planned to begin between 1 July 2024 and June 2025

Table 6-3 provides a summary of wastewater network improvement projects Watercare has planned, as of June 2024, to begin in the 2024-2025 period, subject to approval of business cases. These projects are mainly in response to anticipated population growth and to reduce high frequency and volume of overflows in poorly performing areas. Engineered overflow points proposed for installation can be found in Appendix C.

Table 6-2 All projects associated with wastewater network upgrade and improvements that were underway during the reporting year 2023-2024

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
Warkworth Growth Servicing	Design	To provide for greenfield growth in the north of Warkworth, by connecting to the existing township network and the Northeast Wastewater Scheme via installation of a 2.1km long wastewater pipeline	Cater to growth in the area, increase capacity of the wastewater network and reduce WWOs in the network, especially at EOP 1540	2020-2028	Warkworth
Warkworth to Snells Transfer Pipeline	Execution	Installation of a new conveyance sewer from Warkworth to Snells Wastewater Treatment Plant to increase capacity, including intermediate pump station	Cater for growth in the area and reduce overflows at EOPs 790 and 1540	2017-2025	Warkworth, Snells Beach/Algies Bay
Waiwera Wastewater Servicing	Design	Consolidation of WWTP, enabling decommissioning of non-compliant WW discharge at Waiwera WWTP. Involves constructing a new pipeline and pump station	Conveyance of Waiwera flows to Hatfields beach, ultimate treatment via Army Bay WWTP	2021-2026	Waiwera, Orewa
Silverdale West WW Rising Main Opportunistic	Feasibility	To provide wastewater service and to support growth in Silverdale West/Dairy Flat area as this area will become the focus for future light industrial growth north of Auckland	Cater for growth in Silverdale West and Dairy Flat area	2023-2031	Weiti, Orewa
Hobbs Bay Pumping Station Contingency	Design	Critical condition concern around existing asset, primarily due to high H_2S resulting in rapid degradation of wet well structure and difficulties in accessing for maintenance	Bypass solution enabled, providing resilience in the event of station failure and enabling the station to be taken offline for potential remediation	2022-2025	Whangaparāoa
Stanmore PS & RM Upgrade	Feasibility	The current PS is unmaintainable as the current condition doesn't allow people to enter. Overflows from Stanmore PS is 6-10 per annum, into bathing beach. Currently manually optimised but capacity is constrained. There is also a high risk of failure due to ageing pipes and corrosion due to H_2S. Capacity and storage	Resolve current capacity issues and support future growth. Build resilience and reduce failure risk. Reduce overflow frequency and improve water quality in stream and bathing beach	2022-2029	Whangaparāoa

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
		issues at Hobbs Bay Pump Station and significant odour issues			
Gulf Harbour Wastewater Servicing	Feasibility	Project was previously delayed and then reprioritised as per developer interests. Development in the area.	Resolves existing capacity constraints and uncontrolled overflows within Gulf Harbour, provides additional resilience to existing operational issues on dipped gravity pipeline. Provides for greenfield growth	2022-2030	Whangaparāoa
Penlink Wastewater Pipeline	Design	Substantial growth is forecast in the Whangaparāoa Peninsula, Wēiti, Orewa, Silverdale and surrounding areas. The existing wastewater conveyance to Army Bay WWTP is unable to accommodate this growth through the existing network. Waka Kotahi's O Mahurangi – Penlink project presents an opportunity to utilise this work to create a new network which avoids existing bottlenecks in the network	Cater for substantial growth with a new wastewater pipework system that efficiently conveys wastewater to the Army Bay Wastewater Treatment Plant (WWTP) without bottlenecks	2018-2035	Whangaparāoa, Weiti, Orewa
Rerouting of transmission (trunk) system main associated with Alma pump station	Execution	Required to increase capacity to provide for population growth	Reduce overflow frequency and provide for growth. Addresses Type 3 location S28.	2018-2025	East Coast Bays
Jonathan Place Pipe Upgrades	Design	Multiple overflows and additional customer complaints, 6 overflows per year.	To ensure that the level of service target of two overflows (or less) per year are achieved	2021-2026	East Coast Bays

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
Wairau Valley Diversion	Feasibility	The Wairau branch sewer is currently capacity constrained and will need to be upgraded to continue servicing existing communities and accommodate for future demand of ~150k people. Providing conveyance through a storage tunnel directly to the Rosedale WWTP provides the ability to attenuate peak flows and reduce peak flow management and capacity at the WWTP	Reduce EOP and Type 3 overflows. Reviewing feasibility of tunnel to treatment plant.	2022-2032	East Coast Bays
Mairangi Bay gravity wastewater sewer upgrade	Feasibility	The project is to construct ~700 m of 300 mm diameter pipe from the new pipe at Monterose Terrace (currently under construction), to resolve reoccurring overflows in the network, especially at 16 Jutland St Mirangi Bay, and remove the EOP from manhole 1295342	Increase capacity to reduce overflows to Mairangi Bay Stream and beach during wet weather	2023-2026	East Coast Bays
Wairau Wastewater Pump Station Upgrades	Feasibility	Reduce overflow frequency and risk to public health and environment, reduce risk of asset failure. This will be addressed by replacing assets in poor condition and increasing the capacity of the Wairau pump station	Reduce high volume overflow from EOP 951 to under 2 spills/ annum from 5-6 spills/ annum and provide for growth. Reviewing feasibility of tunnel to treatment plant	2022-2032	East Coast Bays, Devonport-Takapuna, Shoal Bay
Torbay WW Network Upgrades	Studies and Investigation	Program involves 11 separate network capacity upgrades in sewers and pump stations, and provision of wet weather peak flow storage at key locations	Resolve multiple level of service issues and provide for growth	2022-2031	East Coast Bays, Long Bay
Forrest Hill WW Catchment Diversion	Feasibility	New pump station, storage tank and rising main to be built in Forest Hill region to accommodate for 72% growth in population over the next 50 years for Forest Hill, Seaview, Milford and Takapuna	The project will help reduce both controlled and uncontrolled overflows into local beaches and swimming areas to help protect public health and the environment	2022-2028	East Coast Bays, Takapuna

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
East Coast Bays Link Sewer Upgrade	Execution	Significant growth in East Coast Bays requires a double up in capacity. Existing transfer line is at end of its life and needs to be replaced and existing sewer needs to be relined	To reduce overflows from EOPs 854 and 855, and to bathing beaches. This rising main upgrade will reduce the average overflow frequency for 6.5 to 2 per year	2015-2025	East Coast Bays, Upper Harbour North
Renewal and upgrade of remainder of rising main and upgrade Lake Road Northcote pump station	Design	Rising main has a history of failure, WWOs in existing and future scenarios, approx. 4 hours storage, high risk of spill if cannot be repaired in this time	Reduced risk of DWOs as a result of asset failure. Reduces overflow volume/ frequency at EOPs 830, 863 and Type 3 location S26 and allows for growth	2021-2025	Shoal Bay
Northcote-Chatswood WW Network Upgrades	Design	There are known existing capacity issues and population is predicted to grow significantly in the Northcote-Chatswood wastewater catchment	Increase capacity and reduce overflow frequency & volume at EOPs 836, 844, 861, 863 and Type 3 location S26 and to allow for growth	2018-2027	Shoal Bay, East Coast Bays
Unsworth Heights Diversion	Feasibility	Multiple uncontrolled overflows during wet weather events and occasionally dry weather due to capacity constraints in local network	Reduce multiple uncontrolled overflows. Upsize the pipe to increase flow capacity constraints	2023-2027	Upper Harbour North
Kahika Rising Main Replacement	Execution	The existing concrete steel lined rising main is at severe risk of failure (erosion/corrosion), having failed in the last two years resulting in complex operational repairs. Sections of the rising main have accessibility issues (pipe bridge and bank, sensitive ecological area) and there are level of service issues within the Beach Haven, Birkdale and Baywater sub-catchments, affecting 41,400 people	Increase the level of service, reduce overflow frequency, particularly at EOP 862, and provide for growth	2021-2025	Upper Harbour South

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
Kahika Pump Station Upgrades and RM Extension	Feasibility	Extension of the Kahika Rising main is required to cope with the future pump rate, and to alleviate surcharge in the tunnel that connects to the Wairau diversion	To cater for recent development of the area, reduce overflows at EOP862	2023-2027	Upper Harbour South
Whenuapai & Redhills Wastewater Servicing	Design	Growth of 20k residents in Whenuapai region between 2022 & 2065. This project consist of three packages, specifically providing wastewater services to the future urban zone that is currently not serviced	Allow for future growth	2018-2028	Upper Harbour West
Brighams Creek, Redhills PS and sewer upgrade 1	Feasibility	Upsize the pump station from the 320L/s current capacity to 1000L/s to cater for growth	Greenfields growth servicing	2028-2033	Upper Harbour West
Northern Interceptor - Stage 1	Execution	To allow wastewater flows to be diverted from the Northern Strategic Growth Area (NorSGA) and South Rodney (Kumeū / Huapai/Riverhead) to the Rosedale wastewater treatment plant. This work will balance flows at the treatment plants and provide additional capacity to the Western Interceptor	Allow for growth and reduce overflows at EOP 1275 and Type 3 overflow locations S20, S21, S24. Allow for load balancing between treatment plants	2021-2025	Upper Harbour West, Kumeū/Huapai, Henderson Creek, Whau River
Takapu Street WW Upgrade	Execution	Frequent uncontrolled overflows on Takapu St, I&I investigation of catchment is completed, however there is capacity constraint	Resolution of uncontrolled overflows	2022-2025	Henderson Creek
WIWQIP Westmere WW Catchment Improvement Works	Feasibility	Modelled and actual overflows are in excess of the level of service required and in excess of network discharge consent. There are numerous network throttles and restrictions. The throttle to main outlet to Ōrākei sewer shown as 150mm in GIS, but modelled as a 300mm. There is	Reduced EOP overflow frequencies to reach target of <2 per year, across the 14 active EOPs. Reduce uncontrolled overflows along the network. Reduce discharge into Motions Creek in turn improving water quality of the stream	2023-2031	Cox's Bay

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
		backwater effects from Ōrākei Main likely to occur			
WIWQIP Grey Lynn Park Stage 1 & Branch 6 Collector	Feasibility	Modelled and actual overflows are in excess above level of service required and in excess of network discharge consent	Increase stormwater capacity, reduced overflows and I&I, improving health of waterways	2024-2031	Cox's bay
WIWQIP Herne Bay WW Branch 5 Upgrade	Design	Upgrade aging asset to improve efficiency and capacity of network here, reducing overflow volumes and frequencies	Reduce EOP overflow frequency and volume to reach NDC targets if <2 p.a in the area serviced by Branch 5, including poorly performing EOPs 712 and 201. Reduce uncontrolled overflows from the branch. In turn, improve water quality of streams in this catchment	2022-2028	Cox's Bay, Western Isthmus
Central Interceptor and Link Sewers	Execution	Reduce WWO frequency and volumes at the largest overflow sites, provide water quality improvements and allow for growth	The CI and Link Sewers will immediately reduce WWOs from approximately 15 EOPs, including two of Auckland's most significant overflows at Lyons Ave and Haverstock EOPs	2019-2026	Western Isthmus / Cox's Bay
WIWQIP Pt Chev WW Catchment Improvement Works (CC1)	Feasibility	Reduces WWO volume/ frequency, provide water quality improvement and allow for growth. This project involves new collector sewers CC1 (gravity sewer to Central Interceptor at Rawalpindi Shaft) in the Pt Chevalier Catchment	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2023 - 2029	Western Isthmus / Cox's Bay
WIWQIP Oakley (CC9 - Keith Hay Park)	Construction	CC9 Collector sewer to address WWOs, provide water quality improvements and allow for growth	Reduction in the frequency and volume of wet weather wastewater overflows	2023-2026	Western Isthmus / Cox's Bay

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
WIWQIP Freemans Bay Wastewater Upgrade	Studies and Investigation	Reduces WWO volume/ frequency, provides water quality improvements and allows for growth in Freeman's Bay	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area, particularly EOP 183	2026-2029	Western Isthmus / Cox's Bay
WIWQIP Grey Lynn Tunnel	Execution	Reduces WWO volume/ frequency, provide water quality and allow for growth. This project involves an extension of the Central Interceptor to Grey Lynn to collect overflows from Kelmarna and Tawariki overflows	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2022 - 2026	Western Isthmus, Cox's Bay
WIWQIP Avondale_Whau CC6 Stage 1 to PS25 Shaft	Feasibility	Modelled and actual overflows are in excess of level of service required, and in excess of targets set by NDC	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2022-2029	Western Isthmus, Cox's Bay
WIWQIP Waterview Stage 2 of Avondale Br Sewer CC6	Feasibility	Modelled and actual overflows are in excess above level of service required and in excess of network discharge consent	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2023-2030	Western Isthmus, Cox's Bay
WIWQIP Avondale Whau CC7A and CC7A1 to Miranda Shaft	Design	Reduces WWO volume/ frequency, provides water quality improvements and allows for growth. This project involves new collector sewers CC7A and CC7A1 (gravity sewers to Central Interceptor at Miranda Shaft) in the Avondale / Whau Catchment	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2024 - 2026	Western Isthmus, Cox's Bay
WIWQIP Avondale Lynfield Branch To Haycock Shaft	Feasibility	Modelled and actual overflows are in excess above level of service required and in excess of NDC	Increase capacity, reduce WWOs from EOPs, reduce volume of inflow and infiltration into the network	2024-2033	Western Isthmus, Cox's Bay

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
Queen Street Diversion	Design	To address growth in the CBD area, frequent EOP overflows and the risk of aging assets in poor condition by constructing a new large diameter pipe discharging into the Ōrākei Main Sewer and planned diversion of the upstream local catchment via a new small diameter pipe along Vincent and Albert Streets	Allow for growth and reduce overflows at EOPs 76, 123, 128	2020-2027	Central Auckland (CBD)
Newmarket Gully	Feasibility	The Hobson Bay catchment's combined sewer system is prone to overflows during wet weather events beyond the allowance of the Network Discharge Consent, reducing water quality in Hobson Bay to unsafe levels. A new tunnel is required to increase storage capacity	Mitigate the following EOPs: Newmarket Gully/Branch 3 EOPs: 733, 421, 1630, 424, 511, 704, 509. Branch 2 EOPs: 500, 502, 503, 504, 505, 507, 597, 498. Branch 1 EOPs: 280, 1621, 273, 295, S98, 296, 1522, 286, 279, 272, 586, 587, 588, 274. Using a storage tunnel pumping wet weather flows to PS64, reducing overflows in the Hobson Bay catchment, satisfying the Network Discharge Consent conditions	2023-2030	Hobson Bay
HLC Oranga Wastewater Servicing	Feasibility	To maintain the required level of service and support for a large scale Kainga Ora development	Cater for growth, ensuring level of service for large development	2022-2028	Onehunga
Archboyd Ave PS and Associated Pipelines	Execution	Currently not meeting existing level of service, allow for future population increase especially from Kāinga Ora in the Buckland and Wickman, Māngere East and Favona neighbourhoods	Reduce overflow frequency / volume at EOPs 963, 973 and Type 3 location S53	2021-2031	Māngere
Rehua Place E76:E93 Stage 2 and Aorere Park WW Pipeline	Execution	High I&I resulting in capacity constraints and uncontrolled overflows	Reduction in WWOs	2022-2024	Māngere

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
KO - Māngere Wastewater Improvements	Execution	To service Kainga Ora housing development programmes	Ensure adequate infrastructure and services in place for future growth	2022-2040	Māngere
HLC Māngere WW Improvements Programme	Feasibility	Aging assets need to be upgraded to maintain level of service and to support growth in wider community. Capacity constraints already present in Māngere catchment, which need to be resolved	Projects within this programme of works will resolve current capacity issues within the catchment, including reduction in uncontrolled overflows, and accommodate future growth	2024-2028	Māngere
Taniwha Street WW Pipe Extension	Execution	Cater for population growth in Wai O Taiki Bay. Address network overflows	Deliver improved level of service for the neighbourhood of Wai O Taiki Bay and cater for the forecasted growth in the area of approximately 1,200 dwellings by compensating for an existing insufficiency in the network	2020-2024	Lower Tāmaki River
Dunkirk Stage 2 Rising Main	Execution	To provide additional capacity for growth in the area by connecting Dunkirk PS to Eastern Interceptor through new rising main	Increase capacity and reduce overflows. Phase2 will provide for ongoing growth in the catchment and resolve all overflows except EOP 163	2021-2028	Lower Tāmaki River
WWT TARP Panmure Basin Rising Main	Design	The Pump Station has shown evidence of pipe deterioration, which often results in the formation of pinhole leaks. Failure of internal pipework may result in the interruption of service, uncontrolled overflows into Panmure Basin creating a health and safety hazard	Increased lifespan of the asset by replacement of major operational components as well as a reconfiguration of internal equipment to achieve safe egress requirements	2022-2025	Lower Tāmaki River

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
WWT TARP Panmure Basin WWPS	Design	The existing rising main is an asbestos cement pipeline and has completed the expected service life. It is also located within private properties making maintenance accessibility not as easily achieved	Increased lifespan of the asset by replacement, re-alignment of the pipeline for ease of access and continued maintenance and a capacity increase to cater for future demand flow	2022-2025	Lower Tāmaki River
PS14 Upgrade Tāmaki	Feasibility	Population expected to increase. There are current capacity issues, and suspected type 3 overflows. Predicted sea level rise at the current PS site	To increase capacity and reduce uncontrolled overflows. Improve resilience to seawater rise at this site	2022-2027	Lower Tāmaki River
Otara Catchment WW Capacity Upgrades	Execution	Provide sufficient wastewater capacity in the Otara catchment to support the projected population growth and resolve transmission network overflows on the Southern Interceptor.	Reduce overflow frequency and volume from five Type 3 overflows: S7, S35, S58, S59, and S60 / provide capacity for future growth	2015-2027	Upper Tāmaki River
Otara local network upgrade	Feasibility	Project aligned with network discharge consent target of 2 p.a. Population increase of approximately 15,000 over the next 30 years. Housing intensification is largely the driver of growth	Allow for growth and reduce overflows at EOP 961 and existing uncontrolled overflows in the catchment	2022-2028	Upper Tāmaki River
Howick WW Catchment System Upgrades	Feasibility	The Howick Diversion project has been developed to divert flows from the Howick Interceptor (HIN) and Buckland Beach Branch Sewer (BBH) towards the Tāmaki Interceptor (TIN)	Improve capacity in the network to provide for growth, and to reduce overflows	2023-2029	Upper Tāmaki River
Southern Auckland WW Servicing Scheme	Design	To cater for growth by diverting flows away from the constrained Southern Interceptor to provide capacity and resolve subsequent overflows at	Reduction in overflows at Hingaia WWPS	2018-2030	Pahurehure Inlet

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
		Hingaia WWPS. Involves constructing new rising main from Hingaia PS to Manurewa South PS			
Drury West Transmission Sewer Design	Design	Cater for substantial growth	Provide new infrastructure for developments	2021-2028	Pahurehure Inlet
Pukekohe TS - Isabella PS	Design	Business Case for Pukekohe TS - Isabella PS, additional service will be required to support development needs in the Pukekohe and Paerata area	Support population growth	2021-2028	Pukekohe
Jutland Pump Station Diversion (Pukekohe)	Design	Jutland Road pump station servicing Belmont Special Housing Area (SHA) is being throttled to 20l/s due to a lack of downstream capacity and limit further development in the SHA and future urban area	The Jutland pump station operational limit can be removed and allow for the full design capacity of 50l/s and allow development in the SHA and Future Urban area of Pukekohe West to continue	2022-2031	Pukekohe
Paerata wastewater servicing	Feasibility	The Pukekohe-Paerata Structure Plan was adopted by Auckland Council on 6 August 2019 and defines a land release schedule. Pukekohe East - Developer interest in the eastern area of Pukekohe has increased with recent Government investment under the Infrastructure Acceleration Fund. The Golding Meadows Development is requesting connection to the system and has proposed a servicing plan. Watercare needs to review this servicing plan to confirm alignment with wider servicing plans and define Watercare servicing scope	Provide service to the projected developments within the northern catchment of the Pukekohe region	2023-2030	Pukekohe

Project Name	Project Stage	Reason for project	Expected Outcome	Estimated Timeframe	Catchments
WIWQIP Pt Erin Extension to Central Interceptor	Design	Reduces WWO volume/ frequency, provides water quality improvements and allows for growth. This project involves construction of an extension of the Central Interceptor to Pt Erin to collect overflows from Branch 5 and improve performance of the St Marys Bay Tunnel	Reduction in the frequency and volume of wet weather wastewater overflows in combined sewer area	2022 - 2026	Western Isthmus
Unitec WW Pipe Bridge Upgrade	Feasibility	Additional wastewater network capacity will be required to service upcoming developments as well as any future infill growth. Currently there are some substantial capacity constraints in the network downstream of the proposed development	This project will eliminate overflows from EOP 1519, reducing overall spill volume by approximately 9,000m3 per year, and enable future development in the catchment	2022-2040	Western Isthmus
WIWQIP Waterview Separation Works	Design	High level of redevelopment expected due to HNZ works and currently high frequency overflows in this combined sewer area	Reduction in the frequency and volume of wastewater overflows and provide capacity for growth	2023-2029	Western Isthmus
WIWQIP Motions WW Catchment Improvements Works	Feasibility	Modelled and actual overflows are in excess above level of service required and in excess of the network discharge consent	Reduce EOP overflows to meet < 2 p.a target. Provide increased capacity to service future growth. In turn improve water quality of Motions Creek	2023-2031	Western Isthmus
WIWQIP Oakley WW Catchment Improvement Works	Feasibility	Wastewater upgrades to address WWOs, provide water quality improvements and allow for growth	Reduction in the frequency and volume of wet weather wastewater overflows	2025-2029	Western Isthmus (Central Interceptor) / Cox's Bay

Table 6-3 Planned wastewater network upgrade and improvement projects beginning in 2024-2025 reporting year

Project Name	Reason for Project	Anticipated Outcome	Estimated Timeframe	Catchments
WIWQIP Grey Lynn Catchment Improvement Works - Link Sewer to Kelmarna Ave	Programme of work to enable growth and reduce WWOs. Improve watercourse and water quality	Reduction in the frequency and volume of wastewater overflow at Type 2 EOPs	2024 - 2032	Western Isthmus, Cox's Bay
Linwood Avenue Pipe Upgrades	High number of uncontrolled overflows here are caused by combination of I&I and capacity constraints in downstream pipeline. New wastewater pipes are needed to ensure target of 2 or less overflows from EOPs are achieved	Reduce EOP overflows to meet 2 p.a standard and reduce uncontrolled spills from MH at 9 Woodstock Rd	2025-2029	East Coast Bays
WIWQIP Oakley WW Catchment Improvement Works	Wastewater upgrades to address WWOs, provide water quality improvements and allows for growth	Reduction in the frequency and volume of wet weather wastewater overflows	2025-2029	Western Isthmus, Cox's Bay
Castledine Catchment diversion to EIN	Kainga Ora development expected to exacerbate the EOP overflows from 6 spills per year to approx. 20+ spills a year. This needs to be addressed by increasing pipe capacity	Reduce overflows at Taniwha St EOP, resolve local network capacity constraints	2024-2026	Lower Tāmaki River
Beach Haven Diversion	To address underperforming EOPs that overflow due to capacity constraints. Our wastewater model shows there is a lack of capacity in the 225mm network. The planned housing development at Birkdale Rd will also exacerbate the problem.	Reduce EOP and uncontrolled overflows, support growth by increasing capacity through a new conveyance system	2024-2029	Upper Harbour South

7 NEW ASSETS

7.1 Introduction

Continued development and population growth in Auckland require Watercare to make additions to both the local and transmission wastewater networks. This allows Watercare to service areas of urban intensification and greenfield growth.

Wastewater assets are made up complex assets; pump stations and EOPs, as well as simpler network assets, such as manholes, network pipes and fittings.

7.2 New complex assets commissioned in 2023-2024

There have been two complex assets commissioned during the reporting period, with the details presented in Table 7-1. There are no newly installed Type 2 EOPs, however; there have been newly discovered Type 2 EOPs and the details of these can be found in Appendix C.

Table 7-1 Complex assets commissioned during 2023-24 reporting period

Facility Code and Name	Catchment	Date Commissioned	Reason for New Asset
DPMAI Mairangi Bay Pump Station	East Coast Bays	April 2024	Replaces Sidmouth PS to cater for capacity growth
DPTHK Three Kings Pump Station	Western Isthmus	April 2024	To service a new development
DPGIN Glen Innes Pump station	Lower Tāmaki River	June 2024	Replaces Ps 15 Pt England to cater for growth

7.3 Other network assets

Details of type and number of newly installed manholes and other network assets, long with the type and length of newly installed wastewater pipes are detailed in Appendix F. The tables detail whether the new assets have been installed within the existing NDC catchments or within the Future Urban Area.

As per last year, the catchments with the greatest numbers of new assets are Pahurehure Inlet, Upper Tāmaki River and Henderson Creek for manholes, fittings and number of pipes. This continued increase in new network assets reflect the high rate of development in these areas.

Newly installed manholes

Table F-1 in Appendix F summarises the number of new manholes installed across various catchments, categorised by different manhole types and their association with existing or future urban areas.
Key highlights include:

- Warkworth added 23 new manholes
- Pahurehure Inlet installed the highest number with 359 new manholes, split between existing urban and future urban areas
- Upper Tāmaki River followed closely with 317 new manholes, all in existing urban areas
- Henderson Creek also had a significant number with 278 new manholes, also all in existing urban areas

- Significant contributions also came from Orewa (143), Punui (116) and Western Isthmus (106) where a mix of future urban and existing areas were covered
- Several catchments, such as Wellsford, Omaha, and Snells Beach/Algies Bay, did not add any new manholes.

Overall, the total number of new manholes is 2,230, with the majority being standard manholes (2,209) located primarily in existing urban areas.

New wastewater fittings

Table F-2 in Appendix F outlines the installation of new wastewater fittings across various catchments in 2023–2024, categorised by fitting type (e.g., boundary kits, end caps, inspection points, nodes, valves) and whether they were installed in existing or future urban areas.
Key highlights include:

- Pahurehure Inlet saw the largest installation with 246 new fittings, followed by Upper Tāmaki River with 232 new fittings, and Henderson Creek with 202 fittings, which includes both existing and future urban areas
- Smaller installations were recorded in Pukekohe ((7), Omaha (16), Shoal Bay (42), and Onehunga (32)
- Several catchments, including Wellsford, Waiwera, Central Auckland and Beachlands Maraetai, did not have any new fittings installed

In total, 1,502 new fittings were installed across all catchments, primarily in existing urban areas, with a smaller portion targeting future urban areas.

New WW network pipes

Table F-3 in Appendix F summarises the installation of new wastewater network pipes across various catchments in 2023–2024, categorised by pipe type (e.g., gravity, overflow, pressurized, rising) and the urban area (existing or future).

Key highlights include:

- Pahurehure Inlet had the largest installation, with 486 new pipes totalling 19,232.27 m, covering both existing and future urban areas
- Upper Tāmaki River installed 420 new pipes spanning 9,894.71 m, while Henderson Creek added 384 pipes over 8,396.03 m
- Orewa added 156 pipes over 4,348.42 m, while Puhinui installed 134 pipes totalling 3,958.56 m
- Smaller installations were noted in Omaha (8 pipes, 180.41 m) and Cox's Bay (9 pipes, 127.44 m)
- Several catchments, such as Wellsford, Snells Beach/Algies Bay, and Waiwera, reported no new pipes

In total, 2,956 new pipes were installed across all catchments, covering 80,856.81 m, with the majority being gravity pipes installed in existing urban areas.

8 PUBLIC INFORMATION

8.1 Publicly Available Information

Condition 65 of the NDC requires Watercare to make information about the NDC available to the general public. Specifically, Watercare needs to provide:

- General information on the wastewater network and material about undertaking works in the vicinity of wastewater pipes, to help prevent accidental damage that could result in wastewater discharges
- Information about wastewater and stormwater drainage, and the need and reasons for ensuring that service connections on properties drain into the appropriate system, including advice for property owners on how this can be achieved
- General information for private property owners who believe they may have cross connections about how they can test for this and rectify it
- Information about the general function and operation of the wastewater network, including information about the nature of wet weather wastewater overflows and information directed at raising awareness about the potential effects on the receiving environment
- Information about the location of Engineered Overflow Points that are known to discharge at high volume more than 12 times per year, and the risk of contact recreation at these locations following periods of heavy rain

Watercare hosts a range of pages that include information about the wastewater on its website (www.watercare.co.nz). The following sub-section details the range of information available to the public.

8.1.1 Undertaking works

Watercare presents material about undertaking works in the vicinity of wastewater pipes, to help prevent accidental damage that could result in wastewater discharge:

https://www.watercare.co.nz/Water-and- wastewater/Building-and-developing/Working-near-our-assets

8.1.2 Wastewater and stormwater drainage

For information on how the wastewater system is designed, and how overflows occur, and what can be done to prevent outflows: https://www.watercare.co.nz/Faults-outages/Plumbing-and-wastewater; https://www.watercare.co.nz/residents/learn/what-not-to-flush

Watercare responsibilities for the wastewater network: https://www.watercare.co.nz/Help-and-advice/Responsibilities

Stormwater and wastewater lessons for schools: https://www.watercare.co.nz/residents/learn/free-water-education-lessons

Disposal of fats, oils, and grease: https://www.watercare.co.nz/residents/learn/what-not-to-flush

8.1.3 Cross-connections

Information about wastewater and stormwater drainage, and the need and reasons for ensuring that service connections on properties drain into the appropriate system, including advice for

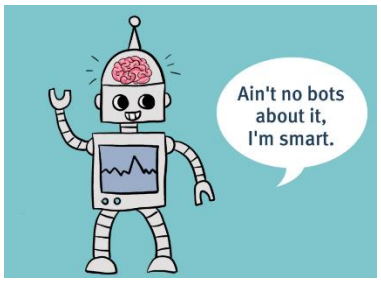
property owners on how this can be achieved: https://www.watercare.co.nz/Faults-outages/Plumbing-and-wastewater/How-to-prevent-overflows/Downpipes-and-gully-traps

General information for private property owners who believe they may have cross-connections, how to test for this and rectify it: https://assets-au-01.kc-usercontent.com/8d8543bb-3825-026e-ff7d-7935a69c103f/815c164f-c26e-4552-bd43-5bc6f0f15742/keeping_pipes_flowing.pdf

8.1.4 General function

For general information about the wastewater network: https://www.watercare.co.nz/home/about-us/what-we-do/wastewater ; https://www.watercare.co.nz/home/faults-and-outages/how-we-manage-wastewater-overflows;

In addition to the above, Watercare operates a 24/7 customer call centre. Customer requests for information are logged and responded to accordingly: https://www.watercare.co.nz/Faults-outages/Report-a-fault



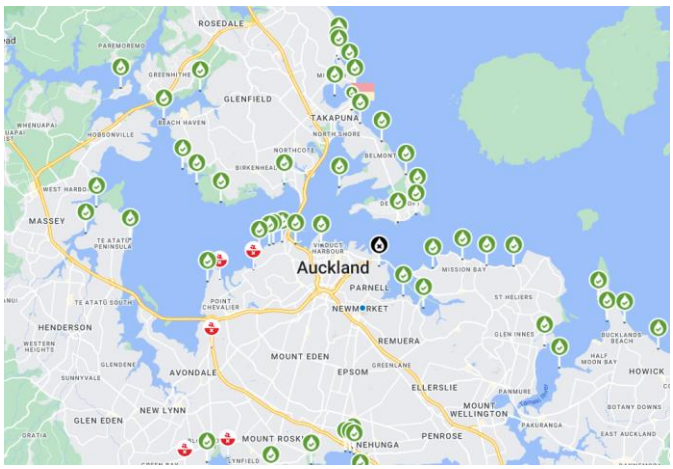
In June 2022 we launched a new digital channel for logging a fault. Called H2Bro, the chatbot provides customers with greater choice and control and the telephone is no longer their only option for logging a fault. The Chatbot is part of our digital contact functionality and is available on the front page of our corporate website. In the last financial year, our chatbot handled 54,500 interactions, with 97.5% of these managed entirely by the bot without any human intervention.

Figure 8-1 Advert for Watercare's H2Bro Chatbot

8.1.5 Engineered Overflow Points

Information on wastewater overflow points and performance goals for WWOs, sustainability measures, and projects that reduce overflows: https://www.watercare.co.nz/home/about-us/what-we-do/wastewater ; https://www.watercare.co.nz/residents/help-and-support/wastewater-faqs

The Safeswim website provides information on the safety of swimming at Auckland's beaches (https://safeswim.org.nz). The Safeswim model uses real-time data from a range of models, including Watercare's wastewater water network models, with the ability for Watercare and HW staff to make manual overrides as appropriate. This is often supported by social media posts notifying public of new black flags. A report is available upon request which contains information about specific Engineered Overflow Points integrated into the Safeswim system.



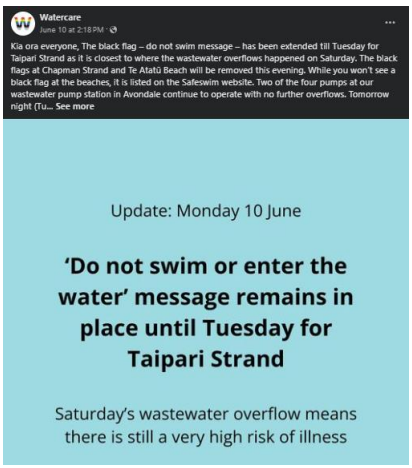


Figure 8-2 Examples of Safeswim website showing swimmable beaches, and a Facebook post associated with a new black flag.

8.2 Other initiatives

8.2.1 Website refresh

Watercare launched a new website and 'my account' self-service portal in June 2024. These were designed to provide an intuitive and enhanced customer experience. The improvements are the result of extensive co-design sessions with various customer segments, including homeowners, tenants, and property managers. The website now creates a segmented journey, delivering relevant information tailored to whether our users are residential customers, business owners, property managements, developers or solicitors. This provides information about wastewater and appropriate management that is tailored to each of the customer segment needs.

The website refresh included the addition of information in Mandarin about how to manage accounts, how to reduce overflows: https://www.watercare.co.nz/residents/help-and-support/information-on-managing-your-account-for-mandarin-speakers.

8.2.2 Local board engagement

Local Boards receive information from Watercare about how they are delivering the work programme, which includes information about improvements to increase capacity of the wastewater network. This is tailored to local board needs and is delivered in the format required by the local board. This provides local boards with oversight at both major project level, as well as proactive and reactive work. Local boards are also given updates when there are black flag events.

8.2.3 Ongoing education

Watercare continues to educate the public on the causes of overflows and the actions private property owners can take to reduce the frequency and volume of overflows. Efforts include presentations at community events and distributing newsletters in specific communities to educate people about overflows. Tapped in is now released four times a year to distribute general information.

Tapped In Spring 2023 ; Tapped In Winter 2023 ; Tapped In Summer 2023/24

The 'Keeping your pipes flowing' poster which shows how to maintain pipes and use them correctly is available on the website in different languages https://www.watercare.co.nz/home/faults-and-outages/how-to-prevent-blockages-and-overflows

Our school education programme "WAI" delivered 559 classes across Tāmaki Makaurau to 13,975 students from kindergarten to year 8. Lesson five of the curriculum is focused on helping children learn about the impact of putting the wrong things down the drain and the journey of water to the beaches and waterways, as shown in Figure 8-3.

Lesson five of the curriculum, is focused on helping children learn about the impact of putting the wrong things down the drain and the journey of water to the beaches and waterways:

Figure 8-3 Overview of Lesson 5 Stormwater and wastewater

8.2.4 Social media initiatives

Watercare has launched onto the TikTok platform for a greater audience reach in May 2022. Tiktok provides an alternative platform where the public can view videos the provide community members education to identifying leaks, using tap water over bottled water, water saving measures and incorrect item disposal: https://www.tiktok.com/@watercare_nz.

Disposal of items: https://www.tiktok.com/@watercare_nz/video/7381585359630519560 ; https://www.tiktok.com/@watercare_nz/video/7340899929822416130

8.2.5 Campaigns

Watercare has run numerous social media campaigns to educate communities on the wastewater network. These were often targeted and geographical locations where there were known problems occurring in the network. A few examples are shown below.

Figure 8-4 Social media posts used to educate communities

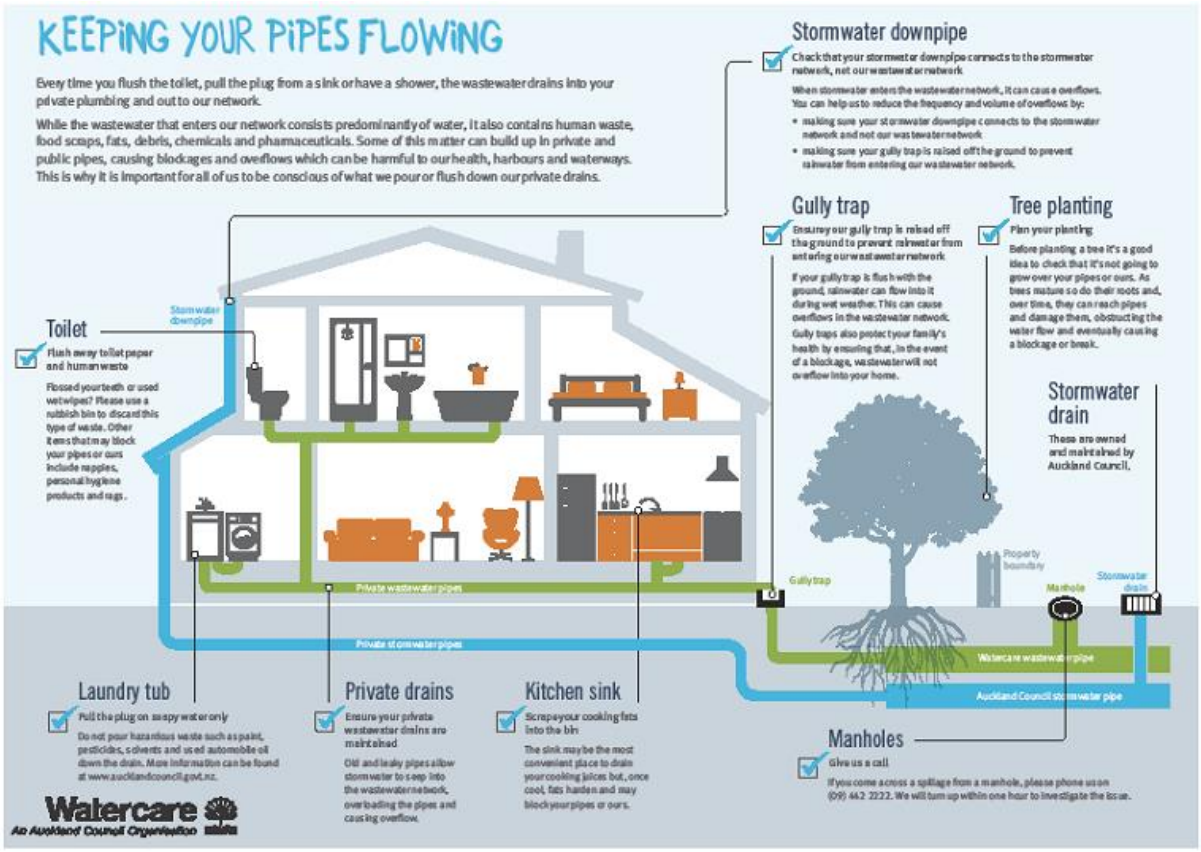


Figure 8-5 Education piece about what travels through pipes around homes

TAPPED IN

Bringing you news, updates and information from Watercare

Spring 2023

Improving the health of our beaches and waterways

Tāmaki Makaurau is home to stunning beaches, waterways, and parks. Unfortunately, from time to time, our beautiful environment is affected by wastewater overflows.

During fine weather, overflows can happen when there is a build-up of fat or items like wet wipes in a pipe. These things can form large clumps – sometimes called fatbergs – that block pipes and cause private gully traps and public manholes to overflow with wastewater. Our crews aim to respond to all dry-weather overflows within an hour. They clear the blockage, sometimes using sucker trucks, and then thoroughly clean up and disinfect the affected area.

On rainy days, overflows can happen when rain gets into wastewater pipes and overwhelms them. It causes manholes and purpose-built structures to overflow with stormwater and wastewater into our creeks and streams.

We're doing our bit to reduce the impact of wastewater overflows by carrying out inspections and tests on the public wastewater network and improving our infrastructure. You can do your bit by being mindful of what you pour down the sink and flush down the toilet and by ensuring your property's private plumbing is correctly installed and maintained.

In this edition of *Tapped In*, we highlight ways we can reduce overflows together so we can continue to enjoy Auckland's beaches, waterways, and backyards.

In the 12 months to 30 June 2023...

3701 wastewater overflows caused by blockages occurred in Auckland.

Watercare

TAPPED IN

Understanding our wastewater network

The wastewater network is designed to convey wastewater to a treatment plant where it is thoroughly cleaned before being released back into the environment (for example, the Manukau Harbour or Hauraki Gulf).

Wastewater, also known as sewage, is the used water that goes down sinks from washing machines, showers, baths, and toilets. Most of it is water, but occasionally food scraps, cooking oils and rubbish end up in the wastewater network. This causes blockages in pipes and results in wastewater overflows.

Stormwater is collected into a public stormwater network. This is managed by **Auckland Council**.

Wastewater overflows occur when wastewater spills out from gully traps, manholes, engineered overflow points or pump stations.

Report an overflow on our website or call (09) 442 2222 option 1

Businesses

Households

534 pump stations
These are buildings with machinery for pumping wastewater from one place to another.

177,371 manholes
These are holes in the ground, covered by a lid, that provide entry to the wastewater network.

8,650km of wastewater pipes
Wastewater drains into private wastewater pipes that connect to the public wastewater network which carries household wastewater to treatment plants.

18 wastewater treatment plants
At the treatment plants, wastewater is cleaned so that it is not harmful to people or the environment and can be released to sea, rivers or land. We manage the public wastewater network.

What we're doing to reduce overflows

We're investing $10.6 billion in wastewater projects over the next 20 years.

Part of this investment includes working closely with Auckland Council to test and inspect the public wastewater and stormwater network and private drainage.

We inspect wastewater pipes, stormwater downpipes and gully traps to ensure stormwater is not entering the wastewater network. We do this in a variety of ways, including:

- Smoke testing – harmless smoke, similar to what is used in discos and theatres, is used to pinpoint any places on a property where stormwater is entering our wastewater network or vice versa.
- Dye testing – non-toxic dye is poured down a specific drain so we can trace where the water ends up.
- CCTV camera inspections – a camera is inserted down the pipe to inspect internal conditions.

Figure 8-6 Spring 2023 Tapped In newsletter

9 TARGETED MONITORING PROGRAMME

9.1 Background

The Targeted Monitoring Programme (TMP) evolution reflects several stages of development, including initial approvals and subsequent revisions. The foundational document, prepared by NIWA in June 2015, laid out the original framework for monitoring, and it received its initial approval in June 2015. Recognizing the need for a more cost-effective approach, Watercare revised this programme in August 2016, which was approved by Auckland Council in November 2016.

Following inconclusive results from the first stage of monitoring—focused on water quality and ecological sampling across three catchments—Watercare trailed continuous water quality monitoring approach with online probes. These probes have been deployed to gather more comprehensive data. Independent ecological assessments are now being conducted by AECOM and Tonkin & Taylor (T+T) to enhance the TMP. A summary of the proposed revised programme outlined below and detailed in Appendix H.

9.2 Summary of the proposed revised programme

AECOM and T+T were commissioned to develop a pilot monitoring plan to assess the ecological impacts of wastewater overflows in compliance with the NDC. The aim is to establish a monitoring framework that aligns with consent conditions, ensuring ecological effects are measured consistently across high-risk receiving environments.

Key findings include:

- Pilot monitoring plan: the revised pilot programme is designed to evaluate ecological responses over time using biological indices to determine the most effective monitoring parameters
- Site selection: Targeted sites include high and very high ecological risk categories, covering diverse receiving environments (e.g., estuaries, small waterways). Selection was informed by Auckland Council's State of Environment (SOE) monitoring data and ecological risk assessments
- Monitoring focus: Routine monitoring is preferred over event-based monitoring to capture long-term changes. Key ecological drivers such as water quality, habitat conditions, and macroinvertebrate communities were identified for inclusion
- Implementation: The pilot will last one year and inform the broader TMP by selecting optimal parameters for future monitoring.

The proposed pilot study will be submitted to Council for approval prior to implementation. It is the intention of Watercare to implement the pilot study during 2024-2025, with results helping refine a comprehensive monitoring strategy across the network.

10 CONCLUSIONS

10.1 Relative Performance

Type 1 and Type 3 overflow data can be made to draw conclusions of the general performance of the wastewater network across the Auckland region. Analysis of Type 2 data is indicative of the performance of specific EOPs, and due to the proportion of telemetered sites, it not a valid representation of the entire wastewater network.

The total number of T1 and T3 overflows is lower than each of the previous four annual totals, despite the ongoing improvement at capturing data. This period's total of 4,768 remains higher than the reported 4,135 overflows from the 2019-20 period. However, during this earlier period, not all transmission overflows were included in the report, so a higher frequency would be expected this year. Overall, the figures suggest that the performance of the network has improved and again highlights the effect that extreme weather events have on our network, as demonstrated by the figures reported in 2022-23. This supports the importance of building resilience into our wastewater network.

Table 10-1 Summary of total dry and WWOs over the past 5 reporting periods

	Type	2019-20	2020-21	2021-22	2022-23	2023-24
DWO	Type 1	61	18	57	51	27
	Type 3	3,487	4,957	4,618	3274	3692
	Type 3 DWO L3+	80	117	199	80	60
WWO	Type 1	194	102	254	777	213
	Type 3	393	519	801	2326	836
	Type 3 WWO L3+	4	9	11	49	4
Overall	Total DWOs	3,548	4,975	4,675	3,325	3,719
	Total WWOs	587	621	1,055	3,106	1,049
	Total T3 L3+	84	126	210	132	64
	Total T1 & T3 overflows	4,135	5,596	5,730	6,431	4,768

10.2 Trends and Causes

As seen in previous years, the same catchments report the highest frequencies of T3 overflows, these being Henderson Creek, Upper Tāmaki River and East Coast Bays. Trend analysis of historic overflow data indicates that fats and roots remain the leading cause of DWOs, and there is an increasing trend in proportion of WWOs caused by fat and roots as well.

10.3 Remedial Works and Future Improvements

There are a number of projects and programmes ensuring the continued improvement of the performance of the Auckland-wide wastewater network, while also catering for significant population growth. Many of these network projects aim to increase capacity within the network to relieve current pressures and constraints, cater for future growth and build resilience for extreme weather events and rising sea-levels. They also aim to reduce both controlled and uncontrolled overflows to the environment, improving the water quality of streams, rivers and wetlands so that all communities can enjoy and use wai māori and wai tai within, and surrounding, Tāmaki Makaurau.

In addition to the Improvement Works Programme, the Inflow and Infiltration team continues to investigate areas of concern, identifying public and private drainage issues contributing to both dry and WWOs. Over the next year or so, this team will be focusing on a number of areas, including parts of Hobson Bay under the Eastern Isthmus Water Quality Improvement Programme, East Coast Bays, Devonport-Takapuna, Auckland Central and Henderson Creek.

Appendix A. Definitions and Overflow Incident Assessment

Table of definitions

Auckland	The geographical area defined in section 4(1) of the Local Government (Auckland Council) Act 2009
Best Practicable Option (BPO)	In relation to a discharge of a contaminant or an emission of noise, means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to— a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and b) the financial implications, and the effects on the environment, of that option when compared with other options; and c) the current state of technical knowledge and the likelihood that the option can be successfully applied (Resource Management Act 1991)
Class 1 Recreational Receiving Environment	An area where contact recreation is known to occur (i.e. located on a known bathing beach). If the beach is a SafeSwim site this is deemed to be an indicator of a) high use; and/or b) a known shellfish gathering site; and/or c) aquaculture areas
Computer Modelling	The formal simulation of the wastewater network using a mathematical model to predict network performance from a set of parameters and conditions, using a combination of hydrologic (such as MOUSE-ROI) and hydraulic (such as MOUSE) programmes.
Consultation	Engagement in a spirit of good will and open-mindedness to ensure that the Consent Holder is fully informed of the other parties' concerns and issues when preparing and reviewing the Wastewater Network Strategy
Controlled overflow	A discharge from the network that occurs from an engineered overflow point, either during times of dry or wet weather flows
Dry Weather Flow	The flow in the wastewater network that would occur during a normal day in a dry weather period, including wastewater, trade waste and groundwater infiltration. Groundwater is defined as any natural water, including salt water, which has not become mixed with wastewater or trade waste
Dry Weather Overflow (DWO)	An overflow that occurs during dry weather flow from any part of the network, usually as a result of blockage, breakage, mechanical or power failure at pump stations or storage facilities, system failure or the lack of hydraulic capacity in the network during periods of dry weather flow
Engineered Overflow Point	A location where a discharge from an engineered overflow structure occurs
Existing Network	The separated and combined wastewater network owned and operated by Watercare Services Limited (as the Auckland water organisation) at the time the Auckland Wastewater Network Comprehensive Discharge Permit commences.

	For avoidance of doubt, any additional or New Engineered Overflow Points become part of the Existing Network after the engineered overflow structure has been built
Existing Urban Area	Any area within the metropolitan urban limits, and; Any area included within the urban zones (under an operative district plan) of a rural or coastal settlement; at the time the Auckland Wastewater Network Comprehensive Discharge Permit commences
Future Network	The *Network*, including Engineered Overflow Points and other Network assets, in currently un-serviced areas within any *Existing Urban Area*; or to be constructed within any *Indicative Future Urban Area* after the area has been given an urban zoning
Indicative Future Urban Area	Any area shown in the maps in Attachment 1 as Indicative Future Urban Area
Manager	The designated person authorised by the Auckland Council, or their delegate.
Metropolitan Urban Limit	The boundary between rural area and urban area delineated on the Map Series 1, Sheets 1- 20 of the Auckland Council Regional Policy Statement (July 1999) and subsequent amendments
Network	The wastewater network owned and operated by Watercare Services Limited (as the Auckland water organisation), including all assets necessary for the operation of the network, including but not limited to pipelines, pipe bridges, siphons, rising mains, overflow structures, storage facilities and pump stations The Network includes the transmission system (the larger pipes that convey wastewater collected by local network pipes to the wastewater treatment plant.) and the local system (the smaller pipes that convey wastewater from individual properties or housing or commercial developments to the transmission network)
New Engineered Overflow Point	An Engineered Overflow Point that is an addition to the Network after the Auckland Wastewater Network Comprehensive Discharge Permit commences
Normal Operation (of the Network)	Excludes events which are due to circumstances beyond the Consent Holder's control and which cannot be provided against, and are defined as follows: (a) Chokes. Network Failure, a force majeure (including vandalism and for terrorism): (b) Heavy rain which occurs at the same time maintenance or construction or re-construction of the Network and is beyond the diversion capacity.
Overflow or Wastewater Overflow	A discharge from the Network that occurs in either a controlled manner from an Engineered Overflow Point or in an uncontrolled manner from any other point in the network, either during times of Dry Weather Flow or Wet Weather Flow
Overflow Point	An existing or future physical discharge location where the discharge is from an engineered overflow structure in the wastewater network.
Repeat Dry Weather Overflow	A Dry Weather Overflow that occurs more than once at the same location within a 12 month period

Replacement Engineered Overflow Point	A like-for-like replacement (including a minor upgrade of the Engineered Overflow Structure) of the existing Engineered Overflow Point.
Reported Wastewater Overflow	An Overflow that is reported by any person to the Watercare Control Room or that has been identified as having occurred by Watercare's telemetry system.
SEA-M1	Significant Ecological Area – Marine 1, as defined in the Proposed Auckland Unitary Plan notified 30 September 2013. An area which, due to its physical form, scale or inherent values, is considered to be the most vulnerable to any adverse effects of inappropriate subdivision, use and development.
Similar Location	A location within a radius of 500 metres of the original location provided that it is within the same receiving environment.
Type 1 Overflow Points	Engineered structures associated with a WWPS
Type 2 Overflow Points	Engineered structures that provide a relief point on the network, including combined sewer overflows (CSOs)
Type 3 Overflows Points	Uncontrolled overflow points that usually discharge from a manhole as the result of surcharging during wet weather.
Uncontrolled overflow	A discharge from any point in the network, either during times of dry or wet weather flows
Wastewater	Liquid (and liquids containing solids) waste from domestic, industrial, institutional or commercial premises including (but not limited to) toilet wastes, sullage, trade wastes and gross solids.
Wastewater Network	A system of pipes, open channels and associated ancillary structures for the purpose of conveying, diverting, storing, treating or discharging wastewater.
Wastewater Network Strategy	The document that describes network improvement planning and prioritisation of network improvements for a period of six years
Wastewater Overflow or Overflow	A discharge from the network that occurs in either a controlled manner from an engineered overflow point or in an uncontrolled manner from any other point in the network, either during times of dry weather flow or wet weather flow
Wet Weather Flow	The flow within a wastewater network that is greater than the dry weather flow, and which occurs as a result of rainfall (directly or indirectly) entering the Network
Wet Weather Overflow (WWO)	A wastewater overflow during times of wet weather flow
Wet Weather Overflow Event	One or more wet weather overflows that end(s) when all overflows have ceased discharging for more than 24 hours. Where the overflow stops and then recommences within 24 hours as a result of a single continuous or intermittent rainfall event, it is considered a single wet weather overflow event

Overflow incident level assessment

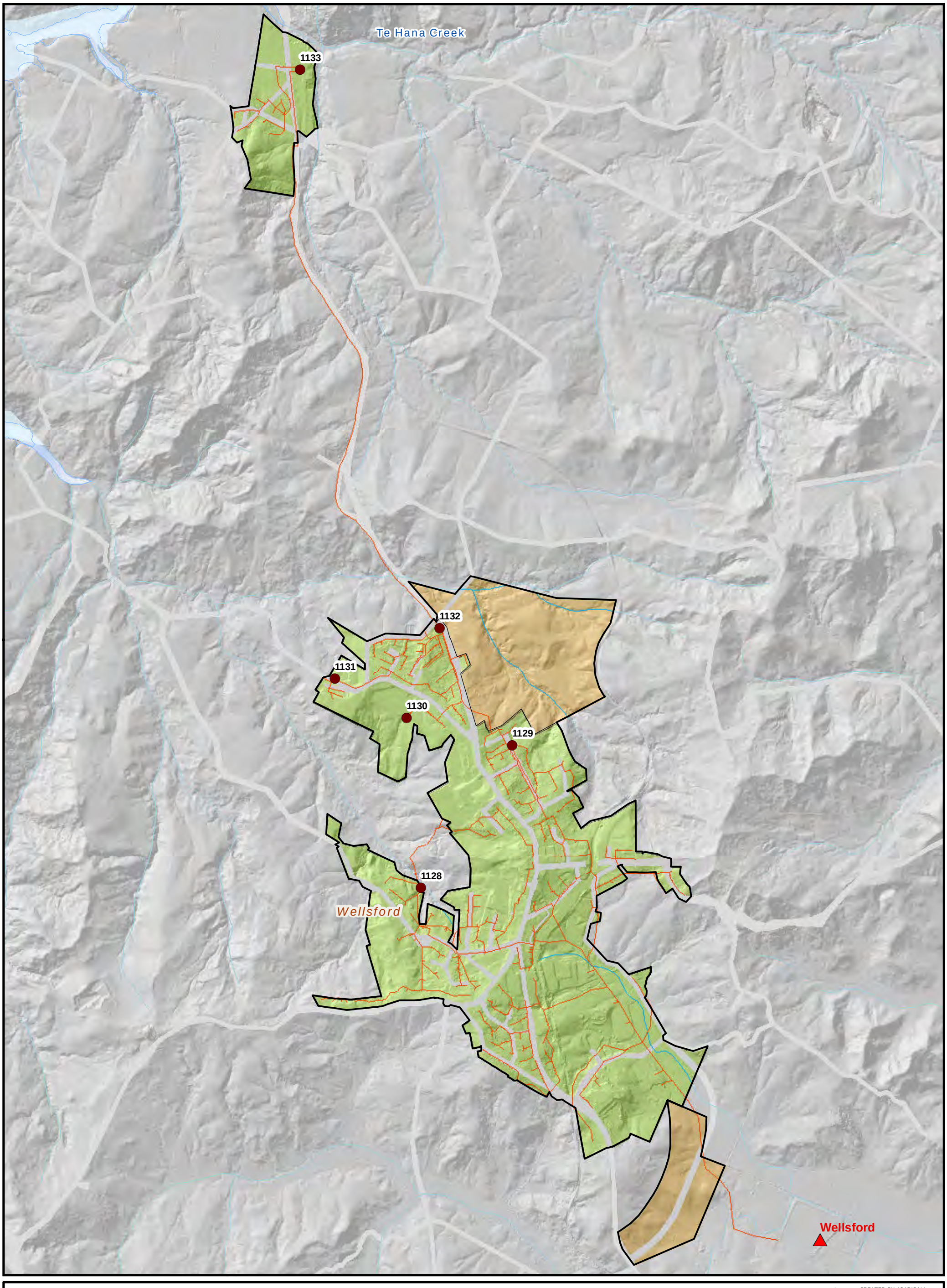
Level 1 (Spill)	A Level 1 incident is capable of being managed as a matter of routine operations, resolved in a reasonable timeframe and where there is one or more of the following: • ground containment • no discharge to a water course • contamination of less than 50 m^2 of adjacent ground • no property damage • public health risk limited to one household (private property) • no affect on in-stream ecology
Level 2 (Minor Overflow)	A Level 2 incident is capable of being managed as a matter of routine operations, resolved in a reasonable timeframe and where there is one or more of the following: • a discharge to an open water course or stormwater system and where natural dilution or containment minimises the impact on the water body • there is a low ammonia reading 100m downstream (<3ppm) • potential impact on fish/wildlife • contamination of greater than 50 m^2 of adjacent ground • minimal effect on in-stream ecology • property damage less than $1000 • potential health risk limited to 2 households (private property); or • potential health risk limited to less than 10 people (sensitive public place)
Level 3 (Significant Overflow)	A Level 3 incident requires escalation due to complexity, consequential effects and involvement of Communications and other specialist support where there is one or more of the following: • short term of less than 4 hours of high volume/rate or an extended duration of less than 12 hours (from time of notification) of low volume/rate discharge to water body or sensitive land and where minimal dilution or containment is possible • there is obvious contamination of stream/water body or the stream is anoxic and or black • there is reasonably high ammonia readings (>3ppm) 100m downstream • potential impact on in-stream ecology • in-stream ecology is stressed • potential impact on shellfish gathering • potential impact on recreational bathing • property damage less than $10,000 • health risk to more than 2 households (private property) • heath risk to more than 10 people (sensitive public place) • prosecution is possible
Level 4 (Major Overflow)	A Level 4 incident requires escalation due to complexity, consequential effects and involvement of Communications and other specialist support where there is: • prolonged duration of greater than 4 hours of high volume/rate or greater than 12 hours (from time of notification) of low volume discharge to waterbody or sensitive land where no containment is possible • the stream is anoxic and/or black • definite impact on fish/wildlife, severely stressed or dead

	• definite impact on shellfish gathering • definite impact on recreational bathing • property damage greater than $10,000 • definite health risk to more than 10 households (private property) • definite health risk to more than 100 people (sensitive public place) • prosecution is likely
Level 5 (Catastrophe)	A Level 5 incident is a catastrophe or a Civil Defence State of Emergency. A Level 5 incident is coordinated by the Executive Management Team due to consequential effects, incident management complexity and multi-agency involvement and may be triggered by a Regional or National Civil Defence Emergency or a regional Water Services event of extreme nature

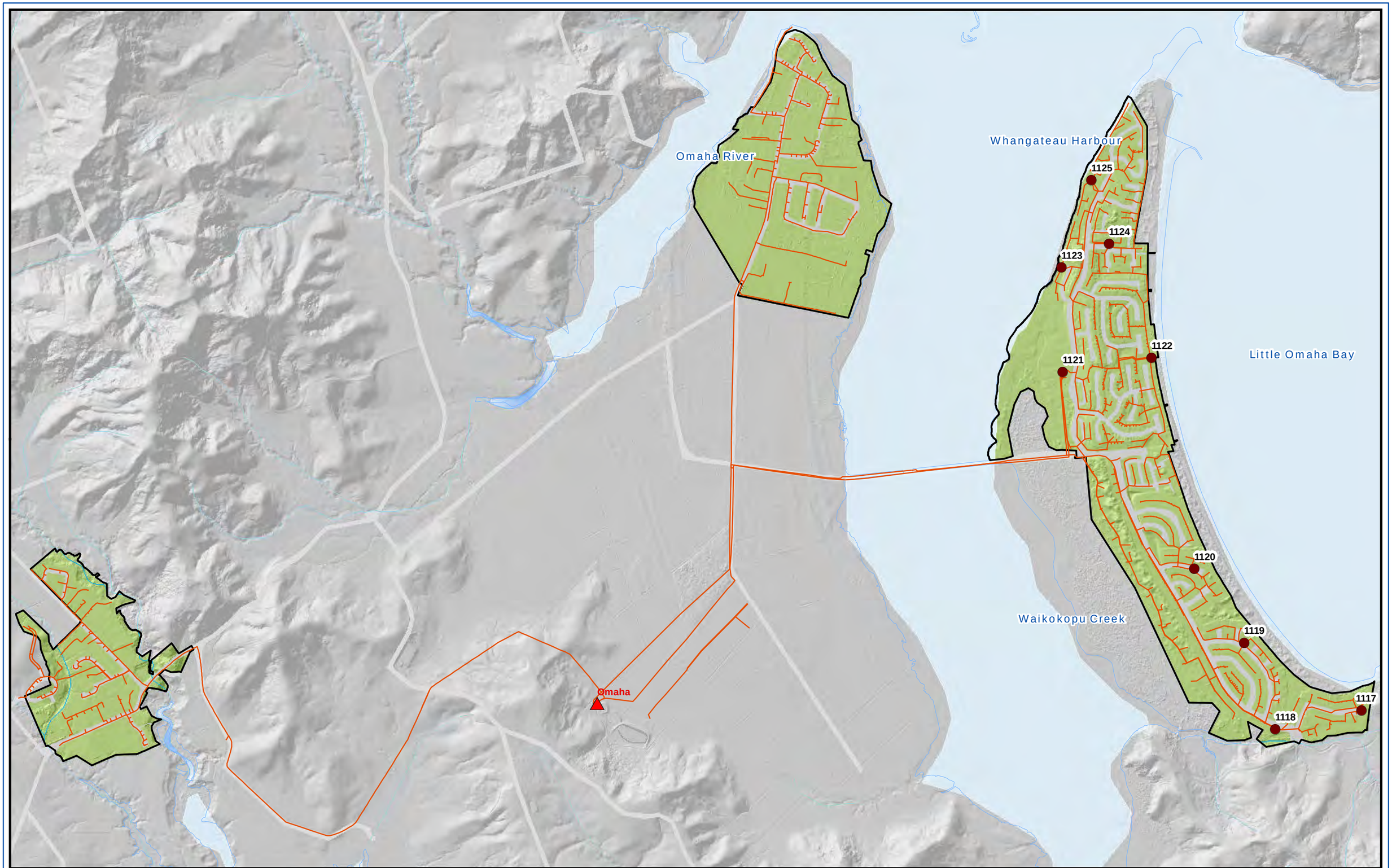
Appendix B. Catchment Maps

B-1 Catchment maps detailing EOPs and sewer network

B-2 Proposed assets catchment maps detailing planned projects



Appendix B-1 Network catchment maps



LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Omaha Catchment

0 160 320 480

Metres

N

SCALE: 1:19,000 @A3 CREATED BY: ASARIBALI

DATE: 14 August 2024 MAP NO: PR24035_2

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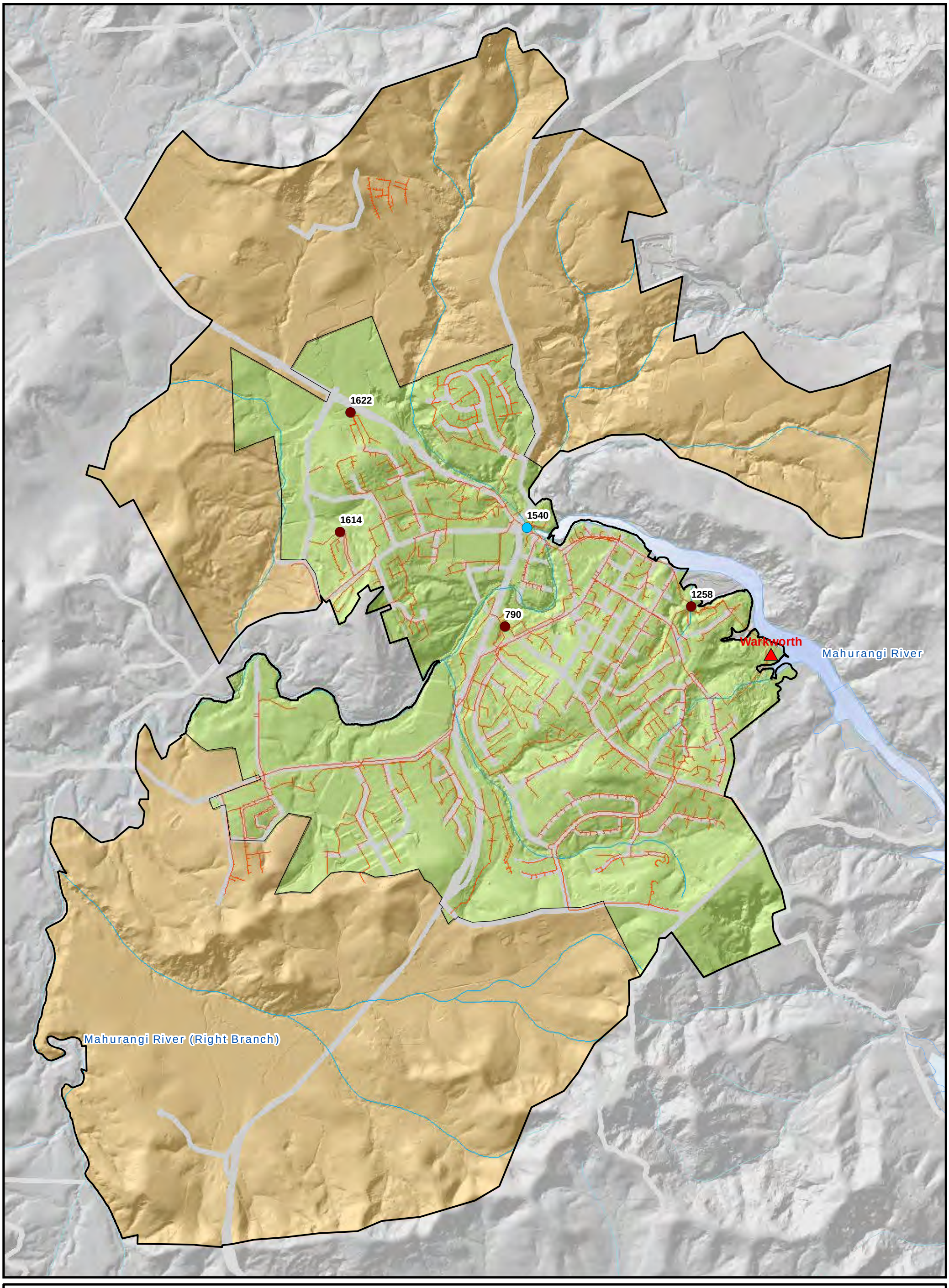

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Warkworth Catchment

0 140 280 420 Metres

N

SCALE:1:16,000 @A3 CREATED BY:ASARIBALI
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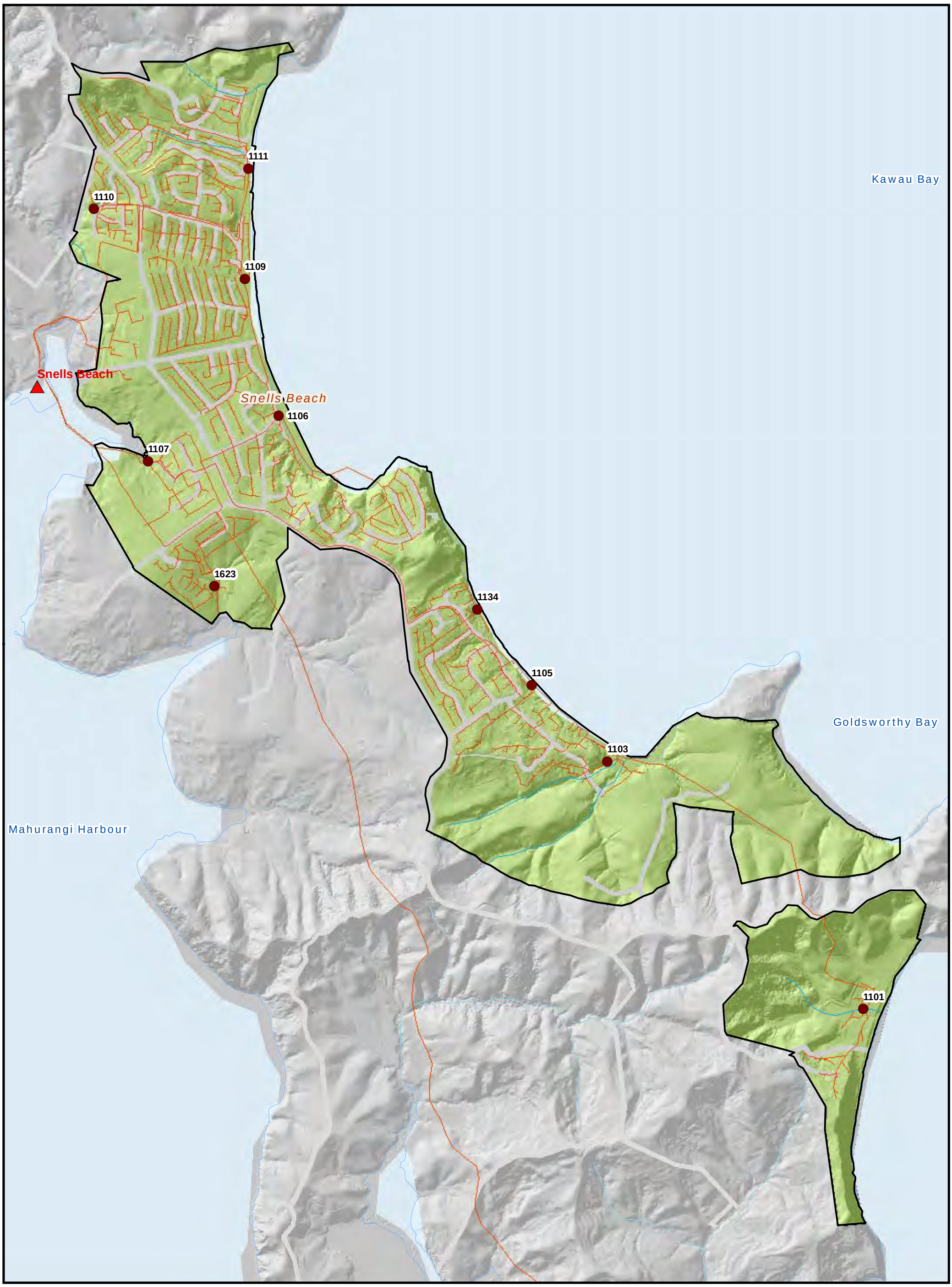

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Snells Beach-Algies Bay Catchment

0 150 300 450 Metres

N

SCALE:1:17,000 @A3 CREATED BY:ASARIBALI

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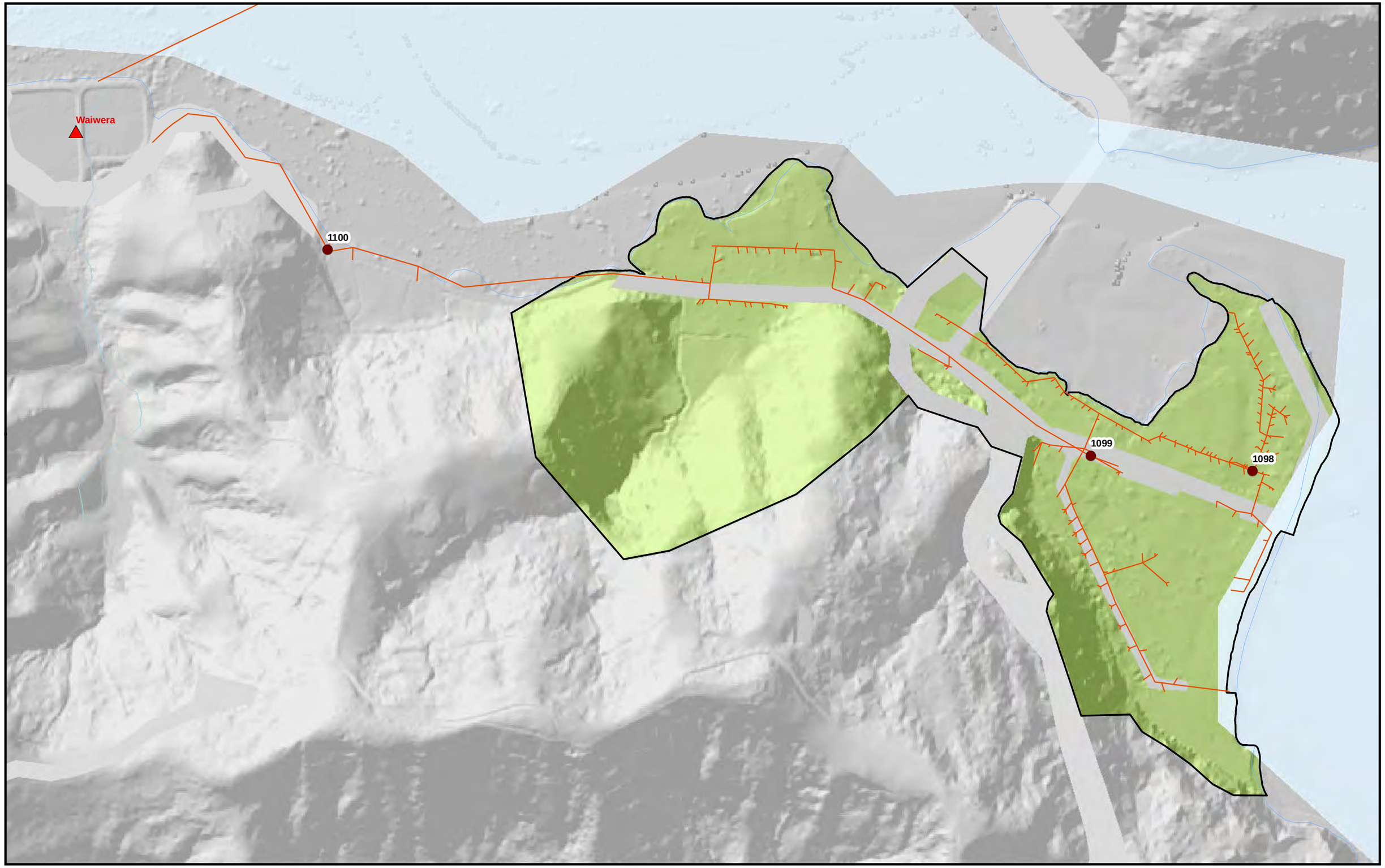
Appendix B-1 Network catchment maps



LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Waiwera Catchment

0 40 80 120

Metres

N

SCALE: 1:4,500 @A3 CREATED BY: ASARIBALI

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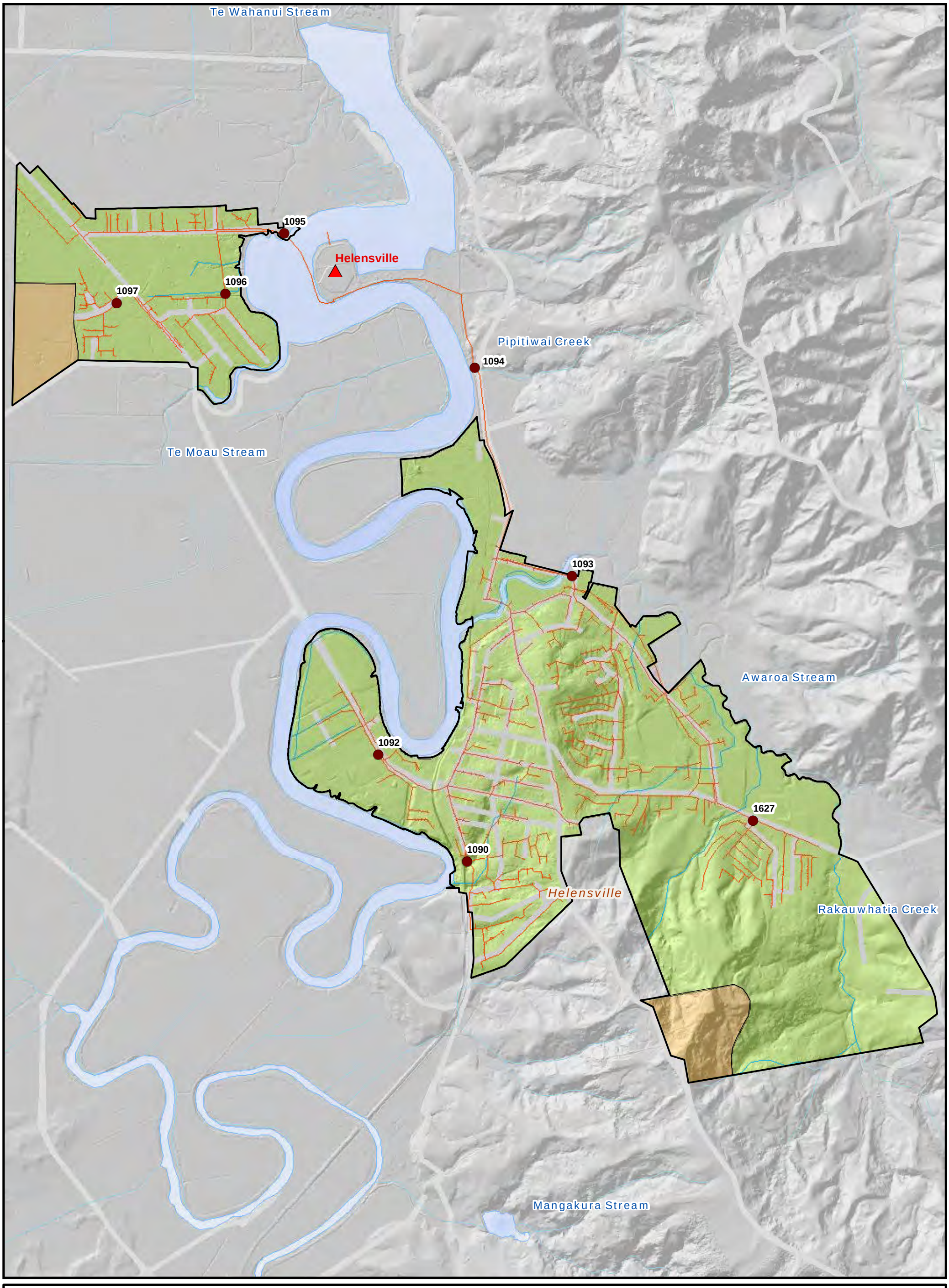

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Helensville Catchment

0 140 280 420 Metres

N

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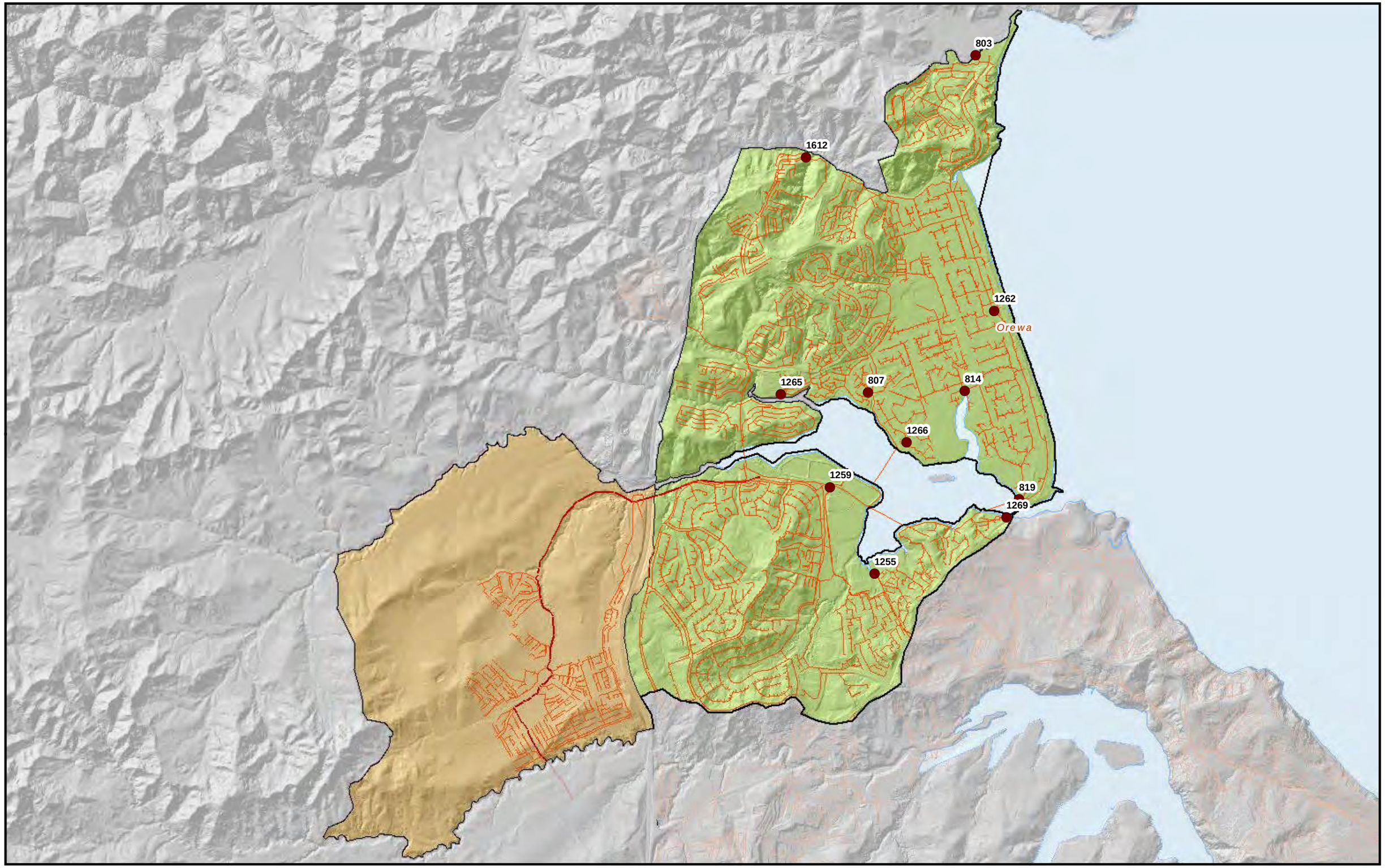

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

HBC-Orewa Catchment

0 310 620 930
Metres

N

SCALE: 1:29,500 @A3 CREATED BY : ASARIBALI
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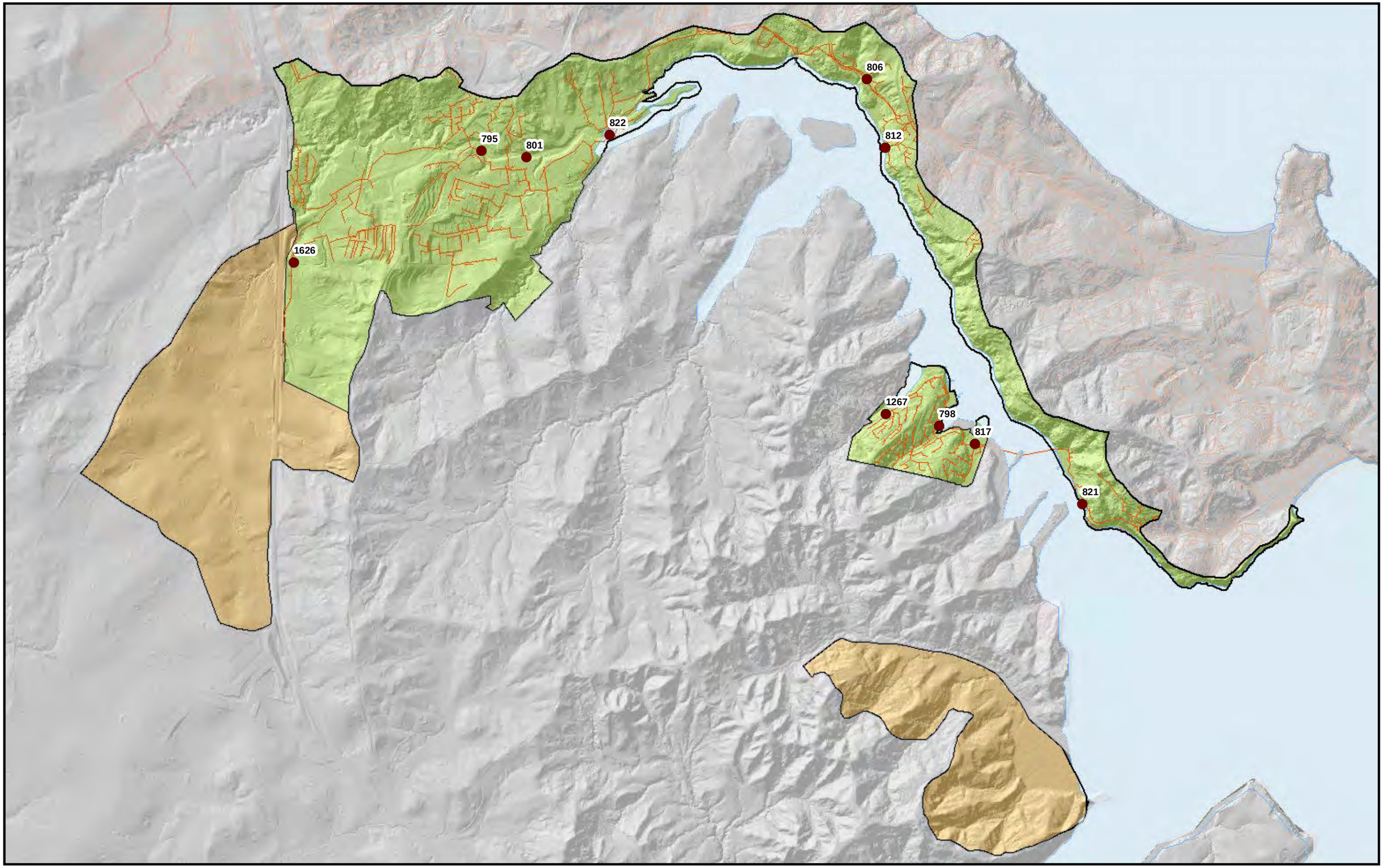

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

HBC-Weiti Catchment

0 275 550 825
Metres

N

SCALE: 1:25,500 @A3 CREATED BY : ASARIBALI
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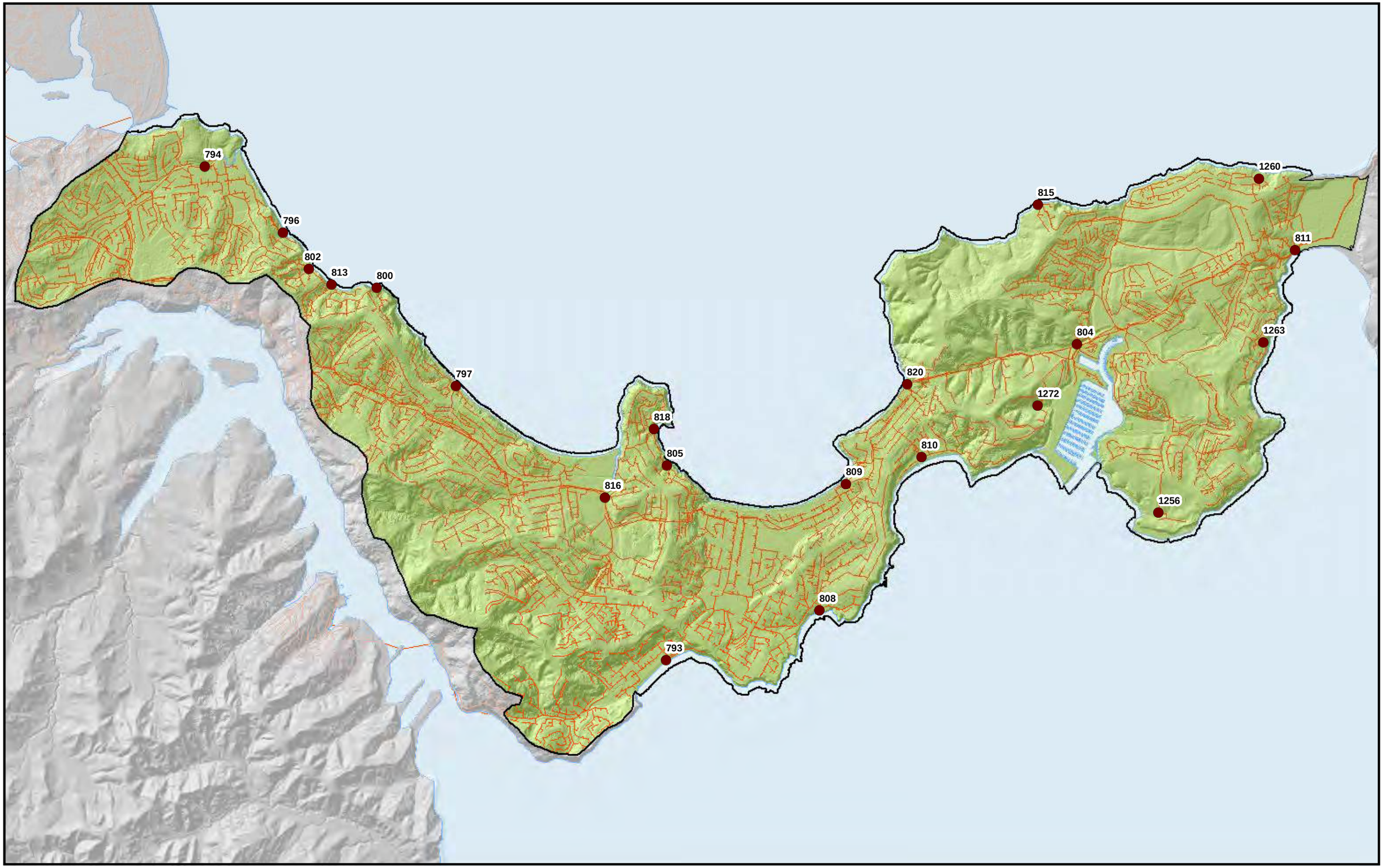

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

HBC-Whangaparaoa Catchment

0 310 620 930
Metres

N

SCALE: 1:29,500 @A3 CREATED BY : ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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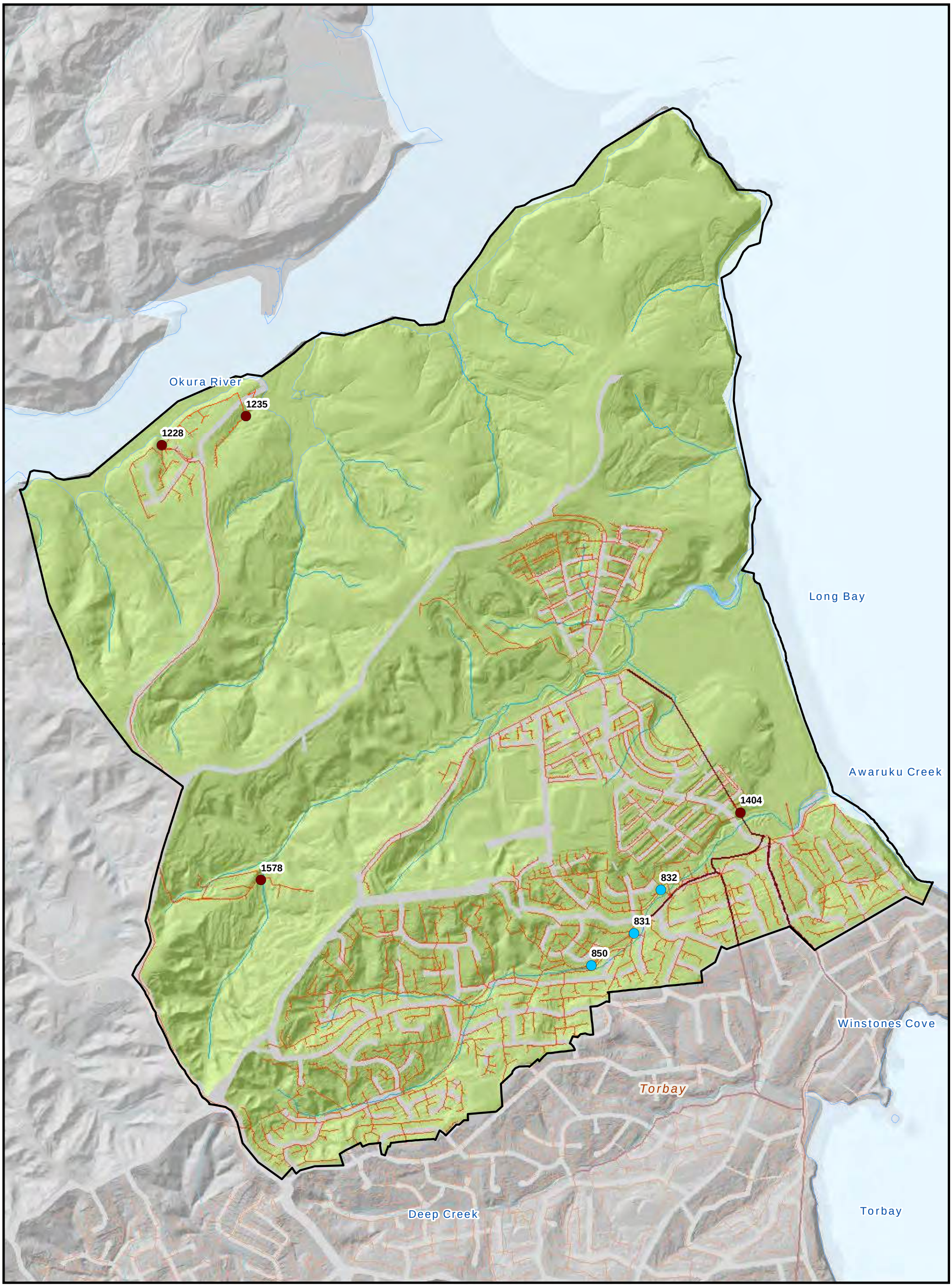

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Long Bay Catchment

N

0 130 260 390

Metres

SCALE:1:16,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

East Coast Bays Catchment

N

0 240 480 720

Metres

SCALE:1:30,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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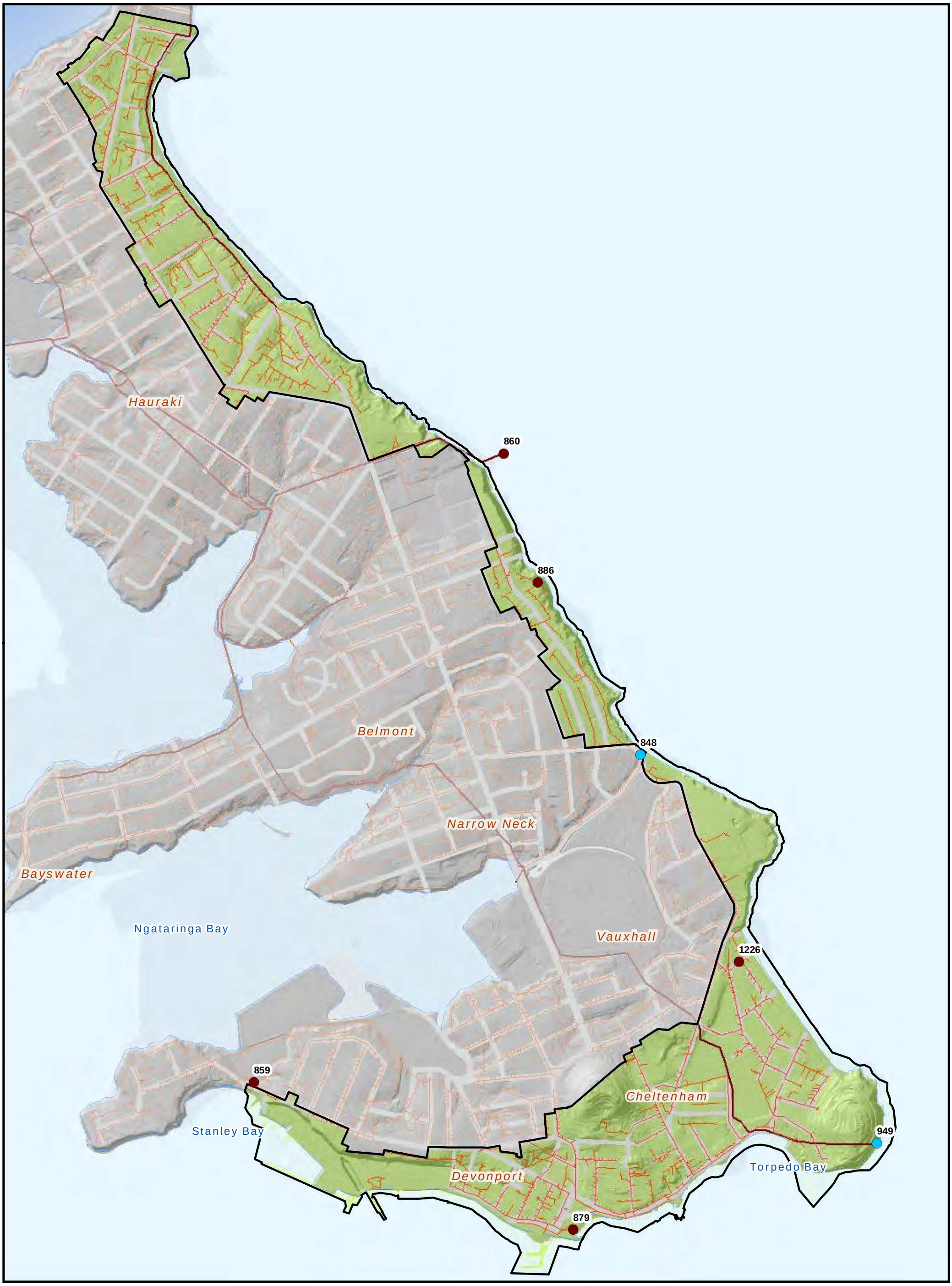

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Devonport-Takapuna Catchment

N

0 130 260 390

Metres

SCALE:1:16,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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An Auckland Council Organisation

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Appendix B-1 Network catchment maps

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Shoal Bay Catchment

0 240 480 720
Metres

N

SCALE: 1:23,000 @A3 CREATED BY : ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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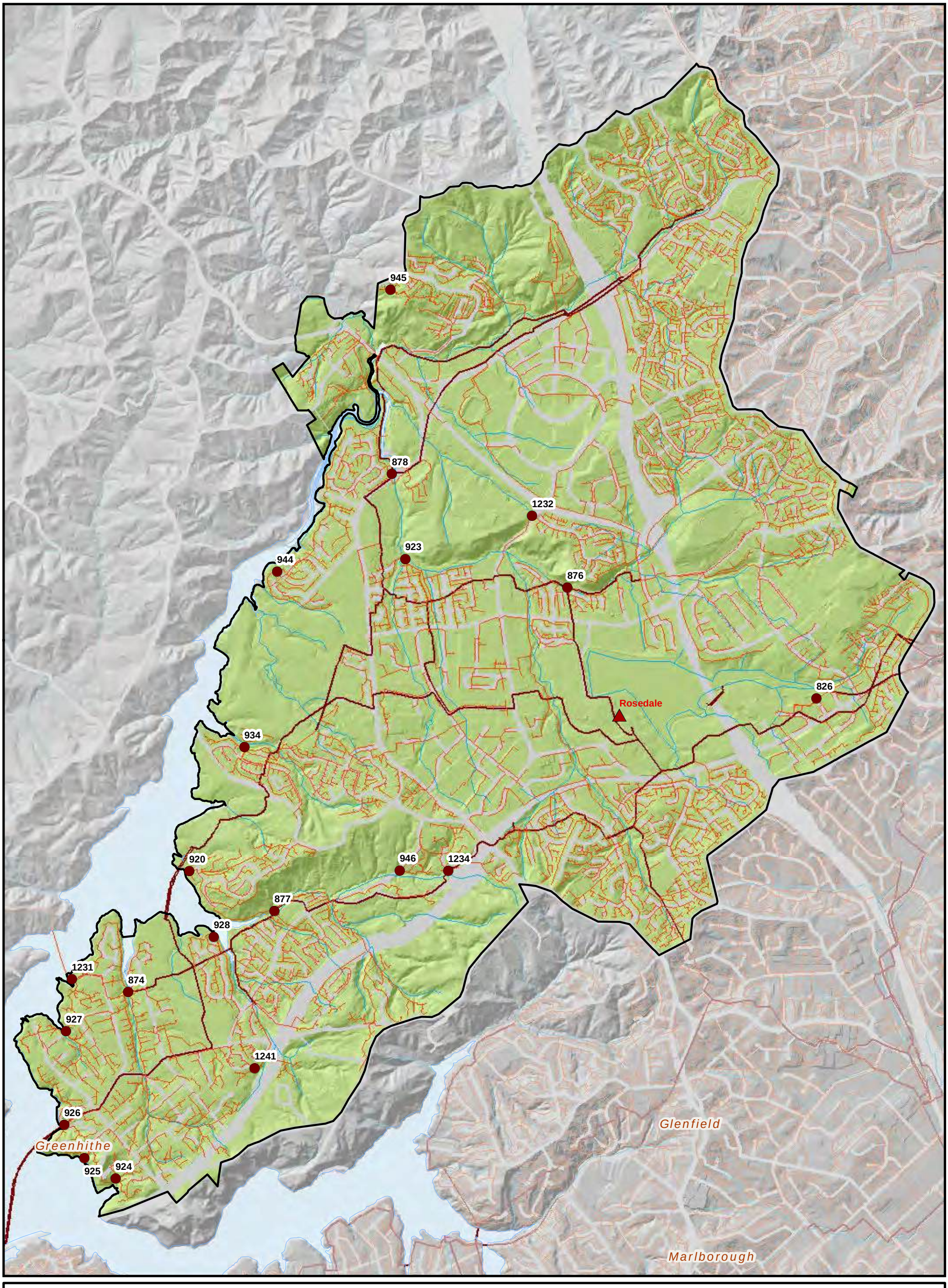

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Upper Harbour North Catchment

N

0 220 440 660

Metres

SCALE:1:27,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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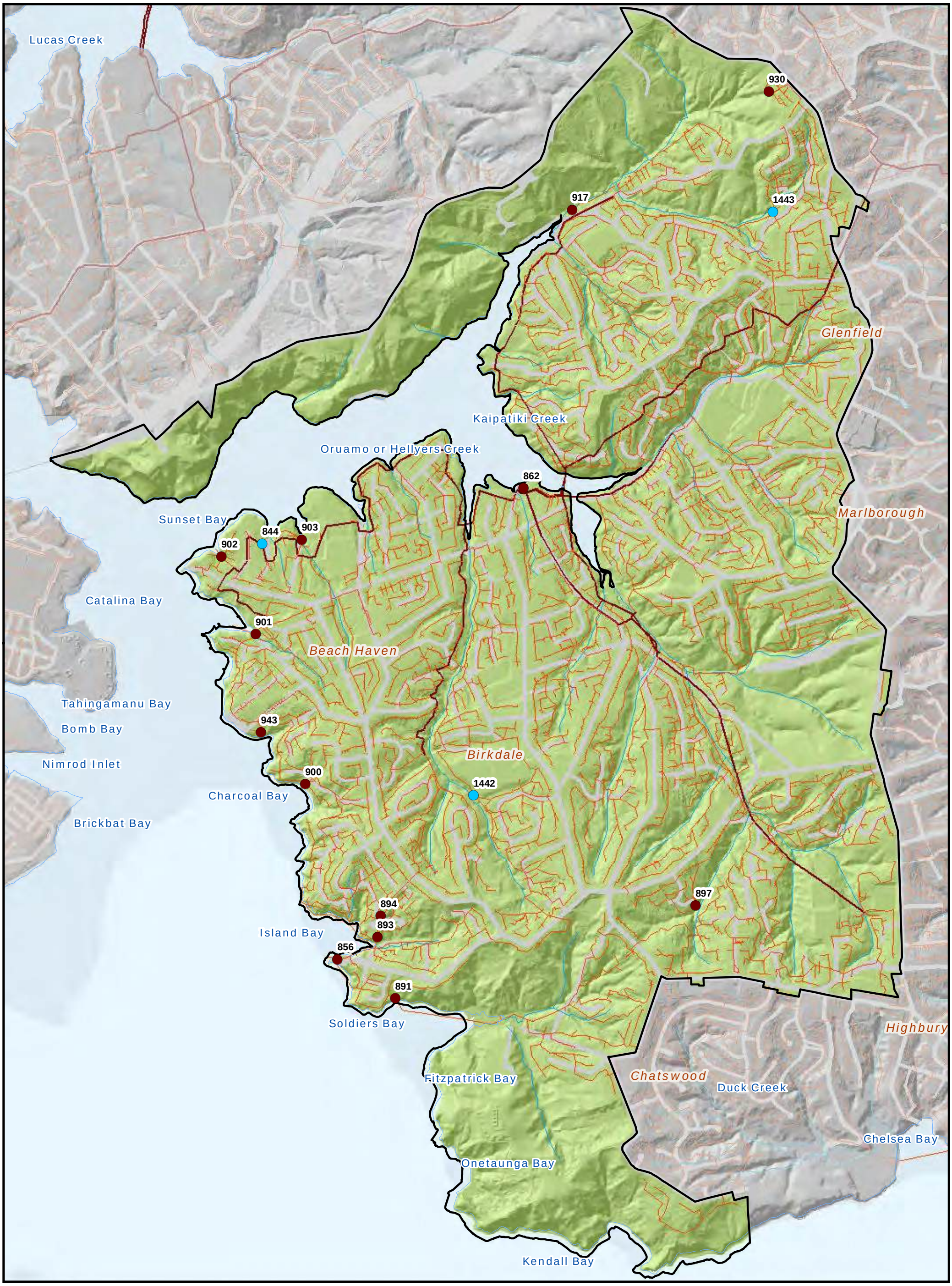
Appendix B-1 Network catchment maps



LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Upper Harbour South Catchment

N

0 160 320 480

Metres

SCALE:1:20,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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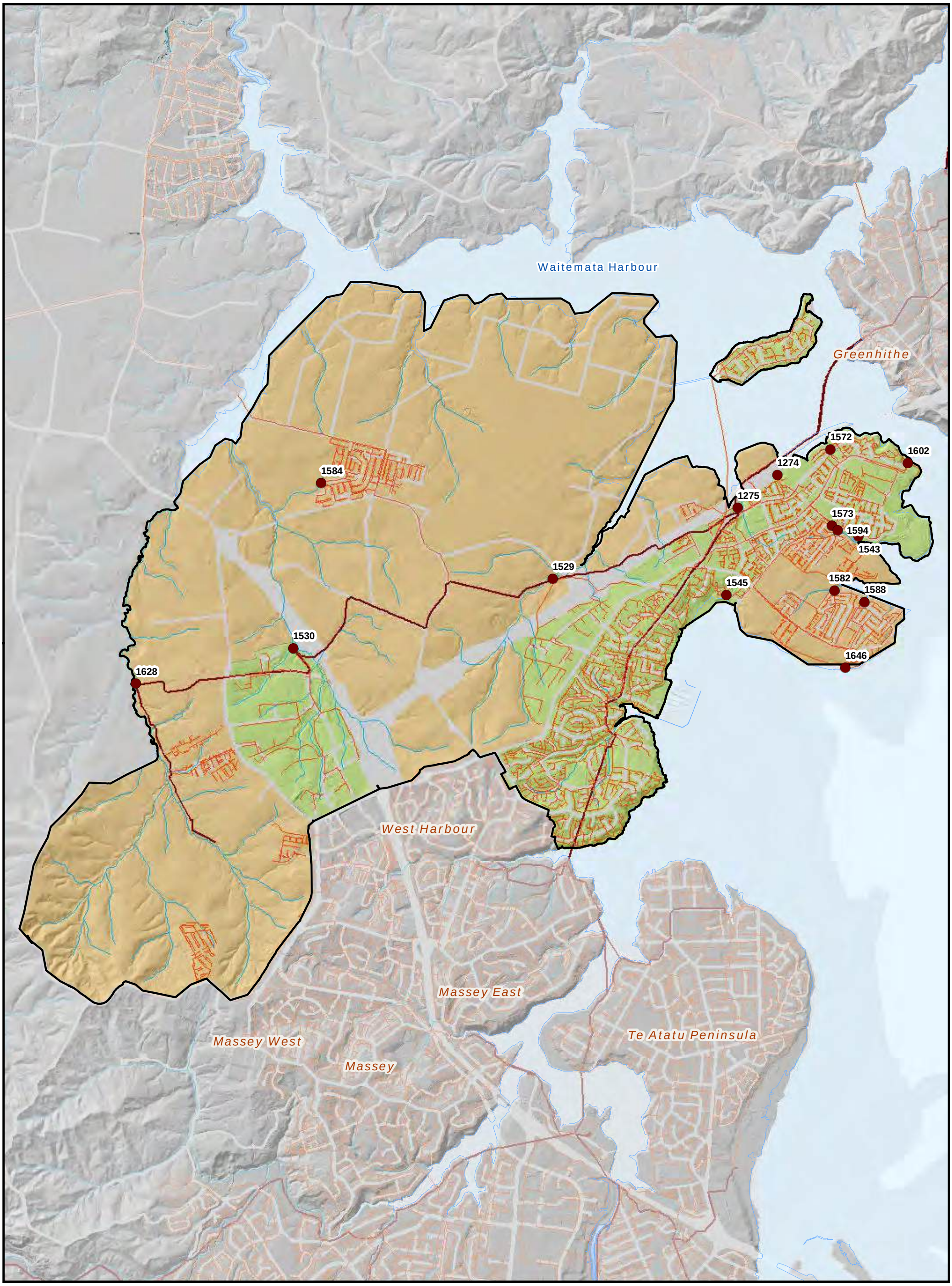

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Upper Harbour West Catchment

N

0 275 550 825

Metres

SCALE:1:34,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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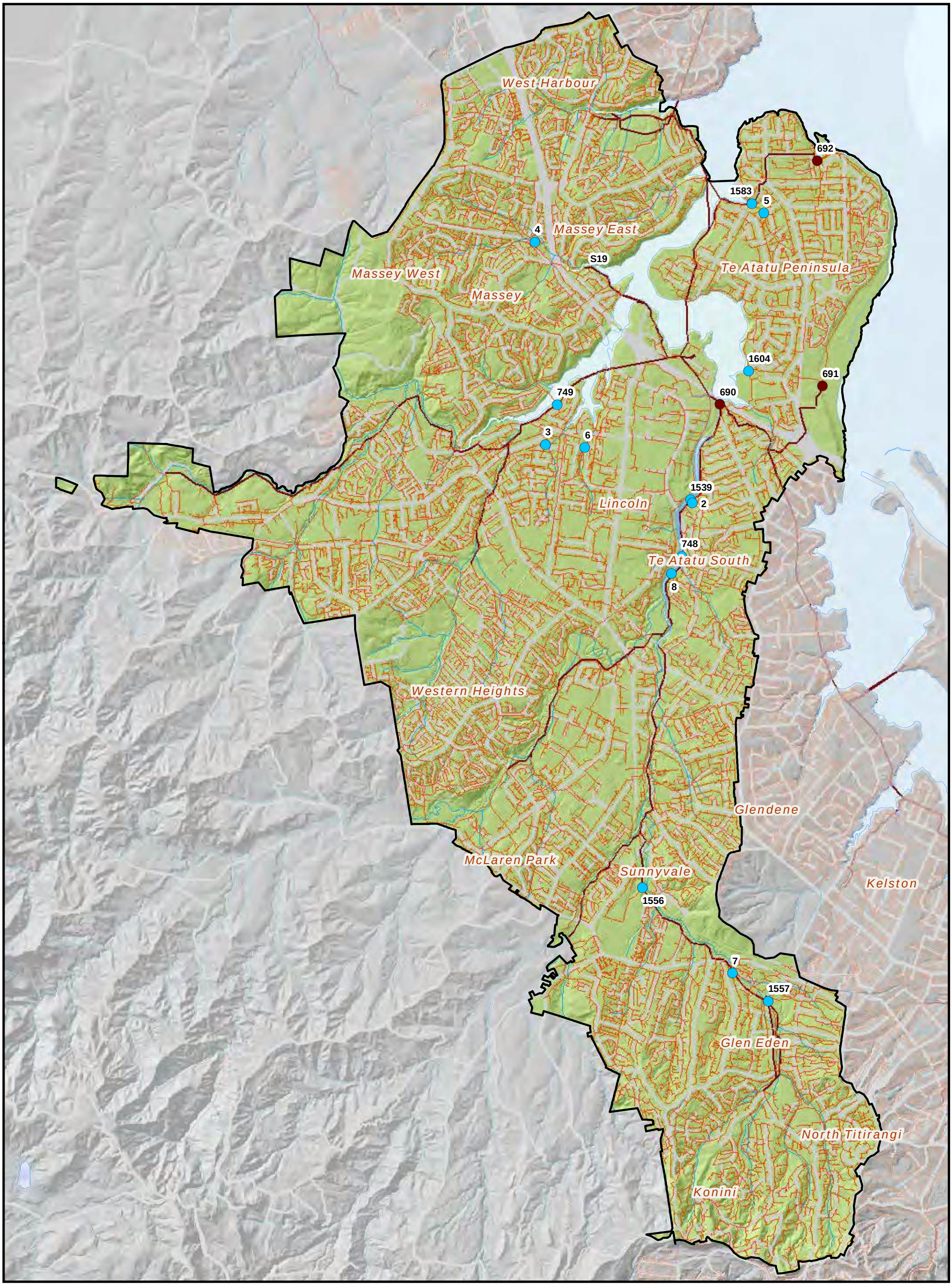

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Henderson Creek Catchment

N

0 310 620 930

Metres

SCALE:1:38,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Whau River Catchment

N

0 200 400 600

Metres

SCALE:1:25,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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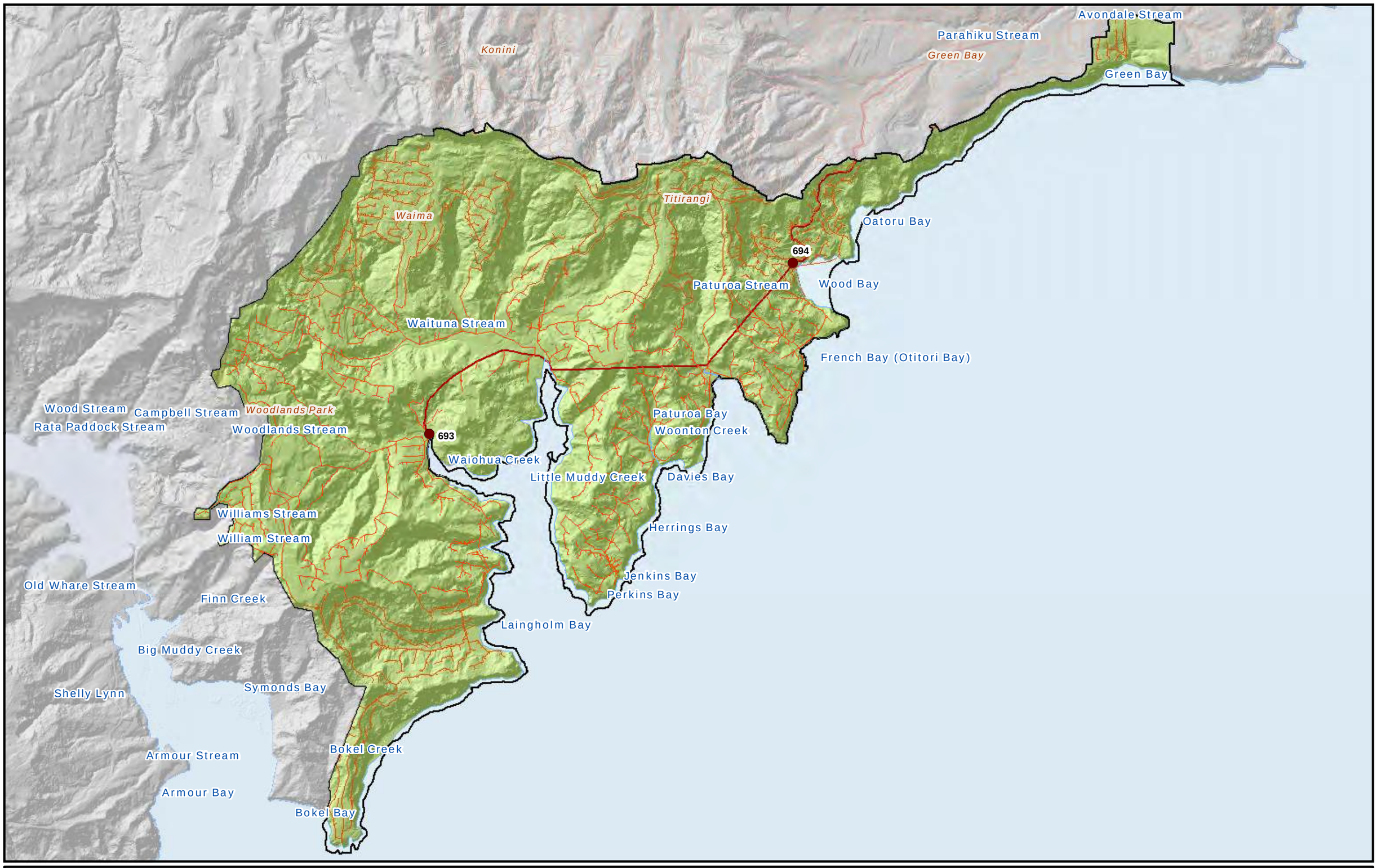

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Laingholm Catchment

0 240 480 720

Metres

N

SCALE: 1:23,000 @A3 CREATED BY : ASARIBALI

DATE: 14 August 2024 MAP NO: PR24035_2

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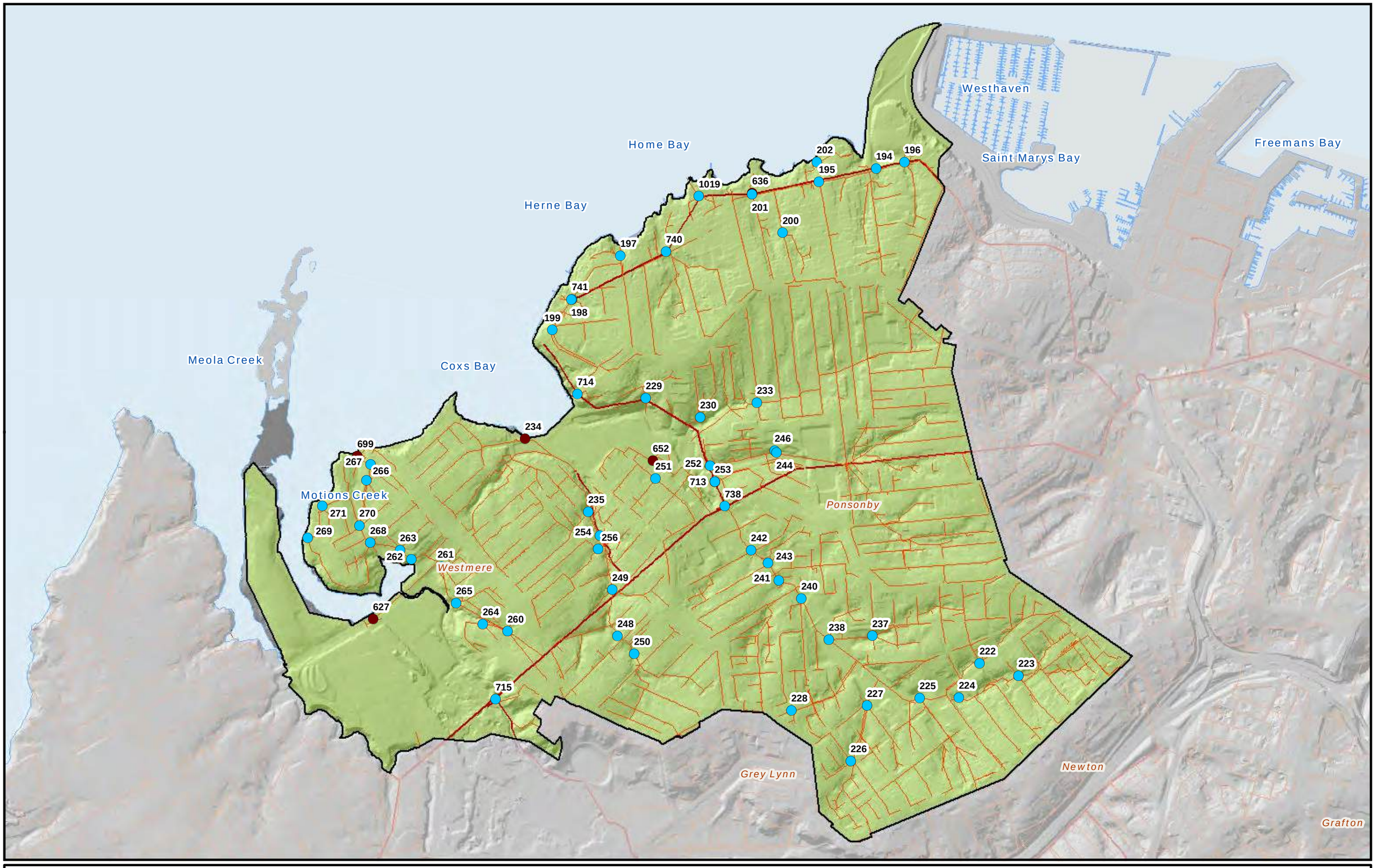

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Coxs Bay Catchment

0 160 320 480

Metres

N

SCALE: 1:15,000 @A3 CREATED BY : ASARIBALI

DATE: 14 August 2024 MAP NO: PR24035_2

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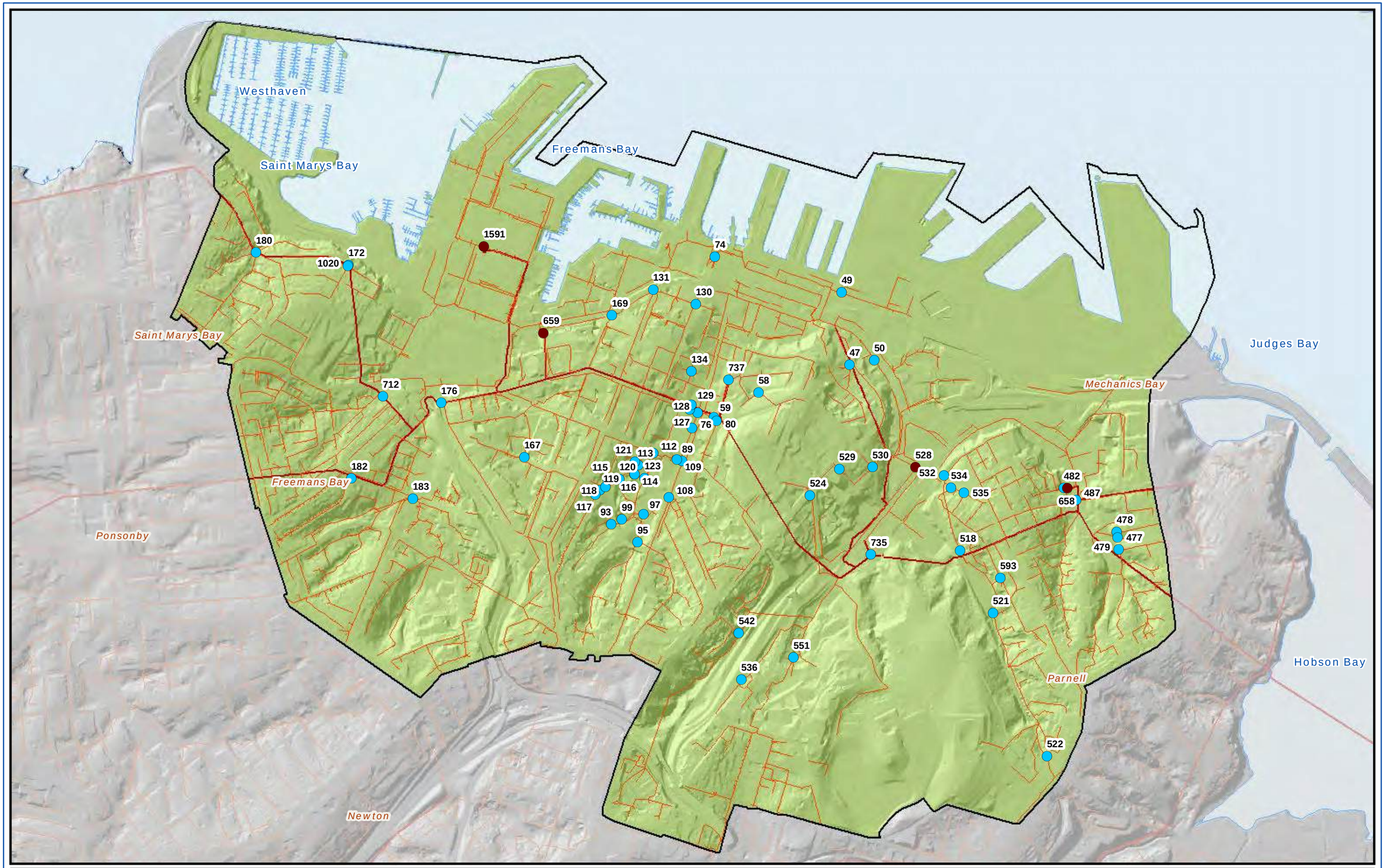

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Central Auckland (CBD) Catchment

0 150 300 450 Metres

N

SCALE: 1:14,000 @A3 CREATED BY : ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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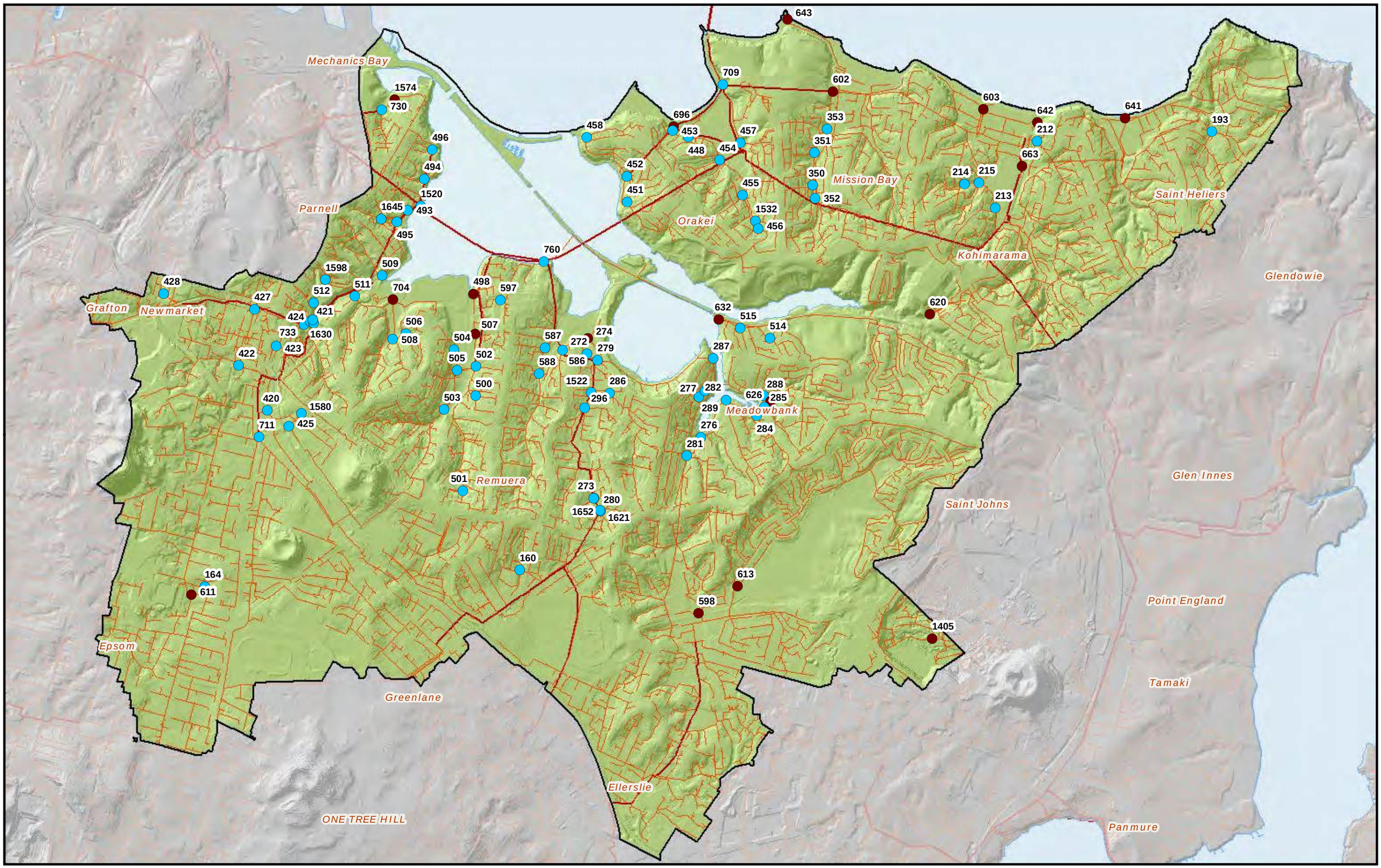

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Hobson Bay Catchment

0 300 600 900

Metres

N

SCALE: 1:28,000 @A3 CREATED BY : ASARIBALI

DATE: 14 August 2024 MAP NO: PR24035_2

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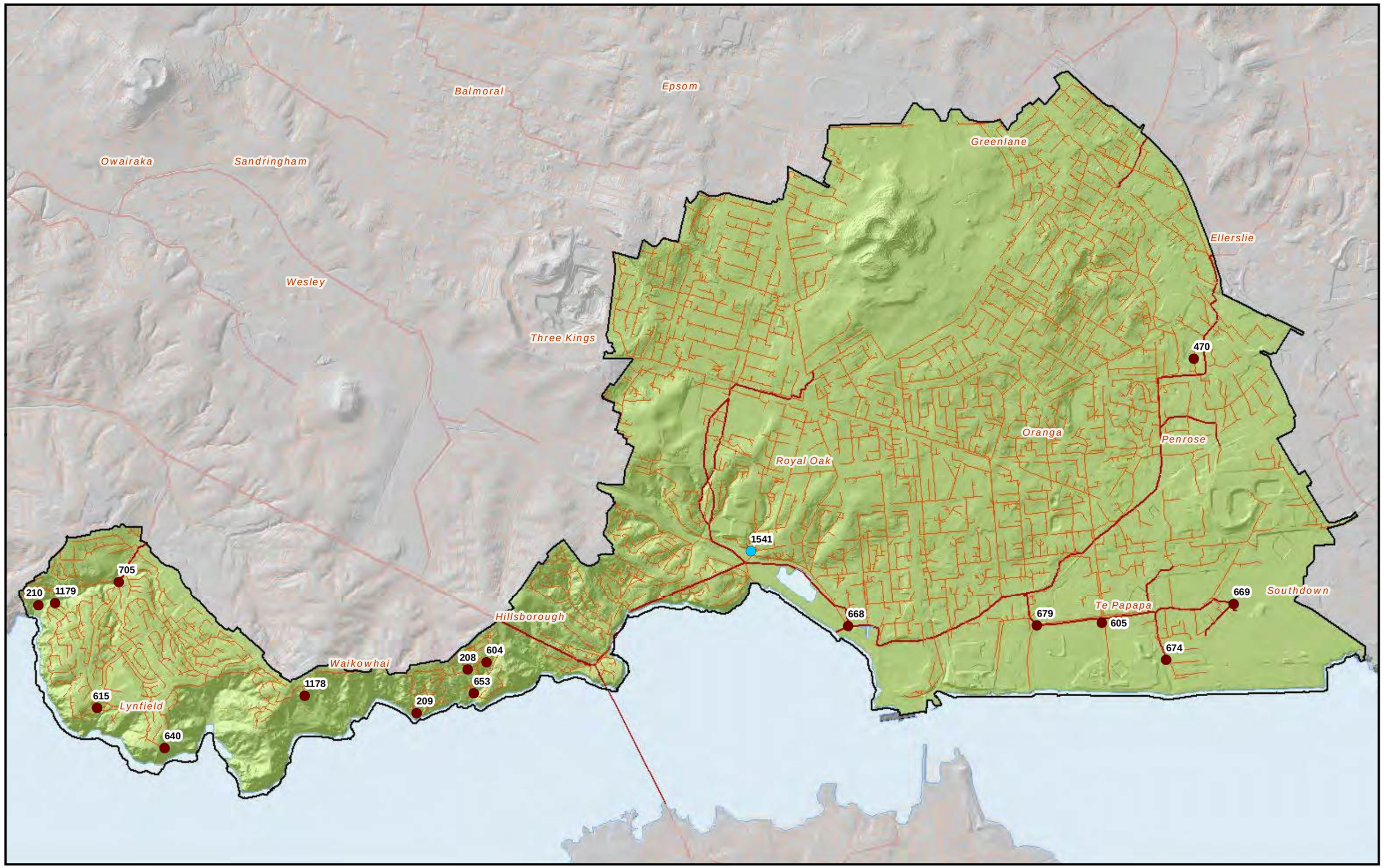

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Onehunga Catchment

0 280 560 840
Metres

N

SCALE: 1:26,000 @A3 CREATED BY : ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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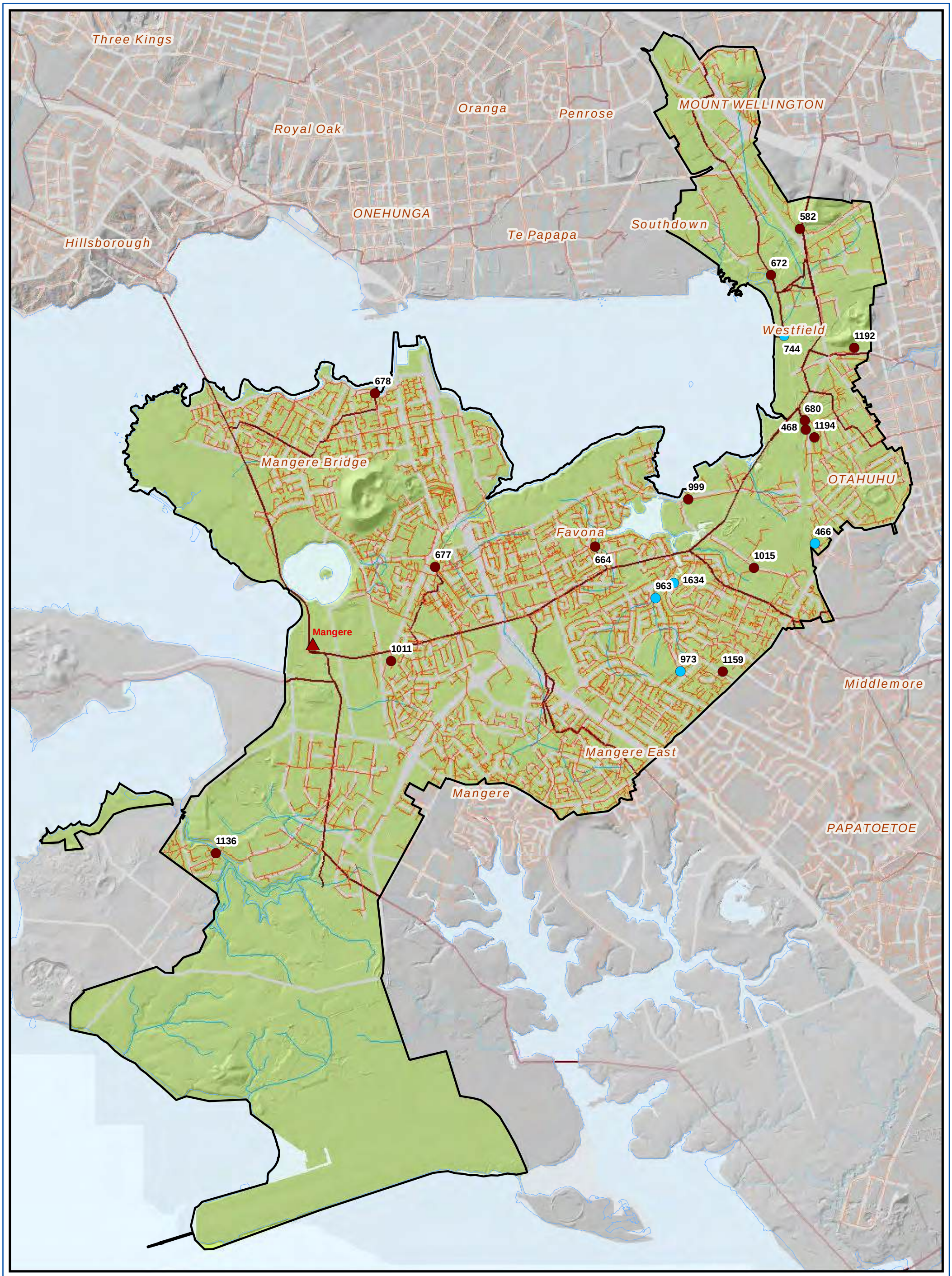

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Mangere Catchment

N

0 280 560 840

Metres

SCALE:1:35,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Lower Tamaki River Catchment

N

0 220 440 660

Metres

SCALE:1:27,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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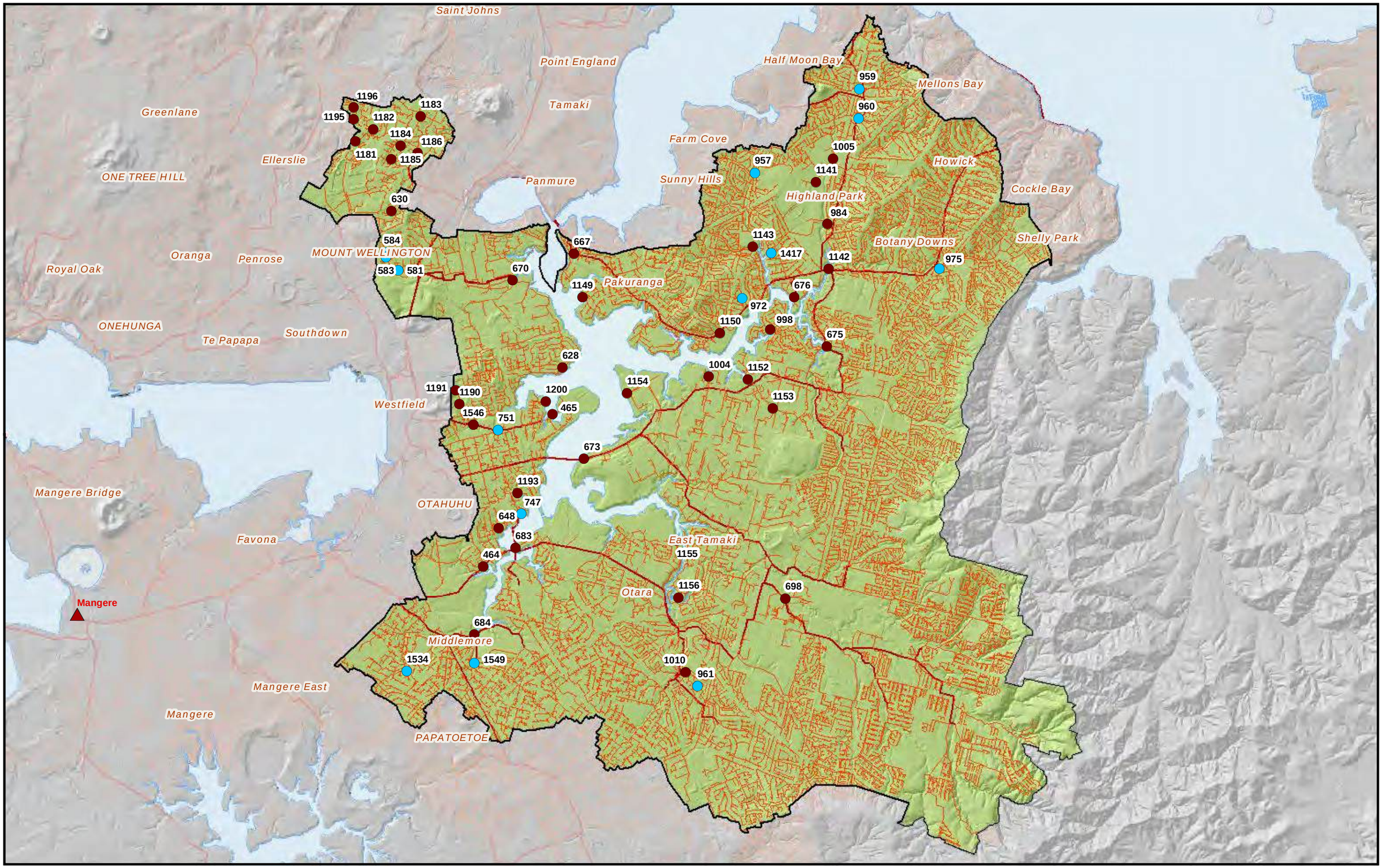
Appendix B-1 Network catchment maps



LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Upper Tamaki River Catchment

0 550 1,100 1,650

Metres

N

SCALE: 1:53,000 @A3 CREATED BY : ASARIBALI

DATE: 14 August 2024 MAP NO: PR24035_2

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Appendix B-1 Network catchment maps

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Cockle Bay Catchment

N

0 175 350 525

Metres

SCALE:1:22,000 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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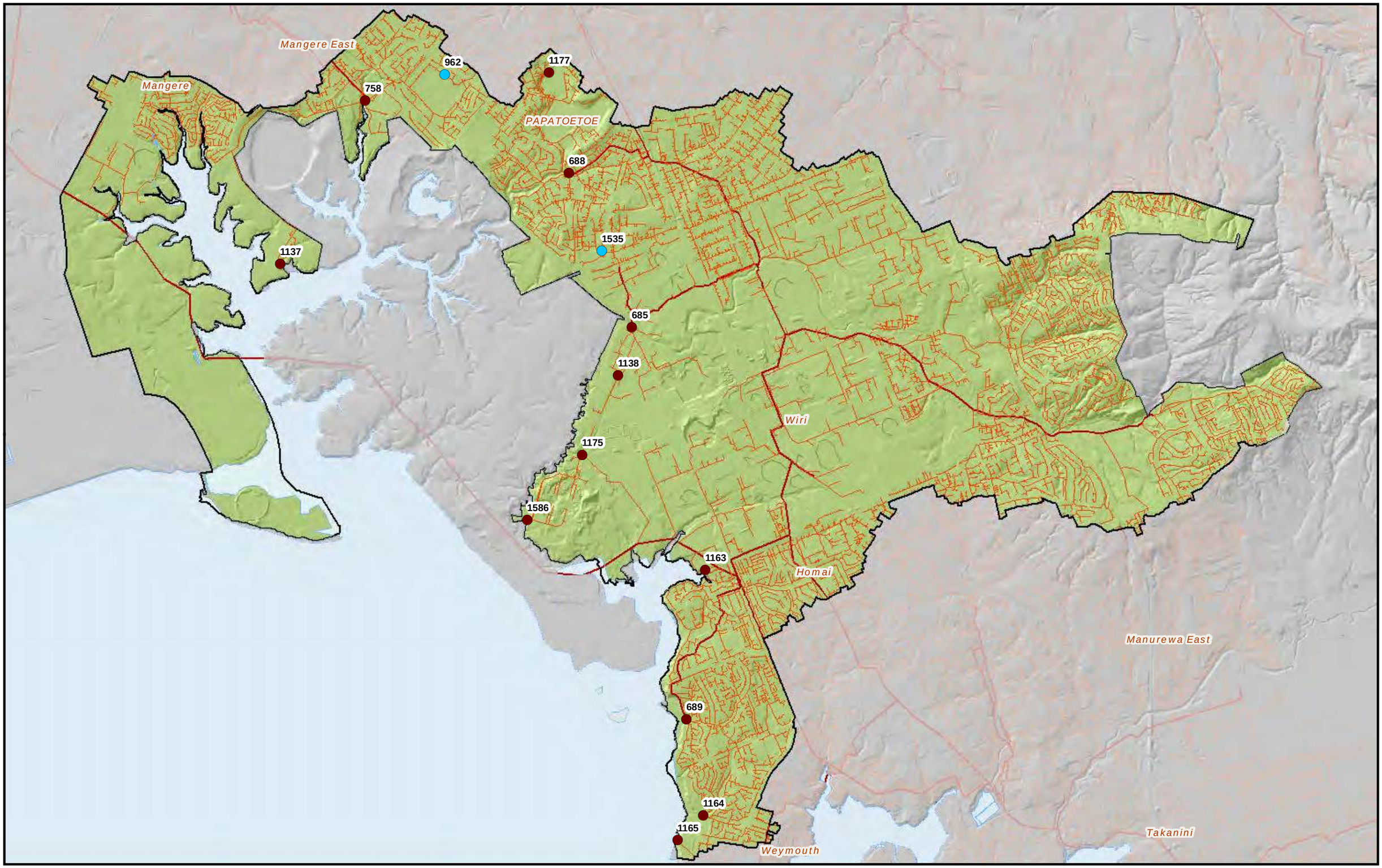

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

BASE MAP

Puhinui Catchment

0 360 720 1,080
Metres

N

SCALE: 1:35,000 @A3 CREATED BY : ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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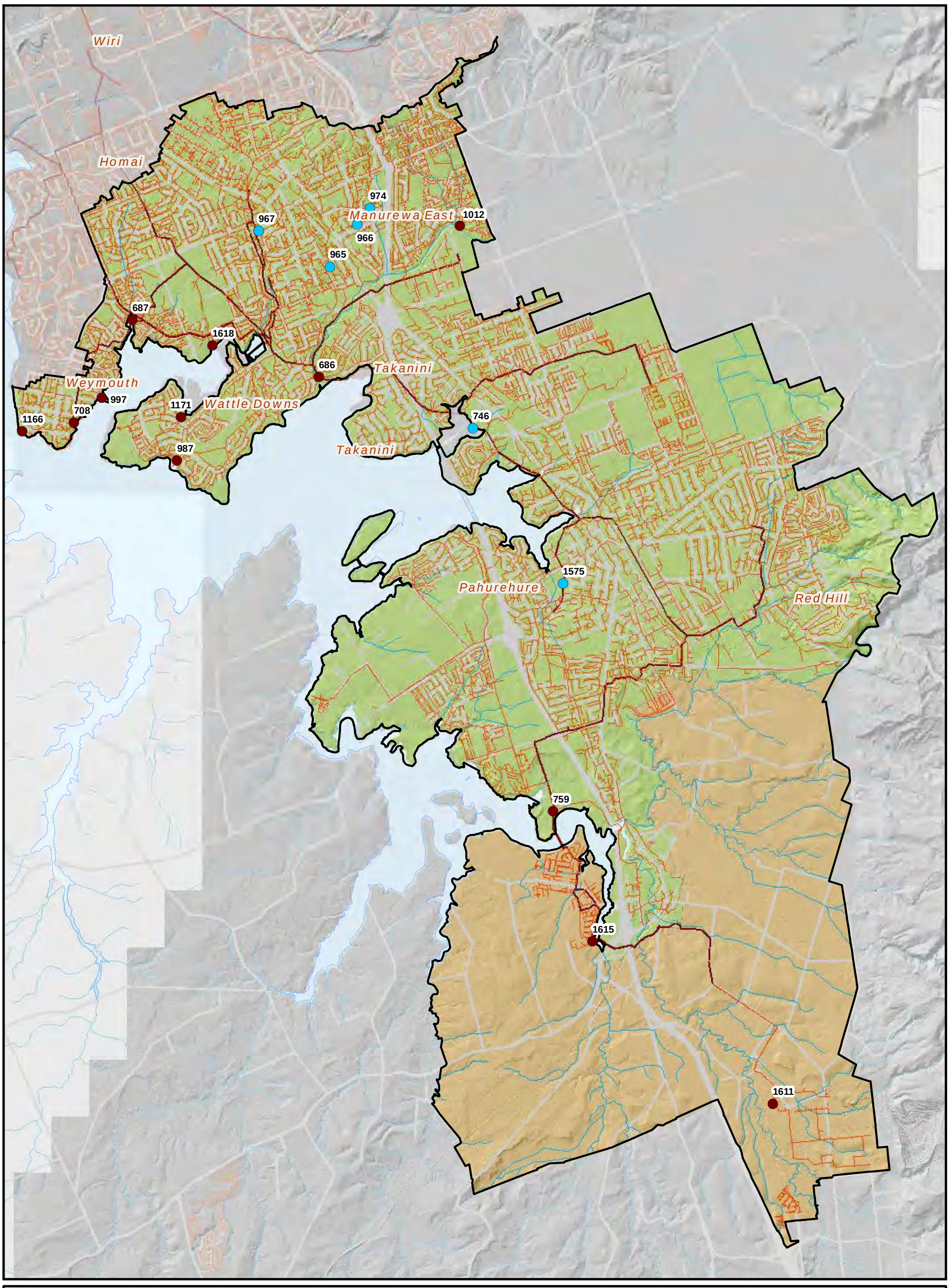

Appendix B-1 Network catchment maps

Sandy Bay
Hekerua Bay
Enclosure Bay
Oneroa Bay
Owhanake
(Waiheke)
657
Oneroa
Oneroa
Blackpool
Blackpool
Surfdale

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Oneroa Catchment

0 90 180 270
Metres

N

SCALE: 1:11,000 @A3 CREATED BY: ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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Pohutukawa Bay
View Bay
Shelly Bay
Sunkist Bay
1085
1083
1080
1017
1079
1016
1086
1081
Magazine Bay
Beachlands
1084
1087
1542
Waikopua Creek
Te Puru Stream
Beachlands

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Beachlands-Maraetai Catchment

0 160 320 480
Metres

N

SCALE: 1:18,500 @A3 CREATED BY: ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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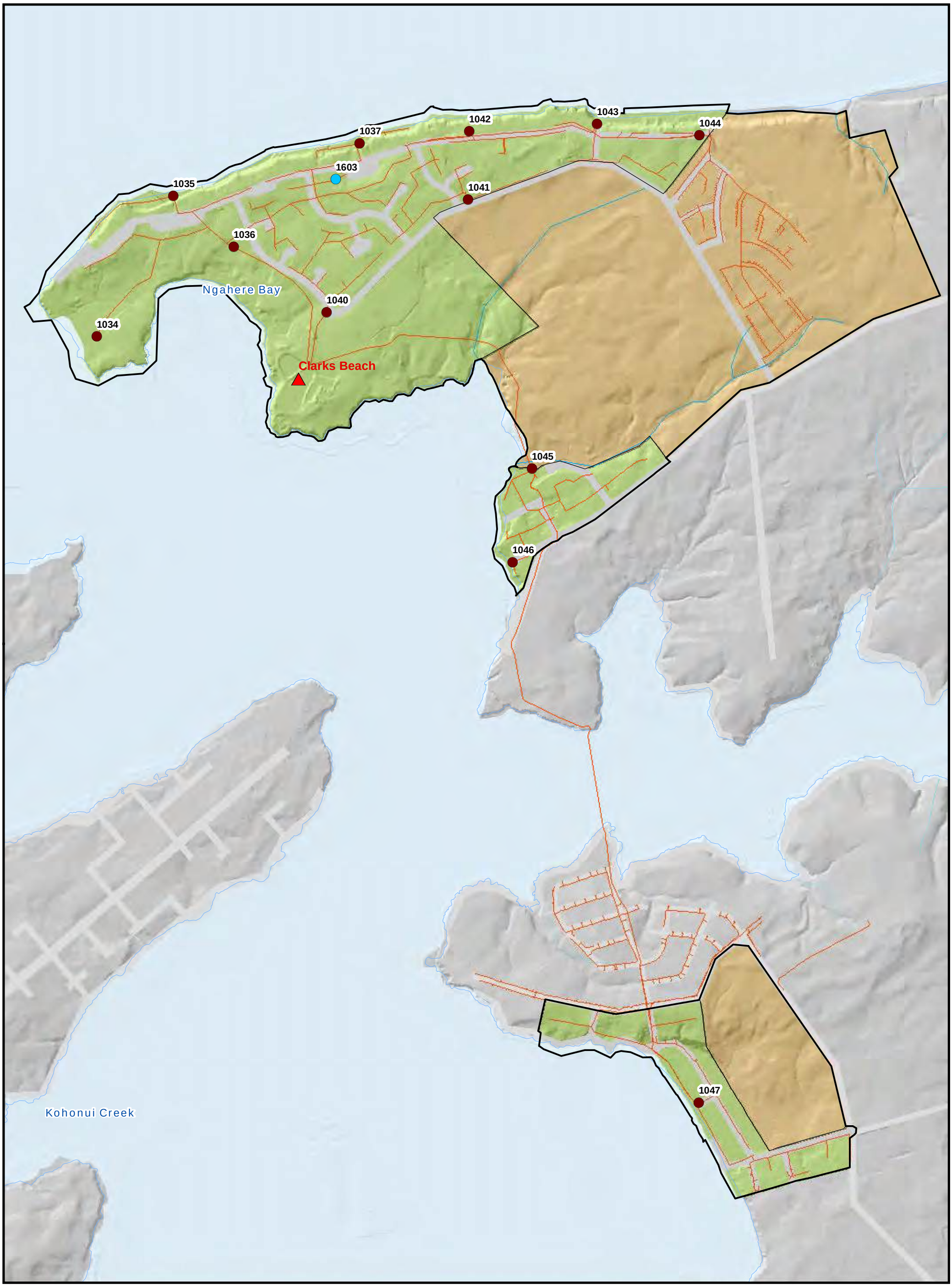

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Clarks Beach Catchment

0 100 200 300 Metres

N

SCALE:1:11,500 @A3 CREATED BY:ASARIBALI

DATE:14 August 2024 MAP NO:PR24035_2

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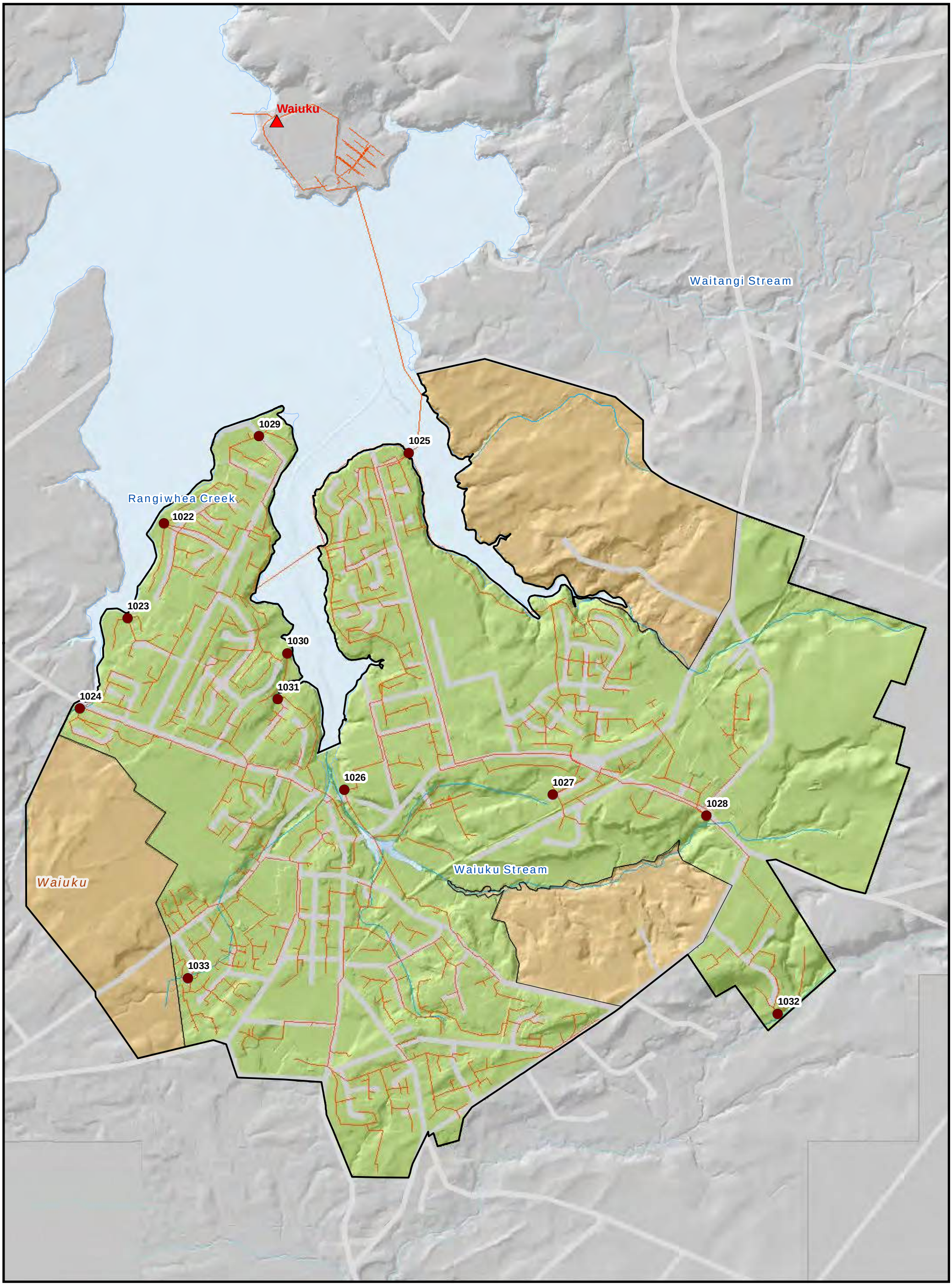

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Waiuku Catchment

0 130 260 390

Metres

N

SCALE:1:15,000 @A3 CREATED BY:ASARIBALI

DATE:14 August 2024 MAP NO:PR24035_2

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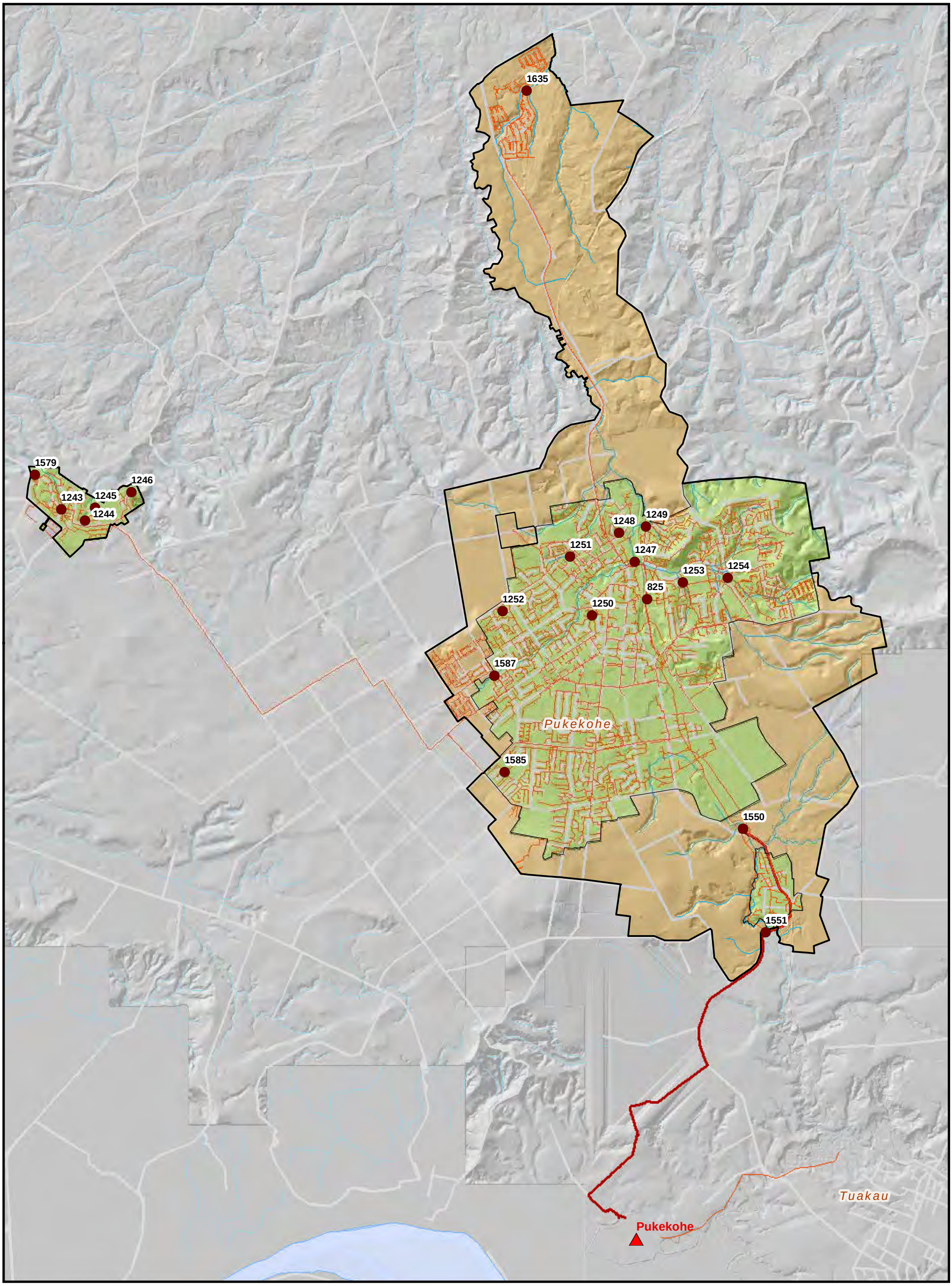

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Network Pipe
- Transmission Network Pipe
- Local Treatment Plant
- Transmission Treatment Plant
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Pukekohe Catchment

0 375 750 1,125 Metres

N

SCALE:1:42,000 @A3 CREATED BY:ASARIBALI

DATE:14 August 2024 MAP NO:PR24035_2

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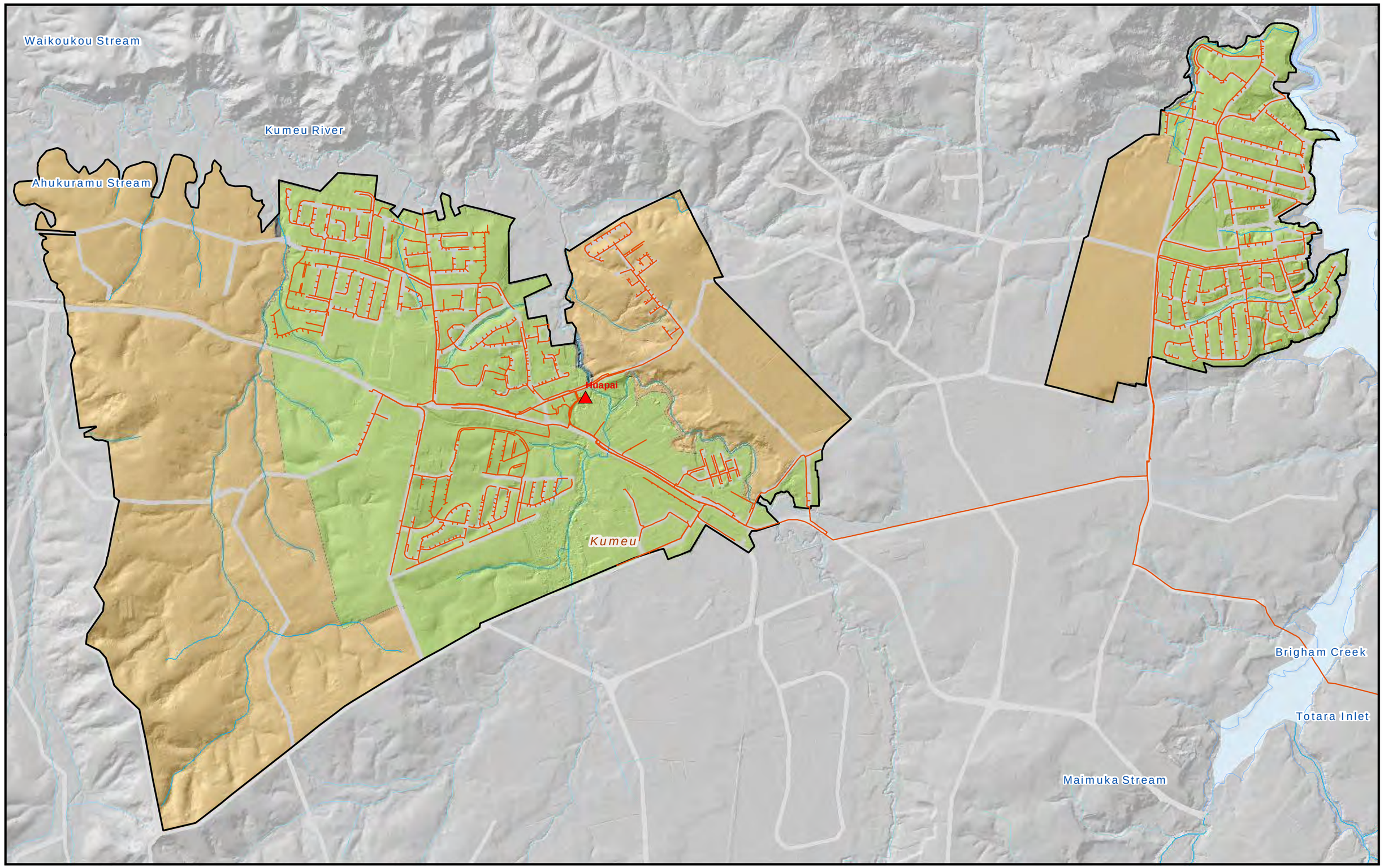

LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Kumeu-Huapai-Riverhead Catchment

0 180 360 540
Metres

N

SCALE: 1:21,000 @A3 CREATED BY: ASARIBALI
DATE: 14 August 2024 MAP NO: PR24035_2

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LEGEND

- Type 1 Operational
- Type 2 Operational
- Local Treatment Plant
- Transmission Treatment Plant
- Local Network Pipe
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

BASE MAP

Western Isthmus (CI) Catchment

N

0 250 500 750

Metres

SCALE:1:30,600 @A3 CREATED BY: ASARIBALI

DATE:14 August 2024 MAP NO: PR24035_2

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LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

Proposed Assets Map

East Coast Bays Catchment

N

0 240 480 720

Metres

SCALE:1:30,000 @A3 CREATED BY: ASARIBALI

DATE:06 July 2023 MAP NO: PR22022_11

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Appendix B-2 Proposed assets catchment maps

LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Shoal Bay Catchment

0 240 480 720
Metres

N

SCALE: 1:23,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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Appendix B-2 Proposed assets catchment maps

East Coast Bays
Branch Sewer

Northern
Interceptor_Phase1

Northern
Interceptor

Jonathan
Place WW
Main Upgrade

1595

Linwood Ave
Wastewater
Main Upgrade

Forrest Hill
WW Main
Upgrade

Glenfield

Greenhithe

Kahika
Pumpstation
Rising Main

Marlborough

LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

Proposed Assets Map

Upper Harbour North Catchment

N

0 220 440 660

Metres

SCALE:1:27,000 @A3 CREATED BY: ASARIBALI

DATE:06 July 2023 MAP NO: PR22022_11

Watercare
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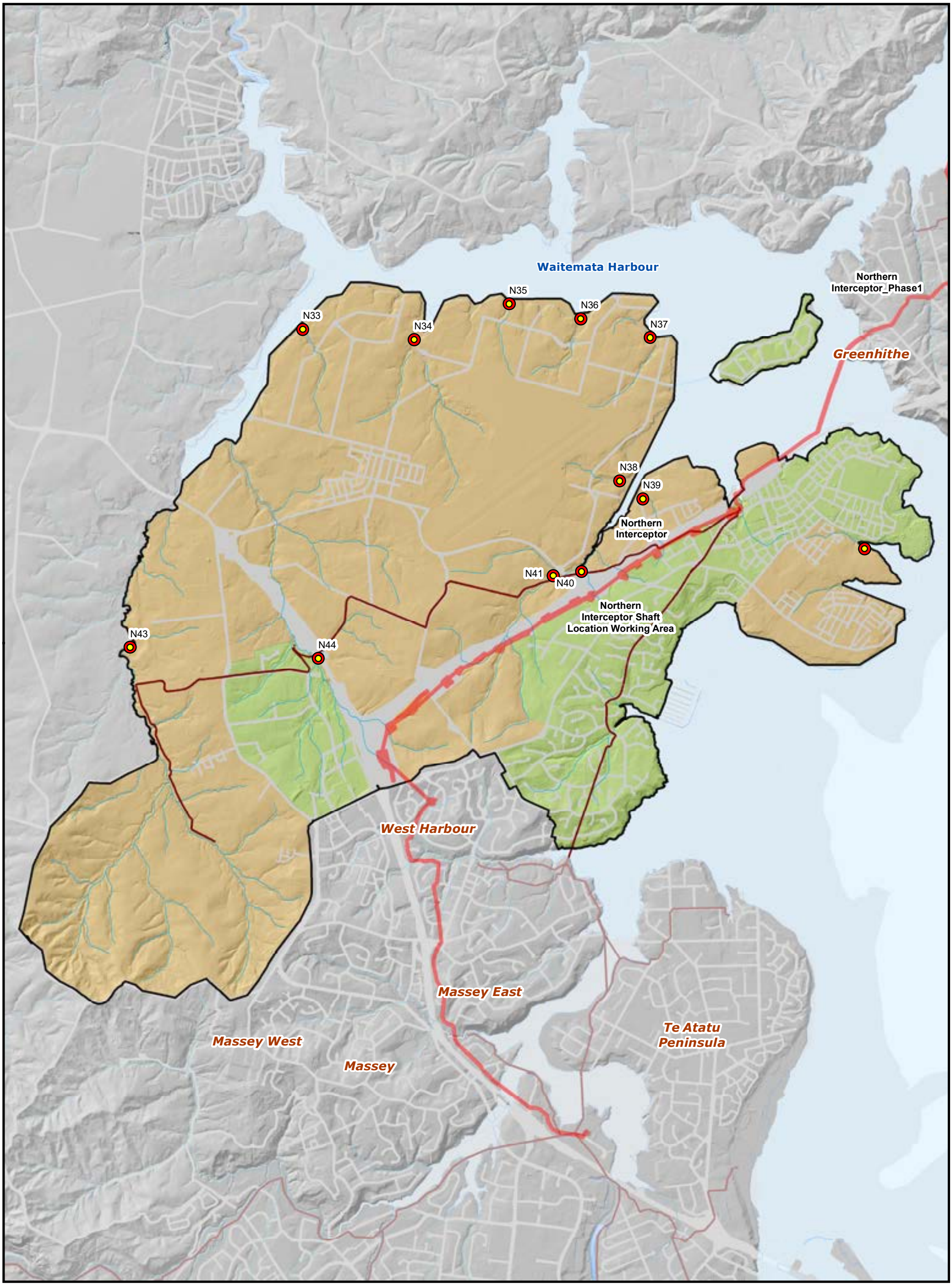
Appendix B-2 Proposed assets catchment maps

Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

Proposed Assets Map

Upper Harbour West Catchment

N

0 275 550 825

Metres

SCALE:1:34,000 @A3 CREATED BY: ASARIBALI

DATE:06 July 2023 MAP NO: PR22022_11

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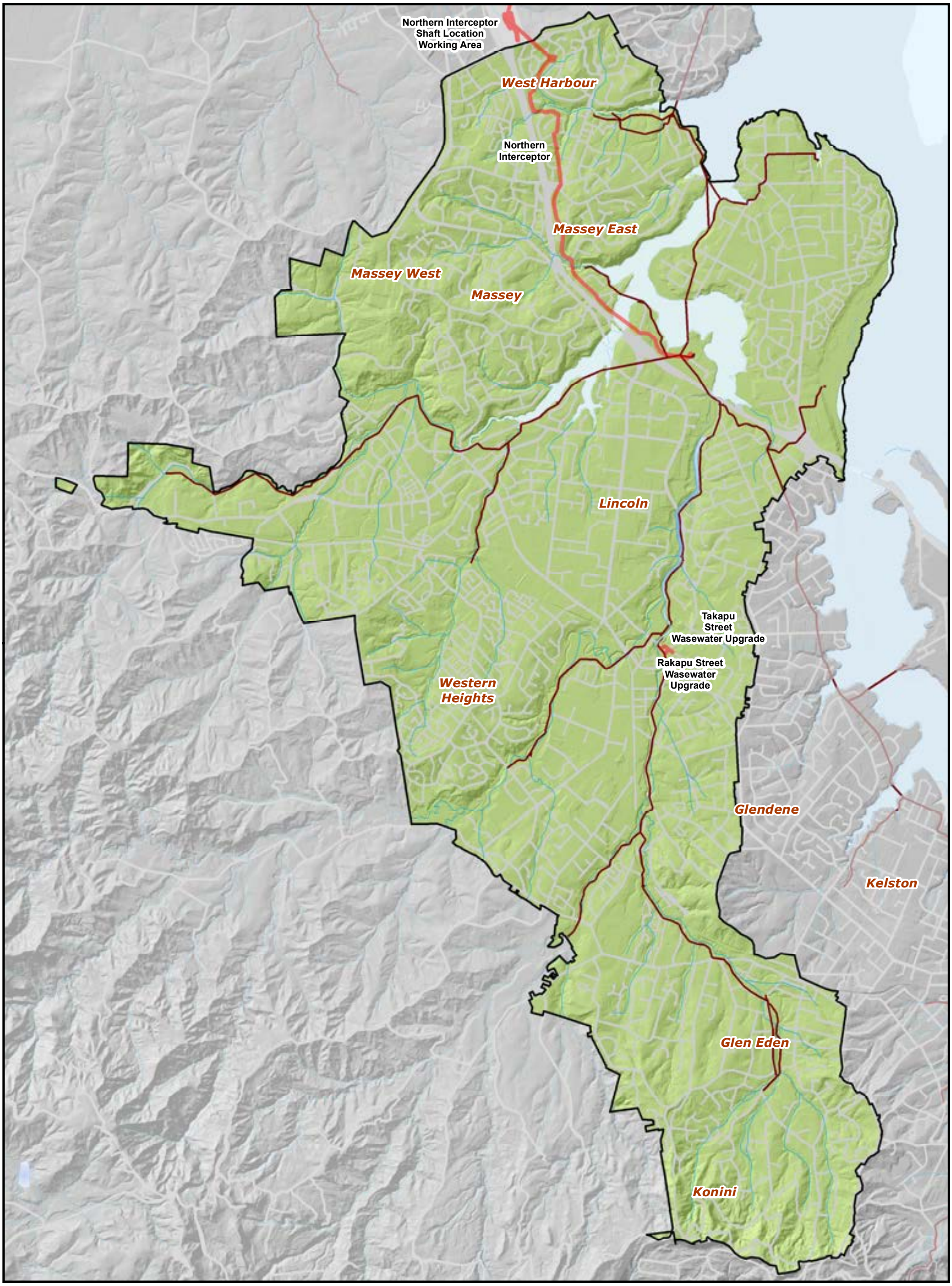
Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

Proposed Assets Map

Henderson Creek Catchment

N

0 310 620 930

Metres

SCALE:1:38,000 @A3 CREATED BY: ASARIBALI

DATE:06 July 2023 MAP NO: PR22022_11

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DISCLAIMER

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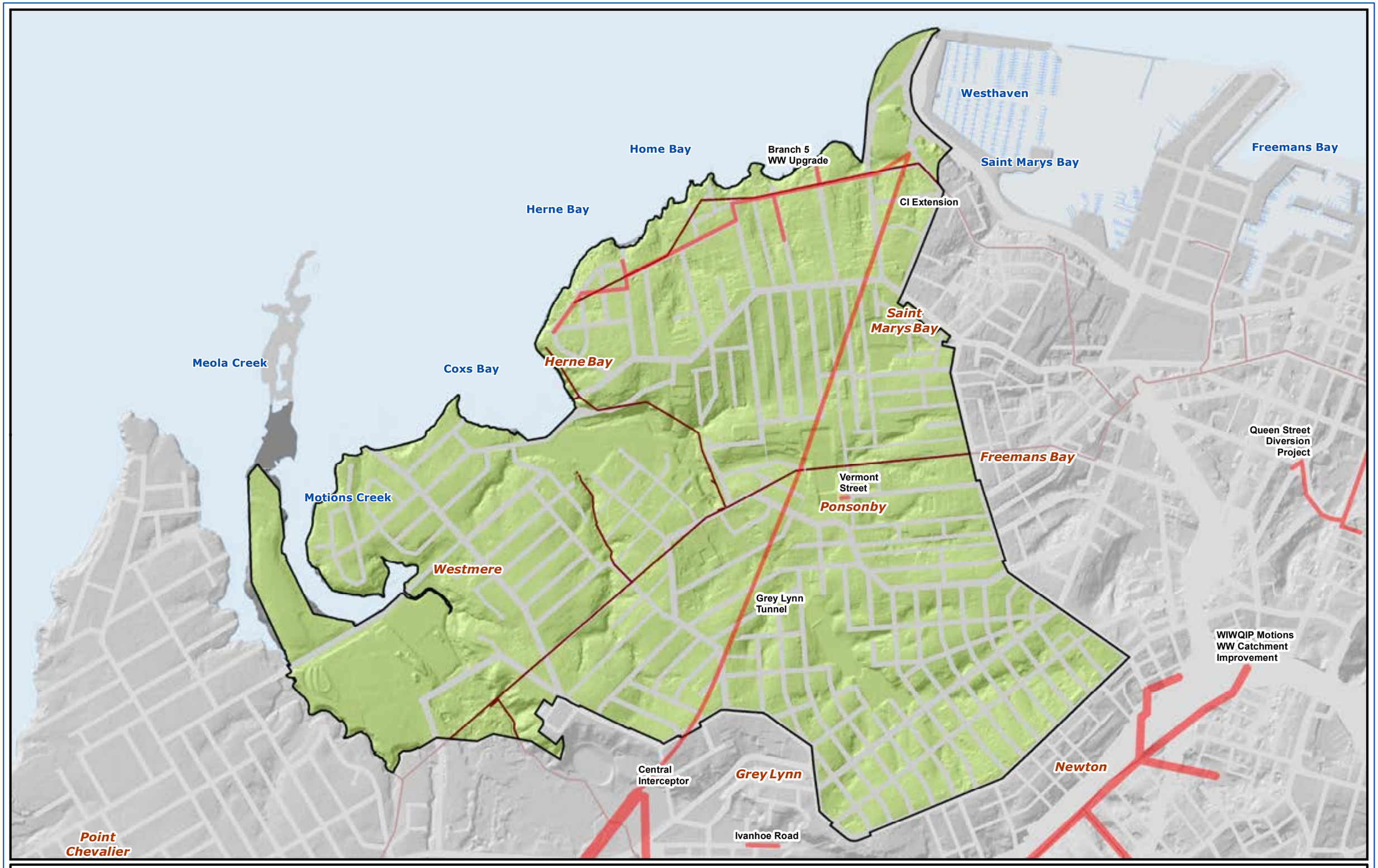
Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Coxs Bay Catchment

0 160 320 480
Metres

N

SCALE: 1:15,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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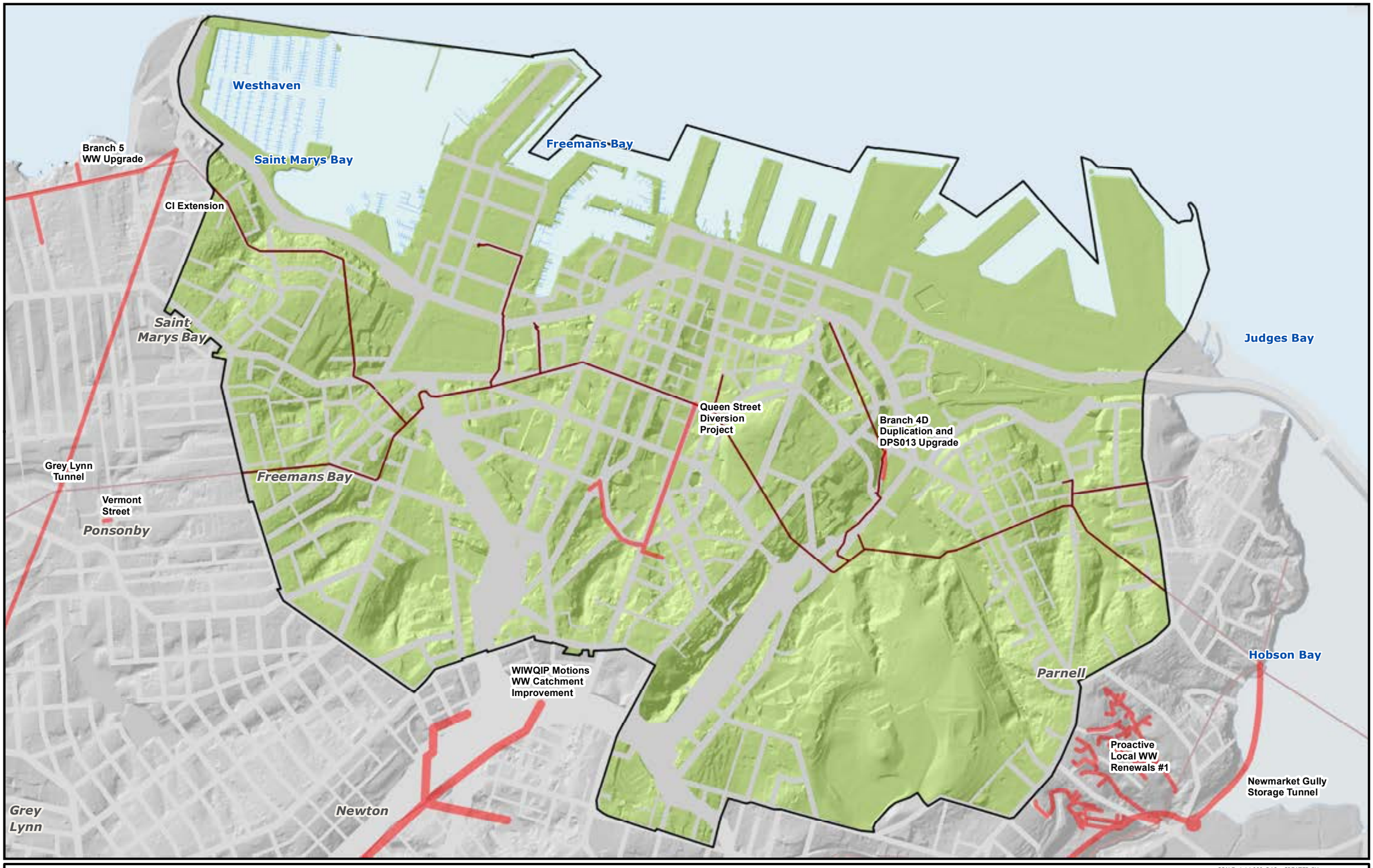

LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Central Auckland (CBD) Catchment

0 150 300 450
Metres

N

SCALE: 1:14,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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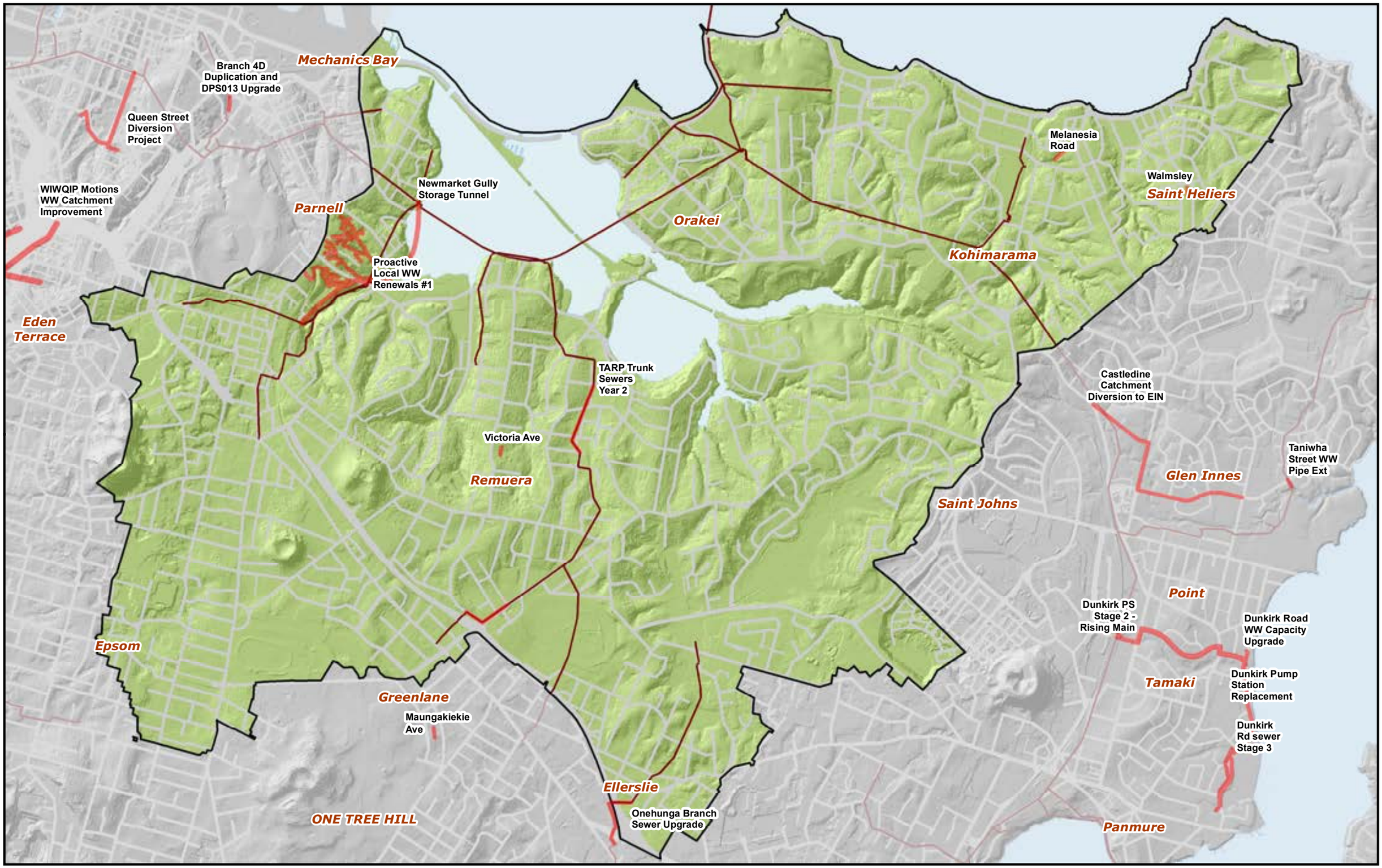

LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Hobson Bay Catchment

0 300 600 900
Metres

N

SCALE: 1:28,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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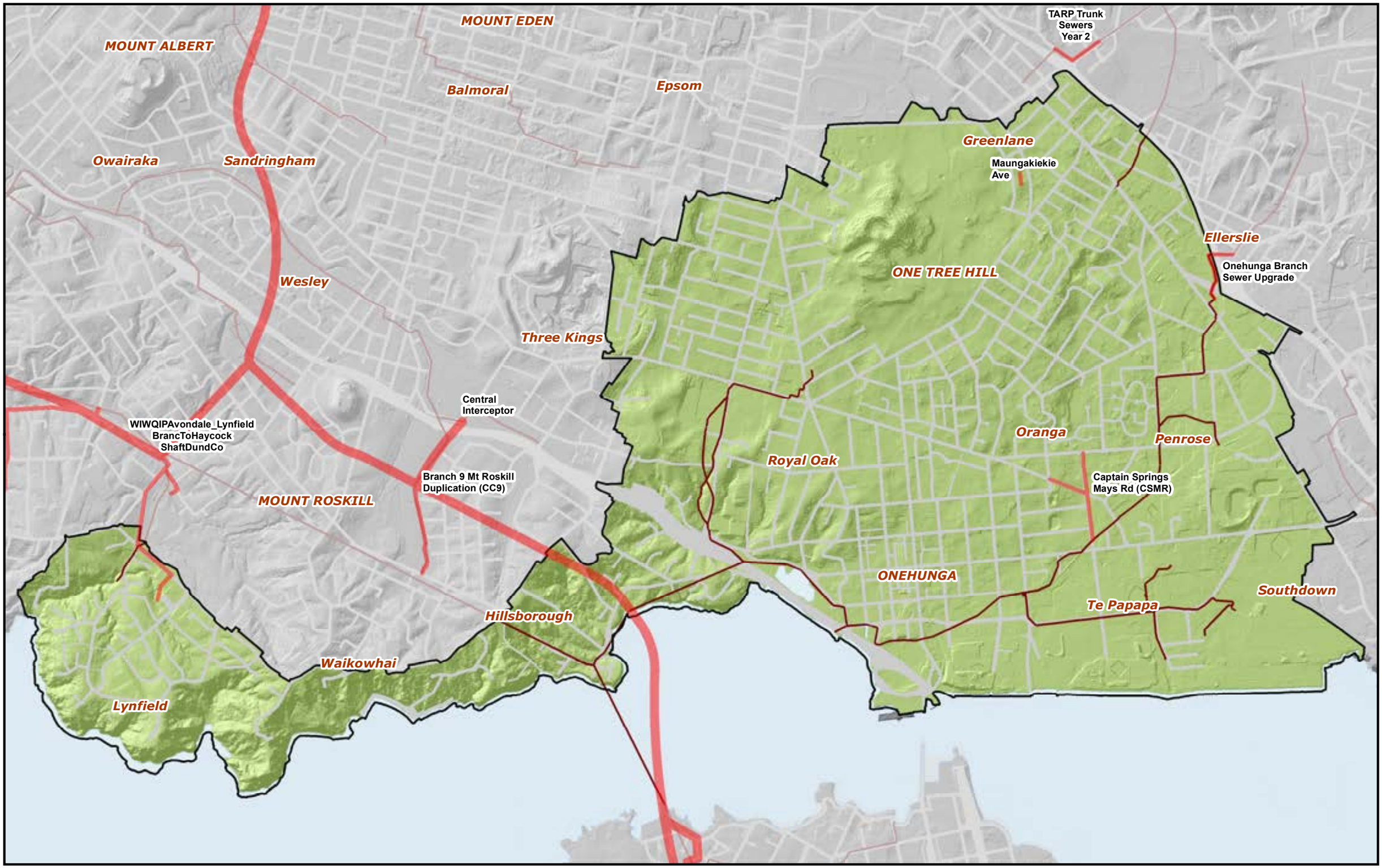
Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Onehunga Catchment

0 280 560 840
Metres

N

SCALE: 1:26,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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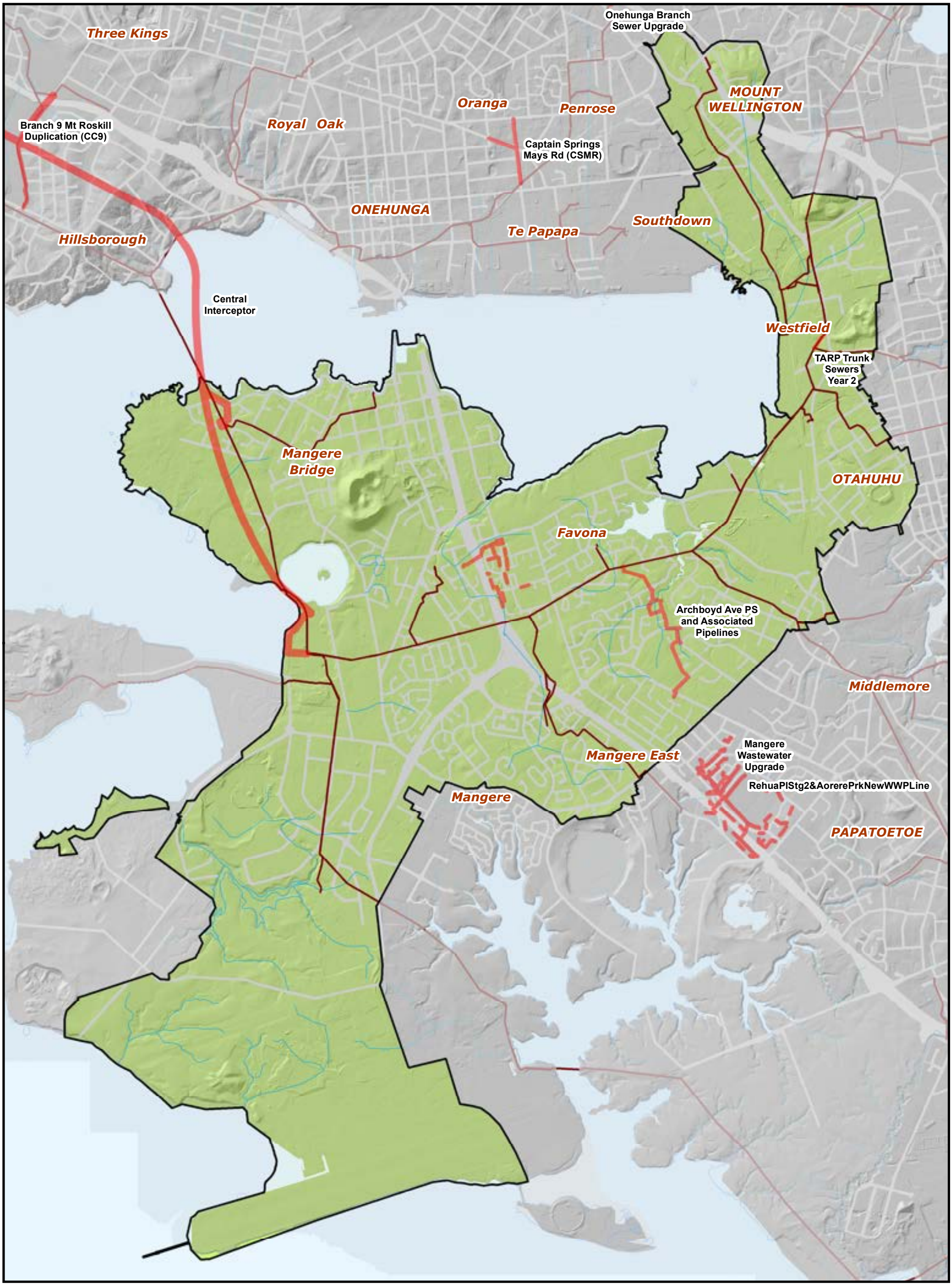
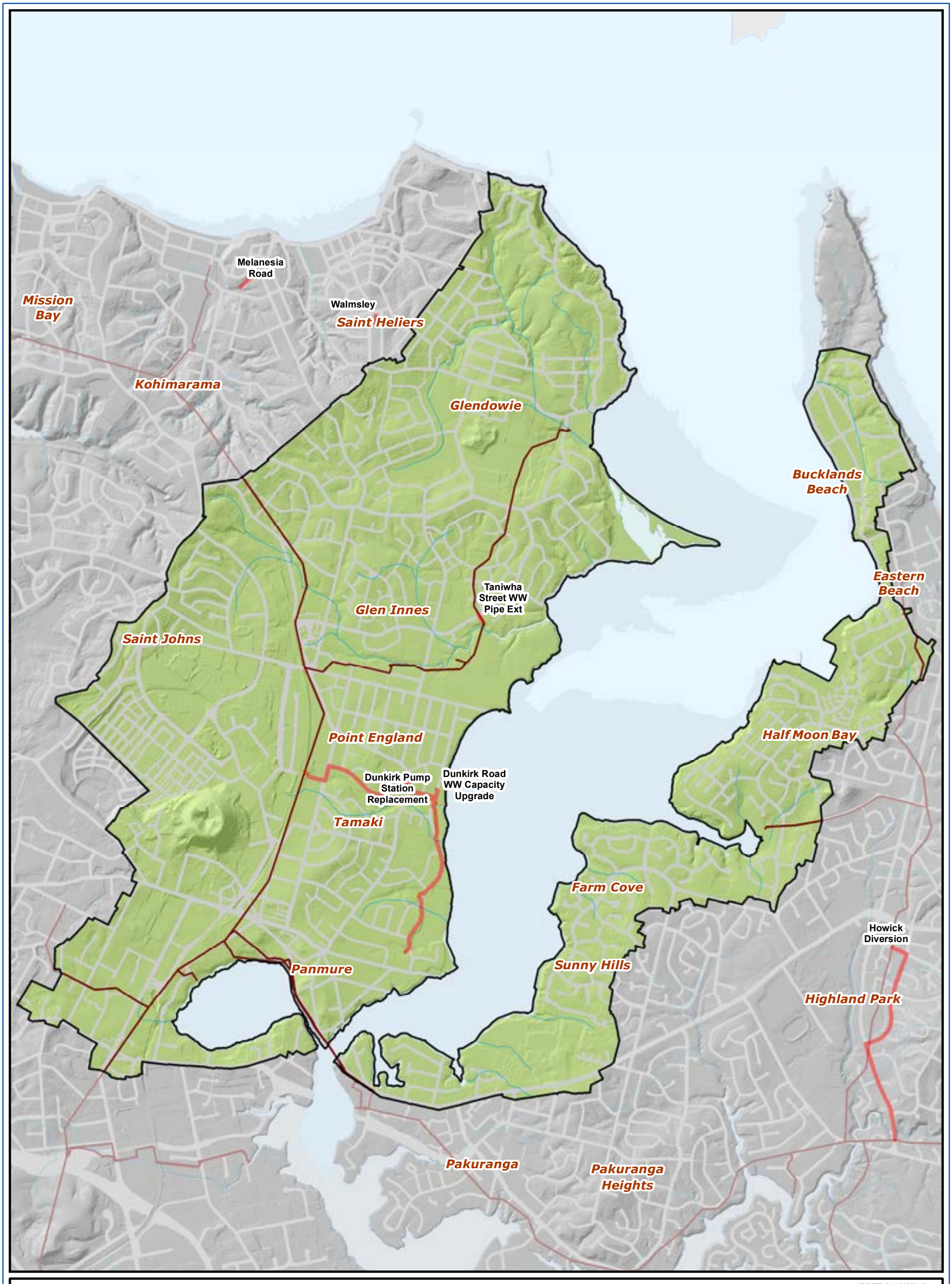
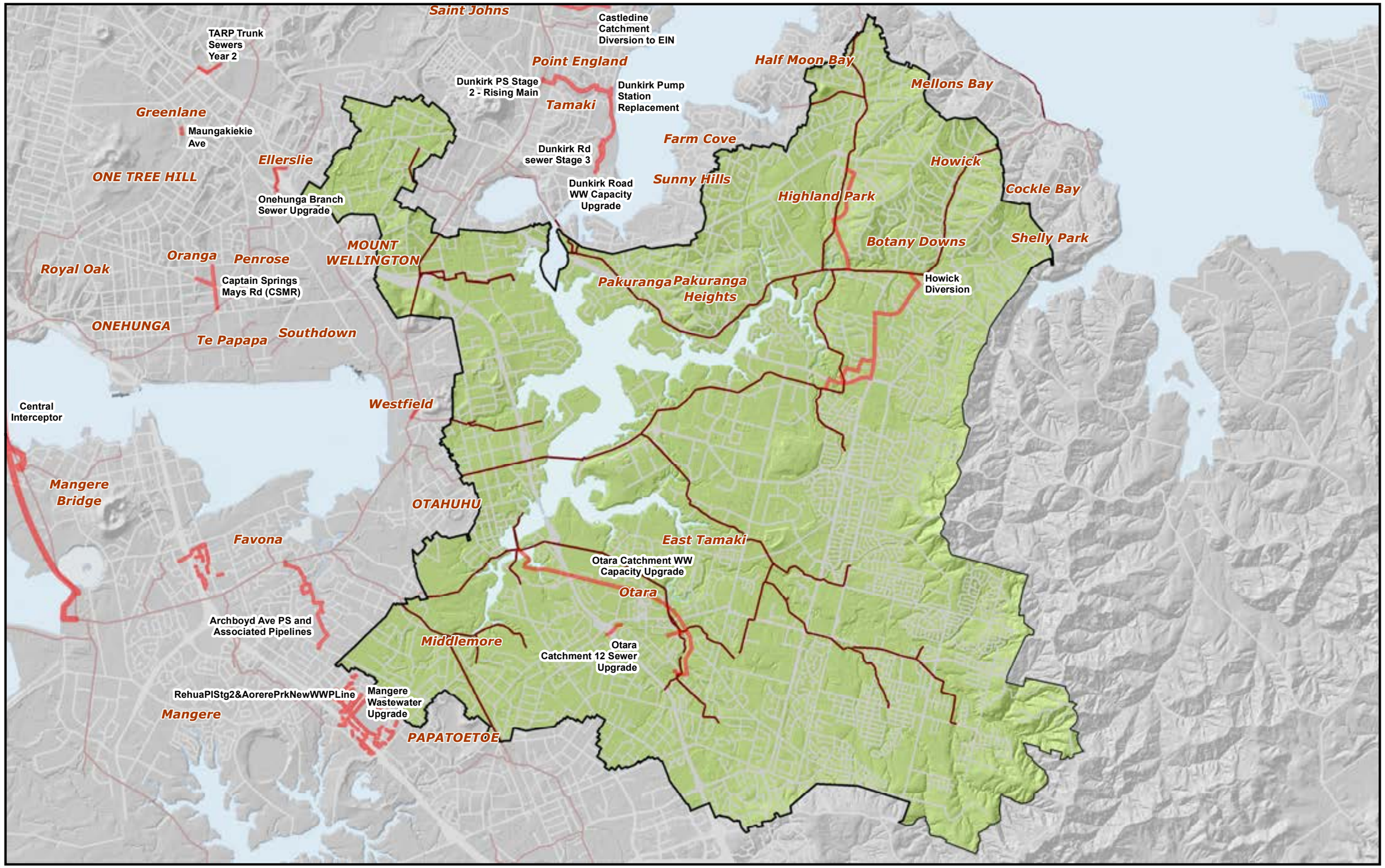
Appendix B-2 Proposed assets catchment maps



Appendix B-2 Proposed assets catchment maps



Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Upper Tamaki River Catchment

0 550 1,100 1,650
Metres

N

SCALE: 1:53,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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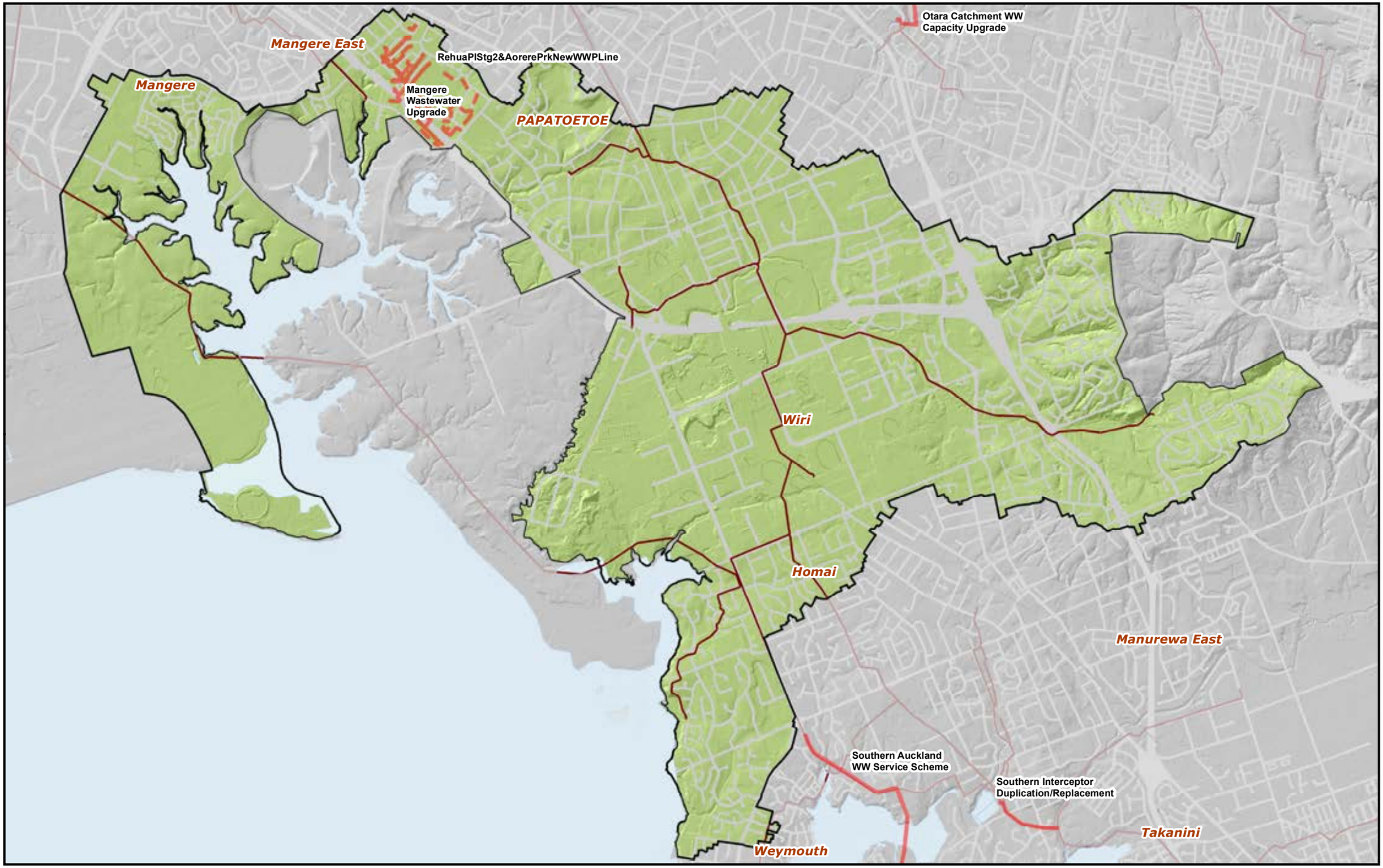
Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Areas (as defined in NDC)

Proposed Assets Map

Puhinui Catchment

0 360 720 1,080
Metres

N

SCALE: 1:35,000 @A3 CREATED BY : ASARIBALI
DATE: 11 July 2023 MAP NO: PR23017_1

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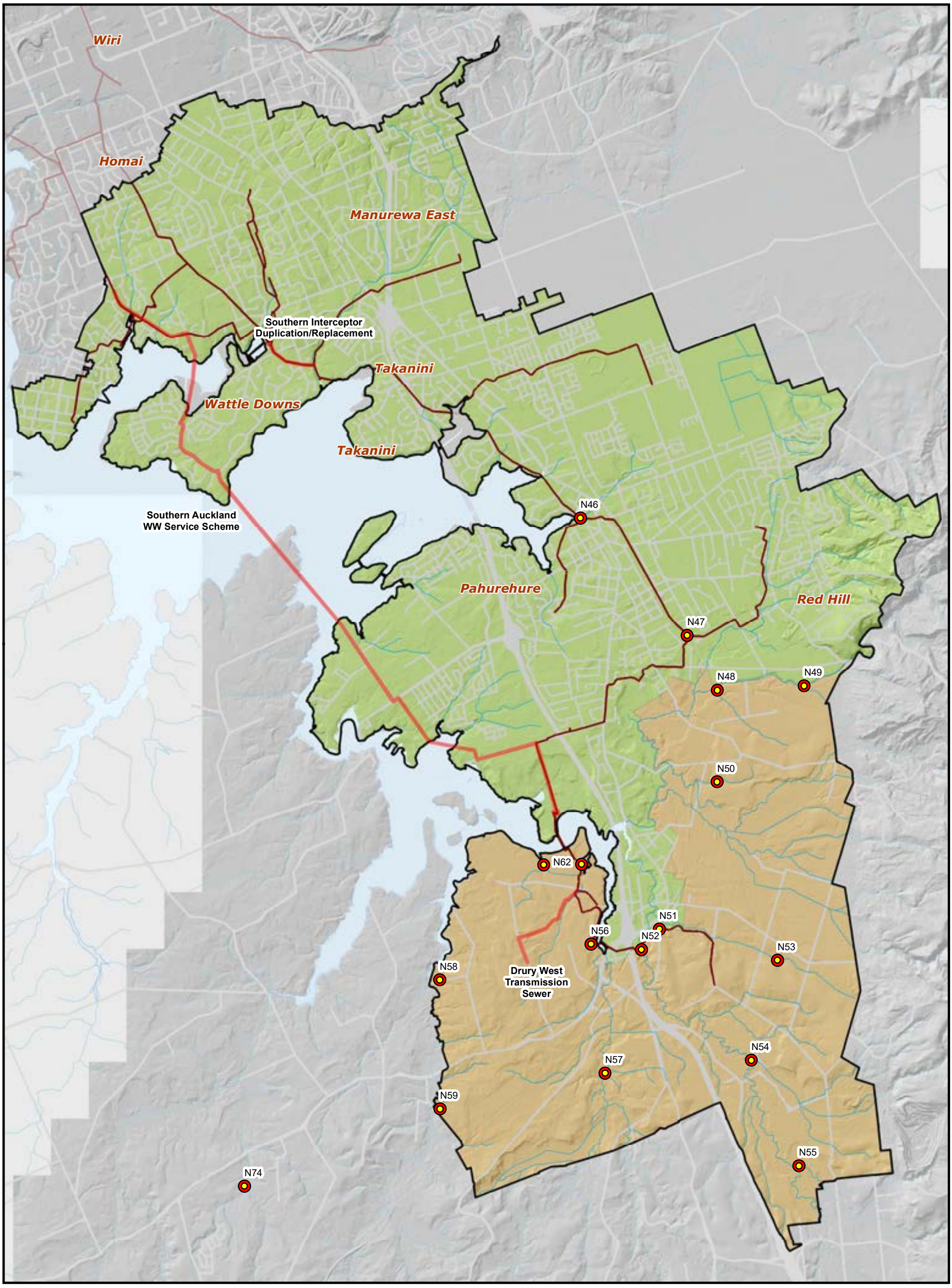
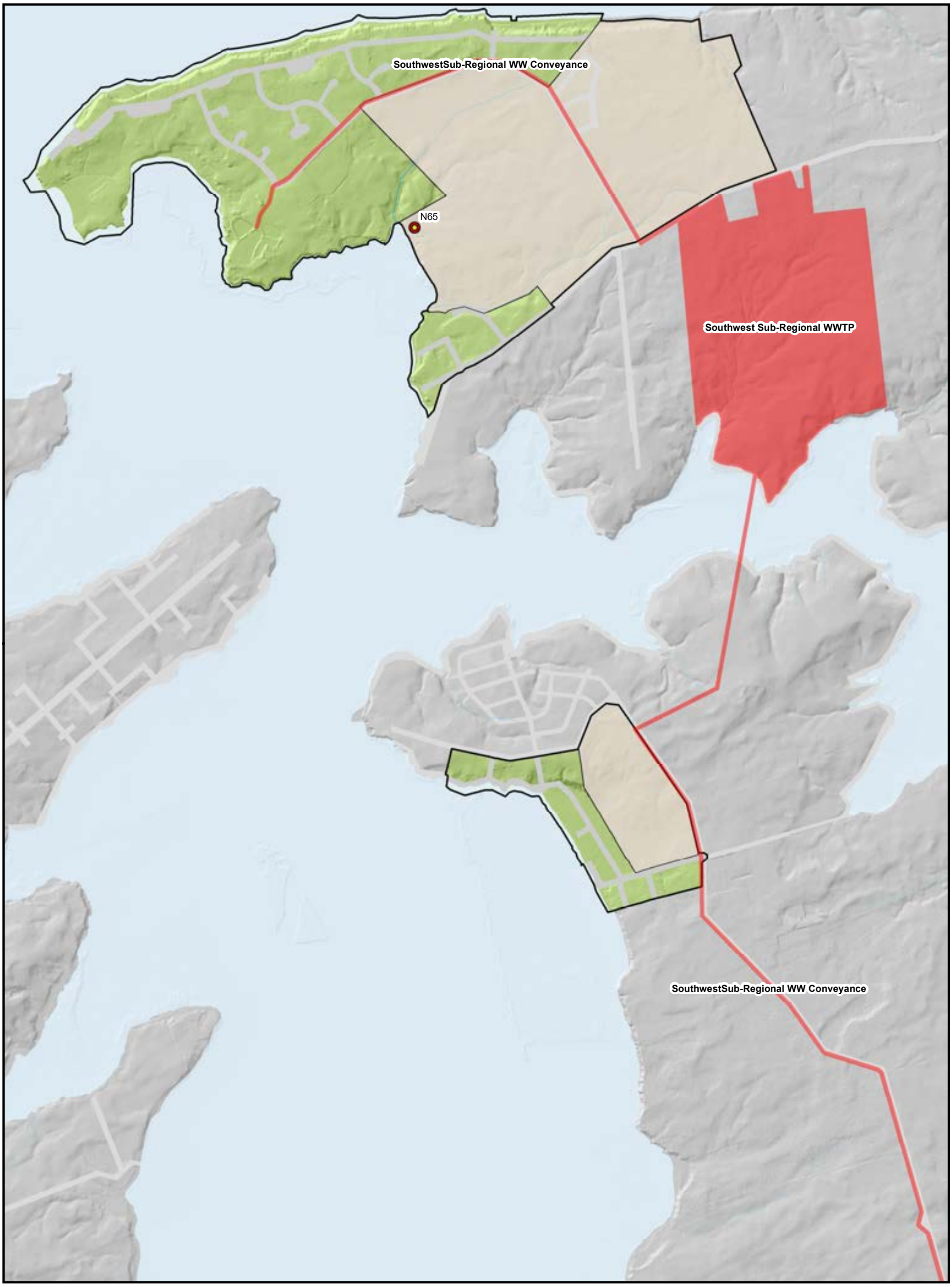
Appendix B-2 Proposed assets catchment maps



Appendix B-2 Proposed assets catchment maps



LEGEND

- Proposed Future Overflow Location
- WWLT_ProposedAsset
- Transmission Network Pipe
- Existing Urban Area (as defined in NDC)
- Indicative Future Urban Area (as defined in NDC)

Proposed Assets Map

Clarks Beach

N

0 150 300 450

Metres

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DISCLAIMER
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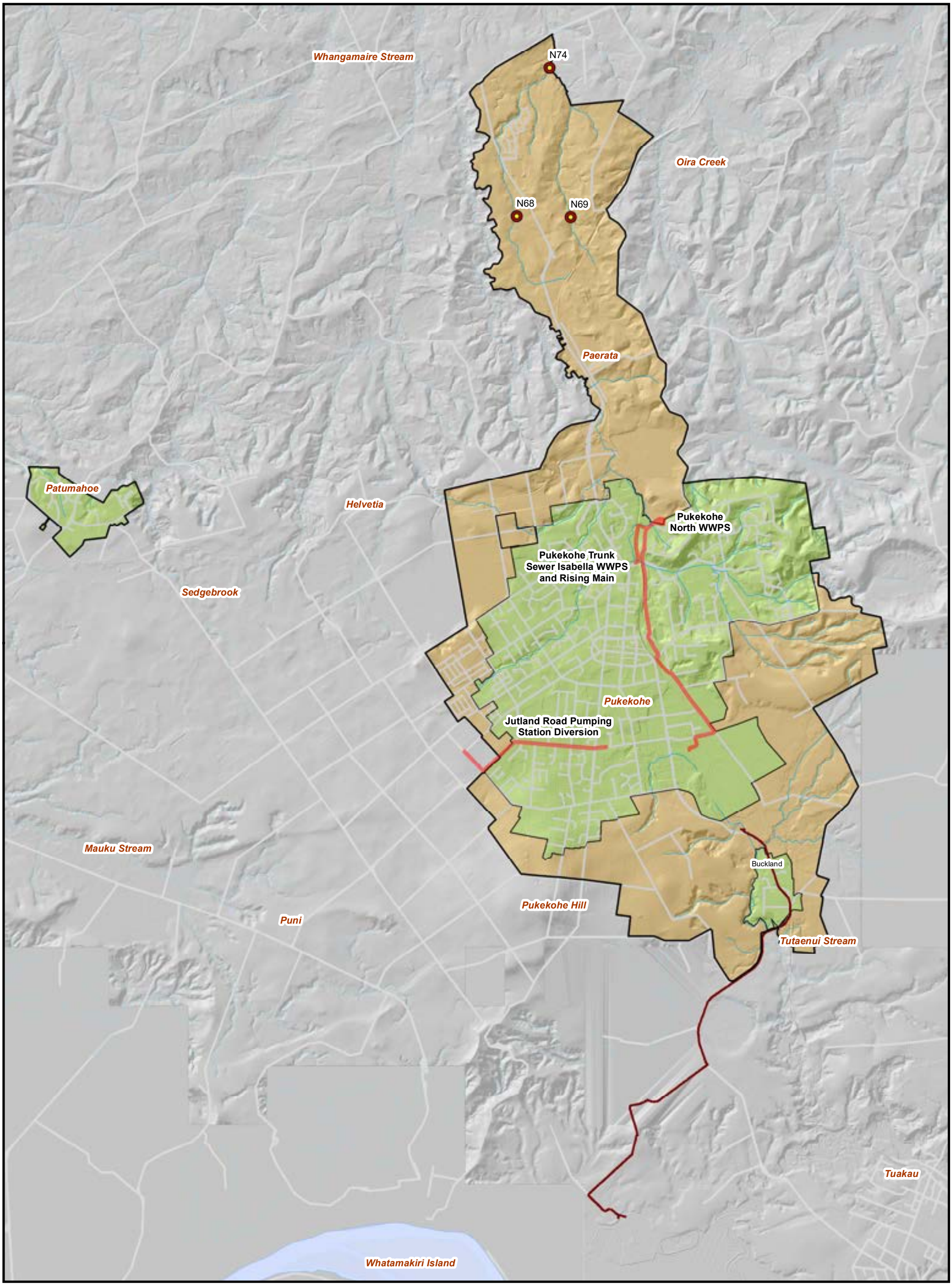
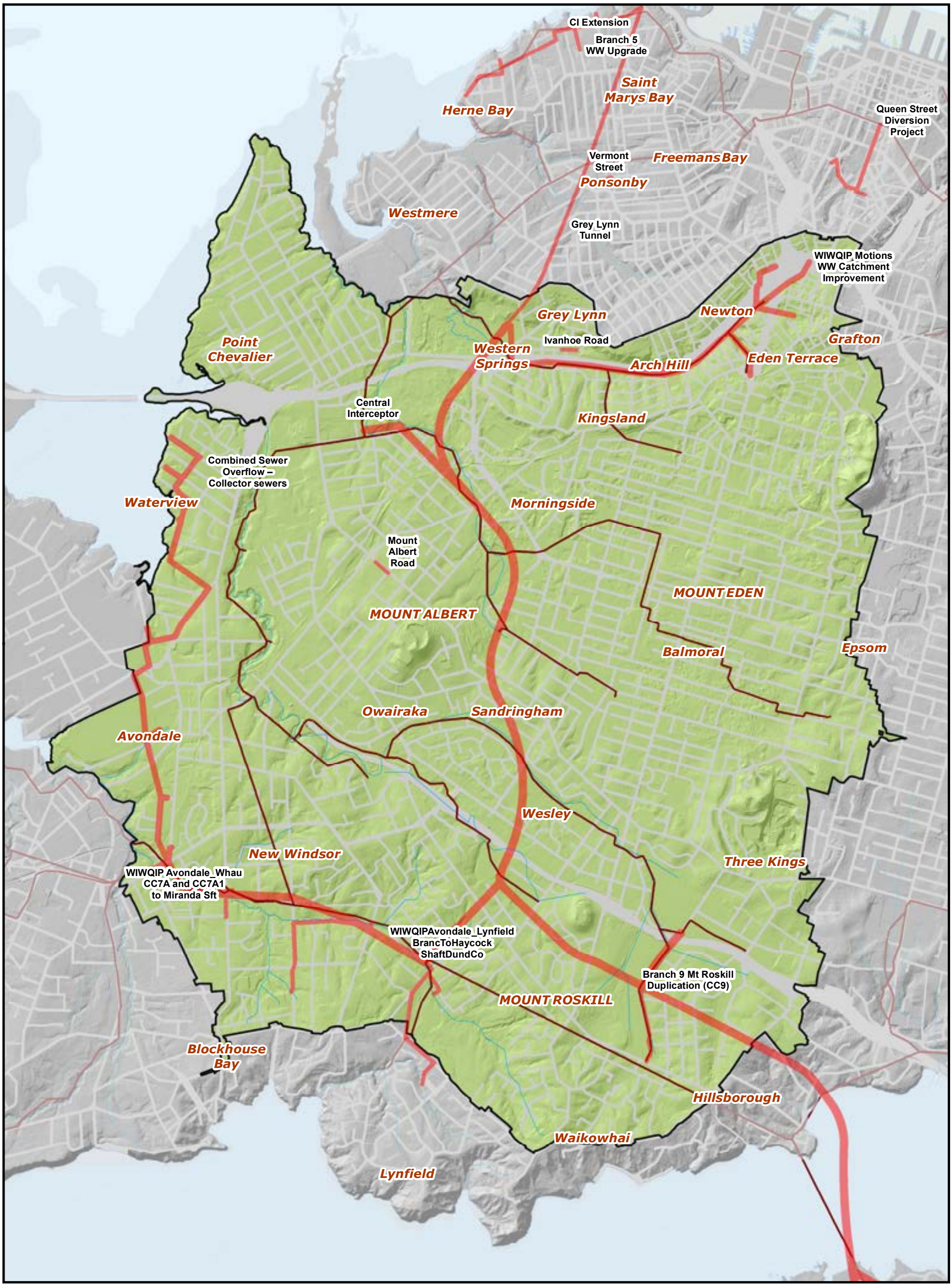
SCALE: 1:14,000 @A3
DATE: 06 July 2023
CREATED BY: ASARIBALI
MODIFIED BY: ASARIBALI
MAP NO: PR23017_1

Appendix B-2 Proposed assets catchment maps



Appendix B-2 Proposed assets catchment maps



Appendix B-2 Proposed assets catchment maps

Appendix C. Engineered Overflow Point Schedules

Table C-1 Schedule of engineered overflow points

Table C-2 Schedule of overflows to private property

Table C-1 Schedule of engineered overflow points in the existing wastewatwer network, current on June 2024. The highlighted rows show where changes have been made to the schedule during the 2023-24 reporting period. Blue: EOPs that have been discovered, green: newly proposed, commisioned or sealed EOPs.

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
1651		35 Entrican Avenue	1,761,101	5,916,992	2		Operational	Separate	Local	Hobson Bay	Unnamed stream flowing to Hobson Bay	Small waterway	2	1	2	1	Very High	Very High			
1650	DPRO1	Rock Isle 1 Pump Station	1,756,801	5,937,045	1		Operational	Separate	Local	East Coast Bays	Winstones Cove	Beach	2	2	2	1	Low	Very Low			
1649		21 Cecil Road	1,757,945	5,929,199	2		Operational	Separate	Local	East Coast Bays	Waitemata Harbour	Harbour	2	3	1	1	Very High	Moderate			
1648	DPTHK	Three Kings Pump Station	1,756,608	5,914,100	1		Proposed	Separate	Local	Western Isthmus	Swale	Swale	3	3	2	2	Very Low	Very Low			
1647						8	Proposed	Separate	Local	East Coast Bays	Awaruku Creek	Small waterway	3	3	1	1	Low	Moderate			
1646	DPSC5	Scott Point 5 Pump Staion	1,748,557	5,925,221	1		Operational	Separate	Local	Upper Harbour West	Limeburners Bay	Estuary	2	2	1	2	Very Low	Very Low			
1645		42 Tohunga Cres	1,759,382	5,919,250	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very High	Very High			
1644	DPWWN	Warkworth North Pump Station			2		proposed	Separate	Local	Warkworth	Manukau Harbour (as per Elizabeth St EOP)	Harbour	3	2	1	1	Low	Low			
1642		CRL EOP (replacement Motions network)					Proposed			Western Isthmus			0	0	0	0	0	0			
1641		Heron Park EOP					Proposed			Western Isthmus			0	0	0	0	0	0			
1640		CC7 EOP Miranda Reserve			2		Proposed			Western Isthmus			0	0	0	0	0	0			
1639		Archboyd Pump Station					Proposed			Māngere			0	0	0	0	0	0			
1638		23 Dingle Road	1,765,327	5,919,529	2		Operational	Separate	Local	Hobson Bay	St Heliers Bay	Beach	1	2	1	1	Very High	High			
1637		Mclarin Rd					Proposed			Clarks Beach			0	0	0	0	0	0			
1636		4 Scott Road	1,747,468	5,925,842			Proposed	Separate	Local	Upper Harbour West	Limeburners Bay	Estuary	2	2	1	2	Low	Low			
1635	DPTEP	Te Paea PS	1,767,785	5,887,983	1		Operational	Separate	Local	Pukekohe	Unnamed Tributary to Whangapouri Creek	Small waterway	3	2	2	1	Very Low	Moderate			
1634		160 Tennessee	1,761,926	5,908,338	2		Operational	Separate	Local	Māngere	Unnamed tributary to Harania Creek (South)	Small waterway	3	2	2	1	Very Low	Moderate			
1633		6 Alfriston Road	1,769,019	5,900,961	2		Operational	Separate	Local	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very Low	Very Low			
1631	DPDNK	Dunkirk Pump Station			1		Proposed	Separate	Transmission	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Low	Low			
1630	DSB0314	35 James Cook Cres, Remuera	1,758,804	5,918,424	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very Low			
1629		2/29 Raven Ave	1,755,453	5,912,410	2		Operational	Separate	Local	Western Isthmus	Oakley Creek (Keith Hay Park)	Small waterway	2	3	2	1	0	0			
1628	DPRHL	Redhills Pump Station	1,741,592	5,925,063	1		Operational	Separate	Local	Upper Harbour West	Ngongetepara Stream	Large waterway	3	2	2	1	Very Low	Very Low			
1627	DPRAW	Rautawhiri Rd PS	1,730,860	5,939,443	1		Operational	Separate	Local	Helensville	Awaroa Stream	Large waterway	3	2	2	1	Very Low	Very Low			
1626	DPSML	Small Road Pump Station	1,718,738	5,945,153	1		Proposed	Separate	Local	Weiti	John Creek	Small waterway	3	2	2	2	Very Low	Moderate			
1625		Was N51	1,773,367	5,891,562	1		Proposed	Separate	Local	Pahurehure Inlet	Unnamed tributary of Hingaia Stream	Small waterway	3	2	2	1	Very Low	Moderate			
1624	DPSC6	Scott Point 6 WWPS	1,748,655	5,926,446	1		Proposed	Separate	Local	Upper Harbour West	Bomb Bay	Estuary	3	1	1	2	Very Low	Very Low			
1623	DPKIA	Kia Kaha Drive PS	1,754,906	5,966,794	1		Proposed	Separate	Local	Snells Beach-Algies Bay	Northern arm of Mahurangi Harbour (Cornell Circle)	Estuary	3	1	2	2	Very Low	Very Low			
1622	DPWIK	14 Wikitoria Lane	1,748,156	5,971,249	1		Operational	Separate	Local	Warkworth	Mill Stream	Small waterway	3	3	2	2	Very Low	Very Low			
1621	DSB0123	12 Woodley Ave, Remuera	1,761,151	5,916,897	2		Operational	Separate	Local	Hobson Bay	Orakei Basin	Basin	1	1	1	1	Moderate	High			
1620	DPGOD	Godwit Place Wastewater Pump Station	1,752,987	5,911,045	1		Operational	Separate	Local	Māngere	Manukau Harbour edge (between Lynfield Cove and Wattle Bay)	Harbour	3	1	2	2	Very low	Very low			

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
1619	DPSY1	Sylvania Crescent 1 Wastewater Pump Station	1,753,194	5,910,910	1		Operational	Separate	Local	Onehunga	Manukau Harbour edge (between Lynfield Cove and Wattle Bay)	Harbour	3	1	2	2	Very low	Very low			
1618	DPMAH	194 Mahia Rd	1,767,662	5,898,935	1		Operational	Separate	Local	Pahurehure Inlet	Waimahia Creek	Estuary	2	2	1	1	Very Low	Very Low			
1617	DPPAR	Paremoremo Wastewater Pumpstation	1,746,524	5,931,331	1		Operational	Separate	Local	Outside			0	0	0	0	0	0			
1616		Waiwera WWTP	1,751,413	5,954,774	2		Proposed	Separate	Local	Wairewa	Wairewa Estuary	Estuary	1	1	1	1	0	0			
1615	DPBR1	132 Bremner Road	1,772,519	5,891,353	1		Operational	Separate	Local	Pahurehure Inlet	Ngakoroa Stream	Small waterway	3	2	2	1	Very Low	Very Low			
1614	DPFAL	84 Falls Road	1,748,107	5,970,693	1		Operational	Separate	Local	Warkworth	Unnamed watercourse	Small waterway	3	3	2	2	Very Low	Very Low			
1613	DPWH2	217 West Hoe Heights, Orewa	1,750,024	5,950,844	1		Operational	Separate	Local	Orewa	Nukumea Stream	Small waterway	3	1	2	1	Very Low	High			
1612	DPWH1	217 West Hoe Heights, Orewa	1,750,053	5,951,160	1		Operational	Separate	Local	Orewa	Nukumea Stream	Small waterway	3	1	2	1	Very Low	High			
1611	DPQUY	355 Quarry Road	1,774,808	5,889,272	1		Operational	Separate	Local	Pahurehure Inlet	Hingaia Stream	Large waterway	3	2	2	2	Very Low	Very Low			
1610	DPBR2	269 Bremner Road			1		Proposed	Separate	Local	Pahurehure Inlet	Unnamed Tributary to Drury Creek	Small waterway	3	2	1	1	Very Low	Moderate			
1608		9 Woodstock Road			2		Proposed	Separate	Local	East Coast Bays	Unamed tributary of Wairau Stream	Small waterway	3	3	2	1	Low	Low			
1607		Weitii Pump Station	1,747,895	5,946,133	1		Proposed	Separate	Local	Orewa	Weiti Stream	Large waterway	2	2	2	2	0	0			
1606		83 Sunnynook Road	1,755,522	5,930,599	2		Operational	Separate	Local	East Coast Bays	Unamed tributary of Wairau Stream	Small waterway	3	3	2	1	Low	Low			
1605	DSBHV40	29a Cresta Ave			2		Proposed	Separate	Local				0	0	0	0	0	0			
1604		10 Celsmere Lane	1,746,650	5,920,482	2	7.6	Operational	Separate	Local	Henderson Creek Catchment	Henderson Creek (southern arm)	Estuary	2	2	1	1	High	High			
1603		84 Torkar Rd	1,750,920	5,888,722	2		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low			
1602	DPHO3	Hobsonville 3 Pump Station	1,749,168	5,927,225	1		Operational	Separate	Transmission	Upper Harbour West	Harrier Point	Beach	1	2	2	2	Low	Very Low			
1601		2/3 Chartwell Ave			2	6.8	Proposed	Separate	Transmission				0	0	0	0	0	0			
1599	DSECB	49 Masterton Rd			2	5.4	Proposed	Separate	Transmission				0	0	0	0	0	0			
1598		21 Ayr Street	1,758,933	5,918,759	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very Low			
1597		St Marys Bay Diversion			2		Proposed	Separate	Transmission				0	0	0	0	0	0			
1595		11 Jonathan Place	1,755,409	5,931,106	2	2.5	Operational	Separate	Local	East Coast Bays	Unnamed tributary of Wairau Stream	Small waterway	3	3	2	1	Low	Low			
1594	DPSC1	Scott Point 1 WWPS			1		Operational	Separate	Local	Upper Harbour West	Bomb Bay	Estuary	3	1	1	2	Very Low	Very Low			
1593		Bremner Rd PS (207 Bremner Road)			1		Proposed	Separate	Local	Pahurehure Inlet	Unnamed Tributary to Drury Creek	Small waterway	3	2	2	1	Very Low	Moderate			
1592	DPFRD	84 Fred Taylor Drive PS			1		Operational	Separate	Local	Upper Harbour West	Ngongetepara Stream	Large waterway	3	2	2	1	Very Low	Very Low			
1591	DPWYN	PS85 Wynyard Quarter PS	1,756,500	5,921,073	1		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate			
1589		153 Whitney Street	1,752,206	5,913,308	2		Operational	Separate	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	0	0			
1588	DPSC3	Scott Point 3 WWPS	1,748,744	5,925,864	1		Operational	Separate	Local	Upper Harbour West	Nimrod Inlet	Estuary	3	1	1	2	0	0			
1587	DPJUT	Jutland Rd WWPS	1,767,402	5,880,894	1		Operational	Separate	Local	Pukekohe	Unnamed tributary of Whangapouri Creek (Adams Rd)	Small waterway	3	2	2	1	Very Low	Moderate			
1586	DPHAB	Harbour Ridge Drive PS	1,763,580	5,901,817	1		Operational	Separate	Local	Puhinui	Puhinui Stream	Large waterway	2	2	1	1	Moderate	Moderate			
1585	DPROW	Rowles Rd PS	1,767,515	5,879,719	1		Operational	Separate	Local	Pukekohe	Stormwater pond (Wai Shing Place)	Small waterway	3	3	2	1	Very Low	Very Low			

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
1584	DPWHV	Whenuapai Village PS	1,743,407	5,927,036	1		Operational	Separate	Local	Upper Harbour West	Stormwater pond (Tamiro Road)	Small waterway	3	3	2	1	0	0			
1583		16 Matipo Rd	1,746,685	5,922,320	2	12	Operational	Separate	Local	Henderson Creek	Unnamed tributary to Henderson Creek	Small waterway	3	1	2	1	Very low	Very low			
1582	DPSC2	Scott Point 2 WWPS	1,748,450	5,925,980	1		Operational	Separate	Local	Upper Harbour West	Nimrod Inlet	Estuary	3	1	1	2	0	0			
1580		4 St Marks Rd	1,758,738	5,917,679	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very Low			
1579	DPPAM	Pamela Christine Pump Station	1,761,818	5,883,329	1		Operational	Separate	Local	Pukekohe	Stormwater pond (Pamela Christine Road)	Small waterway	3	3	2	1	Very Low	Very Low			
1578	DPOKR	Okura River Rd Pump Station	1,753,948	5,937,792	1		Operational	Separate	Local	Long Bay	Unnamed tributary (1) to Vaughan Stream	Small waterway	2	2	1	1	0	0			
1577	DPORU	Oruarangi Pump Station	1,757,100	5,904,811	1		Operational	Separate	Local	Māngere	Oruarangi Creek	Small waterway	1	2	1	1	High	Moderate			
1576		16 Jutland St	1,756,196	5,932,826	2		Operational	Separate	Local	East Coast Bays	Unnamed watercourse off Jutland Street	Small waterway	3	2	2	2	Low	High			
1575	DSPAN	Papakura North MH08	1,772,128	5,895,902	2		Operational	Separate	Transmission	Pahurehure Inlet	Pahurehure Inlet Basin 3	Basin	3	2	2	1	Very Low	Low			
1574		21 Judges Bay Rd	1,759,459	5,920,211	2		Operational	Separate	Local	Hobson Bay	Judges Bay	Basin	1	1	1	1	High	High			
1573	DPHO4	Hobsonville 4 Pump Station	1,748,425	5,926,616	1		Operational	Separate	Transmission	Upper Harbour West	Bomb Bay	Estuary	3	1	1	2	Very Low	Very Low			
1572	DPHO2	Hobsonville 2 Pump Station	1,748,410	5,927,365	1		Operational	Separate	Transmission	Upper Harbour West	Te Okoriki Inlet	Estuary	3	2	1	1	Very Low	Very Low			
1571		CC6Gate					Proposed	Combined	Transmission								0	0			
1570		PtErinGate					Proposed	Combined	Transmission								0	0			
1569		WFI_Relief					Proposed	Combined	Transmission								0	0			
1568		TawarikiGate					Proposed	Combined	Transmission								0	0			
1567		StMarysGate					Proposed	Combined	Transmission								0	0			
1566		SarsfieldGate					Proposed	Combined	Transmission								0	0			
1565		Sandbrook Reserve					Proposed	Separate	Transmission								0	0			
1564		KelmarnaGate					Proposed	Combined	Transmission								0	0			
1563		Coxs Gate					Proposed	Combined	Transmission								0	0			
1562		NewmarketGully_B03MH16					Proposed	Separate	Transmission								0	0			
1561	DSORM043	CI_Rawalpindi	1,752,833	5,917,681	2		Proposed	Combined	Transmission	Western Isthmus							0	0			
1560	DSB08006?	Norgrove Gate	1,753,191	5,917,720	2		Proposed	Combined	Transmission	Western Isthmus							0	0			
1559		Glendowie					Proposed	Combined	Transmission								0	0			
1558		CI Keith Hay Park Shaft Gated Connection	1,755,523	5,913,163	2		Proposed	Combined	Transmission	Western Isthmus	Oakley Creek	Small waterway	2	3	2	1	0	0			
1557		Upper Glen Eden Storage Tank	1,746,876	5,913,564	2		Operational	Separate	Transmission	Henderson Creek	Waikumete Stream	Large waterway	3	2	2	1	Very Low	Very Low			
1556	DSGLE59C	GLEMH MH59C	1,745,484	5,914,812	2		Operational	Separate	Transmission	Henderson Creek	Waikumete Stream	Large waterway	3	2	2	1	Very Low	Very Low			
1555		CI_Relief	1,758,126	5,908,056	1		Proposed	Combined	Transmission	Māngere							0	0			
1554		Rawalpindi					Proposed	Combined	Transmission	Western Isthmus							0	0			

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1553		CI_Haverstock	1,754,020	5,915,949	2		Proposed	Combined	Transmission	Western Isthmus							0	0			
1552		CI_B08MH18	1,753,676	5,917,720	2		Proposed	Combined	Transmission	Western Isthmus							0	0			
1551	DPBUK	Bucklands Pump Station	1,770,682	5,877,780	1		Operational	Separate	Local	Pukekohe	Tutaenui Stream	Large waterway	3	3	2	2	Very low	Very low			
1550	DPPKE	Pukekohe Pump Station	1,771,410	5,879,035	1		Operational	Separate	Transmission	Pukekohe	Unnamed tributary of the Tutaenui Stream	Small waterway	3	3	2	2	Very low	Very low			
1549	DSPPC	14 McLean Ave	1,764,294	5,906,965	2	3.7	Operational	Separate	Local	Upper Tamaki River	Troon Creek	Small Waterway	3	2	1	1	Very low	Very low			
1548		3/42 Fairlands Ave	1,751,152	5,916,667	2		Operational	Combined	Local	Western Isthmus	Waterview Inlet (Saltaire Street)	Estuary	3	1	1	1	Moderate	Moderate			
1547		Miranda Reserve (B)	1,751,279	5,913,682	2		Operational	Separate	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	0	0			
1546	DPOTN	Otahuhu North Diversion MH07	1,764,282	5,910,612	1		Operational	Separate	Transmission	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low			
1545	DPBRK	Brickworks Pump Station	1,747,386	5,925,937	1		Operational	Separate	Local	Upper Harbour West	Limeburners Bay	Estuary	2	2	1	2	Low	Low			
1543	DPHO5	Hobsonville 5 Pump Station	1,748,686	5,926,515	1		Operational	Separate	Local	Upper Harbour West	Bomb Bay	Estuary	3	1	1	2	Very Low	Very Low			
1542	DPNAV	New Avenues WWPS	1,778,566	5,914,973	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Pine Harbour Marina Beach (South)	Small Waterway	3	2	1	2	Very Low	Moderate			
1541		40 Beachcroft Avenue	1,757,781	5,912,310	2		Operational	Separate	Local	Onehunga	Onehunga Bay	Beach	1	2	1	1	Low	Low			
1540		Elizabeth Street	1,748,974	5,970,714	2		Operational	Separate	Local	Warkworth	Unnamed tributary (4) of Mahurangi River	Small waterway	3	2	1	1	Very Low	Moderate			
1539		Blethyn Place Reserve	1,746,013	5,919,071	2		Operational	Separate	Local	Henderson Creek	Henderson Creek (southern arm)	Estuary	2	1	1	1	Very Low	Very Low			
1538		30 Potatau St (B)	1,755,913	5,918,589	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1537		Suffolk Street (B)	1,756,376	5,918,858	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1536		103 Seabrook Ave	1,748,933	5,912,899	2		**Decommissioned**	Separate	Local	Whau River	Manawa Stream	Small waterway	3	2	2	1	Very low	Moderate			
1535		145-147 Wyllie Road	1,764,355	5,904,519	2	2.5	Operational	Separate	Local	Puhinui	Puhinui Stream	Large waterway	2	2	1	1	Moderate	Moderate			
1534		22 Graeme Avenue	1,763,264	5,906,846	2		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low			
1533		208 Riddell Road	1,767,576	5,918,866	2		Operational	Separate	Local	Lower Tamaki River	Hartland Avenue and Riddell Road Stormwater Culvert	Small waterway	2	2	2	2	Low	Very low			
1532		84 Reihana St	1,762,406	5,919,233	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very High	Very High			
1531		68 Olsen Ave	1,756,048	5,912,756	2		Operational	Separate	Local	Western Isthmus	Tributary of Oakley Creek	Small waterway	3	2	2	1	0	0			
1530	DPMSN	PS69 Massey North Wastewater Pump Station	1,743,135	5,925,413	1		Operational	Separate	Transmission	Upper Harbour West	Totara Creek	Small waterway	3	2	2	2	Very Low	Moderate			
1529	DPWHN	PS 68 Whenuapai Wastewater Pump Station	1,745,683	5,926,094	1		Operational	Separate	Transmission	Upper Harbour West	Waiarohia Stream	Small waterway	3	2	2	1	Very Low	Moderate			
1526	DSB09	Branch 9 MH91A	1,755,348	5,912,373	2		Operational	Combined	Transmission	Western Isthmus	Oakley Creek (Keith Hay Park)	Small Waterway	2	3	2	1	0	0			
1525		22 - 24 Randolf Street	1,756,584	5,919,023	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1523		Suffolk Street (A)	1,756,370	5,918,853	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1522		15 Dempsey Street	1,761,079	5,917,849	2		Operational	Separate	Local	Hobson Bay	Unnamed stream flowing to Hobson Bay	Small Waterway	2	1	2	1	0	0			
1520	DSMHD	Orakei Sewer Main Hobson Diversion - Logan Terrace drop shaft	1,759,704	5,919,354	2		Operational	Separate	Transmission	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very High	Very High			
1519		Phyllis Reserve	1,751,791	5,916,655	2		Operational	Combined	Local	Western Isthmus	Oakley Creek (Oakley Creek Walkway)	Large Waterway	2	1	1	1	0	0			
1518	DSB9D29B	Hendon Ave (New Branch 9 Diversion)	1,752,256	5,915,038	2		Operational	Combined	Transmission	Western Isthmus	Oakley Creek (Allan Wood Reserve)	Large Waterway	3	1	2	1	0	0			

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1515		Branch 7 MH34	1,755,387	5,918,213	2		Operational	Separate	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1514		Heron Park	1,751,105	5,916,612	2		Operational	Separate	Local	Western Isthmus	Waterview Inlet (Saltaire Street)	Estuary	3	1	1	1	Moderate	Moderate			
1511		2 Harold Street	1,756,984	5,918,246	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1508		37 Commercial Rd	1,755,347	5,918,284	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1506		1/94 School Rd	1,754,793	5,918,282	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1505		13 Sefton Ave	1,754,317	5,918,786	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	0	0			
1502		84 Wolverton Rd	1,750,982	5,913,840	2		Operational	Separate	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	0	0			
1443		128 Spinella Drive	1,753,186	5,929,173	2		Operational	Separate	Local	Upper Harbour South	Glendhu Reserve Stream	Small waterway	3	2	2	1	Very low	Moderate		Low	Low
1442		140 Birkdale Road	1,751,455	5,925,801	2		Operational	Separate	Local	Upper Harbour South	Rangatira Stream	Small waterway	3	2	2	1	Low	Moderate		Low	Low
1441			1,751,249	5,926,090			Decommissioned	Separate	Local	Upper Harbour South	Rangitira Stream	Small waterway	3	2	2	1	Low	Moderate			
1417		13 Lynley Place, Pakuranga	1,768,835	5,913,234	2		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low		Low	Low
1408		Howick Diversion Pump Station	1,770,052	5,913,036	1		Proposed	Separate	Transmission	Upper Tamaki River			3	1	1	1	Very low	Low	1-4		
1406		61 - 67 Felton Matthew Ave	1,764,865	5,917,367	2		Operational	Separate	Local	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Low	Low		Low	Medium
1405	DPSTF	Stonefields Pump Station	1,763,835	5,915,859	1		Operational	Separate	Local	Hobson Bay	Waiatarua Reserve Stream	Small waterway	3	3	2	1	Very low	Very low	> 8	Low	Low
1404	DPLGB	Long Bay Wastewater Pump Station	1,756,286	5,937,996	1		Operational	Separate	Transmission	Long Bay	Awaruku Creek	Small Waterway	2	2	1	1	Moderate	Moderate	> 8	Low	Low
1278		135 Millbrook Road	1,745,625	5,915,528	2		Operational	Separate	Local	Henderson Creek	Waikumete Stream	Large waterway	3	2	2	1	Very low	Very low		Low	Low
1275	DPHOP	Hobsonville Wholesale Wastewater Pump Station	1,747,498	5,926,793	1		Operational	Separate	Transmission	Upper Harbour West	Wallace Inlet	Estuary	2	2	1	1	Very low	Very low	4-8	Low	Low
1274	DPHOB	Hobsonville Wastewater Pump Station	1,747,889	5,927,115	1		Operational	Separate	Local	Upper Harbour West	Te Okoriki Inlet	Estuary	3	2	1	1	Very low	Very low	> 8	Low	Low
1272	DPROB	Roberts Road Wastewater Pump Station	1,759,521	5,945,805	1		Operational	Separate	Local	Whangaparāoa	Laurie Southwick Parade Stream	Small waterway	3	2	2	1	Very low	Moderate	4-8	Low	Low
1269	DPORB	Orewa Bridge South Wastewater Pump Station	1,751,733	5,948,109	1		Operational	Separate	Local	Orewa	Orewa river estuary	Estuary	1	1	1	1	Very low	Very low	4-8	Low	Low
1267	DPCOA	Coastal Heights Wastewater Pump Station	1,753,122	5,944,039	1		Operational	Separate	Local	Weiti	Weiti Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
1266	DPMAY	Maygrove Wastewater Pump Station	1,750,884	5,948,748	1		Operational	Separate	Local	Orewa	Orewa river estuary	Estuary	1	1	1	1	Very low	Very low	4-8	Low	Low
1265	DPTAP	Tauranga Place Wastewater Pump Station	1,749,815	5,949,155	1		Operational	Separate	Local	Orewa	Northern arm of Orewa river estuary	Estuary	3	2	1	1	Very low	Very low	1-4	Low	Low
1263	DPISV	Island View Wastewater Pump Station	1,761,439	5,946,344	1		Operational	Separate	Local	Whangaparāoa	Okoromai Bay Beach	Beach	1	1	1	1	Low	Very low	4-8	Low	Low
1262	DPFLO	Florence Wastewater Pump Station	1,751,627	5,949,864	1		Operational	Separate	Local	Orewa	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1260	DPPAC	Pacific Wastewater Pump Station	1,761,402	5,947,736	1		Operational	Separate	Local	Whangaparāoa	Army Bay Beach	Beach	2	2	1	1	Low	Very low	4-8	Low	Low
1259	DPORE	Orewa Wastewater Pump Station	1,750,231	5,948,366	1		Operational	Separate	Local	Orewa	Orewa river estuary	Estuary	1	1	1	1	Low	Low	> 8	Medium	Low
1258	DPLIL	Lilburn Wastewater Pump Station	1,749,735	5,970,350	1		Operational	Separate	Local	Warkworth	Stormwater pond (Lucy Moore Memorial Park)	Small waterway	3	3	2	1	Very Low	Very low	1-4	Low	Low
1256	DPPIN	Pinecrest Wastewater Pump Station	1,760,549	5,944,898	1		Operational	Separate	Local	Whangaparāoa	Stormwater pond-Gulf Harbour Country Club	Small waterway	3	3	2	1	Very low	Very low	4-8	Low	Low
1255	DPJEL	Jelas Wastewater Pump Station	1,750,612	5,947,630	1		Operational	Separate	Local	Orewa	Southern arm of Orewa river estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
1254	DPANS	Anselmi Ridge Wastewater Pump Station	1,770,225	5,882,075	1		Operational	Separate	Local	Pukekohe	Whangapouri Creek	Large waterway	3	2	2	1	Very low	Very low	> 8	Low	Low

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1253	DPCL2	Colin Lawrie 2 Wastewater Pump Station	1,769,680	5,882,022	1		Operational	Separate	Local	Pukekohe	Whangapouri Creek	Large waterway	3	2	2	1	Very low	Very low	> 8	Low	Low
1252	DPKRD	Kauri Road Wastewater Pump Station	1,767,492	5,881,673	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1251	DPMRW	Marble Wood Wastewater Pump Station	1,768,312	5,882,336	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	1-4	Low	Low
1250	DPDUB	Dublin Road Wastewater Pump Station	1,768,579	5,881,619	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1249	DPISA	Isabella Drive Wastewater Pump Station	1,769,233	5,882,696	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1248	DPLOC	Lochview Wastewater Pump Station	1,768,906	5,882,623	1		Operational	Separate	Local	Pukekohe	Stormwater pond (Lochview Reserve)	Small waterway	3	3	2	1	Very low	Very low	> 8	Low	Low
1247	DPCHR	Cape Hill Road Wastewater Pump Station	1,769,096	5,882,270	1		Operational	Separate	Local	Pukekohe	Whangapouri Creek	Large waterway	3	2	2	1	Very low	Very low	1-4	Low	Low
1246	DPNES	North East Wastewater Pump Station	1,762,989	5,883,117	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1245	DPMTU	Mareretu Wastewater Pump Station	1,762,549	5,882,925	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1244	DPWEC	Wecks Wastewater Pump Station	1,762,427	5,882,772	1		Operational	Separate	Local	Pukekohe	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1243	DPFRS	Fletchers Wastewater Pump Station	1,762,139	5,882,908	1		Operational	Separate	Local	Pukekohe	Stormwater pond (Fletcher Lane)	Small waterway	3	3	2	1	Very low	Very low	> 8	Low	Low
1241	DPDRE	Dressage Wastewater Pump Station	1,750,231	5,928,910	1		Operational	Separate	Local	Upper Harbour North	Orwell Stream	Small waterway	3	2	2	2	Very low	Moderate	4-8	Low	Low
1240	DPCLI	Cliffs Wastewater Pump Station	1,757,281	5,937,410	1		Operational	Separate	Local	East Coast Bays	Toroa Point	Beach	2	2	2	1	Low	Very low	4-8	Low	Low
1239	DPRO2	Rock Isle 2 Wastewater Pump Station	1,756,715	5,936,801	1		Operational	Separate	Local	East Coast Bays	Waiake Beach	Beach	1	2	1	1	Very low	Very low	> 8	Low	Low
1238	DPPTL	Portal Wastewater Pump Station	1,756,864	5,933,627	1		Operational	Separate	Local	East Coast Bays	Churchill Coast	Beach	1	2	2	1	Low	Very low	4-8	Low	Low
1237	DPCHU	Churchill Wastewater Pump Station	1,756,699	5,933,919	1		Operational	Separate	Local	East Coast Bays	Churchill Coast	Beach	1	2	2	1	Low	Very low	1-4	Low	Low
1236	DPBE1	Beach Road 1 Wastewater Pump Station	1,757,474	5,931,022	1		Operational	Separate	Local	East Coast Bays	Beach at Kennedy Park	Beach	2	2	2	1	Low	Very low	1-4	Low	Low
1235	DPOKU	Okura Wastewater Pump Station	1,753,878	5,939,934	1		Operational	Separate	Local	Long Bay	Okura Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
1234	DPCHS	Chester Wastewater Pump Station	1,751,748	5,930,456	1		Operational	Separate	Local	Upper Harbour North	Kyle Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
1232	DPBUS	Bush Wastewater Pump Station	1,752,405	5,933,236	1		Operational	Separate	Local	Upper Harbour North	Oteha Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
1231	DPOSC	Oscar Wastewater Pump Station	1,748,801	5,929,607	1		Operational	Separate	Local	Upper Harbour North	Lucas Creek	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
1229	DPBE2	Beach Road 2 Wastewater Pump Station	1,756,445	5,936,777	1		Operational	Separate	Local	East Coast Bays	Deep Creek	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
1228	DPDEB	Deborah Wastewater Pump Station	1,753,490	5,939,800	1		Operational	Separate	Local	Long Bay	Okura Estuary	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
1227	DPCRA	Craig Wastewater Pump Station	1,757,633	5,929,593	1		Operational	Separate	Local	East Coast Bays	Wairau Creek	Estuary	2	3	1	1	Very low	Very low	4-8	Low	Low
1226	DPAAW	Arawa Wastewater Pump Station	1,761,086	5,923,458	1		Operational	Separate	Local	Devonport-Takapuna	Cheltenham Beach	Beach	1	1	1	1	Low	Very low	4-8	Low	Low

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1200	DPJOE	Joe Stanley Place Wastewater Pump Station	1,765,388	5,910,968	1		Operational	Separate	Local	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low	4-8	Low	Low
1198	DPWNG	Wingate Street Wastewater Pump Station	1,750,148	5,914,844	1		Operational	Separate	Local	Western Isthmus	Whau River	Estuary	2	1	1	1	#N/A	#N/A	4-8		
1197	DPGN2	Great North Road Wastewater Pump Station	1,750,809	5,914,776	1		Operational	Separate	Local	Western Isthmus	Small tributary of Whau Creek 1	Small Waterway	3	2	2	1	#N/A	#N/A	< 1		
1196	DPCAR	Carrs Place Wastewater Pump Station	1,762,449	5,915,462	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1195	DPBA2	Ballarat Street 2 Wastewater Pump Station	1,762,451	5,915,282	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	1-4	Low	Low
1194	DPHRD	Huia Road Wastewater Pump Station	1,763,367	5,909,830	1		Operational	Separate	Local	Māngere	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1193	DPRNY	Rodney Street Wastewater Pump Station	1,764,955	5,909,569	1		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low	4-8	Low	Low
1192	DPPO1	Portage Road 1 Wastewater Pump Station	1,763,776	5,910,746	1		Operational	Separate	Local	Māngere	Ann's Creek	Estuary	3	1	1	2	Very low	Low	> 8	Low	Low
1191	DPRD2	Mount Richmond 2 Wastewater Pump Station	1,764,012	5,911,139	1		Operational	Separate	Local	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low	4-8	Low	Low
1190	DPRD1	Mount Richmond 1 Wastewater Pump Station	1,764,068	5,910,928	1		Operational	Separate	Local	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low	> 8	Low	Low
1189	DPWAT	Watene Road Wastewater Pump Station	1,765,238	5,913,953	1		Operational	Separate	Local	Lower Tamaki River	Panmure Basin	Basin	2	1	1	1	Low	Low	> 8	Low	Low
1188	DPBDG	Bridge Street Wastewater Pump Station	1,765,563	5,913,856	1		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
1187	DPPNM	Panmure Wharf Wastewater Pump Station	1,766,421	5,914,341	1		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
1186	DPBNK	Banks Street Wastewater Pump Station	1,763,431	5,914,765	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1185	DPFER	Ferndale Road Wastewater Pump Station	1,763,023	5,914,673	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1184	DPMOT	Motu Place Wastewater Pump Station	1,763,168	5,914,877	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1183	DPHAR	Harris Road Wastewater Pump Station	1,763,474	5,915,326	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1182	DPMCD	McDonald Crescent Wastewater Pump Station	1,762,750	5,915,126	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1181	DPBA1	Ballarat Street 1 Wastewater Pump Station	1,762,478	5,914,944	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1179	DPRVK	Royal Viking Wastewater Pump Station	1,752,565	5,911,919	1		Operational	Separate	Local	Onehunga	Wairaki Stream	Small Waterway	2	2	2	1	Moderate	Moderate	> 8	Low	Low
1178	DPHBH	Hillsborough Road Wastewater Pump Station	1,754,437	5,911,225	1		Operational	Separate	Transmission	Onehunga	Waikowhai Bay	Beach	1	1	2	1	Low	Very low	> 8	Low	Low
1177	DPMP2	Malaspina Place 2 Wastewater Pump Station	1,763,822	5,906,318	1		Operational	Separate	Local	Puhinui	Unnamed stream in Kohuora Park	Small waterway	3	2	1	1	Low	Moderate		Low	Low
1175	DPMC2	Mclaughlins Road 2 Wastewater Pump Station	1,764,155	5,902,460	1		Operational	Separate	Local	Puhinui	Unnamed tributary of Puhinui Stream near McLaughlin Rd	Small waterway	3	2	2	2	Very Low	Moderate		Low	Low
1173	DPCOC	Cockle Bay Storage Tank	1,773,770	5,914,489	1		Operational	Separate	Transmission	Cockle Bay	Cockle Bay	Beach	1	1	1	1	Low	Very low		Low	Low

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1172	DPMEB	Mellons Bay Storage Tank	1,771,981	5,916,319	1		Operational	Separate	Transmission	Cockle Bay	Mellons Bay	Beach	1	2	1	1	Low	Very low		Low	Low
1171	DPABE	Aberdeen Crescent Wastewater Pump Station	1,767,257	5,898,024	1		Operational	Separate	Local	Pahurehure Inlet	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land		Low	Low
1168	DPHMB	Halfmoon Bay Marina Wastewater Pump Station	1,769,474	5,916,585	1		Operational	Separate	Local	Lower Tamaki River	Half Moon Bay Marina	Basin	2	3	1	1	Low	Very low	4-8	Low	Low
1166	DPRYS	Roys Road Wastewater Pump Station	1,765,236	5,897,841	1		Operational	Separate	Local	Pahurehure Inlet	Te Pua Point	Beach	2	2	1	1	Low	Very low		Low	Low
1165	DPWEY	Weymouth Domain Wastewater Pump Station	1,765,118	5,898,575	1		Operational	Separate	Local	Puhinui	Weymouth Beach	Beach	1	1	1	1	Very Low	Very Low		Low	Low
1164	DPSET	Settlers Cove Wastewater Pump Station	1,765,376	5,898,820	1		Operational	Separate	Local	Puhinui	Unnamed stream (flowing to Weymouth Beach)	Small waterway	3	3	1	1	Very Low	Very Low		Low	Low
1163	DPMNW	Manurewa West Wastewater Pump Station	1,765,398	5,901,299	1		Operational	Separate	Local	Puhinui	Puhinui Creek	Estuary	2	1	1	1	Very Low	Very Low		Low	Low
1159	DPLAM	Lambie Court Wastewater Pump Station	1,762,428	5,907,431	1		Operational	Separate	Local	Māngere	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land		Low	Low
1156	DPLAW	Lawrence Place Wastewater Pump Station	1,767,416	5,907,970	1		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Otara Creek (east)	Small waterway	3	2	1	1	Very low	Very low		Low	Low
1155	DPLUK	Luke Place Wastewater Pump Station	1,767,388	5,908,843	1		Operational	Separate	Local	Upper Tamaki River	Otara Creek	Estuary	2	1	1	1	Very low	Very low		Low	Low
1154	DPHIB	Highbrook Park Wastewater Pump Station	1,766,630	5,911,095	1		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River	Estuary	1	1	1	1	Very low	Very low	4-8	Low	Low
1153	DPHIS	Harris Road Wastewater Pump Station	1,768,857	5,910,858	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low	1-4	Low	Low
1152	DPCRY	Cryers Road Wastewater Pump Station	1,768,575	5,911,223	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low		Low	Low
1150	DPRHP	Riverhills Park Wastewater Pump Station	1,768,048	5,912,012	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low		Low	Low
1149	DPPEL	Pelorus Place Wastewater Pump Station	1,765,945	5,912,562	1		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River	Estuary	1	1	1	1	Very low	Very low		Low	Low
1143	DPGOS	Gossamer Drive Wastewater Pump Station	1,768,549	5,913,332	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Low	Moderate	4-8	Low	Medium
1142	DPCAS	Cascades Road Wastewater Pump Station	1,769,709	5,912,994	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low	1-4	Low	Low
1141	DPLLO	Lloyd Elsmore Park Wastewater Pump Station	1,769,514	5,914,322	1		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Highland Park)	Small waterway	3	2	1	1	Very low	Moderate	1-4	Low	Low
1140	DPRNA	Ramoana Mews Wastewater Pump Station	1,772,811	5,912,879	1		Operational	Separate	Local	Cockle Bay	Maungamaungaroa Creek	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
1139	DPCHI	Chisbury Terrace Wastewater Pump Station	1,773,393	5,913,117	1		Operational	Separate	Local	Cockle Bay	Maungamaungaroa Creek	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
1138	DPMC1	McLaughlins Road 1 Wastewater Pump Station	1,764,516	5,903,264	1		Operational	Separate	Local	Puhinui	Puhinui Stream	Large waterway	2	2	1	1	Moderate	Moderate	4-8	Low	Low
1136	DPRUA	Ruaiti Road Wastewater Pump Station	1,757,232	5,905,572	1		Operational	Separate	Local	Māngere	Oruarangi Creek	Small waterway	1	2	1	1	High	Moderate		Low	Low
1134	DPMRN	Mariners Wastewater Pump Station	1,756,165	5,966,812	1		Operational	Separate	Local	Snells Beach-Algies Bay	Algies Bay Beach	Beach	1	2	1	1	Low	Very low	1-4	Low	Low
1133	DPTHA	Te Hana Wastewater Pump Station	1,735,648	5,986,724	1		Operational	Separate	Local	Wellsford	Unnamed tributary of Te Hana Creek	Small waterway	3	2	2	2	Very low	Moderate	4-8	Low	Low
1132	DPKYH	Kellys Hill Wastewater Pump Station	1,736,377	5,983,805	1		Operational	Separate	Local	Wellsford	Stormwater Pond (Reid Underpass)	Small waterway	3	3	2	2	Very low	Very low	4-8	Low	Low
1131	DPCEM	Cemetery Wastewater Pump Station	1,735,829	5,983,542	1		Operational	Separate	Local	Wellsford	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low

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1130	DPSHR	School Road Wastewater Pump Station	1,736,204	5,983,336	1		Operational	Separate	Local	Wellsford	Unnamed tributary (south) of Whakapirau Creek	Small waterway	3	2	2	2	Very low	Moderate	4-8	Low	Low
1129	DPARM	Armitage Wastewater Pump Station	1,736,756	5,983,193	1		Operational	Separate	Local	Wellsford	Unnamed tributary (north) of Whakapirau Creek	Small waterway	3	2	2	1	Very low	Moderate	1-4	Low	Low
1128	DPWOR	Worker Road Wastewater Pump Station	1,736,279	5,982,449	1		Operational	Separate	Local	Wellsford	Unnamed tributary (south) of Whakapirau Creek	Small waterway	3	2	2	2	Very low	Moderate	1-4	Low	Low
1125	DPBOA	Boat Ramp Wastewater Pump Station	1,759,333	5,978,378	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1124	DPSUC	Success Court Wastewater Pump Station	1,759,430	5,978,028	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1123	DPANC	Anchorage Wastewater Pump Station	1,759,169	5,977,899	1		Operational	Separate	Local	Omaha	Whangateau Harbour Beach	Beach	1	1	1	1	Very low	Very low	> 8	Low	Low
1122	DPEGV	Esme Grove Wastewater Pump Station	1,759,663	5,977,402	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1121	DPBRO	Broadlands Drive Pump Station	1,759,175	5,977,324	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1120	DPKOK	Kokopu Wastewater Pump Station	1,759,899	5,976,245	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1119	DPPOA	Paraoa Wastewater Pump Station	1,760,171	5,975,837	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1118	DPMRI	Mangatawhiri Wastewater Pump Station	1,760,342	5,975,363	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1117	DPTAU	Taumata Wastewater Pump Station	1,760,815	5,975,465	1		Operational	Separate	Local	Omaha	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1111	DPSNB	Sunburst Avenue Wastewater Pump Station	1,755,042	5,968,975	1		Operational	Separate	Local	Snells Beach-Algies Bay	Snells Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
1110	DPRGH	Riverleigh Drive Wastewater Pump Station	1,754,283	5,968,777	1		Operational	Separate	Local	Snells Beach-Algies Bay	Stormwater pond (Riverleigh Drive)	Small waterway	3	3	2	1	Very low	Very low	4-8	Low	Low
1109	DPTMT	Tamatea Wastewater Pump Station	1,755,024	5,968,434	1		Operational	Separate	Local	Snells Beach-Algies Bay	Snells Beach	Beach	1	2	1	1	Low	Very low	> 8	Low	Low
1107	DPCNL	Cornel Wastewater Pump Station	1,754,548	5,967,539	1		Operational	Separate	Local	Snells Beach-Algies Bay	Northern arm of Mahurangi Harbour (Cornell Circle)	Estuary	2	1	2	1	Very low	Very low	> 8	Low	Low
1106	DPDAL	Dalton Wastewater Pump Station	1,755,189	5,967,762	1		Operational	Separate	Local	Snells Beach-Algies Bay	Snells Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
1105	DPALE	Alexander Wastewater Pump Station	1,756,431	5,966,439	1		Operational	Separate	Local	Snells Beach-Algies Bay	Algies Bay Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
1103	DPWLJ	Williams Wastewater Pump Station	1,756,803	5,966,064	1		Operational	Separate	Local	Snells Beach-Algies Bay	Unnamed stream (flowing to Algies Bay)	Small waterway	3	2	1	1	Very low	Moderate	> 8	Low	Low
1101	DPMBC	Martins Bay Camp Wastewater Pump Station	1,758,060	5,964,849	1		Operational	Separate	Local	Snells Beach-Algies Bay	Martins Bay Beach	Beach	1	2	2	1	Low	Very low	> 8	Low	Low
1100	DPWER	Weranui Wastewater Pump Station	1,751,711	5,954,556	1		Operational	Separate	Local	Waiwera	Wairewa Estuary	Estuary							4-8		
1099	DPWWR	Waiwera Town Wastewater Pump Station	1,752,701	5,954,288	1		Operational	Separate	Local	Waiwera	Waiwera Estuary	Estuary	1	1	1	1	Low	Low	4-8	Low	Low

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1098	DPWAC	Waiwera Camp Wastewater Pump Station	1,752,910	5,954,269	1		Operational	Separate	Local	Waiwera	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
1097	DPCIC	Chic Wastewater Pump Station	1,727,990	5,941,774	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway	2	2	1	1	Very low	Very low	4-8	Low	Low
1096	DPPAI	Parakai Wastewater Pump Station	1,728,479	5,941,816	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway	2	2	1	1	Very low	Very low	> 8	Low	Low
1095	DPSPR	Springs Road Wastewater Pump Station	1,728,743	5,942,088	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway							4-8		
1094	DPOUT	Outfall Wastewater Pump Station	1,729,598	5,941,489	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway							< 1		
1093	DPMRO	Miro Street Wastewater Pump Station	1,730,036	5,940,548	1		Operational	Separate	Local	Helensville	Awaroa Stream	Large Waterway	3	2	2	1	Very low	Very low	4-8	Low	Low
1092	DPMIL	Mill Road Wastewater Pump Station	1,729,166	5,939,746	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway	2	2	1	1	Very low	Very low	4-8	Low	Low
1090	DPKOW	Kowhai Wastewater Pump Station	1,729,564	5,939,266	1		Operational	Separate	Local	Helensville	Kaipara River	Large waterway	2	2	1	1	Very low	Very low	4-8	Low	Low
1087	DPPHM	Pine Harbour Marina Wastewater Pump Station	1,777,316	5,915,445	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Pine Harbour Marina Beach (South)	Small Waterway	3	2	1	2	Very Low	Moderate	> 8	Low	Low
1086	DPTOO	Toomer Place Wastewater Pump Station	1,777,342	5,916,082	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Pine Harbour Marina Beach (North)	Small Waterway	3	2	1	1	Very Low	Moderate	> 8	Low	Low
1085	DPSKB	Sunkist Bay Wastewater Pump Station	1,777,777	5,916,537	1		Operational	Separate	Local	Beachlands Maraetai	Sunkist Bay Beach	Beach	1	1	1	1	Low	Very Low		Low	Low
1084	DPKKA	Karaka Road Wastewater Pump Station	1,778,578	5,915,511	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Pine Harbour Marina Beach (South)	Small Waterway	3	2	1	2	Very Low	Moderate		Low	Low
1083	DPTVW	Third Avenue Wastewater Pump Station	1,778,995	5,916,555	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Kelly's Beach (North)	Small Waterway	3	3	1	2	Very Low	Moderate		Low	Low
1081	DPTPR	Te Puru Wastewater Pump Station	1,779,562	5,916,016	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Kelly's Beach (South)	Small Waterway	3	2	1	1	Very Low	Moderate		Low	Low
1080	DPTPN	Te Pene Wastewater Pump Station	1,781,675	5,917,021	1		Operational	Separate	Local	Beachlands Maraetai	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land		Low	Low
1079	DPMTI	Maraetai Domain Wastewater Pump Station	1,781,973	5,916,489	1		Operational	Separate	Local	Beachlands Maraetai	Unnamed stream to Maraetai Beach	Small Waterway	2	2	1	2	Moderate	Moderate	> 8	Low	Low
1047	DPGLB	Glenbrook Beach Wastewater Pump Station	1,752,090	5,885,638	1		Operational	Separate	Local	Clarks Beach	Glenbrook Beach	Beach	2	2	1	1	Low	Very Low	> 8	Low	Low
1046	DPCHV	Channel View Road Wastewater Pump Station	1,751,471	5,887,432	1		Operational	Separate	Local	Clarks Beach	Waiau Beach	Beach	2	2	1	1	Low	Very Low	> 8	Low	Low
1045	DPKEV	Keven Road (Waiau 1) Wastewater Pump Station	1,751,535	5,887,742	1		Operational	Separate	Local	Clarks Beach	Waiau Beach	Beach	2	2	1	1	Low	Very Low	> 8	Low	Low
1044	DPCRI	Crisp Rd Wastewater Pump Station	1,752,091	5,888,850	1		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low
1043	DPHOS	Hoskings Clarks Beach Wastewater Pump Station	1,751,752	5,888,887	1		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low
1042	DPKNI	Knights Walkway Wastewater Pump Station	1,751,327	5,888,863	1		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low
1041	DPSTV	Stevenson Road Wastewater Pump Station	1,751,324	5,888,635	1		Operational	Separate	Local	Clarks Beach	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1040	DPCBO	Clarks Beach Oxidation Pond	1,750,854	5,888,262	1		Operational	Separate	Local	Clarks Beach	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1037	DPHLA	Halls Access Wastewater Pump Station	1,750,963	5,888,822	1		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low

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1036	DPSLA	Stella Drive Wastewater Pump Station	1,750,545	5,888,479	1		Operational	Separate	Local	Clarks Beach	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1035	DPWAS	Wilson Access Wastewater Pump Station	1,750,344	5,888,648	1		Operational	Separate	Local	Clarks Beach	Clarks Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low
1034	DPYAC	Yacht Club Wastewater Pump Station	1,750,090	5,888,181	1		Operational	Separate	Local	Clarks Beach	Waiuku Estuary	Estuary	1	1	1	1	Very Low	Very Low	> 8	Low	Low
1033	DPBCR	Breaker Grove Wastewater Pump Station	1,752,833	5,875,425	1		Operational	Separate	Local	Waiuku	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
1032	DPKEN	Kendallvale Drive Wastewater Pump Station	1,755,389	5,875,270	1		Operational	Separate	Local	Waiuku	Awaroa River Tributary	Small waterway	3	2	1	1	Very Low	Moderate	> 8	Low	Low
1031	DPOWE	Owens Road Wastewater Pump Station	1,753,223	5,876,634	1		Operational	Separate	Local	Waiuku	Waiuku Creek	Estuary	2	1	1	1	Very Low	Very Low	> 8	Low	Low
1030	DPEDP	Edgewater Parade Wastewater Pump Station	1,753,264	5,876,833	1		Operational	Separate	Local	Waiuku	Waiuku Creek	Estuary	2	1	1	1	Very Low	Very Low	> 8	Low	Low
1029	DPRGW	Rangiwhea Road Wastewater Pump Station	1,753,141	5,877,773	1		Operational	Separate	Local	Waiuku	Sandspit Beach	Beach	1	1	1	1	Low	Very Low	> 8	Low	Low
1028	DPKAO	Kitchener Road Wastewater Pump Station	1,755,080	5,876,130	1		Operational	Separate	Local	Waiuku	Waiuku Stream	Small waterway	2	1	1	1	Moderate	High	> 8	Low	Low
1027	DPFGH	Fernleigh Avenue Wastewater Pump Station	1,754,414	5,876,220	1		Operational	Separate	Local	Waiuku	Waiuku Stream Tributary	Small waterway	3	1	1	1	Very Low	High	> 8	Low	Low
1026	DPKNG	King Street Wastewater Pump Station	1,753,511	5,876,242	1		Operational	Separate	Local	Waiuku	Waiuku Creek	Estuary	2	1	1	1	Very Low	Very Low	1-4	Low	Low
1025	DPKAI	Kowhai Place Wastewater Pump Station	1,753,790	5,877,701	1		Operational	Separate	Local	Waiuku	Golf Course Creek	Estuary	1	1	1	1	Very Low	Very Low	> 8	Low	Low
1024	DPLNA	Lina Place Wastewater Pump Station	1,752,364	5,876,593	1		Operational	Separate	Local	Waiuku	Rangiwhea Creek Tributary	Small waterway	2	1	1	1	Moderate	High	> 8	Low	Low
1023	DPBYV	Bay View Wastewater Pump Station	1,752,572	5,876,985	1		Operational	Separate	Local	Waiuku	Rangiwhea Creek	Estuary	2	1	1	1	Very Low	Very Low	> 8	Low	Low
1022	DPNZS	New Zealand Steel Wastewater Pump Station	1,752,730	5,877,396	1		Operational	Separate	Local	Waiuku	Rangiwhea Creek	Estuary	2	1	1	1	Very Low	Very Low	> 8	Low	Low
1020		27 New Street	1,755,954	5,921,011	2		Operational	Combined	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Medium	Medium
1019		15 Cremorne Street	1,754,367	5,921,256	2		Operational	Combined	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		Medium	High
1017	DPOMA	Omana Esplanade Wastewater Pump Station	1,781,107	5,916,795	1		Operational	Separate	Local	Beachlands Maraetai	Omana Beach	Beach	1	1	1	1	Low	Very Low		Low	Low
1016	DPHAW	Hawke Crescent Wastewater Pump Station	1,777,009	5,916,400	1		Operational	Separate	Local	Beachlands Maraetai	Sunkist Bay Beach	Beach	1	1	1	1	Low	Very Low		Low	Low
1015	DPSAV	Savill Drive Link Wastewater Pump Station	1,763,080	5,908,414	1		Operational	Separate	Local	Māngere	Unnamed tributary to Harania Creek (east)	Small waterway	3	2	2	1	Very low	Moderate	1-4	Low	Low
1013	DPEST	Estuary Views Wastewater Pump Station	1,773,388	5,913,022	1		Operational	Separate	Local	Cockle Bay	Maungamaungaroa Creek	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
1012	DPHOR	Horlicks Place Wastewater Pump Station	1,770,813	5,900,460	1		Operational	Separate	Local	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very low	Very low	< 1	Low	Low
1011	DPMCK	Mckenzie Road Wastewater Pump Station	1,759,031	5,907,540	1		Operational	Separate	Local	Māngere	Tararata Creek	Small waterway	3	2	1	1	Very low	Moderate	1-4	Low	Low
1010	DPHAN	Hannah Road Wastewater Pump Station	1,767,521	5,906,830	1		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Otara Creek (west)	Small waterway	3	3	1	1	Very low	Very low		Low	Low
1008	DPBRA	Bramley Drive Wastewater Pump Station	1,767,547	5,915,254	1		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Very low	Very low		Low	Low
1005	DPHIP	Highland Park Wastewater Pump Station	1,769,778	5,914,677	1		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Highland Park)	Small waterway	3	2	1	1	Very low	Moderate	1-4	Low	Low
1004	DPSDN	Stonedon Drive Wastewater Pump Station	1,767,875	5,911,352	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low		Low	Low

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999	DPJFD	James Fletcher Drive Wastewater Pump Station	1,762,073	5,909,197	1		Operational	Separate	Local	Māngere	Harania Creek	Estuary	3	2	1	2	Very low	Very low	1-4	Low	Low
998	DPBUR	Burswood Drive Wastewater Pump Station	1,768,817	5,912,070	1		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low	1-4	Low	Low
997	DPWNO	Waimarino Road Wastewater Pump Station	1,766,336	5,898,218	1		Operational	Separate	Local	Pahurehure Inlet	Waimahia Creek	Estuary	2	2	1	1	Very low	Very low		Low	Low
993	DPTPD	The Parade Wastewater Pump Station	1,769,367	5,918,950	1		Operational	Separate	Local	Lower Tamaki River	Bucklands Beach	Beach	1	1	1	1	Low	Very low	1-4	Low	Low
987	DPSAC	St Anne's Crescent Wastewater Pump Station	1,767,118	5,897,373	1		Operational	Separate	Local	Pahurehure Inlet	St Anne’s Foreshore	Beach	2	2	2	1	Low	Very low	> 8	Low	Low
985	DPPKN	Pakuranga North Wholesale Wastewater Pump Station	1,768,968	5,915,457	1		Operational	Separate	Local	Lower Tamaki River	Wakaaranga Creek	Estuary	3	1	1	1	Very low	Very low	4-8	Low	Low
984	DPAVI	Aviemore Drive Wastewater Pump Station	1,769,689	5,913,679	1		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Highland Park)	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
976	DPSAN	Sandspit Road Wastewater Pump Station	1,774,119	5,913,495	1		Operational	Separate	Local	Cockle Bay	Shelly Park Beach	Beach	2	1	1	1	Low	Very low	1-4	Low	Low
975		16 Windsong Ct	1,771,400	5,912,996	2		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Botany Downs)	Small waterway	3	3	2	1	Very low	Very low		Low	Low
974		2 Browning Street	1,769,670	5,900,687	2		Operational	Separate	Local	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very low	Very low		Low	Low
973		4 Chalfont Street	1,761,994	5,907,434	2		Operational	Separate	Local	Māngere	Unnamed tributary to Harania Creek (south)	Small waterway	3	2	2	1	Very low	Moderate		Low	Low
972		123 Ennis Ave	1,768,389	5,912,544	2		Operational	Separate	Local	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low		Low	Low
967		14 Percival Street	1,768,249	5,900,395	2		Operational	Separate	Local	Pahurehure Inlet	Unnamed stream near Percival Street	Small waterway	3	2	2	1	Very low	Moderate		Low	Low
966		17 McDougall Street	1,769,504	5,900,477	2		Operational	Separate	Local	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very low	Very low		Low	Low
965		105R Beaumonts Way	1,769,158	5,899,940	2		Operational	Separate	Local	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very low	Very low		Low	Low
963		62 Chelburn Crescent	1,761,738	5,908,184	2		Operational	Separate	Local	Māngere	Unnamed tributary to Harania Creek (south)	Small waterway	3	2	2	1	Very low	Moderate		Low	Low
962		53R Raglan Street	1,762,768	5,906,302	2		Operational	Separate	Local	Puhinui	Unnamed Stream in Aorere Park	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
961		16 Ingram Crescent	1,767,705	5,906,620	2		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Otara Creek (west)	Small waterway	3	3	1	1	Very low	Very low		Medium	Low
960		30 Minaret Drive	1,770,167	5,915,294	2		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Highland Park)	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
959		12 Udall Place	1,770,183	5,915,749	2		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Highland Park)	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
957		38 Whiteacres Drive	1,768,586	5,914,465	2		Operational	Separate	Local	Upper Tamaki River	Unnamed tributary of Pakuranga Creek (Whiteacres Drive)	Small waterway	3	3	1	2	Low	Low		Medium	Low
951	DSSIL	Silverfield Storage Tank	1,755,753	5,927,979	1	2	Operational	Separate	Transmission	East Coast Bays	Wairau Stream	Small waterway	3	3	2	1	Low	Low	> 8	Medium	Low
949	DSKED	King Edward Parade Storage Tank Overflow	1,761,724	5,922,619	1		Operational	Separate	Transmission	Devonport-Takapuna	North Head	Harbour	2	1	1	1	High	High	> 8	High	Medium
948	DPEXM	Exmouth Wastewater Pump Station	1,756,695	5,925,056	1		Operational	Separate	Local	Shoal Bay	Tuff Crater	Basin	3	1	1	2	Very low	Low	4-8	Low	Low
947	DPBLA	Black Rock Wastewater Pump Station	1,758,510	5,928,571	1		Operational	Separate	Transmission	East Coast Bays	Thorne Bay	Beach	2	1	1	1	Moderate	Low	> 8	Medium	Low
946	DPKY2	Kyle 2 Wastewater Pump Station	1,751,368	5,930,457	1		Operational	Separate	Local	Upper Harbour North	Kyle Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low

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945	DPCLP	Carol Lee Place Wastewater Pump Station	1,751,295	5,935,005	1		Operational	Separate	Local	Upper Harbour North	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
944	DPMHO	Mahoney Wastewater Pump Station	1,750,407	5,932,799	1		Operational	Separate	Local	Upper Harbour North	Lucas Creek	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
943	DPNEP	Neptune Wastewater Pump Station	1,750,227	5,926,166	1		Operational	Separate	Local	Upper Harbour South	Beach Haven Coast	Beach	3	2	1	1	Very low	Very low	4-8	Low	Low
938	DPGYS	Grays Wastewater Pump Station	1,756,934	5,937,225	1		Operational	Separate	Local	East Coast Bays	Winstones Cove	Beach	2	2	2	1	Low	Very low	4-8	Low	Low
934	DPALY	Aberly Wastewater Pump Station	1,750,153	5,931,426	1		Operational	Separate	Local	Upper Harbour North	Aberley Creek	Small waterway	3	1	2	1	Very low	Moderate	4-8	Low	Low
930	DPALC	Albany Church Wastewater Pump Station	1,753,162	5,929,868	1		Operational	Separate	Local	Upper Harbour South	Lignite Stream	Small waterway	3	1	2	1	Very low	High	1-4	Low	Low
928	DPWNI	Wainoni Wastewater Pump Station	1,749,913	5,929,936	1		Operational	Separate	Local	Upper Harbour North	Te Wharau Creek	Estuary	3	1	2	1	Very low	Very low	4-8	Low	Low
927	DPAWA	Awatahi Wastewater Pump Station	1,748,755	5,929,200	1		Operational	Separate	Local	Upper Harbour North	Lucas Creek	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
926	DPRAH	Rahui Wastewater Pump Station	1,748,741	5,928,466	1		Operational	Separate	Local	Upper Harbour North	Greenhithe Coast	Estuary	2	2	2	1	Very low	Very low	4-8	Low	Low
925	DPKKI	Koki Wastewater Pump Station	1,748,900	5,928,205	1		Operational	Separate	Local	Upper Harbour North	Greenhithe Coast	Estuary	2	2	2	1	Very low	Very low	1-4	Low	Low
924	DPREM	Remu Wastewater Pump Station	1,749,145	5,928,046	1		Operational	Separate	Local	Upper Harbour North	Greenhithe Coast	Estuary	2	2	2	1	Very low	Very low	1-4	Low	Low
923	DPVAN	Van Der Bilt Wastewater Pump Station	1,751,427	5,932,861	1		Operational	Separate	Local	Upper Harbour North	Oteha Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
920	DPKER	Kerema Wastewater Pump Station	1,749,720	5,930,454	1		Operational	Separate	Local	Upper Harbour North	Lucas Creek	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
918	DPONA	Omana Wastewater Pump Station	1,757,690	5,929,393	1		Operational	Separate	Local	East Coast Bays	Wairau Creek	Estuary	2	3	1	1	Very low	Very low	> 8	Low	Low
917	DPGLU	Glendu Wastewater Pump Station	1,752,025	5,929,183	1		Operational	Separate	Local	Upper Harbour South	Lignite Stream	Small waterway	3	1	2	1	Very low	High	> 8	Low	Low
916	DPERI	Eric Price Wastewater Pump Station	1,758,248	5,928,503	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	> 8	Low	Low
915	DPHM1	Hurstmere 1 Wastewater Pump Station	1,758,340	5,928,365	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	4-8	Low	Low
914	DPHM2	Hurstmere 2 Wastewater Pump Station	1,758,285	5,928,253	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	> 8	Low	Low
913	DPHM3	Hurstmere 3 Wastewater Pump Station	1,758,188	5,928,064	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	> 8	Low	Low
912	DPSHE	Shea Hospital Wastewater Pump Station	1,756,975	5,928,012	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	1-4	Low	Low
911	DPPRO	Promenade Wastewater Pump Station	1,758,062	5,927,759	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	> 8	Low	Low
910	DPLAK	Lake View Wastewater Pump Station	1,757,149	5,927,609	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	4-8	Low	Low
909	DPKIL	Killarney Wastewater Pump Station	1,757,653	5,927,412	1		Operational	Separate	Local	East Coast Bays	Lake Pupuke	Basin	1	1	1	1	Low	Low	4-8	Low	Low
908	DPDMN	Dominion Wastewater Pump Station	1,756,770	5,926,625	1		Operational	Separate	Local	Shoal Bay	Hillcrest Creek	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
907	DPKWO	Kitewao Wastewater Pump Station	1,756,654	5,926,549	1		Operational	Separate	Local	Shoal Bay	Hillcrest Creek	Small waterway	3	2	1	1	Very low	Moderate	> 8	Low	Low
906	DPBPO	Barrys Point Local Wastewater Pump Station	1,757,591	5,926,435	1		Operational	Separate	Local	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
905	DPBYS	Bayswater Wastewater Pump Station	1,757,642	5,923,703	1		Operational	Separate	Local	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
904	DPJIM	Jim Tichener Wastewater Pump Station	1,759,376	5,923,189	1		Operational	Separate	Local	Shoal Bay	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low

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903	DPCRE	Cresta Wastewater Pump Station	1,750,462	5,927,278	1		Operational	Separate	Local	Upper Harbour South	Hellyers Creek	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
902	DPBEN	Beachaven Wastewater Pump Station	1,750,008	5,927,176	1		Operational	Separate	Local	Upper Harbour South	Hellyers Creek	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
901	DPCRO	Cronin Wastewater Pump Station	1,750,198	5,926,733	1		Operational	Separate	Local	Upper Harbour South	Beach Haven Beach	Beach	1	2	1	1	Low	Very low	1-4	Low	Low
900	DPRMP	Rosecamp Wastewater Pump Station	1,750,483	5,925,867	1		Operational	Separate	Local	Upper Harbour South	Charcoal Bay	Beach	2	2	1	1	Low	Very low	1-4	Low	Low
899	DPARH	Arahia Wastewater Pump Station	1,756,163	5,925,728	1		Operational	Separate	Local	Shoal Bay	Tuff Crater	Basin	3	1	1	2	Very low	Moderate	1-4	Low	Medium
898	DPHVN	Havenwood Wastewater Pump Station	1,754,493	5,925,539	1		Operational	Separate	Local	Shoal Bay	Waiurutoa Stream	Small waterway	3	1	1	1	Very low	High	< 1	Low	Low
897	DPCAM	Caram Wastewater Pump Station	1,752,739	5,925,165	1		Operational	Separate	Local	Upper Harbour South	Eskdale Stream	Small waterway	3	2	1	1	Very low	Moderate	> 8	Low	Low
894	DPHD2	Hadfield 2 Wastewater Pump Station	1,750,919	5,925,105	1		Operational	Separate	Local	Upper Harbour South	Island Bay	Beach	2	2	1	1	Low	Very low	1-4	Low	Low
893	DPHD1	Hadfield 1 Wastewater Pump Station	1,750,899	5,924,984	1		Operational	Separate	Local	Upper Harbour South	Island Bay	Beach	2	2	1	1	Low	Very low	1-4	Low	Low
891	DPVIA	Valkyria Wastewater Pump Station	1,751,003	5,924,630	1		Operational	Separate	Local	Upper Harbour South	Soldiers Bay	Beach	2	1	2	1	Low	Very low	1-4	Low	Low
890	DPSYV	Sylvan Wastewater Pump Station	1,756,123	5,924,570	1		Operational	Separate	Local	Shoal Bay	Onepoto Stream	Estuary	3	1	1	1	Very low	Low	> 8	Low	Medium
889	DPAFD	Alfred Wastewater Pump Station	1,755,924	5,923,988	1		Operational	Separate	Local	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
888	DPHOM	Homewood Wastewater Pump Station	1,752,967	5,923,875	1		Operational	Separate	Local	Shoal Bay	Duck Creek and Chelsea Ponds	Small waterway	3	2	2	1	Very low	Moderate	> 8	Low	Low
887	DPHNM	Hinemoa Wastewater Pump Station	1,754,736	5,923,492	1		Operational	Separate	Local	Shoal Bay	Little Shoal Bay	Beach	2	2	2	1	Low	Very low	> 8	Low	Low
886	DPSFE	Seacliffe Wastewater Pump Station	1,760,156	5,925,212	1		Operational	Separate	Local	Devonport-Takapuna	Seacliffe Coast	Beach	2	1	1	1	Low	Very low	4-8	Low	Low
885	DPREG	Regent Wastewater Pump Station	1,759,617	5,924,376	1		Operational	Separate	Local	Shoal Bay	Unnamed tributary of Ngataringa Bay	Small waterway	2	2	2	1	Moderate	Moderate	1-4	Low	Low
884	DPKAW	Kawerau Wastewater Pump Station	1,759,385	5,924,135	1		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
883	DPNOD	Norwood Wastewater Pump Station	1,758,631	5,924,095	1		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
881	DPLDE	Lake Devonport Wastewater Pump Station	1,760,158	5,923,377	1		Operational	Separate	Local	Shoal Bay	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8	Low	Low
880	DPEWE	Ewen Alison Wastewater Pump Station	1,759,853	5,922,893	1		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
879	DPKED	King Edward Wastewater Pump Station	1,760,320	5,922,221	1		Operational	Separate	Transmission	Devonport-Takapuna	Devonport Beach	Beach	1	2	1	1	Low	Very low	1-4	Low	Low
878	DPALB	Albany Wastewater Pump Station	1,751,307	5,933,566	1		Operational	Separate	Transmission	Upper Harbour North	Oteha Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
877	DPKY1	Kyle 1 Wastewater Pump Station	1,750,389	5,930,143	1		Operational	Separate	Transmission	Upper Harbour North	Kyle Stream	Small waterway	3	2	1	1	Very low	Moderate	4-8	Low	Low
876	DPRLE	Rosedale Wastewater Pump Station	1,752,681	5,932,674	1		Operational	Separate	Transmission	Upper Harbour North	Oteha Stream	Small waterway	3	2	1	1	Very low	Moderate	1-4	Low	Low
874	DPCHH	Church House Wastewater Pump Station	1,749,242	5,929,508	1		Operational	Separate	Transmission	Upper Harbour North	Greenhithe Stream	Small waterway	3	1	2	1	Very low	High	1-4	Low	Low
871	DPCBY	Castor Bay Wastewater Pump Station	1,757,736	5,930,443	1		Operational	Separate	Transmission	East Coast Bays	Castor Bay Stream	Small waterway	3	3	1	2	Very low	Very low	1-4	Low	Low
869	DPBRB	Browns Bay Wastewater Pump Station	1,756,183	5,935,040			Operational	Separate	Transmission	East Coast Bays	Taiaotea Creek	Small waterway	2	2	2	1	Moderate	Moderate	> 8	Low	Low
863	DPMNI	Maunganui Storage Tank Overflow	1,754,257	5,923,750	1		Operational	Separate	Transmission	Shoal Bay	Chelsea Bay	Beach	2	2	1	1	High	High	1-4	High	Medium

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862	DPKAH	Kahika Wastewater Pump Station	1,751,743	5,927,577	1		Operational	Separate	Transmission	Upper Harbour South	Kaipatiki Creek	Estuary	3	1	1	1	Very low	Low	> 8	Medium	Low
861	DPSUL	Sulphur Wastewater Pump Station	1,755,974	5,923,663	1		Operational	Separate	Transmission	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
860	DPNRO	Northboro Tunnel Wastewater Overflow	1,759,999	5,925,807	1		Operational	Separate	Transmission	Devonport-Takapuna	St Leonards Beach	Beach	2	1	1	1	High	High	> 8	High	Medium
859	DPSN2	Stanley Point 2 Wastewater Pump Station	1,758,845	5,922,902	1		Operational	Separate	Transmission	Devonport-Takapuna	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land			
857	DPSN1	Stanley Point 1 Wastewater Pump Station	1,758,097	5,922,775	1		Operational	Separate	Transmission	Shoal Bay	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land			
856	DPISL	Island Bay Wastewater Pump Station	1,750,669	5,924,854	1		Operational	Separate	Transmission	Upper Harbour South	Island Bay	Beach	2	2	1	1	Moderate	Low	1-4	Medium	Low
855	DPSI1	Sidmouth Wastewater Pump Station (Southern Overflow)	1,757,052	5,932,385	1		Operational	Separate	Transmission	East Coast Bays	Mairangi Bay	Beach	1	2	2	1	High	Moderate	1-4	Medium	Medium
854	DPSI1	Sidmouth Wastewater Pump Station (Northern Overflow)	1,756,723	5,932,997	1		Operational	Separate	Transmission	East Coast Bays	Mairangi Bay	Beach	1	2	2	1	High	Moderate	1-4	Medium	Medium
853	DPALM	Alma Wastewater Pump Station	1,757,153	5,928,864	1		Operational	Separate	Transmission	East Coast Bays	Wairau Stream	Small waterway	3	3	2	1	Very low	Very low	< 1	Low	Low
852	DPFTD	Fred Thomas WWPS	1,757,482	5,926,320	1		Operational	Separate	Transmission	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low	1-4	Medium	Medium
851		1 Kauri Glen Road	1,754,771	5,925,081	2		Operational	Separate	Local	Shoal Bay	Waiurutoa Stream	Small waterway	3	1	1	1	Very low	High		Low	Low
850		14 Battenburg Place	1,755,476	5,937,398	2		Operational	Separate	Local	Long Bay	Awaruku Creek	Small Waterway	2	2	1	1	Moderate	Moderate		Low	Low
849	DPSEA	Sea Breeze Wastewater Pump Station	1,760,347	5,924,112	1		Operational	Separate	Transmission	Shoal Bay	Ngataringa Stream	Small waterway	2	1	1	1	Very low	Very low	4-8	Low	Low
848		1 Old Lake Road	1,760,631	5,924,415	2		Operational	Separate	Local	Devonport-Takapuna	Narrow Neck Beach	Beach	1	1	1	1	Low	Very low		Low	Low
847		66 Stanley Point Road	1,758,291	5,922,791	2		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low		Low	Low
846		26 Waratah Street	1,754,165	5,925,196	2		Operational	Separate	Local	Shoal Bay	Waiurutoa Stream	Small waterway	3	1	1	1	Very low	High		Low	Low
844		28 Gazelle Road	1,750,235	5,927,255	2		Operational	Separate	Local	Upper Harbour South	Hellyers Creek	Estuary	2	1	1	1	Very low	Very low		Low	Low
843		52 Richmond Ave	1,755,722	5,924,297	2		Operational	Separate	Local	Shoal Bay	Onepoto Stream	Estuary	2	1	1	1	Very Low	Very Low		Low	Low
842		48 Richmond Ave	1,755,768	5,924,278	2		Operational	Separate	Local	Shoal Bay	Onepoto Stream	Estuary	2	1	1	1	Low	Low		Low	Medium
841		14 Denby Lane	1,755,886	5,924,236	2		Operational	Separate	Local	Shoal Bay	Onepoto Stream	Estuary	2	1	1	1	Low	Low		Low	Medium
840		44 William Bond Street	1,759,519	5,922,963	2		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Low	Low		Low	Medium
839		51 Plymouth Cres	1,759,069	5,924,212	2		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low		Low	Low
838		39 Kiwi Road	1,759,655	5,922,922	2		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Very low	Very low		Low	Low
837		10 Charles Street	1,757,966	5,925,882	2		Operational	Separate	Local	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low		Low	Low
836		24 Patuone Place	1,759,907	5,922,974	2		Operational	Separate	Local	Shoal Bay	Ngataringa Bay	Estuary	2	1	1	1	Low	Low		Low	Medium
835		3 Sidmouth Road	1,756,665	5,932,586	2		Operational	Separate	Local	East Coast Bays	Mairangi Bay Stream	Small waterway	3	2	2	2	Low	High		Low	Medium
834		28 Penning Road	1,757,130	5,929,535	2	2.5	Operational	Separate	Local	East Coast Bays	Unnamed tributary of Wairau Creek	Small waterway	3	2	2	1	Low	Low		Low	Medium
832		47 Glenvar Road	1,755,797	5,937,747	2		Operational	Separate	Local	Long Bay	Awaruku Creek	Small Waterway	2	2	1	1	Moderate	Moderate		Low	Low
831		97 Awaruku Road	1,755,672	5,937,545	2		Operational	Separate	Local	Long Bay	Awaruku Creek	Small Waterway	2	2	1	1	Moderate	Moderate		Low	Low
830	DPLNO	Lake Northcote Wastewater Pump Station	1,755,780	5,924,800	1		Operational	Separate	Transmission	Shoal Bay	Onepoto Stream	Estuary	3	1	1	1	Very low	Moderate	1-4	Medium	Medium
829		28 Waitemata Road	1,758,606	5,925,415	2		Operational	Separate	Local	Shoal Bay	Shoal Bay	Estuary	2	1	1	1	Very low	Very low		Low	Low
827	DPSEW	Seaview Wastewater Pump Station	1,757,407	5,929,545	1		Operational	Separate	Transmission	East Coast Bays	Unnamed tributary of Wairau Creek	Small Waterway	3	2	2	1	Very low	Very low	1-4		

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826	DPATL	Atlas Wastewater Pump Station	1,769,246	5,931,884	1		Operational	Separate	Local	Upper Harbour North	Alexandra Stream	Small waterway	3	1	2	1	Very low	High	4-8	Low	Low
825	DPFRA	Franklin Road Wastewater Pump Station	1,769,246	5,881,820	1		Operational	Separate	Local	Pukekohe	Unnamed tributary of Whangapouri Creek (Franklin Rd)	Small waterway	3	2	2	1	Very low	Moderate	1-4	Low	Low
822	DPWEI	Weiti Wastewater Pump Station	1,751,093	5,946,091	1		Operational	Separate	Local	Weiti	Weiti River	Estuary	2	2	2	2	Low	Low	> 8	Low	Medium
821	DPWAD	Wade Wastewater Pump Station	1,754,566	5,943,378	1		Operational	Separate	Local	Weiti	Weiti Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
820	DPTDL	Tindalls Wastewater Pump Station	1,758,411	5,945,990	1		Operational	Separate	Local	Whangaparāoa	Tindalls Beach	Beach	1	2	1	1	Low	Very low	1-4	Low	Low
819	DPTER	Terminal Wastewater Pump Station	1,751,841	5,948,263	1		Operational	Separate	Local	Orewa	Orewa river estuary	Estuary	1	1	1	1	Very low	Very low	4-8	Low	Low
818	DPSWB	Swann Beach Wastewater Pump Station	1,756,260	5,945,606	1		Operational	Separate	Local	Whangaparāoa	Swann Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
817	DPSTW	Stillwater Wastewater Pump Station	1,753,777	5,943,819	1		Operational	Separate	Local	Weiti	Weiti Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
816	DPSTA	Stanmore Wastewater Pump Station	1,755,844	5,945,025	1		Operational	Separate	Local	Whangaparāoa	Unnamed stream flowing to Stanmore Bay	Small waterway	3	2	2	1	Very low	Moderate	4-8	Low	Low
815	DPSIE	Siesta Wastewater Pump Station	1,759,524	5,947,516	1		Operational	Separate	Local	Whangaparāoa	Coal Mine Bay Beach	Beach	2	2	1	1	Low	Very low	4-8	Low	Low
814	DPRVS	Riverside Wastewater Pump Station	1,751,377	5,949,184	1		Operational	Separate	Local	Orewa	Unnamed tributary of Orewa river estuary (east)	Estuary	3	1	1	1	Very low	Very low	4-8	Low	Low
813	DPPUA	Puawai Wastewater Pump Station	1,753,520	5,946,836	1		Operational	Separate	Local	Whangaparāoa	Puawai Bay Beach	Beach	2	2	1	1	Low	Very low	4-8	Low	Low
812	DPPOP	Poplar Wastewater Pump Station	1,753,119	5,945,996	1		Operational	Separate	Local	Weiti	Weiti Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
811	DPOKO	Okoromai Wastewater Pump Station	1,761,709	5,947,127	1		Operational	Separate	Local	Whangaparāoa	Okoromai Bay Beach	Beach	1	1	1	1	Low	Very low	> 8	Low	Low
810	DPMIA	Matakatia Wastewater Pump Station	1,758,535	5,945,370	1		Operational	Separate	Local	Whangaparāoa	Matakatia Bay Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
809	DPMLY	Manly Wastewater Pump Station	1,757,892	5,945,140	1		Operational	Separate	Local	Whangaparāoa	Big Manly Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
808	DPLIT	Little Manly Wastewater Pump Station	1,757,667	5,944,064	1		Operational	Separate	Local	Whangaparāoa	Little Manly Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
807	DPLKE	Lakeside Wastewater Pump Station	1,750,555	5,949,169	1		Operational	Separate	Local	Orewa	Orewa river estuary	Estuary	1	1	1	1	Very low	Very low	> 8	Low	Low
806	DPKKC	Karaka Cove Wastewater Pump Station	1,752,983	5,946,501	1		Operational	Separate	Local	Weiti	Unnamed Stream (Karaka Cove)	Small waterway	2	3	2	2	Moderate	Very low	4-8	Low	Low
805	DPHUR	Hurdlow Wastewater Pump Station	1,756,371	5,945,296	1		Operational	Separate	Local	Whangaparāoa	Swann Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
804	DPHBB	Hobbs Bay Wastewater Pump Station	1,760,277	5,946,490	1		Operational	Separate	Local	Whangaparāoa	Laurie Southwick Parade Stream	Small waterway	3	2	2	1	Very low	Moderate	1-4	Low	Low
803	DPHAT	Hatfields Beach Wastewater Pump Station	1,751,471	5,952,039	1		Operational	Separate	Local	Orewa	Otanerua stream	Small waterway	2	2	2	2	Moderate	Moderate	4-8	Low	Low
802	DPGLG	Glenelg Wastewater Pump Station	1,753,327	5,946,967	1		Operational	Separate	Local	Whangaparāoa	Puawai Bay Beach	Beach	2	2	1	1	High	Moderate	4-8	Medium	Medium
801	DPFOU	Foundry Wastewater Pump Station	1,750,481	5,945,927	1		Operational	Separate	Local	Weiti	Weiti River	Estuary	2	2	2	2	Very low	Very low	> 8	Low	Low
800	DPDUN	Duncansby Wastewater Pump Station	1,753,905	5,946,809	1		Operational	Separate	Local	Whangaparāoa	Puawai Bay Beach	Beach	2	2	1	1	Low	Very low	4-8	Low	Low
798	DPDUC	Duck Creek Wastewater Pump Station	1,753,512	5,943,950	1		Operational	Separate	Local	Weiti	Weiti Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
797	DPCOO	Cooper Wastewater Pump Station	1,754,577	5,945,971	1		Operational	Separate	Local	Whangaparāoa	Stanmore Bay Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
796	DPCHE	Chelverton Wastewater Pump Station	1,753,109	5,947,276	1		Operational	Separate	Local	Whangaparāoa	Red Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low

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795	DPBLU	Blue Gum Wastewater Pump Station	1,750,151	5,945,974	1		Operational	Separate	Local	Weiti	Weiti River	Estuary	2	2	2	2	Very low	Very low	4-8	Low	Low
794	DPBAY	Bay Street Wastewater Pump Station	1,752,443	5,947,837	1		Operational	Separate	Local	Whangaparāoa	Unnamed stream flowing to Red Beach	Small waterway	3	3	2	1	Low	Low	4-8	Low	Medium
793	DPARK	Arkles Bay Wastewater Pump Station	1,756,363	5,943,642	1		Operational	Separate	Local	Whangaparāoa	Arkles Bay Beach	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
790	DPPAL	Palmer Wastewater Pump Station	1,748,873	5,970,256	1		Operational	Separate	Local	Warkworth	Mahurangi River	Large waterway	2	1	1	1	Low	Moderate	> 8	Low	Medium
760	DSB1H	Hobson DS Branch MH1	1,760,697	5,918,905	2		Operational	Combined	Transmission	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Low
759	DPHNG	Drury/Hingaia Wholesale Wastewater Pump Station	1,772,003	5,893,000	1		Operational	Separate	Transmission	Pahurehure Inlet	Drury Creek	Estuary							> 8		
752	DSRSB	Rosebank Siphon MH1A	1,748,357	5,917,248	2		Operational	Separate	Transmission	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low		Low	Low
751	DSOTN	Otahuhu North Branch MH12	1,764,660	5,910,533	2		Operational	Separate	Transmission	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low		Low	Low
749	DSSWN	Swanson Branch MH15	1,744,549	5,920,113	2		Operational	Separate	Transmission	Henderson Creek	Huruhuru Creek	Estuary	2	1	2	1	High	High		High	Medium
748	DSGLE	Glen Eden Branch MH16	1,745,917	5,918,448	2		Operational	Separate	Transmission	Henderson Creek	Henderson Creek (southern arm)	Estuary	2	1	1	1	Very high	Very high		High	High
747	DSOTD	Otahuhu East Diversion Branch MH4A	1,765,012	5,909,255	2		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low		Low	Low
746	DSSIN	Southern Interceptor MH93	1,770,983	5,897,881	2		Operational	Separate	Transmission	Pahurehure Inlet	Pahurehure Inlet Basin 1	Basin	3	2	1	2	Moderate	Very high		High	Medium
745	DSGLD	Glendowie Branch MH13	1,766,740	5,917,076	2		Operational	Separate	Transmission	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
744	DSHLT	Hellabys Trade Waste MH4	1,763,054	5,910,871	2		Operational	Combined	Transmission	Māngere	Ann's Creek	Estuary	3	1	1	2	Very low	Low		Low	Low
742	DSB07A	Branch 7A MH1	1,754,979	5,918,257	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
741	DSB05	Branch 5 Herne Bay MH25	1,753,816	5,920,806	2		Operational	Combined	Transmission	Coxs Bay	Cox's Bay	Beach	3	2	1	1	Moderate	Very high		Medium	High
740	DSB05	Branch 5 Herne Bay MH23	1,754,226	5,921,014	2		Operational	Combined	Transmission	Coxs Bay	Herne Bay	Beach	1	2	1	1	Very high	Very high		High	High
739	DSB08	Branch 8 Mt Albert MH7	1,753,224	5,917,728	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
738	DSORM	Orakei Main Sewer MH31	1,754,481	5,919,908	2		Operational	Combined	Transmission	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
737	DSB04B	Branch 4B Hardings Street MH2A	1,757,500	5,920,547	2		Operational	Combined	Transmission	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		High	High
736	DSORM	Orakei Main Sewer MH51A	1,751,768	5,916,936	2		Operational	Combined	Transmission	Western Isthmus	Oakley Creek (Oakley Creek Walkway)	Large Waterway	2	1	1	1	#N/A	#N/A			
735	DSORM	Orakei Main Sewer MH19A	1,758,080	5,919,837	2		Operational	Combined	Transmission	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		High	High
734	DSEDB	Edendale Branch MH1	1,754,148	5,916,652	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Lyon Avenue)	Small Waterway	2	1	2	1	Low	High			
733	DSB03C	Branch 3C Newmarket MH1	1,758,759	5,918,397	2		Operational	Combined	Transmission	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		High	High
732	DSORM	Orakei Main Sewer MH38	1,753,068	5,918,721	2		Operational	Combined	Transmission	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
730	DSB03B	Branch 3B Newmarket MH2	1,759,388	5,920,131	2		Operational	Combined	Transmission	Hobson Bay	Judges Bay	Basin	1	1	1	1	High	High		Medium	Medium
728	DSB08	Branch 8 Mt Albert MH31	1,754,096	5,915,954	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Haverstock Road)	Small Waterway	3	2	2	1	Low	High			
727	DSB08	Branch 8 Mt Albert MH30	1,754,080	5,915,982	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Haverstock Road)	Small Waterway	3	2	2	1	Low	High			
726	DSB08	Branch 8 Mt Albert MH18	1,753,675	5,917,190	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			

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725	DSB08	Branch 8 Mt Albert MH6	1,753,191	5,917,720	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
724	DSB08	Branch 8 Mt Albert MH3	1,752,886	5,917,666	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
723	DSB08	Branch 8 Mt Albert MH2	1,752,875	5,917,665	2		Operational	Combined	Transmission	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
722	DSB07	Branch 7 Arch Hill MH52	1,756,368	5,918,861	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
721	DSB07	Branch 7 Arch Hill MH49	1,756,154	5,918,711	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
720	DSB07	Branch 7 Arch Hill MH48	1,756,146	5,918,702	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
719	DSB07	Branch 7 Arch Hill MH46	1,756,045	5,918,590	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
718	DSB07	Branch 7 Arch Hill MH44	1,755,991	5,918,534	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
717	DSB07	Branch 7 Arch Hill MH42C	1,755,887	5,918,429	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
716	DSB07	Branch 7 Arch Hill MH22	1,754,196	5,918,275	2		Operational	Combined	Transmission	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
715	DSB07	Branch 7 Arch Hill MH1	1,753,485	5,919,068	2		Operational	Combined	Transmission	Coxs Bay	Motions Creek	Small waterway	2	2	1	1	Very high	Very high		High	High
714	DSB06	Branch 6 Cox Creek MH11	1,753,840	5,920,394	2		Operational	Combined	Transmission	Coxs Bay	Cox's Bay	Beach	3	2	1	1	Moderate	Very high		Low	Low
713	DSB06	Branch 6 Cox Creek MH2	1,754,438	5,920,015	2		Operational	Combined	Transmission	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Medium	High
712	DSB05	Branch 5 Herne Bay MH2A	1,756,096	5,920,479	2		Operational	Combined	Transmission	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
711	DSB03	Branch 3 Newmarket MH29	1,758,396	5,917,486	2		Operational	Combined	Transmission	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Medium	Low
709	DSB01A	Branch 1A Remuera MH1	1,762,143	5,920,335	2		Operational	Separate	Transmission	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Medium	Medium
708	DPWYM	PS47 Weymouth Pump Station	1,765,896	5,897,957	1		Operational	Separate	Transmission	Pahurehure Inlet	Hazards Road Foreshore	Beach							1-4		
707	DPPAB	Panmure Basin Wholesale Wastewater Pump Station	1,764,476	5,914,251	1		Operational	Separate	Transmission	Lower Tamaki River	Panmure Basin	Basin	2	1	1	1	Low	Low	4-8	Low	Low
706	DPDNK	Dunkirk Wholesale Wastewater Pump Station	1,766,357	5,915,647	1		Operational	Separate	Transmission	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Low	Low	1-4	Medium	Low
705	DPLYF	Lynfield Wholesale Wastewater Pump Station	1,753,044	5,912,078	1		Operational	Separate	Transmission	Onehunga	Wairaki Stream	Small Waterway	2	2	2	1	Moderate	Moderate	< 1	Low	Low
704	DPSHO	Shore Road Wholesale Wastewater Pump Station	1,759,479	5,918,598	1		Operational	Separate	Transmission	Hobson Bay	Unnamed stream in Thomas Bloodworth Park	Small waterway	2	2	1	1	Very high	Very high	4-8	Low	Low
703	DPWRI	Wright Road Wholesale Wastewater Pump Station	1,751,482	5,919,097	1		Operational	Separate	Transmission	Western Isthmus	Coast near Wright Road	Beach	1	2	2	1	#N/A	#N/A	4-8		
702	DPHRB	Harbour View Road Wholesale Wastewater Pump Station	1,751,539	5,919,424	1		Operational	Separate	Transmission	Western Isthmus	Raymond Reserve	Beach	1	2	2	1	#N/A	#N/A	4-8		
701	DPOLV	Oliver Road Wholesale Wastewater Pump Station	1,752,143	5,919,822	1		Operational	Separate	Transmission	Western Isthmus	Meola Creek Mouth	Estuary	1	2	1	1	Low	High	4-8		
700	DPWNU	Wainui Avenue Wholesale Wastewater Pump Station	1,752,412	5,919,315	1		Operational	Separate	Transmission	Western Isthmus	Meola Creek Mouth	Estuary	1	2	1	1	Low	High	> 8		
699	DPWPA	Westmere Park Wholesale Wastewater Pump Station	1,752,884	5,920,125	1		Operational	Combined	Transmission	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high	4-8	Low	Low
698	DPOSN	Ormiston Rd Wastewater Pump Station	1,769,082	5,907,756	1		Operational	Separate	Transmission	Upper Tamaki River	Unnamed tributary of Otara Creek (east)	Small waterway	3	2	1	1	Very low	Very low	4-8	Low	Low
696	DPORM	Orakei Wholesale Wastewater Pump Station	1,761,744	5,919,995	1		Operational	Combined	Transmission	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high	4-8	High	Low

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
695	DPWIN	St George Wholesale Wastewater Pump Station	1,750,801	5,914,066	1		Operational	Separate	Transmission	Whau River	Whau Creek	Small waterway	3	1	1	1	Low	Very high	< 1	High	Medium
694	DPWDB	Wood Bay Wholesale Wastewater Pump Station	1,748,238	5,910,044	1		Operational	Separate	Transmission	Laingholm	Wood Bay	Beach	1	2	1	1	Low	Very low	4-8	Low	Low
693	DPLNG	Laingholm Wholesale Wastewater Pump Station	1,745,818	5,908,907	1		Operational	Separate	Transmission	Laingholm	Waiohua Creek	Estuary	3	1	1	1	Very low	Very low	4-8	Low	Low
692	DPTEN	Te Atatu North Wholesale Wastewater Pump Station	1,747,405	5,922,789	1		Operational	Separate	Transmission	Henderson Creek	Estuary at Orukuwai Point	Estuary	3	1	2	1	Very low	Very low	4-8	Low	Low
691	DPTEA	Te Atatu Central Wholesale Wastewater Pump Station	1,747,461	5,920,317	1		Operational	Separate	Transmission	Henderson Creek	Harbourview Beach	Beach	2	1	2	2	Low	Very low	4-8	Low	Low
690	DPFLN	Western Wholesale Wastewater Pump Station	1,746,336	5,920,116	1		Operational	Separate	Transmission	Henderson Creek	Henderson Creek (southern arm)	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
689	DPWYN	Weymouth North Wholesale Wastewater Pump Station	1,765,208	5,899,792	1		Operational	Separate	Transmission	Puhinui	Puhinui Creek	Estuary	2	1	1	1	Very Low	Very Low	4-8	Low	Low
688	DPPPW	Papatoetoe Wholesale Wastewater Pump Station	1,764,021	5,905,306	1		Operational	Separate	Transmission	Puhinui	Unnamed stream near Hillside Rd	Small waterway	3	2	1	2	Very Low	Moderate	< 1	Low	Low
687	DPMAW	Manurewa West Wholesale Wastewater Pump Station	1,766,639	5,899,262	1		Operational	Separate	Transmission	Pahurehure Inlet	Waimahia Creek	Estuary	2	2	1	1	Moderate	Moderate	1-4	Medium	Medium
686	DPSIN	PS 84 Manurewa South	1,769,015	5,898,534	1		Operational	Separate	Transmission	Pahurehure Inlet	Papakura Stream	Large waterway	3	2	1	1	Very low	Very low	1-4	Medium	Low
685	DPPUH	Puhinui Wholesale Wastewater Pump Station	1,764,676	5,903,778	1		Operational	Separate	Transmission	Puhinui	Puhinui Stream	Large waterway	2	2	1	1	Moderate	Moderate	> 8	Low	Low
684	DPMID	Middlemore Wholesale Wastewater Pump Station	1,764,297	5,907,411	1		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Low	Moderate	1-4	Medium	Medium
683	DPOTB	Otara Wholesale Wastewater Pump Station	1,764,926	5,908,728	1		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low	1-4	Low	Low
682	DPGND	Glendowie Wholesale Wastewater Pump Station	1,767,404	5,918,598	1		Operational	Separate	Transmission	Lower Tamaki River	Glendowie Stream	Small waterway	3	3	2	1	Very low	Very low	1-4	Low	Low
681	DPENG	Pt England Wholesale Wastewater Pump Station	1,766,596	5,916,759	1		Operational	Separate	Transmission	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Low	Low	1-4	High	Medium
680	DPOTW	Otahuhu West Wholesale Wastewater Pump Station	1,763,311	5,910,003	1		Operational	Separate	Transmission	Māngere	Tui Creek	Small waterway	3	2	2	2	Very low	Moderate	1-4	Low	Low
679	DPONT	Onehunga Wholesale Wastewater Pump Station	1,759,926	5,911,752	1		Operational	Separate	Transmission	Onehunga	Mangere Inlet North	Basin	2	1	1	2	Moderate	Moderate	1-4	Medium	Low
678	DPMGB	Māngere Bridge Wholesale Wastewater Pump Station	1,758,869	5,910,282	1		Operational	Separate	Transmission	Māngere	Ambury Shoreline	Beach	1	1	1	1	Low	Very low	1-4	Low	Low
677	DPTRC	Black Bridge Wholesale Wastewater Pump Station	1,759,480	5,908,505	1		Operational	Separate	Transmission	Māngere	Tararata Creek	Small waterway	3	2	1	1	Low	High	1-4	High	Medium
676	DPPKS	Pakuranga South Wholesale Wastewater Pump Station	1,769,184	5,912,560	1		Operational	Separate	Transmission	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low	1-4	Low	Low
675	DPBOT	Botany Wholesale Wastewater Pump Station	1,769,682	5,911,806	1		Operational	Separate	Transmission	Upper Tamaki River	Pakuranga Creek	Estuary	3	1	1	1	Very low	Low	1-4	Low	Low
674	DPPPT	Pikes Point Wholesale Wastewater Pump Station	1,760,896	5,911,494	1		Operational	Separate	Transmission	Onehunga	Unnamed stream (Miami Parade)	Small Waterway	3	3	2	2	Very low	Very low	1-4	Low	Low
673	DPTIN	Tamaki East Wholesale Wastewater Pump Station	1,765,968	5,910,094	1		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River	Estuary	1	1	1	1	Very low	Very low	1-4	Low	Low
672	DPWTF	Westfield Wholesale Wastewater Pump Station	1,762,920	5,911,492	1		Operational	Separate	Transmission	Māngere	Ann's Creek	Estuary	3	1	1	2	Low	Low	1-4	Low	Medium
670	DPSPK	Sylvia Park Wholesale Wastewater Pump Station	1,764,880	5,912,820	1		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River	Estuary	1	1	1	1	Very low	Very low	< 1	Medium	Low
669	DPSMT	Mt Smart Wholesale Wastewater Pump Station	1,761,401	5,911,912	1		Operational	Separate	Transmission	Onehunga	Mangere Inlet North	Basin	2	1	1	2	Low	Low	< 1	Low	Low

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668	DPONE	Hillsborough Wholesale Wastewater Pump Station	1,758,511	5,911,748	1		Operational	Separate	Transmission	Onehunga	Onehunga Bay	Beach	2	2	1	1	Low	Low	1-4	Medium	Low
667	DPHIN	Pakuranga Wholesale Wastewater Pump Station	1,765,816	5,913,225	1		Operational	Separate	Transmission	Upper Tamaki River	Upper Tamaki River	Estuary	1	1	1	1	High	High	< 1	High	Medium
664	DPFAV	Favona Road Wholesale Wastewater Pump Station	1,761,120	5,908,712	1		Operational	Separate	Transmission	Māngere	Harania Creek	Estuary	3	2	1	2	Very low	Low	1-4	Medium	Low
663	DPKOH	Kohimarama Wholesale Wastewater Pump Station	1,764,582	5,919,662	1		Operational	Separate	Transmission	Hobson Bay	Madill's Stream	Small waterway	3	2	1	1	Very low	Moderate	1-4	Medium	Medium
662	DPHOW	Howick Wholesale Wastewater Pump Station	1,773,589	5,915,082	1		Operational	Separate	Transmission	Cockle Bay	Howick Beach	Beach	1	1	1	1	Low	Very low	1-4	Low	Low
659	DPFAN	PS4 Fanshawe Street Pump Station	1,756,748	5,920,737	1		Operational	Separate	Transmission	Central Auckland	Waitemata Harbour - CBD Edge	Harbour							4-8		
658	DPFRN	Farnham Street Wholesale Wastewater Pump Station	1,758,878	5,920,106	1		Operational	Separate	Transmission	Central Auckland	Waitemata Harbour - CBD Edge	Harbour							> 8		
657	DPONR	Oneroa Waiheke Wastewater Pump Station	1,779,483	5,927,363	1		Operational	Separate	Local	Oneroa	Oneroa Beach	Beach	1	2	1	1	Low	Very Low	> 8	Low	Low
656	DPESM	Esmeralda Avenue Wastewater Pump Station	1,749,318	5,916,633	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
653	DPWBG	Wesley Bay Glade Wastewater Pump Station	1,755,705	5,911,244	1		Operational	Separate	Local	Onehunga	Unnamed stream (flowing to Wesley Bay)	Small waterway	2	2	1	1	Moderate	Moderate	1-4	Low	Low
652	DPWEB	Webber Street Wastewater Pump Station	1,754,174	5,920,100	1		Operational	Combined	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high	> 8	Low	Low
650	DPWA1	Walker Road 1 Wastewater Pump Station	1,751,405	5,918,363	1		Operational	Separate	Local	Western Isthmus	Walker Road	Freshwater Wetlands	3	1	2	1	#N/A	#N/A	> 8		
648	DPTAH	Tahatai Street Wastewater Pump Station	1,764,668	5,909,033	1		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low	4-8	Low	Low
644	DPTIM	Timothy Place Wastewater Pump Station	1,748,468	5,917,464	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
643	DPTYC	Tamaki Yacht Club Wastewater Pump Station	1,762,666	5,920,862	1		Operational	Separate	Local	Hobson Bay	Tamaki Yacht Club	Beach	2	2	1	1	Low	Very low	> 8	Low	Low
642	DPTAM	Tamaki Drive Wastewater Pump Station	1,764,684	5,920,029	1		Operational	Separate	Local	Hobson Bay	Madill's Stream	Small waterway	3	2	1	1	Very low	Moderate	> 8	Low	Low
641	DPSTH	St Heliers Wastewater Pump Station	1,765,393	5,920,063	1		Operational	Separate	Local	Hobson Bay	St Heliers Bay	Beach	1	2	1	1	Very High	High	4-8	Low	Medium
640	DPSY2	Sylvania Crescent 2 Wastewater Pump Station	1,753,386	5,910,832	1		Operational	Separate	Local	Onehunga	Manukau Harbour edge (between Lynfield Cove and Wattle Bay)	Harbour	3	1	2	2	Very low	Very low	> 8	Low	Low
636	DPSAR	Sarsfield Street Wastewater Pump Station	1,754,600	5,921,267	1		Operational	Combined	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high	4-8	Low	Low
634	DPRB2	Rosebank Road 2 Wastewater Pump Station	1,749,015	5,917,538	1		Operational	Separate	Local	Whau River	Waterview Embayment	Basin	2	1	1	1	Low	Low	4-8	Low	Low
633	DPRID	Riddell Road Wastewater Pump Station	1,767,698	5,919,689	1		Operational	Separate	Local	Lower Tamaki River	Riddell Road Beach	Beach	2	2	2	2	Low	Very low	4-8	Low	Low
632	DPPUR	Purewa Road Wastewater Pump Station	1,762,111	5,918,436	1		Operational	Separate	Local	Hobson Bay	To land	To land							1-4		
630	DPPEN	Penrose Road Wastewater Pump Station	1,763,031	5,913,878	1		Operational	Separate	Local	Upper Tamaki River	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	4-8	Low	Low
629	DPPKI	Patiki Road Wastewater Pump Station	1,748,419	5,918,548	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
628	DPPNA	Panama Road Wastewater Pump Station	1,765,642	5,911,484	1		Operational	Separate	Local	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low	4-8	Low	Low
627	DPMLA	Meola Road Wastewater Pump Station	1,752,953	5,919,416	1		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high	1-4	Low	Low
626	DPMEA	Meadowbank Road Wastewater Pump Station	1,762,527	5,917,774	1		Operational	Separate	Local	Hobson Bay	Meadowbank Stream East	Small waterway	3	3	2	1	Very low	Very low	> 8	Low	Low
625	DPMED	Mead Street Wastewater Pump Station	1,749,709	5,916,482	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low

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624	DPMAC	Masefield Avenue Wastewater Pump Station	1,755,037	5,921,442	1		**Sealed**	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high	> 8	Low	Low
622	DPLEW	Lewis Street Wastewater Pump Station	1,752,015	5,912,008	1		Operational	Separate	Local	Whau River	Blockhouse Bay	Beach	1	2	1	1	Low	Very low	> 8	Low	Low
621	DPKEY	Kenley Place Wastewater Pump Station	1,749,236	5,915,985	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	1-4	Low	Low
620	DPJRP	John Rymer Place Wastewater Pump Station	1,763,816	5,918,478	1		Operational	Separate	Local	Hobson Bay	Purewa Stream	Small waterway	3	2	2	1	Very low	Moderate	4-8	Low	Low
618	DPHS2	Holly Street 2 Wastewater Pump Station	1,750,568	5,916,407	1		Operational	Separate	Local	Whau River	Waterview Embayment	Basin	2	1	1	1	Low	Low	> 8	Low	Low
617	DPHS1	Holly Street 1 Wastewater Pump Station	1,750,812	5,916,355	1		Operational	Separate	Local	Whau River	Waterview Embayment	Basin	2	1	1	1	Low	Low	1-4	Low	Low
616	DPWTB	Waterbank Crescent Wastewater Pump Station	1,751,562	5,917,766	1		Operational	Separate	Local	Western Isthmus	Lower Oakley Creek	Estuary	3	1	1	1	#N/A	#N/A	4-8		
615	DPHIM	Himalaya Crescent Wastewater Pump Station	1,752,881	5,911,134	1		Operational	Separate	Local	Onehunga	Manukau Harbour edge (between Lynfield Cove and Wattle Bay)	Harbour	3	1	2	2	Very low	Very low	4-8	Low	Low
613	DPGRA	Grand Drive Wastewater Pump Station	1,762,261	5,916,282	1		Operational	Separate	Local	Hobson Bay	Waiatarua Reserve Stream	Small waterway	3	3	2	1	Very low	Very low	> 8	Low	Low
612	DPKRA	Karaka Bay Wastewater Pump Station	1,767,328	5,920,151	1		Operational	Separate	Local	Lower Tamaki River	Karaka Bay	Beach	2	2	1	1	Low	Very low	> 8	Low	Low
611	DPGIL	Gillies Avenue Wastewater Pump Station	1,757,854	5,916,212	1		Operational	Separate	Local	Hobson Bay	To land	To land							4-8		
609	DPEND	Endeavour Street Wastewater Pump Station	1,751,453	5,911,636	1		Operational	Separate	Local	Whau River	Blockhouse Bay	Beach	1	2	1	1	Low	Very low	> 8	Low	Low
608	DPCOW	Cowley Street Wastewater Pump Station	1,751,814	5,917,723	1		**Decommissioned**	Separate	Local	Western Isthmus	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8		
607	DPRB1	Rosebank Road 1 Wastewater Pump Station	1,749,684	5,917,070	1		Operational	Separate	Local	Whau River	Waterview Embayment	Basin	2	1	1	1	Low	Low	4-8	Low	Low
606	DPCLY	Connolly Avenue Wastewater Pump Station	1,756,364	5,914,640	1		Operational	Combined	Local	Western Isthmus	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land	> 8		
605	DPCSR	Captain Springs Road Wastewater Pump Station	1,760,412	5,911,772	1		Operational	Separate	Local	Onehunga	Mangere Inlet North	Basin	2	1	1	2	Low	Low	> 8	Low	Low
604	DPBJD	Ben James Drive Wastewater Pump Station	1,755,800	5,911,474	1		Operational	Separate	Local	Onehunga	Unnamed stream (flowing to Wesley Bay)	Small waterway	2	2	1	1	Moderate	Moderate	1-4	Low	Low
603	DPAVE	Averill Avenue Wastewater Pump Station	1,764,246	5,920,135	1		Operational	Separate	Local	Hobson Bay	Kohimarama Beach	Beach	1	2	1	1	Moderate	Low	1-4	Low	Low
602	DPATK	Atkin Avenue Wastewater Pump Station	1,763,032	5,920,278	1		Operational	Separate	Local	Hobson Bay	Unnamed stream - Mission Bay	Small waterway	3	3	1	1	Low	Low	> 8	Low	Low
598	DPABB	Abbotts Way Wastewater Pump Station	1,761,947	5,916,064	1		Operational	Separate	Local	Hobson Bay	Waiatarua Reserve Stream	Small waterway	3	3	2	1	Very low	Very low	4-8	Low	Low
596		197-209 Taniwha Street	1,765,544	5,917,114	2		Operational	Separate	Local	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
593		31 Cheshire Terrace	1,758,606	5,919,740	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
588		24 Mahor Avenue	1,760,659	5,917,998	2		Operational	Combined	Local	Hobson Bay	Remuera Stream	Small waterway	3	1	1	1	Low	Very high		Low	Medium
587		24 Manawa Road	1,760,707	5,918,208	2		Operational	Combined	Local	Hobson Bay	Remuera Stream	Small waterway	3	1	1	1	Low	Very high		Low	Low
586		39 Manawa Road	1,760,848	5,918,189	2		Operational	Combined	Local	Hobson Bay	Remuera Stream	Small waterway	3	1	1	1	Low	Very high		Low	Low
584		14 Skinner Road	1,762,952	5,913,248	2		Operational	Separate	Local	Upper Tamaki River	Unnamed stream (Mt Wellington)	Small waterway	3	3	1	2	Very low	Very low		Low	Low
583		18 Skinner Road	1,762,944	5,913,171	2		Operational	Separate	Local	Upper Tamaki River	Unnamed stream (Mt Wellington)	Small waterway	3	3	1	2	Very low	Very low		Low	Low
582	DPSYL	Sylvia Park Wastewater Pump Station	1,763,253	5,911,955	1		Operational	Separate	Transmission	Māngere	Ann's Creek	Estuary	3	1	1	2	Very low	Low	> 8	Low	Low

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581		5 Johnson Road	1,763,131	5,912,975	2		Operational	Separate	Local	Upper Tamaki River	Unnamed stream (Mt Wellington)	Small waterway	3	3	1	2	Very low	Very low		Low	Low
578		32 Miranda Street	1,751,275	5,913,733	2		Operational	Separate	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	#N/A	#N/A			
575		164 St Georges Road	1,751,127	5,914,038	2		Operational	Combined	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	#N/A	#N/A			
574		5 Shoreham Street	1,751,761	5,913,935	2		Operational	Separate	Local	Western Isthmus	Tributary of Whau Creek (Shoreham Street)	Small Waterway	3	2	2	1	#N/A	#N/A			
573		4 Margate Road	1,751,669	5,913,659	2		Operational	Separate	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	#N/A	#N/A			
572		375 Blockhouse Bay Road	1,751,611	5,913,419	2		Operational	Combined	Local	Western Isthmus	Whau Creek	Small waterway	3	1	2	1	#N/A	#N/A			
571		102 Penney Avenue	1,753,455	5,912,748	2		Operational	Separate	Local	Western Isthmus	Whau Creek (White Swan Road)	Small Waterway	3	2	2	1	#N/A	#N/A			
568		71 Alverstone Street	1,751,081	5,917,397	2		Operational	Combined	Local	Western Isthmus	Waterview Inlet (Seaside Avenue)	Estuary	3	1	2	1	Moderate	Moderate			
567		16 Seaside Avenue	1,751,201	5,916,934	2		Operational	Combined	Local	Western Isthmus	Waterview Inlet (Seaside Avenue)	Estuary	3	1	2	1	Moderate	Moderate			
566		64 Fir Street	1,751,194	5,917,169	2		Operational	Combined	Local	Western Isthmus	Waterview Inlet (Seaside Avenue)	Estuary	3	1	2	1	Moderate	Moderate			
565		65 Oakley Avenue	1,751,131	5,917,658	2		Operational	Combined	Local	Western Isthmus	Waterview Inlet (Seaside Avenue)	Estuary	3	1	2	1	Moderate	Moderate			
563		1443 Great North Road	1,751,783	5,917,287	2		**Operational**	Combined	Local	Western Isthmus	Oakley Creek (Oakley Creek Walkway)	Large Waterway	2	1	1	1	#N/A	#N/A			
562		11 Waterbank Crescent	1,751,693	5,917,664	2		Operational	Combined	Local	Western Isthmus	Lower Oakley Creek	Estuary	3	1	1	1	#N/A	#N/A			
561		49 Herdman Street	1,751,491	5,917,701	2		Operational	Combined	Local	Western Isthmus	Lower Oakley Creek	Estuary	3	1	1	1	#N/A	#N/A			
559		1401 Great North Road A	1,751,902	5,917,629	2		Operational	Combined	Local	Western Isthmus	Lower Oakley Creek	Estuary	3	1	1	1	#N/A	#N/A			
551		2 Kari Street	1,757,765	5,919,418	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
542		38 Whitaker Place	1,757,542	5,919,516	2		Operational	Combined	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
536		3 Ferncroft Street	1,757,553	5,919,328	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
535		Bedford Street	1,758,458	5,920,088	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
534		Mutu Street	1,758,405	5,920,108	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
532		1 Augustus Terrace	1,758,377	5,920,158	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
530		5 Alten Street	1,758,086	5,920,191	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
529		6 - 18 Symonds Street	1,757,952	5,920,184	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
528	DPCNH	2 Stanley Street	1,758,261	5,920,192	1		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
524		8 Grafton Road	1,757,831	5,920,076	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
522		3 Domain Drive	1,758,796	5,919,017	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
521		6 Ngahere Terrace	1,758,576	5,919,599	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
518		5 Cheshire Street	1,758,443	5,919,852	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
515		11 Purewa Road	1,762,283	5,918,367	2		Operational	Separate	Local	Hobson Bay	Upper Purewa Creek	Estuary	3	1	1	2	Very low	Very low		Low	Low
514		63 Tahapa Crescent	1,762,523	5,918,286	2		Operational	Separate	Local	Hobson Bay	Upper Purewa Creek	Estuary	3	1	1	2	Very low	Low		Medium	Low
512		3A Laxon Terrace A	1,758,837	5,918,571	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
511		158 Bassett Road	1,759,171	5,918,625	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Medium	Low

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
509		113 Brighton Road A	1,759,391	5,918,792	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
508		32 Hapua Street	1,759,477	5,918,279	2		Operational	Separate	Local	Hobson Bay	Unnamed stream in Thomas Bloodworth Park	Small waterway	2	2	1	1	Very high	Very high		High	High
507	DPPL2	Portland Road South Pump Station	1,760,143	5,918,319	1		Operational	Separate	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high	> 8	Low	Low
506		20 Hapua Road	1,759,581	5,918,322	2		Operational	Separate	Local	Hobson Bay	Unnamed stream in Thomas Bloodworth Park	Small waterway	2	2	1	1	Very high	Very high		High	High
505		9 Scherff Road	1,759,996	5,918,027	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Medium	Medium
504		20 Standen Avenue	1,759,973	5,918,193	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Low	Medium
503		68 Portland Road	1,759,891	5,917,711	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Medium	High
502		21 Ingram Road	1,760,150	5,918,058	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Medium	Medium
501		23a Portland Road	1,760,043	5,917,053	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Low	Low
500		20 Spencer Street	1,760,146	5,917,822	2		Operational	Combined	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high		Low	Low
498	DPPL1	Portland Road North Pump Station	1,760,129	5,918,642	1		Operational	Separate	Local	Hobson Bay	Waitaramoa Stream	Small waterway	3	1	1	1	Low	Very high	4-8	Low	Medium
496		28 Crescent Road	1,759,796	5,919,809	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Medium
495		43 Tohunga Street	1,759,509	5,919,226	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Low
494		3 Papahia Street	1,759,731	5,919,573	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Medium
493		32 Takutai Street	1,759,598	5,919,319	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Low
487		106 St Georges Bay Road	1,758,914	5,920,059	2		Operational	Combined	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
482		11 Farnham Street	1,758,864	5,920,107	2		Operational	Combined	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
479		22 Stratford Street	1,759,088	5,919,857	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
478		22 Avon Street	1,759,080	5,919,928	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
477		69 St Georges Bay Road	1,759,083	5,919,907	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
470	DPWAL	Walls Road Wastewater Pump Station	1,761,101	5,913,754	1		Operational	Separate	Local	Onehunga	Stormwater Detention Pond	Small waterway	3	3	2	2	Very low	Very low	> 8	Low	Low
468	DPSAL	Saleyard Road Wastewater Pump Station	1,763,277	5,909,908	1		Operational	Separate	Local	Māngere	Tui Creek	Small waterway	3	2	2	2	Very low	Moderate	4-8	Low	Low
466		20 Chelsea Avenue	1,763,374	5,908,741	2		Operational	Separate	Local	Māngere	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land		Low	Low
465	DPOTA	Otahuhu North East Wholesale Wastewater Pump Station	1,765,491	5,910,775	1		Operational	Separate	Transmission	Upper Tamaki River	Otahuhu Creek	Estuary	3	2	1	2	Very low	Very low	4-8	Low	Low
464	DPJAN	Jane Cowie Place Wastewater Pump Station	1,764,438	5,908,444	1		Operational	Separate	Local	Upper Tamaki River	Upper Tamaki River (Middlemore Arm)	Estuary	3	2	1	1	Very low	Very low	4-8	Low	Low
458		88 Paritai Drive	1,761,043	5,919,909	2		Operational	Separate	Local	Hobson Bay	Lower Purewa Creek	Estuary	2	1	1	1	Very low	Very low		Low	Low
457		36 Reihana Street	1,762,284	5,919,865	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach									
456		88 Reihana Street	1,762,429	5,919,171	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Low	Medium
455		63 Reihana Street	1,762,302	5,919,440	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Medium	High
454		34-36 Apihai Street	1,762,117	5,919,727	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Medium	High

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453		12a Okahu Street	1,761,738	5,919,963	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Low	Low
452		18 Ngapipi Road	1,761,368	5,919,593	2		Operational	Separate	Local	Hobson Bay	Lower Purewa Creek	Estuary	2	1	1	1	Very low	Very low		Low	Low
451		27 Ngapipi Road	1,761,371	5,919,385	2		Operational	Separate	Local	Hobson Bay	Lower Purewa Creek	Estuary	2	1	1	1	Very low	Very low		Low	Low
448		17 Watene Crescent	1,761,865	5,919,910	2		Operational	Separate	Local	Hobson Bay	Okahu Bay	Beach	1	2	1	1	Very high	Very high		Medium	High
440		3 Waitati Place	1,751,939	5,915,229	2		Operational	Combined	Local	Western Isthmus	Oakley Creek near New North Road	Large Waterway	2	2	2	1	#N/A	#N/A			
439		17 Tait Street B	1,751,702	5,915,469	2		Operational	Combined	Local	Western Isthmus	Oakley Creek near New North Road	Large Waterway	2	2	2	1	#N/A	#N/A			
432		2 Mayn Avenue	1,754,570	5,914,539	2		Operational	Separate	Local	Western Isthmus	Oakley Creek (Wesley)	Large Waterway	2	3	2	1	#N/A	#N/A			
430		5 Gifford Avenue	1,754,364	5,914,679	2		Operational	Separate	Local	Western Isthmus	Oakley Creek (Wesley)	Large Waterway	2	3	2	1	#N/A	#N/A			
428		6 Parkfield Terrace	1,757,626	5,918,647	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
427		Kingdon Street	1,758,359	5,918,520	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
425		12 St Marks Road	1,758,633	5,917,574	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
424		29 Ayr Street B	1,758,831	5,918,434	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
423		8 Remuera Road B	1,758,534	5,918,223	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
422		27 Morrow Street	1,758,232	5,918,066	2		Operational	Combined	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
421		29 Ayr Street A	1,758,837	5,918,410	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Medium	High
420		14 Mahuru Street	1,758,462	5,917,703	2		Operational	Separate	Local	Hobson Bay	Newmarket Stream	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
413		727 Great North Road	1,753,899	5,918,658	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
412		PSW25 Overflow	1,754,084	5,918,391	2		**Decommissioned**	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
411		28 Springfield Road	1,754,146	5,918,006	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
409		731 Great North Road	1,754,002	5,918,534	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
404		31 Ivanhoe Road	1,754,321	5,918,426	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
398		27 Fourth Street	1,755,284	5,918,217	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
397		52 Kingsland Avenue	1,755,192	5,918,230	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
395		15 Fourth Street	1,755,389	5,918,206	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
394		42a Tuarangi Road	1,754,578	5,918,667	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
390		21 Edinburgh Street	1,756,460	5,919,260	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
389		21 Gundry Street	1,756,405	5,919,150	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
386		39 Commercial Road	1,755,469	5,918,296	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
385		52 Cooper Street	1,755,537	5,918,324	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
383		24 Central Road	1,755,486	5,918,216	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
382		Nixon Park	1,755,519	5,918,212	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
379		30 Potatau Street	1,755,909	5,918,589	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
378		10 Burgoyne Street	1,756,301	5,919,043	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
377		36 King Street	1,755,778	5,918,437	2		Operational	Combined	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
376		31 Bond Street	1,755,578	5,918,443	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
375		39 King Street	1,755,751	5,918,420	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
362		9 Karaka Street	1,756,584	5,919,022	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
360		5 Harold Street	1,756,989	5,918,209	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
359		17-23 Exmouth Street	1,756,729	5,918,647	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
357		1 Ian McKinnon Drive	1,756,699	5,919,128	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			

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355		6 West Terrace	1,756,593	5,919,384	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
354		29 East Street	1,756,749	5,919,279	2		Operational	Separate	Local	Western Isthmus	Upper Motions Creek	Small Waterway	3	1	1	1	#N/A	#N/A			
353		2b Nihill Crescent	1,762,985	5,919,974	2		Operational	Separate	Local	Hobson Bay	Unnamed stream - Mission Bay	Small waterway	3	3	1	1	Low	Low		Low	Medium
352		49 Rukutai Street	1,762,889	5,919,418	2		Operational	Separate	Local	Hobson Bay	Unnamed stream - Mission Bay	Small waterway	3	3	1	1	Low	Low		Low	Low
351		125 Aotea Street	1,762,885	5,919,784	2		Operational	Separate	Local	Hobson Bay	Unnamed stream - Mission Bay	Small waterway	3	3	1	1	Low	Low		Low	Low
350		44 Rukutai Street	1,762,869	5,919,523	2		Operational	Separate	Local	Hobson Bay	Unnamed stream - Mission Bay	Small waterway	3	3	1	1	Low	Low		Low	Medium
349		58 Walmer Road	1,752,488	5,918,631	2		Operational	Combined	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
347		13 Novar Place	1,752,836	5,918,081	2		Operational	Combined	Local	Western Isthmus	Meola Creek (north of SH 16)	Large Waterway	2	2	1	1	Low	High			
342		13 Rawalpindi Street	1,752,832	5,917,661	2		Operational	Separate	Local	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
341		25 Parkdale Road	1,752,983	5,917,441	2		Operational	Separate	Local	Western Isthmus	Meola Creek (Rawalpindi)	Large Waterway	3	2	2	1	Low	High			
338		99 Moa Road	1,752,429	5,919,002	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
337		252 Meola Road	1,752,282	5,918,909	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
333		79 Moa Road	1,752,545	5,918,880	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
328		1054 Great North Road	1,752,899	5,918,235	2		Operational	Separate	Local	Western Isthmus	Meola Creek (north of SH 16)	Large Waterway	2	2	1	1	Low	High			
327		3 Parr Road	1,752,583	5,918,129	2		Operational	Separate	Local	Western Isthmus	Meola Creek (north of SH 16)	Large Waterway	2	2	1	1	Low	High			
325		28 Pasedena Road	1,753,070	5,918,730	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
324		53 Premier Avenue B	1,752,987	5,918,739	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
323		53 Premier Avenue A	1,752,988	5,918,736	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
322		20 Kanuka Street	1,752,648	5,918,895	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
321		76 Premier Avenue	1,752,748	5,918,857	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
320		71 Moa Road	1,752,562	5,918,781	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
319		1064 Motions Road	1,753,198	5,918,823	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
317		1102 Great North Road	1,752,793	5,918,185	2		Operational	Separate	Local	Western Isthmus	Meola Creek (north of SH 16)	Large Waterway	2	2	1	1	Low	High			
316		98 Moa Road	1,752,447	5,918,969	2		Operational	Separate	Local	Western Isthmus	Lower Meola Creek	Large Waterway	2	2	2	1	#N/A	#N/A			
309		29 Euston Road	1,754,001	5,915,651	2		Operational	Separate	Local	Western Isthmus	Meola Creek (Haverstock Road)	Small Waterway	3	2	2	1	Low	High			
308		94 Haverstock Road	1,754,040	5,915,909	2		Operational	Separate	Local	Western Isthmus	Meola Creek (Haverstock Road)	Small Waterway	3	2	2	1	Low	High			
296		17 Benson Road	1,761,028	5,917,721	2		Operational	Separate	Local	Hobson Bay	Orakei Basin	Basin	1	1	1	1	Moderate	High		Low	Low
295		14 Rangitoto Avenue	1,760,962	5,917,244	2		**Sealed**	Separate	Local	Hobson Bay	Orakei Basin	Basin	1	1	1	1	Moderate	High		Low	Low
289		93 Waiatarua Road	1,762,170	5,917,785	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
288		2 Bonnie Brae Road	1,762,472	5,917,822	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
287		148 Lucerne Road	1,762,065	5,918,123	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
286		44a Benson Road	1,761,229	5,917,840	2		Operational	Separate	Local	Hobson Bay	Orakei Basin	Basin	2	1	1	1	Moderate	High		Low	Low
285		77 Meadowbank Road	1,762,477	5,917,730	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
284		84 Meadowbank Road	1,762,417	5,917,660	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
282		118 Ngapuhi Road	1,761,950	5,917,811	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
281		49 Ngapuhi Road	1,761,853	5,917,335	2		Operational	Separate	Local	Hobson Bay	Meadowbank Stream West	Small waterway	3	2	2	1	Very low	Moderate		Low	Low

EOP ID	Facility Code	EOP Name	X coord	Y coord	EOP Type	ADF	Status	System	Network	Catchment	Receiving Environment	RE Type	Recreational Class	Ecological Class	Cultural Class	Aesthetic Class	Public Health Risk	Ecological Risk	Available Storage Hours	Volume Range	Frequency Range
280		12a Woodley Avenue	1,761,154	5,916,888	2		Operational	Separate	Local	Hobson Bay	Orakei Basin	Basin	1	1	1	1	Moderate	High		Low	Low
279		188 Upland Road	1,761,132	5,918,109	2		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high		Low	Low
277		126 Ngapuhi Road	1,761,999	5,917,859	2		Operational	Separate	Local	Hobson Bay	Orakei Creek	Estuary	2	1	1	1	Moderate	Moderate		Low	Low
276		58 Kelvin Road	1,761,965	5,917,486	2		Operational	Separate	Local	Hobson Bay	Meadowbank Stream West	Small waterway	3	2	2	1	Very low	Moderate		Low	Low
274	DPTON	Tonks Street Wastewater Pump Station	1,761,052	5,918,284	1		Operational	Separate	Local	Hobson Bay	Hobson Bay	Basin	2	1	1	1	Very high	Very high	> 8	Low	Low
273	DSB01	35 Entrican Avenue	1,761,094	5,916,990	2		Operational	Separate	Local	Hobson Bay	Unnamed stream flowing to Hobson Bay	Small Waterway									
272		3/159 Orakei Road	1,761,047	5,918,159	2		Operational	Separate	Local	Hobson Bay	Unnamed stream flowing to Hobson Bay	Small Waterway									
271		22 Winsomere Cresecent	1,752,726	5,919,910	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
270		1 Westmere Park Avenue	1,752,892	5,919,822	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
269		7 Weona Place	1,752,668	5,919,768	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
268		40 Lemington Road	1,752,940	5,919,748	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Medium
267		216 Garnet Road	1,752,941	5,920,089	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
266		25 Tirotai Crescent	1,752,923	5,920,019	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
265		15 Notley Street	1,753,313	5,919,486	2		Operational	Separate	Local	Coxs Bay	Motions Creek	Small waterway	2	2	1	1	Very high	Very high		High	High
264		25 Savage Street	1,753,429	5,919,394	2		Operational	Separate	Local	Coxs Bay	Motions Creek	Small waterway	2	2	1	1	Very high	Very high		Low	High
263		36a Westmere Crescent	1,753,069	5,919,716	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Medium	High
262		26 Westmere Crescent	1,753,119	5,919,677	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Medium	High
261		18 Meola Road	1,753,251	5,919,645	2		Operational	Separate	Local	Coxs Bay	Motions Creek Estuary	Estuary	2	2	1	1	Very high	Very high		Low	Low
260		34 Notley Street	1,753,537	5,919,364	2		Operational	Separate	Local	Coxs Bay	Motions Creek	Small waterway	2	2	1	1	Very high	Very high		Low	Low
256		63a Warnock Street	1,753,931	5,919,721	2		Operational	Separate	Local	Coxs Bay	Edgars Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Medium
254		58 Fife Street	1,753,938	5,919,779	2		Operational	Combined	Local	Coxs Bay	Edgars Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
253		14 Parawai Cr	1,754,438	5,920,014	2		Operational	Combined	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
252		22 Parawai Crescent	1,754,417	5,920,082	2		Operational	Combined	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		High	High
251		33 Regina Street	1,754,180	5,920,027	2		Operational	Combined	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
250		25 Francis Street	1,754,087	5,919,267	2		Operational	Combined	Local	Coxs Bay	Edgars Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
249		5 Larchwood Avenue	1,753,991	5,919,544	2		Operational	Combined	Local	Coxs Bay	Edgars Creek	Small waterway									
248		Wellpark Reserve	1,754,014	5,919,342	2		Operational	Combined	Local	Coxs Bay	Edgars Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
246		32 Tawariki Street D	1,754,698	5,920,149	2		Operational	Combined	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		High	Medium
244		32 Tawariki Street B	1,754,706	5,920,141	2		Operational	Combined	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		High	High
243		58 Hakanoa Street	1,754,669	5,919,660	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
242		38 Sackville Street	1,754,594	5,919,716	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		High	High
241		55 Hakanoa Street	1,754,715	5,919,584	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Medium	Medium
240		73 Dryden Street	1,754,813	5,919,506	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Medium
238		61 Dryden Street	1,754,932	5,919,327	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		High	High
237		91 Rose Road	1,755,122	5,919,343	2		Operational	Separate	Local	Coxs Bay	Cox’s Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
235		52 Fife Street	1,753,938	5,919,779	2		Operational	Separate	Local	Coxs Bay	Edgars Creek	Small waterway	3	3	1	1	Very low	Very low		High	High
234	DPEDC	75 West End Road	1,753,612	5,920,199	1		Operational	Separate	Local	Coxs Bay	Cox’s Bay	Beach	3	2	1	1	Moderate	Very high		Low	Low
233		65 Kelmarna Avenue	1,754,620	5,920,358	2		Operational	Separate	Local	Coxs Bay	Kelmarna Stream	Small waterway	3	2	2	1	Low	High		High	High

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230		42 Wharf Road	1,754,373	5,920,294	2		Operational	Separate	Local	Coxs Bay	Kelmarna Stream	Small waterway	3	2	2	1	Moderate	Very high		Medium	High
229		30 West End Road	1,754,138	5,920,376	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Medium	High
228		Selbourne Street/ Firth Street	1,754,769	5,919,020	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
227		Elgen Street	1,755,099	5,919,040	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
226		123 Williamson Avenue	1,755,028	5,918,798	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Medium
225		Grey Lynn Park/ Williamson Avenue	1,755,327	5,919,073	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Medium	Medium
224		49 Ariki Street	1,755,498	5,919,076	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
223		36 Scanlan Street	1,755,757	5,919,170	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
222		Sussex Street/ Williamson Avenue	1,755,588	5,919,224	2		Operational	Separate	Local	Coxs Bay	Cox's Creek	Small waterway	3	2	1	1	Moderate	Very high		Low	Low
215		74 Hawera Road	1,764,212	5,919,542	2		Operational	Separate	Local	Hobson Bay	Madill's Stream	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
213		59 Baddeley Avenue	1,764,345	5,919,340	2		Operational	Separate	Local	Hobson Bay	Madill's Stream	Small waterway	3	2	1	1	Very low	Moderate		Low	Low
212		54 Speight Road	1,764,680	5,919,878	2		Operational	Separate	Local	Hobson Bay	Madill's Stream	Small waterway	3	2	1	1	Very low	Moderate		Low	Medium
211		520 Blockhouse Bay Road	1,751,540	5,912,455	2		Operational	Separate	Local	Western Isthmus	Tributary of Whau Creek (Blockhouse Bay Reserve)	Small waterway	2	2	2	1	#N/A	#N/A			
210	DPGLT	Gilletta Road Wastewater Pump Station	1,752,439	5,911,904	1		Operational	Separate	Local	Onehunga	Lynfield Cove	Beach	2	2	2	1	Low	Very low	> 8	Low	Low
209	DPAL2	Aldersgate Road 2 Wastewater Pump Station	1,755,275	5,911,093	1		Operational	Separate	Local	Onehunga	Wesley Bay	Beach	2	1	1	1	Moderate	Low	1-4	Low	Medium
208	DPAL1	Aldersgate Road 1 Wastewater Pump Station	1,755,658	5,911,422	1		Operational	Separate	Local	Onehunga	Unnamed stream (flowing to Wesley Bay)	Small waterway	2	2	1	1	Moderate	Moderate	4-8	Low	Low
202		69 Hamilton Road	1,754,881	5,921,403	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		Low	High
201		97 Sarsfield Street	1,754,599	5,921,262	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		High	High
200		28 Sentinel Road	1,754,732	5,921,097	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		Low	High
199		57 Marine Parade	1,753,732	5,920,673	2		Operational	Separate	Local	Coxs Bay	Cox's Bay	Beach	3	2	1	1	Moderate	Very high		Low	High
198		22 Marine Parade	1,753,814	5,920,805	2		Operational	Separate	Local	Coxs Bay	Cox's Bay	Beach	3	2	1	1	Moderate	Very high		High	High
197		1 Marine Parade	1,754,026	5,920,996	2		Operational	Separate	Local	Coxs Bay	Herne Bay	Beach	1	2	1	1	Moderate	Moderate		Low	High
196		8 Sarsfield Street	1,755,262	5,921,402	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		High	High
195		54 Sarsfield Street	1,754,890	5,921,317	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		Low	Low
194		28 Sarsfield Street	1,755,138	5,921,375	2		Operational	Separate	Local	Coxs Bay	Home Bay	Beach	1	2	1	1	Very high	Very high		High	High
193		35 Yattendon Road	1,766,093	5,919,956	2		Operational	Separate	Local	Hobson Bay	St Heliers Bay	Beach	1	2	1	1	Very High	High		Medium	High
191	DPWTR	West Tamaki Road Wastewater Pump Station	1,767,621	5,917,576	1		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	1	1	1	Very low	Very low	> 8	Low	Low
189		109 Taniwha Street	1,766,605	5,917,102	2		Operational	Separate	Local	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Moderate	Moderate		High	High
188		6 Concord Place	1,766,526	5,916,894	2		Operational	Separate	Local	Lower Tamaki River	Omaru Creek	Small waterway	3	3	1	1	Very low	Very low		Low	Low
183	DPWTN	95 Wellington Street	1,756,219	5,920,064	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
180		16 Hackett Street	1,755,581	5,921,065	2		**Decommissioned**	Combined	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
176		Union Street	1,756,333	5,920,453	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Medium	High
172		1 London Street	1,755,956	5,921,014	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
169		Fanshawe Street/ Nelson Street	1,757,026	5,920,810	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low

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167		74 Cook Street	1,756,671	5,920,233	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
164		23A Inverary Avenue	1,757,959	5,916,278	2		Operational	Separate	Local	Hobson Bay	To land	To land	2	2	2	1	To Land	To Land		Low	Low
163		34 Riverview Road	1,765,964	5,914,295	2		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	2	2	1	Low	Low		Low	Medium
162		49 Dunkirk Road	1,766,220	5,914,916	2		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	2	2	1	Moderate	Moderate		Medium	Medium
161		155 Riverside Avenue	1,766,365	5,915,758	2		Operational	Separate	Local	Lower Tamaki River	Lower Tamaki River	Estuary	2	2	2	1	Very low	Very low		Low	Low
160		45 Ascot Avenue	1,760,504	5,916,412	2		Operational	Separate	Local	Hobson Bay	Waiatarua Reserve Stream	Small waterway	2	2	2	1	Very low	Very low		Low	Low
152	DPJOA	Joan Street Wastewater Pump Station	1,751,787	5,919,957	1		Operational	Separate	Local	Western Isthmus	Point Chevalier Beach	Beach	1	2	1	1	Moderate	Low	> 8		
148		64 Smale Street	1,751,738	5,918,205	2		Operational	Separate	Local	Western Isthmus	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land			
146		68 Smale Street	1,751,709	5,918,200	2		Operational	Separate	Local	Western Isthmus	To land	To land	To Land	To Land	To Land	To Land	To Land	To Land			
139		18 Wainoni Avenue	1,751,527	5,918,539	2		Operational	Separate	Local	Western Isthmus	Coast near Bambury Close	Beach	2	2	2	1	#N/A	#N/A			
134		Durham Lane	1,757,350	5,920,581	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
131		Wolfe Street/ Hobson Street	1,757,195	5,920,913	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
130		15 Albert Street	1,757,368	5,920,856	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
129		19 Victoria Street West	1,757,350	5,920,445	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
128		11 Victoria Street East	1,757,375	5,920,413	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
127		1 Victoria Street West	1,757,344	5,920,426	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour									
123		12 Mayoral Drive B	1,757,159	5,920,147	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
121		11 Mayoral Drive	1,757,120	5,920,214	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
120		14 Mayoral Drive	1,757,057	5,920,143	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
119		67 Vincent Street B	1,756,978	5,920,098	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
118		162 Cook Street	1,757,001	5,920,112	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
117		67 Vincent Street A	1,756,959	5,920,079	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
116		15 Mayoral Drive B	1,757,119	5,920,162	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour									
115		12 Mayoral Drive A	1,757,010	5,920,142	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
114		15 Mayoral Drive	1,757,118	5,920,164	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
113		8 Mayoral Drive	1,757,134	5,920,200	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
112		Wellesley Street West	1,757,197	5,920,247	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
109		267 Queen Street	1,757,291	5,920,223	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
108		301 Queen Street B	1,757,258	5,920,069	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low

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99		1 Greys Avenue	1,757,067	5,919,979	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
97		301 Queen Street A	1,757,155	5,920,000	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
95		327 Queen Street	1,757,131	5,919,887	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
93		89 Mayoral Drive	1,757,025	5,919,960	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
89		292 Queen Street	1,757,312	5,920,216	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
80		Lorne Street/ Victoria Street East	1,757,452	5,920,381	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
76		242 Queen Street	1,757,352	5,920,351	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
59		27 Victoria Street	1,757,441	5,920,394	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
58		41 Kitchener Street	1,757,623	5,920,495	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
50		61 Beach Road	1,758,094	5,920,626	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
49		Quay Street	1,757,961	5,920,903	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
47		Short Street/ Anzac Avenue	1,757,993	5,920,609	2		Operational	Separate	Local	Central Auckland	Waitemata Harbour - CBD Edge	Harbour	2	3	1	1	Very high	Moderate		Low	Low
44	DPASH	Ash Street Wastewater Pump Station	1,749,843	5,915,004	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
42	DPLID	Lidcombe Place Wastewater Pump Station	1,750,374	5,916,592	1		Operational	Combined	Local	Whau River	Waterview Embayment	Basin	2	1	1	1	Low	Low	1-4	Low	Low
41	DPRVD	Riversdale Road Wastewater Pump Station	1,749,408	5,915,370	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	2	1	1	1	Very low	Very low	4-8	Low	Low
40		17 Victor Street	1,750,980	5,915,903	2		Operational	Separate	Local	Western Isthmus	Waterview Inlet (Saltaire Street)	Estuary	3	1	1	1	Moderate	Moderate			
39		Avondale Racecourse	1,751,023	5,915,074	2		Operational	Combined	Local	Western Isthmus	Small tributary of Whau Creek 1	Small Waterway	3	2	2	1	#N/A	#N/A			
38	DPSTR	Sceptre Place Wastewater Pump Station	1,749,357	5,915,778	1		Operational	Separate	Local	Whau River	Whau River Estuary	Estuary	3	2	2	1	Very low	Very low	4-8	Low	Low
37		3 Kelvinside Terrace	1,751,090	5,914,475	2		Operational	Separate	Local	Western Isthmus	Small tributary of Whau Creek 2	Small Waterway	3	2	2	1	#N/A	#N/A			
36		37 Saltaire Street	1,751,012	5,916,371	2		Operational	Separate	Local	Western Isthmus	Waterview Inlet (Saltaire Street)	Estuary	3	1	1	1	Moderate	Moderate			
10		38 La Rosa Street	1,749,083	5,911,643	2		Operational	Separate	Local	Whau River	Avondale Stream	Small waterway	3	3	1	1	Very low	Very low		Low	Low
8		16 Chilcot Road	1,745,804	5,918,257	2		Operational	Separate	Local	Henderson Creek	Henderson Creek (southern arm)	Estuary	2	1	1	1	Very low	Very low		Low	Low
7		14B Woodglen Road	1,746,473	5,913,873	2		Operational	Separate	Local	Henderson Creek	Waikumete Stream	Large waterway	3	2	2	1	Very low	Very low		Low	Low
6		50 Kingdale Road	1,744,853	5,919,642	2		Operational	Separate	Local	Henderson Creek	Lincoln Stream	Small waterway	3	2	2	1	Low	High		Medium	Medium
5		9 Glenford Lane	1,746,820	5,922,215	2		Operational	Separate	Local	Henderson Creek	Unnamed tributary to Henderson Creek	Small waterway	3	1	2	1	Very low	Very low		Low	Low
4		144-160 Triangle Road	1,744,306	5,921,899	2		Operational	Separate	Local	Henderson Creek	Rarawaru Stream	Small waterway	3	2	2	1	Low	High		Low	Medium
3		13 Ascot Avenue	1,744,420	5,919,675	2		Operational	Separate	Local	Henderson Creek	Taikata Stream	Small waterway	3	3	2	1	Very low	Very low		Low	Low
2		25 Blethyn Place	1,746,033	5,919,037	2		Operational	Separate	Local	Henderson Creek	Henderson Creek (southern arm)	Estuary	2	1	1	1	Very low	Very low		Low	Low

Table C-2 Type 3 Overflows to Private Property Schedule, current June 2024. The green hilighted overflow sites have been added to the schedule during this reporting period.

ID	Catchment	Type 3 Overflow Name	Estimated Freq (spills/ yr)	Estimated Freq Range	Estimated Vol Range	Receiving Environment	Accessibility	Public Health Effect	Aesthetic Effect	Public Health Risk	Aesthetic Risk
S138	Lower Tamaki River	Silverton Ave	4	Low	Low	Wai o Taki Bay	Public Land	Low	Low	Low	Low
S137	Whau River	Karaka Street	0	Low	Low	Private Land	Good	High	High	Moderate	Low
S136	Whau River	Kohekohe Street	0	Low	Low	Private Land	Good	High	High	Moderate	Low
S135	Whau River	Heaphy St	1.2	Low	Low			Low	Low	Low	Low
S134	Hobson Bay	Hawthorne Pl	1.2	Low	Low			Low	Low	Low	Low
S133	Hobson Bay	St Johns Rd	1.2	Low	Low			Low	Low	Low	Low
S132	Whangaparaoa	Marellen Dr	1.2	Low	Low			Low	Low	Low	Low
S131	Henderson Creek	Taipari Rd	1.2	Low	Low			Low	Low	Low	Low
S130	Pahurehure Inlet	Trimdon St	1.2	Low	Low			Low	Low	Low	Low
S129	Upper Harbour North	East Coast Rd	1.2	Low	Low			Low	Low	Low	Low
S128	Henderson Creek	Allington Rd	1.2	Low	Low			Low	Low	Low	Low
S127	Lower Tamaki River	Silverton Ave	1.2	Low	Low			Low	Low	Low	Low
S126	Puhinui	Allen St	1.2	Low	Low			Low	Low	Low	Low
S125	Henderson Creek	Noall St	1.2	Low	Low			Low	Low	Low	Low
S124	East Coast Bays	B Marama St	1.2	Low	Low			Low	Low	Low	Low
S123	Western Isthmus	Hertford St	1.2	Low	Low			Low	Low	Low	Low
S122	Onehunga	The Avenue	1.2	Low	Low			Low	Low	Low	Low
S121	Henderson Creek	Matama Rd	1.2	Low	Low			Low	Low	Low	Low
S120	Western Isthmus	Croydon Rd	1.2	Low	Low			Low	Low	Low	Low
S119	Hobson Bay	Corinth St	1.2	Low	Low			Low	Low	Low	Low
S118	Shoal Bay	Council Tce	1.2	Low	Low			Low	Low	Low	Low
S117	Whau River	Hinau St	1.2	Low	Low			Low	Low	Low	Low
S116	Puhinui	Ferndown Ave	1.2	Low	Low			Low	Low	Low	Low
S115	Cox's Bay	Albany Rd	1.2	Low	Low			Low	Low	Low	Low
S114	Upper Harbour West	Oakpark PL	1.2	Low	Low			Low	Low	Low	Low
S113	Upper Tamaki River	Tui Rd	1.2	Low	Low			Low	Low	Low	Low
S112	Whangaparaoa	Sundown Ave	1.2	Low	Low			Low	Low	Low	Low
S111	Henderson Creek	Waitoro Ln	1.2	Low	Low			Low	Low	Low	Low
S110	Mangere	Jordan Rd	1.2	Low	Low			Low	Low	Low	Low
S109	Pukekohe	Eastside Dr	1.2	Low	Low			Low	Low	Low	Low
S108	Upper Tamaki River	Aranui Rd	1.2	Low	Low	Private Land	Good	High	High	Moderate	Low
S107	Pukekohe	Cape Hill Rd	1.2	Low	Low	Private Land	Good	High	High	Moderate	Low
S106	East Coast Bays	Nile Rd	1.2	Low	Low	Private Land	Good	High	High	Moderate	Low
S105	Western Isthmus	A Richardson Rd	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S104	Western Isthmus	Woodside Rd	1.6	Low	Low	Public Land	Good	High	High	Moderate	Low
S103	Onehunga	Canberra Ave	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S102	Western Isthmus	Parkinson Ave	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S101	Henderson Creek	Railside Ave	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S100	Pukekohe	Reynolds Rd	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S99	Whau River	Meredith St	1.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S98	Hobson Bay	Ara St	1.6	Low	Low	Public Land	Good	High	High	Moderate	Low
S97	Whau River	Taylor St	1.6	Medium	Low	Private Land	Good	High	High	High	Moderate
S96	Upper Tamaki River	Clutha Cres	2	Medium	Low	Private Land	Good	High	High	High	Moderate
S95	Upper Tamaki River	Water St	2	Medium	Low	Private Land	Good	High	High	High	Moderate
S94	Upper Tamaki River	Barrie Ave	2	Medium	Low	Private Land	Good	High	High	High	Moderate

ID	Catchment	Type 3 Overflow Name	Estimated Freq (spills/ yr)	Estimated Freq Range	Estimated Vol Range	Receiving Environment	Accessibility	Public Health Effect	Aesthetic Effect	Public Health Risk	Aesthetic Risk
S93	Upper Tamaki River	Swaffield Rd	2	Medium	Low	Private Land	Good	High	High	High	Moderate
S92	Orewa	Moffat Rd	2	Medium	Low	Private Land	Good	High	High	High	Moderate
S91	East Coast Bays	Selwyn Cres	2.4	Medium	Low	Private Land	Good	High	High	High	Moderate
S90	Onehunga	Epworth Ave	2.4	Medium	Low	Private Land	Good	High	High	High	Moderate
S89	East Coast Bays	Rock Isle Rd	3.2	Medium	Low	Private Land	Good	High	High	High	Moderate
S88	Onehunga	Athenic Ave	3.2	Medium	Low	Private Land	Good	High	High	High	Moderate
S87	Whangaparaoa	Zealandia Rd	3.6	Medium	Low	Private Land	Good	High	High	High	Moderate
S86	Henderson Creek	Vodanovich Rd	4	Low	Low	Private Land	Good	High	High	Moderate	Low
S85	Puhinui	Janese Place	6	Medium	Low	Public Land	Good	High	High	High	Moderate
S84	Western Isthmus	Kingsview Rd	13	Medium	Low	Private Land	Good	High	High	High	Moderate
S83	Upper Harbour North	Paul Matthews	11	Medium	Low	Public Land	Limited	Medium	Low	Moderate	Low
S82	Pahurehure Inlet	Coxhead Road	4	Medium	Low	Public Land	Good	High	High	High	Moderate
S81	Pukekohe	Helvetia Rd	4	Medium	Low	Private Land	Good	High	High	High	Moderate
S80	Western Isthmus	Whitney St	3	Medium	Low	Private Land	Good	High	High	High	Moderate
S79	Upper Harbour South	Gladys Ave	10	Medium	Low	Private Land	Good	High	High	High	Moderate
S78	Upper Harbour South	Lynn Road	12	Medium	Low	Public Land	Limited	Medium	Low	Moderate	Low
S77	Laingholm	Kauri Point Road	13	Medium	Low	Private Land	Good	High	High	High	Moderate
S76	Henderson Creek	Titoki Street	4	Medium	Low	Public Land	Limited	Medium	Low	Moderate	Low
S75	East Coast Bays	Beach Road	7	Medium	Low	Private Land	Good	High	High	High	Moderate
S74	Henderson Creek	Candia Road	5	Medium	Low	Private Land	Good	High	High	High	Moderate
S73	Devonport-Takapuna	The Strand	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S72	Pahurehure Inlet	Crampton Place	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S71	Henderson Creek	Takapu Street	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S70	East Coast Bays	Woodstock Road	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S69	Lower Tamaki River	Steeple Rise	3	Medium	Low	Public Land	Good	High	High	High	Moderate
S68	East Coast Bays	Sunnybrae Branch Sewer MH 32	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S67	East Coast Bays	Masterton Rd	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S66	Upper Tamaki River	Bucklands Beach Branch Sewer MH19A	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S64	Cockle Bay	Mellons Bay Rd	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S63	Cockle Bay	Mellons Bay MH 16	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S61	Whau River	West Lynn Branch MH 09	2	Low	Low	Private Land	Good	High	High	Moderate	Low
S60	Upper Tamaki River	Otara Branch Relief Sewer MH 16A	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S59	Upper Tamaki River	Otara Branch Sewer MH 17	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S58	Upper Tamaki River	Otara Branch Sewer MH 18	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S57	Mangere	Mangere Bridge Branch MH 01	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S56	Henderson Creek	Matipo Rd	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S55	Lower Tamaki River	Sloane St, Glen Innes	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S54	Western Isthmus	Dexter Ave, Balmoral	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S53	Mangere	McKinstry Avenue	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S52	Puhinui	Skipton Street	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S51	Western Isthmus	Seaview Tce	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S50	Western Isthmus	Carlton St	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S49	Western Isthmus	Dundale Ave	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S47	Hobson Bay	Vale Road	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S46	Western Isthmus	Hasbury Ave	2	Low	Low	Private Land	Good	High	High	Moderate	Low

ID	Catchment	Type 3 Overflow Name	Estimated Freq (spills/ yr)	Estimated Freq Range	Estimated Vol Range	Receiving Environment	Accessibility	Public Health Effect	Aesthetic Effect	Public Health Risk	Aesthetic Risk
S45	Warkworth	Elizabeth St	5.5	Low	Low	Private Land	Good	High	High	Moderate	Low
S42	Henderson Creek	Sunline Avenue Reserve	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S40	Whau River	Gardner Avenue	1	Low	Low	Private Land	Good	High	High	Moderate	Low
S39	Whau River	D Fruitvale Road	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S37	Whau River	Hutchinson Ave	2.5	Low	Low	Private Land	Good	High	High	Moderate	Low
S36	Upper Tamaki River	Bairds Rd	1	Low	Low	Public Land	Good	High	High	Moderate	Low
S35	Upper Tamaki River	R Bairds Rd	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S32	Mangere	Walmsely Road	2	Low	Low	Private Land	Good	High	High	Moderate	Low
S30	Henderson Creek	A Millbrook Road	2	Low	Low	Public Land	Good	High	High	Moderate	Low
S29	East Coast Bays	Montrose Terrace	6.2	Medium	Low	Private Land	Limited	Medium	Low	Moderate	Low
S28	East Coast Bays	A Nile Road	8	Medium	Low	Private Land	Limited	Medium	Low	Moderate	Low
S27	East Coast Bays	Selwyn Crescent	3.6	Medium	Low	Private Land	Limited	Medium	Low	Moderate	Low
S26	Shoal Bay	Chatswood Branch Sewer MH 10	11.3	Medium	Medium	Public Land	Limited	Medium	Low	Moderate	Low
S25	Hobson Bay	Branch 3 MH 14	2.3	Medium	Low	Public Land	Good	High	High	High	Moderate
S24	Henderson Creek	Whenuapai Branch Sewer MH 10	3	Medium	Low	Public Land	Good	High	High	High	Moderate
S23	Henderson Creek	Te Atatu North Branch Sewer MH 6	3.1	Medium	Low	Public Land	Good	High	High	High	Moderate
S22	Henderson Creek	Te Atatu North Branch Sewer MH 5	2.7	Medium	Low	Public Land	Good	High	High	High	Moderate
S21	Henderson Creek	Te Atatu North Branch Sewer MH 2	2.2	Medium	Low	Public Land	Limited	Medium	Low	Moderate	Low
S20	Henderson Creek	Te Atatu North Branch Sewer MH 1	0.7	Low	Low	Public Land	Limited	Medium	Low	Low	Low
S19	Henderson Creek	Massey Branch Sewer MH14	1.3	Low	Low	Public Land	Good	High	High	Moderate	Low
S10	Whau River	A Firle Place	0.6	Low	Low	Private Land	Good	High	High	Moderate	Low
S9	Pahurehure Inlet	Coxhead Rd	1.4	Low	Low	Private Land	Limited	Medium	Low	Low	Low
S7	Upper Tamaki River	Crown Crescent	1.6	Low	Low	Private Land	Limited	Medium	Low	Low	Low
S6	Upper Tamaki River	DSHIN56	1	Low	Low	Public Land	Limited	Medium	Low	Low	Low
S5	Puhinui	Hain Ave	1.3	Low	Low	Private Land	Limited	Medium	Low	Low	Low
S2	Mangere	Wedgwood Avenue	1.1	Low	Low	Private Land	Limited	Medium	Low	Low	Low
S1	Mangere	Mascot Avenue	1.2	Low	Low	Private Land	Limited	Medium	Low	Low	Low

Appendix D. Overflow Records for 2023-2024

Table D-1 All DWOs for 2023-24 reporting period

Table D-2 All WWOs for 2023-24 reporting period

Table D-3 Engineer-led investigations in 2023-24 reporting period

Table D-4 Type 1 DWO trends

Table D-5 Type 1 WWO trends

Table D-6 Type 3 DWO trends

Table D-7 Type 3 WWO trends

Table D-1 All controlled and uncontrolled dry weather overflows from the Auckland-wide wastewater network during the 2023-24 period

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Wellsford	5/09/2023	3	2552178	Davies RD	13:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Wellsford	1/11/2023	3	2441417	Rodney ST	16:13	n/a	Rags	No	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no			Unblocked line
Wellsford	31/12/2023	3	2442476	Rodney ST	10:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Wellsford	5/02/2024	3	2441057	Rodney ST	10:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Wellsford	14/02/2024	3	2553816	Centennial Park RD	13:07	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Wellsford	21/02/2024	3	2553816	Centennial Park RD	10:07	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, sucker truck
Wellsford	26/04/2024	1	DPKYH	Kellys Hill Pump Station	11:18	221	Power Failure	yes	Stormwater Pond (Reid Underpass)		Local	Small waterway	Very low	Yes	Yes		yes		
Wellsford	26/06/2024	1	DPWOR	Worker Road Pump Station	16:37	130	Unknown	yes	Unnamed tributary (south) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Omaha	31/07/2023	3	2444401	Ida WAY	10:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, escalated to engineer
Omaha	15/08/2023	3	2453172	Omaha DR	8:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	12/10/2023	3	2453172	Omaha DR	14:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	21/10/2023	3	2453172	Omaha DR	15:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	21/10/2023	3	2453557	Omaha DR	17:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	22/10/2023	3	2455575	Omaha DR	13:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	11/11/2023	3	2551301	Riverside DR	21:17	n/a	Rubbish	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	2/12/2023	3	2551301	Riverside DR	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	14/12/2023	3	2444600	North West Anchorage	11:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line, roots removed
Omaha	31/03/2024	3	2541613	Kokopu ST	21:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Omaha	2/04/2024	3	2447058	Esme GRV	9:19	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			
Omaha	7/05/2024	3	2453314	Lagoon WAY	11:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	7/07/2023	2	1540	Elizabeth Street	19:00	280	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	15/07/2023	3	2444675	Jade River PL	13:54	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Repaired ww line hit by comms line
Warkworth	20/07/2023	3	2279741	Anne Burton DR	14:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored pump
Warkworth	27/07/2023	2	1540	Elizabeth Street	14:40	30	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	19/08/2023	3	2441007	Pulham RD	15:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Warkworth	23/08/2023	3	2557881	Ella Anne CRES	13:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, repaired pump
Warkworth	8/09/2023	3	2554155	Great North RD	10:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	11/09/2023	2	1540	Elizabeth Street	15:40	60	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	22/09/2023	3	2549352	Hill ST	8:38	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Warkworth	28/09/2023	2	1540	Elizabeth Street	11:50	50	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	30/10/2023	2	1540	Elizabeth Street	1:10	360	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	3/11/2023	2	1540	Elizabeth Street	10:00	120	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	4/12/2023	3	2457687	Pulham RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	14/12/2023	3	2441520	Elizabeth ST	15:23	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Warkworth	25/12/2023	2	1540	Elizabeth Street	13:10	40	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Warkworth	29/12/2023	2	1540	Elizabeth Street	17:20	190	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	31/12/2023	2	1540	Elizabeth Street	14:40	150	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	5/01/2024	3	2553115	Queen ST	11:59	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Warkworth	15/01/2024	2	1540	Elizabeth Street	14:20	40	Unknown	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	16/03/2024	3	2614925	Fairwater RD	17:57	n/a	Fat	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			Flushed line
Warkworth	18/03/2024	3	2449821	Clegg PL	20:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Warkworth	14/04/2024	3	2549126	Victoria ST	13:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	7/06/2024	3	82613148	Mason HTS	10:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Snells Beach/Algies Bay	31/07/2023	1	DPCNL	Cornel Pump Station	19:20	69	Power Failure	no	Northern arm of Mahurangi Harbour (Cornell Circle)		Local	Estuary	Very low	No		No	yes		
Snells Beach/Algies Bay	15/11/2023	3	2549894	Amanda LN	20:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Snells Beach/Algies Bay	1/12/2023	3	2445663	Heron LN	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Snells Beach/Algies Bay	2/12/2023	1	DPDAL	Daltons Pump Station	10:31	653	Broken pipe	yes	Snells Beach		Local	Beach	Low	No		yes	yes		Repair broken rising main
Snells Beach/Algies Bay	2/12/2023	3	2445663	Heron LN	12:00	n/a	Broken pipe	No	Road/ footpath	L2	Local	Beach	yes	no	no	no			repair burst rising main
Snells Beach/Algies Bay	16/12/2023	3	2541971	Willjames AVE	10:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Snells Beach/Algies Bay	5/01/2024	3	2441766	Robinia PL	7:42	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Snells Beach/Algies Bay	12/01/2024	3	2551761	The Glade	9:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Snells Beach/Algies Bay	3/03/2024	3	2543029	Hinemoa TCE	17:48	n/a	Unknown	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			
Snells Beach/Algies Bay	4/03/2024	3	2436056	Cornel CIR	10:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Snells Beach/Algies Bay	22/03/2024	3	2441984	Tamatea DR	8:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Snells Beach/Algies Bay	6/05/2024	3	2441388	Mahurangi East RD	15:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Snells Beach/Algies Bay	7/06/2024	1	DPDAL	Daltons Pump Station	08:47	359	Mechanical	yes	Snells Beach		Local	Beach	Low	No		yes	yes		Valves checked and opened
Snells Beach/Algies Bay	18/06/2024	3	2551040	Mera RD	9:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Waiwera	3/10/2023	3	2447124	Waiwera RD	9:48	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, repired MH
Waiwera	18/02/2024	3	2440701	Waiwera PL	10:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Helensville	3/08/2023	3	2550138	Parkhurst RD	14:51	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Helensville	12/08/2023	3	2439626	Awaroa RD	15:27	n/a	Unknown	No	Puhinui Stream	L1	Local	Large waterway	no	no	no	no			Flushed line
Helensville	20/11/2023	3	2439010	Springs RD	8:43	n/a	Unknown	No	Puhinui Stream	L1	Local	Large waterway	no	no	no	no			Unblocked line
Helensville	21/11/2023	3	2558478	St James AVE	18:30	n/a	Unknown	No	Whau Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Helensville	10/12/2023	3	2548019	Parkhurst RD	12:00	n/a	Roots	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Helensville	22/12/2023	3	2549831	Awaroa RD	9:51	n/a	Fat	No	Whau Creek	L2	Local	Small waterway	no	yes	no	no			Flushed line

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Helensville	14/01/2024	3	2555941	Mangakura RD	14:12	n/a	Fat	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			
Helensville	28/01/2024	3	2545613	Audrey Luckens LN	10:16	n/a	Roots	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			rootcut
Helensville	4/03/2024	3	2546276	Makiri ST	5:05	n/a	Roots	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Helensville	4/04/2024	3	2439484	Garfield RD	12:51	n/a	Unknown	No	Puhinui Stream	L1	Local	Large waterway	yes	no	no	no			flushed line
Helensville	23/05/2024	3	2552060	Awaroa RD	11:00	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Refitted MH
Helensville	8/06/2024	3	2557303	Rautawhiri RD	9:53	n/a	Unknown	No	Tributary of Oakley Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, planned CCTV
Helensville	11/06/2024	3	2552575	Garfield RD	11:59	n/a	Fat	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flsuhed line
Helensville	22/06/2024	3	2548862	Makiri ST	9:06	n/a	Rags	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			
Orewa	1/07/2023	3	2552067	Old North RD	11:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, dig up and repair
Orewa	17/07/2023	3	2438254	Hibiscus Coast HWY	16:10	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Orewa	26/07/2023	3	2551480	Roberta CRES	11:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	29/07/2023	3	2446509	Roberta CRES	10:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Orewa	2/08/2023	3	2448915	Parkside DR	9:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Orewa	4/08/2023	3	2563238	Pacific Heights RD	12:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	8/08/2023	3	2441852	Centreway RD	16:10	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	13/08/2023	3	2555005	Totara Views DR	10:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed gravel
Orewa	17/08/2023	3	2448381	Nickell PL	9:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Orewa	17/08/2023	3	2542012	Hillcrest RD	14:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Orewa	29/08/2023	3	2549235	Hibiscus Coast HWY	15:04	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	1/09/2023	3	2552208	Sykes AVE	11:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Orewa	7/09/2023	3	2542012	Hillcrest RD	14:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	13/09/2023	3	2440440	Hibiscus Coast HWY	17:42	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	15/09/2023	3	2542012	Hillcrest RD	8:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	18/09/2023	3	2446227	Hibiscus Coast HWY	16:42	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	19/09/2023	3	2437580	Old North RD	16:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Orewa	21/09/2023	3	2446561	Sykes AVE	13:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	22/09/2023	3	2567963	Hillcrest RD	11:42	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, removed rocks
Orewa	3/10/2023	3	2440443	Hibiscus Coast HWY	16:07	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots, repaired line
Orewa	3/10/2023	3	2556262	Pohutukawa AVE	11:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck, CCTV
Orewa	9/11/2023	3	2449335	Hibiscus Coast HWY	12:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Orewa	17/11/2023	3	DSMIL	Milldale Branch Sewer MH11	18:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	23/11/2023	3	2542668	Weiti RD	13:35	1847	Unknown	no		L1	Transm.	stream	unknown	no	no	no	no		
Orewa	16/12/2023	3	2550140	Neaptide CL	13:33	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Orewa	18/12/2023	3	2442427	Riverside RD	16:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
					15:44	n/a	Roots	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots

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Orewa	14/01/2024	3	2544759	Moenui AVE	6:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	26/01/2024	3	2550576	Riverside RD	15:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	27/01/2024	3	2550576	Riverside RD	8:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Orewa	13/02/2024	3	2449374	Orewa Heights CRES	11:31	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	17/02/2024	3	2446804	Orewa Heights CRES	13:45	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags, repaired line
Orewa	27/02/2024	3	2446804	Orewa Heights CRES	19:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV
Orewa	11/03/2024	3	2446885	Elizabeth ST	18:23	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, bypass pump, dig up and repair
Orewa	5/04/2024	3	2549165	Lancelot RD	11:08	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Escalated for repair
Orewa	10/04/2024	3	2442464	Hibiscus Coast HWY	15:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	22/04/2024	3	2460920	Parkside DR	9:09	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Orewa	16/05/2024	3	82268828	Dendro Ring RD	20:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Resealed MH
Orewa	22/05/2024	3	81182293	Kuinga ST	17:08	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete
Orewa	24/05/2024	3	2548637	Hibiscus Coast HWY	10:34	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Orewa	1/06/2024	3	82812490	Smithson ST	15:33	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	6/06/2024	3	2550582	Eaves Bush PDE	16:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	6/06/2024	3	2553497	Eaves Bush PDE	8:36	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Weiti	27/07/2023	3	2446091	Titan PL	9:13	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Plans to repair pipe
Weiti	27/07/2023	3	2463709	Tavern RD	12:39	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Repair rising main break
Weiti	4/08/2023	3	2443249	Whangaparaoa RD	8:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Weiti	16/08/2023	3	2548521	Donald PL	8:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Weiti	19/08/2023	3	2548521	Donald PL	11:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Weiti	2/10/2023	3	2439721	Small RD	14:13	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			
Weiti	3/10/2023	3	2546508	Titan PL	19:20	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Escalated to supervisor
Weiti	4/11/2023	3	2439693	Forge RD	16:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Weiti	9/11/2023	3	2440320	Flexman PL	12:35	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Weiti	5/01/2024	3	2459372	Wade River RD	12:01	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Dig up and repair
Weiti	25/02/2024	3	2445155	Cockle PL	9:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Weiti	29/02/2024	1	DPSTW	Stillwater Pump Station	13:32	1118	Unknown	no	Weiti Estuary		Local	Estuary	Very low	No		No	yes		
Weiti	20/03/2024	3	2442692	Donald PL	16:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Weiti	3/05/2024	3	2451744	Agency LN	16:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	1/07/2023	3	2445469	Commodore CT	10:54	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whangaparaoa	9/07/2023	3	2539456	Elgin PL	11:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	13/07/2023	3	2551208	Matakatia PDE	13:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cutter, removed roots
Whangaparaoa	15/07/2023	3	2540605	Vipond RD	11:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	20/07/2023	3	2558562	Rawhiti RD	10:52	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Whangaparaoa	23/07/2023	3	2540605	Vipond RD	11:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	23/07/2023	3	2444166	Bay Vista DR	14:41	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	31/07/2023	3	2561765	Whangaparaoa RD	18:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	5/08/2023	3	2552452	Rakino AVE	21:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whangaparaoa	6/08/2023	3	2447653	Zealandia RD	13:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Whangaparaoa	11/08/2023	3	2442589	Swann Beach RD	8:31	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Whangaparaoa	13/08/2023	3	2556896	Whangaparaoa RD	13:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	19/08/2023	3	2445539	Langton RD	17:25	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	22/08/2023	3	2545988	Albert Hall DR	8:27	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Whangaparaoa	22/08/2023	3	2550422	Matai RD	8:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	23/08/2023	3	2443735	Kauri RD	14:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	25/08/2023	3	2545774	Whangaparaoa RD	16:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Whangaparaoa	25/08/2023	3	2444585	Penton RD	8:25	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, planned CCTV
Whangaparaoa	25/08/2023	3	2551165	Matai RD	10:54	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Whangaparaoa	27/08/2023	3	2448226	Shadon PL	12:45	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed gravel
Whangaparaoa	27/08/2023	3	2558980	Parkview DR	10:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whangaparaoa	30/08/2023	3	2441368	Kenneth Hopper PL	12:36	n/a	Fat	No	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no		0	Flushed line
Whangaparaoa	31/08/2023	3	2441459	Everard AVE	11:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whangaparaoa	31/08/2023	3	2450462	Hurdlow PL	9:32	n/a	Broken pipe	No	Road/ footpath	L3	Local	beach	yes	no	yes	yes			Repair rising main break
Whangaparaoa	2/09/2023	3	2549059	Ardern AVE	14:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whangaparaoa	3/09/2023	3	2548275	Whangaparaoa RD	10:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	6/09/2023	3	2439305	Cooper RD	21:03	n/a	Broken pipe	No	Road/ footpath	L2	Local	Beach	yes	no	no	no		0	Flushed line, dig up and repair
Whangaparaoa	10/09/2023	3	2546935	Shakespear RD	6:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	14/09/2023	3	2556896	Whangaparaoa RD	7:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whangaparaoa	16/09/2023	3	2556896	Whangaparaoa RD	7:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	20/09/2023	3	2545377	Nautilus DR	8:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whangaparaoa	27/09/2023	3	2551159	Sundown AVE	12:33	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	27/09/2023	3	2450658	Wade River RD	10:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whangaparaoa	7/10/2023	3	2444166	Bay Vista DR	19:59	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	9/10/2023	3	2444166	Bay Vista DR	9:31	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed wood + rags
Whangaparaoa	9/10/2023	3	2560329	Pinecrest DR	7:35	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed concrete
Whangaparaoa	11/10/2023	3	2549775	Donald ST	17:58	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalated
Whangaparaoa	12/10/2023	3	2450804	Glenelg RD	12:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whangaparaoa	23/10/2023	3	2554389	Bay Vista DR	10:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	26/10/2023	3	2443539	Whangaparaoa RD	17:58	n/a	Fat	No	On property	L2	Local	Beach	yes	no	no	no			Flushed line
Whangaparaoa	21/11/2023	3	2551955	Alec Craig WAY	13:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Whangaparaoa	27/11/2023	3	2452392	Beach RD	12:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	27/11/2023	3	2562384	Ladies MILE	6:29	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Whangaparaoa	9/12/2023	3	2450982	Stanmore Bay RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	10/12/2023	3	2539456	Elgin PL	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Whangaparaoa	14/12/2023	3	2447813	Brian CRES	16:36	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed rocks
Whangaparaoa	18/12/2023	3	2450249	Fingal WAY	12:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	3/01/2024	3	2442338	Pacific PDE	20:37	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, removed roots
Whangaparaoa	5/01/2024	3	2548390	Pacific PDE	18:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Whangaparaoa	6/01/2024	3	2550752	Alec Craig WAY	18:31	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			No notes
Whangaparaoa	7/01/2024	3	2449828	Pinecrest DR	11:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Whangaparaoa	8/01/2024	3	2438258	Red Beach RD	11:39	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Whangaparaoa	17/01/2024	3	2610999	Taikura AVE	7:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	20/01/2024	3	2445322	Buccaneer CT	19:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	26/01/2024	3	2452767	Astrolabe PL	12:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whangaparaoa	30/01/2024	3	2560519	Rata RD	11:08	n/a	Unknown	No	Reserve/ park	L3	Local	Stream	yes	yes	no	no			Unblocked line
Whangaparaoa	8/02/2024	3	2540287	Ladies MILE	20:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whangaparaoa	16/02/2024	3	2551897	Maylee CRES	16:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	25/02/2024	3	2435737	Whangaparaoa RD	12:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whangaparaoa	28/02/2024	3	2445339	Totara RD	17:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whangaparaoa	6/03/2024	3	2443385	Birdwood RD	8:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	7/03/2024	3	2561500	Ladies MILE	20:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	13/03/2024	3	2551166	Langton RD	19:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			heavy flush
Whangaparaoa	28/03/2024	3	2556180	Roseville RD	14:31	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Whangaparaoa	29/03/2024	3	2440654	Brian CRES	8:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whangaparaoa	1/04/2024	3	2440654	Brian CRES	9:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	3/04/2024	3	2448288	Matakatia PDE	19:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	13/04/2024	3	2548652	Greenview LN	10:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whangaparaoa	18/04/2024	3	2548084	Cooper RD	12:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Whangaparaoa	22/04/2024	3	2437586	Rimu RD	11:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	24/04/2024	3	2445469	Commodore CT	6:42	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	26/04/2024	3	2545489	Gledstane RD	15:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	7/05/2024	3	2559011	Gulf Harbour DR	10:22	n/a	Unknown	No	Inside property	L1	Local	n/a	no	no	no	no			Sucker truck
Whangaparaoa	10/05/2024	3	2441184	Astrolabe PL	18:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rags
Whangaparaoa	13/05/2024	3	2545926	Rata RD	11:41	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no		0.5	Flushed line
Whangaparaoa	17/05/2024	3	2559895	Whangaparaoa RD	9:39	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Whangaparaoa	26/05/2024	3	2443277	Jean PL	11:47	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no		0	Flushed line
Whangaparaoa	27/05/2024	3	2553138	Javelin CL	18:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	1/06/2024	3	2449699	Alec Craig WAY	11:29	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	1/06/2024	3	2547977	Brightside RD	12:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whangaparaoa	2/06/2024	3	2540683	Elgin PL	11:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	5/06/2024	3	2556832	Gulf Harbour DR	10:02	n/a	Rags	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			Flushed line, removed rags
Whangaparaoa	20/06/2024	3	2444906	Whangaparaoa RD	13:09	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			removed roots
Whangaparaoa	20/06/2024	3	2449694	Binnacle RISE	13:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root removal
Whangaparaoa	21/06/2024	3	2444944	Brightside RD	17:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Whangaparaoa	25/06/2024	3	2452327	Tates CT	11:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whangaparaoa	27/06/2024	3	2442956	Cedar TCE	6:32	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	29/06/2024	3	2452602	Whangaparaoa RD	10:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	29/06/2024	3	2550232	Sundown AVE	8:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Long Bay	10/07/2023	3	2531396	Corric HL	17:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Long Bay	28/07/2023	3	2562491	Longshore DR	11:41	n/a	Silts	Yes	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Long Bay	29/07/2023	3	2528607	Emlyn PL	11:53	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Restored bypass pump
Long Bay	5/08/2023	3	2433667	Awaruku RD	15:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	17/08/2023	3	2562491	Longshore DR	8:55	n/a	Silts	Yes	On property	L2	Local	Stream	no	yes	no	no		0	Unblocked line
Long Bay	24/08/2023	3	2435005	Gails DR	10:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	15/09/2023	3	2436666	County RD	11:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	16/09/2023	3	2542990	June PL	11:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Long Bay	25/09/2023	2	832	47 Glenvar Road	21:20	40	Unknown	yes	Awaruku Creek		Local	Small Waterway		yes		no	yes		
Long Bay	9/10/2023	3	2432818	Phoebe Meikle PL	19:10	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Long Bay	12/10/2023	3	2435141	Fitzwilliam DR	12:57	n/a	Unknown	No	Reserve/ park	L3	Local	Stream	yes	yes	no	no		6	Restored bypass pump
Long Bay	13/10/2023	3	2461113	Okura River RD	9:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced valve
Long Bay	20/10/2023	3	2528009	Battenburg PL	16:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	25/10/2023	3	2562491	Longshore DR	6:40	n/a	Foreign Object	Yes	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Long Bay	2/11/2023	3	2428317	Stredwick DR	10:17	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line, removed rubbish & roots
Long Bay	2/11/2023	3	2539222	Cliff RD	9:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	20/11/2023	3	2427862	Battenburg PL	15:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	27/11/2023	3	2532118	Lingham CRES	20:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	29/11/2023	3	2536149	Cliff RD	17:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Long Bay	31/01/2024	3	2542346	Awaruku RD	8:43	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Long Bay	8/02/2024	3	2437947	Long Bay DR	10:24	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Long Bay	15/02/2024	3	2563615	Caldera DR	18:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	23/02/2024	3	2427552	Helen Ryburn PL	7:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	24/02/2024	3	2538813	Helen Ryburn PL	10:39	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			CCTV, flushed line, root cut, removed roots + fat
Long Bay	29/02/2024	3	2535137	Kura PL	14:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	1/03/2024	3	2538496	Glenvar RD	12:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Long Bay	4/03/2024	3	2437777	Gilberd PL	16:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Long Bay	29/03/2024	3	2535842	Danbury DR	20:00	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Long Bay	29/03/2024	3	2535842	Danbury DR	10:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Long Bay	2/04/2024	3	2429118	Waiau ST	10:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Long Bay	4/04/2024	3	2525391	East Coast RD	7:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Long Bay	4/04/2024	3	2528607	Emlyn PL	10:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored bypass pump
Long Bay	13/04/2024	3	2428499	Awaruku RD	23:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Long Bay	21/04/2024	3	2428499	Awaruku RD	17:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Planned root removal
Long Bay	24/04/2024	2	832	47 Glenvar Road	8:40	40	Unknown	yes	Awaruku Creek		Local	Small Waterway		yes		no	yes		

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Long Bay	29/04/2024	3	2433667	Awaruku RD	13:27	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no			Flushed line
Long Bay	11/05/2024	3	2536504	Emlyn PL	12:47	n/a	Unknown	No	On property	L2	Local	Lake/basin/pond	yes	no	no	no			Replaced pump
Long Bay	18/05/2024	3	2534038	Okura River RD	10:25	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Long Bay	23/05/2024	3	2539038	Babington PL	15:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Long Bay	3/06/2024	3	2436262	Babington PL	10:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
East Coast Bays	1/07/2023	3	2540829	Hebron RD	9:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	4/07/2023	3	2534934	Castor Bay RD	8:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cutter, removed roots
East Coast Bays	5/07/2023	3	2548917	Castor Bay RD	15:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	8/07/2023	3	2535366	Nile RD	20:06	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	11/07/2023	3	2535266	Churchill RD	14:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	12/07/2023	3	2538183	Kallista PL	16:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/07/2023	3	2529803	East Coast RD	13:39	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Bypass leaking,escalated to NZPGS
East Coast Bays	14/07/2023	3	2431949	East Coast RD	13:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/07/2023	3	2436794	Montrose TCE	9:24	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	16/07/2023	3	2557021	Valley RD	14:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned root removal
East Coast Bays	18/07/2023	3	2541037	East Coast RD	18:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	23/07/2023	3	2453986	Sunnynook RD	16:41	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Removed objects + repaired MH
East Coast Bays	23/07/2023	3	2441243	Onetaunga RD	17:00	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Removed roots
East Coast Bays	24/07/2023	3	2540544	John Downs DR	15:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	24/07/2023	3	2531840	Diana DR	8:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	25/07/2023	3	2537022	Woodlands CRES	9:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	27/07/2023	3	2432745	Lake View RD	16:25	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/07/2023	3	2433481	Agincourt ST	11:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, installed bypass pump
East Coast Bays	28/07/2023	3	2421966	Beach RD	8:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/07/2023	3	2529803	East Coast RD	8:30	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Restored bypass pump
East Coast Bays	28/07/2023	3	2532533	Tonkin DR	11:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	28/07/2023	3	2541076	Becroft DR	18:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	29/07/2023	3	2545862	Kowhai ST	17:22	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed PVC pieces
East Coast Bays	29/07/2023	3	2527622	Wolsley AVE	13:02	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Heavy flush
East Coast Bays	30/07/2023	3	2436794	Montrose TCE	11:51	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed pebbles
East Coast Bays	30/07/2023	3	2426871	Agincourt ST	11:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	1/08/2023	3	2527570	Marama ST	19:21	n/a	Fat	No	Inside property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat _ object
East Coast Bays	1/08/2023	3	2529163	Castor Bay RD	10:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	6/08/2023	3	2436942	The Esplanade	9:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	6/08/2023	3	2535366	Nile RD	12:57	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/08/2023	3	2431102	Camelot PL	8:42	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed clay
East Coast Bays	11/08/2023	3	2427725	East Coast RD	17:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
East Coast Bays	12/08/2023	3	2442004	Sunnynook RD	12:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
East Coast Bays	14/08/2023	3	2427214	Agincourt ST	17:12	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rags from pump
East Coast Bays	14/08/2023	3	2431013	Saltburn RD	16:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/08/2023	3	2531227	Bond CRES	15:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/08/2023	3	2430911	Bournemouth TCE	11:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	17/08/2023	3	2536128	Edgeworth RD	18:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	18/08/2023	3	2431766	Holland RD	11:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	21/08/2023	3	2431013	Saltburn RD	16:25	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	23/08/2023	3	2427214	Agincourt ST	15:21	n/a	Rags	Yes	Narrow Neck Beach	L3	Local	Beach	yes	yes	no	no			
East Coast Bays	25/08/2023	3	2540105	Pierce RD	10:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
East Coast Bays	26/08/2023	3	2443649	Dalmeny CL	10:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/08/2023	3	2436671	Bute RD	18:42	n/a	Fat	No	Inside property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalated to engineer
East Coast Bays	28/08/2023	3	2536845	Aberdeen RD	15:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	30/08/2023	3	2432082	Sylvan Park AVE	18:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	31/08/2023	3	2538149	East Coast RD	13:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up to removed roots
East Coast Bays	1/09/2023	3	2431475	Totaravale DR	11:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	1/09/2023	3	2428878	Aberdeen RD	7:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/09/2023	3	2425391	Benders AVE	16:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	3/09/2023	3	2431013	Saltburn RD	14:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	7/09/2023	3	2533912	Palliser LN	12:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	7/09/2023	3	2536861	Salamanca RD	18:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
East Coast Bays	8/09/2023	3	2434133	Goldfield	15:58	n/a	silts	No	On property	L2	Local	SW network	no	no	yes	no			CCTV, flushed lines
East Coast Bays	9/09/2023	3	2440007	Trinidad RD	12:27	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	13/09/2023	3	2429212	Morton AVE	11:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/09/2023	3	2538947	Naviti PL	10:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	14/09/2023	3	2440865	Sunnynook RD	15:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	17/09/2023	3	2536539	Cockayne CRES	11:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	18/09/2023	3	2441132	Beach RD	9:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	20/09/2023	3	2541521	Cliff RD	13:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	21/09/2023	3	2532517	Bruce RD	14:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	23/09/2023	3	2425948	Nile RD	9:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	23/09/2023	3	2534101	Wairau RD	14:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
East Coast Bays	25/09/2023	3	2529754	Ellice RD	9:06	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	27/09/2023	3	2535306	Jonathan PL	6:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/09/2023	3	2431910	Downing ST	15:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	28/09/2023	3	2537098	Sharon RD	20:17	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, job incomplete
East Coast Bays	1/10/2023	3	2547114	Varlene TCE	17:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/10/2023	3	2535149	Sartors AVE	9:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
East Coast Bays	3/10/2023	3	2421430	Ayton DR	8:42	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			CCTV, pipe repaired
East Coast Bays	3/10/2023	3	2553887	Eastcliffe RD	11:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	5/10/2023	3	2441258	John Downs DR	13:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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East Coast Bays	6/10/2023	3	2536163	Lyons AVE	18:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	7/10/2023	3	2431453	Sylvan Park AVE	20:05	n/a	Roots	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots + fats
East Coast Bays	8/10/2023	3	2431017	Sylvan Park AVE	13:50	n/a	Roots	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots + fat
East Coast Bays	8/10/2023	3	2441597	Sandiacre WAY	13:23	n/a	Roots	No	Inside property	L1	Local	n/a	no	no	no	no			Removed roots
East Coast Bays	9/10/2023	3	2428027	Bond CRES	8:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	10/10/2023	3	2438600	Kitchener RD	10:59	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	10/10/2023	3	2528744	Manurere AVE	14:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	12/10/2023	3	2528056	Corunna RD	20:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	12/10/2023	3	2530205	Hillside RD	11:29	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	12/10/2023	3	2533562	Livingstone ST	20:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	13/10/2023	3	2434960	View RD	10:28	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	14/10/2023	3	2532707	Dallinghoe CRES	13:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	15/10/2023	3	2443518	Surville PL	12:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/10/2023	3	2441260	Malters PL	10:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	17/10/2023	3	2531679	Ayton DR	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, remved roots,
East Coast Bays	20/10/2023	3	2438600	Kitchener RD	15:05	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
East Coast Bays	20/10/2023	3	2540896	Sylvan Park AVE	11:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	20/10/2023	3	2431080	Parr TCE	10:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	21/10/2023	3	2533182	Salamanca RD	7:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	22/10/2023	3	2430930	Braemar RD	0:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
East Coast Bays	25/10/2023	2	834	28 Penning Road	18:50	610	Unknown	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	25/10/2023	3	2538576	Datura PL	13:35	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
East Coast Bays	27/10/2023	3	2539616	Helvetia DR	8:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/10/2023	3	2434358	Aberdeen RD	15:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	28/10/2023	3	2531045	John Downs DR	14:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	28/10/2023	3	2536003	East Coast RD	15:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/10/2023	3	2541578	Celina PL	16:23	n/a	Unknown	Yes	On property	L2	Local	Stream	no	yes	no	no			Flushed line, CCTV
East Coast Bays	2/11/2023	3	2427214	Agincourt ST	8:05	n/a	Roots	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			Removed roots + fats
East Coast Bays	2/11/2023	3	2435515	Gulf View RD	9:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
East Coast Bays	4/11/2023	3	2537023	Beach RD	14:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	8/11/2023	3	2531164	Killarney ST	11:07	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned dig up and repair
East Coast Bays	8/11/2023	3	2532065	Juniper RD	15:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/11/2023	3	2551488	Omana RD	13:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/11/2023	3	2536456	Bevyn ST	13:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	10/11/2023	3	2532281	East Coast RD	15:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	10/11/2023	3	2528096	Shakespeare RD	9:06	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
East Coast Bays	16/11/2023	3	2528633	Braemar RD	14:32	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	17/11/2023	3	2536391	Alexander AVE	8:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Planned CCTV
East Coast Bays	20/11/2023	3	2436705	Bute RD	7:45	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
East Coast Bays	21/11/2023	3	2546572	Browns Bay RD	14:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV

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East Coast Bays	22/11/2023	3	2529803	East Coast RD	20:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Restored bypass pump
East Coast Bays	22/11/2023	3	2532134	Kowhai RD	12:15	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	26/11/2023	3	2528633	Braemar RD	10:55	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
East Coast Bays	26/11/2023	3	2541197	Forrest Hill RD	17:47	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
East Coast Bays	26/11/2023	3	2529803	East Coast RD	15:55	n/a	Power Failure	Yes	On property	L1	Local	n/a	no	no	no	no			Restored bypass pump
East Coast Bays	28/11/2023	3	2541000	Beechwood RD	11:52	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, escalated to engineer
East Coast Bays	29/11/2023	3	2542431	Penzance RD	9:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots + fat
East Coast Bays	1/12/2023	3	2535792	East Coast RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	1/12/2023	3	2542354	Barker RISE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	4/12/2023	3	2425004	Chivalry RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	4/12/2023	3	2526878	Bruce RD	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	4/12/2023	3	2536354	Aberdeen RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	5/12/2023	3	2541257	Audrey RD	12:00	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			DSMFD
East Coast Bays	7/12/2023	3	2539993	Woodlands CRES	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/12/2023	3	2526878	Bruce RD	12:00	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/12/2023	3	2435455	Squirrel LN	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/12/2023	3	81154555	Seaton RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/12/2023	3	2438600	Kitchener RD	12:00	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/12/2023	3	2430911	Bournemouth TCE	0:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	11/12/2023	3	2531138	Taumata RD	0:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned repairs
East Coast Bays	12/12/2023	3	2536354	Aberdeen RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	13/12/2023	3	2532134	Kowhai RD	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	14/12/2023	3	2536862	Lyford CRES	7:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	15/12/2023	3	2429804	Trinidad RD	9:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/12/2023	3	2537204	Quebec RD	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/12/2023	3	2547036	Kiteroa TCE	18:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/12/2023	3	2534187	Agincourt ST	10:43	n/a	Unknown	No	Narrow Neck Beach	L3	Local	Beach	no	yes	no	no		6	Installed bypass pump
East Coast Bays	18/12/2023	3	2429804	Trinidad RD	10:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	18/12/2023	3	2425077	Killarney ST	9:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	20/12/2023	3	2425571	Parr TCE	9:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	22/12/2023	3	2425004	Chivalry RD	16:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	23/12/2023	3	2535306	Jonathan PL	17:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	24/12/2023	3	2423601	Target RD	18:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	26/12/2023	3	2443643	Bellbird RISE	14:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
East Coast Bays	27/12/2023	3	2427040	Wolsley AVE	9:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	28/12/2023	3	2427647	Rewi ST	*15:18*	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/12/2023	3	2430582	Jonathan PL	15:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/12/2023	3	2539234	Churchill RD	9:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	2/01/2024	3	2535255	Halder PL	19:24	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
East Coast Bays	2/01/2024	3	2433210	Halberg ST	15:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/01/2024	3	2425656	Wolsley AVE	11:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
East Coast Bays	2/01/2024	3	2537204	Quebec RD	21:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	3/01/2024	3	2527622	Wolsley AVE	14:20	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
East Coast Bays	4/01/2024	3	2430145	Montrose TCE	20:36	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
East Coast Bays	4/01/2024	3	2441969	Malters PL	17:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
East Coast Bays	7/01/2024	3	2431766	Holland RD	10:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	7/01/2024	3	2534595	Penzance RD	8:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	8/01/2024	3	2438600	Kitchener RD	7:26	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			sucker truck used
East Coast Bays	8/01/2024	3	2530789	Churchill RD	16:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	8/01/2024	3	2544206	Gulf View RD	20:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	9/01/2024	3	2430285	Gulf View RD	7:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut
East Coast Bays	10/01/2024	3	2428930	Finchley RD	11:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots, dig up and repair
East Coast Bays	10/01/2024	3	2433898	East Coast RD	16:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Installed bypass pump
East Coast Bays	10/01/2024	3	2532134	Kowhai RD	15:18	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/01/2024	3	2546669	Mizpah RD	9:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	11/01/2024	3	2533109	Katui ST	16:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	12/01/2024	3	2428764	Airey PL	9:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	12/01/2024	3	2433898	East Coast RD	15:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Resealed MH
East Coast Bays	14/01/2024	3	2452408	Target RD	9:36	n/a	Rubbish	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	15/01/2024	3	2427214	Agincourt ST	10:25	n/a	Power Failure	Yes	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no			
East Coast Bays	21/01/2024	3	2537098	Sharon RD	7:50	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, planned repairs
East Coast Bays	23/01/2024	3	2435264	Arosa PL	15:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	26/01/2024	3	2425635	Braemar RD	16:58	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
East Coast Bays	29/01/2024	3	2424759	Sharon RD	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	29/01/2024	3	2435264	Arosa PL	21:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	31/01/2024	3	2425635	Braemar RD	14:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	31/01/2024	3	2531539	Otakau RD	15:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	1/02/2024	3	82807715	Agincourt ST	8:24	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Restored pump
East Coast Bays	1/02/2024	3	2433851	Coronation RD	12:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV
East Coast Bays	2/02/2024	3	2527796	Nile RD	8:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
East Coast Bays	4/02/2024	3	2529878	Scarlock AVE	9:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	5/02/2024	3	2430713	Heather PL	10:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	5/02/2024	3	2534078	Wolsley AVE	17:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	6/02/2024	3	2530373	Heather PL	10:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	7/02/2024	3	2538149	East Coast RD	9:31	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	7/02/2024	3	2430692	Tye RD	14:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/02/2024	3	2437406	Channel View RD	9:32	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no		0.25	Flushed line, sucker truck
East Coast Bays	12/02/2024	3	2439188	East Coast RD	10:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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East Coast Bays	12/02/2024	3	2428364	Seine RD	11:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	12/02/2024	3	2437210	Helvetia DR	15:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	15/02/2024	3	2536907	Sunset RD	12:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV
East Coast Bays	16/02/2024	3	2429751	Beach RD	20:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	17/02/2024	3	2533283	Napoleon AVE	18:05	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
East Coast Bays	17/02/2024	3	2431569	Whitby CRES	12:58	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
East Coast Bays	18/02/2024	3	2533463	Seaview RD	10:05	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned works
East Coast Bays	19/02/2024	3	2425451	Heathcote RD	20:31	n/a	Broken pipe	No	Narrow Neck Beach	L3	Local	Beach	no	yes	no	no			Unblocked and repaired line
East Coast Bays	22/02/2024	3	2545825	Beach RD	11:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	22/02/2024	3	2540299	Beach RD	16:39	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
East Coast Bays	24/02/2024	3	2537204	Quebec RD	10:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	24/02/2024	3	2424121	Jonathan PL	13:57	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no			Missing notes
East Coast Bays	25/02/2024	3	2534262	Heathcote RD	11:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	28/02/2024	3	2427888	Hastings RD	14:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/02/2024	3	2538183	Kallista PL	13:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/03/2024	3	2425635	Braemar RD	12:05	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			plunged gully trap
East Coast Bays	3/03/2024	3	2544924	Elmira PL	8:25	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	4/03/2024	3	2433526	Hillside RD	12:01	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
East Coast Bays	9/03/2024	3	2427280	Knightsbridge DR	22:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	9/03/2024	3	2444691	Glencoe RD	9:26	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			flushed line
East Coast Bays	10/03/2024	3	2427280	Knightsbridge DR	9:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/03/2024	3	2441899	Celina PL	20:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
East Coast Bays	11/03/2024	3	2435521	Langana AVE	10:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	11/03/2024	3	2539854	Waipuia PL	11:31	n/a	Unknown	No	Narrow Neck Beach	L3	Local	Beach	no	yes	no	no		6	Flushed line
East Coast Bays	12/03/2024	3	2442307	Wairau RD	13:08	n/a	Unknown	No	Inside property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	12/03/2024	3	2541578	Celina PL	8:24	n/a	Unknown	Yes	On property	L2	Local	SW network	no	no	yes	no			Sucker truck
East Coast Bays	13/03/2024	3	2546478	Ridge RD	7:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	14/03/2024	3	2541077	Catalina CRES	17:41	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned repairs
East Coast Bays	14/03/2024	3	2538753	Glamorgan DR	17:23	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			CCTV, removed concrete
East Coast Bays	18/03/2024	3	2437740	Hurstmere RD	13:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	21/03/2024	3	2432068	Greendale SPUR	12:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	21/03/2024	3	2441350	Sandown RD	10:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	22/03/2024	3	2535993	Anakiwa PL	22:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	25/03/2024	3	2434950	Kowhai RD	15:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line, CCTV
East Coast Bays	25/03/2024	3	2542172	Theban PL	13:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	25/03/2024	3	2547408	Sunrise AVE	14:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	26/03/2024	3	2440865	Sunnynook RD	9:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	27/03/2024	3	2432082	Sylvan Park AVE	12:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed lines
East Coast Bays	28/03/2024	3	2527622	Wolsley AVE	12:53	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			heavy flush

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
East Coast Bays	29/03/2024	3	2438600	Kitchener RD	16:18	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	30/03/2024	3	2440996	Montclair RISE	13:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	31/03/2024	3	2542195	King Richard PL	15:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	1/04/2024	3	2534730	Roband AVE	16:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/04/2024	3	2427320	Cockayne CRES	15:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	2/04/2024	3	2533555	Havelock AVE	12:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	5/04/2024	3	2442880	Clyde RD	15:07	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
East Coast Bays	11/04/2024	3	2532704	Gordon AVE	16:09	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	14/04/2024	3	2536456	Bevyn ST	11:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
East Coast Bays	16/04/2024	3	2432745	Lake View RD	12:11	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Removed concrete, CCTV
East Coast Bays	17/04/2024	3	2428020	Blakeborough DR	7:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	19/04/2024	3	2533042	Kiri PL	11:58	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
East Coast Bays	19/04/2024	3	2535019	Corunna RD	17:48	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
East Coast Bays	19/04/2024	3	2436345	Castor Bay RD	18:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	21/04/2024	3	2548173	Beach RD	16:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	23/04/2024	3	2441111	Stoneleigh CT	13:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV
East Coast Bays	23/04/2024	3	2536861	Salamanca RD	17:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	23/04/2024	3	2539150	Forrest Hill RD	9:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Root cut, CCTV
East Coast Bays	23/04/2024	3	2432334	Glenfield RD	17:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	23/04/2024	3	2432745	Lake View RD	12:08	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	24/04/2024	3	2534730	Roband AVE	21:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	24/04/2024	3	2425766	Woodbridge LN	20:13	n/a	Broken pipe	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			further investigation
East Coast Bays	25/04/2024	3	2437409	Beach RD	15:24	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unsure if public
East Coast Bays	26/04/2024	3	2433298	Orton ST	9:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cutter, CCTV
East Coast Bays	26/04/2024	3	2438600	Kitchener RD	9:40	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	26/04/2024	3	2431144	Beach RD	20:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/04/2024	3	2425891	Nile RD	12:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/04/2024	3	2539688	Athena DR	7:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	29/04/2024	3	2545010	Lavery PL	11:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	1/05/2024	3	2549203	Browns Bay RD	10:22	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, job escalated
East Coast Bays	7/05/2024	3	2431917	Waterloo RD	13:07	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	7/05/2024	3	2536500	Palliser LN	11:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	7/05/2024	3	2435660	Clyde RD	18:45	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	8/05/2024	3	2532905	Westbourne RD	11:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	10/05/2024	3	2436002	Aberdeen RD	13:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			heavy flush, CCTV
East Coast Bays	11/05/2024	3	2429263	Wairau RD	12:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/05/2024	3	2539265	Selwyn CRES	11:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	12/05/2024	3	2437989	Lake Pupuke DR	17:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	17/05/2024	3	2431766	Holland RD	11:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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East Coast Bays	18/05/2024	3	2534417	Firth RD	10:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/05/2024	3	2427170	East Coast RD	10:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/05/2024	3	2440812	Sealy RD	11:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	20/05/2024	3	2426313	Orton ST	12:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	20/05/2024	3	2436584	Beach RD	12:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	20/05/2024	3	2535755	Serrata PL	14:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	22/05/2024	3	2421876	Hastings RD	12:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	22/05/2024	3	2537325	Totaravale DR	8:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	23/05/2024	3	2441317	Beach RD	11:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
East Coast Bays	24/05/2024	3	2436169	The Esplanade	14:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	24/05/2024	3	2452408	Target RD	13:32	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	24/05/2024	3	2434408	Hill CRES	19:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	25/05/2024	3	2543782	Oban RD	10:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/05/2024	3	2538579	Trinidad RD	13:17	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
East Coast Bays	27/05/2024	3	2535255	Halder PL	13:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	27/05/2024	3	2541076	Becroft DR	10:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	27/05/2024	3	2431768	Coronation RD	11:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/05/2024	3	2531382	Hastings RD	9:30	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	29/05/2024	3	2430600	Totaravale DR	9:02	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
East Coast Bays	1/06/2024	3	2452408	Target RD	12:05	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	2/06/2024	3	2530209	Kitchener RD	19:43	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush, removed fat
East Coast Bays	2/06/2024	3	2443518	Surville PL	14:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
East Coast Bays	4/06/2024	3	2534481	Serrata PL	10:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	4/06/2024	3	2543609	Sealy RD	15:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	4/06/2024	3	2549878	Mayfair CRES	16:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
East Coast Bays	5/06/2024	3	2431390	Wairau RD	15:19	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush, root cut, removed roots + fat
East Coast Bays	5/06/2024	3	2537369	Lyttelton AVE	9:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
East Coast Bays	7/06/2024	3	2431985	Castor Bay RD	17:53	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalated to engineer
East Coast Bays	7/06/2024	3	2543199	Knights RD	11:03	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks, CCTV
East Coast Bays	9/06/2024	3	2547451	Glamorgan DR	14:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, pigtail attachment
East Coast Bays	11/06/2024	3	2432644	Tawavale CRES	13:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated for root removal
East Coast Bays	11/06/2024	3	2540146	Totaravale DR	17:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalate for root removal
East Coast Bays	13/06/2024	3	2426042	Becroft DR	0:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV requested
East Coast Bays	13/06/2024	3	2435455	Squirrel LN	16:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated for root removal
East Coast Bays	14/06/2024	2	834	28 Penning Road	2:25	140	Unknown	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	15/06/2024	3	2537933	Archers RD	15:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, escalate for CCTV

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East Coast Bays	15/06/2024	3	2542199	Celina PL	15:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	18/06/2024	3	2541572	Nor'East DR	8:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, requested CCTV
East Coast Bays	19/06/2024	3	2433109	Weatherly RD	17:17	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
East Coast Bays	20/06/2024	3	2547110	Maxwelton DR	9:04	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	21/06/2024	3	2528223	Normanton ST	8:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	22/06/2024	3	2425319	Palliser LN	9:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalate for CCTV
East Coast Bays	22/06/2024	3	2537933	Archers RD	12:27	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, roots cut
East Coast Bays	24/06/2024	3	2534992	Valley RD	15:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	25/06/2024	3	2431949	East Coast RD	12:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	26/06/2024	3	2541684	Forrest Hill RD	11:16	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/06/2024	3	2428953	Terrylyn DR	14:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/06/2024	3	2540846	Heathcote RD	6:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	28/06/2024	3	2440812	Sealy RD	13:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	30/06/2024	3	2435660	Clyde RD	13:32	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	3/07/2023	3	2542171	Park AVE	16:18	n/a	Unknown	No	Inside property	L1	Local	n/a	no	no	no	no			
Devonport-Takapuna	6/07/2023	3	2428990	Arthur CRES	8:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Devonport-Takapuna	16/07/2023	3	2541350	Arawa AVE	14:45	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Repair broken rising main
Devonport-Takapuna	16/07/2023	3	2547922	Oxford TCE	12:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	17/07/2023	3	2542798	Hurstmere RD	9:36	n/a	rags	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	19/07/2023	3	2541949	Victoria RD	15:18	n/a	3rd party damage	No	Road/ footpath	L3	Local	SW network	yes	no	yes	no		2	Flushed line - unsure of receiving environ.
Devonport-Takapuna	31/07/2023	3	2542798	Hurstmere RD	12:41	n/a	Rags	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Devonport-Takapuna	21/08/2023	3	2549272	Seacliffe AVE	10:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	18/09/2023	3	2421731	The Strand	13:50	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Devonport-Takapuna	20/09/2023	3	2434307	Clarence ST	14:56	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	21/09/2023	3	2443622	Vauxhall RD	18:23	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Devonport-Takapuna	25/09/2023	3	2431638	Anzac ST	10:13	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Devonport-Takapuna	19/10/2023	3	2430551	Beacholm RD	12:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Devonport-Takapuna	2/12/2023	3	2430780	Hurstmere RD	12:00	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Devonport-Takapuna	17/12/2023	3	2434307	Victoria RD	6:37	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	23/12/2023	3	2547235	Church ST	9:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Devonport-Takapuna	4/01/2024	3	2434307	Clarence ST	15:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	15/01/2024	3	2527747	Matai RD	8:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line

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Devonport-Takapuna	22/01/2024	3	2534333	Anzac ST	22:07	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	26/01/2024	3	2434921	Rata RD	20:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Devonport-Takapuna	31/01/2024	3	2441874	Matai RD	12:10	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	29/02/2024	3	2431638	Anzac ST	14:49	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	no	no	no	no			flushed line
Devonport-Takapuna	9/04/2024	3	2431638	Anzac ST	13:04	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	26/04/2024	3	2431638	Anzac ST	8:36	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Devonport-Takapuna	11/05/2024	3	2547922	Oxford TCE	14:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	14/06/2024	2	848	1 Old Lake Road	2:05	80	Unknown	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	20/06/2024	3	2541102	Domain ST	8:10	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	1/07/2023	3	2529833	Cadness ST	16:22	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	1/07/2023	3	2441353	Ariho TCE	12:36	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	2/07/2023	3	2421198	Council TCE	10:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Shoal Bay	7/07/2023	3	2441353	Ariho TCE	11:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Shoal Bay	12/07/2023	3	2431409	Alton TCE	13:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	14/07/2023	3	2441353	Empire RD	11:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, removed roots, root cut
Shoal Bay	14/07/2023	3	2422057	Northboro RD	8:13	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	14/07/2023	3	2438796	Esmonde RD	14:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	19/07/2023	3	2423031	Abbotsford TCE	12:48	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Repaired broken rising main
Shoal Bay	19/07/2023	3	2544129	Chelsea View DR	17:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Shoal Bay	30/07/2023	3	2439202	Jutland RD	13:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	31/07/2023	3	2530596	Maritime TCE	12:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	3/08/2023	3	2424908	Rangitira AVE	15:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	6/08/2023	3	2435467	David Beattie PL	15:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	7/08/2023	3	2435421	Philomel CRES	8:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	7/08/2023	3	2439847	Mokoia RD	12:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	9/08/2023	3	2440237	Onetaunga RD	9:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	12/08/2023	3	2421763	Awanui ST	19:55	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/08/2023	3	2439847	Mokoia RD	11:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Shoal Bay	14/08/2023	3	2441151	Stanley Point RD	15:05	n/a	Power Failure	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	14/08/2023	3	2527783	Colonial RD	13:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	17/08/2023	3	2544022	Barlow PL	13:51	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, cleared roots + fat
Shoal Bay	19/08/2023	3	2430882	Clarence RD	13:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	19/08/2023	3	2562670	Lake RD	9:45	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	21/08/2023	3	2418712	Holyoake PL	6:41	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	23/08/2023	3	2530356	Kororo ST	9:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Shoal Bay	24/08/2023	3	2423431	Waratah ST	8:11	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, plans to repair line
Shoal Bay	27/08/2023	3	2418752	Holyoake PL	8:44	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	31/08/2023	3	2539520	Williamson AVE	11:12	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	2/09/2023	3	2424939	Clarence RD	13:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	2/09/2023	3	2534775	Ravenstone PL	15:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	10/09/2023	3	2533118	Exmouth RD	14:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/09/2023	3	2423355	Seaview AVE	10:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	17/09/2023	3	2528850	Ensign PL	10:45	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	17/09/2023	3	2423526	Glenfield RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	17/09/2023	3	2531513	Speedy CRES	17:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	18/09/2023	3	2439336	Lake RD	16:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	19/09/2023	3	2423709	Clarence RD	11:16	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Shoal Bay	19/09/2023	3	2534145	Lake RD	9:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	20/09/2023	3	2439231	Opua ST	11:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Shoal Bay	27/09/2023	3	2420396	Onewa RD	11:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	28/09/2023	3	2420156	Inkster ST	18:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	29/09/2023	3	2426896	Dominion ST	14:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	29/09/2023	3	2429454	Exmouth RD	15:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	6/10/2023	3	2528560	Birkenhead AVE	10:15	n/a	Fat	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			Flushed line
Shoal Bay	7/10/2023	3	2433160	Chelsea View DR	16:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	8/10/2023	3	2418712	Holyoake PL	9:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	9/10/2023	3	2424248	Awanui ST	9:58	n/a	Roots	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Shoal Bay	11/10/2023	3	2538365	Northboro RD	16:53	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	13/10/2023	3	2434394	Portsea PL	13:57	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Removed roots, repaired line
Shoal Bay	13/10/2023	3	2419217	Mokoia RD	17:39	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV, job escalated
Shoal Bay	13/10/2023	3	2426717	Lenihan ST	9:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	14/10/2023	3	2535401	Mountbatten AVE	13:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	15/10/2023	3	2427620	Chelsea View DR	16:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, raised MH
Shoal Bay	16/10/2023	3	2434737	James Evans DR	11:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	16/10/2023	3	2426741	Chelsea View DR	10:04	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, removed roots + rags
Shoal Bay	17/10/2023	3	2524889	Stanley Point RD	10:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	23/10/2023	3	2426987	Palmerston RD	18:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	25/10/2023	3	2440118	Morrison AVE	10:16	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots, CCTV
Shoal Bay	27/10/2023	3	2544098	Rosyth AVE	17:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	30/10/2023	2	829	28 Waitemata Road	7:10	435	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	1/11/2023	3	2431294	Lake Pupuke DR	20:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	5/11/2023	3	2529538	Tilden AVE	1:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	10/11/2023	3	2436152	Martin CRES	11:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, plans to removed roots + repaired lnine

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Shoal Bay	20/11/2023	2	829	28 Waitemata Road	14:45	95	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	22/11/2023	2	829	28 Waitemata Road	14:20	40	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	22/11/2023	3	2429064	College RD	11:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	23/11/2023	3	2429064	College RD	15:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Shoal Bay	24/11/2023	3	2439659	Deuxberry AVE	17:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	24/11/2023	3	2535342	Brassey RD	14:35	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	25/11/2023	3	2422803	Ewen Alison AVE	17:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	28/11/2023	3	2426649	Norwood RD	9:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, root cut
Shoal Bay	28/11/2023	3	2538493	Lake RD	11:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	29/11/2023	3	2426991	Kauri Glen RD	13:02	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	1/12/2023	3	2532070	Brassey RD	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	2/12/2023	3	2442666	Albert RD	12:00	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			CCTV
Shoal Bay	3/12/2023	2	829	28 Waitemata Road	20:40	30	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	5/12/2023	3	2418789	Stanley Point RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/12/2023	3	2530323	Felstead ST	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/12/2023	3	2531484	City View TCE	0:00	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Shoal Bay	16/12/2023	3	2427477	Eban AVE	9:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	18/12/2023	3	2435880	Stanley Point RD	8:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	18/12/2023	3	2540502	Stanley Point RD	10:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	19/12/2023	3	2536795	Fraser RD	9:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	21/12/2023	3	2540502	Stanley Point RD	9:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	26/12/2023	3	81010600	Havenwood PL	18:37	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Temporarily fixed line
Shoal Bay	28/12/2023	3	2423355	Seaview AVE	7:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Shoal Bay	2/01/2024	2	829	28 Waitemata Road	19:20	15	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	2/01/2024	3	2543013	Marsden ST	17:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	3/01/2024	3	2427894	Waitemata RD	8:36	n/a	Fat	No	On property	L3	Local	Estuary	yes	no	no	no		5	Unblocked line
Shoal Bay	4/01/2024	3	2530213	Greydene PL	15:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	6/01/2024	3	2433022	Barrys Point RD	15:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	11/01/2024	3	2426966	Birkenhead AVE	15:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	11/01/2024	3	2441353	Ariho TCE	12:47	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	14/01/2024	3	2421896	City View TCE	7:16	n/a	Fat	No	On property	L3	Local	SW network	no	no	yes	no			Flushed line
Shoal Bay	19/01/2024	3	2425243	Monarch AVE	12:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	23/01/2024	3	2426584	Felstead ST	17:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	24/01/2024	3	2426218	Old Lake RD	10:48	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Shoal Bay	24/01/2024	3	2524318	Belle Vue AVE	16:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	25/01/2024	3	2551087	Northumberland AVE	10:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	29/01/2024	3	2422831	Awanui ST	10:43	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Shoal Bay	30/01/2024	3	2441950	Grahame ST	20:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	5/02/2024	1	DPLNO	Lake Road (Northcote) Pump Station	07:30	480	Broken pipe	yes	Onepoto Stream	L3	Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	5/02/2024	3	2423082	Shoal Bay RD	7:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	7/02/2024	3	2524318	Belle Vue AVE	8:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV

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Shoal Bay	8/02/2024	3	2428731	Victoria RD	16:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	8/02/2024	3	2537361	Bayswater AVE	9:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	9/02/2024	3	2441001	Fraser RD	9:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Shoal Bay	9/02/2024	3	2543426	Charles ST	13:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	12/02/2024	3	2536770	Lydia AVE	13:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	12/02/2024	3	2428731	Victoria RD	8:11	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			CCTV, flushed line, escalated to engineer
Shoal Bay	15/02/2024	3	2423849	Princes ST	12:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	16/02/2024	3	2438704	Lake RD	18:20	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Shoal Bay	17/02/2024	3	2425756	College RD	18:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Shoal Bay	17/02/2024	3	2429662	Sylvan AVE	10:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	17/02/2024	3	2537014	Eldon ST	19:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	20/02/2024	3	2418712	Holyoake PL	21:02	n/a	Unknown	Yes	On property	L3	Local	Stream	no	yes	no	no			Flushed line
Shoal Bay	22/02/2024	3	2424908	Rangitira AVE	11:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	28/02/2024	3	2431511	Bracken AVE	13:41	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			
Shoal Bay	1/03/2024	3	2433565	Plymouth CRES	12:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, clear roots, repair break
Shoal Bay	3/03/2024	3	2522352	Pullum ST	17:24	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	6/03/2024	3	2420849	Holdaway AVE	13:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	7/03/2024	3	2528985	James Evans DR	13:46	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, relined + patched pipe
Shoal Bay	10/03/2024	3	2427073	Tizard RD	11:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/03/2024	3	2421586	Seaview AVE	9:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			rootcut
Shoal Bay	17/03/2024	3	2427107	Monarch AVE	14:13	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	21/03/2024	3	2435538	Northboro RD	18:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	26/03/2024	3	2427477	Eban AVE	15:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			sucked out fat
Shoal Bay	28/03/2024	3	2441299	Kawerau AVE	22:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Shoal Bay	1/04/2024	3	2536181	Pearn PL	12:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	1/04/2024	3	2538571	Raupapa ST	13:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	2/04/2024	3	2537837	Northboro RD	14:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	2/04/2024	3	2538349	Menear LN	12:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	3/04/2024	3	2550459	Northumberland AVE	10:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	3/04/2024	3	2428731	Victoria RD	14:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	4/04/2024	3	2441961	Philomel CRES	13:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Shoal Bay	5/04/2024	3	2541151	Ariho TCE	12:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Shoal Bay	6/04/2024	3	2427970	Ngataringa RD	15:39	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	8/04/2024	3	2433036	Kawerau AVE	13:46	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned repairs
Shoal Bay	8/04/2024	3	2422172	Rugby RD	10:23	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	8/04/2024	3	2539520	Williamson AVE	18:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Shoal Bay	10/04/2024	3	2528712	City View TCE	16:55	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no		6	Landslip - set up bypass pump
Shoal Bay	14/04/2024	3	2532032	Waimana AVE	12:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	15/04/2024	3	2429537	Maritime TCE	9:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV

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Shoal Bay	15/04/2024	3	2532753	Speedy CRES	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	22/04/2024	3	2427893	Beresford ST	7:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	23/04/2024	3	2434389	Barlow PL	9:32	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			CCTV - incomplete notes
Shoal Bay	25/04/2024	3	2535342	Brassey RD	16:36	n/a	Fat	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Shoal Bay	27/04/2024	3	2427659	Rawene RD	17:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	28/04/2024	3	2434237	Bayswater AVE	11:28	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Shoal Bay	28/04/2024	3	2420812	Rawene RD	0:49	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut, replaced MH lid
Shoal Bay	30/04/2024	3	2420812	Rawene RD	6:47	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	4/05/2024	3	2531938	Kitewao ST	14:12	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			repair dislodged pipe
Shoal Bay	12/05/2024	3	2429457	Ngataringa RD	15:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/05/2024	3	2430169	College RD	15:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	13/05/2024	3	2534771	Porritt AVE	11:09	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	13/05/2024	3	2427641	Mokoia RD	10:23	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Shoal Bay	13/05/2024	3	2436082	Ariho TCE	7:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	14/05/2024	3	2536934	Marsden ST	8:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots + fat
Shoal Bay	17/05/2024	3	2531492	Kaihu ST	16:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Shoal Bay	17/05/2024	3	2422342	Anzac ST	8:51	n/a	Roots	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			Unblocked line
Shoal Bay	18/05/2024	3	2420005	Kauri Glen RD	10:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV. Downer reported as L2, didn'tgo into stream
Shoal Bay	20/05/2024	3	2530864	Stanley Point RD	13:29	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned dig up and repair
Shoal Bay	20/05/2024	3	2420812	Rawene RD	7:59	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	20/05/2024	3	2539520	Williamson AVE	7:49	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	23/05/2024	3	2424727	Wairoa RD	13:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	23/05/2024	3	2528700	Onewa RD	10:31	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	24/05/2024	3	2532070	Brassey RD	9:14	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV/ further investigation requested
Shoal Bay	27/05/2024	3	2420215	Gladstone RD	9:12	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no			
Shoal Bay	28/05/2024	3	2429893	Learmonth AVE	9:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	28/05/2024	3	2536470	Waitemata RD	10:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	29/05/2024	3	2429893	Learmonth AVE	8:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	1/06/2024	3	2532751	Stanaway ST	10:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Shoal Bay	1/06/2024	3	2433160	Chelsea View DR	9:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Shoal Bay	3/06/2024	3	2539520	Williamson AVE	10:47	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, escalated for CCTV
Shoal Bay	4/06/2024	3	2422841	Peregrine PL	11:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Shoal Bay	4/06/2024	3	2532285	Beach RD	19:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	14/06/2024	2	829	28 Waitemata Road	2:25	125	Unknown	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	15/06/2024	3	2440751	Hart RD	15:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, flushed line
Shoal Bay	16/06/2024	3	2434230	Regent ST	13:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	16/06/2024	3	2547400	Bardia ST	11:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Shoal Bay	21/06/2024	3	2546150	Como ST	15:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	21/06/2024	3	2532797	Deuxberry AVE	15:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	22/06/2024	3	2439832	Homewood PL	17:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	22/06/2024	3	2539520	Williamson AVE	18:35	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	1/07/2023	3	2434857	Kristin LN	17:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Upper Harbour North	5/07/2023	3	2432398	Ronald MacKen PL	11:58	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Upper Harbour North	11/07/2023	3	2427766	Coliseum DR	14:29	n/a	Roots	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Harbour North	17/07/2023	3	2531555	Pitoitoi AVE	21:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	20/07/2023	3	2536834	Antares PL	12:33	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, repaird MH channel
Upper Harbour North	23/07/2023	3	2426790	Noel Williams PL	11:36	n/a	Unknown	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			Heavy flush
Upper Harbour North	24/07/2023	3	2434373	Tawa DR	10:11	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, root cutter, removed rags
Upper Harbour North	25/07/2023	3	2529733	Santiago CRES	8:11	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Upper Harbour North	27/07/2023	3	2420419	Dairy Flat HWY	8:09	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Harbour North	27/07/2023	3	2425314	Ronald MacKen PL	18:16	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	28/07/2023	3	2534086	Kell DR	12:53	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	1/08/2023	3	2539939	Churchouse RD	15:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	12/08/2023	3	2437780	Oteha Valley RD	10:19	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	16/08/2023	3	2557657	Oteha Valley RD-X	11:52	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	17/08/2023	3	2535109	Ronald MacKen PL	10:10	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour North	17/08/2023	3	2433657	Bushlands Park DR	10:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	17/08/2023	3	2532559	Sunnyview RD	11:48	n/a	Roots	Yes	On property	L2	Local	Stream	no	yes	no	no			Flushed line, removed roots + fats
Upper Harbour North	26/08/2023	3	2557657	Oteha Valley RD-X	14:12	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	28/08/2023	3	2431702	Meadowood DR	8:35	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	29/08/2023	3	2557657	Oteha Valley RD-X	17:36	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flush dumping station
Upper Harbour North	30/08/2023	3	2540585	Oratau PL	14:58	n/a	fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	31/08/2023	3	2537849	Oteha Valley RD-X	16:21	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Sucker truck
Upper Harbour North	9/09/2023	3	2426686	Rahui RD	11:43	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	9/09/2023	3	2529923	Malin PL	12:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots

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Upper Harbour North	13/09/2023	3	2532019	Kyle RD	12:54	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Upper Harbour North	15/09/2023	3	2537849	Oteha Valley RD-X	11:28	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	21/09/2023	3	2532694	Bush RD	9:55	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed silt
Upper Harbour North	23/09/2023	3	2435238	Awatahi PL	11:23	n/a	fat	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			PS issue
Upper Harbour North	3/10/2023	3	2427050	Constellation DR	18:46	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Harbour North	3/10/2023	3	2537849	Oteha Valley RD-X	9:48	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	5/10/2023	3	2530583	Pounamu AVE	14:26	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, sucker truck, escalated to engineer
Upper Harbour North	7/10/2023	3	2440781	Fairview AVE	10:01	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no		0.5	Flushed line
Upper Harbour North	13/10/2023	3	2420218	Oteha Valley RD	12:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	13/10/2023	3	2537849	Oteha Valley RD-X	15:03	n/a	Silts	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Harbour North	13/10/2023	3	2532864	Rosedale RD	7:26	n/a	Roots	No	Reserve/ park	L3	Local	Stream	yes	yes	no	no		6	Flushed line
Upper Harbour North	17/10/2023	3	2552430	Akeake LN	15:31	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks
Upper Harbour North	19/10/2023	3	2437509	Oakford Park CRES	10:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	21/10/2023	3	2534259	Outlook RD	17:10	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no			
Upper Harbour North	23/10/2023	3	2537849	Oteha Valley RD-X	11:35	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Harbour North	24/10/2023	3	2425369	Greenwich WAY	9:24	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Harbour North	27/10/2023	3	2537350	Rosedale RD	6:51	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour North	2/11/2023	3	2566549	Kyle RD	8:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	6/11/2023	3	2532679	Almond GRV	7:51	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	8/11/2023	3	2424308	Laurel Oak DR	15:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	15/11/2023	3	2529045	Sunset RD	20:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	20/11/2023	3	2432446	Houhere CL	14:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Harbour North	22/11/2023	3	2440781	Fairview AVE	11:21	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Upper Harbour North	23/11/2023	3	2530786	Albany HWY	18:02	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rags
Upper Harbour North	23/11/2023	3	2538987	Lucas WAY	18:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	27/11/2023	3	2432321	Tarndale GRV	16:06	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Harbour North	28/11/2023	3	2535216	Malin PL	8:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots + fat

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Upper Harbour North	4/12/2023	3	2557657	Oteha Valley RD-X	12:00	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	11/12/2023	3	2544952	Dairy Flat HWY	12:00	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Replaced MH lid
Upper Harbour North	13/12/2023	3	2537849	Oteha Valley RD-X	12:00	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Sucker truck
Upper Harbour North	15/12/2023	3	2433799	Pelican LN	14:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour North	17/12/2023	3	2559843	Oteha Valley RD-X	6:04	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Harbour North	23/12/2023	3	2541738	Harrowglen DR	12:16	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	10/01/2024	3	2538509	Emerald WAY	14:02	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Harbour North	11/01/2024	3	2539846	Rosedale RD	13:01	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat
Upper Harbour North	14/01/2024	3	1424792	Blacks RD	14:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			cctv, flushed line
Upper Harbour North	15/01/2024	3	2538614	Santiago CRES	8:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	25/01/2024	3	2421893	Notre Dame WAY	12:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	26/01/2024	3	2533617	Henry Rose PL	11:35	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	2/02/2024	3	2538391	Saturn PL	9:00	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Harbour North	2/02/2024	3	2426006	Aberley RD	22:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	3/02/2024	3	2435101	Chester AVE	7:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	5/02/2024	3	2432846	Saturn PL	11:28	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	17/02/2024	3	2528320	Namsan CL	15:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	21/02/2024	3	2429980	Barbados DR	14:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	21/02/2024	3	2560787	Spencer RD	12:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	23/02/2024	3	2533159	Unsworth DR	12:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	26/02/2024	3	2527682	East Coast RD	14:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour North	27/02/2024	1	DPATL	Atlas Pump Station	22:20	3	Unknown	no	Alexandra Stream		Local	Small waterway	Very low	Yes			yes		
Upper Harbour North	29/02/2024	3	2542784	Bluebird CRES	8:09	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Patched hole in line caused by roots, CCTV
Upper Harbour North	29/02/2024	3	2532559	Sunnyview RD	9:58	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	2/03/2024	3	2432087	William Gamble DR	19:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	6/03/2024	3	2533159	Unsworth DR	10:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour North	11/03/2024	3	2426686	Rahui RD	16:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Upper Harbour North	11/03/2024	3	2434907	Almond GRV	10:27	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no			Flushed line
Upper Harbour North	13/03/2024	3	2539589	Rahui RD	14:39	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Harbour North	19/03/2024	3	2431528	Calypso WAY	10:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Upper Harbour North	20/03/2024	3	2426795	Hilton CL	11:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Upper Harbour North	22/03/2024	3	2540904	Oteha Valley RD	14:19	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Upper Harbour North	26/03/2024	3	2435103	Greenhithe RD	8:16	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	4/04/2024	3	2537805	Almond GRV	7:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots + fat
Upper Harbour North	4/04/2024	3	2540586	Almond GRV	17:34	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	5/04/2024	3	2534800	Awatahi PL	16:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	6/04/2024	3	2426788	Ascension PL	18:56	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Harbour North	8/04/2024	3	2432757	Canary PL	12:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	10/04/2024	3	2427766	Coliseum DR	18:18	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	15/04/2024	3	2433854	Churchouse RD	11:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fats
Upper Harbour North	16/04/2024	3	2432006	Centorian DR	9:54	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no			Unblocked line
Upper Harbour North	24/04/2024	3	2542769	Centorian DR	18:26	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Upper Harbour North	27/04/2024	3	2528320	Namsan CL	15:57	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	11/05/2024	3	2531174	Rook PL	18:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	12/05/2024	3	2538510	Jade CT	14:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	12/05/2024	3	2537745	Unsworth DR	18:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	16/05/2024	3	2427544	Mountain Beech RISE	11:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour North	16/05/2024	3	2427412	St Lucia PL	9:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour North	20/05/2024	3	2426415	Caribbean DR	10:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	24/05/2024	3	2530259	Hornbill DR	15:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	28/05/2024	3	2527643	Gills RD	17:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Upper Harbour North	31/05/2024	3	2439173	Mandeville PL	20:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots, replaced MH lid
Upper Harbour North	31/05/2024	3	2427047	Oteha Valley RD	10:07	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, planned CCTV
Upper Harbour North	1/06/2024	3	2566549	Kyle RD	15:01	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete

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Upper Harbour North	2/06/2024	3	2532553	Chester AVE	20:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + concrete
Upper Harbour North	3/06/2024	3	2442497	Living Stream RD	10:05	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalated for dig up and repair
Upper Harbour North	3/06/2024	3	2433344	Wynona CL	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour North	3/06/2024	3	2542382	Blacks RD	11:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	6/06/2024	3	2436234	Tyburn LN	18:24	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Upper Harbour North	7/06/2024	3	2530259	Hornbill DR	17:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV to find fault
Upper Harbour North	9/06/2024	3	2535899	Kyle RD	17:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	15/06/2024	3	2428698	Omega ST	16:14	n/a	Fat	No	On property	L3	Local	Stream	no	yes	no	no			Unblocked line
Upper Harbour North	16/06/2024	3	2535899	Kyle RD	18:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	19/06/2024	3	2529641	Coliseum DR	18:59	n/a	Roots	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, Escalated for root removal + CCTV
Upper Harbour North	19/06/2024	3	2443511	Mercari WAY	11:31	n/a	Fat	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no		1	Flushed line
Upper Harbour North	19/06/2024	3	2607954	Rosedale RD	9:16	n/a	Roots	No	On property	L3	Local	Stream	no	yes	no	no			
Upper Harbour North	22/06/2024	3	2541726	Kyle RD	14:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	24/06/2024	3	2441264	Rothwell AVE	18:32	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	24/06/2024	3	2533164	Albany HWY	22:12	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	25/06/2024	3	2533464	Don McKinnon DR	9:34	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line, escalated for root removal
Upper Harbour North	27/06/2024	3	2558663	Blacks RD	9:34	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	29/06/2024	3	2433911	Rahui RD	15:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour North	30/06/2024	3	2433799	Pelican LN	16:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	1/07/2023	3	2543257	Rangatira RD	9:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Upper Harbour South	3/07/2023	3	2617037	Hadfield ST	16:10	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			repair rising main break
Upper Harbour South	5/07/2023	3	2547362	Fairdale PL	9:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	7/07/2023	3	2538264	Hellyers ST	10:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	10/07/2023	3	2420424	Sunnyhaven AVE	9:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	15/07/2023	3	2431783	Lynn RD	14:21	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Heavy flush
Upper Harbour South	15/07/2023	3	2529199	Manuka RD	11:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	16/07/2023	3	2529778	Simon Ellice DR	16:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Harbour South	19/07/2023	3	2428040	Neal AVE	7:58	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			Pipe damaged in land slip - plans to repair line
Upper Harbour South	20/07/2023	3	2540009	Saffron ST	18:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	24/07/2023	3	2421295	James ST	8:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	25/07/2023	3	2530383	Pemberton AVE	12:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	26/07/2023	3	2542271	Rangatira RD	8:46	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed silts
Upper Harbour South	26/07/2023	3	2538294	Park RD	12:06	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		1	Dig up and repair
Upper Harbour South	1/08/2023	3	2432533	Tiri Tiri RD	14:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	2/08/2023	3	2539894	Eskdale RD	8:24	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			repair dislodged lateral
Upper Harbour South	5/08/2023	3	2434151	Hadfield ST	20:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	10/08/2023	3	2441585	De Luen AVE	11:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Upper Harbour South	12/08/2023	3	2441165	Kia Ora RD	10:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Yet to determine if public - Flushed line, CCTV
Upper Harbour South	19/08/2023	3	2433240	Odin PL	12:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Upper Harbour South	22/08/2023	3	2437065	Gatman ST	19:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	29/08/2023	3	2421321	McQuoid PL	9:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	1/09/2023	3	2437065	Gatman ST	14:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	6/09/2023	3	2441499	Jacaranda AVE	18:31	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, planned repairs
Upper Harbour South	11/09/2023	3	2439365	Stott AVE	6:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	15/09/2023	3	2431800	Seahorse PL	13:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	25/09/2023	3	2428677	Valley View RD	10:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, flushed line
Upper Harbour South	1/10/2023	3	2420528	Fernwood GRV	9:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	5/10/2023	3	2426905	Cantina AVE	12:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	7/10/2023	3	2429095	Stephanie CL	15:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	12/10/2023	3	2433850	Roberts RD	12:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	22/10/2023	3	2546764	Rosecamp RD	20:06	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Upper Harbour South	23/10/2023	3	2427136	Mahara AVE	19:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	1/11/2023	3	2439270	Rangatira RD	13:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, root cut
Upper Harbour South	2/11/2023	3	2433861	Beswick PL	9:05	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots

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Upper Harbour South	2/11/2023	3	2528693	Easton Park PDE	9:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	2/11/2023	3	2561030	Chippendale CRES	17:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	5/11/2023	3	2430477	Glenfield RD	7:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour South	9/11/2023	3	2530870	Simon Ellice DR	16:44	n/a	Unknown	No	On property	L3	Local	SW network	no	no	yes	no		6	CCTV
Upper Harbour South	14/11/2023	3	2439554	Fordham ST	9:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	21/11/2023	3	2443081	Brigantine DR	20:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	23/11/2023	3	2430726	Beach Haven RD	17:46	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	24/11/2023	3	2421295	James ST	19:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	24/11/2023	3	2439208	Beach Haven RD	13:58	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	28/11/2023	3	2431800	Seahorse PL	18:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	30/11/2023	3	2528419	Roseberry AVE	10:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	2/12/2023	3	2431856	Lynn RD	12:00	n/a	Unknown	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no		0.25	Unblocked line
Upper Harbour South	4/12/2023	3	2433317	Hadfield ST	12:00	n/a	Broken pipe	No	Reserve/ park	L3	Local	Beach	yes	no	no	yes		6	Roots removed
Upper Harbour South	7/12/2023	3	2427299	Manuka RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Upper Harbour South	10/12/2023	3	2427611	Oruamo PL	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	11/12/2023	3	2537767	Rangatira RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	11/12/2023	3	2421129	Tree View AVE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	22/12/2023	3	2433916	Verbena RD	14:47	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Upper Harbour South	27/12/2023	3	2529554	Ridgewood CRES	12:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Upper Harbour South	27/12/2023	3	2421782	Noeleen ST	20:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	27/12/2023	3	2528999	Cunliffe PL	10:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	31/12/2023	3	2433156	Verbena RD	10:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	3/01/2024	3	2441165	Kia Ora RD	20:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	9/01/2024	3	2527642	Neptune AVE	8:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	9/01/2024	3	2539901	Salisbury RD	9:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	13/01/2024	3	2528999	Cunliffe PL	8:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	21/01/2024	3	2421381	Dakota AVE	9:12	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair

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Upper Harbour South	23/01/2024	3	2533207	Pavola GRV	11:19	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired pipe bridge
Upper Harbour South	23/01/2024	3	2439208	Beach Haven RD	11:17	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	27/01/2024	3	2540736	Rosecamp RD	15:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	4/02/2024	3	2542273	Rangatira RD	10:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	7/02/2024	3	2532318	Gladys AVE	11:14	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	12/02/2024	3	2441263	Onetaunga RD	20:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	15/02/2024	3	2428758	Glendhu RD	13:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	16/02/2024	3	2431349	Neptune AVE	15:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	18/02/2024	3	2436660	Balmain RD	12:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	18/02/2024	3	2529756	Valecrest PL	12:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Harbour South	19/02/2024	3	2534102	James ST	10:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	23/02/2024	3	2527559	Hague PL	13:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	23/02/2024	3	2528717	James ST	11:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	23/02/2024	3	2547327	Stott AVE	6:37	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no			Restored bypass pump (plans for pipe repair in original job)
Upper Harbour South	24/02/2024	3	2434791	Onetaunga RD	10:47	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Notes from WO# 25810059 (NZ defense site), Flushed line, removed roots
Upper Harbour South	24/02/2024	3	2439586	Waipa ST	13:09	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	26/02/2024	3	2439586	Waipa ST	14:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	26/02/2024	3	2538741	Sunnyhaven AVE	12:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Harbour South	26/02/2024	3	2544274	Flaxdale ST	11:02	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed linee
Upper Harbour South	29/02/2024	3	2536244	Birkdale RD	2:27	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush to removed concrete
Upper Harbour South	3/03/2024	3	2538741	Sunnyhaven AVE	14:13	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Upper Harbour South	10/03/2024	3	2420933	Vandeleur AVE	22:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	11/03/2024	3	2527559	Hague PL	9:49	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	13/03/2024	3	2527559	Hague PL	10:52	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	20/03/2024	3	2528419	Roseberry AVE	12:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	27/03/2024	3	2544281	McPhail ST	15:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line

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Upper Harbour South	1/04/2024	3	2536272	Birkdale RD	12:14	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Upper Harbour South	1/04/2024	3	2539634	Rangatira RD	19:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, roots removed
Upper Harbour South	2/04/2024	3	2539634	Rangatira RD	8:25	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Yet to be repaired
Upper Harbour South	2/04/2024	3	2437066	Stott AVE	11:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCT, root cut
Upper Harbour South	2/04/2024	3	2437161	Caram PL	15:19	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			Heavy flush, CCTV, removed roots + fat
Upper Harbour South	4/04/2024	3	2539699	Rowena CRES	15:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cut, removed roots + fat, CCTV
Upper Harbour South	5/04/2024	3	2427492	Roberts RD	14:48	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	6/04/2024	3	2427492	Roberts RD	9:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots + fat
Upper Harbour South	9/04/2024	3	2435760	Beach RD	13:15	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	10/04/2024	3	2426671	Recreation DR	19:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	10/04/2024	3	2418703	Titiwai PL	16:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	16/04/2024	3	2430047	Aeroview DR	10:24	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	16/04/2024	3	2541226	Ranch AVE	7:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	18/04/2024	3	193756	Tiri Tiri RD	10:19	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no			DSBDW broken pipe bridge
Upper Harbour South	18/04/2024	3	DSBDW	Birkdale West Branch Sewer TS12	12:00		Broken pipe	no		L3	Transm.	stream	no	Yes	no	no	no		
Upper Harbour South	19/04/2024	3	2436894	Beach Haven RD	7:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	23/04/2024	3	2426905	Cantina AVE	18:12	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Upper Harbour South	24/04/2024	3	2433027	Rangatira RD	13:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Harbour South	25/04/2024	3	2527642	Neptune AVE	18:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour South	25/04/2024	3	2533467	John Court ST	10:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	27/04/2024	3	2431365	Rangatira RD	15:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Harbour South	28/04/2024	3	2441590	Salisbury RD	14:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	1/05/2024	3	2429114	Rosecamp RD	15:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, CCTV
Upper Harbour South	1/05/2024	3	2439333	Ranch AVE	13:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	1/05/2024	3	2523197	Caram PL	19:18	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no		5	Dig up & repair line due to crack
Upper Harbour South	4/05/2024	3	2441181	Birkdale RD	16:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	4/05/2024	3	2431349	Neptune AVE	17:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Harbour South	5/05/2024	3	195061	McQuoid PL	20:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			DSKHK CCTV
Upper Harbour South	5/05/2024	3	DSKHK	Kahika Branch Sewer TS11 MH15	22:00	240	Unknown	no		L2	Transm.	stream	yes	yes	no	no	no		
Upper Harbour South	7/05/2024	3	2539730	Packham PL	12:17	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	8/05/2024	3	2536706	Tramway RD	10:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour South	10/05/2024	3	2438224	Stott AVE	20:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	14/05/2024	3	2425821	Glenfield RD	10:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	14/05/2024	3	2531154	Morriggia PL	14:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	16/05/2024	3	2421782	Noeleen ST	9:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	18/05/2024	3	2421461	Garner PL	13:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Harbour South	31/05/2024	3	2561030	Chippendale CRES	13:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV + heavy flush
Upper Harbour South	1/06/2024	3	2430057	Easton Park PDE	10:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Harbour South	2/06/2024	3	2420266	Lauderdale RD	15:30	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	2/06/2024	3	2440934	Birkdale RD	11:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	6/06/2024	3	2429450	Waipa ST	13:51	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated to engineer
Upper Harbour South	8/06/2024	3	2541864	Rangatira RD	13:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	9/06/2024	3	2434151	Hadfield ST	9:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	9/06/2024	3	2432416	Salisbury RD	10:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	11/06/2024	3	2533499	Roseberry AVE	7:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	11/06/2024	3	2420141	Waipa ST	11:16	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no			Escalated to engineer
Upper Harbour South	12/06/2024	3	2541566	Seaview RD	15:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblock line
Upper Harbour South	15/06/2024	3	2439192	Beach Haven RD	14:48	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	21/06/2024	3	2544299	Salisbury RD	16:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	24/06/2024	3	2528553	Willow AVE	14:42	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			rootcut, CCTV
Upper Harbour South	26/06/2024	3	2530760	Waverley AVE	10:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated for CCTV
Upper Harbour South	27/06/2024	3	2536137	Camrose PL	16:06	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Arranged CCTV + dig up for repair
Upper Harbour South	28/06/2024	3	2440004	Kia Ora RD	12:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	30/06/2024	3	2433839	Beaudine AVE	17:27	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, escalated for root removal

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Upper Harbour South	30/06/2024	3	2547327	Stott AVE	9:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour West	5/07/2023	3	2518634	Ferry PDE	15:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	19/07/2023	3	2408525	Marina View DR	17:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	30/07/2023	3	2562247	Pihoihoi PL	21:20	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	30/08/2023	3	2553073	Settlers GRV	18:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Harbour West	31/08/2023	3	2558879	Scott RD	20:31	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete
Upper Harbour West	19/09/2023	3	2411656	The Terrace	21:37	n/a	silts	No	On property	L1	Local	n/a	no	no	no	no			heavy flush
Upper Harbour West	2/10/2023	3	2561279	Kopuru RD	17:59	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete, repaired MH
Upper Harbour West	4/10/2023	3	82655551	Inanga ST	15:35	n/a	Foreign Object	No	Construction site	L1	Local	n/a	no	no	no	no			
Upper Harbour West	7/10/2023	3	2568797	Wallace RD	14:29	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags + rubbish
Upper Harbour West	28/10/2023	3	2563056	Scott RD	16:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Upper Harbour West	7/12/2023	3	82610202	Hema RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Upper Harbour West	8/12/2023	3	2403725	Raphael PL	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Upper Harbour West	13/12/2023	3	2615185	Eyton Kay RD	0:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour West	13/12/2023	3	2455006	Shelduck WAY	0:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	4/01/2024	3	2416977	The Terrace	12:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Harbour West	4/01/2024	3	2521231	Bernleigh TCE	12:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour West	14/01/2024	3	82512525	Taiororua AVE	16:14	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Upper Harbour West	16/01/2024	3	2460544	Shelduck WAY	18:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Repaired MH
Upper Harbour West	23/01/2024	3	2569970	Te Rito RD	8:44	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	5/02/2024	3	2420983	Lupetti RISE	9:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	7/02/2024	3	2510807	Cesari PL	18:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	9/02/2024	3	2411939	Williams RD	8:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour West	17/02/2024	3	2568077	Rakau RD	9:14	n/a	Fat	No	Road/ footpath	L3	Local	Stream	yes	yes	no	no			PS issue
Upper Harbour West	23/02/2024	3	2553737	Bertram RD	11:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced valve
Upper Harbour West	23/03/2024	3	2404339	Whiting GRV	13:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			root removal
Upper Harbour West	8/04/2024	3	2511182	Hogarth RISE	6:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots

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Upper Harbour West	29/04/2024	3	82604690	Kopuru RD	11:56	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	11/05/2024	3	2615483	Silvereye RD	11:33	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Harbour West	17/05/2024	3	2407460	Picasso DR	17:48	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Harbour West	18/05/2024	3	2404572	Hobsonville RD	11:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	19/05/2024	3	2403831	Marguerita PL	17:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour West	19/05/2024	3	2404265	Rosetti RISE	10:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	19/05/2024	3	2615483	Silvereye RD	11:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour West	6/06/2024	3	82504242	Scott RD	13:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	1/07/2023	3	2510037	Mildmay RD	13:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	4/07/2023	3	2617020	Murray RD	16:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/07/2023	3	2412153	Coburg ST	16:27	n/a	Unknown	No	St Heliers Bay	L1	Local	Beach	no	no	no	no			Heavy flush, CCTV
Henderson Creek	5/07/2023	3	2409402	Waitemata DR	16:59	n/a	Unknown	Yes	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	6/07/2023	3	2522639	West Coast RD	10:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	6/07/2023	3	2511560	Coey PL	7:22	n/a	Foreign Object	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, removed scrap metal
Henderson Creek	7/07/2023	3	82705031	William Calvert DR	13:10	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	7/07/2023	3	2521960	Swanson RD	20:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	10/07/2023	3	2525080	Mili WAY	10:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	11/07/2023	3	2415600	Kemp RD	10:14	n/a	Broken pipe	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Dig up and repair, escalated to engineer
Henderson Creek	12/07/2023	3	2408178	Edmonton RD	14:58	n/a	Broken pipe	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			CCTV, dig up and repair
Henderson Creek	13/07/2023	3	2523727	Kellett RD	8:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	15/07/2023	3	2414059	View RD	19:05	n/a	Unknown	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line
Henderson Creek	15/07/2023	3	2421989	Norman RD	16:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	15/07/2023	3	2408178	Edmonton RD	12:01	n/a	Unknown	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	19/07/2023	3	2417271	Cyclarama CRES	8:52	n/a	Fat	Yes	Henderson Creek (southern arm)	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	20/07/2023	3	2509668	Newham PL	15:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	20/07/2023	3	2411389	Urlich DR	6:30	n/a	Broken pipe	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Repaired broken benching and holes in MH chamber
Henderson Creek	20/07/2023	3	2410585	Evans RD	16:15	n/a	Roots	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	23/07/2023	3	2408917	Edmonton RD	15:41	n/a	Fat	No	Unnamed stream - Mission Bay	L1	Local	Small waterway	no	no	no	no			Heavy flush, CCTV, removed fats + rags
Henderson Creek	24/07/2023	3	2509252	Kervil AVE	9:38	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV to investigate tomos
Henderson Creek	25/07/2023	3	2416654	Karepo CRES	19:22	n/a	Fat	No	Unnamed tributary of Wairau Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	26/07/2023	3	2409402	Waitemata DR	14:51	n/a	Unknown	Yes	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	30/07/2023	3	2511070	Quincey PL	20:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Henderson Creek	30/07/2023	3	2408984	Grainger RD	16:09	n/a	Unknown	No	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2414476	Paramount DR	11:54	n/a	Fat	Yes	Waitemata Harbour - CBD Edge	L1	Local	Harbour	yes	no	no	no			Unblocked line
Henderson Creek	1/08/2023	3	2418123	Woodbank DR	9:26	n/a	Roots	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Unblocked line, removed roots, sucker truck
Henderson Creek	1/08/2023	3	2422567	Karemoana DR	8:11	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2508695	Royal RD	20:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2411625	Allington RD	8:05	n/a	3rd party damage	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			CCTV, escalated to engineer
Henderson Creek	1/08/2023	3	2406988	Brunner RD	15:28	n/a	Roots	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	1/08/2023	3	2407966	Henderson Valley RD	11:45	n/a	Unknown	No	Lincoln Stream	L1	Local	Small waterway	yes	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2408150	Brunner RD	20:18	n/a	Unknown	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2408748	Edmonton RD	12:14	n/a	Unknown	No	Madill's Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, resealed MH
Henderson Creek	3/08/2023	3	2414043	Te Atatu RD	13:04	n/a	Unknown	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line, CCTV
Henderson Creek	3/08/2023	3	2523727	Kellett RD	18:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/08/2023	3	2510694	Matama RD	19:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/08/2023	3	2411625	Allington RD	8:36	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Installed bypass pump
Henderson Creek	7/08/2023	3	2511070	Quincey PL	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Escalated to engineer
Henderson Creek	7/08/2023	3	2509264	Horokaka ST	11:03	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	7/08/2023	3	2511101	Glengarry RD	8:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	8/08/2023	3	2416127	Candia RD	16:43	n/a	Fat	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Heavy flush
Henderson Creek	8/08/2023	3	2524106	Vera RD	15:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/08/2023	3	2516061	Metcalfe RD	12:10	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	10/08/2023	3	2515993	Redlands GRV	16:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	11/08/2023	3	2412334	Glenfield RD	8:30	n/a	Fat	No	Henderson Creek (southern arm)	L1	Local	Estuary	no	no	no	no			Flushed line, CCTV
Henderson Creek	11/08/2023	3	2422623	Lincoln Garden CL	14:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	11/08/2023	3	2509105	Railside AVE	11:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/08/2023	3	2407786	Sungrove RISE	12:02	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	14/08/2023	3	2412759	Landmark TCE	10:00	n/a	Roots	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Flushed line, removed roots
Henderson Creek	14/08/2023	3	2515993	Redlands GRV	12:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Henderson Creek	16/08/2023	3	2511777	View RD	11:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	18/08/2023	3	2414930	Hillwell DR	15:14	n/a	Unknown	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line
Henderson Creek	18/08/2023	3	2516069	Waipareira AVE	8:19	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Henderson Creek	18/08/2023	3	2409215	Newington RD	17:36	n/a	Unknown	No	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, CCTV
Henderson Creek	22/08/2023	3	2516061	Metcalfe RD	14:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	23/08/2023	3	2522884	Lincoln RD	14:37	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	23/08/2023	3	2559923	Central Park DR	17:06	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	23/08/2023	3	2416177	McCormick RD	16:20	n/a	Roots	No	Waiatarua Reserve Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	23/08/2023	3	2511836	Peterhouse PL	17:38	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no		0	Unblocked line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Henderson Creek	24/08/2023	3	2511524	Kervil AVE	11:12	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	24/08/2023	3	2414476	Paramount DR	10:19	n/a	Fat	Yes	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			Flushed line
Henderson Creek	25/08/2023	3	2510694	Matama RD	14:30	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, planned CCTV
Henderson Creek	26/08/2023	3	2516883	Inver ST	14:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	26/08/2023	3	2407970	Riserra DR	9:14	n/a	Roots	No	Lincoln Stream	L1	Local	Small waterway	no	no	no	no			Heavy flush, root cut
Henderson Creek	26/08/2023	3	2507341	Oates RD	13:29	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no		0.25	Flushed line
Henderson Creek	27/08/2023	3	2413254	Silverstone PL	17:59	n/a	Fat	No	Upper Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line, CCTV
Henderson Creek	27/08/2023	3	2511268	Routley DR	*12:12*	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Henderson Creek	28/08/2023	3	2409200	Kervil AVE	14:42	n/a	Broken pipe	No	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	29/08/2023	3	2510694	Matama RD	20:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	29/08/2023	3	2508648	Woodglen RD	15:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	30/08/2023	3	2408725	Fairdene AVE	10:06	n/a	Unknown	No	Madill's Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	31/08/2023	3	2517349	Don Buck RD	10:30	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	1/09/2023	3	2420999	Central Park DR	8:26	n/a	Foreign Object	No	Henderson Creek (southern arm)	L1	Local	Estuary	yes	no	no	no			Flushed line
Henderson Creek	1/09/2023	3	2419996	Henderson Valley RD	13:24	n/a	Fat	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	2/09/2023	3	2418088	View RD	12:17	n/a	Broken pipe	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Repaired line
Henderson Creek	2/09/2023	3	2407944	Newington RD	19:25	n/a	Foreign Object	No	Oakley Creek (Keith Hay Park)	L1	Local	Small waterway	no	no	no	no			Flushed line, removed concrete
Henderson Creek	3/09/2023	3	2424567	Midhurst AVE	11:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/09/2023	3	2416791	Aditi CL	11:16	n/a	Roots	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots + fats
Henderson Creek	4/09/2023	3	2516354	Woodglen RD	9:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	4/09/2023	3	2417097	Don Buck RD	10:37	n/a	Broken pipe	No	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Flushed line, dig up and repair
Henderson Creek	4/09/2023	3	2407359	Kohu RD	11:42	n/a	Roots	No	To land	L1	Local		yes	no	no	no			Unblocked line, removed roots
Henderson Creek	9/09/2023	3	2408260	Sunnyside RD	10:46	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Henderson Creek	10/09/2023	3	81006063	Allington RD	11:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/09/2023	3	2409629	Adriatic AVE	18:41	n/a	Unknown	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	11/09/2023	3	81004675	Savoy RD	11:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/09/2023	3	2516074	Burgundy Park AVE	18:23	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Henderson Creek	13/09/2023	3	2408951	Lincoln RD	11:41	n/a	Fat	Yes	Unnamed stream - Mission Bay	L1	Local	Small waterway	yes	no	no	no			Flushed line
Henderson Creek	13/09/2023	3	2408954	Noall ST	16:00	n/a	Unknown	Yes	Madill's Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	14/09/2023	3	2412097	Henderson Valley RD	9:46	n/a	Unknown	Yes	St Heliers Bay	L1	Local	Beach	no	no	no	no			Flushed line
Henderson Creek	14/09/2023	3	2411775	Sunnylaw PL	17:05	n/a	Roots	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, root cut
Henderson Creek	15/09/2023	3	2417807	Swanson RD	13:48	n/a	Roots	No	Lower Meola Creek	L1	Local	Large Waterway	yes	no	no	no			Flushed line, removed roots
Henderson Creek	15/09/2023	3	2517349	Don Buck RD	17:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	15/09/2023	3	2567540	Bela Vista BLVD	15:08	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	16/09/2023	3	2510591	Kingdale RD	18:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Henderson Creek	17/09/2023	3	2418900	Edwin Freeman PL	12:20	n/a	Broken pipe	No	Unnamed tributary of Wairau Creek	L1	Local	Small waterway	no	no	no	no			No notes if fixed
Henderson Creek	18/09/2023	3	2408951	Lincoln RD	14:25	n/a	Unknown	Yes	Unnamed stream - Mission Bay	L1	Local	Small waterway	yes	no	no	no			Flushed line
Henderson Creek	19/09/2023	3	2411973	Central Park DR	17:08	n/a	Roots	Yes	St Heliers Bay	L1	Local	Beach	no	no	no	no			flushed line
Henderson Creek	19/09/2023	3	2407117	Backhurst GRV	10:29	n/a	Roots	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	20/09/2023	3	2417550	Wattle RD	14:32	n/a	Rags	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line
Henderson Creek	21/09/2023	3	2416767	Metcalfe RD	10:30	n/a	Fat	No	Unnamed tributary of Wairau Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed fat
Henderson Creek	21/09/2023	3	2517986	Armada DR	18:15	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Henderson Creek	22/09/2023	3	2415507	Titoki ST	19:01	n/a	Broken pipe	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	yes	no	no	no			Planned repairs
Henderson Creek	25/09/2023	2	1604	10 Celsmere Lane	20:45	250	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	25/09/2023	2	1583	16 Matipo Rd	20:40	200	Unknown	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	27/09/2023	3	2414119	Palomino DR	10:53	n/a	Fat	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line
Henderson Creek	27/09/2023	3	2406704	Surat PL	13:59	n/a	Fat	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	27/09/2023	3	2409731	Edsel ST	12:22	n/a	Fat	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	yes	no	no	no			Flushed line
Henderson Creek	27/09/2023	3	2510012	Vitasovich AVE	14:59	n/a	Roots	No	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no			Flushed line, removed roots
Henderson Creek	1/10/2023	3	2515994	Candia RD	10:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Henderson Creek	2/10/2023	3	2409224	Miriam Corban HTS	19:21	n/a	Fat	No	Orakei Creek	L1	Local	Estuary	no	no	no	no			Unblocked line
Henderson Creek	2/10/2023	3	2523485	Urlich DR	10:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	2/10/2023	3	2513157	Castaing CRES	8:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/10/2023	3	2411316	Glen RD	9:18	n/a	Fat	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Unblocked line, removed fat + concrete
Henderson Creek	4/10/2023	3	2422225	Swanson RD	10:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	4/10/2023	3	2409062	Don Buck RD	9:25	n/a	Roots	No	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	5/10/2023	3	2509711	Cedar Heights AVE	11:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/10/2023	3	2616606	Bela Vista BLVD	15:24	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	5/10/2023	3	2407883	Taranui PL	14:51	n/a	Unknown	No	Oakley Creek (Keith Hay Park)	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	6/10/2023	3	2422753	Candia RD	18:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	6/10/2023	3	2512212	Candia RD	18:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Henderson Creek	6/10/2023	3	2419161	Candia RD	15:18	n/a	Fat	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			flushed line
Henderson Creek	6/10/2023	3	2409402	Waitemata DR	17:29	n/a	Unknown	Yes	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	6/10/2023	3	2418741	Edwin Freeman PL	21:20	n/a	Unknown	No	Waiatarua Reserve Stream	L1	Local	Small waterway	yes	no	no	no			Unblocked line
Henderson Creek	7/10/2023	3	2423190	Choice AVE	14:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	7/10/2023	3	2521795	Glenbervie CRES	19:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	7/10/2023	3	2403932	Granville DR	21:30	n/a	Fat	No	Unnamed tributary of Wairau Stream	L1	Local	Small waterway	no	no	no	no			Unlocked line
Henderson Creek	8/10/2023	3	2508729	Reynella DR	10:12	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Henderson Creek	8/10/2023	3	2403932	Granville DR	10:37	n/a	Unknown	No	Unnamed tributary of Wairau Stream	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	8/10/2023	3	2408963	Septimus PL	14:30	n/a	Unknown	No	Madill's Stream	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	9/10/2023	3	2408685	Shona PL	15:07	n/a	Roots	No	Madill's Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	9/10/2023	3	2409502	Wilsher CRES	16:07	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	yes	no	no	no			Flushed line
Henderson Creek	10/10/2023	3	2513672	Universal DR	9:05	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/10/2023	3	2521795	Glenbervie CRES	13:27	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			CCTV
Henderson Creek	10/10/2023	3	2407815	Andelko PL	14:08	n/a	Unknown	No	Oakley Creek (Keith Hay Park)	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	12/10/2023	3	2404951	Halloran PL	15:07	n/a	Roots	No	Lincoln Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots, resealed MH
Henderson Creek	12/10/2023	3	2410585	Evans RD	17:13	n/a	Roots	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			
Henderson Creek	13/10/2023	3	2513275	Moire RD	21:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	15/10/2023	3	2404446	McLeod RD	16:16	n/a	Unknown	No	Unnamed tributary of Wairau Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	16/10/2023	3	2511683	Borich RD	20:29	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Job escalated
Henderson Creek	16/10/2023	3	2409224	Miriam Corban HTS	19:44	n/a	Roots	No	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots + fat
Henderson Creek	16/10/2023	3	2408223	Claret PL	8:12	n/a	Unknown	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	17/10/2023	3	2412097	Henderson Valley RD	7:55	n/a	Unknown	Yes	St Heliers Bay	L1	Local	Beach	no	no	no	no			flushed line
Henderson Creek	17/10/2023	3	2417127	West Harbour DR	22:29	n/a	Unknown	Yes	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	18/10/2023	3	2417127	West Harbour DR	22:12	n/a	Unknown	Yes	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			
Henderson Creek	18/10/2023	3	2524105	Sylvan CRES	12:32	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0.5	
Henderson Creek	20/10/2023	3	2406901	Woodfern CRES	11:23	n/a	Fat	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	20/10/2023	3	2417127	West Harbour DR	8:46	n/a	Fat	Yes	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	22/10/2023	3	2511873	Waitaki ST	7:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Henderson Creek	22/10/2023	3	2418457	Ginders DR	15:15	n/a	Broken pipe	No	Waiatarua Reserve Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, CCTV, escalated to engineer
Henderson Creek	22/10/2023	3	2406922	Kaurilands RD	8:58	n/a	Fat	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	22/10/2023	3	2409058	Vintage DR	17:12	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, removed rags, CCTV
Henderson Creek	23/10/2023	3	2414676	Wilsher CRES	11:48	n/a	Rags	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	yes	no	no	no			Flushed line, removed rags, sucker truck
Henderson Creek	23/10/2023	3	2617251	Baumea RISE	18:10	n/a	Broken pipe	No	Construction site	L1	Local	n/a	no	no	no	no			CCTV, repaired line
Henderson Creek	24/10/2023	3	2522404	Glengarry RD	8:41	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Henderson Creek	26/10/2023	3	2512013	Choice AVE	20:34	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	26/10/2023	3	2418457	Ginders DR	15:15	n/a	Roots	No	Waiatarua Reserve Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, CCTV
Henderson Creek	28/10/2023	3	2408821	Takapu ST	13:00	n/a	Unknown	No	Unnamed stream - Mission Bay	L1	Local	Small waterway	no	no	no	no			Unblocked line

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Henderson Creek	28/10/2023	3	2411543	Gill AVE	12:24	n/a	Unknown	No	Reserve/ park	L2	Local	Beach	yes	no	no	no			Unblocked line
Henderson Creek	2/11/2023	3	2522416	Bahari DR	18:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/11/2023	3	2412419	Terra Nova ST	19:39	n/a	Roots	No	Unnamed stream in Thomas Bloodworth Park	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	6/11/2023	3	2411973	Central Park DR	14:27	n/a	Unknown	Yes	St Heliers Bay	L1	Local	Beach	no	no	no	no			Flushed line
Henderson Creek	6/11/2023	3	2509288	Lucinda PL	11:04	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up & repair
Henderson Creek	6/11/2023	3	2514080	Clearview HTS	10:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	9/11/2023	3	2414268	Robert Burke PL	8:10	n/a	Roots	Yes	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line, CCTV, removed roots
Henderson Creek	11/11/2023	3	2417800	Don Buck RD	21:37	n/a	3rd party damage	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			CCTV, planned works
Henderson Creek	11/11/2023	3	2509266	Sherpa PL	13:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	12/11/2023	3	2411892	Milan DR	9:32	n/a	Fat	No	St Heliers Bay	L1	Local	Beach	no	no	no	no			Flushed line, escalated for CCTV
Henderson Creek	13/11/2023	3	2411832	Kaurilands RD	7:07	n/a	Unknown	No	Hobson Bay	L1	Local	Basin	no	no	no	no			Flushed line
Henderson Creek	13/11/2023	3	2411848	Woodglen RD	5:49	n/a	Unknown	No	Hobson Bay	L1	Local	Basin	no	no	no	no			Planned CCTV
Henderson Creek	16/11/2023	3	2509447	Triangle RD	14:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	16/11/2023	3	2414047	Edmonton RD	15:35	n/a	Fat	No	Retail/ commercial/ public	L3	Local	Stream	yes	yes	no	no		6	Flushed line
Henderson Creek	17/11/2023	3	2513686	Lucienne DR	15:09	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	21/11/2023	3	2512438	Te Atatu RD	6:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	22/11/2023	3	2416257	Glen RD	20:35	n/a	Rags	No	Unnamed tributary of Wairau Creek	L1	Local	Small waterway	yes	no	no	no			Flushed line, removed rags
Henderson Creek	23/11/2023	3	2514671	Flanshaw RD	8:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	23/11/2023	3	2522416	Bahari DR	13:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Henderson Creek	24/11/2023	3	2510394	Oates RD	11:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	24/11/2023	3	2514424	Milan DR	15:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Replaced MH lid
Henderson Creek	24/11/2023	3	2411316	Glen RD	9:04	n/a	Fat	No	Newmarket Stream	L1	Local	Small waterway	yes	no	no	no			
Henderson Creek	25/11/2023	3	2510394	Oates RD	16:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	26/11/2023	3	2514817	Terra Nova ST	9:03	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV, dig up and repair
Henderson Creek	26/11/2023	3	2506844	Wirihana RD	14:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	27/11/2023	3	2406861	Glengarry RD	10:09	n/a	Roots	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	28/11/2023	3	2521960	Swanson RD	9:48	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	30/11/2023	3	2415341	Poinsettia PL	11:00	n/a	Unknown	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Heavy flush
Henderson Creek	30/11/2023	3	2415738	Taikata RD	15:24	n/a	Unknown	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Flushed line
Henderson Creek	1/12/2023	3	2413490	Atkinson RD	12:00	n/a	Unknown	No	Upper Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line, restore pump
Henderson Creek	1/12/2023	3	2404118	Petrel PL	12:00	n/a	Roots	No	Unnamed tributary of Wairau Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	2/12/2023	3	2413043	Sachel PL	12:00	n/a	Foreign Object	No	Upper Tamaki River (Middlemore Arm)	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	2/12/2023	3	82510505	Barrel CRES	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, ecalated to engineer + planned CCTV
Henderson Creek	2/12/2023	3	2411316	Glen RD	12:00	n/a	Foreign Object	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, CCTV, removed bricks

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Henderson Creek	2/12/2023	3	2408945	Mawney RD	12:00	n/a	Unknown	No	Unnamed stream - Mission Bay	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	5/12/2023	3	2412893	San Ignacio CT	12:00	n/a	Fat	No	Henderson Creek (southern arm)	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	7/12/2023	3	2406813	Autumn AVE	12:00	n/a	Broken pipe	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Planned repairs
Henderson Creek	8/12/2023	3	2559880	Birdwood RD	12:00	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Sucker truck
Henderson Creek	9/12/2023	3	2412470	Armada DR	12:00	n/a	Unknown	No	Unnamed stream in Thomas Bloodworth Park	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	12/12/2023	3	2416767	Metcalfe RD	0:00	n/a	Fat	No	Unnamed tributary of Wairau Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	13/12/2023	3	2517359	Metcalfe RD	0:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/12/2023	3	2411141	Don Buck RD	0:00	n/a	3rd party damage	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line, cse to remove plywood and rubbish
Henderson Creek	13/12/2023	3	2423403	West Coast RD	0:00	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Henderson Creek	14/12/2023	3	2408203	Waipareira AVE	8:58	n/a	Fat	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line, sucker truck
Henderson Creek	14/12/2023	3	2417162	Sherpa PL	15:02	n/a	Fat	No	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Heavy flush, removed fat + rags
Henderson Creek	16/12/2023	3	81156374	Sunvue RD	9:46	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed food scraps
Henderson Creek	16/12/2023	3	81006682	Buscomb AVE	13:23	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	17/12/2023	3	2514610	Matipo RD	18:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Henderson Creek	17/12/2023	3	81008224	Metcalfe RD	10:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	18/12/2023	3	2457341	Rangeview RD	10:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Henderson Creek	20/12/2023	3	2517122	Edwards AVE	20:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots + rags
Henderson Creek	20/12/2023	3	2517673	Edmonton RD	12:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Henderson Creek	26/12/2023	3	2414268	Robert Burke PL	9:12	n/a	Fat	Yes	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Heavy flush
Henderson Creek	26/12/2023	3	2415873	Gordon Stanley DR	18:24	n/a	Fat	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Remove fats & roots
Henderson Creek	26/12/2023	3	81007574	Burgundy Park AVE	19:41	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	28/12/2023	3	2414890	San Domingo RISE	14:58	n/a	Roots	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	31/12/2023	3	81009052	Aldern RD	9:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	2/01/2024	3	81009052	Aldern RD	12:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/01/2024	3	2407341	Woodfern CRES	14:13	n/a	Fat	No	Narrow Neck Beach	L1	Local	Beach	no	no	no	no			Flushed line, removed fat
Henderson Creek	3/01/2024	3	2411965	Kereru ST	16:50	n/a	Unknown	No	St Heliers Bay	L1	Local	Beach	no	no	no	no			Flushed line
Henderson Creek	4/01/2024	3	2519202	Sunhill RD	20:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			sucker truck used
Henderson Creek	4/01/2024	3	2409130	Reynella DR	12:25	n/a	Unknown	Yes	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	4/01/2024	3	2409599	Lincoln Park AVE	11:24	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	yes	no	no	no			Flushed line, CCTV
Henderson Creek	5/01/2024	3	2422312	Lincoln Garden CL	13:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	6/01/2024	3	2413173	Lincoln RD	15:31	n/a	Unknown	No	Whau River Estuary	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	6/01/2024	3	2415733	Marlene AVE	17:07	n/a	Fat	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Flushed line
Henderson Creek	7/01/2024	3	2406610	Capricorn PL	9:06	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Unblocked line, sucker truck
Henderson Creek	8/01/2024	3	2412409	Shetland ST	7:41	n/a	Roots	No	Henderson Creek (southern arm)	L1	Local	Estuary	no	no	no	no			Flushed line, removed roots

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Henderson Creek	9/01/2024	3	2414043	Te Atatu RD	12:06	n/a	Unknown	No	Upper Purewa Creek	L1	Local	Estuary	no	no	no	no			Resealed MH
Henderson Creek	9/01/2024	3	2509777	Kohu RD	14:19	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	10/01/2024	3	2516439	Forest Hill RD	19:53	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Henderson Creek	10/01/2024	3	2405862	Glendale RD	8:15	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no		3	Flushed line, dig up and repair, CCTV
Henderson Creek	10/01/2024	3	2416127	Kellett RD	19:45	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Henderson Creek	11/01/2024	3	2414548	Miriam Corban HTS	10:44	n/a	Roots	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line, removed roots
Henderson Creek	12/01/2024	3	2508820	Granville DR	17:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/01/2024	3	2523727	Candia RD	11:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + roots
Henderson Creek	14/01/2024	3	2516347	Preston AVE	9:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	14/01/2024	3	2569823	Pleasant RD	9:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	14/01/2024	3	2417832	Candia RD	9:20	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Unblocked line
Henderson Creek	15/01/2024	3	2411977	Geordie ST	7:31	n/a	Fat	No	St Heliers Bay	L1	Local	Beach	no	no	no	no			flushed line
Henderson Creek	16/01/2024	3	2415094	Royal RD	12:21	n/a	Unknown	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line, CCTV
Henderson Creek	16/01/2024	3	2413259	Brunner RD	19:14	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, raised MH
Henderson Creek	18/01/2024	3	2415176	Anich RD	12:21	n/a	Foreign Object	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line, removed rocks
Henderson Creek	18/01/2024	3	2508832	Reinga PL	8:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	18/01/2024	3	2407741	Brunner RD	18:34	n/a	Roots	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	19/01/2024	3	2413233	Danica ESP	12:00	n/a	Unknown	No	Upper Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	19/01/2024	3	2417053	Glendale RD	11:04	n/a	Broken pipe	No	Meadowbank Stream West	L1	Local	Small waterway	yes	no	no	no			CCTV, dig up and repair
Henderson Creek	19/01/2024	3	2410916	Glengarry RD	16:07	n/a	Unknown	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	21/01/2024	3	2508832	Reinga PL	11:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, root removal
Henderson Creek	21/01/2024	3	2511664	Konini RD	16:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	21/01/2024	3	2411240	Rathgar RD	19:41	n/a	Rags	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed rags
Henderson Creek	21/01/2024	3	2409543	Royal View RD	10:44	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	22/01/2024	3	2408027	Edmonton RD	9:43	n/a	Unknown	No	Lincoln Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	24/01/2024	3	2517120	Rathgar RD	15:07	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	24/01/2024	3	2522828	Captain Scott RD	21:20	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	24/01/2024	3	2411301	Woodglen RD	12:11	n/a	Roots	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			
Henderson Creek	24/01/2024	3	2519868	Glenmall PL	16:05	n/a	Fat	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no		1	Flushed line
Henderson Creek	25/01/2024	3	2461126	Shibata RISE	18:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	26/01/2024	3	2410398	Duncan AVE	11:39	n/a	Roots	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	30/01/2024	2	748	Glen Eden Branch MH16	1:10	1440	Unknown	yes	Henderson Creek (southern arm)		Transm.	Estuary	Very High			no	yes		
Henderson Creek	30/01/2024	3	2408827	Reynella DR	12:14	n/a	Unknown	Yes	Unnamed stream - Mission Bay	L1	Local	Small waterway	no	no	no	no			Flushed line

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Henderson Creek	2/02/2024	3	2407790	Rangeview RD	9:06	n/a	Unknown	No	Tributary of Oakley Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	5/02/2024	3	2461126	Shibata RISE	21:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	5/02/2024	3	2509830	Vintage DR	18:19	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	5/02/2024	3	2407647	Starforth PL	18:48	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	8/02/2024	3	2413402	View Ridge DR	9:01	n/a	Roots	No	Upper Purewa Creek	L1	Local	Estuary	no	no	no	no			Unblocked line, root cut, removed roots
Henderson Creek	8/02/2024	3	2413911	Larnoch RD	11:33	n/a	Unknown	No	Lower Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line, sucker truck
Henderson Creek	8/02/2024	3	2520741	Cartmel AVE	13:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	8/02/2024	3	2521365	Triangle RD	7:38	n/a	Roots	No	On property	L3	Local	Stream	no	yes	no	no		6	Flushed line
Henderson Creek	9/02/2024	3	2409543	Royal View RD	20:44	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	11/02/2024	3	2523703	Elder PL	11:38	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			
Henderson Creek	12/02/2024	3	2410250	Highland AVE	7:30	n/a	Broken pipe	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line, CCTV, dig up and repair
Henderson Creek	15/02/2024	3	2409345	Tudor RD	13:37	n/a	Roots	No	Orakei Creek	L1	Local	Estuary	no	no	no	no			Flushed line, removed roots
Henderson Creek	15/02/2024	3	2512592	Woodside RD	10:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	16/02/2024	3	2412290	Millbrook RD	11:21	n/a	Unknown	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Flushed line
Henderson Creek	16/02/2024	3	2414937	Universal DR	9:54	n/a	Unknown	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line
Henderson Creek	19/02/2024	3	2415187	Preston AVE	10:27	n/a	Unknown	No	Lower Meola Creek	L1	Local	Large Waterway	unknown	no	no	no			Flushed line
Henderson Creek	19/02/2024	3	2408651	Sunline AVE	22:09	n/a	Broken pipe	No	Madill's Stream	L1	Local	Small waterway	no	no	no	no			CCTV, dig up and repair
Henderson Creek	20/02/2024	3	81005083	Lincoln RD	14:46	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Henderson Creek	21/02/2024	3	2516061	Metcalfe RD	12:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	21/02/2024	3	2408223	Claret PL	7:41	n/a	Unknown	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Unblocked line, CCTV
Henderson Creek	22/02/2024	3	2508381	Shetland ST	21:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Missing notes
Henderson Creek	22/02/2024	3	2409557	Waipani RD	22:00	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	4/03/2024	3	2508381	Shetland ST	14:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Henderson Creek	5/03/2024	3	2415381	Daytona RD	19:28	n/a	Roots	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Heavy flush. Removed roots
Henderson Creek	7/03/2024	3	2417346	Daytona RD	18:41	n/a	Unknown	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line
Henderson Creek	8/03/2024	3	2508729	Reynella DR	14:41	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	10/03/2024	3	2511353	James Laurie ST	9:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/03/2024	3	2517603	Chapman RD	15:47	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	12/03/2024	3	2510705	Pleasant RD	15:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	12/03/2024	3	2411447	Edgware RD	11:01	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	13/03/2024	3	2412424	Atkinson RD	14:47	n/a	Roots	No	Unnamed stream in Thomas Bloodworth Park	L1	Local	Small waterway	no	no	no	no			Flushed line, escalated to engineers
Henderson Creek	13/03/2024	3	2407763	Awaroa RD	18:36	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			
Henderson Creek	14/03/2024	3	2415381	Daytona RD	9:02	n/a	Fat	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			heavy flush
Henderson Creek	15/03/2024	3	81157633	Bruce McLaren RD	8:12	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			roots removed

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Henderson Creek	18/03/2024	3	2413600	Cellarmans ST	8:55	n/a	Unknown	No	Lower Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	18/03/2024	3	2513649	Sturges RD	15:06	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed objects
Henderson Creek	18/03/2024	3	2416836	McClintock RD	16:16	n/a	Roots	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	18/03/2024	3	2408598	Pinedale PL	10:53	n/a	Unknown	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	yes	no	no	no			Flushed line
Henderson Creek	19/03/2024	3	2414401	Gala PL	7:23	n/a	Unknown	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Flushed line
Henderson Creek	21/03/2024	3	2510414	Highland AVE	18:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	22/03/2024	3	2412290	Millbrook RD	15:34	n/a	Fat	No	Okahu Bay	L1	Local	Beach	yes	no	no	no			
Henderson Creek	22/03/2024	3	81006039	John F Kennedy PL	12:17	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Henderson Creek	22/03/2024	3	1396004	Ebony PL	17:53	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			flushed line
Henderson Creek	24/03/2024	3	2417002	Candia RD	11:20	n/a	Roots	No	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			flushed line
Henderson Creek	25/03/2024	3	2517780	Reynella DR	8:41	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	26/03/2024	3	2417712	Metcalfe RD	8:41	n/a	Fat	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			flushed line
Henderson Creek	26/03/2024	3	2407377	Henderson Valley RD	8:22	n/a	Unknown	No	To land	L1	Local		no	no	no	no			flushed line
Henderson Creek	27/03/2024	3	2414862	Triangle RD	22:14	n/a	Fat	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	yes	no	no	no			flushed line
Henderson Creek	27/03/2024	3	2561562	Swanson RD	19:23	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Henderson Creek	27/03/2024	3	2417002	Candia RD	9:39	n/a	Unknown	No	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			flushed line
Henderson Creek	28/03/2024	3	2514101	Rathgar RD	16:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	29/03/2024	3	2511774	View RD	11:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	29/03/2024	3	81157184	Alwyn AVE	17:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Henderson Creek	2/04/2024	3	2514164	Quincey PL	11:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/04/2024	3	2511808	Swanson RD	12:06	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, removed gravel
Henderson Creek	3/04/2024	3	2412804	Pinedale PL	13:51	n/a	Unknown	No	Unnamed stream in Thomas Bloodworth Park	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	3/04/2024	3	2417271	Cyclarama CRES	10:23	n/a	Unknown	Yes	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	3/04/2024	3	2516362	Munroe RD	12:48	n/a	Fat	No	Reserve/ park	L2	Local	Lake/basin/pond	yes	no	no	no		1	Heavy flush, CCTV, removed roots + fat
Henderson Creek	4/04/2024	3	2408827	Reynella DR	8:09	n/a	Unknown	Yes	Unnamed stream - Mission Bay	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	4/04/2024	3	2511597	St Catherine CRES	10:21	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, CCTV
Henderson Creek	5/04/2024	3	2509813	West Coast RD	12:27	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	7/04/2024	3	2412834	Zefiro DR	12:22	n/a	Fat	No	Henderson Creek (southern arm)	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	7/04/2024	3	2523561	Edgewood WAY	13:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	8/04/2024	3	2516004	Afton PL	11:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTv
Henderson Creek	8/04/2024	3	2408154	Gaede TCE	8:32	n/a	Roots	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line, removed roots + fat
Henderson Creek	11/04/2024	3	2517122	Edwards AVE	7:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/04/2024	3	2512651	Triangle RD	18:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	13/04/2024	3	2516004	Metcalfe RD	15:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	15/04/2024	3	2512667	Posa AVE	12:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	22/04/2024	3	2510466	Woodfern CRES	8:49	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line

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Henderson Creek	24/04/2024	3	2417524	Lincoln RD	8:56	n/a	Broken pipe	Yes	Waitemata Harbour - CBD Edge	L1	Local	Harbour	yes	no	no	no			Heavy flush, CCTV, repared MH connection
Henderson Creek	26/04/2024	3	2517530	Henderson Valley RD	11:32	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Henderson Creek	27/04/2024	3	2513678	Neil AVE	10:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	29/04/2024	3	2412590	West Coast RD	15:54	n/a	Broken pipe	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Flushed line, planned CCTV
Henderson Creek	29/04/2024	3	2412262	Bruce McLaren RD	15:50	n/a	Rags	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Unblocked line
Henderson Creek	29/04/2024	3	2513561	Hobsonville RD	18:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	30/04/2024	3	2412446	Farwood DR	14:53	n/a	Fat	No	Unnamed stream in Thomas Bloodworth Park	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	1/05/2024	3	2417271	Cyclarama CRES	9:21	n/a	Unknown	Yes	Meadowbank Stream West	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	2/05/2024	3	2509813	West Coast RD	7:44	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblcoked line
Henderson Creek	4/05/2024	3	2409402	Waitemata DR	18:53	n/a	Unknown	Yes	Orakei Creek	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	5/05/2024	3	2411775	Sunnylaw PL	13:15	n/a	Roots	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Unblocked line
Henderson Creek	6/05/2024	3	2510414	Highland AVE	7:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	8/05/2024	3	2416166	Holman RD	11:29	n/a	Rags	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Flushed line, removed rags
Henderson Creek	9/05/2024	3	2408640	Reynella DR	21:09	n/a	Unknown	Yes	Waitaramoa Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	10/05/2024	3	2412590	West Coast RD	13:00	n/a	Unknown	No	Okahu Bay	L1	Local	Beach	no	no	no	no			
Henderson Creek	10/05/2024	3	2558162	Millbrook RD	9:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	12/05/2024	3	82510524	Lumber RISE	11:43	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/05/2024	3	2522859	Vodanovich RD	18:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	14/05/2024	3	2416845	Don Buck RD	17:36	n/a	Unknown	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	17/05/2024	3	2406718	Konini RD	15:26	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	18/05/2024	3	2413696	Glengarry RD	11:01	n/a	Unknown	No	Lower Purewa Creek	L1	Local	Estuary	no	no	no	no			Flushed line
Henderson Creek	18/05/2024	3	2521030	Ambler AVE	21:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no		flushed line	Missing notes
Henderson Creek	22/05/2024	1	DPTEN	PS 42 Te Atatu North	20:51	60	Power Failure	yes	Estuary at Orukuwai Point	L1	Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	22/05/2024	3	2407509	Pioneer ST	6:27	n/a	Rags	No	Shoal Bay	L1	Local	Estuary	yes	no	no	no			Flushed line
Henderson Creek	23/05/2024	3	2408640	Reynella DR	18:00	n/a	Silts	Yes	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line, removed rocks + clay
Henderson Creek	24/05/2024	3	2417855	Universal DR	8:08	n/a	Unknown	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			
Henderson Creek	25/05/2024	3	2507867	Nandana DR	9:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags
Henderson Creek	26/05/2024	3	2410698	Cyclarama CRES	16:04	n/a	Unknown	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	28/05/2024	3	2508547	Keegan DR	13:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	28/05/2024	3	2411189	Wickstead PL	14:44	n/a	Unknown	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	31/05/2024	3	2405454	Redwood DR	14:55	n/a	Roots	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots

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Henderson Creek	1/06/2024	3	2418343	Moire RD	15:24	n/a	Roots	No	Waiatarua Reserve Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	3/06/2024	3	2410052	Hanui PL	13:52	n/a	Unknown	No	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	3/06/2024	3	2424352	Parrs Cross RD	15:51	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, removed roots. Fat + rags
Henderson Creek	4/06/2024	3	2412290	Millbrook RD	16:37	n/a	Fat	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Flushed line
Henderson Creek	4/06/2024	3	2511682	Parrs Cross RD	10:45	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Escalated for dig up and repair
Henderson Creek	4/06/2024	3	2509298	Lincoln RD	15:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	4/06/2024	3	2408146	Bruce McLaren RD	8:45	n/a	Unknown	No	Omaru Creek	L1	Local	Small waterway	yes	no	no	no			Flushed line
Henderson Creek	7/06/2024	3	2419161	Candia RD	9:26	n/a	Roots	No	Unnamed tributary (4) of Mahurangi River	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	8/06/2024	1	DPFLN	PS 44 Western	07:00	210	Mechanical	yes	Henderson Creek (southern arm)	L3	Transm.	Estuary	Low	No		Yes	yes		Issue at PS25 resolved
Henderson Creek	8/06/2024	2	1539	Blethyn Place Reserve	10:00	330	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	Very Low			no	yes		
Henderson Creek	8/06/2024	3	S24	Whenuapai Branch Sewer MH 10	22:10	200	Mechanical	no	Stormwater	L2	Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	9/06/2024	3	2415438	Royal View RD	11:11	n/a	Roots	No	Meola Creek (Rawalpindi)	L1	Local	Large Waterway	no	no	no	no			Flushed line, roots removal
Henderson Creek	9/06/2024	3	2520038	Waitemata DR	14:31	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV to confirm dislodgement
Henderson Creek	9/06/2024	3	2511242	Pleasant RD	16:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	11/06/2024	3	2407988	Dallow PL	14:50	n/a	Roots	No	Lincoln Stream	L1	Local	Small waterway	no	no	no	no			Flushed line, removed roots
Henderson Creek	12/06/2024	3	2509267	Gallony AVE	9:01	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Henderson Creek	13/06/2024	3	2409151	Lincoln RD	11:49	n/a	Unknown	No	Car park	L2	Local	SW network	no	no	yes	no			Vac cesspit
Henderson Creek	15/06/2024	3	2412179	Charlenne CL	13:45	n/a	Roots	No	Okahu Bay	L1	Local	Beach	no	no	no	no			Flushed line, removed roots + fat
Henderson Creek	15/06/2024	3	2415224	Woodside RD	13:54	n/a	Fat	No	Lower Meola Creek	L1	Local	Large Waterway	no	no	no	no			Flushed line
Henderson Creek	15/06/2024	3	2512859	Reynella DR	14:06	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, repair line
Henderson Creek	15/06/2024	3	2409463	Huruhuru RD	20:20	n/a	Unknown	No	Newmarket Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	16/06/2024	3	2408547	Kereru ST	15:34	n/a	Roots	No	Meola Creek (Lyon Avenue)	L1	Local	Small Waterway	no	no	no	no			Flushed line
Henderson Creek	19/06/2024	3	2515923	Cherry Tree PL	12:02	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, scheduled repiars
Henderson Creek	19/06/2024	3	81007676	Ambler AVE	9:08	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	19/06/2024	3	2519723	Royal RD	16:31	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Henderson Creek	20/06/2024	3	2521882	Garton DR	12:09	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	22/06/2024	3	2414476	Paramount DR	15:30	n/a	Fat	Yes	Waitemata Harbour - CBD Edge	L1	Local	Harbour	yes	no	no	no			Escalated for heavy flush, CCTV
Henderson Creek	22/06/2024	3	2520657	Matipo RD	9:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalate for CCTV
Henderson Creek	22/06/2024	3	2527763	Reynella DR	12:36	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Henderson Creek	24/06/2024	3	2450506	Border RD	13:21	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	24/06/2024	3	2407146	Hinerau ST	14:47	n/a	Broken pipe	No	Unnamed tributary to Henderson Creek	L1	Local	Small waterway	no	no	no	no			Flushed line, CCTV
Henderson Creek	25/06/2024	3	2407540	Atkinson RD	8:52	n/a	Broken pipe	No	Omaru Creek	L1	Local	Small waterway	no	no	no	no			CCTV, flushed line, repaired pipe

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Henderson Creek	26/06/2024	3	2412578	Waitaki ST	12:02	n/a	Rags	No	St Heliers Bay	L1	Local	Beach	no	no	no	no			Unblocked line
Henderson Creek	26/06/2024	3	2521960	Swanson RD	17:23	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated for CCTV
Henderson Creek	27/06/2024	3	81007799	Huruhuru RD	15:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	27/06/2024	3	2405220	Triangle RD	8:22	n/a	Rags	No	Lincoln Stream	L1	Local	Small waterway	no	no	no	no			Flushed line
Henderson Creek	27/06/2024	3	2415018	Mildmay RD	17:48	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Henderson Creek	28/06/2024	3	2414630	Edmonton RD	15:44	n/a	Roots	No	Waitemata Harbour - CBD Edge	L1	Local	Harbour	no	no	no	no			Unblocked line
Henderson Creek	29/06/2024	3	2526601	Royal RD	11:31	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	29/06/2024	3	2510134	Kashmir RD	10:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Henderson Creek	29/06/2024	3	2411119	Waitemata DR	6:56	n/a	Roots	Yes	Meola Creek (Haverstock Road)	L1	Local	Small Waterway	no	no	no	no			Removed roots, flushed line
Whau River	1/07/2023	3	2404138	Lynwood RD	13:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Whau River	1/07/2023	3	2405332	Gardner AVE	13:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Whau River	5/07/2023	3	2515878	Kirby ST	15:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whau River	6/07/2023	3	2593004	Bellgrove PL	16:28	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/07/2023	3	81005698	Godley RD	10:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/07/2023	3	2410990	Lantana RD	14:59	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Unblocked line
Whau River	10/07/2023	3	2490312	Horwell PL	9:33	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	13/07/2023	3	2517517	Tomo ST	12:15	n/a	Rags	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Whau River	14/07/2023	3	2421681	Godley RD	9:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, replaced MH lid
Whau River	19/07/2023	3	2405868	Pleasant RD	14:26	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, removed roots, dig up and repair
Whau River	19/07/2023	3	2517696	Eastglen RD	10:09	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV
Whau River	19/07/2023	3	2512442	Coniston AVE	16:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	23/07/2023	3	2420659	Golf RD	9:26	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repair logged in previous job
Whau River	23/07/2023	3	2517117	Kaweka ST	13:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	25/07/2023	3	2404258	Sabulite RD	9:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	28/07/2023	1	DPEND	Endeavour Street Pump Station	15:23	18	Unknown	yes	Blockhouse Bay		Local	Beach	Low	No		yes	yes		
Whau River	31/07/2023	3	2593751	Connell ST	12:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Whau River	1/08/2023	3	2525860	Palmer AVE	7:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	1/08/2023	3	2518082	Barnfield PL	19:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Whau River	3/08/2023	3	2410277	Butterworth DR	10:22	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	5/08/2023	3	2407881	Hepburn RD	14:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	5/08/2023	3	2415531	Karaka ST	11:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/08/2023	3	2405684	Parker AVE	17:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	8/08/2023	3	2510140	Hutchinson AVE	15:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	11/08/2023	3	2595009	Oregon AVE	18:52	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Repair damaged pipe
Whau River	13/08/2023	3	2511203	Covil AVE	11:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/08/2023	3	2510425	Tiroroa AVE	11:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced MH lid

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Whau River	19/08/2023	3	2526090	Parker AVE	12:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	22/08/2023	3	2409955	Kaweka ST	22:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	26/08/2023	3	2411937	Avonleigh RD	13:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	26/08/2023	3	2507171	Godley RD	11:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	27/08/2023	3	2408817	Tiroroa AVE	10:46	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	29/08/2023	3	2508135	Trojan CRES	8:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	31/08/2023	3	2404406	Rosebank RD	15:17	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Whau River	1/09/2023	3	2507257	Sabulite RD	18:36	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Whau River	3/09/2023	3	2490312	Horwell PL	11:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	7/09/2023	3	2405332	Gardner AVE	12:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/09/2023	3	2487812	Endeavour ST	15:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Root cut, removed roots, CCTV
Whau River	14/09/2023	1	DPKEY	Kenley Place Pump Station	18:10	70	Unknown	no	Whau River Estuary		Local	Estuary	Very low	No		No	yes		
Whau River	16/09/2023	3	2421167	Reid RD	17:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whau River	16/09/2023	3	2410489	Tiki ST	9:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	17/09/2023	3	2413872	Te Atatu RD	16:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	19/09/2023	3	2418014	Tahi TCE	11:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Whau River	19/09/2023	3	2507257	Sabulite RD	12:47	n/a	Unknown	Yes	Inside property	L1	Local	n/a	no	no	no	no			
Whau River	21/09/2023	3	2487332	Connaught ST	17:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	21/09/2023	3	2519348	Takahe RD	11:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	22/09/2023	3	2566430	Delta AVE	10:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whau River	29/09/2023	3	2405448	Great North RD	15:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	29/09/2023	3	2410196	Pakira AVE	14:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	30/09/2023	3	2411436	Trojan CRES	12:06	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	30/09/2023	3	2403407	Cron AVE	13:04	n/a	fat	No	On property	L2	Local	Stream	no	yes	no	no			Further investigation requested
Whau River	1/10/2023	3	2511711	Binsted RD	9:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	3/10/2023	3	2562360	Links RD	20:41	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated to supervisor
Whau River	4/10/2023	3	2410027	Titirangi RD	18:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	4/10/2023	3	2513296	Ayrton ST	15:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	7/10/2023	3	2420121	Golf RD	12:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Whau River	8/10/2023	3	2528374	Talavera PL	15:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whau River	9/10/2023	3	2409990	Cobham CRES	18:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/10/2023	3	2458263	Parker AVE	13:11	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no			Unblocked line
Whau River	10/10/2023	3	2489930	Holly ST	12:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter, CCTV
Whau River	11/10/2023	3	2558403	Nikau ST	20:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	14/10/2023	3	2407882	Hepburn RD	14:28	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete + rags
Whau River	20/10/2023	3	2478725	Mead ST	14:45	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	21/10/2023	3	2600099	Jasmine PL	19:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags
Whau River	23/10/2023	3	2413247	Stottholm RD	14:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Whau River	23/10/2023	3	2552824	Links RD	10:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	24/10/2023	3	2509725	Rimu ST	12:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	25/10/2023	3	2509880	Clayburn RD	10:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, sucker truck
Whau River	26/10/2023	3	2413872	Te Atatu RD	16:44	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Whau River	4/11/2023	3	2521804	Beazley PL	16:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	7/11/2023	3	2405015	Lydford PL	10:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	7/11/2023	3	2405538	Castleford ST	16:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	8/11/2023	3	2508967	Rimu ST	18:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/11/2023	3	2418498	Arawa ST	15:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/11/2023	3	2407707	Great North RD	11:47	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Whau River	9/11/2023	3	2416040	Alwyn AVE	13:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	14/11/2023	3	2507476	Temuri PL	17:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	16/11/2023	3	2479474	Ash ST	8:50	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Whau River	17/11/2023	3	2510207	Lantana RD	11:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	17/11/2023	3	2509584	Lantana RD	14:23	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	20/11/2023	3	2416313	Westall RD	14:43	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed stones, planned CCTV
Whau River	20/11/2023	3	2589571	Kinross ST	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	22/11/2023	3	2596482	Maple ST	20:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	23/11/2023	3	2410965	Riverview RD	9:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Whau River	24/11/2023	3	2411420	Copley ST	18:55	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed plank of wood
Whau River	26/11/2023	3	2510481	Riverview RD	6:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Whau River	29/11/2023	3	2411422	Nikau ST	17:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Whau River	1/12/2023	3	2504005	Kenley PL	12:00	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Set up temporary repair
Whau River	1/12/2023	3	2406185	Glenorchy ST	12:00	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			Dig up and repair
Whau River	8/12/2023	3	2411422	Nikau ST	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	10/12/2023	3	2406495	De Val DR	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	10/12/2023	3	2416531	Parker AVE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	12/12/2023	3	2509527	Armstrong PL	12:00	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	12/12/2023	3	2417426	Tahi TCE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	12/12/2023	3	2510496	Palmer AVE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	14/12/2023	3	2481885	Fremlin PL	12:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whau River	17/12/2023	3	2509527	Armstrong PL	18:20	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	20/12/2023	3	2414149	Queen Mary AVE	12:49	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned dig up and repair
Whau River	20/12/2023	3	2592332	Bellgrove PL	15:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	21/12/2023	3	2414156	Te Atatu RD	13:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	28/12/2023	3	2403407	Cron AVE	18:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	28/12/2023	3	2510209	Godley RD	10:41	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Whau River	28/12/2023	3	2408817	Tiroroa AVE	13:24	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots

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Whau River	29/12/2023	3	2412498	Meadow CRES	9:38	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Whau River	2/01/2024	3	2406795	Blease ST	13:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	5/01/2024	3	2414710	Jaemont AVE	9:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	7/01/2024	3	2512707	McLeod RD	9:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Whau River	8/01/2024	3	2399960	Ash ST	20:41	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Whau River	8/01/2024	3	2410242	Butterworth DR	12:20	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/01/2024	3	2415721	Stottholm RD	15:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	11/01/2024	3	2405449	Kirby ST	12:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	13/01/2024	3	2414785	Merchant AVE	13:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	17/01/2024	3	2421791	Manhattan HTS	13:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	17/01/2024	3	2423308	Arawa ST	18:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	21/01/2024	3	2486432	Maple ST	14:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whau River	22/01/2024	3	2514701	Staincross ST	15:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	25/01/2024	3	2410432	Queen Mary AVE	8:56	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			No mention of repairs
Whau River	26/01/2024	3	2407278	Crystal AVE	8:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	26/01/2024	3	2510245	Trojan CRES	12:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	30/01/2024	3	2516305	Coniston AVE	17:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/02/2024	3	2410036	Willerton AVE	18:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	7/02/2024	3	2405039	Fruitvale RD	7:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + stones
Whau River	7/02/2024	3	2405039	Fruitvale RD	11:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	9/02/2024	3	2410173	Vanguard RD	20:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Whau River	10/02/2024	3	2479193	Holly ST	17:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Whau River	15/02/2024	3	2410016	Tahi TCE	10:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	16/02/2024	3	2411315	Titirangi RD	18:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whau River	20/02/2024	3	2603186	Lynbrooke AVE	13:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	21/02/2024	3	2411053	Titirangi RD	17:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, replaced MH lid
Whau River	21/02/2024	3	2512644	Farquhar RD	20:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	22/02/2024	3	2410036	Willerton AVE	18:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	23/02/2024	3	2485876	Canal RD	9:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	28/02/2024	3	2531331	Vanguard RD	13:25	n/a	Fat	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			
Whau River	2/03/2024	3	2406388	Titirangi RD	10:47	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Whau River	2/03/2024	3	2510496	Palmer AVE	18:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	13/03/2024	3	81008945	Golf RD	7:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	14/03/2024	3	2412149	Gardner AVE	9:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	16/03/2024	3	2405387	Golf RD	10:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	16/03/2024	3	2510325	West Coast RD	18:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	16/03/2024	3	2405387	Golf RD	16:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	16/03/2024	3	2510355	Copley ST	12:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/03/2024	3	2588579	Orchard ST	12:23	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/03/2024	3	2589124	Orchard ST	12:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	20/03/2024	3	2410985	Hutchinson AVE	8:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Whau River	20/03/2024	3	2545462	Brandon RD	17:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	25/03/2024	3	2405236	Bancroft CRES	15:47	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CSE, CCTV, flushed line, repair break
Whau River	25/03/2024	3	2414158	Tiroroa AVE	18:57	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Whau River	27/03/2024	3	2410089	Akatea RD	9:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whau River	28/03/2024	3	2514951	Tirimoana RD	20:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whau River	29/03/2024	3	2476724	Bellgrove PL	19:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Whau River	30/03/2024	3	1408875	Harrybrook RD	13:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	1/04/2024	3	2410242	Butterworth DR	14:11	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	2/04/2024	3	2513966	Farquhar RD	10:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	3/04/2024	3	2511375	Metric PL	18:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	4/04/2024	3	2410284	Kelman RD	15:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	4/04/2024	3	2596472	Orchard ST	9:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	5/04/2024	3	2407578	Barrys RD	22:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Removed fat
Whau River	8/04/2024	3	2413817	West Coast RD	9:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	13/04/2024	3	2410284	Kelman RD	14:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots & fat, CCTV
Whau River	14/04/2024	3	2400583	Blockhouse Bay RD	16:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Whau River	14/04/2024	3	2485876	Canal RD	10:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	16/04/2024	3	2415531	Karaka ST	17:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	16/04/2024	3	2591573	Ash ST	13:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	17/04/2024	3	2587597	Rosebank RD	14:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/04/2024	3	2400746	Kenley PL	10:57	n/a	Unknown	Yes	On property	L2	Local	Estuary	yes	no	no	no		1	Flushed line, CCTV
Whau River	23/04/2024	3	2404811	Tirimoana RD	15:12	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	27/04/2024	3	2599507	Bolton ST	12:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Whau River	27/04/2024	3	2415883	Hepburn RD	12:53	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	29/04/2024	3	2412862	Delta AVE	13:50	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	1/05/2024	3	2586593	Ash ST	9:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	3/05/2024	3	2486432	Maple ST	17:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	5/05/2024	3	2518240	Poturi Streams AVE	14:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	7/05/2024	3	2406351	Cliff View DR	14:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	10/05/2024	3	2414038	Jaemont AVE	18:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Repalced pump
Whau River	13/05/2024	3	2510355	Copley ST	20:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	16/05/2024	3	2536026	Maybelle PL	9:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Whau River	18/05/2024	3	2414679	Merchant AVE	16:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	22/05/2024	3	2405107	Queen Mary AVE	15:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	23/05/2024	3	2507516	Tomo ST	9:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, planned CCTV
Whau River	24/05/2024	3	2405107	Queen Mary AVE	20:14	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			removed & repaired broken benching
Whau River	28/05/2024	3	2512525	Great North RD	10:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Whau River	28/05/2024	3	2409121	Merchant AVE	15:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	31/05/2024	3	2506896	Farquhar RD	9:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Whau River	1/06/2024	3	2511942	Great North RD	7:10	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Whau River	1/06/2024	3	2450547	Links RD	10:53	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0.5	Flushed line, removed roots

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Whau River	5/06/2024	3	2507925	Holly ST	11:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/06/2024	3	2589883	Rosebank RD	18:04	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, root cut
Whau River	7/06/2024	1	DPWIN	PS 25 St George	08:30	960	Mechanical	yes	Whau Creek	L3	Transm.	Small waterway	Low	Yes	no	no	yes		Issue at PS25 resolved
Whau River	7/06/2024	3	2603434	Gilfillan ST	10:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whau River	8/06/2024	1	DPWIN	PS 25 St George	12:30	150	Broken pipe	yes	Whau Creek	L3	Transm.	Small waterway	Low	Yes	no	no	yes		Issue at PS25 resolved
Whau River	8/06/2024	3	2406176	Astley AVE	15:22	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	9/06/2024	3	2485670	Wairau AVE	13:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	15/06/2024	3	2410559	Reid RD	16:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	15/06/2024	3	82840852	Coniston AVE	13:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	15/06/2024	3	2489161	Ash ST	13:19	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/06/2024	3	2406516	Godley RD	12:15	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			flsuhed line, CCTV
Whau River	18/06/2024	3	82748983	Tomo ST	7:21	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, escalated for root removal
Whau River	19/06/2024	3	2489254	Mitchell ST	8:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	20/06/2024	3	2516560	Farquhar RD	13:27	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	21/06/2024	3	2504005	Kenley PL	8:22	n/a	Broken pipe	Yes	On property	L2	Local	Estuary	yes	no	no	no		0	Flushed line
Whau River	22/06/2024	3	2411438	Armstrong PL	9:20	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	22/06/2024	3	2510556	Westall RD	13:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	24/06/2024	3	2545462	Brandon RD	11:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	25/06/2024	3	2507516	Tomo ST	17:07	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	25/06/2024	3	2545462	Brandon RD	8:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Whau River	25/06/2024	3	81008352	Meadow CRES	11:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Whau River	28/06/2024	3	2510325	West Coast RD	15:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	7/07/2023	3	2409835	Huia RD	11:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	9/07/2023	3	2520925	South Titirangi RD	7:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots + fats, repaired line
Laingholm	14/07/2023	3	2412100	Otitori Bay RD	14:30	n/a	Rubbish	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rubbish
Laingholm	20/07/2023	3	2418574	Takahe RD	7:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH
Laingholm	8/08/2023	3	2407104	Tane RD	8:40	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Escalated to engineer, planned repairs
Laingholm	12/08/2023	3	2403588	Victory RD	16:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	22/08/2023	3	2418574	Takahe RD	10:54	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH
Laingholm	26/08/2023	3	2525302	South Titirangi RD	16:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	30/08/2023	3	2520436	Huia RD	10:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	2/09/2023	3	2404584	Western RD	10:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	11/09/2023	3	81157023	Huia RD	11:56	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Laingholm	17/09/2023	3	2405022	South Titirangi RD	16:14	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Laingholm	17/09/2023	3	2412100	Otitori Bay RD	15:18	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	5/10/2023	3	2404824	Paturoa RD	12:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Laingholm	7/10/2023	3	2412100	Otitori Bay RD	15:29	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	10/10/2023	3	2508410	Ngaio RD	18:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	22/10/2023	3	2403855	Tane RD	6:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	11/11/2023	3	2508454	Park RD	14:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	16/11/2023	3	2404584	Western RD	8:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Laingholm	22/11/2023	3	2412100	Otitori Bay RD	7:46	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Land slip - flushed line (bypass)
Laingholm	22/11/2023	3	2407433	Waima CRES	12:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	28/11/2023	3	2510203	Park RD	16:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	2/12/2023	3	2404584	Western RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	3/12/2023	3	2510203	Park RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	5/12/2023	3	2527760	Grendon RD	12:00	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	11/12/2023	3	81006363	Scenic DR	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	21/12/2023	3	2416953	South Titirangi RD	16:11	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Laingholm	22/12/2023	3	2508278	Woodlands Park RD	19:19	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Laingholm	27/12/2023	3	2412100	Otitori Bay RD	12:06	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	3/01/2024	3	2405022	South Titirangi RD	16:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Laingholm	5/01/2024	3	2413414	Parker AVE	17:59	n/a	Unknown	No	On property	L3	Local	Stream	no	yes	no	no		3	Flushed line
Laingholm	7/01/2024	3	2410002	Rimutaka PL	9:51	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Laingholm	20/01/2024	3	2536634	Kauri Point RD	19:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	21/01/2024	3	2530161	Kauri Point RD	14:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	24/02/2024	3	2404646	Exhibition DR	19:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	25/02/2024	3	2404646	Huia RD	7:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	28/02/2024	3	2525610	Tinopai RD	15:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Laingholm	14/03/2024	3	2510632	Victory RD	6:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Laingholm	4/04/2024	3	2416953	South Titirangi RD	18:16	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Temp repair
Laingholm	9/04/2024	3	2405020	Karen RD	7:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Laingholm	24/04/2024	3	2409642	Victory RD	9:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Landslip - flushed line
Laingholm	14/05/2024	3	2408555	South Titirangi RD	10:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fat
Laingholm	6/06/2024	3	2534646	Paturoa RD	12:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	19/06/2024	3	2406564	Ngaio RD	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	4/07/2023	3	2600159	Sackville ST	6:44	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, escalated to engineer
Cox's Bay	4/07/2023	3	2599518	Murdoch RD	18:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Cox's Bay	6/07/2023	3	2598062	Douglas ST	8:59	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	7/07/2023	2	201	97 Sarsfield Street	20:00	745	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	12/07/2023	2	201	97 Sarsfield Street	12:00	85	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	13/07/2023	2	201	97 Sarsfield Street	19:15	35	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/07/2023	2	201	97 Sarsfield Street	22:55	1440	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/07/2023	2	230	42 Wharf Road	23:20	320	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	22/07/2023	3	2492801	Westmoreland ST-W	19:26	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Cox's Bay	23/07/2023	3	2599518	Murdoch RD	17:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cox's Bay	26/07/2023	2	201	97 Sarsfield Street	2:20	555	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	2/08/2023	2	201	97 Sarsfield Street	6:10	555	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	9/08/2023	2	201	97 Sarsfield Street	16:20	85	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	13/08/2023	3	2598209	Francis ST	16:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	14/08/2023	2	201	97 Sarsfield Street	14:35	150	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	14/08/2023	2	230	42 Wharf Road	14:40	20	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	16/08/2023	2	201	97 Sarsfield Street	20:50	95	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/08/2023	2	198	22 Marine Parade	0:40	120	Unknown	yes	Cox's Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/08/2023	2	201	97 Sarsfield Street	0:25	925	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/08/2023	2	230	42 Wharf Road	0:30	40	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	23/08/2023	3	2491258	Westmere CRES	13:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cox's Bay	24/08/2023	3	2600350	Edgars RD	12:48	n/a	Silts	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			
Cox's Bay	29/08/2023	3	2603123	Notley ST	8:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	29/08/2023	3	2481567	Herne Bay RD	14:41	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	29/08/2023	3	2614783	Hamilton RD	10:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	30/08/2023	2	201	97 Sarsfield Street	15:05	55	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	30/08/2023	3	2482144	Richmond RD	18:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	4/09/2023	2	201	97 Sarsfield Street	1:05	1440	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	4/09/2023	2	230	42 Wharf Road	7:10	90	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	7/09/2023	2	201	97 Sarsfield Street	10:45	275	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	7/09/2023	3	2488679	Murdoch RD	11:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Cox's Bay	11/09/2023	2	201	97 Sarsfield Street	9:20	665	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	11/09/2023	2	230	42 Wharf Road	9:20	90	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	12/09/2023	3	2604014	Ponsonby RD	16:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	15/09/2023	2	201	97 Sarsfield Street	6:15	45	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	23/09/2023	2	201	97 Sarsfield Street	19:35	1440	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	23/09/2023	2	230	42 Wharf Road	20:10	40	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	25/09/2023	2	230	42 Wharf Road	21:50	80	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	27/09/2023	2	201	97 Sarsfield Street	19:35	135	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	30/09/2023	2	201	97 Sarsfield Street	3:25	185	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	2/10/2023	2	201	97 Sarsfield Street	20:15	110	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	2/10/2023	3	2489092	Frobisher WAY	9:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, CCTV
Cox's Bay	7/10/2023	2	201	97 Sarsfield Street	13:00	155	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	8/10/2023	3	2596675	Endeavour ST	14:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Root cut, removed roots
Cox's Bay	8/10/2023	3	2606950	Francis ST	19:39	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Cox's Bay	8/10/2023	3	2596675	Garnet RD	15:44	n/a	Roots	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			
Cox's Bay	10/10/2023	3	2599787	Hakanoa ST	11:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	14/10/2023	3	2556074	Surrey CRES	16:41	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed clay

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Cox's Bay	15/10/2023	2	201	97 Sarsfield Street	0:05	20	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	16/10/2023	3	2556074	Surrey CRES	17:07	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	16/10/2023	3	2487963	Westmere CRES	8:19	n/a	Roots	No	On property	L2	Local	Estuary	yes	no	no	no			Removed roots
Cox's Bay	17/10/2023	2	201	97 Sarsfield Street	14:50	200	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	18/10/2023	3	2597046	Sarsfield ST	12:12	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Cox's Bay	24/10/2023	2	201	97 Sarsfield Street	15:25	60	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	26/10/2023	3	2601491	Norfolk ST	17:37	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, ongoing investigation
Cox's Bay	26/10/2023	3	2489685	Bayfield RD	19:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	27/10/2023	3	2600991	Lincoln ST	11:15	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned works
Cox's Bay	30/10/2023	2	201	97 Sarsfield Street	1:05	540	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	1/11/2023	3	2488484	Marine PDE	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	2/11/2023	3	2491037	Masons AVE	10:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Cox's Bay	3/11/2023	2	198	22 Marine Parade	8:05	300	Unknown	yes	Cox's Bay		Local	Beach		no		yes	yes		
Cox's Bay	3/11/2023	2	201	97 Sarsfield Street	7:15	435	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	4/11/2023	3	2484780	Larchwood AVE	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Cox's Bay	4/11/2023	3	2492188	Millais ST	9:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	8/11/2023	2	201	97 Sarsfield Street	0:20	15	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	12/11/2023	3	2492196	Clarence ST	10:30	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV to confirm cracks in chamber as cause of sinkhole
Cox's Bay	12/11/2023	3	2492502	Clarence ST	6:04	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			CCTV to confirm cracks in chamber as cause of sinkhole
Cox's Bay	14/11/2023	2	201	97 Sarsfield Street	15:05	155	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	17/11/2023	2	201	97 Sarsfield Street	13:00	1010	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/11/2023	2	201	97 Sarsfield Street	14:00	80	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	21/11/2023	3	2592090	Francis ST	8:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	23/11/2023	3	2596127	Williamson AVE	11:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Cox's Bay	25/11/2023	3	2596894	Sunny Brae CRES	12:59	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line, CCTV, removed roots
Cox's Bay	28/11/2023	2	201	97 Sarsfield Street	21:20	50	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	3/12/2023	2	201	97 Sarsfield Street	12:35	110	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	5/12/2023	2	201	97 Sarsfield Street	17:00	395	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	17/12/2023	3	2488484	Marine PDE	13:17	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Cox's Bay	21/12/2023	3	2491215	Sherwood AVE	13:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	22/12/2023	3	2600829	West End RD	13:36	n/a	Unknown	No	Reserve/ park	L4	Local	Stream	yes	yes	no	no			Flushed line
Cox's Bay	24/12/2023	2	201	97 Sarsfield Street	13:40	405	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	24/12/2023	2	230	42 Wharf Road	13:50	30	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	29/12/2023	2	201	97 Sarsfield Street	0:55	1305	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	29/12/2023	2	230	42 Wharf Road	10:50	110	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	31/12/2023	2	201	97 Sarsfield Street	12:55	435	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	5/01/2024	2	201	97 Sarsfield Street	18:05	120	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	15/01/2024	2	201	97 Sarsfield Street	13:10	125	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Cox's Bay	17/01/2024	3	2487354	Brown ST	9:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Cox's Bay	23/01/2024	2	201	97 Sarsfield Street	12:35	70	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	28/01/2024	2	201	97 Sarsfield Street	16:55	135	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	3/02/2024	2	201	97 Sarsfield Street	9:05	40	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	6/02/2024	3	2597873	Richard ST	13:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Cox's Bay	6/02/2024	3	2594079	Murdoch RD	18:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	20/02/2024	2	201	97 Sarsfield Street	7:35	45	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	24/02/2024	3	2491259	Garnet RD	18:33	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	25/02/2024	2	201	97 Sarsfield Street	7:10	30	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	25/02/2024	3	2602308	Saratoga AVE	19:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Cox's Bay	26/02/2024	2	201	97 Sarsfield Street	16:45	245	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	26/02/2024	3	2487572	Clarence ST	12:39	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			CCTV, dig up and repair
Cox's Bay	3/03/2024	2	201	97 Sarsfield Street	3:05	500	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	9/03/2024	3	2606953	Fife ST	13:50	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed fat + roots, dig up and repair
Cox's Bay	9/03/2024	3	2597299	Firth RD	15:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Cox's Bay	10/03/2024	3	2403452	West End RD	7:13	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no		6	Flushed line, CCTV
Cox's Bay	15/03/2024	3	2487862	Fife ST	16:07	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Planned repairs
Cox's Bay	17/03/2024	3	2594079	Murdoch RD	19:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, root cutter
Cox's Bay	20/03/2024	3	2600828	Parawai CRES	15:51	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	23/03/2024	2	202	69 Hamilton Road	17:55	15	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	23/03/2024	2	201	97 Sarsfield Street	6:45	210	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	28/03/2024	2	201	97 Sarsfield Street	10:50	20	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	31/03/2024	3	2481567	Herne Bay RD	12:11	n/a	Unknown	Yes	On property	L1	Local	n/a	yes	no	no	no			flushed line
Cox's Bay	1/04/2024	3	2600828	Parawai CRES	12:06	n/a	Unknown	Yes	On property	L1	Local	n/a	yes	no	no	no			Flushed line
Cox's Bay	3/04/2024	3	2600828	Parawai CRES	17:19	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	4/04/2024	3	2492742	Clarence ST	8:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Cox's Bay	5/04/2024	2	201	97 Sarsfield Street	4:15	45	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	9/04/2024	3	2481567	Herne Bay RD	18:08	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cox's Bay	12/04/2024	2	201	97 Sarsfield Street	2:25	325	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	14/04/2024	3	2490071	Northland ST	16:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Cox's Bay	17/04/2024	2	201	97 Sarsfield Street	21:20	1230	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	17/04/2024	3	2601927	Ardmore RD	11:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	18/04/2024	2	230	42 Wharf Road	17:05	40	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	24/04/2024	3	2486077	Faulder AVE	11:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	1/05/2024	2	201	97 Sarsfield Street	18:20	85	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	11/05/2024	3	2490666	William Denny AVE	9:55	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			
Cox's Bay	12/05/2024	3	2485863	Selbourne ST	15:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	15/05/2024	2	201	97 Sarsfield Street	0:15	400	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	17/05/2024	3	2488177	Upton ST	17:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	20/05/2024	2	198	22 Marine Parade	20:50	460	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Cox's Bay	20/05/2024	2	201	97 Sarsfield Street	18:40	780	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	24/05/2024	2	201	97 Sarsfield Street	14:15	110	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	28/05/2024	2	201	97 Sarsfield Street	19:10	705	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	2/06/2024	2	201	97 Sarsfield Street	21:50	45	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	4/06/2024	3	2599996	Ardmore RD	15:17	n/a	Unknown	No	On property	L3	Local	SW network	no	no	yes	no		6	Flushed line
Cox's Bay	9/06/2024	2	201	97 Sarsfield Street	16:05	960	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	12/06/2024	3	2481567	Herne Bay RD	12:56	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cox's Bay	13/06/2024	2	198	22 Marine Parade	23:45	730	Unknown	yes	Cox's Bay		Local	Beach		no		yes	yes		
Cox's Bay	13/06/2024	2	201	97 Sarsfield Street	22:55	1440	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	13/06/2024	2	230	42 Wharf Road	23:05	170	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	16/06/2024	2	201	97 Sarsfield Street	19:45	880	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	21/06/2024	3	2488678	MacKelvie ST	9:09	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	22/06/2024	2	201	97 Sarsfield Street	17:20	795	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	22/06/2024	2	198	22 Marine Parade	23:50	410	Unknown	yes	Cox's Bay		Local	Beach		no		yes	yes		
Cox's Bay	22/06/2024	2	230	42 Wharf Road	18:20	40	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	25/06/2024	3	2487286	Faulder AVE	9:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Clean up
Cox's Bay	26/06/2024	3	2593988	MacKelvie ST	11:49	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	5/07/2023	3	2488273	Vincent ST	9:40	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	7/07/2023	2	178	43 College Hill	22:20	90	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	7/07/2023	2	172	1 London Street	22:20	90	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	10/07/2023	2	712	Branch 5 Herne Bay MH2A	8:28	95	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	12/07/2023	2	712	Branch 5 Herne Bay MH2A	12:07	62	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	13/07/2023	2	712	Branch 5 Herne Bay MH2A	19:36	13	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	13/07/2023	3	2482427	Vincent ST	12:28	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	20/07/2023	2	712	Branch 5 Herne Bay MH2A	23:13	1404	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/07/2023	3	2593913	Pakenham ST	7:09	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	24/07/2023	3	2590402	St Marys RD	13:51	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cutter
Central Auckland CBD	26/07/2023	2	712	Branch 5 Herne Bay MH2A	*2:26*	268	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	27/07/2023	2	712	Branch 5 Herne Bay MH2A	13:03	146	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	30/07/2023	3	2587936	Harbour ST	11:20	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Central Auckland CBD	4/08/2023	3	2403381	Parnell RD	15:40	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Central Auckland CBD	8/08/2023	3	2405853	College HL	10:01	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Central Auckland CBD	8/08/2023	3	2596405	Halsey ST	11:07	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	10/08/2023	2	712	Branch 5 Herne Bay MH2A	20:43	40	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	14/08/2023	2	712	Branch 5 Herne Bay MH2A	14:47	141	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	14/08/2023	2	178	43 College Hill	14:40	45	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	14/08/2023	2	172	1 London Street	14:40	45	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	16/08/2023	2	712	Branch 5 Herne Bay MH2A	20:58	33	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/08/2023	2	712	Branch 5 Herne Bay MH2A	0:29	42	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/08/2023	3	2481663	College HL	15:56	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	20/08/2023	2	712	Branch 5 Herne Bay MH2A	0:37	594	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/08/2023	2	178	43 College Hill	0:30	65	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	20/08/2023	2	172	1 London Street	0:30	65	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	21/08/2023	2	712	Branch 5 Herne Bay MH2A	9:50	175	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	30/08/2023	2	712	Branch 5 Herne Bay MH2A	15:27	33	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	1/09/2023	3	2596062	Franklin RD	11:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	4/09/2023	2	178	43 College Hill	6:40	145	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	4/09/2023	2	172	1 London Street	6:40	145	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	15/09/2023	2	712	Branch 5 Herne Bay MH2A	6:28	46	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/09/2023	3	2403104	Georgina ST	17:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Central Auckland CBD	18/09/2023	3	2560496	Franklin RD	13:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	19/09/2023	3	2488273	Vincent ST	9:19	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	23/09/2023	2	712	Branch 5 Herne Bay MH2A	19:55	623	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	23/09/2023	2	178	43 College Hill	20:05	295	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	23/09/2023	2	172	1 London Street	20:05	295	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	25/09/2023	2	712	Branch 5 Herne Bay MH2A	1:38	758	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	27/09/2023	2	712	Branch 5 Herne Bay MH2A	7:22	788	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	28/09/2023	2	712	Branch 5 Herne Bay MH2A	21:29	91	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	29/09/2023	1	DPCNH	PS 13 Constitution Hill	20:52	39	Other	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Central Auckland CBD	29/09/2023	2	712	Branch 5 Herne Bay MH2A	3:19	266	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	29/09/2023	2	712	Branch 5 Herne Bay MH2A	8:35	73	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	30/09/2023	1	DPCNH	PS 13 Constitution Hill	08:59	274	Mechanical	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		
Central Auckland CBD	30/09/2023	2	712	Branch 5 Herne Bay MH2A	1:58	142	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	30/09/2023	2	712	Branch 5 Herne Bay MH2A	4:37	98	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	1/10/2023	1	DPCNH	PS 13 Constitution Hill	08:45	898	Mechanical	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		
Central Auckland CBD	2/10/2023	1	DPCNH	PS 13 Constitution Hill	08:21	984	Mechanical	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		
Central Auckland CBD	3/10/2023	1	DPCNH	PS 13 Constitution Hill	06:50	995	Mechanical	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		
Central Auckland CBD	3/10/2023	3	2593768	Customs ST-E	13:48	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Incomplete notes
Central Auckland CBD	4/10/2023	1	DPCNH	PS 13 Constitution Hill	08:40	432	Mechanical	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		
Central Auckland CBD	4/10/2023	3	2477567	Queen ST	9:49	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Incomplete notes
Central Auckland CBD	10/10/2023	2	712	Branch 5 Herne Bay MH2A	11:28	321	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	11/10/2023	2	712	Branch 5 Herne Bay MH2A	10:00	427	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	11/10/2023	3	2603919	Watt ST	12:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	12/10/2023	2	712	Branch 5 Herne Bay MH2A	13:24	87	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	13/10/2023	2	712	Branch 5 Herne Bay MH2A	9:45	379	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	13/10/2023	3	2402849	Parnell RISE	9:21	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line, removed rags
Central Auckland CBD	14/10/2023	2	712	Branch 5 Herne Bay MH2A	14:18	97	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	15/10/2023	2	712	Branch 5 Herne Bay MH2A	1:30	44	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	16/10/2023	3	2497840	St Georges Bay RD	10:43	n/a	Broken pipe	No	Road/ footpath	L3	Local	SW network	yes	no	yes	no			repair collapsed pipe
Central Auckland CBD	17/10/2023	2	712	Branch 5 Herne Bay MH2A	16:06	45	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/10/2023	2	712	Branch 5 Herne Bay MH2A	11:51	108	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/10/2023	2	178	43 College Hill	14:55	55	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	17/10/2023	2	172	1 London Street	14:55	55	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	17/10/2023	3	2482422	Princes ST	17:05	n/a	3rd party damage	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Central Auckland CBD	17/10/2023	3	2598324	Hobson ST	21:46	n/a	Unknown	Yes	Car park	L1	Local	n/a	yes	no	no	no			Flushed line

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Central Auckland CBD	17/10/2023	3	2611233	Faraday ST	8:15	n/a	Broken pipe	No	Car park	L4	Local	SW network	yes	no	yes	no			Long-term project to repair Parnell sinkhole branch collapse.
Central Auckland CBD	18/10/2023	2	712	Branch 5 Herne Bay MH2A	9:29	300	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/10/2023	2	712	Branch 5 Herne Bay MH2A	9:19	175	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	19/10/2023	3	2596062	Franklin RD	13:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Central Auckland CBD	24/10/2023	2	712	Branch 5 Herne Bay MH2A	16:41	57	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	24/10/2023	2	178	43 College Hill	15:30	20	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	24/10/2023	2	172	1 London Street	15:30	20	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	30/10/2023	2	712	Branch 5 Herne Bay MH2A	2:21	295	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	3/11/2023	2	178	43 College Hill	10:25	40	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	3/11/2023	2	172	1 London Street	10:25	40	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	7/11/2023	3	2604648	Anzac AVE	15:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	10/11/2023	3	2484186	Madden ST	16:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	13/11/2023	3	2481615	Pakenham ST-E	8:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	14/11/2023	2	712	Branch 5 Herne Bay MH2A	16:20	152	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	14/11/2023	3	2591702	Victoria ST-W	6:44	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	17/11/2023	2	712	Branch 5 Herne Bay MH2A	16:23	113	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/11/2023	2	712	Branch 5 Herne Bay MH2A	3:28	356	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/11/2023	2	178	43 College Hill	2:15	125	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	18/11/2023	2	172	1 London Street	2:15	125	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	20/11/2023	2	712	Branch 5 Herne Bay MH2A	15:03	86	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/11/2023	2	178	43 College Hill	14:05	20	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	20/11/2023	2	172	1 London Street	14:05	20	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	28/11/2023	2	712	Branch 5 Herne Bay MH2A	22:28	60	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	28/11/2023	2	178	43 College Hill	21:20	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	28/11/2023	2	172	1 London Street	21:20	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	1/12/2023	3	2486704	Beresford ST	12:00	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line

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Central Auckland CBD	8/12/2023	3	2598324	Hobson ST	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	13/12/2023	3	2401239	Quay ST	0:00	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, sucker truck to remove silts
Central Auckland CBD	19/12/2023	3	2566706	Beresford SQ	15:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	24/12/2023	2	712	Branch 5 Herne Bay MH2A	14:56	46	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	29/12/2023	2	128	11 Victoria Street East	10:40	70	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	31/12/2023	2	712	Branch 5 Herne Bay MH2A	17:58	398	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	31/12/2023	3	2590364	Napier ST	12:19	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	31/12/2023	3	2402301	Lorne ST	15:56	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	11/01/2024	3	2596405	Halsey ST	14:35	n/a	3rd party damage	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Dig up and repair
Central Auckland CBD	12/01/2024	3	2487517	Franklin RD	8:19	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	15/01/2024	2	712	Branch 5 Herne Bay MH2A	14:24	98	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	15/01/2024	2	128	11 Victoria Street East	13:20	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	15/01/2024	3	2484683	Swift AVE	9:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			repair broken section
Central Auckland CBD	21/01/2024	3	2485131	Union ST	20:48	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	30/01/2024	3	2490813	Percival PDE	15:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	15/02/2024	3	2507200	Burton ST	13:11	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	16/02/2024	2	712	Branch 5 Herne Bay MH2A	9:30	33	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/02/2024	2	712	Branch 5 Herne Bay MH2A	8:53	40	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	24/02/2024	3	2595682	Hepburn ST	14:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Central Auckland CBD	26/02/2024	2	712	Branch 5 Herne Bay MH2A	17:55	168	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	26/02/2024	3	2484200	Beaumont ST	13:18	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, root cut
Central Auckland CBD	4/03/2024	2	128	11 Victoria Street East	15:50	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	8/03/2024	3	2489310	Elizabeth ST	16:58	n/a	Foreign Object	No	Inside property	L1	Local	n/a	no	no	no	no			CCTV, dig up & repair damage
Central Auckland CBD	8/03/2024	3	2508409	Vincent ST	15:47	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Central Auckland CBD	12/03/2024	2	712	Branch 5 Herne Bay MH2A	14:46	128	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	15/03/2024	2	712	Branch 5 Herne Bay MH2A	17:12	100	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/03/2024	3	2594748	Mayoral DR	23:52	n/a	Rags	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line

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Central Auckland CBD	19/03/2024	3	2590109	Nelson ST	22:31	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat
Central Auckland CBD	19/03/2024	3	2405651	Symonds ST	21:53	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	20/03/2024	3	2402807	Queen ST	19:50	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	20/03/2024	3	2601246	Augustus TCE	19:47	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
Central Auckland CBD	21/03/2024	3	2596272	Franklin RD	14:20	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Central Auckland CBD	23/03/2024	2	712	Branch 5 Herne Bay MH2A	8:04	171	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	23/03/2024	2	128	11 Victoria Street East	17:55	25	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	24/03/2024	3	2596272	Franklin RD	19:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			root removal
Central Auckland CBD	24/03/2024	3	81005153	Wyndham ST	7:44	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line, further investigation
Central Auckland CBD	2/04/2024	3	2507825	Hobson ST	17:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	3/04/2024	3	2485131	Union ST	10:57	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	3/04/2024	3	2507200	Burton ST	20:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Central Auckland CBD	4/04/2024	3	2507825	Hobson ST	12:04	n/a	Roots	No	Construction site	L1	Local	n/a	no	no	no	no			root cut, flushed line
Central Auckland CBD	5/04/2024	3	2499687	Falcon ST	12:03	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Central Auckland CBD	6/04/2024	3	2485131	Union ST	12:10	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Central Auckland CBD	8/04/2024	3	2601256	Bradford ST	10:47	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Yet to confirm w CCTV
Central Auckland CBD	8/04/2024	3	2407284	Grafton RD	13:38	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	9/04/2024	3	2596313	Hobson ST	15:01	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			remove roots
Central Auckland CBD	9/04/2024	3	2481457	Federal ST	8:42	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	12/04/2024	2	712	Branch 5 Herne Bay MH2A	2:44	259	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	18/04/2024	2	712	Branch 5 Herne Bay MH2A	17:19	56	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	19/04/2024	2	712	Branch 5 Herne Bay MH2A	3:25	175	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	19/04/2024	2	128	11 Victoria Street East	3:40	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	2/05/2024	3	2600950	St Georges Bay RD	8:41	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, removed concrete
Central Auckland CBD	3/05/2024	3	2598324	Hobson ST	5:05	n/a	Roots	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	5/05/2024	3	2587938	Howe ST	15:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Central Auckland CBD	8/05/2024	3	2587874	Pakenham ST-E	11:49	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags

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Central Auckland CBD	10/05/2024	3	2486582	Queen ST	19:16	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	11/05/2024	3	2403024	Ponsonby RD	15:48	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	15/05/2024	2	712	Branch 5 Herne Bay MH2A	4:59	171	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/05/2024	2	712	Branch 5 Herne Bay MH2A	5:49	14	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/05/2024	3	2481054	Hobson ST	11:08	n/a	Unknown	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			Flushed line, sucker truck
Central Auckland CBD	20/05/2024	2	712	Branch 5 Herne Bay MH2A	18:54	618	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	22/05/2024	3	2602183	Whitaker PL	12:05	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, removed rocks
Central Auckland CBD	24/05/2024	2	712	Branch 5 Herne Bay MH2A	14:36	82	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	25/05/2024	2	712	Branch 5 Herne Bay MH2A	8:08	67	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	25/05/2024	3	2509388	Windsor ST	17:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	28/05/2024	2	712	Branch 5 Herne Bay MH2A	19:24	86	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	3/06/2024	3	2487050	Beresford SQ	17:30	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	4/06/2024	3	2588444	Hepburn ST	12:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Central Auckland CBD	5/06/2024	3	2404675	Pitt ST	15:16	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Central Auckland CBD	7/06/2024	3	2597983	Imrie AVE	13:02	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	7/06/2024	3	2611069	Gaunt ST	9:51	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	13/06/2024	2	712	Branch 5 Herne Bay MH2A	23:05	106	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	14/06/2024	2	712	Branch 5 Herne Bay MH2A	2:04	1335	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	16/06/2024	2	712	Branch 5 Herne Bay MH2A	19:58	948	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/06/2024	3	2596313	Hobson ST	12:25	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0.5	Flushed line
Central Auckland CBD	21/06/2024	3	2597674	Queen ST	13:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Central Auckland CBD	22/06/2024	2	712	Branch 5 Herne Bay MH2A	17:35	347	Unknown	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	24/06/2024	3	81001051	St Georges Bay RD	10:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated for root removal
Central Auckland CBD	26/06/2024	3	2597528	Picton ST	8:55	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired IP, CCTV, unblocked pipe
Hobson Bay	1/07/2023	2	193	35 Yattendon Road	22:15	1120	Unknown	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	3/07/2023	3	2616774	Eltham RD	15:34	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	6/07/2023	3	2602399	Mount St John AVE	9:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Hobson Bay	7/07/2023	2	505	9 Scherff Road	21:30	200	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		

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Hobson Bay	7/07/2023	2	1598	21 Ayr Street	22:25	70	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	7/07/2023	2	420	14 Mahuru Street	21:00	180	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	9/07/2023	3	81000498	Ashwell ST	9:27	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags
Hobson Bay	10/07/2023	3	2588691	Koraha ST	11:58	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rags, root cutter
Hobson Bay	11/07/2023	3	2496321	Watene CRES	10:06	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	11/07/2023	3	2605148	The Glen	16:43	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	11/07/2023	3	2488708	Entrican AVE	18:21	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	15/07/2023	3	2597856	Selwyn AVE	21:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Hobson Bay	16/07/2023	3	2490478	Komaru ST	19:54	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks, sucker truck
Hobson Bay	16/07/2023	3	2610661	Wootton RD	11:14	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	17/07/2023	3	2599623	Windmill RD	10:06	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	17/07/2023	3	2490115	Tamaki DR	8:38	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Hobson Bay	18/07/2023	3	2491638	Middleton RD	11:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	18/07/2023	3	2490454	Ranfurly RD	15:27	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	18/07/2023	3	2496183	Main HWY	8:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	19/07/2023	2	453	12a Okahu Street	15:30	110	Unknown	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	19/07/2023	3	2596409	Paunui ST	12:01	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, dig up and repair
Hobson Bay	19/07/2023	3	2596207	Umere CRES	17:54	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	19/07/2023	3	2495190	Ranier ST	11:03	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Hobson Bay	19/07/2023	3	2606781	Victoria AVE	13:14	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Hobson Bay	20/07/2023	2	505	9 Scherff Road	23:40	835	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/07/2023	2	420	14 Mahuru Street	23:20	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/07/2023	2	1598	21 Ayr Street	23:35	155	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/07/2023	3	2493507	MacMurray RD	15:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	27/07/2023	2	505	9 Scherff Road	14:20	30	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	27/07/2023	2	1598	21 Ayr Street	14:10	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	27/07/2023	2	420	14 Mahuru Street	14:05	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	27/07/2023	3	2596409	Paunui ST	9:48	n/a	Silts	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	30/07/2023	3	2483492	Onslow AVE	16:13	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	31/07/2023	3	2489945	Disraeli ST	11:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	31/07/2023	3	2493112	Seccombes RD	14:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	1/08/2023	3	2605148	The Glen	11:49	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			repaired dislodged line

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Hobson Bay	1/08/2023	3	2495005	Sage RD	9:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	2/08/2023	2	505	9 Scherff Road	6:20	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	2/08/2023	3	2494452	Grampian RD	11:35	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	2/08/2023	3	2491533	Godden CRES	8:44	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	6/08/2023	3	2399801	Kepa RD	19:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	6/08/2023	3	2400159	Waimea LN	20:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	7/08/2023	3	2617377	Rutherford TCE	9:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	7/08/2023	3	2605148	The Glen	9:22	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, dig up and repair
Hobson Bay	8/08/2023	3	2607307	Ngapipi RD	14:55	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	8/08/2023	3	2486518	Rangiatea RD	10:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	8/08/2023	3	2592219	Inverary AVE	13:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	9/08/2023	2	420	14 Mahuru Street	16:05	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	10/08/2023	3	2590413	Gavin ST	11:03	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned repairs
Hobson Bay	11/08/2023	3	2593850	Fern Glen RD-S	11:31	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	11/08/2023	3	2595734	Lawry ST	9:36	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	11/08/2023	3	2506842	Tonks ST	15:17	n/a	Fat	No	On property	L3	Local	Stream	no	yes	no	no		3	Unblock EOP
Hobson Bay	14/08/2023	2	505	9 Scherff Road	15:10	35	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/08/2023	2	420	14 Mahuru Street	14:40	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	14/08/2023	3	2599489	Owens RD	10:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	15/08/2023	3	2400750	Mahoe AVE	13:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, root cut, removed roots
Hobson Bay	15/08/2023	3	2601983	Eltham RD	8:23	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	16/08/2023	2	420	14 Mahuru Street	20:50	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	17/08/2023	2	505	9 Scherff Road	5:30	25	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	18/08/2023	3	2597859	Atkin AVE	10:17	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned repairs
Hobson Bay	18/08/2023	3	2588949	Grand DR	19:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	19/08/2023	3	2407686	St Stephens AVE	9:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	19/08/2023	3	2490831	Sprott RD	10:45	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0	Unblocked line
Hobson Bay	20/08/2023	2	213	59 Baddeley Avenue	1:10	40	Unknown	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/08/2023	2	505	9 Scherff Road	0:40	435	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/08/2023	2	503	68 Portland Road	0:35	60	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/08/2023	2	511	158 Bassett Road	0:30	90	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/08/2023	2	1598	21 Ayr Street	0:30	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/08/2023	2	281	49 Ngapuhi Road	1:00	80	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		

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Hobson Bay	21/08/2023	2	505	9 Scherff Road	9:10	25	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	22/08/2023	3	2602979	Hawera RD	9:21	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Planned repairs
Hobson Bay	23/08/2023	3	2584618	Abbotts WAY	16:39	n/a	Foreign Object	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Hobson Bay	25/08/2023	3	2492049	King George AVE	13:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	26/08/2023	3	2601983	Eltham RD	13:34	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, escalated to engineer
Hobson Bay	26/08/2023	3	2490421	Main Highway	7:27	n/a	Unknown	No	Car park	L3	Local	SW network	yes	no	yes	no		6	Flushed line
Hobson Bay	29/08/2023	3	2589296	Main HWY	11:06	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0.01	Flushed line, removed roots
Hobson Bay	30/08/2023	3	2596579	Lawndale PL	14:37	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no		1.5	Flushed line, root cut, set up bypass pump
Hobson Bay	1/09/2023	3	2488815	Ballin ST	20:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	1/09/2023	3	2604513	Fancourt ST	8:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	4/09/2023	3	2601983	Eltham RD	10:40	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck, repaired line
Hobson Bay	7/09/2023	2	505	9 Scherff Road	13:10	20	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	10/09/2023	3	2592505	Grand DR	21:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck
Hobson Bay	11/09/2023	2	711	Branch 3 Newmarket MH29	15:41	93	Unknown	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	11/09/2023	2	505	9 Scherff Road	15:45	425	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	11/09/2023	2	503	68 Portland Road	15:40	220	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	11/09/2023	2	213	59 Baddeley Avenue	16:15	30	Unknown	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	11/09/2023	2	350	44 Rukutai Street	16:10	40	Unknown	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	11/09/2023	2	511	158 Bassett Road	15:40	300	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	11/09/2023	2	1598	21 Ayr Street	15:35	110	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	11/09/2023	2	1630	35 James Cook Cres, Remuera	15:40	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	11/09/2023	2	421	29 Ayr Street A	15:40	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	11/09/2023	2	508	32 Hapua Street	15:40	40	Unknown	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	11/09/2023	2	281	49 Ngapuhi Road	16:05	305	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	11/09/2023	2	160	45 Ascot Avenue	15:45	35	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	13/09/2023	3	2496566	Coates AVE	10:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV to determine cause
Hobson Bay	13/09/2023	3	2598166	Rawhitiroa RD	11:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	14/09/2023	3	2406897	Kapua ST	15:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	15/09/2023	3	2596294	Eltham RD	15:42	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	16/09/2023	3	2497891	Middleton RD	18:43	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		0.25	Unblocked line
Hobson Bay	17/09/2023	3	2490117	Fern Glen RD-N	21:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Hobson Bay	18/09/2023	3	2488702	Comins CRES	11:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTv
Hobson Bay	19/09/2023	3	2487149	Speight RD	13:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat, rags + silts
Hobson Bay	22/09/2023	3	2592890	Komaru ST	12:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Hobson Bay	23/09/2023	2	505	9 Scherff Road	20:15	940	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/09/2023	2	1598	21 Ayr Street	20:25	200	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	27/09/2023	2	420	14 Mahuru Street	8:30	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	28/09/2023	2	505	9 Scherff Road	10:30	20	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/09/2023	3	2491273	Orakei RD	9:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	30/09/2023	2	505	9 Scherff Road	6:30	60	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	30/09/2023	2	420	14 Mahuru Street	6:20	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	30/09/2023	3	2499018	Momona RD	15:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	2/10/2023	2	505	9 Scherff Road	20:30	30	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	2/10/2023	2	420	14 Mahuru Street	20:15	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/10/2023	3	2592890	Komaru ST	10:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	6/10/2023	3	2588965	Koraha ST	9:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut
Hobson Bay	6/10/2023	3	2609967	Green LNEW	16:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, replaced MH lid
Hobson Bay	7/10/2023	2	505	9 Scherff Road	13:10	85	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	7/10/2023	2	503	68 Portland Road	13:10	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	7/10/2023	2	511	158 Bassett Road	13:10	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	7/10/2023	2	1598	21 Ayr Street	13:00	25	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	7/10/2023	2	420	14 Mahuru Street	12:50	90	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	7/10/2023	3	2491438	Clarendon RD	14:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	8/10/2023	3	2594782	Grand DR	19:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	9/10/2023	3	2485759	Hoani GLD	13:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Hobson Bay	9/10/2023	3	2610661	Wootton RD	16:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, removed roots
Hobson Bay	10/10/2023	3	2602703	Market RD	15:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	10/10/2023	3	2510725	Bonnie Brae RD	16:56	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	11/10/2023	3	2492925	Kingdon ST	19:01	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	12/10/2023	2	350	44 Rukutai Street	4:30	20	Unknown	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	12/10/2023	3	2487407	Wilding AVE	16:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	16/10/2023	3	2602703	Market RD	12:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Hobson Bay	17/10/2023	2	505	9 Scherff Road	15:15	50	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		

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Hobson Bay	17/10/2023	2	503	68 Portland Road	15:10	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	17/10/2023	2	511	158 Bassett Road	15:10	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	17/10/2023	2	1598	21 Ayr Street	15:00	25	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	17/10/2023	2	420	14 Mahuru Street	15:05	90	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/10/2023	2	711	Branch 3 Newmarket MH29	16:40	28	Unknown	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	24/10/2023	2	505	9 Scherff Road	15:50	35	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	24/10/2023	2	511	158 Bassett Road	15:45	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/10/2023	2	1598	21 Ayr Street	15:40	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/10/2023	2	420	14 Mahuru Street	15:30	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	26/10/2023	3	2601992	Kohimarama RD	17:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	27/10/2023	3	2595109	Godden CRES	21:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	28/10/2023	3	2606267	Ashwell ST	8:10	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	30/10/2023	2	505	9 Scherff Road	2:55	35	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	30/10/2023	2	420	14 Mahuru Street	2:20	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	2/11/2023	2	213	59 Baddeley Avenue	12:25	45	Unknown	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	3/11/2023	2	495	43 Tohunga Street	9:25	25	Unknown	yes	Hobson Bay		Local	Basin	Very High				yes		
Hobson Bay	3/11/2023	2	193	35 Yattendon Road	8:30	430	Unknown	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	3/11/2023	2	505	9 Scherff Road	7:30	355	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	3/11/2023	2	503	68 Portland Road	8:30	35	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	3/11/2023	2	511	158 Bassett Road	7:25	160	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/11/2023	2	1598	21 Ayr Street	7:25	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/11/2023	2	420	14 Mahuru Street	7:15	290	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/11/2023	3	2489268	St Heliers Bay RD	15:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	5/11/2023	3	2601102	Woodside CRES	8:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	6/11/2023	3	2591164	Speight RD	17:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	7/11/2023	2	505	9 Scherff Road	23:30	50	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	7/11/2023	2	503	68 Portland Road	23:25	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	7/11/2023	2	420	14 Mahuru Street	23:30	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	8/11/2023	3	2499046	Umere CRES	16:25	n/a	3rd party damage	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Dig up and repair
Hobson Bay	12/11/2023	2	193	35 Yattendon Road	12:10	210	Unknown	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		

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Hobson Bay	13/11/2023	2	193	35 Yattendon Road	6:30	100	Unknown	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	14/11/2023	2	505	9 Scherff Road	16:25	60	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/11/2023	2	1598	21 Ayr Street	16:25	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	14/11/2023	2	420	14 Mahuru Street	15:25	90	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/11/2023	3	2486867	Celtic CRES	20:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	17/11/2023	3	2495660	Manukau RD	10:22	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV
Hobson Bay	18/11/2023	2	495	43 Tohunga Street	4:05	15	Unknown	yes	Hobson Bay		Local	Basin	Very High				yes		
Hobson Bay	18/11/2023	2	505	9 Scherff Road	3:20	440	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	18/11/2023	2	503	68 Portland Road	3:10	100	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	18/11/2023	2	511	158 Bassett Road	3:15	170	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	18/11/2023	2	1598	21 Ayr Street	2:20	110	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	18/11/2023	2	420	14 Mahuru Street	3:05	370	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	18/11/2023	2	421	29 Ayr Street A	3:25	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/11/2023	2	505	9 Scherff Road	14:15	105	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/11/2023	2	503	68 Portland Road	14:15	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/11/2023	2	511	158 Bassett Road	14:10	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/11/2023	2	420	14 Mahuru Street	13:50	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/11/2023	2	281	49 Ngapuhi Road	14:25	85	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	20/11/2023	3	2495190	Ranier ST	7:37	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	20/11/2023	3	2591759	Melanesia RD	15:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	23/11/2023	3	2492726	William Fraser CRES	14:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cut
Hobson Bay	26/11/2023	3	2486867	Celtic CRES	20:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	27/11/2023	3	2490113	Dingle RD	13:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	28/11/2023	3	2510725	Bonnie Brae RD	7:54	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut
Hobson Bay	29/11/2023	3	2484277	Abbotts WAY	17:03	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Hobson Bay	29/11/2023	3	2509929	Magma CRES	8:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, removed roots
Hobson Bay	29/11/2023	3	2601983	Taranaki RD	19:30	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	30/11/2023	3	2591759	Melanesia RD	15:25	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	30/11/2023	3	2490529	Laxon TCE	11:05	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, removed roots
Hobson Bay	30/11/2023	3	2592353	Dingle RD	8:14	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		0	Flushed line
Hobson Bay	1/12/2023	3	2399684	Spencer ST	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Hobson Bay	1/12/2023	3	2490113	Challenger ST	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed gravel
Hobson Bay	3/12/2023	2	420	14 Mahuru Street	12:40	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/12/2023	3	2499748	Abbotts WAY	12:00	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed stones
Hobson Bay	3/12/2023	3	2494836	Remuera RD	12:00	n/a	Rubbish	No	Inside property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	3/12/2023	3	2483946	Kohimarama RD	12:00	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Hobson Bay	4/12/2023	3	2594316	Tahora AVE	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, CCTV
Hobson Bay	4/12/2023	3	2508308	Judge ST	12:00	n/a	Unknown	No	On property	L2	Local	Estuary	yes	no	no	no		0.5	Restored pump
Hobson Bay	5/12/2023	2	505	9 Scherff Road	17:10	40	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	5/12/2023	2	420	14 Mahuru Street	16:55	80	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	5/12/2023	3	2594579	Arron ST	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Root cut
Hobson Bay	9/12/2023	3	2499748	Abbotts WAY	12:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Hobson Bay	10/12/2023	3	2399665	John Rymer PL	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	12/12/2023	3	2488963	Ranier ST	12:00	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed silts + rags
Hobson Bay	13/12/2023	3	2493442	Paritai DR	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Hobson Bay	17/12/2023	3	2508160	Grand DR	10:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	17/12/2023	3	2608080	Burwood CRES	10:16	n/a	Unknown	No	On property	L3	Local	Beach	yes	no	no	no			DSB2D
Hobson Bay	17/12/2023	3	DSB2D	Branch 2 Diversion	12:00		Unknown	no		L3	Transm.	beach	yes	no	no	no	no		
Hobson Bay	18/12/2023	3	2510516	Ascot AVE	15:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + rags
Hobson Bay	19/12/2023	3	2401334	Glen Atkinson ST	14:28	n/a	Rags	No	Reserve/ park	L3	Local	Stream	yes	yes	no	no		6	Flushed line, removed rags
Hobson Bay	20/12/2023	3	2508308	Judge ST	8:58	n/a	Unknown	No	On property	L3	Local	Beach	yes	no	no	no			
Hobson Bay	20/12/2023	3	2603337	Woodley AVE	10:06	n/a	Silts	Yes	On property	L2	Local	SW network	no	no	yes	no			Unblocked line, sucker truck
Hobson Bay	21/12/2023	3	2489203	Inverary AVE	6:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV - ongoing investigation
Hobson Bay	21/12/2023	3	2491477	Market RD	9:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	22/12/2023	3	2487101	Koraha ST	14:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	24/12/2023	2	505	9 Scherff Road	17:00	130	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	24/12/2023	2	503	68 Portland Road	16:55	65	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	24/12/2023	2	1598	21 Ayr Street	16:50	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/12/2023	2	1630	35 James Cook Cres, Remuera	16:50	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/12/2023	2	420	14 Mahuru Street	13:50	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/12/2023	2	421	29 Ayr Street A	16:50	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/12/2023	2	511	158 Bassett Road	16:50	100	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/12/2023	2	160	45 Ascot Avenue	17:00	15	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	24/12/2023	2	281	49 Ngapuhi Road	18:25	45	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Hobson Bay	27/12/2023	3	2490783	Mount St John AVE	20:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV
Hobson Bay	29/12/2023	2	285	77 Meadowbank Road	8:20	60	Unknown	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	29/12/2023	2	505	9 Scherff Road	2:30	865	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/12/2023	2	503	68 Portland Road	2:30	280	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/12/2023	2	511	158 Bassett Road	2:25	510	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	29/12/2023	2	1598	21 Ayr Street	2:20	235	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	29/12/2023	2	1630	35 James Cook Cres, Remuera	11:00	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	29/12/2023	2	420	14 Mahuru Street	1:15	740	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	29/12/2023	2	508	32 Hapua Street	10:40	110	Unknown	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	29/12/2023	2	160	45 Ascot Avenue	11:05	100	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	31/12/2023	2	505	9 Scherff Road	20:25	160	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	31/12/2023	2	503	68 Portland Road	20:20	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	31/12/2023	2	511	158 Bassett Road	21:00	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	31/12/2023	2	420	14 Mahuru Street	13:05	200	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	31/12/2023	2	281	49 Ngapuhi Road	21:25	20	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	31/12/2023	3	2597929	Waiatarua RD	18:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	2/01/2024	3	2597929	Waiatarua RD	12:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	6/01/2024	2	505	9 Scherff Road	11:25	20	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	6/01/2024	2	420	14 Mahuru Street	11:00	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	6/01/2024	3	2592505	Grand DR	19:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	8/01/2024	3	2513190	Takutai ST	8:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Hobson Bay	9/01/2024	3	2495190	Ranier ST	9:41	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line (unsure if public - no mention of repairs)
Hobson Bay	9/01/2024	3	2483492	Onslow AVE	11:12	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Hobson Bay	12/01/2024	3	2591753	Piccadilly PL	17:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	15/01/2024	2	505	9 Scherff Road	13:35	30	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	15/01/2024	2	511	158 Bassett Road	13:30	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/01/2024	2	1598	21 Ayr Street	13:20	25	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/01/2024	2	420	14 Mahuru Street	13:15	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/01/2024	3	2480872	Raphoe PL	21:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	17/01/2024	3	2497079	Robert ST	17:22	n/a	Broken pipe	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			

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Hobson Bay	17/01/2024	3	2590001	Gavin ST	20:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Hobson Bay	18/01/2024	3	2490142	Berowald PL	15:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	20/01/2024	3	2494789	St Stephens AVE	8:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	22/01/2024	2	193	35 Yattendon Road	11:15	20	Unknown	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	23/01/2024	2	503	68 Portland Road	12:45	15	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/01/2024	2	505	9 Scherff Road	12:55	25	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/01/2024	2	1598	21 Ayr Street	12:35	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	23/01/2024	2	420	14 Mahuru Street	12:35	60	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	23/01/2024	3	2590001	Gavin ST	14:48	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Hobson Bay	24/01/2024	3	2593232	Tuhimata ST	12:51	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblcoked line
Hobson Bay	25/01/2024	3	2595614	Coldham CRES	21:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	26/01/2024	3	2489718	Remuera RD	10:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	26/01/2024	3	2491958	Aratonga AVE	15:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	26/01/2024	3	2614087	Worcester RD	17:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	28/01/2024	2	505	9 Scherff Road	17:05	45	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	28/01/2024	2	420	14 Mahuru Street	16:50	80	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	31/01/2024	3	2490529	Laxon TCE	13:10	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	1/02/2024	3	2596294	Eltham RD	20:29	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	2/02/2024	3	2595393	Goldsmith RD	9:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut
Hobson Bay	3/02/2024	3	2596294	Eltham RD	9:53	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush & clean
Hobson Bay	7/02/2024	3	2510725	Bonnie Brae RD	8:09	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, dig up and repair
Hobson Bay	8/02/2024	3	2607661	Sudeley ST	14:42	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, root cut
Hobson Bay	12/02/2024	3	2604449	St Stephens AVE	9:37	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	12/02/2024	3	2595641	Tarawera TCE	18:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	15/02/2024	3	2508544	Godden CRES	18:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	16/02/2024	3	2497968	Mount St John AVE	21:39	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Hobson Bay	17/02/2024	3	2593979	Brightside RD	9:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Hobson Bay	18/02/2024	3	2604796	Meadowbank RD	21:02	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Hobson Bay	19/02/2024	3	2495656	Kingdon ST	18:37	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed fat, planned works
Hobson Bay	19/02/2024	3	2591430	Ohinerau ST	10:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	21/02/2024	3	2490113	Dingle RD	17:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	23/02/2024	3	2478200	Charles Fox PL	13:34	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	23/02/2024	3	2603337	Woodley AVE	16:14	n/a	Silts	Yes	On property	L3	Local	SW network	no	no	yes	no		6	Flushed line
Hobson Bay	24/02/2024	3	2489990	Mount St John AVE	18:14	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Hobson Bay	25/02/2024	2	420	14 Mahuru Street	6:55	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	26/02/2024	2	420	14 Mahuru Street	16:40	80	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		

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Hobson Bay	28/02/2024	3	2483946	Kohimarama RD	14:54	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	29/02/2024	3	2593232	Tuhimata ST	12:27	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	3/03/2024	2	505	9 Scherff Road	2:55	70	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	3/03/2024	2	511	158 Bassett Road	2:50	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/03/2024	2	1598	21 Ayr Street	11:50	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/03/2024	2	420	14 Mahuru Street	2:40	100	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	3/03/2024	2	281	49 Ngapuhi Road	12:05	20	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	4/03/2024	2	505	9 Scherff Road	13:50	115	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	4/03/2024	2	503	68 Portland Road	13:40	30	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	4/03/2024	2	511	158 Bassett Road	14:20	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/03/2024	2	1598	21 Ayr Street	14:20	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/03/2024	2	420	14 Mahuru Street	13:30	210	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/03/2024	2	281	49 Ngapuhi Road	15:55	40	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	4/03/2024	3	2402322	Remuera RD	13:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Hobson Bay	6/03/2024	3	2482003	McFarland ST	21:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	7/03/2024	3	2599002	Marua RD	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	8/03/2024	3	2596294	Eltham RD	9:38	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Hobson Bay	13/03/2024	3	2601983	Eltham RD	12:40	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Removed silts, dig up and repair
Hobson Bay	14/03/2024	2	420	14 Mahuru Street	7:50	110	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/03/2024	3	2495379	Eastbourne RD	15:14	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	15/03/2024	3	2487868	Temple ST	17:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Hobson Bay	17/03/2024	3	2399814	Mahoe AVE	14:11	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Hobson Bay	17/03/2024	3	2491601	Atkin AVE	13:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	17/03/2024	3	2490529	Laxon TCE	15:16	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Hobson Bay	18/03/2024	3	2497079	Robert ST	10:43	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unsure if public
Hobson Bay	18/03/2024	3	2486356	McFarland ST	18:19	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	18/03/2024	3	2495379	Eastbourne RD	16:46	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	19/03/2024	2	515	11 Purewa Road	9:35	20	Unknown	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	20/03/2024	3	2498289	Tautari ST	10:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	20/03/2024	3	2606767	Portland RD	12:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	21/03/2024	3	2486356	McFarland ST	7:40	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	22/03/2024	3	2600864	Waiatarua RD	11:50	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			repair lateral
Hobson Bay	22/03/2024	3	2487873	Marau CRES	14:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			

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Hobson Bay	23/03/2024	2	505	9 Scherff Road	18:10	40	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/03/2024	2	503	68 Portland Road	18:10	20	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/03/2024	2	420	14 Mahuru Street	6:50	370	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	23/03/2024	2	160	45 Ascot Avenue	18:10	15	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	23/03/2024	2	281	49 Ngapuhi Road	18:35	15	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	26/03/2024	3	2493354	Ely AVE	15:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line, CCTV
Hobson Bay	26/03/2024	3	2487873	Tamaki DR	15:20	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Hobson Bay	26/03/2024	3	2495379	Eastbourne RD	10:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	28/03/2024	3	2602701	Parnell RD	18:48	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Hobson Bay	30/03/2024	3	2588186	Abbotts WAY	12:52	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Hobson Bay	31/03/2024	3	2510367	King Edward AVE	18:00	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Hobson Bay	31/03/2024	3	2499891	Glover RD	16:31	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, rootcut
Hobson Bay	31/03/2024	3	2612606	John Rymer PL	15:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Hobson Bay	2/04/2024	3	2483492	Onslow AVE	11:04	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV
Hobson Bay	2/04/2024	3	2490262	Castle DR	11:47	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	2/04/2024	3	2495379	Eastbourne RD	12:06	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned dig up to remove roots
Hobson Bay	2/04/2024	3	2586169	Panapa DR	10:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat, CCTV
Hobson Bay	4/04/2024	3	2597856	Selwyn AVE	12:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	5/04/2024	2	420	14 Mahuru Street	4:05	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	8/04/2024	3	2483946	Kohimarama RD	12:15	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	9/04/2024	3	2596928	Morrin ST	12:19	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV - unsure if public
Hobson Bay	11/04/2024	2	1598	21 Ayr Street	11:30	15	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	12/04/2024	2	420	14 Mahuru Street	2:30	270	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/04/2024	3	2600670	Leek ST	12:22	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Hobson Bay	17/04/2024	2	420	14 Mahuru Street	21:05	810	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	19/04/2024	2	505	9 Scherff Road	3:40	680	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	19/04/2024	2	503	68 Portland Road	3:45	190	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	19/04/2024	2	511	158 Bassett Road	3:40	290	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	19/04/2024	2	1598	21 Ayr Street	3:40	125	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	19/04/2024	2	421	29 Ayr Street A	3:40	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	19/04/2024	2	160	45 Ascot Avenue	4:20	35	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		

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Hobson Bay	21/04/2024	3	2593314	Lawry ST	15:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Hobson Bay	25/04/2024	3	2401936	Tephra BLVD	8:14	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags
Hobson Bay	28/04/2024	3	2601758	Temple ST	11:01	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Removed MH material, replaced MH
Hobson Bay	29/04/2024	3	2495379	Eastbourne RD	12:17	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	29/04/2024	3	2499206	Robert ST	12:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	30/04/2024	3	2606509	The Glen	10:57	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, dye testing, further investigation
Hobson Bay	30/04/2024	3	2487688	Bowling AVE	15:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	1/05/2024	2	420	14 Mahuru Street	18:20	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	1/05/2024	3	2490675	Marau CRES	7:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	1/05/2024	3	2493826	Kohimarama RD	7:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	2/05/2024	3	2496889	Thatcher ST	6:52	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	3/05/2024	3	2403844	Combes RD	17:09	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	5/05/2024	3	2602757	St Heliers Bay RD	15:49	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed PVC pieces
Hobson Bay	6/05/2024	2	420	14 Mahuru Street	11:25	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	6/05/2024	3	2601902	Ngapipi RD	12:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	6/05/2024	3	2599016	Clonbern RD	15:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	7/05/2024	3	2592831	Windmill RD	13:08	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Hobson Bay	10/05/2024	3	2493507	MacMurray RD	10:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	10/05/2024	3	2606509	The Glen	17:04	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	11/05/2024	3	2602953	Margot ST	21:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	13/05/2024	3	2488434	Kohimarama RD	14:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	13/05/2024	3	2596580	Grampian RD	9:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	14/05/2024	3	2487339	Holgate RD	14:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	15/05/2024	2	505	9 Scherff Road	5:05	110	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	15/05/2024	2	1598	21 Ayr Street	5:00	40	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/05/2024	2	511	158 Bassett Road	5:00	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	15/05/2024	2	420	14 Mahuru Street	0:10	210	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/05/2024	3	2505316	St Johns RD	9:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	17/05/2024	3	2494807	Remuera RD	16:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	18/05/2024	3	2505316	St Johns RD	9:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	19/05/2024	3	2602953	Margot ST	12:48	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	20/05/2024	2	505	9 Scherff Road	20:20	565	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	1598	21 Ayr Street	20:10	185	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/05/2024	2	1580	4 St Marks Rd	17:55	105	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		

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Hobson Bay	20/05/2024	2	420	14 Mahuru Street	18:50	1180	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/05/2024	2	511	158 Bassett Road	20:10	400	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/05/2024	3	2612919	Fancourt ST	10:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Hobson Bay	20/05/2024	3	2488434	Kohimarama RD	11:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	22/05/2024	3	2602191	John Rymer PL	12:50	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	22/05/2024	3	2491955	Temple ST	12:34	n/a	Broken pipe	No	On property	L3	Local	Stream	no	yes	no	no		6	Flushed line
Hobson Bay	23/05/2024	2	421	29 Ayr Street A	7:30	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	23/05/2024	3	2402563	Entrican AVE	8:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	23/05/2024	3	2492039	Cliff RD	15:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	24/05/2024	2	420	14 Mahuru Street	15:20	160	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	24/05/2024	3	2593325	St Vincent AVE	9:32	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	26/05/2024	3	2597180	Grampian RD	15:23	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no		0	Heavy flush
Hobson Bay	27/05/2024	2	420	14 Mahuru Street	0:30	610	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	27/05/2024	2	421	29 Ayr Street A	21:40	20	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	27/05/2024	3	2597799	Edmund ST	20:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	28/05/2024	2	505	9 Scherff Road	19:25	180	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	28/05/2024	2	503	68 Portland Road	19:20	35	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	28/05/2024	2	511	158 Bassett Road	19:30	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	28/05/2024	3	2491887	Godden CRES	9:43	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed gravel
Hobson Bay	30/05/2024	3	2485033	Edmund ST	16:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	30/05/2024	3	2599262	Selwyn AVE	17:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	2/06/2024	3	2598032	Hanene ST	12:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	4/06/2024	3	2596925	Amy ST	12:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	6/06/2024	3	2592505	Grand DR	10:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	7/06/2024	3	2488968	Ballin ST	7:15	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired cracks
Hobson Bay	7/06/2024	3	2599188	Rawhitiroa RD	16:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	8/06/2024	3	2492709	Meadowbank RD	15:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	8/06/2024	3	2586790	Amy ST	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	8/06/2024	3	2606509	The Glen	11:21	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	8/06/2024	3	2499360	Kitemoana ST	14:41	n/a	Fat	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no		0.5	Flushed line
Hobson Bay	8/06/2024	3	2508160	Grand DR	13:49	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0.5	
Hobson Bay	8/06/2024	3	2596540	Middleton RD	11:13	n/a	Silts	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, CCTV
Hobson Bay	9/06/2024	2	505	9 Scherff Road	19:05	305	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	9/06/2024	2	503	68 Portland Road	19:00	45	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		

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Hobson Bay	9/06/2024	2	1598	21 Ayr Street	18:55	50	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	9/06/2024	2	511	158 Bassett Road	19:00	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	9/06/2024	2	420	14 Mahuru Street	16:15	190	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	9/06/2024	3	2602752	Bay RD	13:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Dye test, CCTV
Hobson Bay	9/06/2024	3	2509144	Hiriri AVE	13:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Hobson Bay	11/06/2024	3	2558101	Ridings RD	14:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flsuhed line
Hobson Bay	12/06/2024	3	81014947	Hawkins ST	8:25	n/a	Rubbish	No	On property	L2	Local	SW network	no	no	yes	no		0.5-1	Heavy flush
Hobson Bay	13/06/2024	2	285	77 Meadowbank Road	23:15	145	Unknown	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	13/06/2024	2	505	9 Scherff Road	23:20	630	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	13/06/2024	2	503	68 Portland Road	23:25	155	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	13/06/2024	2	511	158 Bassett Road	23:20	260	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	13/06/2024	2	1598	21 Ayr Street	23:05	150	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	13/06/2024	2	420	14 Mahuru Street	23:00	710	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	13/06/2024	2	160	45 Ascot Avenue	23:20	75	Unknown	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	13/06/2024	2	281	49 Ngapuhi Road	23:25	520	Unknown	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	13/06/2024	3	81013610	Westbourne RD	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, need to remove roots
Hobson Bay	16/06/2024	2	285	77 Meadowbank Road	20:20	80	Unknown	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	16/06/2024	2	505	9 Scherff Road	19:55	425	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	16/06/2024	2	503	68 Portland Road	19:50	160	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	16/06/2024	2	511	158 Bassett Road	19:50	270	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/06/2024	2	420	14 Mahuru Street	19:50	330	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/06/2024	2	421	29 Ayr Street A	19:50	30	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	16/06/2024	2	1598	21 Ayr Street	20:25	150	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	21/06/2024	3	2602191	John Rymer PL	10:07	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	22/06/2024	2	285	77 Meadowbank Road	23:15	20	Unknown	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	22/06/2024	2	505	9 Scherff Road	22:55	335	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	22/06/2024	2	503	68 Portland Road	23:05	40	Unknown	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	22/06/2024	2	511	158 Bassett Road	22:40	140	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	22/06/2024	2	1598	21 Ayr Street	22:35	95	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	22/06/2024	2	420	14 Mahuru Street	22:35	370	Unknown	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		

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Hobson Bay	22/06/2024	3	2494639	Kohimarama RD	15:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	24/06/2024	3	2596925	Amy ST	9:15	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Hobson Bay	28/06/2024	3	2605773	Glen Atkinson ST	11:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	29/06/2024	3	2482867	Towle PL	12:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	30/06/2024	3	2399132	Mahoe AVE	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	1/07/2023	3	2610299	The Drive	10:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	1/07/2023	3	2608456	Oranga AVE	15:16	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	1/07/2023	3	2604848	Mount Albert RD	16:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	2/07/2023	3	2602170	Pah RD	13:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	3/07/2023	3	2607035	Oak ST	17:52	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat, root cutter
Onehunga	5/07/2023	3	2611251	Pah RD	21:03	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	6/07/2023	3	2498535	Paihia RD	10:59	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	15/07/2023	3	2483276	Lynfield PL	5:57	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	16/07/2023	3	2605657	Cardwell ST	9:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	17/07/2023	3	2604587	Selwyn ST	16:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	18/07/2023	3	2492352	Athens RD	15:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	20/07/2023	3	2589301	Te Marama RD	9:04	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots, CCTV
Onehunga	26/07/2023	3	2499537	St Andrews RD	9:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	28/07/2023	3	2492382	Brookfield AVE	20:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	28/07/2023	3	2604547	Princes ST	20:52	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Onehunga	2/08/2023	3	2489517	Lynfield PL	17:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	4/08/2023	3	2496893	Hill ST	11:04	n/a	Power Failure	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Failed pump causing network to back up fixed
Onehunga	4/08/2023	3	2606253	Beachcroft AVE	8:27	n/a	Power Failure	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Failed pump causing network to back up fixed
Onehunga	4/08/2023	3	2498927	Princes ST	16:55	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	7/08/2023	3	2498460	Amaru RD	8:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	12/08/2023	3	2508863	Nolan RD	9:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	14/08/2023	3	2596789	Oriana AVE	11:10	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	15/08/2023	3	2605409	Manukau RD	9:16	n/a	Foreign Object	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, removed pipe pieces
Onehunga	18/08/2023	3	2601837	Bingley AVE	6:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	18/08/2023	3	2607632	Golf RD	16:46	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	19/08/2023	3	2596789	Oriana AVE	9:22	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			
Onehunga	22/08/2023	3	2495522	Manukau RD	14:45	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Onehunga	22/08/2023	3	2617363	Coronation RD	11:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	23/08/2023	3	2491040	Tynor PL	19:14	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	24/08/2023	3	2495869	Galway ST	7:30	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	24/08/2023	3	2605495	Trafalgar ST	12:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	25/08/2023	3	2604634	Buckley RD	10:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	26/08/2023	3	2617363	Coronation RD	15:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Onehunga	28/08/2023	3	2605669	Queenstown RD	20:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	29/08/2023	3	2613670	Patrick ST	11:40	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned repairs
Onehunga	29/08/2023	3	2596774	Halsey DR	14:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Onehunga	7/09/2023	3	2499771	Campbell RD	14:59	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Onehunga	8/09/2023	3	2491040	Tynor PL	21:08	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks, CCTV
Onehunga	8/09/2023	3	2402546	Waitangi RD	9:16	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Onehunga	13/09/2023	3	2604220	Amaru RD	8:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	13/09/2023	3	2485735	Halsey DR	17:51	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Onehunga	14/09/2023	3	2605704	Selwyn RD	21:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	19/09/2023	3	2497141	Maungakiekie AVE	14:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	20/09/2023	3	2499537	St Andrews RD	11:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			rootcut
Onehunga	20/09/2023	3	2595426	Kalmia ST	13:27	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	21/09/2023	3	2407171	Cardwell ST	10:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	21/09/2023	3	2499610	Waitapu RD	8:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	1/10/2023	3	2492382	Brookfield AVE	13:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	1/10/2023	3	2608457	Waitangi RD	7:50	n/a	Foreign Object	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, CCTV, sucker truck to remove concrete
Onehunga	4/10/2023	3	2494655	Oranga AVE	19:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	4/10/2023	3	2601200	Inkerman ST	10:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	8/10/2023	3	2591426	Derry ST	17:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, root cutter
Onehunga	16/10/2023	3	2508146	Wesley Bay GLD	13:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	16/10/2023	3	2605409	Manukau RD	11:28	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	17/10/2023	3	2402646	Mount Smart RD	10:07	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rocks + rags
Onehunga	19/10/2023	3	2493888	Orsova PL	22:21	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, heavy flush
Onehunga	20/10/2023	3	2484443	Viking AVE	17:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	21/10/2023	3	2495709	Curzon ST	14:23	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	28/10/2023	3	2596788	William Donnelly TCE	16:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags, replaced MH lid
Onehunga	30/10/2023	3	2492843	Onehunga MALL	14:02	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Onehunga	1/11/2023	3	2609255	Onehunga MALL	8:08	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	4/11/2023	3	2603312	Tawhiri RD	13:11	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Onehunga	7/11/2023	3	2489558	Hillsborough RD	13:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags
Onehunga	9/11/2023	3	2601948	Church ST	19:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	11/11/2023	3	2613956	Curzon ST	13:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Onehunga	12/11/2023	3	2605986	Arthur ST	13:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	12/11/2023	3	2608381	Arthur ST	12:37	n/a	Fat	No	Car park	L2	Local	SW network	no	no	yes	no			Flushed line
Onehunga	16/11/2023	3	2406565	Puka ST	12:00	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Planned works
Onehunga	20/11/2023	3	2495709	Curzon ST	16:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Onehunga	22/11/2023	3	2602910	Forbes ST	6:59	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	23/11/2023	3	2602910	Forbes ST	9:48	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	25/11/2023	3	2484361	Commodore DR	16:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	27/11/2023	3	2497855	Spring ST	9:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	27/11/2023	3	2597390	Niagara CRES	21:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	27/11/2023	3	2600904	Edmonton AVE	12:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	29/11/2023	3	2608056	Alfred ST	16:44	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV, dig up and repair
Onehunga	4/12/2023	3	2507800	Gilletta RD	12:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, dig up and repair
Onehunga	10/12/2023	3	2483136	Goodall ST	12:00	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			Dig up and repair
Onehunga	14/12/2023	3	2498909	Erson AVE	14:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	17/12/2023	3	2404019	Lynbrooke AVE	17:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	23/12/2023	3	2596779	Hoskins AVE	9:07	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	27/12/2023	3	2602910	Forbes ST	17:51	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	3/01/2024	3	81003907	Te Marama RD	14:02	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Onehunga	8/01/2024	3	2589301	Te Marama RD	15:45	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut, repaired line
Onehunga	11/01/2024	3	2497822	Houpara ST	7:35	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Onehunga	11/01/2024	3	2499642	Tawhiri RD	19:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	13/01/2024	3	2484552	Pallister DR	14:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	17/01/2024	3	2449230	Alfred ST	14:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	20/01/2024	3	2606135	Griffen Park RD	20:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	24/01/2024	3	2494670	Rowe ST	13:39	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	28/01/2024	3	2596447	Goodall ST	7:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Onehunga	30/01/2024	3	2499772	Hardington ST	20:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	30/01/2024	3	2603322	Heretaunga AVE	19:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	30/01/2024	3	2611510	Manukau RD	17:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	31/01/2024	3	2612310	Oranga AVE	12:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, sucker truck, removed fat
Onehunga	4/02/2024	3	2602901	Arapuni AVE	20:07	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0	Unblocked line
Onehunga	5/02/2024	3	2609255	Onehunga MALL	22:56	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Onehunga	6/02/2024	3	2452031	Mays RD	12:28	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Onehunga	6/02/2024	3	2609255	Onehunga MALL	19:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	8/02/2024	3	2456608	Atarangi RD	17:53	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	11/02/2024	3	2495510	Alfred ST	11:13	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Onehunga	13/02/2024	3	2495508	Alfred ST	8:52	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	13/02/2024	3	2609255	Onehunga MALL	10:56	n/a	Unknown	Yes	On property	L2	Local	SW network	no	no	yes	no			Sucker truck
Onehunga	14/02/2024	3	2492965	Mays RD	19:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	14/02/2024	3	2602858	Namata RD	8:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	17/02/2024	3	2496284	Cameron ST	15:51	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags + fat
Onehunga	20/02/2024	3	2497076	Crown ST	12:12	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV

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Onehunga	28/02/2024	3	2492380	Campbell RD	13:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Onehunga	29/02/2024	3	2600463	Seacliffe RD	11:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	1/03/2024	3	2596771	Halsey DR	11:38	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			heavy flush and clean to remove metal
Onehunga	1/03/2024	3	2483276	Lynfield PL	16:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Onehunga	10/03/2024	3	2602274	Captain Springs RD	7:26	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired MH
Onehunga	12/03/2024	3	2497157	Victoria ST	16:03	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	12/03/2024	3	2509381	Onehunga MALL	13:56	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Onehunga	13/03/2024	3	2604855	Bishop ST	19:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	14/03/2024	3	2608647	Hendry AVE	7:13	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			repair break
Onehunga	18/03/2024	3	2498059	Mays RD	15:09	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Roots removed
Onehunga	18/03/2024	3	2600694	Orsova PL	11:50	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	19/03/2024	3	2602918	Wanganella PL	10:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	19/03/2024	3	2489244	Flavia PL	13:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	20/03/2024	3	2488750	Orsova PL	10:31	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	20/03/2024	3	2496284	Cameron ST	18:47	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	20/03/2024	3	2595390	Frederick ST	10:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	21/03/2024	3	2608647	Hendry AVE	14:40	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, repaired line
Onehunga	22/03/2024	3	2608056	Alfred ST	16:13	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			dig up & repair
Onehunga	26/03/2024	3	2495842	Tawa RD	9:14	n/a	Silts	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Onehunga	28/03/2024	3	2493888	Orsova PL	18:02	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV
Onehunga	28/03/2024	3	2608647	Hendry AVE	16:16	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			
Onehunga	2/04/2024	3	2504649	Golf RD	12:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, root cut
Onehunga	3/04/2024	3	2602176	Gorrie AVE	15:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	6/04/2024	3	2499763	Onehunga MALL	9:10	n/a	Unknown	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	7/04/2024	3	2488616	Aldersgate RD	13:15	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	7/04/2024	3	2610143	Buckley RD	9:37	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	8/04/2024	3	2497567	Pah RD	14:53	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	9/04/2024	3	2483057	Saran PL	8:26	n/a	Roots	No	On property	L2	Local	Beach	yes	no	no	yes		1	Flushed line
Onehunga	10/04/2024	3	2610328	Bel Air DR	16:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	10/04/2024	3	2509381	Onehunga MALL	9:50	n/a	Unknown	Yes	On property	L3	Local	SW network	no	no	yes	no		5	Flushed line
Onehunga	15/04/2024	3	2494778	Mount Smart RD	9:59	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, CCTv
Onehunga	18/04/2024	3	2449467	Rockfield RD	17:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	23/04/2024	3	2611251	Pah RD	10:21	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	24/04/2024	3	2509381	Onehunga MALL	16:45	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	28/04/2024	3	2596771	Halsey DR	11:12	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat, CCTV, planned repairs
Onehunga	30/04/2024	3	2404358	Titahi ST	11:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	2/05/2024	3	2510165	Rangipawa RD	8:21	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	3/05/2024	3	2508863	Nolan RD	10:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Onehunga	4/05/2024	3	2615817	Waitangi RD	7:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	5/05/2024	3	2496284	Cameron ST	15:17	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	5/05/2024	3	2596042	George Laurenson LN	17:44	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	9/05/2024	3	2497822	Oranga AVE	11:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Onehunga	9/05/2024	3	2495911	Budock RD	14:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	9/05/2024	3	2404737	Captain Springs RD	13:28	n/a	Unknown	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no		1	Job assumed there was no OF despite a call from council and a 1ppm ammonia reading
Onehunga	10/05/2024	3	2399615	Rowan RD	14:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Onehunga	13/05/2024	3	2496456	Moata RD	13:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	14/05/2024	3	2611251	Pah RD	18:14	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	17/05/2024	3	2495217	Cardwell ST	16:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	18/05/2024	3	2604855	Bishop ST	15:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	23/05/2024	3	2493810	Seacliffe RD	7:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Onehunga	24/05/2024	3	2607811	Olive RD	15:30	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
Onehunga	25/05/2024	3	2598361	Athenic AVE	13:25	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			
Onehunga	30/05/2024	3	2604901	Normans Hill RD	20:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	30/05/2024	3	2606162	Neilson ST	16:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	2/06/2024	3	2601337	Hardington ST	10:48	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Onehunga	3/06/2024	3	2605495	Trafalgar ST	17:14	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			CCTV, repaired line
Onehunga	3/06/2024	3	2600503	Seacliffe RD	16:05	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Onehunga	4/06/2024	3	2611758	Selwyn ST	11:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	6/06/2024	3	2614355	Seacliffe RD	15:27	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	7/06/2024	3	2606922	Waitangi RD	16:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	8/06/2024	3	2617045	Selwyn RD	19:20	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	9/06/2024	3	2481503	Gilletta RD	17:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	9/06/2024	3	2617045	Selwyn RD	16:23	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired IP
Onehunga	13/06/2024	3	2604901	Normans Hill RD	11:18	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	18/06/2024	3	2495709	Curzon ST	11:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	19/06/2024	3	2495299	Mays RD	15:06	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	22/06/2024	3	2593231	Athenic AVE	11:07	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	25/06/2024	3	2499774	Mount Smart RD	10:32	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	25/06/2024	3	2604848	Hillsborough RD	7:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	27/06/2024	3	2552343	Queenstown RD	11:10	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	27/06/2024	3	2614635	Pah RD	14:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	29/06/2024	3	81000261	Princes ST	15:00	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	29/06/2024	3	2617045	Selwyn RD	16:54	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalate for CCTV + root cut
Mangere	1/07/2023	3	2578334	Coronation RD	15:26	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	3/07/2023	3	2572193	Bader DR	14:16	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Mangere	4/07/2023	3	2468727	Rymer PL	19:06	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Sucker truck, flushed line

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Mangere	9/07/2023	3	2570398	Ferguson ST	7:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	10/07/2023	3	2476611	Wellesley RD	10:56	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	11/07/2023	3	2573320	Ashcroft AVE	16:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Mangere	16/07/2023	3	2474520	Dewhurst PL	10:40	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	18/07/2023	3	2579319	McKenzie RD	8:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	23/07/2023	3	2468107	Kiwi ESP	10:19	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	23/07/2023	3	2574598	Derrett PL	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	27/07/2023	3	2572182	Buckland RD	17:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	30/07/2023	3	2474520	Dewhurst PL	15:23	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	31/07/2023	3	2594151	Opawa CRES	9:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Mangere	31/07/2023	3	2572182	Buckland RD	8:30	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	2/08/2023	3	2572182	Buckland RD	16:27	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	3/08/2023	3	2474642	Walmsley RD	21:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + rags
Mangere	3/08/2023	3	2400643	Great South RD	14:22	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	4/08/2023	3	2579360	Mahunga DR	17:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	6/08/2023	3	2468720	Tanners RD	9:04	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, set up bypass pump
Mangere	10/08/2023	3	2572534	Chelburn CRES	14:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	11/08/2023	3	2572498	Tennessee AVE	14:51	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Mangere	11/08/2023	3	2579317	Bentley RD	10:01	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	11/08/2023	3	2476615	Tanners RD	20:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Installed/restored pump
Mangere	13/08/2023	3	2572498	Tennessee AVE	11:09	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Mangere	19/08/2023	3	2586118	Coronation RD	10:05	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	24/08/2023	3	2401012	Queen ST	18:27	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
Mangere	9/09/2023	3	2590635	Tilberg ST	13:13	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	12/09/2023	3	2579855	Clyro PL	20:48	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	13/09/2023	3	2578425	Aintree AVE	16:03	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed rags
Mangere	14/09/2023	3	2465832	Court Town CL	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Mangere	15/09/2023	3	2473048	James Fletcher DR	8:59	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	20/09/2023	3	2471178	Ferguson ST	8:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Mangere	23/09/2023	3	2574824	Favona RD	12:42	n/a	Foreign Object	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, removed rocks
Mangere	2/10/2023	3	2464317	Forbes RD	14:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	3/10/2023	3	2570364	Garus AVE	21:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	3/10/2023	3	2574824	Favona RD	12:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Mangere	4/10/2023	3	2577584	Ferguson ST	9:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	6/10/2023	3	2608424	Great South RD	9:54	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed concrete/rocks, dig up and repair
Mangere	9/10/2023	3	2591440	Amelia Earhart AVE	17:35	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Mangere	13/10/2023	3	2579746	Royton AVE	8:44	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	13/10/2023	3	2586311	Royalpark PL	18:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	16/10/2023	3	2399095	Great South RD	12:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, root cut

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Mangere	17/10/2023	3	2563388	Te Tiki RD	9:55	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	20/10/2023	3	2579746	Royton AVE	20:01	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Mangere	24/10/2023	3	2579746	Royton AVE	9:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	28/10/2023	3	2580391	Massey RD	10:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	2/11/2023	3	2574596	Crawford AVE	21:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	5/11/2023	3	2574596	Crawford AVE	8:48	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Heavy flush, CCTV
Mangere	10/11/2023	3	2479406	Royton AVE	19:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	10/11/2023	3	2466001	Norton PL	19:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	11/11/2023	3	2470741	Duggan AVE	15:33	n/a	3rd party damage	Yes	Construction site	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	14/11/2023	3	2466425	Bader DR	17:24	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed rocks
Mangere	15/11/2023	3	2585579	Coptic PL	20:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	16/11/2023	3	2577768	Paine PL	12:05	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Mangere	17/11/2023	3	2563388	Te Tiki RD	15:33	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	21/11/2023	3	2574822	Forbes RD	18:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	30/11/2023	3	2463529	Beach RD	8:22	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, sucker truck
Mangere	30/11/2023	3	2400187	Penrose RD	7:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	5/12/2023	3	2472372	Chelburn CRES	12:00	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	14/12/2023	3	2463529	Beach RD	8:57	n/a	3rd party damage	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Planned repairs
Mangere	16/12/2023	3	2473453	Nevis PL	18:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	17/12/2023	3	2467596	Gadsby RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	17/12/2023	3	2467623	Gadsby RD	11:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	17/12/2023	3	2576798	McKinstry AVE	13:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	17/12/2023	3	2579205	McNaughton AVE	11:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	22/12/2023	3	2471047	Gadsby RD	15:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	10/01/2024	3	2571939	Masters PL	14:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	12/01/2024	3	2512084	Commissariat RD	9:29	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line, CCTV
Mangere	16/01/2024	3	2484021	Tussock AVE	18:44	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Mangere	17/01/2024	3	2475531	Aintree AVE	17:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	20/01/2024	3	2581733	Toatoa PL	12:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	20/01/2024	3	2494113	Fort Richard RD	16:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	22/01/2024	3	2464753	Miller RD	3:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	23/01/2024	3	2605876	Bell AVE	7:10	n/a	Foreign Object	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rocks
Mangere	27/01/2024	3	2463559	Tennessee AVE	10:31	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots + fat
Mangere	4/02/2024	3	2572132	Norana AVE	20:10	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	12/02/2024	3	2463560	Savill DR	10:55	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	15/02/2024	3	2579364	Chine PL	17:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, unblocked line
Mangere	15/02/2024	3	2612418	Bell AVE	17:42	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
Mangere	19/02/2024	3	2612418	Bell AVE	7:37	n/a	Foreign Object	Yes	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed concrete

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Mangere	20/02/2024	3	2605828	Station RD	9:15	n/a	Unknown	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			Unblocked line
Mangere	24/02/2024	3	2469286	Waterview RD	18:42	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Mangere	28/02/2024	3	2489172	Ferguson ST	12:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	1/03/2024	3	2493486	Victoria ST	13:58	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line, CCTV recommended
Mangere	2/03/2024	3	2579746	Chalfont ST	9:54	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	10/03/2024	3	2576250	Rush PL	10:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	18/03/2024	3	2468071	Mona AVE	10:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Mangere	20/03/2024	3	2472176	Kaka ST	14:45	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	21/03/2024	3	2617625	Lockhart PL	6:49	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	25/03/2024	3	2476611	Wellesley RD	11:39	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			dig up & repair
Mangere	29/03/2024	3	2583530	Miller RD	10:29	n/a	Rubbish	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Mangere	31/03/2024	3	2400038	Penrose RD	21:45	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			dig up, CCTV
Mangere	3/04/2024	3	2467173	Chalfont ST	18:47	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	5/04/2024	3	2469299	Ascot RD	20:56	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Sucker truck
Mangere	5/04/2024	3	2467173	Chalfont ST	12:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	6/04/2024	3	2569740	Favona RD	13:38	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	7/04/2024	3	2476611	Wellesley RD	18:55	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Planned repair
Mangere	8/04/2024	3	2580424	Dewhurst PL	13:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	15/04/2024	3	2579855	Clyro PL	15:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	21/04/2024	3	2569807	Ferguson ST	19:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	24/04/2024	3	2475537	Ashmore PL	17:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	30/04/2024	3	2400251	Portman RD	6:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	2/05/2024	3	2400251	Portman RD	6:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	3/05/2024	3	2465995	Canning CRES	11:09	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	3/05/2024	3	2475203	Waterlea AVE	17:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Mangere	4/05/2024	3	2476615	Whai Hua LN	12:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	9/05/2024	3	81183289	Kaihua TCE	12:01	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	18/05/2024	3	2612666	Weka ST	12:32	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV - unsure if line actually broken
Mangere	18/05/2024	3	2590635	Tilberg ST	19:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	18/05/2024	3	2473051	Vine ST	12:47	n/a	Rags	No	Inside property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	18/05/2024	3	2475776	Deborah PL	10:32	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, sucker truck
Mangere	22/05/2024	3	2469192	Windrush CL	9:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	23/05/2024	3	2512084	Commissariat RD	14:55	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no		1	
Mangere	27/05/2024	3	2603230	Nikau RD	12:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	28/05/2024	3	2615991	Wellesley RD	10:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Mangere	1/06/2024	3	2473490	Brigade RD	7:46	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	1/06/2024	3	2577648	Tranent RD	17:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	2/06/2024	3	2603007	McGee ST	13:12	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	4/06/2024	3	2480447	Ascot RD	10:26	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Mangere	7/06/2024	3	2580402	Forbes RD	17:46	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			

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Mangere	11/06/2024	3	2472176	Kaka ST	9:41	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, new WO for CCTV
Mangere	11/06/2024	3	2582916	Blake RD	8:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Mangere	16/06/2024	3	2580594	Miller RD	17:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	20/06/2024	3	2468671	Ascot RD	9:19	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	22/06/2024	3	2577766	Calthorp CL	12:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	24/06/2024	3	2608290	Niall Burgess RD	20:34	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Root removal, flush line
Mangere	27/06/2024	3	2476611	Wellesley RD	12:12	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	1/07/2023	2	188	6 Concord Place	20:25	340	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	2/07/2023	3	2601652	Line RD	13:53	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	3/07/2023	3	2574165	Pakuranga RD	11:11	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck
Lower Tamaki River	7/07/2023	3	81156400	Potiki PL	16:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Lower Tamaki River	10/07/2023	3	2558543	Morrin RD	15:49	n/a	Foreign Object	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	10/07/2023	3	2600764	Riddell RD	14:09	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Lower Tamaki River	13/07/2023	3	2488932	West Tamaki RD	16:38	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	14/07/2023	3	2598667	Riddell RD	12:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	18/07/2023	3	2601088	Erima AVE	8:52	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	18/07/2023	3	2600841	Line RD	11:45	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat
Lower Tamaki River	18/07/2023	3	2486191	Waddell AVE	23:00	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	18/07/2023	3	2617592	Ireland RD	10:15	n/a	Foreign Object	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	25/07/2023	3	2490450	Caulton ST	9:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Lower Tamaki River	30/07/2023	3	2491500	West Tamaki RD	14:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Lower Tamaki River	31/07/2023	3	2595664	Lush AVE	15:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Lower Tamaki River	1/08/2023	3	2599529	Elstree AVE	10:01	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	3/08/2023	3	2595664	Lush AVE	14:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	4/08/2023	3	2487641	Howard Hunter AVE	10:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	8/08/2023	3	2587321	Riki RD	11:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Lower Tamaki River	11/08/2023	3	2483371	Felton Mathew AVE	16:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	12/08/2023	3	2483189	Waddell AVE	17:37	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/08/2023	3	2595847	Sloane ST	18:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Lower Tamaki River	15/08/2023	3	2489356	Benghazi RD	9:05	n/a	Broken pipe	No	On property	L3	Local	Estuary	yes	no	no	no		6	Flushed line, CCTV, planned repairs
Lower Tamaki River	17/08/2023	3	2571966	Fisher PDE	11:17	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed fiberglass
Lower Tamaki River	19/08/2023	3	2579370	Argo DR	17:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	19/08/2023	3	2593271	Line RD	16:57	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	19/08/2023	3	2407129	Kauriki TCE	7:23	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0.25	Unblocked line
Lower Tamaki River	20/08/2023	2	188	6 Concord Place	0:45	1440	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	21/08/2023	3	2600601	Abingdon PL	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	22/08/2023	3	2489356	Benghazi RD	11:58	n/a	Unknown	No	On property	L2	Local	Beach	yes	no	no	yes		0.25	Flushed line
Lower Tamaki River	26/08/2023	3	2602800	Simmonds LN	8:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	27/08/2023	3	2456408	Pigeon Mountain RD	18:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	31/08/2023	3	2491414	Elstree AVE	12:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	7/09/2023	2	188	6 Concord Place	13:30	170	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	8/09/2023	3	2599529	Elstree AVE	20:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	8/09/2023	3	2499837	Tidey RD	9:55	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no		0	Unblocked line
Lower Tamaki River	11/09/2023	2	188	6 Concord Place	16:20	520	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	13/09/2023	3	2600601	Abingdon PL	13:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, removed roots, CCTV
Lower Tamaki River	13/09/2023	3	2600812	Holland AVE	15:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	14/09/2023	3	2490429	Waddell AVE	7:20	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck
Lower Tamaki River	16/09/2023	3	2481955	Roberta AVE	14:17	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Lower Tamaki River	17/09/2023	3	2569075	Anna Watson RD	14:33	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Removed plywood from MH
Lower Tamaki River	17/09/2023	3	2599242	Kildare AVE	14:04	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	17/09/2023	3	2596172	Castledine CRES	12:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	19/09/2023	3	2466165	Cornelian CRES	9:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Lower Tamaki River	20/09/2023	3	2593919	Queens RD	9:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Lower Tamaki River	22/09/2023	3	2570042	The Parade	21:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	23/09/2023	3	2490707	Cintra PL	10:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	30/09/2023	2	188	6 Concord Place	9:30	30	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		

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Lower Tamaki River	5/10/2023	3	2612409	Ireland RD	11:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fats
Lower Tamaki River	7/10/2023	2	188	6 Concord Place	15:00	20	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	11/10/2023	3	2563759	Clovelly RD	19:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Lower Tamaki River	11/10/2023	3	2593267	Paddington ST	8:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Ublocked line
Lower Tamaki River	12/10/2023	3	2463623	Thurston PL	13:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	15/10/2023	3	2574750	Tamaki Bay DR	22:33	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	16/10/2023	3	2469891	Browns AVE	12:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	17/10/2023	3	2483181	Paddington ST	11:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Lower Tamaki River	19/10/2023	3	2574750	Tamaki Bay DR	9:19	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			remove rocks
Lower Tamaki River	24/10/2023	3	2493266	Erima AVE	13:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	26/10/2023	3	2601031	Emerson ST	8:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	28/10/2023	3	2590959	Mansfield ST	19:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	29/10/2023	3	2597108	Ashby AVE	11:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	2/11/2023	3	2595571	Whitehaven RD	13:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	2/11/2023	3	2485515	Whitehaven RD	8:46	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, CCTV, planned repairs
Lower Tamaki River	3/11/2023	2	188	6 Concord Place	8:00	760	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	6/11/2023	3	2603040	Mount Wellington HWY	10:40	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Yet to determine if private
Lower Tamaki River	7/11/2023	3	2509127	Elstree AVE	10:27	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/11/2023	3	2583023	Ara Tai	17:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	17/11/2023	3	2615224	Pleasant View RD	17:46	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	22/11/2023	3	2599270	Line RD	8:09	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Lower Tamaki River	25/11/2023	3	2462906	Wells RD	9:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	26/11/2023	3	2497405	Lagoon DR	9:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned root cut
Lower Tamaki River	2/12/2023	3	2490037	Pembroke CRES	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	4/12/2023	3	2596186	College HL	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Lower Tamaki River	5/12/2023	3	2617389	Kawiti AVE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	7/12/2023	3	2593271	Line RD	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Lower Tamaki River	8/12/2023	3	2573183	Sunderlands RD	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	17/12/2023	3	2492077	Roberta AVE	9:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	22/12/2023	3	2600807	Lisburn AVE	9:43	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, repaired line
Lower Tamaki River	22/12/2023	3	2492146	Kesteven AVE	10:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	24/12/2023	2	188	6 Concord Place	19:00	30	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	31/12/2023	2	188	6 Concord Place	21:55	90	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	4/01/2024	3	2482062	Vista CRES	11:30	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	10/01/2024	3	2604037	Maybury ST	12:51	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	11/01/2024	3	2402703	Fynes AVE	10:50	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	11/01/2024	3	2603395	Riddell RD	12:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	12/01/2024	3	2487796	Riddell RD	10:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	13/01/2024	3	2490107	Castledine CRES	16:34	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/01/2024	3	2593208	Riverview RD	16:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/01/2024	3	2570497	Venus PL	13:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	14/01/2024	3	2598920	Jefferson ST	13:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Lower Tamaki River	16/01/2024	3	2598951	Maskell ST	16:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, root cut
Lower Tamaki River	17/01/2024	3	2488117	Strong ST	20:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, sucker truck
Lower Tamaki River	19/01/2024	3	2590124	Strong ST	10:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Lower Tamaki River	21/01/2024	3	2459077	Lynton RD	18:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	21/01/2024	3	2610789	Domain RD	11:57	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	23/01/2024	3	2470701	Manor PK	16:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	26/01/2024	3	2485200	West Tamaki RD	14:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	26/01/2024	3	2593975	West Tamaki RD	11:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	28/01/2024	3	2483067	Farringdon ST	6:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	30/01/2024	3	2492668	Riddell RD	11:58	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Dig up and repair
Lower Tamaki River	6/02/2024	3	2593271	Line RD	13:13	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	6/02/2024	3	2455183	Musick Point RD	9:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots

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Lower Tamaki River	11/02/2024	3	2399494	Glendowie RD	12:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	11/02/2024	3	2493291	Caulton ST	17:30	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	12/02/2024	3	2600806	West Tamaki RD	12:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/02/2024	3	2574186	Takutai AVE	21:35	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, sucker truck
Lower Tamaki River	13/02/2024	3	2462738	Tamaki Bay DR	11:27	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			PS issue fixed so no longer backing up
Lower Tamaki River	13/02/2024	3	2596996	West Tamaki RD	14:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/02/2024	3	2596996	West Tamaki RD	21:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Planned CCTV
Lower Tamaki River	15/02/2024	3	2482624	Anderson AVE	11:09	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	16/02/2024	3	2600794	Riddell RD	7:30	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			pipe bolts tightened
Lower Tamaki River	16/02/2024	3	2466636	Tamaki Bay DR	7:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	20/02/2024	3	2487310	Simkin AVE	17:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	24/02/2024	3	2611127	Jellicoe RD	10:43	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	3/03/2024	2	188	6 Concord Place	12:20	30	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	4/03/2024	2	188	6 Concord Place	14:50	160	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	6/03/2024	3	2484531	St Heliers Bay RD	16:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	7/03/2024	3	2597162	Morrin RD	7:34	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, dig up and repair, CCTV
Lower Tamaki River	7/03/2024	3	2594378	Lunn AVE	12:05	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Lower Tamaki River	7/03/2024	3	2399359	Lavas PL	21:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	7/03/2024	3	2595826	Silverton AVE	18:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	8/03/2024	3	2401935	Apirana AVE	9:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Lower Tamaki River	9/03/2024	3	2589032	Cranbrook PL	17:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	16/03/2024	3	2460731	Venus PL	14:17	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	17/03/2024	3	2568243	Bramley DR	13:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Lower Tamaki River	17/03/2024	3	2610931	Lagoon DR	10:30	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	18/03/2024	3	2597698	Forfar RD	12:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	19/03/2024	3	2595566	St Heliers Bay RD	7:05	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	20/03/2024	3	2574380	Estelle PL	8:24	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Lower Tamaki River	23/03/2024	2	188	6 Concord Place	19:25	70	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	25/03/2024	3	2487384	Bromley PL	19:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Lower Tamaki River	27/03/2024	3	2482317	Carnarvon AVE	16:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Lower Tamaki River	28/03/2024	3	81006215	Wendover RD	7:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Lower Tamaki River	30/03/2024	3	2560760	Morrow AVE	11:32	n/a	Rags	No	Car park	L1	Local	n/a	yes	no	no	no			
Lower Tamaki River	1/04/2024	3	2485814	Kinsale AVE	12:23	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Lower Tamaki River	2/04/2024	3	2593271	Line RD	19:01	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	2/04/2024	3	2469967	Kerswill PL	12:48	n/a	Unknown	No	On property	L3	Local	SW network	no	no	yes	no		6	Flushed line, CCTV
Lower Tamaki River	4/04/2024	3	2597631	Evesham AVE	13:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line, recommend CCTV
Lower Tamaki River	8/04/2024	3	2399236	Ireland RD	8:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	8/04/2024	3	2598999	Line RD	18:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	9/04/2024	3	2483371	Felton Mathew AVE	7:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fats
Lower Tamaki River	9/04/2024	3	2593271	Line RD	14:46	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	11/04/2024	3	2598259	Swainston RD	13:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	15/04/2024	3	2481955	Roberta AVE	11:01	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	22/04/2024	3	2479943	Riddell RD	20:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblcoked line
Lower Tamaki River	23/04/2024	3	2487119	Tripoli RD	13:11	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Lower Tamaki River	23/04/2024	3	2479934	Torino ST	10:41	n/a	Fat	No	On property	L3	Local	Stream	no	yes	no	no		3	Flushed line
Lower Tamaki River	24/04/2024	3	2595565	West Tamaki RD	20:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	27/04/2024	3	2504866	Mount Wellington HWY	12:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	29/04/2024	3	2578825	Manor PK	10:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	30/04/2024	3	2596917	Line RD	10:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	4/05/2024	3	2508601	Barbarich DR	15:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	8/05/2024	3	2923969	Castledine CRES	13:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	13/05/2024	3	2502883	Peterson RD	8:57	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags
Lower Tamaki River	14/05/2024	3	2484817	Vanessa CRES	16:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, root cut, heavy flush
Lower Tamaki River	14/05/2024	3	2597108	Ashby AVE	16:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, escalated to engineer

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Lower Tamaki River	17/05/2024	3	2402973	Esperance RD	11:12	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	17/05/2024	3	2482507	Tripoli RD	18:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, notes taken from WO# 25993596
Lower Tamaki River	18/05/2024	3	2461705	Thurston PL	14:38	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, repairs in progress
Lower Tamaki River	20/05/2024	3	2595847	Sloane ST	11:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Lower Tamaki River	22/05/2024	3	2481462	Vista CRES	14:21	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck
Lower Tamaki River	28/05/2024	2	188	6 Concord Place	19:55	110	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	28/05/2024	3	2508372	Cranbrook PL	9:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Lower Tamaki River	31/05/2024	3	2588491	Roberta AVE	15:30	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	1/06/2024	3	2579126	Bramley DR	16:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	1/06/2024	3	2597630	Riddell RD	9:47	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no		1	flushed line
Lower Tamaki River	3/06/2024	3	2484268	Tripoli RD	10:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	4/06/2024	3	2605314	Higgs RD	9:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, removed roots
Lower Tamaki River	4/06/2024	3	2595414	Hannigan DR	8:09	n/a	Unknown	No	Retail/ commercial/ public	L3	Local	SW network	yes	no	yes	no		3	Flushed line, CCTV
Lower Tamaki River	6/06/2024	3	2452878	Merton RD	15:41	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots + fat
Lower Tamaki River	7/06/2024	3	2463462	Kaniere PL	7:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	9/06/2024	2	188	6 Concord Place	19:50	380	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	9/06/2024	3	2479928	Point England RD	15:33	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Back flushed line
Lower Tamaki River	13/06/2024	3	2593842	Taniwha ST	9:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	15/06/2024	3	2467139	Majesty PL	11:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, roots removed
Lower Tamaki River	16/06/2024	2	188	6 Concord Place	20:30	950	Unknown	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	18/06/2024	3	2478791	Mareth ST	19:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Lower Tamaki River	19/06/2024	3	2598471	Washington AVE	13:45	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, owner to fix
Lower Tamaki River	19/06/2024	3	2614374	Clifton CT	14:43	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Lower Tamaki River	22/06/2024	3	2489229	Roberta AVE	11:07	n/a	Rags	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Lower Tamaki River	24/06/2024	3	2488933	Taniwha ST	22:06	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	25/06/2024	3	2605525	Mount Wellington HWY	15:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	25/06/2024	3	2608861	Penrose RD	10:45	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			

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Lower Tamaki River	26/06/2024	3	2402312	Scoria CRES	11:00	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		1	Sucker truck
Lower Tamaki River	27/06/2024	3	82270289	Tobruk RD	21:46	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	27/06/2024	3	2563734	Castledine CRES	12:38	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0.25	Removed roots, flushed line & cesspit
Lower Tamaki River	30/06/2024	3	2498377	Domain RD	10:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	1/07/2023	3	2499509	Frank Grey PL	14:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	1/07/2023	3	2579404	Calvert AVE	9:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed fat
Upper Tamaki River	1/07/2023	3	2579404	Calvert AVE	13:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/07/2023	3	81001057	Hillside RD	15:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/07/2023	3	2560287	Lisnoble RD	20:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/07/2023	3	2581753	Cooper CRES	14:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/07/2023	3	2572209	Bleakhouse RD	13:56	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Repaired pipe
Upper Tamaki River	4/07/2023	3	2580868	Kudu RD	17:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	5/07/2023	3	2399437	Harwood RD	21:18	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	5/07/2023	3	2472549	Gilbert RD	8:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	7/07/2023	3	2581068	Beechdale CRES	8:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	8/07/2023	3	81001094	Commissariat RD	13:02	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Upper Tamaki River	9/07/2023	3	2579012	East Tamaki RD	9:01	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	10/07/2023	3	2473302	Berrett PL	10:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	14/07/2023	3	2468796	Ennis AVE	20:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/07/2023	3	2473101	Bruce PL	15:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/07/2023	3	2472549	Gilbert RD	9:08	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, dig up and repair
Upper Tamaki River	17/07/2023	3	2613749	Allright PL	10:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter, removed roots
Upper Tamaki River	17/07/2023	3	2472452	Dingwall PL	17:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	17/07/2023	3	2478373	Michael Jones DR	18:10	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	19/07/2023	3	2578236	Williams CRES	10:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			CCTV, heavy flush
Upper Tamaki River	19/07/2023	3	2498039	Pacific RISE	14:20	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/07/2023	3	2498490	Ngaio ST	12:25	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush

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Upper Tamaki River	20/07/2023	3	2578828	Greenhill CRES	14:21	n/a	Foreign Object	No	Construction site	L1	Local	n/a	no	no	no	no			CCTV, flushed line, removed concrete
Upper Tamaki River	22/07/2023	3	2612194	Rodney ST	12:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Upper Tamaki River	22/07/2023	3	2460849	Minaret DR	13:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	23/07/2023	3	2578379	Barrie AVE	7:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/07/2023	3	2588560	Avis AVE	9:03	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks, sucker truck
Upper Tamaki River	25/07/2023	3	2586524	Torrens RD	19:44	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	25/07/2023	3	2462821	Alexander CRES	16:54	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	28/07/2023	3	2508558	Banks RD	9:01	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	28/07/2023	3	2580931	Stellamaris WAY	19:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	29/07/2023	3	2571271	Kautami AVE	18:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/07/2023	3	2583275	Avis AVE	15:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Upper Tamaki River	29/07/2023	3	2458775	Whitford RD	12:36	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	29/07/2023	3	2508558	Banks RD	12:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Refuled pump
Upper Tamaki River	1/08/2023	3	2581653	Edgewater DR	15:37	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/08/2023	3	2467612	Sheralee PL	12:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/08/2023	3	2569929	Pakuranga RD	14:32	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rocks
Upper Tamaki River	3/08/2023	3	2460262	Beechdale CRES	7:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/08/2023	3	2467187	Pauline PL	18:25	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no		0.25	Flushed line
Upper Tamaki River	7/08/2023	3	2571868	East Tamaki RD	14:50	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired pipe
Upper Tamaki River	7/08/2023	3	2573595	Rangitoto RD	16:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots, repaired minor line damage
Upper Tamaki River	7/08/2023	3	2572562	Otara RD	11:23	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Upper Tamaki River	7/08/2023	3	2504955	Hutton ST	10:41	n/a	Rags	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line, root cutter
Upper Tamaki River	12/08/2023	3	2570857	Opal AVE	11:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/08/2023	3	2499029	Water ST	11:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	16/08/2023	3	2498485	Trenwith ST	8:21	n/a	Silts	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, removed silts+fats
Upper Tamaki River	18/08/2023	3	2472499	King ST	7:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Upper Tamaki River	21/08/2023	3	2480016	Lynn PL	10:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	21/08/2023	3	2571321	Jade AVE	8:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/08/2023	3	2399354	Alcock ST	9:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	23/08/2023	3	2462564	East Tamaki RD	11:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	23/08/2023	3	2499029	Water ST	13:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	24/08/2023	3	2577595	Ayrshire PL	14:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	27/08/2023	3	2578665	Newry CL	10:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned root removal
Upper Tamaki River	29/08/2023	3	2570101	Bucklands Beach RD	12:58	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, replaced MH lid
Upper Tamaki River	30/08/2023	3	2468906	Firth CRES	18:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	31/08/2023	3	2578379	Barrie AVE	12:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	31/08/2023	3	2606196	Panama RD	12:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	1/09/2023	3	2610361	Matahae DR	8:09	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	2/09/2023	3	2466973	Travers PL	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	2/09/2023	3	2573271	Carey PL	10:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/09/2023	3	2592701	Kelvin Hart DR	16:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/09/2023	3	2606196	Panama RD	10:24	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed plastic
Upper Tamaki River	4/09/2023	3	2570431	Bolina CRES	19:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	4/09/2023	3	2466843	Millhouse DR	13:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	7/09/2023	3	2569035	Cantora AVE	20:05	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	8/09/2023	3	2457006	Murvale DR	18:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, CCTV
Upper Tamaki River	8/09/2023	3	2569703	Aviemore DR	8:19	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	8/09/2023	3	2556053	Gracechurch DR	7:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	9/09/2023	3	2569929	Pakuranga RD	13:09	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	9/09/2023	3	2579796	East Tamaki RD	10:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	10/09/2023	3	2469532	Stonex RD	11:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	11/09/2023	3	2458668	Mirrabooka AVE	11:59	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Line repaired
Upper Tamaki River	11/09/2023	3	2400323	Gavin ST	9:26	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV, dig up and repair

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Upper Tamaki River	13/09/2023	3	2473627	Ashlynne AVE	17:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/09/2023	3	2580149	Wedgwood AVE	9:51	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	13/09/2023	3	2572213	Hedge ROW	20:47	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rags
Upper Tamaki River	13/09/2023	3	2470459	Great South RD	7:36	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	14/09/2023	3	2613576	Botany RD	19:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/09/2023	3	2472694	St George ST	12:41	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/09/2023	3	2573093	Earlsworth RD	10:33	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/09/2023	3	2399087	Marua RD	12:47	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed building materials, fat + rubbish
Upper Tamaki River	16/09/2023	3	2449977	Lane Cameron PL	16:07	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	16/09/2023	3	2606310	Melody LN	12:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Upper Tamaki River	17/09/2023	3	2467576	Tomintoul PL	17:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	17/09/2023	3	2606250	Panama RD	9:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	18/09/2023	3	2504709	Banks RD	13:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/09/2023	3	2459878	Keppoch CT	8:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Tamaki River	19/09/2023	3	2602386	Panama RD	10:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/09/2023	3	2608426	Rutland RD	10:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	22/09/2023	3	2563438	Highbrook DR	12:12	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	22/09/2023	3	2400692	Luke ST	12:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTv
Upper Tamaki River	23/09/2023	3	2570150	Howe ST	16:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	26/09/2023	3	2609007	Fencible PL	14:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	27/09/2023	3	2470352	Bairds RD	10:45	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	29/09/2023	3	2581106	Halcyon PL	18:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	30/09/2023	3	2498754	Melody LN	13:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/10/2023	3	2575509	Earlsworth RD	13:51	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	3/10/2023	3	2459205	Cairngorm PL	12:22	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unbocked line
Upper Tamaki River	3/10/2023	3	2576706	Del Mar CT	10:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Upper Tamaki River	3/10/2023	3	2583748	Shrule PL	8:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Tamaki River	3/10/2023	3	2608426	Rutland RD	16:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	4/10/2023	3	2581070	Gossamer DR	12:31	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed concrete
Upper Tamaki River	5/10/2023	3	2467515	Minaret DR	20:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Tamaki River	5/10/2023	3	2456433	Ballyholey DR	8:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	5/10/2023	3	2482081	Barrie AVE	18:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/10/2023	3	2578774	Ennis AVE	18:27	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	8/10/2023	3	2494102	Avenue RD	12:59	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	9/10/2023	3	2581653	Edgewater DR	22:07	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	9/10/2023	3	2474673	Simmental CRES	12:01	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	10/10/2023	3	2483416	Kolmar RD	13:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	11/10/2023	3	2461983	Ashton AVE	20:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	11/10/2023	3	2583286	Huia RD	15:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/10/2023	3	2556816	Bowden RD	17:26	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			DSSP1 - Sylvia Park Rising Main1
Upper Tamaki River	13/10/2023	3	2499509	Frank Grey PL	9:25	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks + rags
Upper Tamaki River	13/10/2023	3	2461379	Dromora CL	10:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	13/10/2023	3	2460348	Ti Rakau DR	18:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/10/2023	3	DSSP1	Sylvia Park Rising Main 1	12:00		Broken pipe	no		L1	Transm.	n/a	No	no	no	no	no		
Upper Tamaki River	15/10/2023	3	2465015	Middlefield DR	16:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	16/10/2023	3	2606196	Panama RD	12:31	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	18/10/2023	3	2466019	Highland Park DR	7:01	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned dig up and repair
Upper Tamaki River	18/10/2023	3	2570499	Pakuranga RD	8:33	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	19/10/2023	3	2574219	Everitt RD	13:34	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Tamaki River	19/10/2023	3	2460849	Minaret DR	23:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	20/10/2023	3	2610139	Convoy LN	19:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/10/2023	3	2481917	Triumph RD	19:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	21/10/2023	3	2586524	Torrens RD	14:56	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	26/10/2023	3	2465937	Cascades RD	16:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Upper Tamaki River	27/10/2023	3	2495455	Panama RD	16:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Upper Tamaki River	28/10/2023	3	2464222	Station RD	16:12	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/10/2023	3	2580613	Windoma CIR	21:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	30/10/2023	3	2470347	Capstick RD	20:11	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	1/11/2023	3	2568910	Darren CRES	9:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	2/11/2023	3	2479698	Greenstone PL	20:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	4/11/2023	3	2478518	Amon AVE	11:42	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Upper Tamaki River	4/11/2023	3	2608807	McManus PL	11:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/11/2023	3	2479106	Glanmire PL	10:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	7/11/2023	3	2467880	Woolfield RD	9:47	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	7/11/2023	3	2459207	Casuarina RD	16:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	10/11/2023	3	2399348	Panorama RD	21:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	10/11/2023	3	2400425	Harmony AVE	19:13	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	10/11/2023	3	2469410	Miramar PL	19:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	10/11/2023	3	2507973	Church ST	11:35	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed rags
Upper Tamaki River	10/11/2023	3	2464196	Desmond PL	13:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	12/11/2023	3	2556449	Greenan DR	7:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/11/2023	3	2575049	Preston RD	23:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	16/11/2023	3	2571712	Mirrabooka AVE	16:59	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks
Upper Tamaki River	17/11/2023	3	2570143	Davington WAY	9:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	23/11/2023	3	2495951	Neretva AVE	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/11/2023	3	2573041	Serenity PL	16:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/11/2023	3	2614408	Bean PL	12:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	26/11/2023	3	2472448	Kolmar RD	9:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	27/11/2023	3	2464010	Williams CRES	11:23	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, ongoing investigation
Upper Tamaki River	27/11/2023	3	197545	Mount Wellington HWY	8:55	n/a	Broken pipe	No	Retail/ commercial/ public	L3	Local	SW network	yes	no	yes	no			DSSP1 - Sylvia Park Rising Main1

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Upper Tamaki River	27/11/2023	3	DSSP1	Sylvia Park Rising Main 1	12:00	0	Broken pipe	no	Silvia Park Rising Main appears to be leaking underground and flowing into stormwater drain. Job has been escalated to transmission network. DWO has also been relayed to drainage on teams. Attached are images of sewage coming through the ground and flowing along the curb into stormwater cesspit.	L3	Transm.	SW network	No	no	Yes	no	no		
Upper Tamaki River	28/11/2023	3	2401000	Bean PL	9:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	28/11/2023	3	2495940	Fencible PL	9:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/11/2023	3	2459998	Ti Rakau DR	11:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	30/11/2023	3	2572835	Aviemore DR	17:34	n/a	Fat	No	Road/ footpath	L2	Local	Stream	yes	yes	no	no		2	Unblocked line
Upper Tamaki River	3/12/2023	3	2475130	Aviemore DR	12:00	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line - PS issue?
Upper Tamaki River	7/12/2023	3	2578565	Pakuranga RD	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Upper Tamaki River	7/12/2023	3	2578379	Barrie AVE	12:00	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			root removal
Upper Tamaki River	8/12/2023	3	2569019	Vincent ST	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Upper Tamaki River	8/12/2023	3	2467404	Sentosa PL	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Upper Tamaki River	9/12/2023	3	2458860	Golfland DR	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	11/12/2023	3	2585854	Pakuranga RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	11/12/2023	3	2475130	Aviemore DR	12:00	n/a	Fat	Yes	Retail/ commercial/ public	L3	Local	Stream	yes	yes	no	no		6	Flushed line
Upper Tamaki River	13/12/2023	3	2571712	Mirrabooka AVE	12:00	n/a	Silts	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, CCTV
Upper Tamaki River	13/12/2023	3	2570904	Lappington RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	13/12/2023	3	2587197	Cratloe LN	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	14/12/2023	3	2581751	Hamill RD	6:03	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/12/2023	3	2571712	Mirrabooka AVE	6:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/12/2023	3	2460118	Tarnica RD	19:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/12/2023	3	2572213	Hedge ROW	19:17	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/12/2023	3	2574241	Mirrabooka AVE	17:03	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/12/2023	3	2581790	Woolfield RD	14:49	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/12/2023	3	2475130	Aviemore DR	6:17	n/a	Rubbish	Yes	Retail/ commercial/ public	L2	Local	stream	yes	yes	no	no		0.5	flushed line

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Upper Tamaki River	19/12/2023	3	2570203	Ridge RD	16:10	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	19/12/2023	3	2575877	Hamill RD	0:31	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/12/2023	3	2463592	The Link	20:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	21/12/2023	3	2470347	Capstick RD	19:06	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/12/2023	3	2498407	Mataroa RD	17:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/12/2023	3	2463885	Willoughby AVE	12:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/12/2023	3	2498407	Mataroa RD	15:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	24/12/2023	3	2575335	Latham AVE	15:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	28/12/2023	3	2399222	Ellerslie-Panmure HWY	14:13	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, root cut
Upper Tamaki River	31/12/2023	3	2468245	Te Irirangi DR	9:14	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	31/12/2023	3	2573689	Archmillen AVE	10:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	3/01/2024	3	2477273	Kanturk CL	13:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	6/01/2024	3	2579109	Athenry PL	13:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	7/01/2024	3	2559769	Esperanto RD	1:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	7/01/2024	3	2502751	Hillside RD	20:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	8/01/2024	3	2599721	Jack Browne PL	18:51	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	10/01/2024	3	2611963	Hutton ST	7:57	n/a	Silts	No	On property	L2	Local	Stream	no	yes	no	no		0.5	Unblocked line
Upper Tamaki River	11/01/2024	3	2613166	Hope Farm AVE	19:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	12/01/2024	3	2601953	Parry RD	21:55	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	13/01/2024	3	2470946	Great South RD	15:04	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	15/01/2024	3	2479154	Siedeberg DR	15:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	16/01/2024	3	2464111	Tumbridge PL	17:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	17/01/2024	3	2474041	Troon PL	9:04	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	18/01/2024	3	2574241	Mirrabooka AVE	21:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	20/01/2024	3	2495768	Convoy LN	12:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/01/2024	3	2579675	Preston RD	*20:56*	*n/a*	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	24/01/2024	3	2462404	Chapel RD	21:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Tamaki River	25/01/2024	3	2610426	Chesley PL	19:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/01/2024	3	2479871	Cyril French DR	17:13	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	26/01/2024	3	2568617	Ross AVE	9:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/01/2024	3	2465648	Cornwall RD	13:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblcoked line, replaced MH lid
Upper Tamaki River	26/01/2024	3	2473880	Dissmeyer DR	12:13	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	27/01/2024	3	2495768	Convoy LN	22:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	27/01/2024	3	2570203	Ridge RD	22:31	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots
Upper Tamaki River	27/01/2024	3	2499897	Deas PL	12:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	28/01/2024	3	2576032	Sandrine AVE	12:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	30/01/2024	3	2477344	Kestev DR	6:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, replaced MH lid
Upper Tamaki River	30/01/2024	3	2478846	Kaseng PL	8:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, resealed MH
Upper Tamaki River	30/01/2024	3	2462566	Bairds RD	9:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	31/01/2024	3	2570129	Annmarie AVE	8:52	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	1/02/2024	3	2587477	Woolfield RD	16:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/02/2024	3	2482108	Flat Bush School RD	10:19	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	3/02/2024	3	2562823	Paparoa RD	17:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	6/02/2024	3	2471945	Nier PL	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/02/2024	3	2586377	Kelvin Hart DR	10:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/02/2024	3	2590424	Kelvin Hart DR	21:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/02/2024	3	2468057	Chapel RD	18:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	8/02/2024	3	2463841	Kolmar RD	9:16	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Upper Tamaki River	9/02/2024	3	2592152	Great South RD	19:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	9/02/2024	3	2471732	McLean AVE	9:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	9/02/2024	3	2482829	Serenity PL	14:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	9/02/2024	3	2572460	Norrie Smith AVE	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	10/02/2024	3	2400271	Hamlin RD	11:47	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair
Upper Tamaki River	11/02/2024	3	2465070	Firth CRES	23:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Tamaki River	12/02/2024	3	2468631	Neales RD	10:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	13/02/2024	3	2468269	Neales RD	6:11	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	13/02/2024	3	2471822	John Broad PL	13:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	14/02/2024	3	2473292	Omagh AVE	16:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/02/2024	3	2604303	Ruawai RD	15:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fats
Upper Tamaki River	15/02/2024	3	2585618	Aaronville WAY	8:03	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Upper Tamaki River	16/02/2024	3	2607646	Princes ST-E	20:05	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Upper Tamaki River	19/02/2024	3	2582713	Eric Baker PL	23:19	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	20/02/2024	3	2612194	Rodney ST	11:15	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Dig up and repair
Upper Tamaki River	20/02/2024	3	2498749	Princes ST-E	17:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	23/02/2024	3	2591817	Pukekiwiriki PL	18:06	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Upper Tamaki River	26/02/2024	3	2470921	Moyrus CRES	12:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/02/2024	3	2470261	Glenside AVE	9:52	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	28/02/2024	3	2473403	Landon AVE	7:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	28/02/2024	3	2473846	Rotoma RISE	18:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Upper Tamaki River	28/02/2024	3	2576513	Valnera CL	15:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Tamaki River	29/02/2024	3	2581751	Hamill RD	18:54	n/a	Rubbish	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	1/03/2024	3	2470299	Kilkenny DR	19:17	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/03/2024	3	2588709	Wintere RD	14:55	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line, removed rags
Upper Tamaki River	3/03/2024	3	2573797	Aylesbury ST	14:02	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			heavy flush
Upper Tamaki River	4/03/2024	3	2470921	Newbliss CRES	12:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Tamaki River	5/03/2024	3	2460978	Larne AVE	18:04	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, rehaunch MH
Upper Tamaki River	6/03/2024	3	2458200	Chesley PL	19:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	8/03/2024	3	2570148	Glennandrew DR	18:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			fluished line
Upper Tamaki River	8/03/2024	3	2585306	Bowmore CL	12:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	9/03/2024	3	2578182	Gills RD	14:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	10/03/2024	3	2579240	Lovegrove CRES	6:39	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line

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Upper Tamaki River	12/03/2024	2	1549	14 McLean Ave	13:10	180	Unknown	yes	Troon Creek		Transm.	Small Waterway		yes		no	yes		
Upper Tamaki River	12/03/2024	3	2472170	Tindall CRES	7:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	12/03/2024	3	2578182	Gills RD	9:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/03/2024	3	2470503	Ennis AVE	2:55	n/a	Fat	No	Construction site	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	13/03/2024	3	2568550	Julian PL	15:43	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Upper Tamaki River	15/03/2024	3	2474465	Dalcross DR	19:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/03/2024	3	2475278	Middlemore CRES	20:13	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/03/2024	3	2510098	Mount Wellington HWY	14:30	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Upper Tamaki River	16/03/2024	3	2473403	Landon AVE	14:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	16/03/2024	3	2499509	Frank Grey PL	9:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/03/2024	2	1549	14 McLean Ave	12:10	270	Unknown	yes	Troon Creek		Transm.	Small Waterway		yes		no	yes		
Upper Tamaki River	17/03/2024	3	2463450	Archmillen AVE	9:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/03/2024	3	2570203	Ridge RD	10:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	19/03/2024	3	2601793	Albert ST	11:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/03/2024	3	2612565	Marendellas DR	13:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	20/03/2024	3	2572712	Jennifer PL	10:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	21/03/2024	3	2586377	Kelvin Hart DR	22:11	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/03/2024	3	2463257	Great South RD	9:29	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Tamaki River	26/03/2024	3	2571574	Hamill RD	15:27	n/a	Rags	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
Upper Tamaki River	27/03/2024	3	2507973	Church ST	9:56	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			plunged gully, removed pencils
Upper Tamaki River	28/03/2024	3	2570203	Ridge RD	13:46	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			dig up & repair
Upper Tamaki River	1/04/2024	3	2574957	Calvert AVE	20:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/04/2024	3	2570222	Beechdale CRES	11:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root removal
Upper Tamaki River	2/04/2024	3	2459303	Gossamer DR	8:13	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		1	CCTV, dig up and repair
Upper Tamaki River	3/04/2024	3	2471489	Mulroy PL	7:12	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/04/2024	3	2499029	Water ST	10:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/04/2024	3	2470401	East Tamaki RD	15:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Upper Tamaki River	4/04/2024	3	2575863	East Tamaki RD	16:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	4/04/2024	3	2581663	Nola CRES	21:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/04/2024	3	2399569	Motu PL	14:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	4/04/2024	3	2564375	Church ST	11:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	7/04/2024	3	2566817	Hedge ROW	19:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/04/2024	3	2577997	Collett RD	17:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	15/04/2024	3	2581106	Halcyon PL	2:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	15/04/2024	3	2457547	Windsong CT	17:00	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Upper Tamaki River	16/04/2024	3	2460879	Ridge RD	13:57	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	16/04/2024	3	2466441	Orinda CL	7:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	18/04/2024	3	2462992	Ashton AVE	17:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed fat
Upper Tamaki River	18/04/2024	3	2474071	Laidlaw WAY	11:28	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Upper Tamaki River	21/04/2024	3	2458576	Gillett PL	15:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	22/04/2024	3	2583971	Lochinver RD	17:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	22/04/2024	3	2460014	Pakuranga RD	13:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	23/04/2024	3	2599712	Albert ST	17:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/04/2024	3	2463869	Sheralee PL	9:58	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/04/2024	3	2579795	Fisher CRES	18:28	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	25/04/2024	3	2571632	Ennis AVE	9:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	25/04/2024	3	2470207	Glencullen PL	10:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	25/04/2024	3	2470347	Capstick RD	12:22	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/04/2024	3	2475960	Campile CL	16:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	26/04/2024	3	2582756	Ulay PL	23:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	27/04/2024	3	2499941	Keate PL	15:43	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Upper Tamaki River	27/04/2024	3	2458100	Stanniland ST	13:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	28/04/2024	3	81002690	Ellerslie-Panmure HWY	17:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Tamaki River	28/04/2024	3	2468079	Ennis AVE	17:37	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Tamaki River	28/04/2024	3	2567141	Jay CT	14:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/04/2024	3	2574164	Pakuranga RD	19:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	30/04/2024	3	2570494	Tullis PL	16:06	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Replaced MH
Upper Tamaki River	1/05/2024	3	2400204	Ellerslie-Panmure HWY	8:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/05/2024	3	2470347	Capstick RD	11:22	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/05/2024	3	2564375	Church ST	9:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/05/2024	3	2599712	Albert ST	9:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	3/05/2024	3	2462866	Capstick RD	8:26	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/05/2024	3	2566055	Jandell CRES	12:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	4/05/2024	3	2576114	Bells RD	17:52	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Upper Tamaki River	4/05/2024	3	2575540	Tralee TCE	15:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	4/05/2024	3	2570499	Pakuranga RD	9:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	5/05/2024	3	2569157	Sandra AVE	21:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	5/05/2024	3	2461297	Fintona PL	20:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots + fat
Upper Tamaki River	5/05/2024	3	2575630	La Trobe ST	16:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	6/05/2024	3	2399383	Main Highway	14:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Upper Tamaki River	6/05/2024	3	2471401	Capstick RD	11:28	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	8/05/2024	3	2498094	Alana PL	9:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	9/05/2024	3	2486650	Kerrykeel DR	19:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	10/05/2024	3	2486650	Kerrykeel DR	17:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	11/05/2024	3	2466509	Hamill RD	15:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	11/05/2024	3	2464245	Reelick AVE	13:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	11/05/2024	3	2568500	Jandell CRES	11:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	11/05/2024	3	2572409	La Trobe ST	11:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/05/2024	3	2566199	Waikaremoana PL	10:23	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Dig up and repair
Upper Tamaki River	13/05/2024	3	2587324	Teelin PL	14:24	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	18/05/2024	3	2571306	Malvina PL	9:03	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut

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Upper Tamaki River	19/05/2024	3	2498407	Mataroa RD	16:08	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/05/2024	3	2464404	Zelda AVE	13:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	20/05/2024	3	2584431	Velvet CRES	15:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	20/05/2024	3	2468695	Santa Ana DR	14:25	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	20/05/2024	3	2575576	Hamill RD	8:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/05/2024	3	2482108	Flat Bush School RD	17:36	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	22/05/2024	3	2472513	Alexander CRES	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/05/2024	3	2464051	Glenmore RD	9:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/05/2024	3	2608228	Panama RD	10:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/05/2024	3	2498487	Parry RD	15:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	25/05/2024	3	2572495	Bairds RD	12:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/05/2024	3	2575591	Udys RD	13:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	27/05/2024	3	2498487	Parry RD	11:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	28/05/2024	3	2497990	Fisher CRES	13:45	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	30/05/2024	3	2474284	Earlsworth RD	22:14	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	31/05/2024	3	2562628	Panama RD	10:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	1/06/2024	3	2465269	Massey RD	13:15	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Upper Tamaki River	1/06/2024	3	2586809	Coachman DR	17:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	2/06/2024	3	2578379	Barrie AVE	9:52	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line - job connected to WO# 26034330
Upper Tamaki River	3/06/2024	3	2460978	Larne AVE	11:43	n/a	Rubbish	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/06/2024	3	2479520	Seton PL	11:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	3/06/2024	3	2587477	Woolfield RD	7:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/06/2024	3	2464245	Reelick AVE	16:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/06/2024	3	2591077	Raphoe RD	7:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	4/06/2024	3	2578199	Ennis AVE	11:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/06/2024	3	2470834	Troon PL	19:03	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	7/06/2024	3	2476907	Baverstock RD	8:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Tamaki River	7/06/2024	3	82506452	Gossamer DR	18:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fat
Upper Tamaki River	8/06/2024	3	2460836	Driscoll PL	12:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	8/06/2024	3	2458632	Cambric PL	12:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	8/06/2024	3	2460291	Ennis AVE	8:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	9/06/2024	3	2399893	Carrs PL	17:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, dye test
Upper Tamaki River	11/06/2024	3	2459149	Malvina PL	10:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	11/06/2024	3	2568216	Wood AVE	8:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	12/06/2024	3	2583971	Lochinver RD	18:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	12/06/2024	3	2602380	Atkinson AVE	13:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	12/06/2024	3	2575034	Pamir RD	14:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	13/06/2024	3	2465420	Coronation RD	17:14	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	13/06/2024	3	2466119	Lochinver RD	15:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	16/06/2024	3	2510114	Cracroft ST	12:50	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned repairs
Upper Tamaki River	18/06/2024	3	2485153	Meadowland DR	16:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	19/06/2024	3	2455729	Aviemore DR	18:01	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/06/2024	3	2467089	Ridge RD	21:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, roots removed
Upper Tamaki River	20/06/2024	3	2569946	Hakinakina DR	15:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/06/2024	3	2618044	Ellerslie-Panmure HWY	10:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/06/2024	3	81015758	Princes ST	11:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/06/2024	3	2477983	Dawson RD	9:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/06/2024	3	2569946	Hakinakina DR	10:50	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired pipe
Upper Tamaki River	26/06/2024	3	2474284	Earlsworth RD	10:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/06/2024	3	2583467	Brosna PL	12:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/06/2024	3	2588910	Ballybay RD	20:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	27/06/2024	3	2463450	Archmillen AVE	15:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Upper Tamaki River	27/06/2024	3	2574164	Pakuranga RD	16:31	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	27/06/2024	3	2578379	Barrie AVE	11:02	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Upper Tamaki River	28/06/2024	3	81001094	Commissariat RD	11:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	28/06/2024	3	2468503	Coubray PL	8:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/06/2024	3	2572911	Penrose RD	13:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	7/07/2023	3	2566450	John Gill RD	20:47	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Sucker truck, unblocked line
Cockle Bay	19/08/2023	3	2567528	Pah RD	16:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cockle Bay	15/09/2023	3	2461393	Uxbridge RD	10:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Cockle Bay	1/10/2023	3	2579646	Oliver RD	17:32	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Cockle Bay	12/10/2023	3	2457791	Selwyn RD	17:16	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		0	Repaired line
Cockle Bay	22/10/2023	3	2594723	The Esplanade	15:52	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Cockle Bay	30/10/2023	3	2456120	Charles Dickens DR	9:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	2/11/2023	3	2567308	Sunnyview AVE	21:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Cockle Bay	4/11/2023	3	2457708	Sandspit RD	15:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	11/11/2023	3	2456578	Selwyn RD	12:36	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			land slip - escalated to engineers
Cockle Bay	25/11/2023	3	2455132	Sandspit RD	11:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	29/11/2023	3	2455116	Pah RD	19:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cockle Bay	30/11/2023	3	2570261	Pohutukawa AVE	9:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	5/12/2023	3	2461877	Somerville RD	12:00	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rock
Cockle Bay	5/12/2023	3	2562866	Pohutukawa AVE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	14/12/2023	3	2570842	Jolyn PL	16:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Cockle Bay	19/12/2023	3	2454647	Pohutukawa AVE	18:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	18/01/2024	3	2483411	Selwyn RD	12:32	n/a	Broken pipe	No	On property	L2	Local	Beach	yes	no	no	yes			Repaired previously
Cockle Bay	24/01/2024	3	2567360	Sunnyview AVE	17:54	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots
Cockle Bay	31/01/2024	3	2571689	Copperfield TCE	10:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, replaced MH lid
Cockle Bay	6/02/2024	3	2567360	Sunnyview AVE	8:40	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cockle Bay	16/02/2024	3	2564303	Sunnyview AVE	11:23	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Removed roots
Cockle Bay	7/03/2024	3	2464473	Evelyn RD	10:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Cockle Bay	8/03/2024	3	2456456	Moore ST	22:34	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Cockle Bay	25/03/2024	3	2570004	Marine PDE	20:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			heavy flush
Cockle Bay	1/04/2024	3	2569490	Uxbridge RD	12:57	n/a	Fat	No	On property	L3	Local	Beach	yes	no	no	no		0.5	Flushed line
Cockle Bay	15/04/2024	3	2560156	Alexander ST	13:34	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, planned dig up
Cockle Bay	15/04/2024	3	2560156	Alexander ST	16:15	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	18/04/2024	3	2465874	Bucklands Beach RD	15:49	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	21/04/2024	3	2560156	Alexander ST	13:37	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cockle Bay	29/04/2024	3	2455785	Jern PL	21:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	1/05/2024	3	2454871	John Gill RD	16:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	10/05/2024	3	2562561	Pah RD	10:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	17/05/2024	3	2457223	Cheriton RD	19:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	22/05/2024	3	2563134	Uxbridge RD	15:01	n/a	Unknown	No	On property	L2	Local	Beach	yes	no	no	yes		0.5	Flushed line

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Cockle Bay	23/05/2024	3	2457146	Evelyn RD	12:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	23/05/2024	3	2461393	Uxbridge RD	1:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	31/05/2024	3	2464421	Montgomery CRES	12:57	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cockle Bay	31/05/2024	3	2560156	Alexander ST	16:48	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cockle Bay	5/06/2024	3	2464421	Montgomery CRES	11:16	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			
Cockle Bay	7/06/2024	3	2571596	Towbridge PL	13:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	8/06/2024	3	2564902	Lastel PL	8:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Cockle Bay	16/06/2024	3	2464469	Evelyn RD	11:04	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cockle Bay	16/06/2024	3	2576545	Clovelly RD	10:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	4/07/2023	3	2587757	Great South RD	17:54	n/a	3rd party damage	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Repaired pipe, removed asphlat
Puhinui	5/07/2023	3	2578683	Mahon PL	16:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	7/07/2023	3	2470674	Leith CT	16:59	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	8/07/2023	3	2582641	Keri Anne PL	11:10	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	28/07/2023	3	2566142	Pah RD	11:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	30/07/2023	3	2579149	Rowandale AVE	9:08	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	1/08/2023	3	2569647	Gifford RD	9:49	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	4/08/2023	3	2578712	Great South RD	14:50	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	5/08/2023	3	2578712	Great South RD	10:25	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	19/08/2023	3	2586752	Saybrook PL	11:06	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, sucker truck, removed roots + fats
Puhinui	26/08/2023	3	2470792	Maplesden DR	12:35	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed PVC pieces
Puhinui	28/08/2023	3	2568551	Great South RD	17:21	n/a	Roots	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Roots removed
Puhinui	1/09/2023	3	2584215	Pallant ST	18:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	2/09/2023	3	2558577	Elizabeth AVE	15:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	3/09/2023	3	2481233	Ryan PL	16:03	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	4/09/2023	3	2467222	Silkwood GRV	15:34	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, removed rags, planned works
Puhinui	4/09/2023	3	2581416	Hooker PL	13:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	4/09/2023	3	2587991	Wyllie RD	16:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	8/09/2023	3	2473238	Brunswick RISE	15:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, raised MH
Puhinui	9/09/2023	3	2581348	Iorangi PL	10:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	10/09/2023	3	2581348	Iorangi PL	11:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots
Puhinui	10/09/2023	3	2477878	De Havilland DR	20:06	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Puhinui	11/09/2023	2	1535	145-147 Wyllie Road	16:25	20	Unknown	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	11/09/2023	3	2480738	Palmers RD	12:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	21/09/2023	3	2585072	Massey RD	10:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	29/09/2023	3	2473350	Puhinui RD	9:50	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line
Puhinui	1/10/2023	3	2473835	Kirklow PL	14:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	3/10/2023	3	2591439	Crossandra DR	13:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			root removal
Puhinui	9/10/2023	3	2470572	Wairere RD	19:05	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	9/10/2023	3	2475433	Figtree TCE	8:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, raised MH
Puhinui	10/10/2023	3	2488061	Finlayson AVE	17:14	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush

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Puhinui	15/10/2023	3	2569647	Gifford RD	14:08	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	15/10/2023	3	2471531	Iona PL	19:54	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	17/10/2023	3	2471531	Iona PL	9:42	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	19/10/2023	3	2577555	Burbank AVE	17:44	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Puhinui	20/10/2023	3	2470671	Maplesden DR	6:22	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	20/10/2023	3	2470792	Maplesden DR	18:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Puhinui	22/10/2023	3	2579149	Rowandale AVE	19:42	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH
Puhinui	23/10/2023	3	2469505	Burbank AVE	10:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	25/10/2023	3	2468351	Cavendish DR	16:26	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, resealed MH
Puhinui	6/11/2023	3	2471531	Iona PL	10:30	n/a	Rags	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Puhinui	7/11/2023	3	2471221	Skipton ST	13:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	11/11/2023	3	2585289	Larkspur CT	11:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	12/11/2023	3	2578028	Charles Prevost DR	16:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	16/11/2023	3	2589437	Skipton ST	17:38	n/a	Broken pipe	No	On property	L3	Local	SW network	no	no	yes	no		3	Unbocked line
Puhinui	17/11/2023	3	2615582	Noel Burnside RD	17:09	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	22/11/2023	3	2569647	Gifford RD	14:16	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Puhinui	25/11/2023	3	2587467	Maplesden DR	11:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	26/11/2023	3	2477519	Blackgate PL	12:51	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	26/11/2023	3	2480738	Palmers RD	14:34	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed dropper
Puhinui	28/11/2023	3	2469505	Burbank AVE	11:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	1/12/2023	3	2586768	Malaspina PL	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	4/12/2023	3	2481237	Lakewood CT	12:00	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	8/12/2023	3	2471565	Aronia WAY	12:00	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	9/12/2023	3	2579129	Banyan DR	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Puhinui	11/12/2023	3	2572521	Henwood RD	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Puhinui	17/12/2023	3	2583705	Vista PL	9:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Puhinui	19/12/2023	3	2590742	Puhinui RD	14:31	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned dig up and repair
Puhinui	22/12/2023	3	2478635	McGreal PL	14:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	23/12/2023	3	2586768	Malaspina PL	14:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	27/12/2023	3	2587467	Maplesden DR	10:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	28/12/2023	3	2486238	Marwan CRES	12:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed fat
Puhinui	2/01/2024	3	2478635	McGreal PL	13:27	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Puhinui	4/01/2024	3	2476249	Burrell AVE	9:34	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Puhinui	8/01/2024	3	2586904	Myna PL	11:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	11/01/2024	2	1535	145-147 Wyllie Road	6:55	70	Unknown	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	18/01/2024	3	2472149	Great South RD	7:40	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Puhinui	18/01/2024	3	2579149	Rowandale AVE	14:59	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	18/01/2024	3	2581501	Everglade DR	13:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Puhinui	22/01/2024	3	2579149	Rowandale AVE	8:23	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV, repaired MH
Puhinui	23/01/2024	3	2466764	Grande Vue RD	20:19	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Puhinui	24/01/2024	3	2589243	Kumar PL	12:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Puhinui	26/01/2024	3	2485750	Kerrs RD	10:21	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	30/01/2024	2	1535	145-147 Wyllie Road	10:30	50	Unknown	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	30/01/2024	3	2464530	Deering PL	10:13	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rocks
Puhinui	30/01/2024	3	2579149	Rowandale AVE	16:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	7/02/2024	3	2469825	Spruce PL	13:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Puhinui	11/02/2024	3	2580486	Everglade DR	21:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Puhinui	12/02/2024	3	2471531	Iona PL	10:59	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	14/02/2024	3	2473470	Kingsclere PL	16:21	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	19/02/2024	3	2463432	Millennium PL	13:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	23/02/2024	3	2473751	Orams RD	18:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed fat
Puhinui	1/03/2024	3	2473346	Trevor Hosken DR	18:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	4/03/2024	3	2569647	Gifford RD	9:32	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	7/03/2024	3	2466071	Banyan DR	12:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	8/03/2024	3	2570213	Pah RD	23:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Puhinui	11/03/2024	3	2466071	Banyan DR	8:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	14/03/2024	3	2563333	Plumley CRES	6:28	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	16/03/2024	3	2473278	Gibbons RD	15:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	18/03/2024	3	2478307	Grayson AVE	13:36	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	18/03/2024	3	2572521	Henwood RD	9:59	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Puhinui	19/03/2024	3	2582738	Gladding PL	14:37	n/a	Broken pipe	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Puhinui	19/03/2024	3	2474183	Brouder PL	11:10	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	4/04/2024	3	2585720	Adams RD	11:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Puhinui	8/04/2024	3	2472786	York RD	6:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	8/04/2024	3	2470135	York RD	11:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Puhinui	8/04/2024	3	2489135	Dalgety DR	15:29	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, Flushed line, CCTV
Puhinui	8/04/2024	3	2580876	Browns RD	17:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	8/04/2024	3	2585748	Russell RD	15:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	13/04/2024	3	2482911	Adel PL	12:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	24/04/2024	2	1535	145-147 Wyllie Road	21:00	20	Unknown	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	24/04/2024	3	2476787	Wiri Station RD	11:16	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Sucker truck
Puhinui	27/04/2024	3	2586025	Osterley WAY	12:33	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Removed roots
Puhinui	1/05/2024	3	2578320	Gladding PL	10:26	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	2/05/2024	3	2470515	David AVE	13:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	3/05/2024	3	2581636	Maich RD	9:21	n/a	Rubbish	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line, sucker truck, removed rubbish + silts
Puhinui	9/05/2024	3	2577555	Arnwood ST	13:57	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed concrete, CCTV, sucker truck
Puhinui	9/05/2024	3	2471133	Richard RD	7:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	10/05/2024	3	2477519	Blackgate PL	17:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	12/05/2024	3	2468517	Cramond DR	10:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	13/05/2024	3	2481172	Frederick Reece DR	18:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	14/05/2024	3	2482948	Burbank AVE	6:48	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Puhinui	17/05/2024	3	2476416	Osterley WAY	17:15	n/a	Fat	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	22/05/2024	3	2482948	Burbank AVE	8:43	n/a	Rags	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, CCTV
Puhinui	24/05/2024	3	2574939	Woburn ST	10:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	24/05/2024	3	2578756	Raglan ST	16:47	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	27/05/2024	3	2581970	Great South RD	3:43	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	29/05/2024	3	2587762	Cavendish DR	9:18	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Puhinui	1/06/2024	3	2466919	St George ST	11:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	1/06/2024	3	2580300	Carruth RD	23:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	5/06/2024	3	2576635	Eloise PL	11:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	5/06/2024	3	2477557	Adel PL	7:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	7/06/2024	3	2582641	Keri Anne PL	16:47	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	11/06/2024	3	2578320	Gladding PL	15:11	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	12/06/2024	3	2487443	Burbank AVE	12:56	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	12/06/2024	3	2462269	Golden Arches PL	9:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	19/06/2024	3	2466764	Grande Vue RD	11:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	19/06/2024	3	2471536	Birdwood AVE	17:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	21/06/2024	3	2570717	Hillside RD	16:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Puhinui	22/06/2024	3	2589907	Mt Lebanon CRES	15:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	24/06/2024	3	2460718	Ferndown AVE	17:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	26/06/2024	3	2489129	Begonia PL	9:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Puhinui	27/06/2024	3	2584564	Norman Spencer DR	2:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	28/06/2024	3	2573323	Buckland RD	14:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	29/06/2024	3	2585102	Landscape RD	9:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Pahurehure Inlet	1/07/2023	3	2584448	John Walker DR	10:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Pahurehure Inlet	5/07/2023	3	2472638	Leaver PL	18:46	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Pahurehure Inlet	5/07/2023	3	2480568	Estuary RD	17:27	n/a	Rags	No	On property	L2	Local	Estuary	yes	no	no	yes			Flushed line
Pahurehure Inlet	10/07/2023	3	81146005	John Main DR	16:57	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, removed rocks from pit
Pahurehure Inlet	15/07/2023	3	2577789	Albertson PL	15:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	15/07/2023	3	81145957	John Main DR	9:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored pit valve
Pahurehure Inlet	16/07/2023	3	82512186	Komako LN	14:00	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Repaired line
Pahurehure Inlet	17/07/2023	3	82512186	Komako LN	11:18	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, repaied line, escalated to engineer
Pahurehure Inlet	19/07/2023	3	2581355	Mordane PL	8:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	19/07/2023	3	2474742	Saints CT	14:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	19/07/2023	3	2579354	Alfriston RD	11:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	23/07/2023	3	81145844	Sierra WAY	8:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored pump
Pahurehure Inlet	25/07/2023	3	2478639	Jellicoe RD	8:47	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	25/07/2023	3	2478172	Lothian BRAE	12:42	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pahurehure Inlet	25/07/2023	3	81145820	Roslyn Farm ST	10:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored valve
Pahurehure Inlet	1/08/2023	3	2584016	Becker DR	16:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	3/08/2023	3	2470053	Coxhead RD	7:39	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	4/08/2023	3	2583839	Kohiwi RD	11:30	n/a	fat	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			Flushed line

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Pahurehure Inlet	9/08/2023	3	2585314	Alfriston RD	9:13	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Pahurehure Inlet	11/08/2023	3	2475756	Weymouth RD	14:38	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pahurehure Inlet	14/08/2023	3	2482806	Croftview RD	16:02	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + roots
Pahurehure Inlet	16/08/2023	3	2475756	Weymouth RD	12:15	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, planned repairs
Pahurehure Inlet	19/08/2023	3	2586355	Shifnal DR	6:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	22/08/2023	3	2478996	Kay RD	11:31	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed toys + rags
Pahurehure Inlet	23/08/2023	3	2476025	Gloucester RD	10:49	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, repaired line
Pahurehure Inlet	28/08/2023	3	2475199	Lucas PL	17:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	30/08/2023	3	2471848	Te Wiata PL	8:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	1/09/2023	3	2575793	Great South RD	15:40	n/a	fat	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	4/09/2023	3	2591931	Stratford RD	9:17	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, resealed MH
Pahurehure Inlet	10/09/2023	3	2476502	Clark ST	18:51	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	11/09/2023	3	2585913	Secretariat PL	7:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pahurehure Inlet	17/09/2023	3	2579609	Scenic DR	13:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	19/09/2023	3	2473963	Kirton CRES	16:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	20/09/2023	3	2470053	Coxhead RD	6:53	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Pahurehure Inlet	27/09/2023	3	2471463	Christmas RD	10:25	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	6/10/2023	3	2467325	Melleray PL	7:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	9/10/2023	3	2472336	Saints CRT	8:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	16/10/2023	3	2470173	Leaver PL	17:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	19/10/2023	3	2581766	Thompson TCE	9:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Pahurehure Inlet	22/10/2023	3	2550086	Station RD	21:22	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags
Pahurehure Inlet	25/10/2023	3	2473963	Kirton CRES	6:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	26/10/2023	3	2479156	Kent RD	9:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	27/10/2023	3	2478929	Astor PL	13:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	1/11/2023	3	2588226	Kirton CRES	12:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed rags
Pahurehure Inlet	1/11/2023	3	2467278	Bowater PL	19:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	7/11/2023	3	2616461	Sturdee RD	11:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Pahurehure Inlet	22/11/2023	3	2484059	Ironstone PL	10:12	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags, replaced MH lid
Pahurehure Inlet	26/11/2023	3	2589441	Friedlanders RD	20:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	28/11/2023	3	2467720	Weymouth RD	21:31	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pahurehure Inlet	30/11/2023	3	2579817	Mahia RD	15:12	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pahurehure Inlet	2/12/2023	3	2581480	Eddowes ST	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	4/12/2023	3	2478924	Mahia RD	12:00	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Pahurehure Inlet	12/12/2023	3	2580369	Ocean View RD	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, replaced MH lid
Pahurehure Inlet	12/12/2023	3	2587667	Mahia RD	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	15/12/2023	3	2579698	Sharland AVE	20:11	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	19/12/2023	3	2470523	McDougall ST	14:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	27/12/2023	3	2483098	Stratford RD	14:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Pahurehure Inlet	28/12/2023	3	2591931	Stratford RD	10:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Pahurehure Inlet	31/12/2023	3	2589675	Kuurae CRES	16:56	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Pahurehure Inlet	4/01/2024	3	2579178	Arthur RD	16:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pahurehure Inlet	5/01/2024	3	2582853	Eddowes ST	13:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	8/01/2024	3	2582853	Eddowes ST	12:05	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	9/01/2024	3	2582155	Weymouth RD	17:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed fat
Pahurehure Inlet	9/01/2024	3	2470234	Alfriston RD	10:25	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Pahurehure Inlet	11/01/2024	3	82512232	John Main DR	17:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced valve
Pahurehure Inlet	12/01/2024	3	2581310	Great South RD	11:15	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	12/01/2024	3	2583213	Browns RD	15:26	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	13/01/2024	3	2580245	Southview PL	13:51	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Pahurehure Inlet	18/01/2024	3	2472723	Thompson TCE	11:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	24/01/2024	3	2478586	Puriri RD	13:39	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Pahurehure Inlet	28/01/2024	3	2590277	Coxhead RD	8:59	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed concrete, repaired pipe
Pahurehure Inlet	30/01/2024	3	2551649	East ST	13:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	31/01/2024	3	2593927	Scotsmoor DR	17:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	4/02/2024	3	2585368	Montego PL	10:06	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Pahurehure Inlet	4/02/2024	3	2472845	Mahia RD	10:54	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	5/02/2024	3	2475022	Kirton CRES	8:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	5/02/2024	3	2581245	Coxhead RD	10:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	5/02/2024	3	2590542	Ashkirk PL	19:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	10/02/2024	3	2577402	Russell RD	11:32	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rags
Pahurehure Inlet	11/02/2024	3	2559427	Great South RD	12:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	13/02/2024	3	2581498	Arthur RD	11:52	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned repairs
Pahurehure Inlet	14/02/2024	3	81145877	John Main DR	21:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Changed valve
Pahurehure Inlet	15/02/2024	3	2591568	Avonglen CT	16:17	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Removed roots
Pahurehure Inlet	15/02/2024	3	2552302	Beach RD	13:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	16/02/2024	3	2474530	Avonglen CT	21:07	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			removed roots
Pahurehure Inlet	20/02/2024	3	2591568	Avonglen CT	13:37	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots & fat
Pahurehure Inlet	26/02/2024	3	2476686	Mahia RD	17:46	n/a	Fat	No	Car park	L2	Local	SW network	no	no	yes	no			CCTV, flushed line
Pahurehure Inlet	6/03/2024	3	81145957	John Main DR	21:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced valve
Pahurehure Inlet	7/03/2024	3	2577201	Weymouth RD	15:32	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, CCTV
Pahurehure Inlet	9/03/2024	3	2577831	Estuary RD	11:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Pahurehure Inlet	10/03/2024	3	2588565	Percival ST	10:28	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned repairs
Pahurehure Inlet	10/03/2024	3	2467278	Bowater PL	12:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	13/03/2024	3	2614891	Volante AVE	19:47	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	16/03/2024	3	2474577	Swallow DR	17:24	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	16/03/2024	3	2476552	Horlicks PL	17:19	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	16/03/2024	3	2477870	Beaumonts WAY	12:22	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	20/03/2024	3	2468615	Beaumonts WAY	9:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Pahurehure Inlet	30/03/2024	3	2583739	McKean AVE	10:04	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	1/04/2024	3	2474406	Coles PL	13:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	10/04/2024	3	2589758	Fairlight PL	18:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	11/04/2024	3	2585715	Lucas PL	13:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Pahurehure Inlet	13/04/2024	3	2579093	Crampton PL	8:49	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Pahurehure Inlet	18/04/2024	3	2558804	Ipukarea ST	9:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	29/04/2024	3	2591317	Great South RD	11:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	30/04/2024	3	2472845	Mahia RD	19:48	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	30/04/2024	3	2469840	Freshney PL	19:33	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	30/04/2024	3	2472028	Mahia RD	11:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	9/05/2024	3	2472845	Mahia RD	19:33	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	11/05/2024	3	2579003	Mahia RD	12:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	12/05/2024	3	2580115	Scenic DR	11:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Pahurehure Inlet	12/05/2024	3	2470755	Maida VALE	12:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	16/05/2024	3	2482404	Friedlanders RD	18:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	22/05/2024	3	2477924	Shifnal DR	14:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	23/05/2024	3	2482963	Hyperion DR	10:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	24/05/2024	3	2585037	Benton PL	11:52	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	25/05/2024	3	2578642	Hyperion DR	11:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Pahurehure Inlet	29/05/2024	3	2591265	Mahia RD	8:47	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	1/06/2024	3	2575065	Great South RD	11:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	5/06/2024	3	2474396	Rimu RD	19:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	12/06/2024	3	81146221	Matawhanga DR	14:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	12/06/2024	3	2614891	Volante AVE	16:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	15/06/2024	3	2590542	Ashkirk PL	14:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	16/06/2024	3	2587000	Fergy CRES	16:00	n/a	Power Failure	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			issue at PS causing MH to overflow
Pahurehure Inlet	18/06/2024	1	DPWYM	PS 47 Weymouth	15:03	370	Broken pipe	no	Hazards Road Foreshore		Transm.	Beach	Low	No		yes	yes		Rising main repaired
Pahurehure Inlet	18/06/2024	3	197646	Evans RD	8:33	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			DSWEY
Pahurehure Inlet	18/06/2024	3	DSWEY	Weymouth Branch	12:00		Broken pipe	no		L1	Transm.	land	yes	no	no	no	no		
Pahurehure Inlet	20/06/2024	3	2587285	Mahia RD	12:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	20/06/2024	3	2581808	Ashland PL	15:19	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	21/06/2024	3	2467668	Nearco ST	9:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	22/06/2024	3	2476100	Great South RD	15:17	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pahurehure Inlet	22/06/2024	3	2481308	Sandwick DR	16:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	24/06/2024	3	2579234	Christmas RD	11:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	27/06/2024	3	2477174	Kern PL	18:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	28/06/2024	3	2580494	Great South RD	12:07	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	29/06/2024	3	2578970	Christmas RD	11:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	30/06/2024	3	2470173	Ipukarea ST	8:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Oneroa	3/01/2024	1	DPONR	Oneroa Waiheke Pump Station	17:00		Mechanical	no	Oneroa Beach	L1	Local	Beach	Low	no	no	no	yes		

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Beachlands Maraetai	28/10/2023	3	2461064	Pony Park PL	17:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Beachlands Maraetai	29/10/2023	3	2597257	Jack Lachlan DR	10:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Beachlands Maraetai	3/03/2024	3	2457407	Bell RD	17:51	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Beachlands Maraetai	4/04/2024	3	2594038	Jacobs WAY	12:18	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Beachlands Maraetai	9/06/2024	3	2455428	Beachlands RD	10:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Clarks Beach	14/01/2024	3	2528916	McLarin RD	9:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Clarks Beach	6/02/2024	3	2423919	Stella DR	11:03	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Clarks Beach	6/04/2024	3	2528564	Keven RD	9:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			heavy flush, CCTV
Clarks Beach	18/05/2024	3	2426524	Wharf RD	15:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, raised MH
Clarks Beach	19/06/2024	3	2417487	Ronald AVE	8:59	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Waiuku	17/07/2023	3	2527980	Brights RD	17:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Waiuku	27/07/2023	3	2526363	Totara ST	19:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Waiuku	3/08/2023	3	2527311	Victoria AVE	15:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Waiuku	5/08/2023	3	2425100	Queen ST	12:30	n/a	fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Waiuku	10/08/2023	3	2424449	Brights RD	15:02	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots
Waiuku	25/10/2023	3	2424085	George ST	12:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned dig up and repair
Waiuku	6/11/2023	3	2417575	Sandspit RD	19:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Waiuku	24/11/2023	3	2527136	Queen ST	15:15	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Waiuku	12/02/2024	3	2419107	Queen ST	12:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Waiuku	24/02/2024	3	2531020	Shanley CRES	19:51	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Waiuku	2/04/2024	3	2521107	Kaiwaka RD	8:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	5/07/2023	3	2529603	Valley RD	14:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pukekohe	7/07/2023	3	2522855	Buckland RD	16:38	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line
Pukekohe	22/07/2023	3	2531582	Queen ST	8:38	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Pukekohe	24/07/2023	3	2424536	Wesley ST	18:40	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Pukekohe	24/07/2023	3	2423596	Crosbie RD	11:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	16/08/2023	3	2896793	Ambedkar WAY	7:50	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Pukekohe	17/08/2023	3	2528910	Prospect TCE	8:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH
Pukekohe	27/08/2023	3	2896793	Ambedkar WAY	16:32	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned repairs
Pukekohe	1/09/2023	3	2419967	Adams DR	9:01	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pukekohe	5/09/2023	3	2418460	Ranchod TCE	18:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, resealed MH
Pukekohe	10/09/2023	1	DPCHR	Cape Hill Road Pump Station	09:44		Broken pipe	yes	Whangapouri Creek		Local	Large waterway	Very Low	Yes			yes		Rising main repaired
Pukekohe	10/09/2023	3	2419361	Franklin RD	9:42	n/a	Broken pipe	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			Dig up and repair
Pukekohe	16/09/2023	3	2419529	East ST	13:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Pukekohe	16/09/2023	3	2418561	Prospect TCE	18:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Pukekohe	19/09/2023	1	DPCHR	Cape Hill Road Pump Station	08:36		Broken pipe	yes	Whangapouri Creek		Local	Large waterway	Very Low	Yes			yes		Rising main repaired
Pukekohe	19/09/2023	3	2530970	Cape Hill RD	8:28	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV, repaired line
Pukekohe	19/09/2023	3	2417535	The Glade North	17:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Pukekohe	20/09/2023	1	DPCHR	Cape Hill Road Pump Station	09:30		Broken pipe	yes	Whangapouri Creek		Local	Large waterway	Very Low	Yes			yes		Rising main repaired
Pukekohe	21/09/2023	1	DPCHR	Cape Hill Road Pump Station	07:30	180	Mechanical	yes	Whangapouri Creek		Local	Large waterway	Very Low	Yes			yes		
Pukekohe	1/10/2023	3	2449487	Searle DR	17:30	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	3/10/2023	3	2449487	Searle DR	10:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Pukekohe	5/10/2023	3	2529691	Hogan ST	15:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Pukekohe	5/10/2023	3	2419172	Graham ST	15:09	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Pukekohe	29/10/2023	3	2424958	Station RD	16:06	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Pukekohe	31/10/2023	3	2531582	Queen ST	15:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Pukekohe	3/11/2023	3	2418209	Paterson AVE	7:04	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pukekohe	5/11/2023	3	2418209	Paterson AVE	19:13	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, line repaired
Pukekohe	17/11/2023	3	2424091	Eastside DR	14:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	30/11/2023	3	2417599	Adams DR	9:38	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Pukekohe	31/12/2023	3	2417441	Edinburgh ST	14:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	31/12/2023	3	2522855	Glory WAY	17:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	4/01/2024	3	2525689	Laurelwood AVE	10:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pukekohe	13/02/2024	3	2532812	Birch RD	14:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	14/02/2024	3	2425493	East ST	16:32	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pukekohe	16/02/2024	3	2527754	Station RD	15:19	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Pukekohe	17/02/2024	3	2418246	West ST	21:19	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	20/02/2024	1	DPFRA	Franklin Road Pump Station	12:05	40	Power Failure	no	Unnamed tributary of Whangapouri Creek (Franklin Rd)	L2	Local	Small waterway	Very Low	Yes		no	yes		Replace fuse
Pukekohe	5/03/2024	3	2424577	Franklin RD	20:13	n/a	Foreign Object	Yes	Road/ footpath	L1	Local	n/a	yes	no	no	no			remove rock
Pukekohe	11/03/2024	3	2528897	Henry Curd TCE	16:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Pukekohe	13/03/2024	3	2531720	Stadium DR	15:14	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Pukekohe	15/03/2024	3	2418194	East ST	17:30	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	2/04/2024	3	2423822	Landon PL	10:30	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Planned works
Pukekohe	15/04/2024	3	2423501	Totara AVE	9:15	n/a	Roots	No	Inside property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cut
Pukekohe	17/04/2024	3	2420676	Ward ST	12:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	22/04/2024	3	2423501	Totara AVE	16:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Pukekohe	30/04/2024	3	2424438	Massey AVE	0:25	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck
Pukekohe	11/05/2024	3	2417408	Prospect TCE	13:08	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Removed CCTV crawler, bypass pump
Pukekohe	12/05/2024	3	82672116	Arohaina AVE	12:41	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed wood from MH
Pukekohe	31/05/2024	3	2530026	Reynolds RD	8:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	3/06/2024	3	2419361	Franklin RD	18:00	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			repair rising main break

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Pukekohe	15/06/2024	3	2420702	Northvale PL	16:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV, unblocked line
Pukekohe	19/06/2024	3	2419307	Hamilton PL	12:34	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	20/06/2024	3	2417609	Cloverlea PL	9:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV. Job ongoing
Pukekohe	21/06/2024	3	2419672	Adams DR	11:32	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Kumeu/Huapai/River head	27/07/2023	3	2559237	Cambridge RD	15:27	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Kumeu/Huapai/River head	8/08/2023	3	2550041	Princes ST	17:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Kumeu/Huapai/River head	13/08/2023	3	2613719	Tuputupu DR	21:15	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Escalated to engineer
Kumeu/Huapai/River head	11/12/2023	3	2551282	Pohutukawa PDE	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Kumeu/Huapai/River head	15/12/2023	3	2449170	Station RD	8:47	n/a	3rd party damage	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Planned repairs
Kumeu/Huapai/River head	5/01/2024	3	2613270	Walter Ruddock AVE	18:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Restored ecopump
Kumeu/Huapai/River head	3/05/2024	3	2459105	Great North RD	10:06	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, planned repairs
Kumeu/Huapai/River head	27/05/2024	3	2563562	Station RD	9:02	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck
Western Isthmus	1/07/2023	3	2508828	Maui Pomare ST	12:19	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/07/2023	3	2486594	Maryland ST	10:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Western Isthmus	4/07/2023	3	2496440	Dominion RD	16:13	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Western Isthmus	4/07/2023	3	2402918	Bannerman RD	13:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Western Isthmus	10/07/2023	2	732	Orakei Main Sewer MH38	13:13	581	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	10/07/2023	2	739	Branch 8 Mt Albert MH7	11:51	158	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	10/07/2023	2	734	Edendale Branch MH1	8:24	96	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	10/07/2023	2	728	Branch 8 Mt Albert MH31	8:15	225	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	11/07/2023	2	728	Branch 8 Mt Albert MH31	3:28	45	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	11/07/2023	3	2616504	Bolton ST	9:08	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	11/07/2023	3	2502755	Marydale DR	10:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	11/07/2023	3	2496133	New North RD	17:44	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Western Isthmus	11/07/2023	3	2507514	Wolverton ST	16:44	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			Repaired line (damaged from landslip)
Western Isthmus	12/07/2023	2	732	Orakei Main Sewer MH38	11:44	1440	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	12/07/2023	2	739	Branch 8 Mt Albert MH7	9:29	59	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	12/07/2023	2	734	Edendale Branch MH1	11:57	42	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	12/07/2023	2	728	Branch 8 Mt Albert MH31	2:14	125	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	13/07/2023	2	732	Orakei Main Sewer MH38	23:33	72	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		

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Western Isthmus	14/07/2023	2	732	Orakei Main Sewer MH38	0:42	1366	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/07/2023	2	728	Branch 8 Mt Albert MH31	15:34	16	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	15/07/2023	2	732	Orakei Main Sewer MH38	2:25	1440	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	16/07/2023	3	2585698	Akepiro ST	15:06	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line, dig up and repair
Western Isthmus	17/07/2023	3	2494891	Cardigan ST	15:12	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	17/07/2023	3	2495495	Bollard AVE	10:32	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	17/07/2023	3	2605602	New North RD	14:32	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	18/07/2023	3	2595816	Point Chevalier RD	21:00	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	18/07/2023	3	2605602	New North RD	12:02	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, root cutter
Western Isthmus	19/07/2023	2	728	Branch 8 Mt Albert MH31	11:20	29	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	19/07/2023	3	2607236	Nixon ST	8:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	20/07/2023	2	732	Orakei Main Sewer MH38	1:29	899	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/07/2023	2	739	Branch 8 Mt Albert MH7	12:44	1440	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/07/2023	2	734	Edendale Branch MH1	23:36	90	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	20/07/2023	2	728	Branch 8 Mt Albert MH31	23:25	1440	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	21/07/2023	2	732	Orakei Main Sewer MH38	0:28	1175	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	22/07/2023	2	728	Branch 8 Mt Albert MH31	9:31	273	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	22/07/2023	3	2608315	Moreland RD	9:28	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	22/07/2023	3	2598435	Berridge AVE	11:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Western Isthmus	22/07/2023	3	2480055	Point Chevalier RD	10:52	n/a	Roots	No	Car park	L2	Local	SW network	no	no	yes	no			Flushed line, removed roots + fat
Western Isthmus	23/07/2023	3	2479177	Edenvale Park RD	16:37	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	23/07/2023	3	2492392	Maioro ST	15:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	25/07/2023	2	732	Orakei Main Sewer MH38	11:08	698	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	25/07/2023	2	739	Branch 8 Mt Albert MH7	21:44	34	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	25/07/2023	2	734	Edendale Branch MH1	23:21	30	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	25/07/2023	2	728	Branch 8 Mt Albert MH31	21:44	101	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/07/2023	3	2602002	Denny AVE	17:14	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	25/07/2023	3	2479177	Edenvale Park RD	8:21	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/07/2023	2	739	Branch 8 Mt Albert MH7	2:24	221	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	26/07/2023	2	734	Edendale Branch MH1	2:33	154	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		

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Western Isthmus	26/07/2023	2	728	Branch 8 Mt Albert MH31	2:24	438	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	27/07/2023	2	732	Orakei Main Sewer MH38	0:22	1440	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	27/07/2023	2	739	Branch 8 Mt Albert MH7	14:07	114	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	27/07/2023	2	734	Edendale Branch MH1	14:13	82	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	27/07/2023	2	728	Branch 8 Mt Albert MH31	14:07	161	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	30/07/2023	3	2479177	Edenvale Park RD	12:28	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks
Western Isthmus	30/07/2023	3	2566922	Maioro ST	13:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Western Isthmus	31/07/2023	3	2497797	Lorraine AVE	18:40	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line, root cutter
Western Isthmus	1/08/2023	3	2493679	Dominion RD-X	13:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Western Isthmus	2/08/2023	3	2509551	Springfield RD	8:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Western Isthmus	2/08/2023	3	2596960	Balmoral RD	12:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	3/08/2023	3	2602575	Knight AVE	12:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/08/2023	3	2507898	Shoreham ST	13:17	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no			Unblocked line
Western Isthmus	7/08/2023	3	2608787	Mount Albert RD	17:53	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Unsure if private - CCTV, dig up and repair
Western Isthmus	7/08/2023	3	2607217	Anita AVE	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Fixed bypass pump
Western Isthmus	8/08/2023	3	2607322	Ruahine ST	13:54	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed rocks
Western Isthmus	8/08/2023	3	2486911	Mount Eden RD	18:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	9/08/2023	3	2510085	Shoreham ST	13:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	10/08/2023	3	2559316	Keppell ST	20:00	n/a	Roots	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no		1	Flushed line, CCTV, dig up, removed roots
Western Isthmus	11/08/2023	3	2488206	Holly ST	18:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	13/08/2023	3	2566922	Maioro ST	9:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	13/08/2023	3	2603990	Princes AVE	12:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	13/08/2023	3	2596467	Great North RD	17:00	n/a	Unknown	No	On property	L3	Local	SW network	no	no	yes	no		6	Flushed line
Western Isthmus	14/08/2023	2	732	Orakei Main Sewer MH38	11:11	35	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/08/2023	2	739	Branch 8 Mt Albert MH7	15:08	77	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/08/2023	2	734	Edendale Branch MH1	15:12	63	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	16/08/2023	2	728	Branch 8 Mt Albert MH31	18:23	18	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	17/08/2023	2	739	Branch 8 Mt Albert MH7	4:32	44	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	17/08/2023	2	734	Edendale Branch MH1	5:43	30	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	17/08/2023	2	728	Branch 8 Mt Albert MH31	4:32	93	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	17/08/2023	3	2497867	Richardson RD	12:12	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags, concrete + wires
Western Isthmus	17/08/2023	3	2600428	Brewster AVE	12:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	17/08/2023	3	2606504	New North RD	10:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	18/08/2023	3	2499437	Stoddard RD	9:24	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	18/08/2023	3	2480221	Hillside CR-S	12:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	18/08/2023	3	2493171	Dominion RD	11:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	18/08/2023	3	2610138	Taylor ST	12:02	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	19/08/2023	3	2494865	Alexis AVE	9:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Western Isthmus	19/08/2023	3	2495606	Rocklands AVE	9:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	20/08/2023	2	739	Branch 8 Mt Albert MH7	0:50	499	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/08/2023	2	734	Edendale Branch MH1	0:52	375	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	20/08/2023	2	728	Branch 8 Mt Albert MH31	0:50	715	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	21/08/2023	2	734	Edendale Branch MH1	9:16	92	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	22/08/2023	3	2609935	Sandringham RD	10:04	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, repaired line
Western Isthmus	23/08/2023	3	2492549	Brewster AVE	15:10	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed silts
Western Isthmus	24/08/2023	3	2402108	Galatos ST	9:54	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, removed concrete
Western Isthmus	25/08/2023	3	2480221	Hillside CR-S	8:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/08/2023	3	2491517	St Andrews RD	16:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Western Isthmus	26/08/2023	3	2488206	Holly ST	12:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/08/2023	3	2494272	Wolseley ST	11:05	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Western Isthmus	27/08/2023	3	2596603	Lloyd AVE	11:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Western Isthmus	28/08/2023	3	2496610	Stoddard RD	11:59	n/a	Fat	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			
Western Isthmus	29/08/2023	3	2406244	Great North RD	11:55	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Western Isthmus	30/08/2023	3	2496610	Stoddard RD	8:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	30/08/2023	3	2494611	Alexis AVE	14:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Western Isthmus	31/08/2023	3	2604953	Sandringham RD	15:10	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	1/09/2023	3	2492283	Richardson RD	18:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/09/2023	3	2499107	Waterbank CRES	12:48	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed clay, ongoing investigation
Western Isthmus	3/09/2023	3	2509551	Springfield RD	12:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	6/09/2023	3	2491987	Walters RD	16:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	6/09/2023	3	81012254	Burnley TCE	15:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	7/09/2023	3	2601620	Fyvie AVE	13:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	8/09/2023	3	2495564	Kiwi RD	13:37	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	9/09/2023	3	2508403	Great North RD	12:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	9/09/2023	3	81004793	Battersby AVE	17:21	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no		0	Flushed line
Western Isthmus	10/09/2023	3	2602351	Harding AVE	10:56	n/a	Fat	No	Road/ footpath	L3	Local	SW network	yes	no	yes	no		3	Flushed line
Western Isthmus	12/09/2023	3	2494172	Carr RD	17:33	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat
Western Isthmus	13/09/2023	3	2402259	Meola RD	7:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, removed roots
Western Isthmus	13/09/2023	3	2497014	Methuen RD	10:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Western Isthmus	14/09/2023	3	2406432	Harbour View RD	15:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Western Isthmus	14/09/2023	3	2595116	Landscape RD	18:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	15/09/2023	2	739	Branch 8 Mt Albert MH7	6:06	82	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	15/09/2023	2	734	Edendale Branch MH1	6:25	28	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	15/09/2023	2	728	Branch 8 Mt Albert MH31	6:06	158	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	16/09/2023	3	2594537	Lloyd AVE	12:09	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Western Isthmus	18/09/2023	3	2603946	Milton RD	8:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	20/09/2023	3	2406432	Harbour View RD	15:13	n/a	Fat	No	On property	L3	Local	Stream	no	yes	no	no		3	Flushed line
Western Isthmus	21/09/2023	3	2493671	Oakdale RD	16:22	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, repaired line
Western Isthmus	21/09/2023	3	2490683	Levonia ST	20:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	21/09/2023	3	2613318	Hillsborough RD	7:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	22/09/2023	3	2493067	Mount Albert RD	10:56	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Western Isthmus	22/09/2023	3	2492585	Olsen AVE	10:40	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Western Isthmus	23/09/2023	2	739	Branch 8 Mt Albert MH7	16:42	582	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/09/2023	2	734	Edendale Branch MH1	20:17	541	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	23/09/2023	2	728	Branch 8 Mt Albert MH31	16:42	728	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	23/09/2023	3	2482637	Great North RD	6:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	25/09/2023	2	146	68 Smale Street	22:10	220	Unknown	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	25/09/2023	2	739	Branch 8 Mt Albert MH7	1:51	166	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	25/09/2023	2	734	Edendale Branch MH1	1:51	361	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	25/09/2023	2	728	Branch 8 Mt Albert MH31	1:51	736	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/09/2023	2	309	29 Euston Road	22:10	15	Unknown	yes	Meola Creek (Haverstock Road)		Local	Small Waterway		yes		no	yes		
Western Isthmus	25/09/2023	3	2490683	Levonia ST	12:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fats + rags
Western Isthmus	27/09/2023	2	739	Branch 8 Mt Albert MH7	21:13	62	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	27/09/2023	2	732	Orakei Main Sewer MH38	2:44	133	Unknown	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	27/09/2023	2	734	Edendale Branch MH1	21:34	36	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	27/09/2023	2	728	Branch 8 Mt Albert MH31	21:13	77	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	28/09/2023	2	739	Branch 8 Mt Albert MH7	11:27	63	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	28/09/2023	2	734	Edendale Branch MH1	11:28	45	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	28/09/2023	2	728	Branch 8 Mt Albert MH31	11:27	114	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	28/09/2023	3	2602120	Kitchener RD	14:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Western Isthmus	29/09/2023	2	728	Branch 8 Mt Albert MH31	11:40	18	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	30/09/2023	2	739	Branch 8 Mt Albert MH7	7:27	217	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	30/09/2023	2	734	Edendale Branch MH1	7:31	126	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	30/09/2023	2	728	Branch 8 Mt Albert MH31	7:27	296	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	1/10/2023	3	2599804	Freeland AVE	12:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	2/10/2023	3	2493644	Milton RD	20:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	7/10/2023	3	2599685	Eden View RD	18:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	8/10/2023	3	2596030	Brixton RD	13:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed clay
Western Isthmus	9/10/2023	3	2493626	Flower ST	13:36	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, resealed MH
Western Isthmus	10/10/2023	3	2492342	Cardigan ST	17:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	11/10/2023	2	734	Edendale Branch MH1	8:24	6	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	11/10/2023	2	728	Branch 8 Mt Albert MH31	8:15	27	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	13/10/2023	2	728	Branch 8 Mt Albert MH31	7:56	31	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	13/10/2023	3	2496244	New North RD	20:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	14/10/2023	3	2595804	Pine ST	17:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	15/10/2023	3	2605180	Great North RD	14:38	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Dig up and repair, CCTV
Western Isthmus	15/10/2023	3	2490618	Mount Albert RD	10:29	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Western Isthmus	16/10/2023	3	2594537	Lloyd AVE	8:09	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, root cutter
Western Isthmus	17/10/2023	2	728	Branch 8 Mt Albert MH31	20:55	35	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	17/10/2023	3	2492488	McDonald ST	9:03	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, repaired line
Western Isthmus	18/10/2023	2	739	Branch 8 Mt Albert MH7	8:44	117	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	18/10/2023	2	734	Edendale Branch MH1	9:49	68	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	18/10/2023	2	728	Branch 8 Mt Albert MH31	8:44	141	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	18/10/2023	3	2456891	Burleigh ST	12:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	19/10/2023	3	81146070	Ruarangi RD	22:09	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			removed concrete grouting
Western Isthmus	20/10/2023	3	2485710	McDonald ST	11:02	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Western Isthmus	22/10/2023	3	2494254	Eldon RD	14:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	22/10/2023	3	2507922	Wainui AVE	9:56	n/a	Unknown	Yes	On property	L3	Local	Stream	no	yes	no	no		6	flushed line
Western Isthmus	23/10/2023	3	2612922	Marshall Laing AVE	12:06	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	24/10/2023	2	739	Branch 8 Mt Albert MH7	16:08	95	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	24/10/2023	2	734	Edendale Branch MH1	15:57	92	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	24/10/2023	2	728	Branch 8 Mt Albert MH31	16:08	120	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	24/10/2023	3	2492290	New Windsor RD	9:32	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks + concrete
Western Isthmus	25/10/2023	2	728	Branch 8 Mt Albert MH31	8:55	75	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/10/2023	3	2491968	Whitmore RD	16:38	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Plans to reapair pipe
Western Isthmus	26/10/2023	3	2597847	Parkinson AVE	13:20	n/a	3rd party damage	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Dig up and repair
Western Isthmus	26/10/2023	3	2615565	Graham Bell AVE	18:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	28/10/2023	3	2614969	Waterbank CRES	13:54	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed clay, CCTV
Western Isthmus	28/10/2023	3	2603631	Blockhouse Bay RD	11:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	29/10/2023	3	2495048	Parau ST	16:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	29/10/2023	3	2499547	Exminster ST	17:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	30/10/2023	2	739	Branch 8 Mt Albert MH7	2:31	77	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	30/10/2023	2	734	Edendale Branch MH1	3:41	58	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	30/10/2023	2	728	Branch 8 Mt Albert MH31	2:31	147	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	30/10/2023	3	2492954	William Blofield AVE	8:10	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, capped line
Western Isthmus	30/10/2023	3	2599687	Kensington AVE	16:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/11/2023	3	2495495	Bollard AVE	9:57	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	4/11/2023	3	2406768	Matata ST	13:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	4/11/2023	3	2496801	Cullen AVE	12:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	5/11/2023	3	2606066	Blockhouse Bay RD	15:24	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	7/11/2023	3	2613318	Hillsborough RD	17:44	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	7/11/2023	3	2497301	Seaview TCE	17:26	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no		0.25	CCTV
Western Isthmus	8/11/2023	3	2494185	Henley RD	17:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	8/11/2023	3	2613318	Hillsborough RD	19:28	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	9/11/2023	3	2603133	Stoddard RD	15:33	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags
Western Isthmus	10/11/2023	3	2606571	Balmoral RD	15:30	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed foreign object
Western Isthmus	10/11/2023	3	2606899	Potter AVE	12:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	10/11/2023	3	2403986	Porters AVE	8:16	n/a	Rags	No	Retail/ commercial/ public	L3	Local	SW network	yes	no	yes	no		3	Unblocked line, sucker truck
Western Isthmus	11/11/2023	3	2495818	Christie ST	15:21	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	12/11/2023	3	2594537	Lloyd AVE	13:29	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed lne
Western Isthmus	14/11/2023	2	739	Branch 8 Mt Albert MH7	17:23	50	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/11/2023	2	734	Edendale Branch MH1	17:30	22	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	14/11/2023	2	728	Branch 8 Mt Albert MH31	17:23	80	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	14/11/2023	3	2597444	Esplanade RD	19:07	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/11/2023	3	2403986	Porters AVE	16:56	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line

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Western Isthmus	17/11/2023	3	2499107	Waterbank CRES	11:22	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed ceramic pieces. Repair broken line.
Western Isthmus	17/11/2023	3	2594133	Dominion RD	13:31	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	18/11/2023	2	739	Branch 8 Mt Albert MH7	4:48	291	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	18/11/2023	2	734	Edendale Branch MH1	4:51	207	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	18/11/2023	2	728	Branch 8 Mt Albert MH31	4:48	312	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	20/11/2023	2	739	Branch 8 Mt Albert MH7	16:43	39	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/11/2023	2	734	Edendale Branch MH1	16:52	22	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	20/11/2023	2	728	Branch 8 Mt Albert MH31	16:43	57	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	20/11/2023	3	2488299	Ruarangi RD	11:51	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed PVC pieces
Western Isthmus	21/11/2023	3	2491616	Great North RD	14:51	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Planned dig up and repair
Western Isthmus	22/11/2023	3	2402325	Allendale RD	13:10	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	22/11/2023	3	2488299	Ruarangi RD	9:27	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	22/11/2023	3	2486340	Wainui AVE	15:25	n/a	Unknown	Yes	Reserve/ park	L3	Local	Estuary	yes	no	no	no			further investigation
Western Isthmus	23/11/2023	3	2488299	Ruarangi RD	9:24	n/a	Rags	Yes	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Western Isthmus	27/11/2023	3	2613318	Hillsborough RD	8:57	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	27/11/2023	3	2495564	Kiwi RD	14:36	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	28/11/2023	3	2484380	Punga ST	20:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	30/11/2023	3	2597188	New North RD	9:09	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, CCTV
Western Isthmus	1/12/2023	3	2610138	Taylor ST	12:00	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Ongoing investigation
Western Isthmus	1/12/2023	3	2606396	Marshall Laing AVE	12:00	n/a	Broken pipe	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			CCTV
Western Isthmus	3/12/2023	3	2491854	Morningside DR	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	4/12/2023	3	2476993	Geddes TCE	12:00	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed wood
Western Isthmus	4/12/2023	3	2493743	Grant ST	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Western Isthmus	4/12/2023	3	2601067	Sandringham RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Western Isthmus	5/12/2023	3	2596976	Mount Pleasant RD	12:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Western Isthmus	5/12/2023	3	2613318	Hillsborough RD	12:00	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	5/12/2023	3	2494341	Range View RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	5/12/2023	3	2503348	Humariri ST	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	8/12/2023	3	2508339	Te Ra RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	11/12/2023	3	2507221	Taylor ST	12:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, sucker truck, dig up and repair
Western Isthmus	13/12/2023	3	2405592	Himikera AVE	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Western Isthmus	14/12/2023	3	2594133	George ST	17:34	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Western Isthmus	15/12/2023	3	2601817	Sandringham RD	18:01	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, further investigation

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Western Isthmus	17/12/2023	3	2610840	Terry ST	12:10	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	17/12/2023	3	2605362	McKinnon ST	13:26	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0	Unblocked line
Western Isthmus	19/12/2023	3	2599380	St Georges RD	12:01	n/a	Unknown	No	Inside property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	21/12/2023	3	2563604	Porters AVE	11:01	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed rocks, replaced MH lid
Western Isthmus	22/12/2023	3	2499920	Ochre PL	11:44	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	22/12/2023	3	2499229	Blockhouse Bay RD	16:43	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no		0.25	Flushed line, removed rags
Western Isthmus	23/12/2023	3	2488648	Landscape RD	13:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	24/12/2023	2	739	Branch 8 Mt Albert MH7	14:08	1440	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	24/12/2023	2	734	Edendale Branch MH1	15:06	227	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	24/12/2023	2	728	Branch 8 Mt Albert MH31	14:08	353	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	27/12/2023	3	2507366	Great North RD	12:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	28/12/2023	3	2496372	Sheppard AVE	12:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, planned dig up and repair
Western Isthmus	28/12/2023	3	2492257	O'Donnell AVE	10:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	29/12/2023	2	146	68 Smale Street	11:25	85	Unknown	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	29/12/2023	2	739	Branch 8 Mt Albert MH7	2:12	662	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	29/12/2023	2	734	Edendale Branch MH1	3:25	692	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	29/12/2023	2	728	Branch 8 Mt Albert MH31	2:12	1002	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	29/12/2023	3	2497797	Lorraine AVE	9:29	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	31/12/2023	2	734	Edendale Branch MH1	14:14	252	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	31/12/2023	2	728	Branch 8 Mt Albert MH31	13:57	437	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	5/01/2024	3	2609856	Cassino TCE	18:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	11/01/2024	3	2592297	Wright RD	13:36	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Western Isthmus	11/01/2024	3	2611495	Whitney ST	16:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	14/01/2024	3	2451480	Shenandoah AVE	12:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/01/2024	3	2483240	Thames ST	7:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Western Isthmus	15/01/2024	2	734	Edendale Branch MH1	14:29	29	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	15/01/2024	3	2600930	Plunket RD	13:45	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			flushed line, cctv
Western Isthmus	15/01/2024	3	2488648	Landscape RD	12:13	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	17/01/2024	3	2606940	Stoddard RD	14:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Western Isthmus	17/01/2024	3	2610115	Blockhouse Bay RD	20:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	18/01/2024	3	2460186	Lorraine AVE	15:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	19/01/2024	3	2561037	Shenandoah AVE	15:17	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + silts, planned dig up and repair
Western Isthmus	20/01/2024	3	2613070	New Windsor RD	14:17	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Western Isthmus	22/01/2024	3	2498845	Olsen AVE	9:25	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Western Isthmus	23/01/2024	3	2496066	Frost RD	12:20	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	23/01/2024	3	2609190	Miranda ST	13:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	26/01/2024	3	2498882	May RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Western Isthmus	26/01/2024	3	2486591	Oliver ST	13:34	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks
Western Isthmus	29/01/2024	3	2611895	Richardson RD	11:35	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	29/01/2024	3	2494920	Bollard AVE	12:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	3/02/2024	3	2494920	Bollard AVE	10:48	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed stones
Western Isthmus	5/02/2024	3	2606013	Maybeck RD	8:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + rubbish
Western Isthmus	5/02/2024	3	2606092	Glenveagh DR	22:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	5/02/2024	3	2610966	Glenveagh DR	14:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	7/02/2024	3	2599809	Stoddard RD	14:27	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Western Isthmus	9/02/2024	3	2602146	Kitchener RD	8:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Western Isthmus	12/02/2024	3	2497868	O'Donnell AVE	14:32	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Western Isthmus	12/02/2024	3	2507636	Richardson RD	17:21	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cut
Western Isthmus	15/02/2024	3	2559089	Fortuna PL	11:33	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, removed rocks, CCTV
Western Isthmus	18/02/2024	3	2599198	Douglas RD	6:55	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	20/02/2024	3	2508272	Haycock AVE	21:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	20/02/2024	3	2599307	Landscape RD	9:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Western Isthmus	20/02/2024	3	2495073	Sandringham RD	13:21	n/a	Unknown	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			CCTV, sucker truck - possible cross connection
Western Isthmus	21/02/2024	3	2497221	Dominion RD-X	21:00	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cutter
Western Isthmus	21/02/2024	3	2489714	McCullough AVE	17:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	21/02/2024	3	2609935	Sandringham RD	9:26	n/a	Rags	No	Retail/ commercial/ public	L3	Local	Stream	yes	yes	no	no		3	Flushed line, removed rags
Western Isthmus	22/02/2024	3	2600930	Plunket RD	8:42	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Planned repairs
Western Isthmus	22/02/2024	3	2615343	Battersby AVE	8:33	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Western Isthmus	24/02/2024	3	2614018	Holbrook ST	19:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	25/02/2024	2	734	Edendale Branch MH1	16:04	11	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	25/02/2024	2	728	Branch 8 Mt Albert MH31	8:18	65	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/02/2024	3	2481873	Great North RD	19:30	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/02/2024	2	734	Edendale Branch MH1	18:13	49	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	26/02/2024	2	728	Branch 8 Mt Albert MH31	18:03	141	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	29/02/2024	3	2562701	Florence Daly PL	6:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	7/03/2024	3	2599385	Great North RD	11:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, dig up and repair, CCTV
Western Isthmus	8/03/2024	3	2615223	Hadfield AVE	13:19	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Job escalated

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	9/03/2024	3	2481873	Great North RD	15:31	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	9/03/2024	3	2495564	Kiwi RD	12:09	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	9/03/2024	3	2615343	Battersby AVE	12:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed lint, root cut
Western Isthmus	10/03/2024	3	2494311	Olsen AVE	10:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	11/03/2024	3	2493386	Shirley RD	14:22	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags + silts
Western Isthmus	11/03/2024	3	2492292	Fir ST	16:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	13/03/2024	3	2587399	Great North RD	17:32	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	13/03/2024	3	2587399	Great North RD	14:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	14/03/2024	3	2602740	Melrose RD	9:07	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	15/03/2024	2	728	Branch 8 Mt Albert MH31	17:01	154	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	16/03/2024	3	197358	Mary Dreaver ST	7:51	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			DSWIN Flushed line
Western Isthmus	16/03/2024	3	DSWIN	Western Interceptor	12:00		Unknown	no		L1	Transm.	land	unknown	no	no	no	no		
Western Isthmus	18/03/2024	3	2499924	Holbrook ST	21:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	18/03/2024	3	2604830	Fairlands AVE	19:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	20/03/2024	3	2592328	Haultain ST	8:32	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck, replaced MH lid
Western Isthmus	21/03/2024	3	2496372	Sheppard AVE	11:07	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned repairs
Western Isthmus	21/03/2024	3	2600386	New North RD	9:51	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no		0.5	Flushed line
Western Isthmus	22/03/2024	3	2496784	Renfrew AVE	12:46	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			flushed line, further investigation into possible collapse
Western Isthmus	22/03/2024	3	2596646	Hillsborough RD	13:37	n/a	Rags	No	Inside property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	22/03/2024	3	2606941	O'Donnell AVE	6:46	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	23/03/2024	2	739	Branch 8 Mt Albert MH7	8:10	143	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/03/2024	2	734	Edendale Branch MH1	8:24	123	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	23/03/2024	2	728	Branch 8 Mt Albert MH31	8:10	139	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	23/03/2024	2	1589	153 Whitney Street	17:30	30	Unknown	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	24/03/2024	2	734	Edendale Branch MH1	13:00	23	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	25/03/2024	3	2492999	Hillsborough RD	10:24	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	26/03/2024	3	2505883	Hertford ST	11:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	26/03/2024	3	2606746	Mary Dreaver ST	8:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	26/03/2024	3	2615277	Margate RD	19:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	27/03/2024	3	2403352	Upper Queen ST	14:30	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			flushed line
Western Isthmus	2/04/2024	3	2606134	Battersby AVE	11:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/04/2024	3	2406416	Bond ST	8:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	3/04/2024	3	2452500	Roseman AVE	7:43	n/a	Rags	No	On property	L2	Local	Estuary	yes	no	no	no			Flushed line
Western Isthmus	4/04/2024	3	2495330	La Veta AVE	13:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	6/04/2024	3	2600252	Haig AVE	18:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	7/04/2024	3	2497221	Dominion RD-X	10:46	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	7/04/2024	3	2605302	Fir ST	17:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	8/04/2024	3	2616392	New Windsor RD	9:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	8/04/2024	3	2492315	Alexis AVE	16:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	9/04/2024	3	2598482	Methuen RD	8:58	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	10/04/2024	3	2403320	Upper Queen ST	14:47	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Western Isthmus	10/04/2024	3	2600474	Walmer RD	12:02	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	10/04/2024	3	2603421	Bremner AVE	15:49	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots
Western Isthmus	12/04/2024	2	739	Branch 8 Mt Albert MH7	2:52	182	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	12/04/2024	2	734	Edendale Branch MH1	8:35	130	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	12/04/2024	2	728	Branch 8 Mt Albert MH31	2:52	246	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	13/04/2024	3	2492315	Alexis AVE	12:46	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	13/04/2024	3	2608608	New Windsor RD	14:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/04/2024	3	2502779	White Swan RD	18:39	n/a	Rags	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			No notes
Western Isthmus	14/04/2024	3	2502784	Fairway DR	10:36	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	15/04/2024	3	2490857	Wairiki RD	15:35	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	15/04/2024	3	2486922	Amsterdam PL	15:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	17/04/2024	2	739	Branch 8 Mt Albert MH7	21:20	17	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	17/04/2024	2	734	Edendale Branch MH1	21:32	18	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	17/04/2024	2	728	Branch 8 Mt Albert MH31	21:20	33	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	17/04/2024	3	2614970	Seaside AVE	15:35	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Planned repairs
Western Isthmus	17/04/2024	3	2596603	Lloyd AVE	17:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	18/04/2024	3	2497992	Boyce AVE	9:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Western Isthmus	18/04/2024	3	2486054	Dally TCE	8:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	19/04/2024	2	739	Branch 8 Mt Albert MH7	3:47	219	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	19/04/2024	2	734	Edendale Branch MH1	3:54	183	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	19/04/2024	2	728	Branch 8 Mt Albert MH31	3:47	305	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	19/04/2024	2	309	29 Euston Road	4:00	15	Unknown	yes	Meola Creek (Haverstock Road)		Local	Small Waterway		yes		no	yes		
Western Isthmus	22/04/2024	3	2607529	Morvern RD	19:02	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTv
Western Isthmus	22/04/2024	3	2495336	New North RD	20:47	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	23/04/2024	3	2402710	Point Chevalier RD	16:31	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, sucker truck, dig up and repair
Western Isthmus	23/04/2024	3	2452500	Roseman AVE	7:53	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned dig up and repair
Western Isthmus	23/04/2024	3	2611267	Frost RD	21:01	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	23/04/2024	3	2492544	Denize RD	15:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck, CCTV

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Western Isthmus	24/04/2024	3	2608738	Littlejohn ST	13:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/04/2024	3	2566922	Maioro ST	11:54	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Western Isthmus	27/04/2024	3	2606941	O'Donnell AVE	15:37	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, planned repairs
Western Isthmus	27/04/2024	3	2496943	Stoddard RD	7:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	27/04/2024	3	2592761	Point Chevalier RD	13:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	28/04/2024	3	2490490	Dexter AVE	13:29	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	29/04/2024	3	2598482	Methuen RD	11:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	30/04/2024	3	2487955	McDonald ST	18:29	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	2/05/2024	3	2487955	McDonald ST	12:11	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	6/05/2024	3	2487834	Pasadena AVE	9:34	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Job escalated
Western Isthmus	8/05/2024	3	2598559	Hillsborough RD	15:14	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	10/05/2024	3	2484389	St Georges RD	9:50	n/a	Broken pipe	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV, planned repairs
Western Isthmus	11/05/2024	3	2495336	New North RD	19:55	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	11/05/2024	3	2598306	Great North RD	8:53	n/a	Unknown	No	Car park	L2	Local	SW network	no	no	yes	no		0	Unblocked line
Western Isthmus	13/05/2024	3	2601019	Elizabeth ST	15:30	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Western Isthmus	13/05/2024	3	2496606	May RD	18:47	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/05/2024	3	2496268	Oakley AVE	12:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	15/05/2024	2	734	Edendale Branch MH1	5:16	146	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	15/05/2024	2	728	Branch 8 Mt Albert MH31	5:06	213	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	16/05/2024	3	2615120	Marshall Laing AVE	16:23	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		0	Bypass pump
Western Isthmus	17/05/2024	2	728	Branch 8 Mt Albert MH31	5:46	12	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	17/05/2024	3	2499093	Warren AVE	16:35	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			No notes
Western Isthmus	18/05/2024	3	2493527	Hayr RD	8:38	n/a	Silts	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no		1	Flushed line
Western Isthmus	19/05/2024	3	2599334	Conway RD	10:53	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	20/05/2024	2	734	Edendale Branch MH1	20:29	427	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	20/05/2024	2	728	Branch 8 Mt Albert MH31	19:16	818	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	22/05/2024	2	734	Edendale Branch MH1	8:44	405	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	22/05/2024	3	2613067	Wolverton ST	16:02	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Repaired pipe bridge
Western Isthmus	22/05/2024	3	2596741	Hillsborough RD	10:47	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line (rocks)
Western Isthmus	23/05/2024	2	739	Branch 8 Mt Albert MH7	16:47	721	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/05/2024	2	734	Edendale Branch MH1	0:39	34	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	23/05/2024	3	2610289	New North RD	6:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV, suggested root cut
Western Isthmus	24/05/2024	2	739	Branch 8 Mt Albert MH7	7:20	779	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	24/05/2024	3	2507888	Donovan ST	16:47	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	24/05/2024	3	2606941	O'Donnell AVE	13:40	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	25/05/2024	2	734	Edendale Branch MH1	8:39	49	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	25/05/2024	2	728	Branch 8 Mt Albert MH31	2:16	162	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/05/2024	3	2608022	Great North RD	15:22	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	25/05/2024	3	2602461	Wairere AVE	8:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	27/05/2024	2	728	Branch 8 Mt Albert MH31	0:56	67	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	27/05/2024	3	2605939	Mount Albert RD	15:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	28/05/2024	2	734	Edendale Branch MH1	19:25	81	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	28/05/2024	2	728	Branch 8 Mt Albert MH31	2:21	160	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	28/05/2024	3	2507888	Donovan ST	9:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	29/05/2024	2	728	Branch 8 Mt Albert MH31	0:47	526	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	31/05/2024	2	739	Branch 8 Mt Albert MH7	16:52	707	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	31/05/2024	3	2603812	Valley RD	10:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	31/05/2024	3	2611457	Taylor ST	9:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	1/06/2024	3	2603552	Arundel ST	11:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	2/06/2024	3	2607763	May RD	10:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	2/06/2024	3	2610289	New North RD	12:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	4/06/2024	3	2603757	Parkinson AVE	8:42	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Western Isthmus	4/06/2024	3	2606941	O'Donnell AVE	14:33	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	6/06/2024	3	2567876	Stamford Park RD	10:28	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV, dig up and repair
Western Isthmus	6/06/2024	3	2597920	Delphine CL	14:25	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	8/06/2024	3	2600749	Powell ST	13:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	8/06/2024	3	2406395	Western Springs RD	16:45	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	13/06/2024	2	734	Edendale Branch MH1	23:21	81	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	13/06/2024	2	728	Branch 8 Mt Albert MH31	23:13	112	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	13/06/2024	3	2493015	Mount Eden RD	11:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, clear roots
Western Isthmus	14/06/2024	2	734	Edendale Branch MH1	2:24	818	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	14/06/2024	2	728	Branch 8 Mt Albert MH31	2:24	1370	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	15/06/2024	3	2491377	Baleden LN	17:01	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	15/06/2024	3	2598617	Hendon AVE	11:32	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	15/06/2024	3	2497868	O'Donnell AVE	12:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	16/06/2024	2	734	Edendale Branch MH1	20:11	451	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	16/06/2024	2	728	Branch 8 Mt Albert MH31	20:01	1134	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	16/06/2024	3	2591002	Horopito ST	15:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	16/06/2024	3	2494007	Bollard AVE	17:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	18/06/2024	3	2497870	Cassino TCE	12:59	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	18/06/2024	3	2491160	Shorwell ST	13:55	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	18/06/2024	3	2606941	O'Donnell AVE	13:45	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	19/06/2024	3	2496743	Tenterden AVE	12:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	20/06/2024	2	739	Branch 8 Mt Albert MH7	14:40	732	Unknown	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	21/06/2024	3	2459873	New North RD	8:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	21/06/2024	3	2598559	Hillsborough RD	14:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV, flushed line
Western Isthmus	22/06/2024	2	734	Edendale Branch MH1	21:54	82	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	22/06/2024	2	728	Branch 8 Mt Albert MH31	18:42	336	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	22/06/2024	3	81004275	Holbrook ST	8:16	n/a	Fat	No	On property	L2	Local	SW network	no	no	yes	no			Unblocked line
Western Isthmus	23/06/2024	2	734	Edendale Branch MH1	1:18	409	Unknown	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	24/06/2024	3	2507888	Donovan ST	13:00	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	25/06/2024	2	728	Branch 8 Mt Albert MH31	15:13	40	Unknown	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	25/06/2024	3	2603133	Stoddard RD	15:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	26/06/2024	3	2403986	Porters AVE	15:56	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	26/06/2024	3	81013962	Gifford AVE	16:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, awaiting CCTV
Western Isthmus	27/06/2024	3	2607603	New North RD	15:21	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	28/06/2024	3	2597746	Don Croot ST	11:59	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			

Table D-2 All controlled and uncontrolled wet weather overflows from the Auckland-wide wastewater network during the 2023-24 period

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Wellsford	4/09/2023	1	DPTHA	Te Hana Pump Station	01:06	856	Surcharging	yes	Unnamed tributary of Te Hana Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	30/12/2023	3	2440716	Totara VW	12:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Wellsford	12/04/2024	1	DPWOR	Worker Road Pump Station	16:37	27	Surcharging	yes	Unnamed tributary (south) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	14/06/2024	1	DPARM	Armitage Pump Station	02:03	85	Surcharging	yes	Unnamed tributary (north) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	14/06/2024	1	DPKYH	Kellys Hill Pump Station	03:18	46	Surcharging	yes	Stormwater Pond (Reid Underpass)		Local	Small waterway	Very low	Yes	Yes		yes		
Wellsford	14/06/2024	1	DPWOR	Worker Road Pump Station	02:00	120	Surcharging	yes	Unnamed tributary (south) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	16/06/2024	1	DPARM	Armitage Pump Station	21:12	132	Surcharging	yes	Unnamed tributary (north) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	16/06/2024	1	DPKYH	Kellys Hill Pump Station	21:20	88	Surcharging	yes	Stormwater Pond (Reid Underpass)		Local	Small waterway	Very low	Yes	Yes		yes		
Wellsford	16/06/2024	1	DPTHA	Te Hana Pump Station	22:30	30	Surcharging	yes	Unnamed tributary of Te Hana Creek		Local	Small waterway	Very low	Yes			yes		
Wellsford	16/06/2024	1	DPWOR	Worker Road Pump Station	21:33	105	Surcharging	yes	Unnamed tributary (south) of Whakapirau Creek		Local	Small waterway	Very low	Yes			yes		
Omaha	24/09/2023	3	2442214	Inanga LN	10:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Omaha	8/10/2023	3	2452048	Omaha DR	15:38	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Heavy flush, removed roots
Omaha	30/04/2024	3	2447058	Esme GRV	10:38	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Omaha	20/05/2024	1	DPSUC	Success Court Pump Station	21:50	36	Surcharging	no	To land	L1	Local	To land		no	no	no	yes		
Omaha	31/05/2024	3	2551301	Riverside DR	12:27	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Warkworth	8/07/2023	3	2444293	Hauiti DR	16:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	20/07/2023	2	1540	Elizabeth Street	22:30	660	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	21/07/2023	1	DPPAL	Palmer Pump Station	16:10	91	Surcharging	yes	Mahurangi River		Local	Large waterway	Low	no	no	yes	yes		
Warkworth	20/08/2023	3	2445758	Southgate RD	17:59	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	4/09/2023	2	1540	Elizabeth Street	2:10	510	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	6/10/2023	3	2448745	Walton AVE	13:04	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Warkworth	12/10/2023	3	2548949	Elizabeth ST	9:48	n/a	Surcharging	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Warkworth	26/12/2023	3	2444293	Hauiti DR	14:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Warkworth	29/12/2023	1	DPPAL	Palmer Pump Station	19:50	72	Mechanical	yes	Mahurangi River	L1	Local	Large waterway	Low	no	no	yes	yes		
Warkworth	31/12/2023	3	2553382	Lilburn ST	20:07	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, escalated to engineer
Warkworth	22/01/2024	3	2554975	Brown RD	6:50	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Replaced MH lid
Warkworth	28/01/2024	2	1540	Elizabeth Street	17:30	180	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	11/03/2024	3	2546921	Wech DR	17:47	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Warkworth	20/05/2024	1	DPPAL	Palmer Pump Station	22:14	152	Surcharging	yes	Mahurangi River		Local	Large waterway	Low	no	no	yes	yes		
Warkworth	20/05/2024	2	1540	Elizabeth Street	21:00	210	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	28/05/2024	2	1540	Elizabeth Street	20:30	20	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	10/06/2024	2	1540	Elizabeth Street	0:45	70	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Warkworth	14/06/2024	2	1540	Elizabeth Street	1:25	410	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	16/06/2024	1	DPPAL	Palmer Pump Station	22:23	134	Surcharging	yes	Mahurangi River		Local	Large waterway	Low	no	no	yes	yes		
Warkworth	16/06/2024	1	DPLIL	Lilburn Pump Station	22:47	45	Surcharging	no	Stormwater pond (Lucy Moore Memorial Park)		Local	Small waterway	Very Low	No	Yes		yes		
Warkworth	16/06/2024	2	1540	Elizabeth Street	21:00	260	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Warkworth	23/06/2024	2	1540	Elizabeth Street	3:30	30	Surcharging	yes	Unnamed tributary (4) of Mahurangi River		Local	Small waterway	Very Low	yes			yes		
Snells Beach/ Algies Bay	7/07/2023	3	2543220	Sunburst AVE	8:21	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Put MH lid back on
Snells Beach/ Algies Bay	6/12/2023	3	2442983	Snells Beach RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Snells Beach/ Algies Bay	18/12/2023	3	2546434	Willjames AVE	8:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Snells Beach/ Algies Bay	5/03/2024	3	2543029	Hinemoa TCE	10:27	n/a	3rd party damage	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			No notes
Snells Beach/ Algies Bay	20/05/2024	1	DPDAL	Daltons Pump Station	21:18	161	Surcharging	yes	Snells Beach		Local	Beach	Low	No		yes	yes		
Snells Beach/ Algies Bay	20/05/2024	1	DPTMT	Tamatea Pump Station	21:53	69	Surcharging	yes	Snells Beach		Local	Beach	Low	No		yes	yes		
Snells Beach/ Algies Bay	30/05/2024	1	DPTMT	Tamatea Pump Station	01:19	105	Unknown	yes	Snells Beach		Local	Beach	Low	No		yes	yes		
Snells Beach/ Algies Bay	16/06/2024	1	DPDAL	Daltons Pump Station	22:01	116	Surcharging	yes	Snells Beach		Local	Beach	Low	No		yes	yes		
Helensville	21/07/2023	1	DPCIC	Chic Pump Station	03:21	1153	Surcharging	no	Kaipara River		Local	Large waterway	Very low	No			yes		
Helensville	21/07/2023	1	DPMRO	Miro Street Pump Station	03:05	266	Surcharging	no	Awaroa Stream		Local	Large waterway	Very low	Yes			yes		
Helensville	21/07/2023	1	DPOUT	Outfall Pump Station	02:58	498	Surcharging	no	Kaipara River		Local	Large waterway	Very low	No			yes		
Helensville	21/07/2023	3	2553542	Awaroa RD	11:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Orewa	3/07/2023	3	2539546	Centreway RD	10:03	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Orewa	22/07/2023	3	2614810	Pacific Heights RD	7:56	n/a	Unknown	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line
Orewa	24/07/2023	3	2549416	Old North RD	10:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Orewa	30/10/2023	3	2455241	Maire RD	13:50	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, root cut, CCTV
Orewa	19/11/2023	3	2562107	Totara Views DR	17:41	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Orewa	6/12/2023	3	2441083	River RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cut
Orewa	26/12/2023	3	2560698	Toia LN	22:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			No notes
Orewa	20/05/2024	3	2447529	Pine RD	22:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Orewa	14/06/2024	3	2541432	Judd PL	10:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Weiti	21/07/2023	1	DPWAD	Wade Pump Station	02:59	421	Surcharging	no	Weiti Estuary		Local	Estuary	Very low	No		No	yes		
Weiti	21/07/2023	1	DPWEI	Weiti Pump Station	01:32	273	Surcharging	yes	Weiti River		Local	Estuary	Very low	No		No	yes		
Weiti	20/05/2024	1	DPWEI	Weiti Pump Station	21:35	58	Surcharging	yes	Weiti River		Local	Estuary	Very low	No		No	yes		
Weiti	14/06/2024	1	DPWEI	Weiti Pump Station	03:39	89	Surcharging	yes	Weiti River		Local	Estuary	Very low	No		No	yes		
Whangaparaoa	21/07/2023	1	DPPUA	Puawai Pump Station	02:38	27	Surcharging	yes	Puawai Bay Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	21/07/2023	1	DPSTA	Stanmore Pump Station	11:05	227	Surcharging	yes	Unnamed stream flowing to Stanmore Bay		Local	Small waterway	Very low	Yes	no	yes	yes		
Whangaparaoa	21/07/2023	3	2537380	Marie AVE	11:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	24/07/2023	3	2551893	Marellen DR	10:02	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	12/09/2023	3	2451357	Fairway AVE	9:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Whangaparaoa	26/09/2023	3	2439521	Ladies MILE	10:28	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	15/11/2023	3	2447044	Walton ST	8:21	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no		0	Flushed line, CCTV
Whangaparaoa	29/01/2024	3	2442557	Gulf Harbour DR	12:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	12/04/2024	3	2441425	Buccaneer CT	13:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whangaparaoa	20/04/2024	1	DPSTA	Stanmore Pump Station	14:14	92	Mechanical	yes	Unnamed stream flowing to Stanmore Bay	L1	Local	Small waterway	Very low	no	no	no	yes		
Whangaparaoa	21/04/2024	3	2548309	Rimu RD	11:00	n/a	Power Failure	No	Inside property	L2	Local	stream	no	yes	no	no			
Whangaparaoa	20/05/2024	1	DPISV	Island View Pump Station	22:37	42	Surcharging	no	Okoromai Bay Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	20/05/2024	1	DPLIT	Little Manly Pump Station	22:36	39	Surcharging	no	Little Manly Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	20/05/2024	1	DPPUA	Puawai Pump Station	23:17	45	Surcharging	yes	Puawai Bay Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	20/05/2024	1	DPBAY	Bay Street Pump Station	22:14	135	Surcharging	yes	Unnamed stream flowing to Red Beach		Local	Small waterway	Low	Yes			yes		
Whangaparaoa	20/05/2024	1	DPSTA	Stanmore Pump Station	21:49	370	Surcharging	yes	Unnamed stream flowing to Stanmore Bay		Local	Small waterway	Very low	Yes	no	yes	yes		
Whangaparaoa	21/05/2024	3	2552455	Zealandia RD	16:53	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	21/05/2024	3	2437719	Charlotte ST	10:16	n/a	Surcharging	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Whangaparaoa	21/05/2024	3	2551159	Sundown AVE	7:35	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			further investigation needed
Whangaparaoa	21/05/2024	3	2546454	Rata RD	12:35	n/a	Unknown	No	Reserve/ park	L2	Local	Stream	yes	yes	no	no			Unblocked line
Whangaparaoa	22/05/2024	3	2550232	Sundown AVE	11:13	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	31/05/2024	1	DPARK	Arkles Bay Pump Station	06:09	15	Surcharging	no	Arkles Bay Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	10/06/2024	3	2553253	Sundown AVE	12:04	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, waiting on CCTV
Whangaparaoa	14/06/2024	1	DPSTA	Stanmore Pump Station	03:29		Surcharging	yes	Unnamed stream flowing to Stanmore Bay		Local	Small waterway	Very low	Yes	no	yes	yes		
Whangaparaoa	14/06/2024	3	2552455	Zealandia RD	11:50	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	14/06/2024	3	2553253	Sundown AVE	8:39	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whangaparaoa	14/06/2024	3	2450484	Roseville RD	8:24	n/a	Roots	No	On property	L2	Local	SW network	no	no	yes	no		1	Flushed line
Whangaparaoa	16/06/2024	1	DPPUA	Puawai Pump Station	22:49	54	Surcharging	yes	Puawai Bay Beach		Local	Beach	Low	No		yes	yes		
Whangaparaoa	16/06/2024	1	DPBAY	Bay Street Pump Station	22:25	98	Surcharging	yes	Unnamed stream flowing to Red Beach		Local	Small waterway	Low	Yes			yes		
Whangaparaoa	17/06/2024	3	2442203	Zealandia RD	13:18	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	17/06/2024	3	2553253	Sundown AVE	9:01	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whangaparaoa	23/06/2024	1	DPBAY	Bay Street Pump Station	06:20	210	Surcharging	yes	Unnamed stream flowing to Red Beach		Local	Small waterway	Low	Yes			yes		
Whangaparaoa	23/06/2024	1	DPSTA	Stanmore Pump Station	10:07	23	Surcharging	yes	Unnamed stream flowing to Stanmore Bay		Local	Small waterway	Very low	Yes	no	yes	yes		
Long Bay	3/11/2023	3	2428317	Stredwick DR	10:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Long Bay	21/11/2023	3	2537426	Fitzwilliam DR	9:52	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Land slip - planned repairs
Long Bay	24/03/2024	3	2550190	Glenvar RD	13:18	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			
Long Bay	14/06/2024	3	2433052	Awaruku RD	13:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed roots
Long Bay	17/06/2024	3	2438964	Awaruku RD	13:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	3/07/2023	3	2432428	Langana AVE	8:10	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	8/07/2023	3	2528852	Bute RD	8:10	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			

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East Coast Bays	21/07/2023	1	DPBLA	Black Rock Pump Station	21:32	642	Surcharging	yes	Thorne Bay		Transm.	Beach	Moderate	No		yes	yes		
East Coast Bays	21/07/2023	1	DPSI1	Sidmouth Pump Station	09:26	235	Surcharging	yes	Mairangi Bay		Transm.	Beach	High	No		yes	yes		
East Coast Bays	21/07/2023	1	DPCBY	Castor Bay Pump Station	19:55	141	Surcharging	yes	Castor Bay Stream		Transm.	Small waterway	Low	Yes		no	yes		
East Coast Bays	21/07/2023	1	DSSIL	Silverfield Storage Tank	08:35	477	Surcharging	yes	Wairau Stream		Transm.	Small waterway	Very low	Yes	yes	no	yes		
East Coast Bays	21/07/2023	1	DPALC	Albany Church Pump Station	05:10	559	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		
East Coast Bays	21/07/2023	2	834	28 Penning Road	2:05	190	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	21/07/2023	2	1595	11 Jonathan Place	2:10	190	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	21/07/2023	2	1576	16 Jutland St	7:30	30	Surcharging	yes	Unnamed watercourse off Jutland Street		Local	Small waterway		yes			yes		
East Coast Bays	21/07/2023	3	2537760	Beach RD	15:32	n/a	Foreign Object	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			CCTV, removed rocks
East Coast Bays	21/07/2023	3	2430189	Beach RD	11:55	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	21/07/2023	3	2528020	Beach RD	12:50	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	21/07/2023	3	2432014	Rewi ST	12:22	n/a	Surcharging	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
East Coast Bays	21/07/2023	3	2532317	Ashfield RD	7:19	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
East Coast Bays	21/07/2023	3	2427214	Agincourt ST	8:20	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
East Coast Bays	21/07/2023	3	2545433	Browns Bay RD	12:26	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
East Coast Bays	21/07/2023	3	S91	81 Selwyn Cres	7:15	90	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	21/07/2023	3	S70	9 Woodstock Road	20:55	300	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	2/08/2023	3	2434647	Thelma CRES	15:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, CCTV
East Coast Bays	4/09/2023	2	1595	11 Jonathan Place	22:10	20	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	4/09/2023	3	2425391	Benders AVE	13:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	4/09/2023	3	S70	9 Woodstock Road	4:25	50	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	5/09/2023	3	2427214	Agincourt ST	8:15	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	11/09/2023	1	DPCBY	Castor Bay Pump Station	16:10	35	Surcharging	yes	Castor Bay Stream		Transm.	Small waterway	Low	Yes		no	yes		
East Coast Bays	11/09/2023	2	834	28 Penning Road	15:40	40	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	11/09/2023	2	1595	11 Jonathan Place	15:50	70	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	11/09/2023	3	2533945	Whitby CRES	18:21	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up & repair
East Coast Bays	11/09/2023	3	2427214	Agincourt ST	17:14	n/a	Fat	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
East Coast Bays	11/09/2023	3	S91	81 Selwyn Cres	22:10	30	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	11/09/2023	3	S70	9 Woodstock Road	3:50	150	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	12/09/2023	3	2430157	Beach RD	15:48	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed silts, dig up and repair
East Coast Bays	12/09/2023	3	2529529	Ellice RD	14:43	n/a	Foreign Object	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, removed broken dropper
East Coast Bays	12/09/2023	3	2443101	Varlene TCE	8:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
East Coast Bays	24/09/2023	3	2547109	Gull LN	11:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots

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East Coast Bays	25/09/2023	1	DPSI1	Sidmouth Pump Station	23:22	28	Surcharging	yes	Mairangi Bay		Transm.	Beach	High	No		yes	yes		
East Coast Bays	25/09/2023	1	DPCBY	Castor Bay Pump Station	23:05	48	Surcharging	yes	Castor Bay Stream		Transm.	Small waterway	Low	Yes		no	yes		
East Coast Bays	25/09/2023	1	DPALC	Albany Church Pump Station	23:15	279	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		
East Coast Bays	25/09/2023	2	834	28 Penning Road	21:40	40	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	25/09/2023	2	1595	11 Jonathan Place	21:30	140	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	25/09/2023	3	2535580	Agincourt ST	23:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Bypass pump set up
East Coast Bays	25/09/2023	3	S91	81 Selwyn Cres	22:35	50	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	25/09/2023	3	S70	9 Woodstock Road	5:35	160	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	26/09/2023	1	DPSI1	Sidmouth Pump Station	01:06	124	Surcharging	yes	Mairangi Bay		Transm.	Beach	High	No		yes	yes		
East Coast Bays	26/09/2023	1	DPBRB	Browns Bay Pump Station	00:37	196	Surcharging	yes	Taiaotea Creek		Transm.	Small waterway	Moderate	Yes			yes		
East Coast Bays	26/09/2023	3	2429948	Chivalry RD	19:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	26/09/2023	3	2430926	Marama ST	7:39	n/a	Unknown	No	On property	L3	Local	Beach	yes	no	no	yes			Flushed line
East Coast Bays	27/09/2023	3	2434016	Bond CRES	13:55	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	28/09/2023	3	2535715	Glamorgan DR	13:47	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	29/09/2023	3	2434101	September PL	14:39	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	30/09/2023	3	2438600	Kitchener RD	14:23	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	30/09/2023	3	2434589	Elmira PL	10:01	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	10/10/2023	3	2430147	Montrose TCE	15:07	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/10/2023	3	2423550	Nile RD	7:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	29/10/2023	3	2542199	Celina PL	11:30	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	30/10/2023	3	2430742	Ramillies PL	10:06	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed fat + screwdriver
East Coast Bays	2/11/2023	3	2430820	Milford Park PL	21:51	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	3/11/2023	3	2534178	Kiri PL	14:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	10/11/2023	3	2435661	Manly ESP	15:54	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/11/2023	3	2424458	East Coast RD	12:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	19/11/2023	3	2529803	East Coast RD	8:12	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Restored pump
East Coast Bays	19/11/2023	3	2541551	Nigel RD	11:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/11/2023	3	2432871	Agincourt ST	16:23	n/a	Unknown	No	Car park	L2	Local	Stream	yes	yes	no	no			Restored pump
East Coast Bays	21/11/2023	3	2436657	Bellbird RISE	9:11	n/a	Broken pipe	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Planned repairs
East Coast Bays	4/12/2023	3	2425660	Heathcote RD	12:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	6/12/2023	3	2533759	Midway AVE	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	13/12/2023	3	81153781	Cecil RD	0:00	n/a	Surcharging	No	On property	L3	Local	Beach	yes	no	no	no			Flushed line
East Coast Bays	25/12/2023	3	2444071	Browns Bay RD	12:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, root cut, CCTV
East Coast Bays	25/12/2023	3	2539234	Churchill RD	1:35	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
East Coast Bays	30/12/2023	1	DPSI1	Sidmouth Pump Station	02:22	508	Surcharging	yes	Mairangi Bay		Transm.	Beach	High	No		yes	yes		
East Coast Bays	30/12/2023	1	DPALC	Albany Church Pump Station	02:06	161	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		

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East Coast Bays	30/12/2023	2	834	28 Penning Road	0:30	70	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	30/12/2023	3	2430582	Jonathan PL	16:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed fat + rags
East Coast Bays	30/12/2023	3	2434951	Penguin DR	15:22	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Planned CCTV
East Coast Bays	30/12/2023	3	2435099	Benders AVE	9:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
East Coast Bays	30/12/2023	3	S91	81 Selwyn Cres	2:35	50	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	30/12/2023	3	S70	9 Woodstock Road	23:00	70	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	9/01/2024	3	2430157	The Esplanade	8:28	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			Sucker truck
East Coast Bays	10/01/2024	3	2431481	Becroft DR	14:03	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	22/02/2024	3	2539875	Palliser LN	9:04	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	11/03/2024	3	2431878	Hillside RD	10:22	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
East Coast Bays	24/03/2024	3	2440463	Sunnynook RD	16:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			root removal
East Coast Bays	12/04/2024	3	2533759	Midway AVE	20:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
East Coast Bays	20/04/2024	3	2548348	John Downs DR	17:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	21/04/2024	3	2541302	Celina PL	9:35	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	21/04/2024	3	2431548	Seaview RD	7:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	21/04/2024	3	2555325	Holiday RD	8:59	n/a	Fat	No	On property	L3	Local	Beach	yes	no	no	no		6	Flushed line, CCTV
East Coast Bays	2/05/2024	3	2537889	Scarboro TCE	11:26	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	3/05/2024	3	2534018	Cockayne CRES	17:32	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	15/05/2024	3	2436002	Aberdeen RD	9:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	20/05/2024	1	DPGYS	Grays Pump Station	22:26	19	Surcharging	yes	Winstones Cove		Local	Beach	Low	No		yes	yes		
East Coast Bays	20/05/2024	1	DPCBY	Castor Bay Pump Station	22:50	80	Surcharging	yes	Castor Bay Stream		Transm.	Small waterway	Low	Yes		no	yes		
East Coast Bays	20/05/2024	1	DPALC	Albany Church Pump Station	22:11	238	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		
East Coast Bays	20/05/2024	2	834	28 Penning Road	22:00	100	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	20/05/2024	2	1595	11 Jonathan Place	22:20	90	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	20/05/2024	3	S91	81 Selwyn Cres	22:10	55	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	20/05/2024	3	S70	9 Woodstock Road	21:40	130	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	21/05/2024	1	DPBLA	Black Rock Pump Station	00:42		Surcharging	yes	Thorne Bay		Transm.	Beach	Moderate	No		yes	yes		
East Coast Bays	21/05/2024	1	DSSIL	Silverfield Storage Tank	00:20	546	Surcharging	yes	Wairau Stream		Transm.	Small waterway	Very low	Yes	yes	no	yes		
East Coast Bays	21/05/2024	3	2531003	Trias RD	15:18	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots + fat, planned CCTV
East Coast Bays	10/06/2024	3	2539637	Saddleback RISE	10:14	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired pipe
East Coast Bays	10/06/2024	3	2425319	Palliser LN	19:29	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
East Coast Bays	10/06/2024	3	2537889	Scarboro TCE	10:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			CCTV
East Coast Bays	10/06/2024	3	2567753	Anne RD	11:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Roots to be removed
East Coast Bays	14/06/2024	1	DPCBY	Castor Bay Pump Station	02:50	480	Surcharging	yes	Castor Bay Stream	L1	Transm.	Small waterway	Low	no	no	no	yes		
East Coast Bays	14/06/2024	1	DPGYS	Grays Pump Station	03:15	11	Surcharging	yes	Winstones Cove		Local	Beach	Low	No		yes	yes		
East Coast Bays	14/06/2024	1	DPBRB	Browns Bay Pump Station	12:22	198	Surcharging	yes	Taiaotea Creek		Transm.	Small waterway	Moderate	Yes			yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
East Coast Bays	14/06/2024	1	DSSIL	Silverfield Storage Tank	12:37	375	Surcharging	yes	Wairau Stream		Transm.	Small waterway	Very low	Yes	yes	no	yes		
East Coast Bays	14/06/2024	1	DPALC	Albany Church Pump Station	03:25	567	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		
East Coast Bays	14/06/2024	2	1576	16 Jutland St	3:15	20	Surcharging	yes	Unnamed watercourse off Jutland Street		Local	Small waterway		yes			yes		
East Coast Bays	14/06/2024	2	1595	11 Jonathan Place	3:20	110	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	14/06/2024	3	2430600	Totaravale DR	12:22	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/06/2024	3	2539077	Wyoming AVE	9:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/06/2024	3	2438535	Beach RD	12:21	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			flushed line
East Coast Bays	14/06/2024	3	2535580	Agincourt ST	12:02	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	14/06/2024	3	2545171	Masterton RD	18:18	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	14/06/2024	3	2424150	Parr TCE	10:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/06/2024	3	2434360	The Esplanade	10:58	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	14/06/2024	3	S91	81 Selwyn Cres	0:00	80	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	14/06/2024	3	S70	9 Woodstock Road	6:55	230	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	15/06/2024	3	2543604	Blakeborough DR	16:06	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	15/06/2024	3	2434016	Bond CRES	10:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	16/06/2024	1	DPBLA	Black Rock Pump Station	22:09	218	Surcharging	yes	Thorne Bay		Transm.	Beach	Moderate	No		yes	yes		
East Coast Bays	16/06/2024	1	DPGYS	Grays Pump Station	22:23		Surcharging	yes	Winstones Cove		Local	Beach	Low	No		yes	yes		
East Coast Bays	16/06/2024	1	DPCBY	Castor Bay Pump Station	22:19	80	Surcharging	yes	Castor Bay Stream		Transm.	Small waterway	Low	Yes		no	yes		
East Coast Bays	16/06/2024	1	DSSIL	Silverfield Storage Tank	22:04	425	Surcharging	yes	Wairau Stream		Transm.	Small waterway	Very low	Yes	yes	no	yes		
East Coast Bays	16/06/2024	1	DPALC	Albany Church Pump Station	20:59	448	Surcharging	yes	Lignite Stream		Local	Small waterway	Very low	Yes			yes		
East Coast Bays	16/06/2024	2	834	28 Penning Road	20:40	140	Surcharging	yes	Unnamed tributary of Wairau Creek		Local	Small waterway	Very Low	yes		no	yes		
East Coast Bays	16/06/2024	2	1595	11 Jonathan Place	21:10	180	Surcharging	yes	Unnamed tributary of Wairau Stream		Local	Small waterway		yes			yes		
East Coast Bays	16/06/2024	3	S91	81 Selwyn Cres	0:00	85	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
East Coast Bays	16/06/2024	3	S70	9 Woodstock Road	15:50	230	Surcharging	Yes	On property		Local	Stream	Low				yes		
East Coast Bays	17/06/2024	1	DPBLA	Black Rock Pump Station	01:48	792	Surcharging	yes	Thorne Bay		Transm.	Beach	Moderate	No		yes	yes		
East Coast Bays	17/06/2024	3	2532317	Ashfield RD	18:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	17/06/2024	3	2434016	Bond CRES	15:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, escalated for CCTV
East Coast Bays	17/06/2024	3	2531085	Totaravale DR	12:51	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
East Coast Bays	18/06/2024	3	2545171	Masterton RD	6:17	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	19/06/2024	1	DPBLA	Black Rock Pump Station	13:48	792	Surcharging	yes	Thorne Bay		Transm.	Beach	Moderate	No		yes	yes		
East Coast Bays	23/06/2024	3	2530920	Woodcote DR	14:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
East Coast Bays	23/06/2024	3	2538198	Lyons AVE	10:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalate for CCTV
East Coast Bays	23/06/2024	3	2425659	Midway AVE	16:48	n/a	Roots	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			flushed line
East Coast Bays	23/06/2024	3	2538774	Masterton RD	11:07	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
East Coast Bays	23/06/2024	3	2432014	Rewi ST	12:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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East Coast Bays	23/06/2024	3	S70	9 Woodstock Road	21:45	70	Surcharging	Yes	On property		Local	Stream	Low				yes		
Devonport-Takapuna	21/07/2023	1	DPNRO	Northboro Pump Station	08:50	1118	Surcharging	yes	St Leonards Beach		Transm.	Beach	High	No		yes	yes		
Devonport-Takapuna	21/07/2023	2	848	1 Old Lake Road	2:15	370	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	20/08/2023	2	848	1 Old Lake Road	1:10	30	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	11/09/2023	2	848	1 Old Lake Road	16:00	80	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	24/09/2023	1	DPNRO	Northboro Pump Station	04:30	174	Surcharging	yes	St Leonards Beach		Transm.	Beach	High	No		yes	yes		
Devonport-Takapuna	25/09/2023	2	848	1 Old Lake Road	23:45	30	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	30/09/2023	3	2431758	Cameron ST	11:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	31/10/2023	3	2544583	Rewiti AVE	14:59	n/a	Roots	No	Car park	L1	Local	n/a	yes	no	no	no			Heavy flush, removed roots
Devonport-Takapuna	31/10/2023	3	2430551	Beacholm RD	10:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	3/11/2023	1	DPNRO	Northboro Pump Station	12:34	191	Surcharging	yes	St Leonards Beach		Transm.	Beach	High	No		yes	yes		
Devonport-Takapuna	18/11/2023	3	2540630	Blomfield Spa	13:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Devonport-Takapuna	25/12/2023	3	2547237	King Edward PDE	9:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Devonport-Takapuna	30/12/2023	2	848	1 Old Lake Road	0:10	120	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	30/12/2023	3	2536151	Victoria RD	12:43	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			flushed line
Devonport-Takapuna	24/03/2024	3	2542798	Hurstmere RD	13:44	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Devonport-Takapuna	20/05/2024	2	848	1 Old Lake Road	22:00	200	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	14/06/2024	1	DSKED	King Edward Storage Tanks	05:45	90	Surcharging	no	North Head	L1	Transm.	Harbour	High	no	no	no	yes		
Devonport-Takapuna	15/06/2024	3	2421974	St Leonards RD	9:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Devonport-Takapuna	16/06/2024	2	848	1 Old Lake Road	22:15	100	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Devonport-Takapuna	23/06/2024	2	848	1 Old Lake Road	4:05	30	Surcharging	yes	Narrow Neck Beach		Local	Beach		no		yes	yes		
Shoal Bay	18/07/2023	3	DSBYS	Bayswater Branch Sewer TS2A	18:17		Surcharging	no		L2	Transm.	beach	yes	no	no	yes	no		
Shoal Bay	21/07/2023	1	DPJIM	Jim Tichener Pump Station	06:32	334	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Shoal Bay	21/07/2023	1	DPLNO	Lake Road (Northcote) Pump Station	05:14	696	Surcharging	yes	Onepoto Stream		Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	21/07/2023	1	DPSEA	Seabreeze Pump Station	03:16	619	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	21/07/2023	2	829	28 Waitemata Road	5:20	130	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	21/07/2023	3	2433095	Onepoto RD	15:43	n/a	3rd party damage	No	Construction site	L1	Local	n/a	no	no	no	no			Line repaired by 3rd party
Shoal Bay	22/07/2023	3	2523896	Glade PL	9:03	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Removed rags

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Shoal Bay	22/07/2023	3	2437159	Grove RD	16:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	28/07/2023	3	1378961	Maritime TCE	10:08	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	3/08/2023	1	DPSN2	Stanley Point 2 Pump Station	01:58	35	Power Failure	yes	To land	L1	Local	To land		no	no	no	yes		
Shoal Bay	10/08/2023	3	2430221	Belle Vue AVE	12:58	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	21/08/2023	3	2534081	Lake RD	14:03	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	5/09/2023	3	2420732	Palmerston RD	11:25	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, relined pipe
Shoal Bay	5/09/2023	3	2536855	Deuxberry AVE	10:02	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	11/09/2023	1	DPLNO	Lake Road (Northcote) Pump Station	16:34	312	Surcharging	yes	Onepoto Stream		Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	11/09/2023	2	829	28 Waitemata Road	16:00	35	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	11/09/2023	3	2539520	Williamson AVE	17:05	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed metal + rocks
Shoal Bay	11/09/2023	3	2532070	Palmerston RD	17:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	25/09/2023	1	DPLNO	Lake Road (Northcote) Pump Station	23:24	604	Surcharging	yes	Onepoto Stream		Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	26/09/2023	1	DPSEA	Seabreeze Pump Station	17:46	193	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	26/09/2023	3	2432763	Princes ST	16:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	27/09/2023	1	DPSEA	Seabreeze Pump Station	10:09	8	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	30/09/2023	3	2543157	Kawerau AVE	18:34	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Escalated to transmission team
Shoal Bay	1/10/2023	3	2434135	McDowell CRES	17:39	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Shoal Bay	15/10/2023	3	2544019	Wicklow RD	17:19	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			No notes
Shoal Bay	18/10/2023	3	2419342	Maunganui RD	9:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	30/10/2023	3	2429619	Bayswater AVE	10:43	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Shoal Bay	31/10/2023	3	2530048	Deuxberry AVE	16:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots, repaired MH
Shoal Bay	31/10/2023	3	2534965	Anzac ST	18:56	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Unblocked line
Shoal Bay	3/11/2023	3	2544098	Rosyth AVE	12:39	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Shoal Bay	5/11/2023	3	2538493	Lake RD	17:26	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	14/11/2023	2	829	28 Waitemata Road	16:55	15	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	18/11/2023	2	829	28 Waitemata Road	17:35	85	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	19/11/2023	3	2429636	Lake RD	8:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	24/12/2023	1	DPLNO	Lake Road (Northcote) Pump Station	19:40	68	Surcharging	yes	Onepoto Stream		Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	26/12/2023	3	2532158	Raymond TCE	10:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	26/12/2023	3	2536934	Marsden ST	9:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	30/12/2023	1	DPLNO	Lake Road (Northcote) Pump Station	01:04	291	Surcharging	yes	Onepoto Stream		Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	30/12/2023	1	DPSEA	Seabreeze Pump Station	01:48	257	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	30/12/2023	3	2535669	Harley RD	8:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV, heavy flush
Shoal Bay	1/01/2024	3	2543144	Onewa RD	13:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Shoal Bay	16/01/2024	3	2420553	City View TCE	9:17	n/a	Unknown	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line
Shoal Bay	5/03/2024	3	2528700	Onewa RD	8:44	n/a	Unknown	No	Retail/ commercial/ public	L3	Local	SW network	yes	no	yes	no			Flushed line, CCTV, sucker truck, removed fat

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Shoal Bay	12/04/2024	2	829	28 Waitemata Road	10:35	15	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	20/04/2024	1	DPSEA	Seabreeze Pump Station	14:19	12	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	20/04/2024	3	2421763	Awanui ST	14:09	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	20/04/2024	3	2427893	Beresford ST	8:16	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	2/05/2024	3	2531513	Speedy CRES	9:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Shoal Bay	20/05/2024	1	DPJIM	Jim Tichener Pump Station	23:50	109	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Shoal Bay	20/05/2024	1	DPSN2	Stanley Point 2 Pump Station	23:53	29	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Shoal Bay	20/05/2024	1	DPSEA	Seabreeze Pump Station	22:36	670	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	20/05/2024	2	829	28 Waitemata Road	22:25	125	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Shoal Bay	20/05/2024	3	2427026	Gladstone RD	22:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Shoal Bay	21/05/2024	3	2419768	Colonial RD	8:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Shoal Bay	23/05/2024	3	2545138	Lake RD	6:50	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Shoal Bay	30/05/2024	3	2529144	Ngataringa RD	13:43	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Shoal Bay	14/06/2024	1	DPLNO	Lake Road (Northcote) Pump Station	03:24	840	Surcharging	yes	Onepoto Stream	L1	Transm.	Estuary	Very low	no	no	no	yes		
Shoal Bay	14/06/2024	1	DPSEA	Seabreeze Pump Station	03:09	89	Surcharging	yes	Ngataringa Stream	L2	Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	14/06/2024	3	2439832	Homewood PL	12:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Shoal Bay	15/06/2024	3	2428731	Victoria RD	9:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Back flushed line
Shoal Bay	16/06/2024	1	DPSEA	Seabreeze Pump Station	23:00	302	Surcharging	yes	Ngataringa Stream		Transm.	Small waterway	Moderate	Yes		no	yes		
Shoal Bay	16/06/2024	2	829	28 Waitemata Road	22:10	40	Surcharging	yes	Shoal Bay		Local	Estuary					yes		
Upper Harbour North	20/08/2023	3	2428586	Manu PL	10:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	30/08/2023	3	2537128	Centorian DR	12:28	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV found no faults
Upper Harbour North	4/09/2023	3	2427570	Albany HWY	10:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	5/09/2023	3	2435103	Greenhithe RD	7:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	12/09/2023	3	2304014	Andersons RD	7:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned root cut + CCTV
Upper Harbour North	14/09/2023	3	2437060	Suckling'S LN	16:01	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Resealed MH
Upper Harbour North	26/09/2023	3	2561774	Oteha Valley RD-X	8:37	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	26/09/2023	3	2427972	The Close	17:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	4/11/2023	3	2541570	Rosedale RD	9:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	15/11/2023	3	2540643	Tawa DR	15:34	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Harbour North	19/11/2023	3	2432754	Delisle PL	18:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour North	19/11/2023	3	2532559	Sunnyview RD	16:51	n/a	Unknown	Yes	On property	L2	Local	Stream	no	yes	no	no			Heavy flush

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Upper Harbour North	21/11/2023	3	2534706	Parkway DR	11:16	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Unblocked line, removed roots
Upper Harbour North	21/11/2023	3	2535642	Parkway DR	13:47	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Harbour North	13/12/2023	3	2430628	Hornbill DR	0:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	26/12/2023	3	2424280	Northbrook CL	8:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	28/12/2023	3	2537849	Oteha Valley RD-X	8:25	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Harbour North	1/01/2024	3	2437780	Oteha Valley RD	16:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	16/01/2024	3	2538660	The Avenue	13:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Upper Harbour North	24/03/2024	3	2431608	Arirang RISE	19:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			root removal
Upper Harbour North	15/05/2024	3	2540460	East Coast RD	11:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour North	14/06/2024	1	DPCHH	Churchouse Road Pump Station	04:54	108	Surcharging	no	Greenhithe Stream	L1	Transm.	Small waterway	Very low	no	no	no	yes		
Upper Harbour North	14/06/2024	1	DPKY1	Kyle 1 Pump Station	04:23	720	Surcharging	no	Kyle Stream	L1	Transm.	Small waterway	Low	no	no	no	yes		
Upper Harbour South	14/07/2023	3	2425893	Lynn RD	9:43	n/a	Surcharging	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Upper Harbour South	21/07/2023	1	DPCRO	Cronin Pump Station	04:45	108	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	21/07/2023	2	844	28 Gazelle Road	5:15	280	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	24/07/2023	3	2421394	Cronin PL	10:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Repaired MH
Upper Harbour South	4/09/2023	2	844	28 Gazelle Road	21:10	100	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	5/09/2023	3	2421843	Abbeygate ST	10:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	6/09/2023	3	2433489	Birkdale RD	15:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Harbour South	11/09/2023	1	DPCRO	Cronin Pump Station	15:43	219	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	25/09/2023	1	DPCRO	Cronin Pump Station	22:28	309	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	25/09/2023	2	844	28 Gazelle Road	22:40	30	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	30/09/2023	1	DPCRO	Cronin Pump Station	04:48	135	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	30/09/2023	3	2534532	Kia Ora RD	16:14	n/a	Fat	No	On property	L2	Local	Stream	no	yes	no	no			Flushed line, removed fat + rags
Upper Harbour South	18/10/2023	3	2434844	Brunton PL	20:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			CCTV, heavy flush
Upper Harbour South	18/10/2023	3	2530420	Hadfield ST	17:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Harbour South	31/10/2023	3	2439087	Valkyria PL	7:17	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, set up bypass pump
Upper Harbour South	31/10/2023	3	2534155	Beaudine AVE	13:48	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat

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Upper Harbour South	31/10/2023	3	2430477	Glenfield RD	22:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	31/10/2023	3	2436242	Roberts AVE	13:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Upper Harbour South	15/11/2023	3	2423455	Oruamo PL	13:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	18/11/2023	3	2534643	Brunton PL	16:22	n/a	Power Failure	No	On property	L1	Local	n/a	no	no	no	no			PS pump repaired
Upper Harbour South	21/11/2023	3	2540858	Brigantine DR	7:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour South	30/12/2023	1	DPCRO	Cronin Pump Station	00:23	183	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	30/12/2023	2	844	28 Gazelle Road	1:00	20	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	27/02/2024	3	2425415	Simon Ellice DR	8:23	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV
Upper Harbour South	24/03/2024	3	2529336	Lauderdale RD	13:49	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			sucked out fat
Upper Harbour South	24/03/2024	3	2529336	Lauderdale RD	9:50	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Harbour South	24/03/2024	3	2420424	Sunnyhaven AVE	11:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour South	12/04/2024	3	2438276	Kauri RD	18:39	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV, removed roots + fat
Upper Harbour South	21/04/2024	3	2421296	James ST	10:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV
Upper Harbour South	20/05/2024	1	DPCRO	Cronin Pump Station	22:34	131	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	20/05/2024	2	844	28 Gazelle Road	22:55	60	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	10/06/2024	3	2437095	Hadfield ST	9:38	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Harbour South	14/06/2024	1	DPCRO	Cronin Pump Station	03:30	309	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	14/06/2024	1	DPISL	Island Bay Pump Station	04:00	6	Surcharging	yes	Island Bay		Local	Beach	Moderate	No		yes	yes		
Upper Harbour South	14/06/2024	2	844	28 Gazelle Road	3:50	50	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	14/06/2024	3	2419428	Hague PL	20:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Cleared roots, CCTV
Upper Harbour South	16/06/2024	1	DPCRO	Cronin Pump Station	20:57	166	Surcharging	yes	Beach Haven Beach		Local	Beach	Low	No		yes	yes		
Upper Harbour South	16/06/2024	1	DPISL	Island Bay Pump Station	21:41	7	Surcharging	yes	Island Bay		Local	Beach	Moderate	No		yes	yes		
Upper Harbour South	16/06/2024	2	844	28 Gazelle Road	21:35	80	Surcharging	yes	Hellyers Creek		Transm.	Estuary				no	yes		
Upper Harbour South	17/06/2024	3	2431385	Elliott AVE	14:28	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Requested CCTV
Upper Harbour South	20/06/2024	3	2547327	Stott AVE	16:48	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour West	6/09/2023	3	2520679	Hanly CL	6:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	24/09/2023	3	2418171	The Terrace	9:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Upper Harbour West	27/09/2023	3	82511554	Biokovo ST	18:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Harbour West	18/11/2023	3	2455006	Shelduck WAY	20:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Harbour West	30/12/2023	3	81004385	Connemara CT	8:43	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Harbour West	20/04/2024	3	2416977	The Terrace	10:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/07/2023	3	2513586	Don Buck RD	12:49	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Henderson Creek	3/07/2023	3	DSWHE	Whenuapai Branch Sewer MH 15	20:37	34	Surcharging	no			Transm.	beach	yes	no	no	yes	yes		
Henderson Creek	8/07/2023	3	81004418	Granville DR	18:51	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	21/07/2023	1	DPTEN	PS 42 Te Atatu North	05:30	864	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	21/07/2023	1	DPFLN	PS 44 Western	09:19	783	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Low	No		Yes	yes		
Henderson Creek	21/07/2023	2	748	Glen Eden Branch MH16	6:40	325	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Very High			no	yes		
Henderson Creek	21/07/2023	2	1539	Blethyn Place Reserve	5:30	940	Surcharging	yes	Henderson Creek (southern arm)		Local	Estuary	Very Low			no	yes		
Henderson Creek	21/07/2023	2	1604	10 Celsmere Lane	4:30	490	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	21/07/2023	2	6	50 Kingdale Road	5:45	500	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	21/07/2023	2	1583	16 Matipo Rd	4:25	600	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	21/07/2023	3	2407379	Posa AVE	15:04	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	21/07/2023	3	2519709	Takapu ST	11:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	21/07/2023	3	2512600	Newington RD	6:26	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV, repaired MH lid
Henderson Creek	21/07/2023	3	2513157	Castaing CRES	17:28	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	21/07/2023	3	S24	Whenuapai Branch Sewer MH 10	22:35	1130	Surcharging	Yes	Stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	21/07/2023	3	DSGLE	Glen Eden Branch MH83B	10:38	202	Surcharging	no			Transm.	stream	yes	yes	yes	no	yes		
Henderson Creek	21/07/2023	3	S76	44 Titoki Street	0:40	340	Surcharging	Yes	Road/ footpath		Local	Stream	Low				yes		
Henderson Creek	23/07/2023	3	2420182	Selwood RD	20:30	n/a	Surcharging	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Henderson Creek	24/07/2023	3	2416182	West Harbour DR	*14:33*	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	25/07/2023	3	2518024	Noall ST	8:33	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	27/07/2023	3	2412031	Titirangi RD	11:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	28/07/2023	3	82510505	Barrel CRES	8:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	1/08/2023	3	2513157	Castaing CRES	11:45	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	2/08/2023	3	2616796	Aporo Tawhito LN	19:52	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no		0	Flushed line
Henderson Creek	20/08/2023	3	2408245	Newington RD	14:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	21/08/2023	3	2516069	Waipareira AVE	15:32	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush, CCTV
Henderson Creek	21/08/2023	3	2512595	Larissa AVE	14:48	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	21/08/2023	3	2408748	Edmonton RD	15:36	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no			Unblocked line
Henderson Creek	22/08/2023	3	2514594	Sel Peacock DR	11:46	n/a	Surcharging	No	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no			Heavy flush
Henderson Creek	1/09/2023	3	2413197	Newington RD	12:53	n/a	Surcharging	Yes	On property	L2	Local	Stream	no	yes	no	no			
Henderson Creek	4/09/2023	2	1604	10 Celsmere Lane	20:40	140	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	4/09/2023	2	6	50 Kingdale Road	22:40	20	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		

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Henderson Creek	4/09/2023	2	1583	16 Matipo Rd	21:00	110	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	4/09/2023	3	2409234	Longburn RD	20:40	n/a	roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	4/09/2023	3	2508648	Woodglen RD	15:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	4/09/2023	3	S24	Whenuapai Branch Sewer MH 10	7:55	80	Surcharging	Yes	Stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	5/09/2023	3	2409532	Thomas AVE	12:38	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	5/09/2023	3	2523708	Basra DR	10:53	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cut
Henderson Creek	5/09/2023	3	2408376	Newington RD	10:03	n/a	Surcharging	Yes	On property	L2	Local	Stream	no	yes	no	no			
Henderson Creek	6/09/2023	3	2509909	Sungrove RISE	11:43	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed gravel
Henderson Creek	6/09/2023	3	2408146	Bruce McLaren RD	16:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	6/09/2023	3	2409215	Newington RD	12:52	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Henderson Creek	11/09/2023	3	2407944	Newington RD	17:29	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, removed concrete, fat, rags + silts
Henderson Creek	11/09/2023	3	2408954	Noall ST	15:37	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Transmission issue
Henderson Creek	12/09/2023	3	2516141	Highland AVE	19:48	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	14/09/2023	3	2511433	Chorley AVE	15:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Resealed MH
Henderson Creek	24/09/2023	3	2404938	Triangle RD	9:33	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	24/09/2023	3	2510591	Kingdale RD	18:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush, CCTV
Henderson Creek	25/09/2023	1	DPTEN	PS 42 Te Atatu North	22:11	135	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	25/09/2023	2	748	Glen Eden Branch MH16	23:45	25	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Very High			no	yes		
Henderson Creek	25/09/2023	2	1539	Blethyn Place Reserve	23:05	320	Surcharging	yes	Henderson Creek (southern arm)		Local	Estuary	Very Low			no	yes		
Henderson Creek	25/09/2023	2	6	50 Kingdale Road	22:25	230	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	25/09/2023	3	S24	Whenuapai Branch Sewer MH 10	4:00	630	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	25/09/2023	3	S76	44 Titoki Street	22:35	80	Surcharging	Yes	Road/ footpath		Local	Stream	Low				yes		
Henderson Creek	26/09/2023	1	DPTEN	PS 42 Te Atatu North	01:14	1026	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	26/09/2023	1	DPFLN	PS 44 Western	07:47	243	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Low	No		Yes	yes		
Henderson Creek	26/09/2023	3	2512600	Newington RD	9:05	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	29/09/2023	3	2515994	Candia RD	10:23	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	29/09/2023	3	2513157	Castaing CRES	8:56	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	30/09/2023	3	2411819	Seymour RD	17:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	30/10/2023	3	2404478	Te Atatu RD	9:55	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	30/10/2023	3	2408634	Bellringer RD	13:17	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no		0	CCTV, escalated to engineer
Henderson Creek	31/10/2023	2	1604	10 Celsmere Lane	16:40	80	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	31/10/2023	2	1583	16 Matipo Rd	17:10	50	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	3/11/2023	3	2518120	Afton PL	20:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + plastic
Henderson Creek	15/11/2023	3	2408951	Lincoln RD	14:36	n/a	Fat	Yes	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, sucker truck
Henderson Creek	15/11/2023	3	2409599	Lincoln Park AVE	8:12	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	18/11/2023	3	2417221	South Kensington WAY	14:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	18/11/2023	3	2412821	Kaurimu RISE	16:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Henderson Creek	19/11/2023	3	2411083	William Wallbank CRES	11:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Henderson Creek	19/11/2023	3	2413417	Munroe RD	13:08	n/a	3rd party damage	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, planned works
Henderson Creek	4/12/2023	3	2507433	Tara RD	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	13/12/2023	3	2517359	Metcalfe RD	0:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	21/12/2023	3	2413952	Newington RD	16:10	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	25/12/2023	3	2516074	Burgundy Park AVE	12:39	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	25/12/2023	3	2412164	Metcalfe RD	23:15	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	29/12/2023	2	6	50 Kingdale Road	23:20	210	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	29/12/2023	2	1583	16 Matipo Rd	23:35	120	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	30/12/2023	1	DPTEN	PS 42 Te Atatu North	01:42	137	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	30/12/2023	1	DPFLN	PS 44 Western	09:55	216	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Low	No		Yes	yes		
Henderson Creek	30/12/2023	2	1539	Blethyn Place Reserve	0:25	430	Surcharging	yes	Henderson Creek (southern arm)		Local	Estuary	Very Low			no	yes		
Henderson Creek	30/12/2023	2	1604	10 Celsmere Lane	0:25	50	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	30/12/2023	3	2408522	Triangle RD	10:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed fat + rags
Henderson Creek	30/12/2023	3	2411141	Don Buck RD	13:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	30/12/2023	3	2420893	Lavelle RD	17:34	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	30/12/2023	3	S24	Whenuapai Branch Sewer MH 10	2:00	420	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	31/12/2023	1	DPTEN	PS 42 Te Atatu North	22:03	40	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	1/01/2024	3	2512718	Millbrook RD	10:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Henderson Creek	16/01/2024	3	2408713	Statesman ST	15:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	27/01/2024	3	2519310	Reynella DR	12:53	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Henderson Creek	29/01/2024	3	2517544	Mulvaney CRES	15:31	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	19/02/2024	3	2529988	Pooks RD	10:51	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	27/02/2024	3	2517544	Mulvaney CRES	10:45	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	3/03/2024	3	2408821	Takapu ST	14:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	4/03/2024	3	1520272	Forest Hill RD	6:20	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	12/04/2024	3	2407152	View RD	10:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	12/04/2024	3	2412577	View RD	11:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	13/04/2024	3	2414922	Swanson RD	7:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	18/04/2024	3	2409197	Vina PL	15:50	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	19/04/2024	3	2409040	Great North RD	11:40	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush, CCTV
Henderson Creek	20/04/2024	2	1604	10 Celsmere Lane	13:10	40	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	20/04/2024	3	2522548	Quincey PL	12:59	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Henderson Creek	20/04/2024	3	2521830	Zita Maria DR	18:01	n/a	Fat	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Heavy flush, removed fat + roots
Henderson Creek	20/04/2024	3	S24	Whenuapai Branch Sewer MH 10	0:50	60	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	1/05/2024	3	2409215	Newington RD	15:19	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	2/05/2024	3	2417524	Lincoln RD	17:12	n/a	Unknown	Yes	Retail/ commercial/ public	L2	Local	Stream	yes	yes	no	no			Heavy flush, CCTV
Henderson Creek	15/05/2024	3	2416845	Don Buck RD	8:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	16/05/2024	3	2511239	Tagor ST	17:32	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	16/05/2024	3	2408184	Mildmay RD	14:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	20/05/2024	1	DPTEN	PS 42 Te Atatu North	23:35	78	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Henderson Creek	20/05/2024	2	1604	10 Celsmere Lane	22:45	70	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	20/05/2024	2	6	50 Kingdale Road	23:50	20	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	20/05/2024	2	1583	16 Matipo Rd	22:40	80	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	20/05/2024	3	S24	Whenuapai Branch Sewer MH 10	2:10	60	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	21/05/2024	3	2415136	Brashier CIR	8:28	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV - job incomplete
Henderson Creek	21/05/2024	3	2404610	Blacklock AVE	15:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Henderson Creek	21/05/2024	3	2412159	Forest Hill RD	12:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	29/05/2024	3	2416915	Chamberlain RD	10:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	29/05/2024	3	2408786	Colwill RD	9:37	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Henderson Creek	30/05/2024	3	2416029	Justin PL	12:57	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, sucker truck
Henderson Creek	10/06/2024	3	82870363	Millbrook RD	16:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/06/2024	3	1345398	Woodford AVE	10:47	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	10/06/2024	3	2417279	Don Buck RD	9:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	14/06/2024	1	DPTEN	PS 42 Te Atatu North	05:02	150	Surcharging	yes	Estuary at Orukuwai Point	L1	Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	14/06/2024	1	DPFLN	PS 44 Western	11:48	578	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Low	No		Yes	yes		
Henderson Creek	14/06/2024	2	748	Glen Eden Branch MH16	19:55	397	Other	yes	Henderson Creek (southern arm)	L3	Transm.	Estuary	Very High			no	yes		
Henderson Creek	14/06/2024	2	1539	Blethyn Place Reserve	11:40	720	Surcharging	yes	Henderson Creek (southern arm)		Local	Estuary	Very Low			no	yes		
Henderson Creek	14/06/2024	2	1604	10 Celsmere Lane	3:40	190	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	14/06/2024	2	6	50 Kingdale Road	4:30	80	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	14/06/2024	2	1583	16 Matipo Rd	3:40	310	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	14/06/2024	3	S24	Whenuapai Branch Sewer MH 10	15:45	1040	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	15/06/2024	1	DPFLN	PS 44 Western	01:02	33	Surcharging	yes	Henderson Creek (southern arm)		Transm.	Estuary	Low	No		Yes	yes		
Henderson Creek	15/06/2024	3	2525809	Triangle RD	9:21	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			
Henderson Creek	16/06/2024	1	DPTEN	PS 42 Te Atatu North	21:56	178	Surcharging	yes	Estuary at Orukuwai Point		Transm.	Estuary	Very low	no	no	no	yes		
Henderson Creek	16/06/2024	2	748	Glen Eden Branch MH16	10:56	263	Surcharging	yes	Henderson Creek (southern arm)	L3	Transm.	Estuary	Very High			no	yes		
Henderson Creek	16/06/2024	2	1604	10 Celsmere Lane	21:15	240	Unknown	yes	Henderson Creek (southern arm)		Local	Estuary	High			no	yes		
Henderson Creek	16/06/2024	2	1583	16 Matipo Rd	21:20	210	Surcharging	yes	Unnamed tributary to Henderson Creek		Local	Small waterway		yes		no	yes		
Henderson Creek	16/06/2024	2	6	50 Kingdale Road	22:00	130	Surcharging	yes	Lincoln Stream		Local	Small waterway		yes			yes		
Henderson Creek	16/06/2024	3	S24	Whenuapai Branch Sewer MH 10	21:30	110	Surcharging	Yes	stormwater		Transm.	Estuary	yes	yes	yes	yes	yes		
Henderson Creek	16/06/2024	3	S76	44 Titoki Street	2:35	60	Surcharging	Yes	Road/ footpath		Local	Stream	Low				yes		
Henderson Creek	17/06/2024	3	2409074	Jarrah PL	15:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	17/06/2024	3	2415163	Don Buck RD	8:08	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	17/06/2024	3	2521960	Swanson RD	11:09	n/a	Silts	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	23/06/2024	3	2417096	Bahari DR	11:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Henderson Creek	23/06/2024	3	2515822	Lincoln RD	15:07	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Henderson Creek	23/06/2024	3	2521882	Garton DR	8:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	4/07/2023	3	2411415	Panzic PL	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Whau River	6/07/2023	1	DPHS1	Holly Street 1 Pump Station	15:54	29	Surcharging	no	Waterview Embayment		Local	Basin	Low	No		No	yes		
Whau River	8/07/2023	3	2511615	Covil AVE	10:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	21/07/2023	1	DPASH	Ash Street Pump Station	09:16	269	Surcharging	yes	Whau River Estuary		Local	Estuary	Very low	No		No	yes		
Whau River	21/07/2023	1	DPWIN	PS 25 St George	06:10	537	Surcharging	yes	Whau Creek		Transm.	Small waterway	Low	Yes	no	no	yes		
Whau River	21/07/2023	2	752	Rosebank Siphon MH1A	10:15	15	Surcharging	no	Whau River Estuary		Transm.	Estuary	Very Low				yes		
Whau River	21/07/2023	3	2514089	Beaubank RD	8:10	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Whau River	21/07/2023	3	S10	15A Firle Place	7:05	30	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
Whau River	25/07/2023	3	2511066	Crystal AVE	9:13	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	26/07/2023	3	2490312	Horwell PL	8:27	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Whau River	27/07/2023	3	2410579	Rosewarne CRES	5:42	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	27/07/2023	3	2517546	Gardner AVE	11:14	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Resealed MH
Whau River	3/08/2023	3	2404258	Sabulite RD	7:38	n/a	Roots	No	On property	L2	Local	Stream	no	yes	no	no			Planned heavy flush, CCTV
Whau River	11/08/2023	1	DPEND	Endeavour Street Pump Station	12:05	6	Surcharging	yes	Blockhouse Bay		Local	Beach	Low	No		yes	yes		
Whau River	14/08/2023	1	DPEND	Endeavour Street Pump Station	09:48	5	Surcharging	yes	Blockhouse Bay		Local	Beach	Low	No		yes	yes		
Whau River	11/09/2023	3	2509522	Poturi Streams AVE	17:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	11/09/2023	3	2510622	Hutchinson AVE	16:50	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	12/09/2023	3	2404622	Westall RD	9:27	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/09/2023	3	2420121	Golf RD	9:10	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	24/09/2023	3	2509584	Lantana RD	9:03	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	26/09/2023	3	2409605	Glen Marine PDE	2:22	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	26/09/2023	3	2408820	Glynnbrooke ST	10:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	28/09/2023	3	2409953	Bentinck ST	13:05	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat + rags
Whau River	28/09/2023	3	2410242	Butterworth DR	16:39	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	30/09/2023	3	2510751	Christina AVE	20:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Whau River	30/10/2023	3	2526090	Parker AVE	9:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	18/11/2023	3	2589571	Kinross ST	16:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	19/11/2023	3	2404087	Cobham CRES	11:25	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/12/2023	3	2587597	Rosebank RD	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	6/12/2023	3	2448128	Rosebank RD	12:00	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Whau River	22/12/2023	3	2414710	Jaemont AVE	15:16	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	25/12/2023	3	2483819	Holly ST	9:19	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	29/12/2023	3	2406752	Glen Marine PDE	16:45	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut
Whau River	30/12/2023	1	DPASH	Ash Street Pump Station	01:52	131	Surcharging	yes	Whau River Estuary		Local	Estuary	Very low	No		No	yes		
Whau River	30/12/2023	3	2531970	Archibald RD	19:17	n/a	Silts	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			flushed line
Whau River	3/03/2024	3	2410242	Butterworth DR	13:27	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	3/03/2024	3	2592635	Taramea ST	16:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	12/04/2024	3	2484372	Donovan ST	17:41	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, excalated to engineer
Whau River	19/04/2024	3	2406671	Islington AVE	10:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	15/05/2024	3	2479338	Fremlin PL	14:58	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line

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Whau River	16/05/2024	3	2518283	Lyndhurst RD	13:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	21/05/2024	3	2405310	Beaubank RD	13:56	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalated to engineer for repairs
Whau River	21/05/2024	3	2592948	Wairau AVE	16:32	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	29/05/2024	3	2510362	Binsted RD	12:02	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Heavy flush
Whau River	29/05/2024	3	2410229	Rosewarne CRES	13:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Whau River	30/05/2024	3	2517145	Hill CRES	11:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	30/05/2024	3	2407557	Glendene AVE	10:41	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no			Tree fell on pipe bridge - set up bypass pump, ongoing repairs
Whau River	14/06/2024	3	S10	15A Firle Place	5:00	40	Surcharging	Yes	On property	L1	Local	n/a	Low	no	no	no	yes		
Whau River	14/06/2024	3	S40	91 Gardner Avenue	21:50	25	Surcharging	No	On property	L1	Local	Stream	Low				yes		
Whau River	17/06/2024	3	2507516	Tomo ST	14:28	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, escalate for CCTV
Whau River	17/06/2024	3	2404760	St Leonards RD	7:51	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Whau River	17/06/2024	3	2511639	Glendene AVE	12:08	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	17/06/2024	3	2515878	Juneau PL	14:49	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no			CCTV
Whau River	19/06/2024	3	2404161	Crystal AVE	10:19	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Whau River	23/06/2024	3	2513321	Manhattan HTS	16:08	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	20/07/2023	3	2510990	Tainui RD	10:33	n/a	Surcharging	No	On property	L2	Local	SW network	no	no	yes	no			
Laingholm	18/11/2023	3	2412100	Otitori Bay RD	13:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Laingholm	19/01/2024	3	2521545	Landing RD	14:34	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Laingholm	4/03/2024	3	2525610	Tinopai RD	10:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	8/07/2023	3	2600824	Leighton ST	13:35	n/a	Broken pipe	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, CCTV, dig up and repair
Cox's Bay	21/07/2023	2	198	22 Marine Parade	2:10	540	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	21/07/2023	2	202	69 Hamilton Road	5:15	120	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	28/07/2023	3	2599521	Hakanoa ST	11:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	11/09/2023	2	198	22 Marine Parade	16:20	240	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	23/09/2023	2	198	22 Marine Parade	20:35	50	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	31/10/2023	3	2484780	Larchwood AVE	18:46	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		1	CCTV, escalated job
Cox's Bay	24/12/2023	3	2597802	Rose RD	20:59	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			sucker truck used
Cox's Bay	29/12/2023	2	198	22 Marine Parade	12:05	220	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	3/03/2024	3	2490225	Warnock ST	18:24	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Cox's Bay	11/03/2024	3	2494510	Stanmore RD	15:18	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Cox's Bay	12/04/2024	3	2490889	Pompallier TCE	16:57	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	19/04/2024	2	198	22 Marine Parade	5:45	220	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	16/05/2024	3	2599792	Castle ST	7:26	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Cox's Bay	20/05/2024	2	202	69 Hamilton Road	22:45	40	Unknown	yes	Home Bay		Local	Beach		no		yes	yes		
Cox's Bay	20/05/2024	2	230	42 Wharf Road	21:35	100	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Cox's Bay	14/06/2024	1	DPWEB	Webber Street Pump Station			Surcharging	no	Cox’s Creek		Local	Small waterway	Moderate	Yes	Yes	No	yes		
Cox's Bay	16/06/2024	2	198	22 Marine Parade	20:40	330	Unknown	yes	Cox’s Bay		Local	Beach		no		yes	yes		
Cox's Bay	16/06/2024	2	230	42 Wharf Road	20:40	130	Unknown	yes	Kelmarna Stream		Local	Small waterway		yes			yes		
Central Auckland CBD	24/07/2023	1	DPFRN	PS 1 Farnham Street	10:03	19	Surcharging	no	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very high	No		Yes	yes		

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Central Auckland CBD	28/07/2023	2	712	Branch 5 Herne Bay MH2A	1:16	95	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	21/08/2023	2	178	43 College Hill	10:35	15	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	21/08/2023	2	172	1 London Street	10:35	15	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	11/09/2023	2	712	Branch 5 Herne Bay MH2A	9:45	611	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	11/09/2023	2	178	43 College Hill	14:55	140	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	11/09/2023	2	172	1 London Street	14:55	140	Unknown	yes	Waitemata Harbour - CBD Edge		Local	Harbour	Very High	No	Yes	Yes	yes		
Central Auckland CBD	12/09/2023	3	81005153	Wyndham ST	14:09	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots + rags
Central Auckland CBD	12/09/2023	3	2603718	Parnell RD	9:21	n/a	Unknown	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no		0.25	Flushed line
Central Auckland CBD	16/09/2023	3	2603653	Avon ST	9:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Central Auckland CBD	24/09/2023	3	2597337	Wellington ST	16:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Central Auckland CBD	25/09/2023	3	2497511	The Strand	10:08	n/a	Surcharging	No	Inside property	L1	Local	n/a	no	no	no	no			
Central Auckland CBD	26/09/2023	2	712	Branch 5 Herne Bay MH2A	17:17	165	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	26/09/2023	3	2592595	Hepburn ST	8:15	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	18/11/2023	2	128	11 Victoria Street East	17:35	20	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	19/11/2023	2	712	Branch 5 Herne Bay MH2A	6:31	267	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	24/12/2023	2	128	11 Victoria Street East	16:45	45	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	25/12/2023	2	712	Branch 5 Herne Bay MH2A	10:02	27	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	29/12/2023	2	712	Branch 5 Herne Bay MH2A	17:36	870	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	30/12/2023	2	712	Branch 5 Herne Bay MH2A	9:19	5	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	27/02/2024	2	712	Branch 5 Herne Bay MH2A	0:41	92	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	24/03/2024	2	712	Branch 5 Herne Bay MH2A	3:53	22	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/04/2024	2	712	Branch 5 Herne Bay MH2A	2:02	902	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/04/2024	3	2481457	Federal ST	20:10	n/a	Fat	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line, removed fat, CCTV
Central Auckland CBD	21/04/2024	2	712	Branch 5 Herne Bay MH2A	10:18	39	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	16/05/2024	2	712	Branch 5 Herne Bay MH2A	5:45	196	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	20/05/2024	2	128	11 Victoria Street East	21:45	105	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	21/05/2024	2	712	Branch 5 Herne Bay MH2A	12:09	111	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		

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Central Auckland CBD	21/05/2024	3	2495847	Burrows AVE	14:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH lid
Central Auckland CBD	21/05/2024	3	2487049	Jervois RD	12:13	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	29/05/2024	2	712	Branch 5 Herne Bay MH2A	10:16	487	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	29/05/2024	3	2591909	Karangahape RD	17:16	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Central Auckland CBD	30/05/2024	2	712	Branch 5 Herne Bay MH2A	1:16	42	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	10/06/2024	3	2482274	Franklin RD	11:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Central Auckland CBD	14/06/2024	2	128	11 Victoria Street East	3:10	55	Surcharging	yes	Waitemata Harbour - CBD Edge		Local	Harbour					yes		
Central Auckland CBD	15/06/2024	2	712	Branch 5 Herne Bay MH2A	7:34	74	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	17/06/2024	3	2597545	Fanshawe ST	12:43	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy Flush
Central Auckland CBD	23/06/2024	2	712	Branch 5 Herne Bay MH2A	2:39	591	Surcharging	yes	Waitemata Harbour - CBD Edge		Transm.	Harbour	Very Low				yes		
Central Auckland CBD	23/06/2024	3	81000532	Cleveland RD	20:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	5/07/2023	1	DPPUR	Purewa Road Pump Station	08:24	215	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	6/07/2023	1	DPPUR	Purewa Road Pump Station	14:00	66	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	7/07/2023	2	503	68 Portland Road	23:00	35	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	7/07/2023	2	511	158 Bassett Road	22:30	80	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	8/07/2023	2	420	14 Mahuru Street	1:20	30	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	21/07/2023	1	DPPUR	Purewa Road Pump Station	07:31	218	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	21/07/2023	1	DPORM	PS 64 Orakei	09:50	663	Surcharging	yes	Okahu Bay		Transm.	Beach	High	No		yes	yes		
Hobson Bay	21/07/2023	1	DPJRP	John Rymer Place Pump Station	06:39	6	Surcharging	yes	Purewa Stream		Local	Small waterway	Very low	Yes			yes		
Hobson Bay	21/07/2023	2	454	34-36 Apihai Street	6:45	70	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	21/07/2023	2	193	35 Yattendon Road	4:20	730	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	21/07/2023	2	285	77 Meadowbank Road	6:40	180	Surcharging	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	21/07/2023	2	514	63 Tahapa Crescent	6:40	95	Surcharging	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	21/07/2023	2	458	88 Paritai Drive	6:40	40	Surcharging	yes	Lower Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	21/07/2023	2	711	Branch 3 Newmarket MH29	9:15	35	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	21/07/2023	2	503	68 Portland Road	1:50	495	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	21/07/2023	2	350	44 Rukutai Street	3:50	190	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	21/07/2023	2	215	74 Hawera Road	6:50	40	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	21/07/2023	2	213	59 Baddeley Avenue	6:15	210	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	21/07/2023	2	353	2b Nihill Crescent	6:35	260	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	21/07/2023	2	511	158 Bassett Road	1:50	590	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	21/07/2023	2	1630	35 James Cook Cres, Remuera	6:40	20	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	21/07/2023	2	420	14 Mahuru Street	5:35	480	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		

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Hobson Bay	21/07/2023	2	421	29 Ayr Street A	1:55	210	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	21/07/2023	2	508	32 Hapua Street	3:55	180	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	21/07/2023	2	281	49 Ngapuhi Road	2:20	680	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	21/07/2023	2	160	45 Ascot Avenue	3:10	200	Surcharging	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	21/07/2023	3	2496889	Thatcher ST	14:39	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	21/07/2023	3	2486081	McArthur AVE	12:36	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked by 3rd party
Hobson Bay	21/07/2023	3	2597856	Selwyn AVE	8:36	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	26/07/2023	2	505	9 Scherff Road	7:05	15	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	26/07/2023	3	2449858	Rakau ST	17:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	29/07/2023	3	2600139	St Johns RD	12:59	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Hobson Bay	2/08/2023	2	1630	35 James Cook Cres, Remuera	23:15	20	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/08/2023	2	193	35 Yattendon Road	1:30	450	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	4/09/2023	2	505	9 Scherff Road	20:00	430	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	4/09/2023	2	503	68 Portland Road	23:35	75	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	4/09/2023	2	511	158 Bassett Road	23:25	120	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	4/09/2023	2	1598	21 Ayr Street	22:45	50	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	5/09/2023	2	281	49 Ngapuhi Road	0:00	95	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	5/09/2023	3	2407686	St Stephens AVE	9:45	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Repaired line
Hobson Bay	11/09/2023	2	193	35 Yattendon Road	17:40	190	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	11/09/2023	3	2489690	Corinth ST	17:18	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	11/09/2023	3	2602538	Mount Hobson LN	17:56	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	12/09/2023	3	2399161	Mahoe AVE	14:28	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, removed roots
Hobson Bay	12/09/2023	3	2609375	Aotea ST	9:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter, planned CCTV
Hobson Bay	12/09/2023	3	2597856	Selwyn AVE	11:38	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line, root cutter, planned CCTV
Hobson Bay	16/09/2023	3	2508741	Ara ST	18:06	n/a	Surcharging	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Hobson Bay	23/09/2023	2	711	Branch 3 Newmarket MH29	20:38	213	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	23/09/2023	2	503	68 Portland Road	20:35	240	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/09/2023	2	213	59 Baddeley Avenue	22:10	35	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/09/2023	2	511	158 Bassett Road	20:30	430	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	23/09/2023	2	281	49 Ngapuhi Road	20:55	450	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	25/09/2023	2	711	Branch 3 Newmarket MH29	1:48	25	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	25/09/2023	2	508	32 Hapua Street	21:55	20	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	25/09/2023	2	160	45 Ascot Avenue	22:05	15	Surcharging	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	25/09/2023	3	2498147	Gowing DR	15:20	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Hobson Bay	26/09/2023	2	711	Branch 3 Newmarket MH29	0:57	62	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	26/09/2023	3	2499019	Wheturangi RD	13:54	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, root cut, CCTV

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Hobson Bay	18/10/2023	2	711	Branch 3 Newmarket MH29	9:20	88	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	18/10/2023	3	2608399	Melrose ST	10:36	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			flushed line
Hobson Bay	18/10/2023	3	2605645	Wapiti AVE	10:31	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	31/10/2023	3	2400375	Victoria AVE	15:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	3/11/2023	2	281	49 Ngapuhi Road	10:40	105	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	3/11/2023	3	2510785	Ascot AVE	12:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	4/11/2023	3	2481625	Shipherds AVE	10:55	n/a	Unknown	No	Inside property	L1	Local	n/a	no	no	no	no			Bypass pump, flushed line
Hobson Bay	14/11/2023	2	281	49 Ngapuhi Road	17:05	20	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	15/11/2023	3	2509929	Magma CRES	12:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Hobson Bay	18/11/2023	2	508	32 Hapua Street	17:20	40	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	19/11/2023	2	193	35 Yattendon Road	21:05	375	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	19/11/2023	3	2599538	Auckland RD	18:02	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Hobson Bay	20/11/2023	3	2503214	Morrin ST	10:01	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	7/12/2023	3	2490113	Dingle RD	12:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	29/12/2023	2	495	43 Tohunga Street	11:50	15	Surcharging	yes	Hobson Bay		Local	Basin	Very High				yes		
Hobson Bay	29/12/2023	2	454	34-36 Apihai Street	12:00	35	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	29/12/2023	2	458	88 Paritai Drive	12:00	60	Surcharging	yes	Lower Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	29/12/2023	2	350	44 Rukutai Street	11:55	80	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/12/2023	2	353	2b Nihill Crescent	12:00	110	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/12/2023	2	213	59 Baddeley Avenue	12:00	130	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	29/12/2023	2	1580	4 St Marks Rd	11:55	50	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	29/12/2023	2	281	49 Ngapuhi Road	11:55	450	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	30/12/2023	2	453	12a Okahu Street	0:40	80	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	30/12/2023	2	455	63 Reihana Street	0:40	30	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	30/12/2023	2	193	35 Yattendon Road	0:30	510	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	30/12/2023	2	514	63 Tahapa Crescent	0:45	50	Surcharging	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	30/12/2023	2	215	74 Hawera Road	0:50	50	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	31/12/2023	3	2592505	Grand DR	12:18	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	1/01/2024	3	2487101	Koraha ST	10:40	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots, CCTV
Hobson Bay	16/01/2024	3	2480330	Kipling AVE	8:32	n/a	Foreign Object	No	Construction site	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed rocks
Hobson Bay	17/01/2024	3	2602191	John Rymer PL	11:51	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	3/03/2024	3	2486751	Vale RD	15:30	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Hobson Bay	4/03/2024	3	2609265	Halifax AVE	19:39	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed roots, repaired line
Hobson Bay	5/03/2024	3	2490113	Dingle RD	11:32	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	24/03/2024	3	2561913	Waimarie ST	14:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	12/04/2024	2	505	9 Scherff Road	8:05	40	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	19/04/2024	2	281	49 Ngapuhi Road	4:40	400	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	19/04/2024	3	2513041	Rangitoto AVE	9:46	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Hobson Bay	20/04/2024	2	454	34-36 Apihai Street	4:20	15	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/04/2024	2	193	35 Yattendon Road	13:20	240	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/04/2024	2	285	77 Meadowbank Road	4:30	20	Surcharging	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		

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Hobson Bay	20/04/2024	2	458	88 Paritai Drive	4:20	20	Surcharging	yes	Lower Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	21/04/2024	3	2605447	Tahuri RD	10:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	15/05/2024	2	503	68 Portland Road	5:55	30	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	15/05/2024	2	281	49 Ngapuhi Road	6:20	25	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	15/05/2024	3	2485932	Clonbern RD	15:53	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Hobson Bay	20/05/2024	2	495	43 Tohunga Street	21:45	35	Surcharging	yes	Hobson Bay		Local	Basin	Very High				yes		
Hobson Bay	20/05/2024	2	453	12a Okahu Street	22:45	130	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/05/2024	2	455	63 Reihana Street	22:50	70	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/05/2024	2	454	34-36 Apihai Street	22:45	65	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/05/2024	2	193	35 Yattendon Road	22:20	670	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	20/05/2024	2	285	77 Meadowbank Road	22:50	150	Surcharging	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	20/05/2024	2	514	63 Tahapa Crescent	22:50	120	Surcharging	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	20/05/2024	2	515	11 Purewa Road	23:05	25	Surcharging	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	20/05/2024	2	458	88 Paritai Drive	22:40	110	Surcharging	yes	Lower Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	20/05/2024	2	711	Branch 3 Newmarket MH29	23:10	45	Surcharging	yes	Newmarket Stream		Transm.	Small waterway	Moderate	yes			yes		
Hobson Bay	20/05/2024	2	504	20 Standen Avenue	22:45	80	Surcharging	no	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	506	20 Hapua Road	22:45	25	Surcharging	no	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	20/05/2024	2	503	68 Portland Road	21:00	265	Surcharging	yes	Waitaramoa Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	350	44 Rukutai Street	22:30	80	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	215	74 Hawera Road	22:50	80	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	213	59 Baddeley Avenue	22:30	180	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	353	2b Nihill Crescent	22:40	220	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	20/05/2024	2	421	29 Ayr Street A	21:40	100	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	20/05/2024	2	508	32 Hapua Street	21:40	140	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	20/05/2024	2	281	49 Ngapuhi Road	21:15	380	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	20/05/2024	2	160	45 Ascot Avenue	22:30	60	Surcharging	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	20/05/2024	3	2485865	Remuera RD	8:22	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	1	DPORM	PS 64 Orakei	02:37	197	Surcharging	yes	Okahu Bay		Transm.	Beach	High	No		yes	yes		
Hobson Bay	21/05/2024	3	2601693	Kohimarama RD	14:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	21/05/2024	3	2400467	Challenger ST	16:29	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2485724	Long DR	15:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2489690	Corinth ST	7:35	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2490144	Melanesia RD	12:29	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2599007	Michaels AVE	8:35	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2599352	Melanesia RD	9:32	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2599746	Melanesia RD	8:07	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2613474	Ashwell ST	18:34	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	21/05/2024	3	2401942	Hampton DR	15:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	21/05/2024	3	2604248	Hapua ST	12:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	22/05/2024	3	2586718	Greenbank DR	6:17	n/a	Surcharging	No	Inside property	L1	Local	n/a	no	no	no	no			
Hobson Bay	23/05/2024	3	2588754	Michaels AVE	11:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			

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Hobson Bay	23/05/2024	3	2593317	Lonsdale ST	6:48	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	24/05/2024	3	2494999	Taranaki RD	19:21	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Ongoing
Hobson Bay	25/05/2024	3	2601100	Auckland RD	9:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	26/05/2024	3	2483841	Hoani GLD	17:29	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	26/05/2024	3	2599509	Edmund ST	13:54	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	27/05/2024	3	2486356	McFarland ST	13:06	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	28/05/2024	3	2497851	Victoria AVE	9:39	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	29/05/2024	3	2492698	Cliff RD	18:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + silt
Hobson Bay	29/05/2024	3	2603337	Woodley AVE	14:56	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Hobson Bay	29/05/2024	3	2491471	Remuera RD	14:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	29/05/2024	3	2491782	Kurahaupo ST	15:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	10/06/2024	1	DPJRP	John Rymer Place Pump Station			Surcharging	yes	Purewa Stream		Local	Small waterway	Very low	Yes			yes		
Hobson Bay	10/06/2024	2	285	77 Meadowbank Road	0:25	20	Surcharging	yes	Orakei Creek		Local	Estuary	Moderate			no	yes		
Hobson Bay	10/06/2024	2	511	158 Bassett Road	0:25	110	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	10/06/2024	2	420	14 Mahuru Street	4:00	100	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	10/06/2024	2	281	49 Ngapuhi Road	0:45	100	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	10/06/2024	3	2400467	Challenger ST	11:50	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, dye test
Hobson Bay	10/06/2024	3	81014991	Rawhitiroa RD	10:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	13/06/2024	1	DPGIL	Gillies Avenue Pump Station	12:35	1	Surcharging	no	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	14/06/2024	1	DPKOH	PS 17 Kohimarama	04:25	1080	Surcharging	no	Madill's Stream	L1	Transm.	Small waterway	Very low	no	no	no	yes		
Hobson Bay	14/06/2024	1	DPPUR	Purewa Road Pump Station			Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	14/06/2024	1	DPORM	PS 64 Orakei	19:16	338	Surcharging	yes	Okahu Bay		Transm.	Beach	High	No		yes	yes		
Hobson Bay	14/06/2024	2	453	12a Okahu Street	2:10	90	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	14/06/2024	2	454	34-36 Apihai Street	2:10	45	Surcharging	yes	Okahu Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	14/06/2024	2	193	35 Yattendon Road	2:20	900	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	14/06/2024	2	514	63 Tahapa Crescent	2:35	15	Surcharging	yes	Upper Purewa Creek		Local	Estuary	Very Low			no	yes		
Hobson Bay	14/06/2024	2	350	44 Rukutai Street	2:05	70	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/06/2024	2	215	74 Hawera Road	2:15	30	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/06/2024	2	213	59 Baddeley Avenue	2:15	130	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/06/2024	2	353	2b Nihill Crescent	2:10	150	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		
Hobson Bay	14/06/2024	2	421	29 Ayr Street A	2:10	70	Surcharging	yes	Newmarket Stream		Local	Small waterway	Moderate	yes			yes		
Hobson Bay	14/06/2024	2	508	32 Hapua Street	2:10	80	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	14/06/2024	3	2403246	Broadway	10:08	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Hobson Bay	14/06/2024	3	2490478	Komaru ST	15:01	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	14/06/2024	3	2599188	Rawhitiroa RD	9:06	n/a	Silts	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Hobson Bay	16/06/2024	1	DPPUR	Purewa Road Pump Station	10:56	62	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Hobson Bay	16/06/2024	2	193	35 Yattendon Road	22:40	370	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	16/06/2024	2	213	59 Baddeley Avenue	22:45	80	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	16/06/2024	2	353	2b Nihill Crescent	22:35	130	Surcharging	yes	Unnamed stream - Mission Bay		Local	Small waterway	Low	yes			yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Hobson Bay	16/06/2024	2	508	32 Hapua Street	22:30	30	Surcharging	yes	Unnamed stream in Thomas Bloodworth Park		Local	Small waterway	Very High	yes			yes		
Hobson Bay	16/06/2024	2	160	45 Ascot Avenue	22:35	25	Surcharging	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	16/06/2024	2	281	49 Ngapuhi Road	22:00	200	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	17/06/2024	1	DPORM	PS 64 Orakei	01:33	18	Surcharging	yes	Okahu Bay		Transm.	Beach	High	No		yes	yes		
Hobson Bay	17/06/2024	3	2490529	Laxon TCE	11:26	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Repaired fittings
Hobson Bay	17/06/2024	3	2596259	Melanesia RD	8:35	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Hobson Bay	19/06/2024	3	2551915	Edmund ST	13:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Escalated to engineer
Hobson Bay	22/06/2024	2	281	49 Ngapuhi Road	23:45	140	Surcharging	yes	Meadowbank Stream West		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	23/06/2024	2	193	35 Yattendon Road	4:05	450	Surcharging	yes	St Heliers Bay		Local	Beach	Very High	no		yes	yes		
Hobson Bay	23/06/2024	2	213	59 Baddeley Avenue	4:10	30	Surcharging	yes	Madill's Stream		Local	Small waterway	Low	yes			yes		
Hobson Bay	23/06/2024	2	160	45 Ascot Avenue	4:10	20	Surcharging	yes	Waiatarua Reserve Stream		Local	Small waterway	Very Low	yes			yes		
Hobson Bay	23/06/2024	3	2483492	Onslow AVE	17:33	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, unblocked line
Hobson Bay	23/06/2024	3	81005810	Ohinerau ST	17:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	21/07/2023	1	DPAL2	Aldersgate Road 2 Pump Station	07:02	269	Surcharging	yes	Wesley Bay		Local	Beach	Moderate	No		yes	yes		
Onehunga	21/07/2023	1	DPAL1	Aldersgate Road 1 Pump Station	06:53	341	Surcharging	yes	Unnamed stream (flowing to Wesley Bay)		Local	Small waterway	High	Yes			yes		
Onehunga	21/07/2023	3	2610199	Rangipawa RD	9:30	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	22/07/2023	3	2598361	Athenic AVE	13:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	14/08/2023	1	DPWAL	Walls Road Pump Station	15:43	250	Surcharging	no	Stormwater Detention Pond		Local	Small waterway	Very low	No	Yes		yes		
Onehunga	29/08/2023	3	2605660	Hill ST	9:22	n/a	Surcharging	No	Car park	L1	Local	n/a	yes	no	no	no			
Onehunga	5/09/2023	3	2602827	Waitapu RD	15:25	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed concrete
Onehunga	5/09/2023	3	2497883	Mays RD	12:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	6/09/2023	3	81156095	Raurenga AVE	13:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Onehunga	30/09/2023	3	2497567	Pah RD	17:03	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Onehunga	31/10/2023	3	2508146	Wesley Bay GLD	13:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots + fats
Onehunga	3/11/2023	3	2614576	Princes ST	18:37	n/a	Unknown	Yes	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	3/11/2023	3	2484716	Royal Viking WAY	14:58	n/a	Broken pipe	No	On property	L2	Local	Stream	no	yes	no	no		1	Land slip - bypass pump, planned repairs
Onehunga	15/11/2023	3	2497855	Spring ST	14:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	6/12/2023	3	2600904	Edmonton AVE	12:00	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	29/12/2023	3	2494062	Oranga AVE	18:21	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat, rags + gravel
Onehunga	29/12/2023	3	2507623	Konini RD	11:27	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Onehunga	29/12/2023	3	2499805	Empire RD	13:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	30/12/2023	3	81014552	Heretaunga AVE	16:08	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Onehunga	30/12/2023	3	2507623	Konini RD	13:41	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Onehunga	30/12/2023	3	2598361	Athenic AVE	13:43	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	22/02/2024	3	2608902	Ngatiawa ST	14:07	n/a	Surcharging	No	Construction site	L1	Local	n/a	no	no	no	no			
Onehunga	11/03/2024	1	DPONT	PS 21 Onehunga	09:44	2158	Surcharging	no	Mangere Inlet North		Transm.	Basin	Low	No		No	yes		
Onehunga	16/03/2024	3	2507623	Konini RD	11:11	n/a	Roots	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	12/04/2024	3	2610328	Bel Air DR	15:11	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Onehunga	19/04/2024	3	2610498	Alfred ST	8:03	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Onehunga	26/04/2024	3	2497467	Mount Albert RD	15:29	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	15/05/2024	3	2497049	Jervois RD	7:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Onehunga	21/05/2024	3	2495313	Oranga AVE	12:09	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	21/05/2024	3	2499272	Epworth AVE	14:24	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	23/05/2024	3	2611251	Pah RD	8:47	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Onehunga	30/05/2024	3	2601337	Hardington ST	8:44	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Onehunga	10/06/2024	3	2617045	Pah RD	13:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Onehunga	14/06/2024	1	DPAL2	Aldersgate Road 2 Pump Station			Surcharging	yes	Wesley Bay		Local	Beach	Moderate	No		yes	yes		
Onehunga	14/06/2024	1	DPAL1	Aldersgate Road 1 Pump Station			Surcharging	yes	Unnamed stream (flowing to Wesley Bay)		Local	Small waterway	High	Yes			yes		
Onehunga	15/06/2024	3	2593231	Athenic AVE	11:05	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Onehunga	17/06/2024	3	82790887	Hoskins AVE	18:50	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	6/07/2023	3	81183286	Patiti PDE	6:30	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	8/07/2023	3	2466914	Savill DR	14:04	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Mangere	21/07/2023	1	DPOTW	PS 19 Otahuhu West	09:27	219	Surcharging	yes	Tui Creek		Transm.	Small waterway	Very low	Yes	no	no	yes		
Mangere	25/07/2023	3	2579199	Buckland RD	8:07	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	31/07/2023	3	2474520	Dewhurst PL	16:07	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Mangere	20/08/2023	3	2584685	Wallace RD	10:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	11/09/2023	1	DPOTW	PS 19 Otahuhu West	17:40	224	Surcharging	yes	Tui Creek		Transm.	Small waterway	Very low	Yes	no	no	yes		
Mangere	23/09/2023	3	2550695	Favona RD	*17:49*	*n/a*	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	24/09/2023	3	2576723	Mountain RD	17:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Mangere	27/09/2023	3	2461358	Kiwi ESP	9:47	n/a	fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	25/10/2023	3	2588793	Favona RD	12:18	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed wood + rags
Mangere	25/10/2023	3	2467032	Miller RD	12:57	n/a	Rags	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	31/10/2023	3	2472261	Fairey PL	14:53	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, removed concrete, repaired pipe
Mangere	18/11/2023	3	2586414	Massey RD	13:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	30/12/2023	3	2499796	Great South RD	19:21	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	27/02/2024	3	2471178	Ferguson ST	8:54	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	6/05/2024	3	2466557	Whai Hua LN	12:24	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	20/05/2024	1	DPOTW	PS 19 Otahuhu West	23:54	365	Surcharging	yes	Tui Creek		Transm.	Small waterway	Very low	Yes	no	no	yes		
Mangere	21/05/2024	1	DPTRC	PS 37 Black Bridge	01:28	265	Surcharging	no	Tararata Creek		Transm.	Small waterway	Low	Yes			yes		
Mangere	21/05/2024	3	2470067	Quennell AVE	16:25	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Mangere	21/05/2024	3	2475548	Jordan RD	7:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	21/05/2024	3	2489172	Ferguson ST	10:34	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	21/05/2024	3	2569804	Tranent RD	11:12	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	21/05/2024	3	2577624	Buckland RD	14:30	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Mangere	21/05/2024	3	2512084	Commissariat RD	8:50	n/a	Surcharging	No	On property	L2	Local	SW network	no	no	yes	no		0.25	
Mangere	23/05/2024	3	2470741	Duggan AVE	10:52	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Mangere	10/06/2024	3	2572740	Blake RD	9:33	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Mangere	14/06/2024	1	DPOTW	PS 19 Otahuhu West	03:36	360	Surcharging	yes	Tui Creek	L1	Transm.	Small waterway	Very low	no	no	no	yes		
Mangere	14/06/2024	3	2493492	Huia RD	14:23	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Mangere	14/06/2024	3	2475908	Mascot AVE	9:05	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Unblocked line
Mangere	23/06/2024	3	2579407	Rush PL	10:34	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	8/07/2023	2	188	6 Concord Place	0:00	140	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	21/07/2023	1	DPBRA	Bramley Drive Pump Station	08:07	197	Surcharging	no	Lower Tamaki River		Local	Estuary	Very low	No		No	yes		
Lower Tamaki River	21/07/2023	1	DPENG	PS 15 Pt England	06:37	687	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	21/07/2023	1	DPGND	PS 14 Glendowie	07:12	212	Surcharging	yes	Glendowie Stream		Transm.	Small waterway	Low	Yes		No	yes		
Lower Tamaki River	21/07/2023	2	188	6 Concord Place	2:20	1030	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	21/07/2023	2	596	197-209 Taniwha Street	6:25	280	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	21/07/2023	3	2490429	Waddell AVE	8:34	n/a	Foreign Object	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	21/07/2023	3	2595664	Lush AVE	9:13	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	21/07/2023	3	2570225	Fielding CRES	21:27	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	21/07/2023	3	2484208	Glendowie RD	10:33	n/a	Surcharging	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			
Lower Tamaki River	21/07/2023	3	S138	48 Silverton Ave	0:00	80	Surcharging	Yes	Reserve/ park		Local	Estuary	High				yes		
Lower Tamaki River	21/07/2023	3	DSGLD	Glendowie Branch Storage Tank MH08	06:37	718	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	20/08/2023	3	2487791	West Tamaki RD	0:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	4/09/2023	2	188	6 Concord Place	20:40	390	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	4/09/2023	3	2593736	Silverton AVE	18:10	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	5/09/2023	2	188	6 Concord Place	6:25	1020	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	5/09/2023	3	2402882	Brian Slater WAY	15:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	11/09/2023	1	DPBEL	Belmere Rise Pump Station	16:37	60	Surcharging	no	Wakaaranga Creek		Local	Estuary		No	Yes	No	yes		
Lower Tamaki River	11/09/2023	1	DPENG	PS 15 Pt England	17:28	249	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	11/09/2023	3	DSGLD	Glendowie Branch Storage Tank MH08	17:25	519	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	12/09/2023	3	2575305	Imogene WAY	7:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	23/09/2023	2	188	6 Concord Place	20:45	1440	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	24/09/2023	3	2482164	Courtland AVE	12:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, root cutter
Lower Tamaki River	25/09/2023	2	188	6 Concord Place	22:00	480	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	3/11/2023	1	DPGND	PS 14 Glendowie	13:39	59	Surcharging	yes	Glendowie Stream		Transm.	Small waterway	Low	Yes		No	yes		

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Lower Tamaki River	3/11/2023	3	2470016	Meanda GDNS	12:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat
Lower Tamaki River	3/11/2023	3	DSGLD	Glendowie Branch Storage Tank MH08	15:18	292	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	14/11/2023	2	188	6 Concord Place	16:50	70	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	19/11/2023	2	188	6 Concord Place	6:30	660	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	6/12/2023	3	2595858	Castledine CRES	12:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	29/12/2023	2	188	6 Concord Place	12:05	1360	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	29/12/2023	3	2487794	Emerson ST	13:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	30/12/2023	1	DPENG	PS 15 Pt England	02:22	605	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	30/12/2023	1	DPGND	PS 14 Glendowie	02:52	58	Surcharging	yes	Glendowie Stream		Transm.	Small waterway	Low	Yes		No	yes		
Lower Tamaki River	30/12/2023	3	2462545	Hattaway AVE	10:12	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	30/12/2023	3	2603427	Roberta AVE	15:30	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Lower Tamaki River	30/12/2023	3	S138	48 Silverton Ave	0:00	50	Surcharging	Yes	Reserve/ park		Local	Estuary	High				yes		
Lower Tamaki River	30/12/2023	3	DSGLD	Glendowie Branch Storage Tank MH08	02:22	605	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	1/01/2024	3	2482062	Vista CRES	10:37	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			Restored line
Lower Tamaki River	18/01/2024	3	2593208	Riverview RD	15:50	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	27/02/2024	3	2465398	Clovelly RD	11:55	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Lower Tamaki River	3/03/2024	3	2485661	College RD	18:38	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, repaired MH lid
Lower Tamaki River	3/03/2024	3	2564999	Clyside AVE	16:58	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	4/03/2024	3	2485855	Merfield ST	9:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	12/04/2024	2	188	6 Concord Place	8:10	80	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	12/04/2024	3	2590950	Chelmsford AVE	9:15	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Lower Tamaki River	19/04/2024	2	188	6 Concord Place	5:45	550	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	20/04/2024	1	DPENG	PS 15 Pt England	02:22	208	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	20/04/2024	3	DSGLD	Glendowie Branch Storage Tank MH08	14:08	213	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	20/05/2024	1	DPPAB	PS 18 Panmure Basin	23:23	102	Surcharging	no	Panmure Basin		Transm.	Basin	Low	No		Yes	yes		
Lower Tamaki River	20/05/2024	1	DPENG	PS 15 Pt England	23:22	605	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	20/05/2024	2	1406	61 - 67 Felton Matthew Ave	23:10	50	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		

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Lower Tamaki River	20/05/2024	2	596	197-209 Taniwha Street	22:55	190	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	20/05/2024	2	188	6 Concord Place	20:35	1440	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	20/05/2024	3	S138	48 Silverton Ave	0:00	80	Surcharging		Reserve/ park		Local	Estuary	High				yes		
Lower Tamaki River	20/05/2024	3	DSGLD	Glendowie Branch Storage Tank MH08	20:30	1374	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	21/05/2024	1	DPENG	PS 15 Pt England	09:43	731	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	21/05/2024	3	2492614	Roberta AVE	7:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Lower Tamaki River	21/05/2024	3	2496280	Mount Wellington HWY	10:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	21/05/2024	3	2499914	Riverview RD	11:13	n/a	Silts	No	Inside property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	21/05/2024	3	2399359	Lavas PL	10:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	21/05/2024	3	2467859	Takutai AVE	7:30	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	21/05/2024	3	2570573	The Parade	9:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	21/05/2024	3	2596184	Felton Mathew AVE	8:35	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	22/05/2024	3	2570225	Fielding CRES	16:27	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	22/05/2024	3	2598757	Clouston ST	10:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	23/05/2024	3	2497393	Bertrand RD	9:52	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	25/05/2024	3	2483120	Howard Hunter AVE	9:31	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Lower Tamaki River	10/06/2024	3	2486190	Taniwha ST	14:55	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Lower Tamaki River	10/06/2024	3	2589039	Courtland AVE	12:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, unblocked MH
Lower Tamaki River	13/06/2024	2	188	6 Concord Place	23:40	1220	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	14/06/2024	1	DPDNK	PS 53 Dunkirk	05:10	270	Surcharging	no	Lower Tamaki River	L1	Transm.	Estuary	Very low	no	no	no	yes		
Lower Tamaki River	14/06/2024	1	DPENG	PS 15 Pt England	03:30	968	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	14/06/2024	1	DPGND	PS 14 Glendowie	03:24	50	Surcharging	yes	Glendowie Stream		Transm.	Small waterway	Low	Yes		No	yes		
Lower Tamaki River	14/06/2024	2	1406	61 - 67 Felton Matthew Ave	2:25	20	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	14/06/2024	2	596	197-209 Taniwha Street	2:25	160	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	14/06/2024	3	DSGLD	Glendowie Branch Storage Tank MH08	13:18	840	Surcharging	no		L1	Transm.	stream	unknown	no	no	no	yes		
Lower Tamaki River	16/06/2024	1	DPENG	PS 15 Pt England	11:04	845	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	16/06/2024	1	DPGND	PS 14 Glendowie	23:54	28	Surcharging	yes	Glendowie Stream		Transm.	Small waterway	Low	Yes		No	yes		

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Lower Tamaki River	16/06/2024	2	596	197-209 Taniwha Street	22:55	80	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	17/06/2024	1	DPENG	PS 15 Pt England	13:24	11	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	17/06/2024	3	DSGLD	Glendowie Branch Storage Tank MH08	13:19	19	Unknown	no	DSGLD Glendowie MH8 Storage Tank Overflow Alarm 17-Jun-2024 13:19 17-Jun-2024 13:38 - 19 MINS		Transm.	stream	yes	yes	no	no	yes		
Lower Tamaki River	22/06/2024	2	188	6 Concord Place	23:45	840	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	23/06/2024	1	DPENG	PS 15 Pt England	06:24	87	Surcharging	yes	Omaru Creek		Transm.	Small waterway	Low	Yes			yes		
Lower Tamaki River	23/06/2024	2	596	197-209 Taniwha Street	4:20	50	Surcharging	yes	Omaru Creek		Local	Small waterway		yes		no	yes		
Lower Tamaki River	23/06/2024	3	2568698	Clovelly RD	11:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Lower Tamaki River	23/06/2024	3	2595565	West Tamaki RD	11:30	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Lower Tamaki River	23/06/2024	3	DSGLD	Glendowie Branch Storage Tank MH08	06:21	186	Surcharging	no			Transm.	stream	yes	yes	no	no	yes		
Upper Tamaki River	1/07/2023	1	DPPNA	Panama Road Pump Station	09:28	337	Surcharging	yes	Otahuhu Creek		Local	Estuary	Very low	No		No	yes		
Upper Tamaki River	17/07/2023	3	2578199	Ennis AVE	7:23	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/07/2023	1	DPOTB	PS 31 Otara	07:22	518	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	21/07/2023	1	DPTIN	PS 43 Tamaki East	07:43	428	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/07/2023	1	DPPEL	Pelorus Place Pump Station	09:03		Surcharging	no	Upper Tamaki River		Local	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/07/2023	1	DPGOS	Gossamer Drive Pump Station	07:12	330	Surcharging	yes	Pakuranga Creek		Local	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/07/2023	1	DPPNA	Panama Road Pump Station	08:58	117	Surcharging	yes	Otahuhu Creek		Local	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/07/2023	1	DPHIP	Highland Park Pump Station	07:06	663	Surcharging	yes	Unnamed tributary of Pakuranga Creek (Highland Park)		Local	Small waterway	Low	Yes	Yes	no	yes		
Upper Tamaki River	21/07/2023	2	747	Otahuhu East Diversion Branch MH4A	7:38	332	Surcharging	no	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very Low				yes		
Upper Tamaki River	21/07/2023	3	2561381	Yacht PL	13:54	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/07/2023	3	2469876	Manapouri PL	16:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/07/2023	3	S59	Otara Branch Sewer MH 17	22:30	420	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	22/07/2023	1	DPOTA	PS 34 Otahuhu North East	15:32	76	Surcharging	yes	Otahuhu Creek		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	22/07/2023	1	DPGOS	Gossamer Drive Pump Station	00:11	707	Surcharging	yes	Pakuranga Creek		Local	Estuary	Very low	No		No	yes		
Upper Tamaki River	25/07/2023	3	2615719	Aranui RD	7:38	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	27/07/2023	1	DPSPK	PS 38 Sylvia Park	00:07	135	Surcharging	no	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	31/07/2023	3	2462822	Maxwell AVE	11:09	n/a	Surcharging	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			

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Upper Tamaki River	20/08/2023	3	2462992	Ashton AVE	16:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	20/08/2023	3	2472499	Rangitoto RD	9:20	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fats
Upper Tamaki River	5/09/2023	3	2499753	Mount Wellington HWY	12:42	n/a	silts	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	5/09/2023	3	2464659	Wedgwood AVE	6:29	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	5/09/2023	3	2561813	Hangahai RD	12:40	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblcoked line
Upper Tamaki River	5/09/2023	3	2571632	Ennis AVE	7:41	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	5/09/2023	3	2573271	Carey PL	9:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	5/09/2023	3	82780662	Aranui RD	21:31	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/09/2023	3	2474041	Troon PL	9:12	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	6/09/2023	3	2568589	Cantora AVE	10:16	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Upper Tamaki River	6/09/2023	3	2507225	Pacific RISE	10:34	n/a	Unknown	No	Car park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	6/09/2023	3	2576602	Hayman ST	11:15	n/a	Unknown	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line
Upper Tamaki River	11/09/2023	1	DPTIN	PS 43 Tamaki East	23:02	14	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	11/09/2023	1	DPHIP	Highland Park Pump Station	18:37	252	Surcharging	yes	Unnamed tributary of Pakuranga Creek (Highland Park)	L3	Local	Small waterway	Low	Yes	Yes	no	yes		
Upper Tamaki River	11/09/2023	3	2464659	Wedgwood AVE	17:10	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	11/09/2023	3	2498396	Atkinson AVE	17:32	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Upper Tamaki River	12/09/2023	3	2399285	Marua RD	11:25	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	24/09/2023	3	2478471	Walworth AVE	10:33	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	24/09/2023	3	2583294	Halcyon PL	10:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			PS issue
Upper Tamaki River	24/09/2023	3	2589284	Serenity PL	18:13	n/a	Unknown	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	24/09/2023	3	2579239	Laureston AVE	14:43	n/a	fat	No	Road/ footpath	L2	Local	SW network	yes	no	yes	no			
Upper Tamaki River	25/09/2023	3	2469260	Grange RD	9:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	25/09/2023	3	2573093	Earlsworth RD	17:28	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed dropper
Upper Tamaki River	25/09/2023	3	2577072	Laureston AVE	12:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	25/09/2023	3	2578379	Barrie AVE	10:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	26/09/2023	3	2573093	Earlsworth RD	13:56	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	8/10/2023	3	82780662	Aranui RD	18:01	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			

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Upper Tamaki River	25/10/2023	3	2469493	Buckingham CRES	11:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	30/10/2023	3	2450823	Aster PL	17:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	31/10/2023	3	2579673	Preston RD	10:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Removed fat + rags
Upper Tamaki River	31/10/2023	3	2465740	Preston RD	18:55	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	3/11/2023	1	DPOTB	PS 31 Otara	13:58	50	Surcharging	yes	Upper Tamaki River (Middlemore Arm)	L1	Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	3/11/2023	1	DPTIN	PS 43 Tamaki East	12:29	306	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	3/11/2023	3	S59	Otara Branch Sewer MH 17	0:35	40	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	4/11/2023	3	2464222	Station RD	7:39	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	4/11/2023	3	2570755	Gaye CRES	10:43	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	4/11/2023	3	2496863	Avenue RD	1:26	n/a	Unknown	No	Road/ footpath	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	7/11/2023	3	2573759	Ennis AVE	7:57	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	14/11/2023	3	2494098	Ronaki RD	20:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/11/2023	3	2399569	Motu PL	11:45	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/11/2023	3	2575569	Beryl PL	14:36	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fats + rags
Upper Tamaki River	19/11/2023	3	2572911	Penrose RD	22:05	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	19/11/2023	3	2587566	Beryl PL	21:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	20/11/2023	3	2465937	Cascades RD	16:49	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/11/2023	3	2475278	Middlemore CRES	13:31	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	22/11/2023	3	2466898	Yacht PL	12:29	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Escalated to engineers
Upper Tamaki River	22/11/2023	3	2575930	Covina PL	9:41	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	15/12/2023	3	2460836	Driscoll PL	19:40	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	22/12/2023	3	2572911	Penrose RD	18:01	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	26/12/2023	3	2468245	Te Irirangi DR	15:00	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	26/12/2023	3	2499739	Hillside RD	15:04	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	26/12/2023	3	2588530	Armoy DR	9:28	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	29/12/2023	1	DPOTA	PS 34 Otahuhu North East	21:07	100	Surcharging	yes	Otahuhu Creek		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	29/12/2023	1	DPOTB	PS 31 Otara	14:27	100	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Upper Tamaki River	29/12/2023	1	DPTIN	PS 43 Tamaki East	22:40	94	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	29/12/2023	3	S59	Otara Branch Sewer MH 17	13:45	350	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	30/12/2023	1	DPOTB	PS 31 Otara	01:26	130	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	30/12/2023	1	DPTIN	PS 43 Tamaki East	02:29	674	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	30/12/2023	2	1549	14 McLean Ave	0:25	60	Surcharging	yes	Troon Creek		Transm.	Small Waterway		yes		no	yes		
Upper Tamaki River	30/12/2023	3	2471259	Dannemora DR	10:46	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	30/12/2023	3	2458441	Marvon Downs AVE	8:57	n/a	Rubbish	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	30/12/2023	3	2462113	Andrew RD	11:30	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	30/12/2023	3	82780662	Aranui RD	14:23	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			CCTV
Upper Tamaki River	30/12/2023	3	2457812	Jandell CRES	10:36	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	30/12/2023	3	2485153	Meadowland DR	8:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	31/12/2023	3	2571257	Millhouse DR	10:25	n/a	Surcharging	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			
Upper Tamaki River	1/01/2024	3	2488147	Casuarina RD	10:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	8/01/2024	3	2458203	Cromdale AVE	13:01	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	12/01/2024	3	2618056	Flat Bush School RD	12:22	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	15/01/2024	3	2473170	Rangitoto RD	20:42	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Tamaki River	15/01/2024	3	2572366	Gossamer DR	21:36	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	29/01/2024	3	2576032	Sandrine AVE	14:31	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Upper Tamaki River	20/02/2024	1	DPTIN	PS 43 Tamaki East	22:40	33	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	4/03/2024	3	2509984	Church ST	20:11	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	5/03/2024	3	2482957	Birmingham RD	10:20	n/a	Rubbish	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	23/03/2024	3	81003703	Ruawai RD	19:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Upper Tamaki River	12/04/2024	3	2461437	Botany RD	14:29	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	19/04/2024	3	2604896	Hauiti RD	17:37	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	19/04/2024	3	2470503	Ennis AVE	11:09	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	20/04/2024	1	DPOTB	PS 31 Otara	05:23	68	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	20/04/2024	1	DPTIN	PS 43 Tamaki East	15:46	127	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		

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Upper Tamaki River	20/04/2024	3	2456357	Orinda CL	7:07	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	20/04/2024	3	2569767	Rapson RD	15:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	20/04/2024	3	2578506	Millen AVE	15:34	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/04/2024	3	2573193	Gills RD	12:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	2/05/2024	3	2576625	Richards AVE	8:51	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	15/05/2024	3	2497942	Frank Grey PL	13:32	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	15/05/2024	3	2578239	Hills RD	9:20	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line
Upper Tamaki River	20/05/2024	1	DPOTA	PS 34 Otahuhu North East	23:25	289	Surcharging	yes	Otahuhu Creek		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	20/05/2024	2	1534	22 Graeme Avenue	23:30	120	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Local	Estuary					yes		
Upper Tamaki River	20/05/2024	2	1549	14 McLean Ave	23:35	110	Surcharging	yes	Troon Creek		Transm.	Small Waterway		yes		no	yes		
Upper Tamaki River	21/05/2024	1	DPHIN	PS 28 Pakuranga	00:13	183	Surcharging	no	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/05/2024	1	DPOTB	PS 31 Otara	11:34	344	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	21/05/2024	1	DPTIN	PS 43 Tamaki East	00:24	537	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	21/05/2024	3	2460978	Larne AVE	18:41	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	21/05/2024	3	2460515	Mandarin PL	12:11	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2462113	Andrew RD	12:20	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2466898	Yacht PL	7:49	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2561381	Yacht PL	8:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2572594	Bucklands Beach RD	15:07	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2578506	Millen AVE	6:53	n/a	Surcharging	Yes	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	2579469	Hallberry RD	8:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	21/05/2024	3	S59	Otara Branch Sewer MH 17	23:50	120	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	25/05/2024	3	2458203	Cromdale AVE	14:41	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	28/05/2024	3	2575040	St George ST	14:28	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Upper Tamaki River	29/05/2024	3	2613207	Bean PL	10:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	30/05/2024	3	2399491	McDonald CRES	14:55	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	30/05/2024	3	2569081	Stanniland ST	11:23	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Ongoing investigation

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Upper Tamaki River	30/05/2024	3	2463944	Merino AVE	15:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck
Upper Tamaki River	10/06/2024	3	2560790	Jaedee CT	9:15	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, new WO for repiar
Upper Tamaki River	10/06/2024	3	2590448	Udys RD	9:07	n/a	Broken pipe	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Repair collapsed pipe
Upper Tamaki River	10/06/2024	3	2463869	Sheralee PL	20:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Upper Tamaki River	10/06/2024	3	2570353	Glen AVE	15:43	n/a	Power Failure	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/06/2024	1	DPOTB	PS 31 Otara	04:10	960	Surcharging	yes	Upper Tamaki River (Middlemore Arm)	L1	Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	14/06/2024	1	DPTIN	PS 43 Tamaki East	14:00	448	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	14/06/2024	1	DPOTA	PS 34 Otahuhu North East	03:11	140	Surcharging	yes	Otahuhu Creek	L2	Transm.	Estuary	Very low	No		no	yes		
Upper Tamaki River	14/06/2024	2	1534	22 Graeme Avenue	3:30	20	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Local	Estuary					yes		
Upper Tamaki River	14/06/2024	2	1549	14 McLean Ave	3:40	20	Surcharging	yes	Troon Creek		Transm.	Small Waterway		yes		no	yes		
Upper Tamaki River	14/06/2024	3	2578379	Barrie AVE	13:54	n/a	Rags	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/06/2024	3	2600281	Panama RD	9:48	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	14/06/2024	3	S59	Otara Branch Sewer MH 17	10:30	310	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	15/06/2024	3	2586419	Rodney ST	9:11	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush
Upper Tamaki River	15/06/2024	3	2465420	Coronation RD	6:50	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Removed roots
Upper Tamaki River	15/06/2024	3	2463450	Archmillen AVE	10:44	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/06/2024	1	DPOTB	PS 31 Otara	00:34	409	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	17/06/2024	1	DPTIN	PS 43 Tamaki East	01:16	113	Surcharging	yes	Upper Tamaki River		Transm.	Estuary	Very low	No		No	yes		
Upper Tamaki River	17/06/2024	3	2399348	Panorama RD	13:41	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/06/2024	3	2573748	Tyrone ST	11:09	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Upper Tamaki River	17/06/2024	3	2617991	Carbine RD	19:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/06/2024	3	2574759	Averton PL	16:54	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, heavy flush
Upper Tamaki River	17/06/2024	3	2566121	Sandspit RD	14:32	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Upper Tamaki River	17/06/2024	3	S59	Otara Branch Sewer MH 17	4:50	70	Surcharging	Yes	Reserve/ park		Transm.	Stream	Low				yes		
Upper Tamaki River	20/06/2024	3	2462427	Cheam PL	16:20	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Upper Tamaki River	23/06/2024	1	DPOTB	PS 31 Otara	07:18	132	Surcharging	yes	Upper Tamaki River (Middlemore Arm)		Transm.	Estuary	Very low	no	no	no	yes		
Upper Tamaki River	23/06/2024	3	2498485	Trenwith ST	9:30	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Heavy flush

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Cockle Bay	21/07/2023	1	DPHOW	PS 30 Howick	08:05	495	Surcharging	yes	Howick Beach		Transm.	Beach	Low	No		yes	yes		
Cockle Bay	21/07/2023	3	S63	Mellons Bay MH 16	0:45	320	Surcharging	Yes	Reserve/ park		Transm.	beach	Low	no	no	yes	yes		
Cockle Bay	6/12/2023	3	2458408	Trident PL	12:00	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots + fat
Cockle Bay	6/12/2023	3	2484135	Pohutukawa AVE	12:00	n/a	Roots	No	Retail/ commercial/ public	L2	Local	Estuary	yes	no	no	no			Removed roots + fats, replaced MH
Cockle Bay	30/12/2023	1	DPHOW	PS 30 Howick	02:16	107	Surcharging	yes	Howick Beach		Transm.	Beach	Low	No		yes	yes		
Cockle Bay	30/12/2023	3	2454556	John Gill RD	20:26	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Cockle Bay	30/12/2023	3	S63	Mellons Bay MH 16	22:05	130	Surcharging	Yes	Reserve/ park		Transm.	beach	Low	no	no	yes	yes		
Cockle Bay	1/01/2024	3	2457012	Towbridge PL	8:11	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Cockle Bay	21/05/2024	3	S63	Mellons Bay MH 16	2:30	30	Surcharging	Yes	Reserve/ park		Transm.	beach	Low	no	no	yes	yes		
Cockle Bay	30/05/2024	3	2570846	Stevenson WAY	16:24	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed roots
Cockle Bay	10/06/2024	3	2464421	Montgomery CRES	9:30	n/a	Fat	Yes	On property	L1	Local	n/a	no	no	no	no			Heavy flush, cleared blockage
Puhinui	21/07/2023	2	1535	145-147 Wyllie Road	7:05	150	Surcharging	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	12/09/2023	3	2584759	Peninsula RD	16:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, replaced MH lid
Puhinui	25/09/2023	3	2474300	Roscommon RD	12:00	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	17/10/2023	3	2591444	Tuakura WAY	17:14	n/a	Roots	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			Flushed line, removed roots
Puhinui	30/10/2023	3	2470870	Finlayson AVE	21:44	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, job incomplete
Puhinui	31/10/2023	2	1535	145-147 Wyllie Road	9:55	60	Surcharging	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	3/11/2023	3	2468291	Fitzroy ST	23:15	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	3/11/2023	3	2582256	Fitzroy ST	20:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed fat + rags
Puhinui	3/11/2023	3	2478307	Grayson AVE	19:46	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	30/12/2023	2	1535	145-147 Wyllie Road	0:55	90	Surcharging	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	27/02/2024	3	2463354	Gifford RD	10:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	4/03/2024	3	2587753	Hobill AVE	17:18	n/a	Roots	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Puhinui	19/04/2024	3	2582877	Inverell AVE	12:30	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed plywood
Puhinui	15/05/2024	3	2471681	Brentford PL	17:03	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	20/05/2024	2	1535	145-147 Wyllie Road	23:30	150	Surcharging	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	21/05/2024	3	2470674	Leith CT	7:44	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	21/05/2024	3	2470674	Leith CT	6:56	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	22/05/2024	3	2460718	Ferndown AVE	10:59	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Puhinui	23/05/2024	3	2454588	Pah RD	19:42	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Puhinui	14/06/2024	2	1535	145-147 Wyllie Road	3:30	30	Surcharging	yes	Puhinui Stream		Local	Large waterway					yes		
Puhinui	14/06/2024	3	2473970	Adel PL	15:26	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Puhinui	14/06/2024	3	2476835	Peretao RISE	11:22	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	15/06/2024	3	2470089	Etherton DR	7:13	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			rehaunch and seal MH
Puhinui	23/06/2024	3	2589907	Mt Lebanon CRES	16:53	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	23/06/2024	3	2453299	Daphne RD	12:12	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Puhinui	23/06/2024	3	2580775	Peninsula RD	14:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	2/07/2023	3	2486242	Greers RD	10:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	15/08/2023	3	2467416	Sheriff PL	12:56	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, planned CCTV
Pahurehure Inlet	15/08/2023	3	2470796	Rhine PL	11:43	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	15/08/2023	3	2558804	Ipukarea ST	12:44	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Pahurehure Inlet	12/09/2023	3	2579698	Sharland AVE	11:10	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	7/11/2023	3	2468018	Clark ST	15:13	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	16/01/2024	3	2472726	Mahia RD	9:41	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	16/01/2024	3	2566077	Wordsworth RD	13:32	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	5/03/2024	3	2585715	Lucas PL	6:39	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	20/04/2024	3	2476149	Nield RD	12:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	21/05/2024	3	2478749	Dreadon RD	14:27	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	21/05/2024	3	2479324	Stratford RD	15:47	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	10/06/2024	3	2588940	Rimu RD	14:59	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Pahurehure Inlet	14/06/2024	3	2480695	Innismara AVE	8:47	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	14/06/2024	3	2476149	Nield RD	17:41	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pahurehure Inlet	17/06/2024	3	2554820	Kelvin RD	11:21	n/a	3rd party damage	No	On property	L1	Local	n/a	no	no	no	no			remove concrete from line
Pahurehure Inlet	23/06/2024	3	2481308	Sandwick DR	23:56	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pahurehure Inlet	27/06/2024	3	2589096	Mahia RD	18:03	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Beachlands Maraetai	21/07/2023	1	DPMTI	Maraetai Domain Pump Station	06:47	449	Surcharging	no	Unnamed stream to Maraetai Beach		Local	Small waterway	High	Yes			yes		
Beachlands Maraetai	21/07/2023	1	DPTOO	Toomer Place Pump Station	12:12	22	Surcharging	no	Unnamed stream to Pine Harbour Marina Beach (North)		Local	Small waterway	Very Low	Yes			yes		
Beachlands Maraetai	21/07/2023	1	DPNAV	New Avenues Pump Station	09:16	856	Surcharging	yes	Unnamed stream to Pine Harbour Marina Beach (South)		Local	Small waterway	Very Low	Yes			yes		
Beachlands Maraetai	21/07/2023	1	DPTVW	Third View Pump Station	06:23	355	Surcharging	yes	Unnamed stream to Kelly's Beach (North)		Local	Small waterway	Very Low	Yes			yes		
Beachlands Maraetai	22/07/2023	1	DPNAV	New Avenues Pump Station	00:18	102	Surcharging	yes	Unnamed stream to Pine Harbour Marina Beach (South)		Local	Small waterway	Very Low	Yes			yes		
Beachlands Maraetai	26/09/2023	3	2569826	Araminta PL	6:46	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Beachlands Maraetai	20/11/2023	3	2569621	Maraetai DR	17:49	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, removed rags
Beachlands Maraetai	30/12/2023	1	DPTVW	Third View Pump Station	02:41	105	Surcharging	yes	Unnamed stream to Kelly's Beach (North)		Local	Small waterway	Very Low	Yes			yes		
Beachlands Maraetai	8/01/2024	3	2573237	Third View AVE	12:16	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Clarks Beach	17/06/2024	3	2530993	Ronald AVE	9:52	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Waiuku	19/04/2024	3	2521107	Kaiwaka RD	7:24	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	26/07/2023	3	2524038	Victoria ST-W	9:59	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV, dig up and repair
Pukekohe	6/09/2023	3	2419278	Paerata RD	13:01	n/a	Unknown	No	Reserve/ park	L1	Local	n/a	yes	no	no	no			OF due to other repairs along a different part of the network
Pukekohe	12/09/2023	3	2422948	Edinburgh ST	11:15	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line, CCTV
Pukekohe	3/11/2023	3	2419361	Franklin RD	16:13	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Repaired line
Pukekohe	6/11/2023	3	2424093	Max Short DR	6:44	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pukekohe	24/12/2023	3	2423956	Puriri RD	22:35	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Pukekohe	25/05/2024	3	2423822	Landon PL	8:08	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Pukekohe	29/05/2024	3	2525689	Laurelwood AVE	19:40	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV
Pukekohe	29/05/2024	3	2534141	Cape Vista CRES	15:39	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Pukekohe	17/06/2024	3	81158954	Hamilton PL	8:19	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	1/07/2023	3	2592297	Wright RD	9:22	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Western Isthmus	3/07/2023	3	2497248	Laurel ST	17:36	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	8/07/2023	2	146	68 Smale Street	0:45	20	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	21/07/2023	1	DPOLV	PS 5 Oliver Road	12:07	394	Surcharging	yes	Meola Creek Mouth		Local	Estuary	Very Low	No		No	yes		
Western Isthmus	21/07/2023	2	146	68 Smale Street	2:20	520	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	21/07/2023	2	734	Edendale Branch MH1	1:48	1118	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	21/07/2023	2	1531	68 Olsen Ave	6:50	90	Surcharging	yes	Tributary of Oakley Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	21/07/2023	2	1629	2/29 Raven Ave	4:10	380	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	21/07/2023	2	1589	153 Whitney Street	4:10	390	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	21/07/2023	3	2605697	Kiwi RD	20:14	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Western Isthmus	21/07/2023	3	2607217	Anita AVE	11:06	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Set up bypass pump
Western Isthmus	21/07/2023	3	2591296	Donegal ST	7:18	n/a	Foreign Object	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	21/07/2023	3	2494150	Littlejohn ST	9:36	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	21/07/2023	3	2494529	Somerset RD	10:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	22/07/2023	2	739	Branch 8 Mt Albert MH7	0:46	158	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	26/07/2023	2	732	Orakei Main Sewer MH38	12:56	957	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	26/07/2023	3	2496885	Richardson RD	15:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	28/07/2023	2	728	Branch 8 Mt Albert MH31	3:54	50	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	28/07/2023	3	2596952	Great North RD	13:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	28/07/2023	3	2605692	Oxton RD	8:48	n/a	Foreign Object	No	On property	L2	Local	SW network	no	no	yes	no			Flushed line, removed rocks
Western Isthmus	29/07/2023	3	2605791	Douglas RD	12:43	n/a	Surcharging	Yes	On property	L2	Local	SW network	no	no	yes	no			
Western Isthmus	31/07/2023	3	2614046	Boundary RD	10:41	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	20/08/2023	3	2605791	Douglas RD	16:03	n/a	Broken pipe	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	20/08/2023	3	2402108	Galatos ST	17:07	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Western Isthmus	21/08/2023	2	739	Branch 8 Mt Albert MH7	3:17	183	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	21/08/2023	2	728	Branch 8 Mt Albert MH31	3:17	416	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	21/08/2023	3	2494944	Mount Royal AVE	16:09	n/a	Roots	No	Construction site	L1	Local	n/a	no	no	no	no			Unblocked line, removed roots
Western Isthmus	4/09/2023	2	146	68 Smale Street	22:35	70	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	11/09/2023	1	DPOLV	PS 5 Oliver Road	16:00		Mechanical	yes	Meola Creek Mouth		Local	Estuary	Very Low	No		No	yes		
Western Isthmus	11/09/2023	2	146	68 Smale Street	15:30	80	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	11/09/2023	2	732	Orakei Main Sewer MH38	16:07	111	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	11/09/2023	2	739	Branch 8 Mt Albert MH7	9:40	366	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	11/09/2023	2	734	Edendale Branch MH1	9:52	406	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	11/09/2023	2	728	Branch 8 Mt Albert MH31	9:40	569	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	11/09/2023	3	2605895	Tiverton RD	10:34	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	11/09/2023	3	2599877	Morrie Laing AVE	13:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line

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Western Isthmus	12/09/2023	3	2596952	Great North RD	11:05	n/a	Unknown	No	Retail/ commercial/ public	L2	Local	SW network	yes	no	yes	no			Flushed line
Western Isthmus	23/09/2023	3	2593803	Moa RD	21:53	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	24/09/2023	2	1629	2/29 Raven Ave	1:15	20	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	24/09/2023	3	2487750	Dignan ST	13:01	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	25/09/2023	1	DPOLV	PS 5 Oliver Road	23:20	10	Surcharging	yes	Meola Creek Mouth		Local	Estuary	Very Low	No		No	yes		
Western Isthmus	25/09/2023	2	732	Orakei Main Sewer MH38	23:44	120	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	26/09/2023	1	DPOLV	PS 5 Oliver Road	01:28	122	Surcharging	yes	Meola Creek Mouth		Local	Estuary	Very Low	No		No	yes		
Western Isthmus	26/09/2023	2	739	Branch 8 Mt Albert MH7	2:35	504	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	26/09/2023	2	734	Edendale Branch MH1	15:07	148	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	26/09/2023	2	728	Branch 8 Mt Albert MH31	14:58	336	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	26/09/2023	3	2615321	Rosamund AVE	12:40	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	26/09/2023	3	2492290	New Windsor RD	9:16	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Sucker truck, unblocked line, replaced MH lid
Western Isthmus	29/09/2023	3	2593803	Moa RD	12:28	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			CCTV
Western Isthmus	27/10/2023	3	2485315	Mount Albert RD	16:39	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	31/10/2023	2	739	Branch 8 Mt Albert MH7	0:35	159	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	31/10/2023	2	734	Edendale Branch MH1	0:42	94	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	31/10/2023	2	728	Branch 8 Mt Albert MH31	0:35	174	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	31/10/2023	3	2494185	Henley RD	20:36	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	5/11/2023	3	2495048	Parau ST	9:11	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	15/11/2023	3	2586587	Stedman PL	9:52	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	19/11/2023	2	739	Branch 8 Mt Albert MH7	4:22	347	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	19/11/2023	2	734	Edendale Branch MH1	6:45	200	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	19/11/2023	2	728	Branch 8 Mt Albert MH31	4:22	434	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	19/11/2023	3	2495581	St Andrews RD	8:06	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	19/11/2023	3	2594537	Lloyd AVE	14:11	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	5/12/2023	3	2494341	Range View RD	12:00	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	6/12/2023	3	2608315	Moreland RD	12:00	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, dig up and repair
Western Isthmus	6/12/2023	3	2594133	Dominion RD	12:00	n/a	Fat	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	6/12/2023	3	2491845	Allendale RD	12:00	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	6/12/2023	3	2499451	Hillsborough RD	12:00	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	24/12/2023	3	2493970	Morningside DR	19:21	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Replaced MH lid
Western Isthmus	29/12/2023	2	732	Orakei Main Sewer MH38	12:44	44	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	29/12/2023	2	1589	153 Whitney Street	11:30	180	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	29/12/2023	2	1629	2/29 Raven Ave	23:30	140	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	29/12/2023	3	2492290	New Windsor RD	12:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

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Western Isthmus	29/12/2023	3	2595234	Burnley TCE	16:23	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	29/12/2023	3	2597443	Mount Eden RD	18:38	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	30/12/2023	2	732	Orakei Main Sewer MH38	0:46	135	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	30/12/2023	2	739	Branch 8 Mt Albert MH7	2:00	1440	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	30/12/2023	3	2480806	Donegal ST	10:05	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	30/12/2023	3	2402516	Elm ST	16:05	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line, CCTV
Western Isthmus	22/01/2024	3	2496758	Potter AVE	12:38	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			Historical OF
Western Isthmus	27/02/2024	2	739	Branch 8 Mt Albert MH7	0:00	433	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	27/02/2024	2	734	Edendale Branch MH1	2:04	48	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	27/02/2024	2	728	Branch 8 Mt Albert MH31	2:06	68	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	4/03/2024	3	2492292	Fir ST	11:15	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	5/03/2024	3	2603424	Arundel ST	11:40	n/a	Rags	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	16/03/2024	2	728	Branch 8 Mt Albert MH31	2:11	15	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	24/03/2024	2	728	Branch 8 Mt Albert MH31	4:27	38	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	12/04/2024	3	2597563	New North RD	14:56	n/a	Rags	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Flushed line
Western Isthmus	15/04/2024	3	2598617	Bollard AVE	15:30	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	19/04/2024	2	732	Orakei Main Sewer MH38	5:44	20	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/04/2024	2	146	68 Smale Street	13:05	30	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	20/04/2024	2	732	Orakei Main Sewer MH38	13:00	85	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/04/2024	2	739	Branch 8 Mt Albert MH7	2:10	724	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/04/2024	2	734	Edendale Branch MH1	3:51	581	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	20/04/2024	2	728	Branch 8 Mt Albert MH31	2:10	1055	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	20/04/2024	2	1589	153 Whitney Street	4:30	60	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	21/04/2024	2	739	Branch 8 Mt Albert MH7	10:01	65	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	21/04/2024	2	734	Edendale Branch MH1	10:11	47	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	21/04/2024	2	728	Branch 8 Mt Albert MH31	10:01	76	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	21/04/2024	3	2487232	Blockhouse Bay RD	7:17	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	15/05/2024	2	739	Branch 8 Mt Albert MH7	12:55	662	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	15/05/2024	3	2497297	Bollard AVE	10:45	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			flushed line
Western Isthmus	16/05/2024	2	734	Edendale Branch MH1	5:50	67	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	16/05/2024	2	728	Branch 8 Mt Albert MH31	5:09	201	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	20/05/2024	2	146	68 Smale Street	22:35	90	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	20/05/2024	2	732	Orakei Main Sewer MH38	22:26	136	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	20/05/2024	2	309	29 Euston Road	23:05	25	Surcharging	yes	Meola Creek (Haverstock Road)		Local	Small Waterway		yes		no	yes		
Western Isthmus	20/05/2024	2	1531	68 Olsen Ave	23:00	120	Surcharging	yes	Tributary of Oakley Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	20/05/2024	2	1589	153 Whitney Street	22:20	180	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	20/05/2024	2	1629	2/29 Raven Ave	22:25	140	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	21/05/2024	2	734	Edendale Branch MH1	4:12	141	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	21/05/2024	2	728	Branch 8 Mt Albert MH31	11:50	309	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	21/05/2024	3	2610874	Boundary RD	16:19	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	21/05/2024	3	2402545	Olsen AVE	8:45	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	21/05/2024	3	2591296	Donegal ST	12:20	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	21/05/2024	3	2500214	Battersby AVE	11:35	n/a	Rags	No	On property	L2	Local	Stream	no	yes	no	no		0.25	
Western Isthmus	29/05/2024	2	734	Edendale Branch MH1	10:16	163	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	29/05/2024	3	2598103	Truro RD	12:18	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	30/05/2024	2	734	Edendale Branch MH1	1:10	74	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	30/05/2024	2	728	Branch 8 Mt Albert MH31	0:55	139	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	30/05/2024	3	2405871	Meola RD	11:18	n/a	Silts	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	10/06/2024	2	739	Branch 8 Mt Albert MH7	2:51	693	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	10/06/2024	2	734	Edendale Branch MH1	0:18	214	Surcharging	yes	Meola Creek (Lyon Avenue)		Transm.	Small Waterway	High	yes	no	no	yes		
Western Isthmus	10/06/2024	3	2498611	Marshall Laing AVE	12:11	n/a	Silts	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			
Western Isthmus	14/06/2024	1	DPOLV	PS 5 Oliver Road			Surcharging	yes	Meola Creek Mouth		Local	Estuary	Very Low	No		No	yes		
Western Isthmus	14/06/2024	2	146	68 Smale Street	3:10	270	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	14/06/2024	2	732	Orakei Main Sewer MH38	3:23	316	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/06/2024	2	739	Branch 8 Mt Albert MH7	8:07	879	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	14/06/2024	2	1629	2/29 Raven Ave	3:25	120	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	14/06/2024	2	309	29 Euston Road	2:50	75	Surcharging	yes	Meola Creek (Haverstock Road)		Local	Small Waterway		yes		no	yes		
Western Isthmus	14/06/2024	2	1589	153 Whitney Street	3:05	430	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	14/06/2024	3	2603552	Arundel ST	8:37	n/a	Broken pipe	No	On property	L1	Local	n/a	no	no	no	no			Repaired pipe
Western Isthmus	14/06/2024	3	81000289	Fairway DR	12:55	n/a	Roots	No	On property	L1	Local	n/a	no	no	no	no			Flushed line, CCTV, Removed roots
Western Isthmus	14/06/2024	3	2499546	Dundale AVE	8:55	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	14/06/2024	3	2591296	Donegal ST	11:17	n/a	Surcharging	No	On property	L1	Local	n/a	no	no	no	no			
Western Isthmus	14/06/2024	3	2604010	Sandringham RD	14:57	n/a	Surcharging	No	Retail/ commercial/ public	L1	Local	n/a	yes	no	no	no			Sucker truck
Western Isthmus	14/06/2024	3	2484396	Plane ST	16:37	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/06/2024	3	2493047	Margaret AVE	11:54	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line
Western Isthmus	14/06/2024	3	2497221	Dominion RD-X	20:45	n/a	Unknown	Yes	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	14/06/2024	3	2604144	Hendon AVE	14:42	n/a	Unknown	No	On property	L1	Local	n/a	no	no	no	no			Flushed line

Catchment	Date	EOP Type	Asset/ Facility ID/ Compkey	Asset Name/ Address	Start time	Duration (mins)	Cause	Repeat	Immediate Receiving Env	DWO Level	Network	Pollution RE	Risk to public	Stream contam risk	SW contam risk	Contam risk to beach/ rec area	Monitoring	Ammonia (ppm)	Prevent re-occurrence
Western Isthmus	15/06/2024	3	81158867	Dundale AVE	7:18	n/a	Fat	No	On property	L1	Local	n/a	no	no	no	no			Unblocked line
Western Isthmus	16/06/2024	2	146	68 Smale Street	20:55	245	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	16/06/2024	2	732	Orakei Main Sewer MH38	20:57	212	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	16/06/2024	2	309	29 Euston Road	22:25	15	Surcharging	yes	Meola Creek (Haverstock Road)		Local	Small Waterway		yes		no	yes		
Western Isthmus	16/06/2024	2	1629	2/29 Raven Ave	22:25	110	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	16/06/2024	2	1589	153 Whitney Street	21:05	200	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	17/06/2024	2	739	Branch 8 Mt Albert MH7	2:06	740	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/06/2024	2	146	68 Smale Street	4:00	20	Surcharging	yes	To land	L1	Local	To land		no	no	no	yes		
Western Isthmus	23/06/2024	2	732	Orakei Main Sewer MH38	4:08	90	Surcharging	yes	Lower Meola Creek		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/06/2024	2	739	Branch 8 Mt Albert MH7	1:43	815	Surcharging	yes	Meola Creek (Rawalpindi)		Transm.	Large Waterway	Very Low			no	yes		
Western Isthmus	23/06/2024	2	728	Branch 8 Mt Albert MH31	2:59	957	Surcharging	yes	Meola Creek (Haverstock Road)		Transm.	Small Waterway	Moderate	yes		no	yes		
Western Isthmus	23/06/2024	2	1629	2/29 Raven Ave	4:15	70	Surcharging	yes	Oakley Creek (Keith Hay Park)		Local	Small waterway		yes		no	yes		
Western Isthmus	23/06/2024	2	1589	153 Whitney Street	4:05	90	Surcharging	yes	Whau Creek		Local	Small waterway		yes		no	yes		
Western Isthmus	25/06/2024	2	734	Edendale Branch MH1	03:00	660	Surcharging	no	Meola Creek (Lyon Avenue)	L1	Transm.	Small Waterway	High	yes	no	no	yes		

D-3 Details of engineer-led investigation resulting from repeat overflow issues during the 2023-24 reporting period

Catchment	Address	Main Issue	Remediation/ Action Taken
Omaha	Riverside DR	5 overflows in past year	CCTV multiple d/s assets, debris removed
Omaha	Esme GRV	3 overflows in 6 months	New junction installed and lateral re-routed
Whangaparāoa	Commodore CT	Multiple overflows	Under investigation
East Coast Bays	Nile RD	4 overflows in past 6 months	Repaired deformed liners
East Coast Bays	East Coast RD	5 overflows in past 6 months	Escalated to flood recovery team
East Coast Bays	Agincourt ST	2 overflows in 6 months	Damaged pipe repaired.
East Coast Bays	Sharon RD	repeat overflow	private issue
East Coast Bays	Celina PL	3 overflows in 1 year	Displaced pipe dug up & repaired
East Coast Bays	Braemar RD	3 overflows in 6 months	faulty lateral on public side, dig up & repair completed
East Coast Bays	Bruce RD	Mongoing overflows	CCTV, fats & debris removed, line added to 12mo flushing schedule
East Coast Bays	The Esplanade	repeat overflows	Moved from yearly to 6 mo flushing schedule
East Coast Bays	Elmira PL	Multiple overflows	CSE to remove roots, flush fats. Added to flushing schedule.
East Coast Bays	Braemar RD	Multiple overflows	Private issue
East Coast Bays	Lake View RD	manhole concreted over, repeat overflow	no further issues following removal of concrete as per reactive SR 11862350
East Coast Bays	Masterton RD	3 overflows in 6 months	appears to be capacity issue, further observation necessary following new Mairangi Bay PS
Devonport-Takapuna	Hurstmere RD	Multiple overflows	CCTV found large build up in line, all cleared.
Shoal Bay	Holyoake PL	5 overflows in 6 months	Under investigation
Shoal Bay	Brassey RD	Multiple overflows	
Shoal Bay	Williamson AVE	7 callouts in past year, may need to be added to flushing schedule.	
Upper Harbour North	Ronald MacKen PL	4 overflows in past 6 months	Fat build up removed
Upper Harbour North	Oteha Valley RD-X	Multiple, ongoing overflows from dump site.	CCTV conducted, large amount of wipes in line. Asset flushed.
Henderson Creek	Castaing CRES	Multiple overflows from GT	Heavy silt discovered and removed
Henderson Creek	Henderson Valley RD	3 overflows in 6 months	Concrete removed from line
Henderson Creek	Noall ST	3 overflows in 6 months	Fat and debris cleared

Catchment	Address	Main Issue	Remediation/ Action Taken
Henderson Creek	Newington RD	4 overflows in 6 months	Flushing schedule updated to 6 monthly
Henderson Creek	Central Park DR	2 overflows in 6 months	Private issue
Henderson Creek	Lucinda PL	Ongoing overflows from gully trap	Dislodged pipe repaired
Henderson Creek	Robert Burke PL	4 overflows in 6 months	Multiple faults found in the line, dig up & repair completed
Henderson Creek	Reynella DR	ongoing overflows	CCTV lines, appears to be capacity issue - escalated to Planning
Henderson Creek	Reynella DR	3 overflows in 3 months	Private issue
Henderson Creek	Lincoln RD	Repeat overflows	Grease trap discovered and agreement set up with Trade Waste Team
Henderson Creek	Reynella DR	Multiple overflows from gully trap, possibly stones in line.	In progress
Henderson Creek	Swanson RD	Multiple overflows	
Whau River	Horwell PL	4 overflows in past 6 months	Roots and fat build up cleared
Whau River	Sabulite RD	multiple overflows	New junction installed
Whau River	Lantana RD	3 overflows in 1 year	Heavy flush to remove fat, added to flushing schedule
Laingholm	Otitori Bay RD	Multiple overflows following flood damage to line. CCTV to investigate.	
Cox's Bay	Surrey CRES	3 overflows in 6 months	Damaged pipe repaired.
Cox's Bay	MacKelvie ST	Multiple overflows	Under investigation
Central Auckland	Hobson ST	4 overflows in 6 months	Root removal has solved issue
Hobson Bay	Paunui ST	3 overflows in past 6 months	CCTV, repairs to lateral and main line
Hobson Bay	Eltham RD	4 overflows in past 6 months	Reinstate manhole chamber
Hobson Bay	Robert ST	2 overflows in 6 months	Reminder for grease traps to be emptied regularly
Hobson Bay	Ashwell ST	3 overflows in 6 months	Concrete in line removed
Hobson Bay	Ranier ST	multiple overflows	CCTV multiple d/s assets, dipped line added to 3 mo flushing schedule
Hobson Bay	Onslow AVE	multiple overflows	Private issue
Hobson Bay	Laxon TCE	multiple overflows	Private issue
Hobson Bay	Eltham RD	Multiple blockages and overflows	Laterals rerouted to newly installed manhole, no further issues

Catchment	Address	Main Issue	Remediation/ Action Taken
Hobson Bay	Eastbourne RD	4 overflows in 6 months	Dig up & repair under reactive work by MSN has solved issue
Hobson Bay	Woodley AVE	repeat overflows, investigation requested	No further operational issues
Onehunga	Oriana AVE	4 overflows in past 6 months	Fat build up removed
Onehunga	Onehunga MALL	Repeat overflows	CCTV found root intrusion, heavy flush to remove completely
Onehunga	Onehunga MALL	Repeat overflows	Private issue
Onehunga	Forbes ST	multiple overflows from mushroom	Faulty junction, dig up & repair completed
Onehunga	Princes ST	6 overflows in past yr from gym, education piece may be needed here.	
Māngere	Buckland RD	6 overflows in 6 months	Fat and grease build up cleared.
Māngere	Tennessee AVE	Multiple overflows	Private issue
Māngere	Bell AVE	n/a	concrete removed, no further issues
Māngere	Duggan AVE	repeat overflows in wet weather	Fat and grease build up cleared.
Māngere	Kaka ST	multiple overflows	Displacement found and repaired, no further issues
Māngere	Dewhurst PL	Multiple blockages and overflows	Under investigation
Lower Tāmaki River	Waddell AVE	multiple overflows	Wheel stuck in line removed
Lower Tāmaki River	Line RD	5 overflows in 6 months	Under investigation
Lower Tāmaki River	Vista CRES	MH discovered under pavers, repeat blockages	Broken pipe repaired
Lower Tāmaki River	Takutai AVE	Multiple overflows over past 4 years	Heavy flush to remove fats and roots, may be added to flushing schedule
Upper Tāmaki River	Aranui RD	6 overflows in 6 months	Private issue
Upper Tāmaki River	Millen AVE	Repeat overflows over past few years	Under investigation
Upper Tāmaki River	Capstick RD	Multiple overflows in past month	Broken pipe repaired
Upper Tāmaki River	Santa Ana DR		
Upper Tāmaki River	Ridge RD	multiple overflows	replaced junction, no further issues
Upper Tāmaki River	Edgewater DR	Multiple overflows	Heavy flush to clear fats and debris
Upper Tāmaki River	Barrie AVE	5 overflows from GT in 7 months	
Upper Tāmaki River	Hamill RD	5 overflows in past yr, investigate repeat cause	

Catchment	Address	Main Issue	Remediation/ Action Taken
Upper Tāmaki River	Wedgwood AVE	Multiple overflows	Displaced and damaged pipes replaced
Cockle Bay	Sunnyview AVE	3 overflows in past month	Root removal and broken pipe repaired
Cockle Bay	Alexander ST	4 overflows in past 6 months	In progress
Puhinui	Burbank AVE	multiple overflows	heavy flush of multiple assets to clear fats and debris
Puhinui	Keri Anne PL	3 overflows in 6 months	Concrete removed from line
Puhinui	Gifford RD	education around pouring fats/oil down sink	
Puhinui	Iona PL	Fats & rags found, further comms with daycare may be necessary/ add to flushing schedule?	
Pahurehure Inlet	Komako LN	Site builder did not connect private line to public causing multiple overflows	Repaired connection
Pahurehure Inlet	Coxhead RD	4 overflows in past 6 months	Investigation assigned
Pahurehure Inlet	Mahia RD	4 overflows in 6 months	Under investigation
Pukekohe	Adams DR	Potential issue with first flush system	Private issue
Pukekohe	Landon PL	repeat overflows	Heavy flush to clear fats has solved issue
Pukekohe	Hamilton PL	Multiple overflows	dig up & replace junction
Western Isthmus	Edenvale Park RD	5 overflows in past 6 months	Escalated to flood recovery team
Western Isthmus	Lloyd AVE	5 overflows in 6 months	Heavy flush to remove roots
Western Isthmus	Ruarangi RD	multiple overflows	fault in pipe repaired
Western Isthmus	Hillsborough RD	multiple overflows	temporary obstruction removed from line
Western Isthmus	Douglas RD	4 overflows in past 6 months	Collapsed pipe repaired
Western Isthmus	O'Donnell AVE	10 repeat overflows in 6 months, issue with new road surface	
Western Isthmus	Donovan ST	ongoing overflows from GT, CCTV requested	

Table D-4 Type 1 5-year trends for dry weather overflows

Facility Code	Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPSHR	School Road WWPS	Wellsford	1	1	1	0	3	0	0	1.2	1	0.8	Decreasing
DPWOR	Worker Road WWPS	Wellsford	1	3	5	1	0	1	1	2	2	1.6	Decreasing
DPKYH	Kellys Hill WWPS	Wellsford	0	0	0	1	0	2	1	0.2	0.6	0.8	Increasing
DPTHA	Te Hana WWPS	Wellsford	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPARM	Armitage WWPS	Wellsford	1	0	3	0	1	4	0	1	1.6	1.6	No change
DPLIL	Lilburn WWPS	Warkworth	0	1	1	0	0	1	0	0.4	0.6	0.4	Decreasing
DPPAL	Palmer WWPS	Warkworth	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPDAL	Daltons WWPS	Snells Beach/Algies Bay	0	0	0	0	0	0	2	0	0	0.4	Increasing
DPCNL	Cornel WWPS	Snells Beach/Algies Bay	0	0	1	1	1	2	1	0.6	1	1.2	Increasing
DPHMT	Hamatana WWPS	Snells Beach/Algies Bay	0	0	2	0	0	0	0	0.4	0.4	0.4	No change
DPBTE	Brigitte WWPS	Snells Beach/Algies Bay	0	0	11	0	0	0	0	2.2	2.2	2.2	No change
DPTMT	Tamatea WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPWWR	Waiwera Town WWPS	Waiwera	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPOUT	Outfall WWPS	Helensville	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPPAI	Parakai WWPS	Helensville	1	0	0	0	0	0	0	0.2	0	0	No change
DPSPR	Springs Road WWPS	Helensville	3	0	0	0	0	0	0	0.6	0	0	No change
DPKOW	Kowhai WWPS	Helensville	1	0	1	1	0	0	0	0.6	0.4	0.4	No change
DPMRO	Miro Street WWPS	Helensville	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSTW	Stillwater WWPS	Weiti	0	0	0	0	0	3	1	0	0.6	0.8	Increasing
DPFOU	Foundry WWPS	Weiti	1	0	1	0	0	0	0	0.4	0.2	0.2	No change
DPDUC	Duck Creek WWPS	Weiti	1	0	0	1	0	0	0	0.4	0.2	0.2	No change
DPBLU	Blue Gum WWPS	Weiti	1	0	0	0	0	1	0	0.2	0.2	0.2	No change
DPWEI	Weiti WWPS	Weiti	2	0	1	0	0	3	0	0.6	0.8	0.8	No change
DPARK	Arkles Bay WWPS	Whangaparaoa	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPPUA	Puawai WWPS	Whangaparaoa	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPSIE	Siesta WWPS	Whangaparaoa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPTER	Terminal WWPS	Whangaparaoa	1	0	0	0	1	0	0	0.4	0.2	0.2	No change
DPPIN	Pinecrest WWPS	Whangaparaoa	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSWB	Swann Beach WWPS	Whangaparaoa	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPBAY	Bay Street WWPS	Whangaparaoa	0	0	0	1	0	1	0	0.2	0.4	0.4	No change
DPGLG	Glenelg WWPS	Whangaparaoa	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPOKR	Okura River Road WWPS	Long Bay	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPPRO	Promenade WWPS	Devonport-Takapuna	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPLNO	Lake Road (Northcote) WWPS	Shoal Bay	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPKIL	Killarney WWPS	Shoal Bay	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPSN2	Stanley Point 2 WWPS	Shoal Bay	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPARH	Arahia WWPS	Shoal Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSEA	Seabreeze WWPS	Shoal Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPATL	Atlas WWPS	Upper Harbour North	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPKY1	Kyle 1 WWPS/Storage Tank	Upper Harbour North	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPRLE	Rosedale WWPS	Upper Harbour North	0	0	0	0	3	0	0	0.6	0.6	0.6	No change
DPMHO	Mahoney WWPS	Upper Harbour North	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPVAN	Van Der Bilt WWPS	Upper Harbour North	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPKAH	Kahika WWPS	Upper Harbour South	1	0	0	0	0	0	0	0.2	0	0	No change

Facility Code	Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPCRO	Cronin WWPS	Upper Harbour South	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPHD1	Hadfield 1 WWPS	Upper Harbour South	0	0	0	0	0	4	0	0	0.8	0.8	No change
DPTEN	Te Atatu North WWPS (PS42)	Henderson Creek	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPFLN	Western WWPS (PS44)	Henderson Creek	0	1	0	0	0	0	1	0.2	0.2	0.2	No change
DPASH	Ash Street WWPS	Whau River	0	2	0	1	0	0	0	0.6	0.6	0.2	Decreasing
DPKEY	Kenley Place WWPS	Whau River	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPEND	Endeavour Street WWPS	Whau River	0	0	0	1	0	0	1	0.2	0.2	0.4	Increasing
DPPKI	Patiki Road WWPS	Whau River	0	0	0	0	0	0	0	0	0	0	No change
DPRB2	Rosebank Road 2 WWPS	Whau River	0	0	0	0	0	0	0	0	0	0	No change
DPTIM	Timothy Place WWPS	Whau River	0	0	0	0	0	0	0	0	0	0	No change
DPLEW	Lewis Street WWPS	Whau River	1	0	0	1	0	0	0	0.4	0.2	0.2	No change
DPRVD	Riversdale Road WWPS	Whau River	0	0	3	1	0	0	0	0.8	0.8	0.8	No change
DPGLT	Gilleta Road WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPWNG	Wingate Street WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPKA2	Kauri Point Road 2 WWPS	Laingholm	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPHU1	Huia Road 1 WWPS	Laingholm	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPMAC	Macefield Avenue WWPS	Cox's Bay	0	0	0	0	0	0	0	0	0	0	No change
DPWEB	Webber Street WWPS	Cox's Bay	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPWNU	Wainui Ave WWPS (PS12)	Cox's Bay	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPWPA	Westmere Park WWPS (PS6)	Cox's Bay	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPCNH	Constitution Hill WWPS (PS13)	Central Auckland	0	0	0	0	0	0	6	0	0	1.2	Increasing
DPWTB	Waterbank Crescent WWPS	Central Auckland	0	0	0	0	0	0	0	0	0	0	No change
DPFRN	Farnham StreetWWPS (PS1)	Central Auckland	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPORM	Orakei WWPS (PS64)	Hobson Bay	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPSHO	Shore Rd WWPS (PS7)	Hobson Bay	1	0	0	0	0	0	0	0.2	0	0	No change
DPGRA	Grand Drive WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPMCD	McDonald Crescent WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPPL1	Portland Road 1 WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPTON	Tonks Street WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPSTF	Stonefield WWPS	Hobson Bay	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPSTH	St Heliers WWPS	Hobson Bay	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPGIL	Gillies Avenue WWPS	Hobson Bay	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPPUR	Purewa Road WWPS	Hobson Bay	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHIM	Himalaya Crescent WWPS	Onehunga	0	0	0	0	0	0	0	0	0	0	No change
DPAL1	Aldersgate Road 1 WWPS	Onehunga	0	0	1	1	0	0	0	0.4	0.4	0.4	No change
DPOTW	Otahuhu West WWPS (PS19)	Mangere	0	0	0	0	0	0	0	0	0	0	No change
DPSAL	Saleyards Road WWPS	Mangere	0	0	0	0	0	0	0	0	0	0	No change
DPRLA	Rosella Road WWPS	Mangere	0	0	2	0	0	0	0	0.4	0.4	0.4	No change
DPRD2	Mount Richmond 2 WWPS	Mangere	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPSAV	Savill Drive Link WWPS	Mangere	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPENG	Pt England WWPS (PS15)	Lower Tamaki River	1	2	0	1	0	0	0	0.8	0.6	0.2	Decreasing
DPPAB	Panmure Basin WWPS (PS18)	Lower Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPRID	Riddell Road WWPS	Lower Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPBEL	Belmere Rise WWPS	Lower Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPMID	Middlemore WWPS (PS29)	Upper Tamaki River	1	3	0	0	0	0	0	0.8	0.6	0	Decreasing
DPRNY	Rodney Street WWPS	Upper Tamaki River	0	2	0	1	0	0	0	0.6	0.6	0.2	Decreasing

Facility Code	Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPSPK	Sylvia Park WWPS (PS38)	Upper Tamaki River	1	0	0	0	0	0	0	0.2	0	0	No change
DPBNK	Banks Street WWPS	Upper Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPLAU	Laureston Avenue WWPS	Upper Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPOTB	Otara WWPS (PS31)	Upper Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPPKS	Pakuranga South WWPS (PS41)	Upper Tamaki River	0	0	0	0	0	0	0	0	0	0	No change
DPHIN	Pakuranga WWPS (PS28)	Upper Tamaki River	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPHIP	Highland Park WWPS	Upper Tamaki River	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPPAK	Pakuranga Road WWPS	Upper Tamaki River	0	0	3	0	0	0	0	0.6	0.6	0.6	No change
DPAVI	Aviemore Drive WWPS	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPGOS	Gossamer Drive WWPS	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHIB	Highbrook Park WWPS	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPMEN	Milen Avenue WWPS	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPOSN	Ormiston Rd WWPS (PS58)	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPPEL	Pelorus Place WWPS	Upper Tamaki River	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHIS	Harris Road East Tamaki WWPS	Upper Tamaki River	0	0	0	0	6	0	0	1.2	1.2	1.2	No change
DPARW	Arwen Place WWPS	Upper Tamaki River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPHOW	Howick WWPS (PS 30)	Cockle Bay	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPEST	Estuary Views WWPS	Cockle Bay	0	0	0	0	5	0	0	1	1	1	No change
DPPPW	Papatoetoe West WWPS (PS20)	Puhinui	0	3	1	0	0	0	0	0.8	0.8	0.2	Decreasing
DPSET	Settlers Cove WWPS	Puhinui	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPWYM	Weymouth WWPS (PS47)	Pahurehure Inlet	0	0	0	0	1	0	1	0.2	0.2	0.4	Increasing
DPRYS	Roys Road WWPS	Pahurehure Inlet	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPBRM	Bremner Wastewater Pump Station	Pahurehure Inlet	0	0	0	0	10	0	0	2	2	2	No change
DPONR	Oneroa Waiheke WWPS	Oneroa	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPMTI	Maraetai Domain WWPS	Beachlands Maraetai	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPOMA	Omana Esplanade WWPS	Beachlands Maraetai	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPTOO	Toomer Place WWPS	Beachlands Maraetai	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPCOL	Colson Lane WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPKKA	Karaka Road WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPNAV	New Avenues WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPTPN	Te Pene WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPTVW	Third view WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPPHM	Pine Harbour Marina WWPS	Beachlands Maraetai	0	0	0	0	2	0	0	0.4	0.4	0.4	No change
DPEDP	Edgewater Parade WWPS	Waiuku	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPNZS	Elsie Drive WWPS	Waiuku	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPFGH	Fernleigh Avenue WWPS	Waiuku	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPCHR	Cape Hill Road WWPS	Pukekohe	0	0	0	0	0	0	4	0	0	0.8	Increasing
DPFRA	Franklin Road WWPS	Pukekohe	0	0	0	0	0	1	1	0	0.2	0.4	Increasing
DPNES	North East WWPS	Pukekohe	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPLOC	Lochview WWPS	Pukekohe	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPFRS	Fletchers WWPS	Pukekohe	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPWEC	Wecks WWPS	Pukekohe	0	0	1	0	0	1	0	0.2	0.4	0.4	No change
DPOLV	PS 5 Oliver Road WWPS (PS5)	Western Isthmus	0	2	0	1	0	0	0	0.6	0.6	0.2	Decreasing
DPWIN	St George WWPS (PS25)	Western Isthmus	1	1	0	0	0	0	2	0.4	0.2	0.4	Increasing
DPHRB	Harbour View Rd WWPS (PS10)	Western Isthmus	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPWA1	Walker Road 1 WWPS	Western Isthmus	0	0	0	0	1	0	0	0.2	0.2	0.2	No change

Table D-5 Type 1 5-year trends for wet weather overflows

Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPARM	Armitage WWPS	Wellsford	2	4	2	2	9	12	2	3.8	5.8	5.4	Decreasing
DPWOR	Worker Road WWPS	Wellsford	2	1	2	7	7	10	3	3.8	5.4	5.8	Increasing
DPTHA	Te Hana WWPS	Wellsford	0	0	0	0	2	13	2	0.4	3	3.4	Increasing
DPKYH	Kellys Hill WWPS	Wellsford	0	0	2	2	3	3	2	1.4	2	2.4	Increasing
DPCEM	Cemetery WWPS	Wellsford	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSHR	School Road WWPS	Wellsford	1	1	1	0	1	2	0	0.8	1	0.8	Decreasing
DPBRO	Broadlands WWPS	Omaha	0	0	0	1	3	2	0	0.8	1.2	1.2	No change
DPMRI	Mangatawhiri WWPS	Omaha	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSUC	Success Court WWPS	Omaha	0	0	0	0	1	1	1	0.2	0.4	0.6	Increasing
DPPAL	Palmer WWPS	Warkworth	10	3	3	5	12	26	4	6.6	9.8	10	Increasing
DPLIL	Lilburn WWPS	Warkworth	1	3	0	3	5	8	1	2.4	3.8	3.4	Decreasing
DPDAL	Daltons WWPS	Snells Beach/Algies Bay	2	1	0	0	3	9	2	1.2	2.6	2.8	Increasing
DPBTE	Brigitte WWPS	Snells Beach/Algies Bay	50	18	16	21	27	0	0	26.4	16.4	12.8	Decreasing
DPCNL	Cornel WWPS	Snells Beach/Algies Bay	2	0	0	1	1	2	0	0.8	0.8	0.8	No change
DPMBC	Martins Bay Camp WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPMRN	Mariners WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPRGH	Riverleigh Drive WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSNB	Sunburst Avenue WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPTMT	Tamatea WWPS	Snells Beach/Algies Bay	1	1	0	0	2	4	2	0.8	1.4	1.6	Increasing
DPWLJ	Willjames WWPS	Snells Beach/Algies Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPWAC	Waiwera Camp WWPS	Waiwera	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPWWR	Waiwera Town WWPS	Waiwera	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPCIC	Chic WWPS	Helensville	0	0	0	1	0	2	1	0.2	0.6	0.8	Increasing
DPKOW	Kowhai WWPS	Helensville	0	0	0	0	2	1	0	0.4	0.6	0.6	No change
DPMIL	Mill Road WWPS	Helensville	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPMRO	Miro Street WWPS	Helensville	0	0	0	0	2	6	1	0.4	1.6	1.8	Increasing
DPOUT	Outfall WWPS	Helensville	2	0	1	2	2	4	1	1.4	1.8	2	Increasing
DPSPR	Springs Road WWPS	Helensville	0	0	0	0	0	4	0	0	0.8	0.8	No change
DPFLO	Florence WWPS	Orewa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHAT	Hatfield's Beach WWPS	Orewa	0	3	1	2	1	2	0	1.4	1.8	1.2	Decreasing
DPJEL	Jelas WWPS	Orewa	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPMAY	Maygrove WWPS	Orewa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPORE	Orewa WWPS	Orewa	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPRVS	Riverside WWPS	Orewa	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPTAP	Tauranga Place WWPS	Orewa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPWEI	Weiti WWPS	Weiti	0	3	0	4	7	21	3	2.8	7	7	No change
DPWAD	Wade WWPS	Weiti	0	1	0	0	2	18	1	0.6	4.2	4.2	No change
DPBLU	Blue Gum WWPS	Weiti	0	0	0	1	1	5	0	0.4	1.4	1.4	No change
DPDUC	Duck Creek WWPS	Weiti	1	1	0	0	2	6	0	0.8	1.8	1.6	Decreasing
DPFOU	Foundry WWPS	Weiti	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPSTW	Stillwater WWPS	Weiti	0	0	0	0	2	8	0	0.4	2	2	No change
DPSTA	Stanmore WWPS	Whangaparaoa	0	0	0	0	3	11	5	0.6	2.8	3.8	Increasing
DPBAY	Bay Street WWPS	Whangaparaoa	1	3	2	0	4	10	3	2	3.8	3.8	No change
DPARK	Arkles Bay WWPS	Whangaparaoa	0	0	0	0	0	6	1	0	1.2	1.4	Increasing

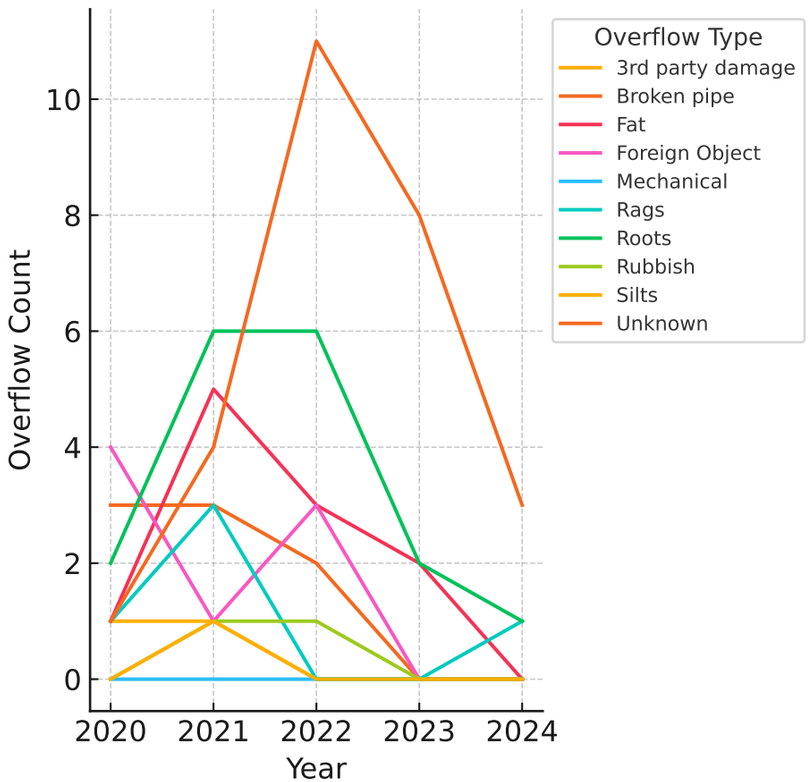
Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPCHE	Chelverton WWPS	Whangaparaoa	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPCOO	Cooper WWPS	Whangaparaoa	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPDUN	Duncansby WWPS	Whangaparaoa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPGLG	Glenelg WWPS	Whangaparaoa	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPHBB	Hobbs Bay WWPS	Whangaparaoa	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPHUR	Hurdlow WWPS	Whangaparaoa	0	0	0	1	0	3	0	0.2	0.8	0.8	No change
DPISV	Island View WWPS	Whangaparaoa	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPLIT	Little Manly WWPS	Whangaparaoa	0	0	0	0	0	3	1	0	0.6	0.8	Increasing
DPMET	Margaret WWPS	Whangaparaoa	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPMLY	Manly WWPS	Whangaparaoa	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPOKO	Okoromai WWPS	Whangaparaoa	1	2	0	0	2	0	0	1	0.8	0.4	Decreasing
DPORB	Orewa Bridge South WWPS	Whangaparaoa	0	0	0	0	1	4	0	0.2	1	1	No change
DPPAC	Pacific WWPS	Whangaparaoa	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPPIN	Pinecrest WWPS	Whangaparaoa	1	0	1	0	0	2	0	0.4	0.6	0.6	No change
DPPOP	Poplar WWPS	Whangaparaoa	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPPUA	Puawai WWPS	Whangaparaoa	0	0	0	0	1	4	3	0.2	1	1.6	Increasing
DPROB	Laguna Place WWPS	Whangaparaoa	0	0	0	0	2	0	0	0.4	0.4	0.4	No change
DPSIE	Siesta WWPS	Whangaparaoa	0	0	0	1	0	1	0	0.2	0.4	0.4	No change
DPSWB	Swann Beach WWPS	Whangaparaoa	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPTDL	Tindalls WWPS	Whangaparaoa	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPTER	Terminal WWPS	Whangaparaoa	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPDEB	Deborah WWPS	Long Bay	0	0	0	0	0	10	0	0	2	2	No change
DPOKR	Okura River Road WWPS	Long Bay	1	1	0	0	0	0	0	0.4	0.2	0	Decreasing
DPBLA	Black Rock WWPS	East Coast Bays	4	3	6	2	5	20	5	4	7.2	7.6	Increasing
DPALC	Albany Church WWPS	East Coast Bays	1	2	0	0	4	17	6	1.4	4.6	5.4	Increasing
DPALM	Alma WWPS	East Coast Bays	1	1	2	0	1	11	0	1	3	2.8	Decreasing
DPBRB	Browns Bay WWPS	East Coast Bays	2	3	3	0	2	8	2	2	3.2	3	Decreasing
DPCBY	Castor Bay WWPS	East Coast Bays	4	4	4	1	3	6	6	3.2	3.6	4	Increasing
DPCHU	Churchill WWPS	East Coast Bays	0	1	0	0	2	7	0	0.6	2	1.8	Decreasing
DPCRA	Craig WWPS	East Coast Bays	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPERI	Eric Price WWPS	East Coast Bays	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPGYS	Grays WWPS	East Coast Bays	0	0	0	0	0	0	3	0	0	0.6	Increasing
DPHM1	Hurstmere 1 WWPS	East Coast Bays	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPHM2	Hurstmere 2 WWPS	East Coast Bays	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPONA	Omana WWPS	East Coast Bays	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSEW	Seaview WWPS	East Coast Bays	0	2	0	0	2	3	0	0.8	1.4	1	Decreasing
DPSI1	Sidmouth WWPS	East Coast Bays	3	3	1	0	2	5	4	1.8	2.2	2.4	Increasing
DPWAU	Wairau WWPS	East Coast Bays	0	0	0	0	1	11	0	0.2	2.4	2.4	No change
DSSIL	Silverfield Wasterwater Storage Tank	East Coast Bays	0	0	0	0	3	2	4	0.6	1	1.8	Increasing
DPKED	King Edward WWPS	Devonport-Takapuna	0	0	0	0	0	0	0	0	0	0	No change
DPPRO	Promenade WWPS	Devonport-Takapuna	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPLNO	Lake Road (Northcote) WWPS	Shoal Bay	0	0	0	5	9	25	6	2.8	7.8	9	Increasing
DPSEA	Seabreeze WWPS	Shoal Bay	0	0	0	4	14	15	8	3.6	6.6	8.2	Increasing
DPAFD	Alfred WWPS	Shoal Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPARH	Arahia WWPS	Shoal Bay	0	0	0	0	1	3	0	0.2	0.8	0.8	No change
DPBPO	Barrys Point Local WWPS	Shoal Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change

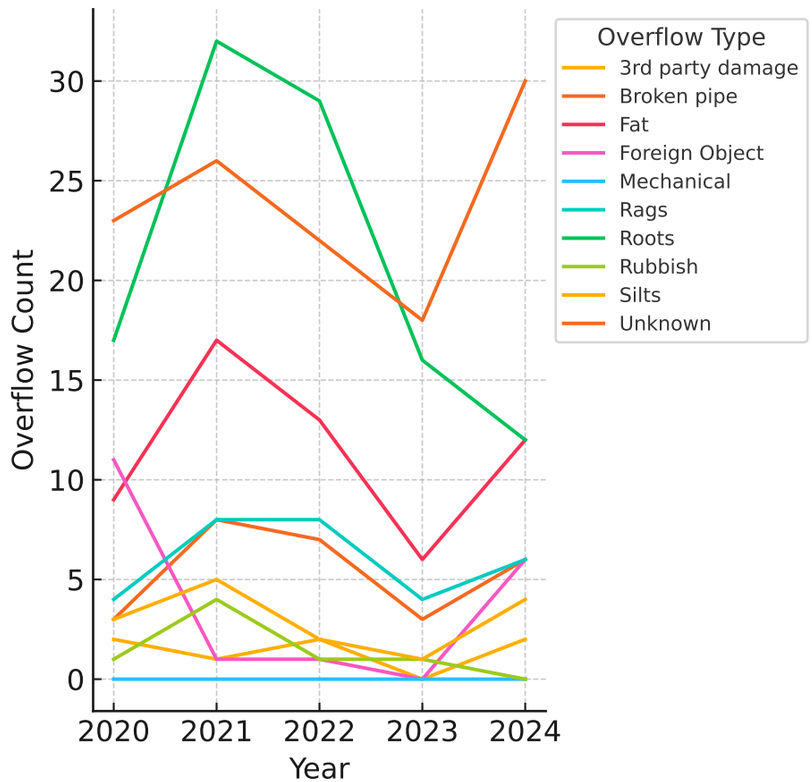
Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPEXM	Exmouth WWPS	Shoal Bay	0	0	0	0	1	2	0	0.2	0.6	0.6	No change
DPHNM	Hinemoa WWPS	Shoal Bay	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPHOM	Homewood WWPS	Shoal Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPJIM	Jim Tichener WWPS	Shoal Bay	5	2	0	0	1	5	2	1.6	1.6	1.6	No change
DPKAW	Kawerau WWPS	Shoal Bay	1	1	0	0	1	0	0	0.6	0.4	0.2	Decreasing
DPMNI	Maunganui WWPS/Storage Tank	Shoal Bay	2	1	0	0	0	0	0	0.6	0.2	0	Decreasing
DPNRO	Northboro WWPS	Shoal Bay	4	4	2	0	4	8	3	2.8	3.6	3.4	Decreasing
DPSFE	Seacliffe WWPS	Shoal Bay	0	0	0	0	0	0	0	0	0	0	No change
DPSN2	Stanley Point 2 WWPS	Shoal Bay	0	0	0	0	1	4	2	0.2	1	1.4	Increasing
DPALY	Aberley WWPS	Upper Harbour North	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPATL	Atlas WWPS	Upper Harbour North	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPAWA	Awatahi WWPS	Upper Harbour North	1	1	0	0	0	0	0	0.4	0.2	0	Decreasing
DPBUS	Bush WWPS	Upper Harbour North	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPCHH	Churchouse Road WWPS	Upper Harbour North	2	1	1	0	2	5	1	1.2	1.8	1.8	No change
DPKY1	Kyle 1 WWPS/Storage Tank	Upper Harbour North	4	2	2	1	3	0	1	2.4	1.6	1.4	Decreasing
DPKY2	Kyle 2 WWPS	Upper Harbour North	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPRLE	Rosedale WWPS	Upper Harbour North	3	0	0	0	2	0	0	1	0.4	0.4	No change
DPVAN	Van Der Bilt WWPS	Upper Harbour North	1	0	0	0	0	2	0	0.2	0.4	0.4	No change
DPCRO	Cronin WWPS	Upper Harbour South	7	5	2	5	5	25	8	4.8	8.4	9	Increasing
DPHD1	Hadfield 1 WWPS	Upper Harbour South	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPISL	Island Bay WWPS	Upper Harbour South	2	2	0	1	0	1	2	1	0.8	0.8	No change
DPKAH	Kahika WWPS	Upper Harbour South	2	2	4	1	1	3	0	2	2.2	1.8	Decreasing
DPMAV	Mariners View WWPS	Upper Harbour South	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPVIA	Valkyria WWPS	Upper Harbour South	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPHI1	Herald Island No 1 WWPS	Upper Harbour West	2	0	0	0	0	0	0	0.4	0	0	No change
DPHI2	Herald Island No 2 WWPS	Upper Harbour West	1	0	0	0	1	2	0	0.4	0.6	0.6	No change
DPHOP	PS 70 Hobsonville Peninsula WWPS	Upper Harbour West	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPTCV	The Cove WWPS	Upper Harbour West	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPWEM	Westpark Marina WWPS	Upper Harbour West	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPTEN	Te Atatu North WWPS (PS42)	Henderson Creek	8	3	6	3	5	25	8	5	8.4	9.4	Increasing
DPFLN	Western WWPS (PS44)	Henderson Creek	7	2	12	4	3	20	5	5.6	8.2	8.8	Increasing
DPDAR	Darcy Place WWPS	Henderson Creek	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPEAS	Easter Parade WWPS	Henderson Creek	2	1	0	0	0	0	0	0.6	0.2	0	Decreasing
DPARC	Archibald Road WWPS	Whau River	0	0	0	0	0	4	0	0	0.8	0.8	No change
DPARP	Archibald Park WWPS	Whau River	0	0	0	0	2	2	0	0.4	0.8	0.8	No change
DPASH	Ash Street WWPS	Whau River	3	1	2	1	0	1	2	1.4	1	1.2	Increasing
DPBED	Bedford Street WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPBNC	Bancroft Crescent WWPS	Whau River	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPEND	Endeavour Street WWPS	Whau River	0	0	0	0	0	1	2	0	0.2	0.6	Increasing
DPESM	Esmeralda Avenue WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPGLT	Gilleta Road WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPHS1	Holly Street 1 WWPS	Whau River	0	0	0	0	0	1	1	0	0.2	0.4	Increasing
DPHS2	Holly Street 2 WWPS	Whau River	1	0	0	0	0	1	0	0.2	0.2	0.2	No change
DPHUG	Hugh Brown Drive WWPS	Whau River	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPKEY	Kenley Place WWPS	Whau River	0	0	0	0	0	0	0	0	0	0	No change
DPLEW	Lewis Street WWPS	Whau River	1	1	0	0	0	2	0	0.4	0.6	0.4	Decreasing

Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPLID	Lidcombe Place WWPS	Whau River	1	0	1	0	0	0	0	0.4	0.2	0.2	No change
DPRVD	Riversdale Road WWPS	Whau River	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPTIM	Timothy Place WWPS	Whau River	0	0	0	0	0	0	0	0	0	0	No change
DPWNG	Wingate Street WWPS	Whau River	0	1	0	0	0	2	0	0.2	0.6	0.4	Decreasing
DPWOO	Wood Bay Road WWPS	Whau River	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPDAV	Davies Bay WWPS	Laingholm	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPDOR	Dorothy Road WWPS	Laingholm	0	0	0	0	1	4	0	0.2	1	1	No change
DPFRE	French Bay WWPS	Laingholm	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPHW1	Hollywood Avenue 1 WWPS	Laingholm	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPJEN	Jenkins Bay WWPS	Laingholm	1	0	0	0	0	1	0	0.2	0.2	0.2	No change
DPKA1	Kauri Point Road 1 WWPS	Laingholm	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPLAI	Laingholm Drive WWPS	Laingholm	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPLNG	Laingholm WWPS (PS60)	Laingholm	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPTR2	Tamariki Reserve 2 WWPS	Laingholm	2	0	0	0	0	0	0	0.4	0	0	No change
DPWDB	Wood Bay WWPS (PS59)	Laingholm	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPEDC	Edgars Creek WWPS (PS51)	Cox's Bay	0	0	0	0	0	4	0	0	0.8	0.8	No change
DPWEB	Webber Street WWPS	Cox's Bay	1	2	1	0	1	0	1	1	0.8	0.6	Decreasing
DPWNU	Wainui Ave WWPS (PS12)	Cox's Bay	1	0	0	0	1	0	0	0.4	0.2	0.2	No change
DPWPA	Westmere Park WWPS (PS6)	Cox's Bay	0	0	0	0	0	0	0	0	0	0	No change
DPCNH	Constitution Hill WWPS (PS13)	Central Auckland	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPFAN	Fanshawe StreetWWPS (PS4)	Central Auckland	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPFRN	Farnham StreetWWPS (PS1)	Central Auckland	2	0	0	0	0	4	1	0.4	0.8	1	Increasing
DPPUR	Purewa Road WWPS	Hobson Bay	0	1	2	0	2	6	5	1	2.2	3	Increasing
DPATK	Atkin Avenue WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPGIL	Gillies Avenue WWPS	Hobson Bay	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPJRP	John Rymer Place WWPS	Hobson Bay	1	1	2	0	1	2	2	1	1.2	1.4	Increasing
DPKOH	Kohimarama WWPS (PS17)	Hobson Bay	0	0	0	0	0	1	1	0	0.2	0.4	Increasing
DPMCD	McDonald Crescent WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPMEA	Meadowbank Road WWPS	Hobson Bay	0	0	0	0	0	0	0	0	0	0	No change
DPORM	Orakei WWPS (PS64)	Hobson Bay	5	2	4	0	1	1	4	2.4	1.6	2	Increasing
DPPL2	Portland Road 2 WWPS	Hobson Bay	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSHO	Shore Rd WWPS (PS7)	Hobson Bay	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPSPE	Stanhope Road WWPS	Hobson Bay	0	0	1	0	0	1	0	0.2	0.4	0.4	No change
DPTYC	Tamaki Yacht Club WWPS	Hobson Bay	1	0	0	0	0	0	0	0.2	0	0	No change
DPAL1	Aldersgate Road 1 WWPS	Onehunga	8	4	7	3	1	2	2	4.6	3.4	3	Decreasing
DPAL2	Aldersgate Road 2 WWPS	Onehunga	4	2	2	2	1	0	2	2.2	1.4	1.4	No change
DPBJD	Ben James Drive WWPS	Onehunga	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPGOD	Godwit Place WWPS	Onehunga	0	0	0	0	0	0	0	0	0	0	No change
DPHBH	Hillsborough Road WWPS	Onehunga	0	0	0	0	0	0	0	0	0	0	No change
DPLYF	Lynfield WWPS (PS24)	Onehunga	0	0	0	2	0	0	0	0.4	0.4	0.4	No change
DPONE	Hillsborough WWPS (PS23)	Onehunga	3	2	2	0	0	0	0	1.4	0.8	0.4	Decreasing
DPONT	Onehunga WWPS (PS21)	Onehunga	0	0	0	0	0	1	1	0	0.2	0.4	Increasing
DPPPT	Pikes Point WWPS (PS52)	Onehunga	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSMT	Mt Smart WWPS (PS22)	Onehunga	0	0	0	0	1	3	0	0.2	0.8	0.8	No change
DPWAL	Walls Road WWPS	Onehunga	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPWBG	Wesley Bay Glade WWPS	Onehunga	0	0	0	0	0	4	0	0	0.8	0.8	No change

Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPOTW	Otahuhu West WWPS (PS19)	Mangere	7	5	1	1	0	16	4	2.8	4.6	4.4	Decreasing
DPBCH	Beach Road WWPS	Mangere	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHRD	Huia Road WWPS	Mangere	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPJFD	James Fletcher Drive WWPS	Mangere	0	0	0	0	2	0	0	0.4	0.4	0.4	No change
DPKIW	Kiwi Esplanade WWPS	Mangere	1	0	0	0	0	1	0	0.2	0.2	0.2	No change
DPLAM	Lambie Court WWPS	Mangere	1	0	0	0	0	0	0	0.2	0	0	No change
DPMCK	Mckenzie Road WWPS	Mangere	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPMGB	Mangere Bridge WWPS (PS36)	Mangere	0	0	0	0	0	3	0	0	0.6	0.6	No change
DPMIR	Miro Road WWPS	Mangere	1	0	1	0	0	0	0	0.4	0.2	0.2	No change
DPNRN	Norana Avenue WWPS	Mangere	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPOTN	Otahuhu North WWPS (PS32)	Mangere	0	0	1	1	0	0	0	0.4	0.4	0.4	No change
DPRLA	Rosella Road WWPS	Mangere	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPRUA	Ruaiti Road WWPS	Mangere	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSAL	Saleyards Road WWPS	Mangere	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPSYL	Sylvia Park WWPS	Mangere	0	1	0	0	0	0	0	0.2	0.2	0	Decreasing
DPTRC	Black Bridge WWPS (PS37)	Mangere	2	1	0	0	0	3	1	0.6	0.8	0.8	No change
DPENG	Pt England WWPS (PS15)	Lower Tamaki River	8	9	11	4	0	1	10	6.4	5	5.2	Increasing
DPBEL	Belmere Rise WWPS	Lower Tamaki River	3	0	1	0	2	0	1	1.2	0.6	0.8	Increasing
DPBRA	Bramley Drive WWPS	Lower Tamaki River	2	0	1	0	1	1	1	0.8	0.6	0.8	Increasing
DPDNK	Dunkirk WWPS (PS53)	Lower Tamaki River	0	0	0	0	0	0	1	0	0	0.2	Increasing
DPGND	Glendowie WWPS (PS14)	Lower Tamaki River	4	4	3	0	2	12	5	2.6	4.2	4.4	Increasing
DPMNR	Manor Park WWPS	Lower Tamaki River	2	0	3	0	0	1	0	1	0.8	0.8	No change
DPPAB	Panmure Basin WWPS (PS18)	Lower Tamaki River	0	0	0	0	0	3	1	0	0.6	0.8	Increasing
DPRID	Riddell Road WWPS	Lower Tamaki River	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPTBD	Tamaki Bay Drive WWPS	Lower Tamaki River	0	0	2	0	0	1	0	0.4	0.6	0.6	No change
DSGLD	Glendowie Branch Storage Tank	Lower Tamaki River	0	0	0	0	4	1	0	0.8	1	1	No change
DPOTB	Otara WWPS (PS31)	Upper Tamaki River	1	0	4	1	0	19	9	1.2	4.8	6.6	Increasing
DPARW	Arwen Place WWPS	Upper Tamaki River	1	0	0	0	0	4	0	0.2	0.8	0.8	No change
DPAVI	Aviemore Drive WWPS	Upper Tamaki River	1	0	0	0	0	0	0	0.2	0	0	No change
DPBUR	Burswood Drive WWPS	Upper Tamaki River	1	0	1	0	0	0	0	0.4	0.2	0.2	No change
DPCAS	Cascades Road WWPS	Upper Tamaki River	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPEDG	Edgewater Drive WWPS	Upper Tamaki River	0	0	1	0	0	1	0	0.2	0.4	0.4	No change
DPGOS	Gossamer Drive WWPS	Upper Tamaki River	0	0	0	0	2	2	2	0.4	0.8	1.2	Increasing
DPHIN	Pakuranga WWPS (PS28)	Upper Tamaki River	1	0	1	1	0	4	1	0.6	1.2	1.4	Increasing
DPHIP	Highland Park WWPS	Upper Tamaki River	3	0	4	0	2	2	2	1.8	1.6	2	Increasing
DPHIS	Harris Road East Tamaki WWPS	Upper Tamaki River	0	0	2	0	0	0	0	0.4	0.4	0.4	No change
DPLAU	Laureston Avenue WWPS	Upper Tamaki River	0	0	1	0	0	0	0	0.2	0.2	0.2	No change
DPMEN	Milen Avenue WWPS	Upper Tamaki River	0	0	2	0	0	0	0	0.4	0.4	0.4	No change
DPMID	Middlemore WWPS (PS29)	Upper Tamaki River	3	1	1	0	0	0	0	1	0.4	0.2	Decreasing
DPMNG	Mangos Place WWPS	Upper Tamaki River	0	0	1	0	1	1	0	0.4	0.6	0.6	No change
DPOTA	Otahuhu North East WWPS (PS34)	Upper Tamaki River	5	5	3	0	1	10	4	2.8	3.8	3.6	Decreasing
DPPAK	Pakuranga Road WWPS	Upper Tamaki River	0	0	3	0	0	0	0	0.6	0.6	0.6	No change
DPPEL	Pelorus Place WWPS	Upper Tamaki River	2	0	3	0	0	2	1	1	1	1.2	Increasing
DPPKS	Pakuranga South WWPS (PS41)	Upper Tamaki River	1	0	0	0	0	0	0	0.2	0	0	No change
DPPNA	Panama Road WWPS	Upper Tamaki River	0	2	1	0	0	2	2	0.6	1	1	No change
DPRNY	Rodney Street WWPS	Upper Tamaki River	0	0	0	0	0	0	0	0	0	0	No change

Facility Code	PS Name	Catchment	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2017-22	2018-23	2019-24	Trend
DPSPK	Sylvia Park WWPS (PS38)	Upper Tamaki River	4	0	1	0	1	4	1	1.2	1.2	1.4	Increasing
DPTIN	Tamaki East WWPS (PS43)	Upper Tamaki River	0	0	0	0	0	17	10	0	3.4	5.4	Increasing
DPUND	Undine Street WWPS	Upper Tamaki River	0	0	1	0	0	2	0	0.2	0.6	0.6	No change
DPBBH	Bucklands Beach WWPS (PS33)	Cockle Bay	2	1	1	0	0	4	0	0.8	1.2	1	Decreasing
DPEST	Estuary Views WWPS	Cockle Bay	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPHOW	Howick WWPS (PS 30)	Cockle Bay	4	3	1	0	0	8	2	1.6	2.4	2.2	Decreasing
DPPPW	Papatoetoe West WWPS (PS20)	Puhinui	3	1	0	0	0	1	0	0.8	0.4	0.2	Decreasing
DPPUH	Puhinui WWPS (PS45)	Puhinui	0	0	0	0	0	0	0	0	0	0	No change
DPTID	Mangere South East WWPS (PS66)	Puhinui	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPWYN	Weymouth North WWPS (PS56)	Puhinui	0	0	0	0	0	0	0	0	0	0	No change
DPBRM	Bremner Wastewater Pump Station	Pahurehure Inlet	0	0	0	0	1	1	0	0.2	0.4	0.4	No change
DPHNG	Hingaia WWPS (PS63)	Pahurehure Inlet	1	4	3	0	0	7	0	1.6	2.8	2	Decreasing
DPMAW	Manurewa West WWPS (PS48)	Pahurehure Inlet	3	2	2	0	0	3	0	1.4	1.4	1	Decreasing
DPRYS	Roys Road WWPS	Pahurehure Inlet	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPSIN	Manurewa South WWPS (PS84)	Pahurehure Inlet	1	0	0	0	0	0	0	0.2	0	0	No change
DPWNO	Waimarino Road WWPS	Pahurehure Inlet	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPWYM	Weymouth WWPS (PS47)	Pahurehure Inlet	2	2	0	0	0	4	0	0.8	1.2	0.8	Decreasing
DPONR	Oneroa Waiheke WWPS	Oneroa	0	0	0	0	0	0	0	0	0	0	No change
DPHAW	Hawke Crescent WWPS	Beachlands Maraetai	1	0	1	0	0	3	0	0.4	0.8	0.8	No change
DPKKA	Karaka Road WWPS	Beachlands Maraetai	0	0	0	0	1	0	0	0.2	0.2	0.2	No change
DPMTI	Maraetai Domain WWPS	Beachlands Maraetai	7	3	5	0	2	1	1	3.4	2.2	1.8	Decreasing
DPNAV	New Avenues WWPS	Beachlands Maraetai	0	0	0	0	1	4	2	0.2	1	1.4	Increasing
DPOMA	Omana Esplanade WWPS	Beachlands Maraetai	1	1	2	0	1	0	0	1	0.8	0.6	Decreasing
DPPHM	Pine Harbour Marina WWPS	Beachlands Maraetai	1	0	1	0	0	0	0	0.4	0.2	0.2	No change
DPSKB	Sunkist Bay WWPS	Beachlands Maraetai	1	0	0	0	0	0	0	0.2	0	0	No change
DPTOO	Toomer Place WWPS	Beachlands Maraetai	1	0	2	0	2	2	1	1	1.2	1.4	Increasing
DPTVW	Third view WWPS	Beachlands Maraetai	3	4	2	0	2	4	2	2.2	2.4	2	Decreasing
DPCHA	Channel View Road	Clarks Beach	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPHOS	Hoskings Clarks Beach WWPS	Clarks Beach	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPFGH	Fernleigh Avenue WWPS	Waiuku	0	1	0	0	0	2	0	0.2	0.6	0.4	Decreasing
DPKAO	Kitchener Road WWPS	Waiuku	0	0	0	0	0	5	0	0	1	1	No change
DPCHR	Cape Hill Road WWPS	Pukekohe	0	1	0	0	0	5	0	0.2	1.2	1	Decreasing
DPFRA	Franklin Road WWPS	Pukekohe	0	0	0	0	0	2	0	0	0.4	0.4	No change
DPPAM	Pamela Christine WWPS	Pukekohe	1	0	0	0	0	0	0	0.2	0	0	No change
DPPKE	Pukekohe WWPS (PS92)	Pukekohe	0	0	0	0	0	1	0	0	0.2	0.2	No change
DPJOA	Joan Street WWPS	Western Isthmus	0	0	0	1	0	0	0	0.2	0.2	0.2	No change
DPOLV	PS 5 Oliver Road WWPS (PS5)	Western Isthmus	5	2	3	3	3	3	5	3.2	2.8	3.4	Increasing
DPWIN	St George WWPS (PS25)	Western Isthmus	10	4	7	5	1	10	2	5.4	5.4	5	Decreasing
DPWTB	Waterbank Crescent WWPS	Western Isthmus	0	0	0	0	0	0	0	0	0	0	No change


Beachlands Maraetai
Overflow Count
Year
0
2
4
6
8
10
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Central Auckland
Overflow Count
Year
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10
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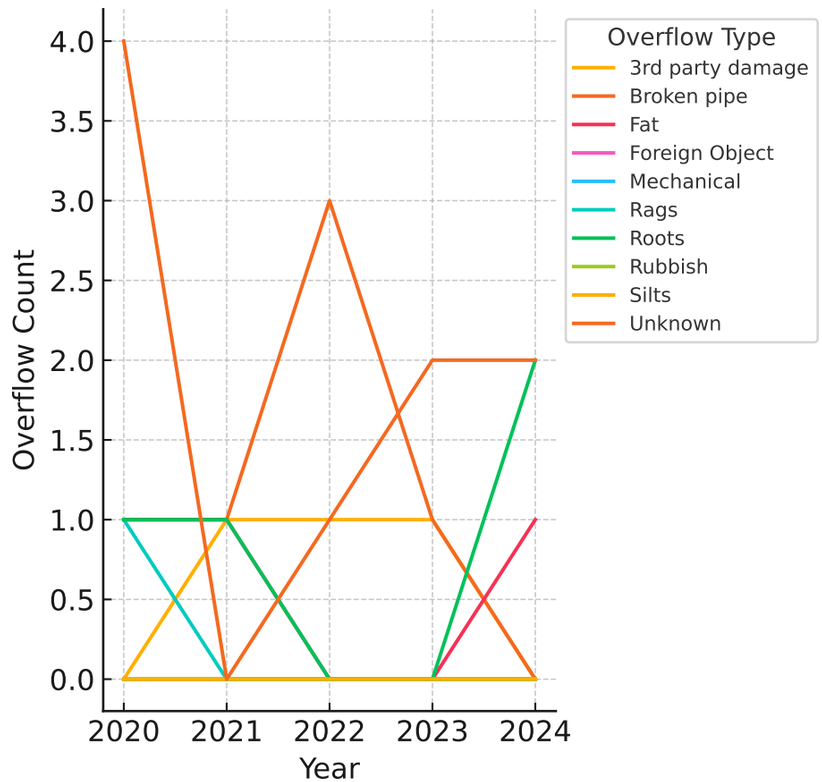
20
25
30
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Clarks Beach
Overflow Count
Year
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0.5
1.0
1.5
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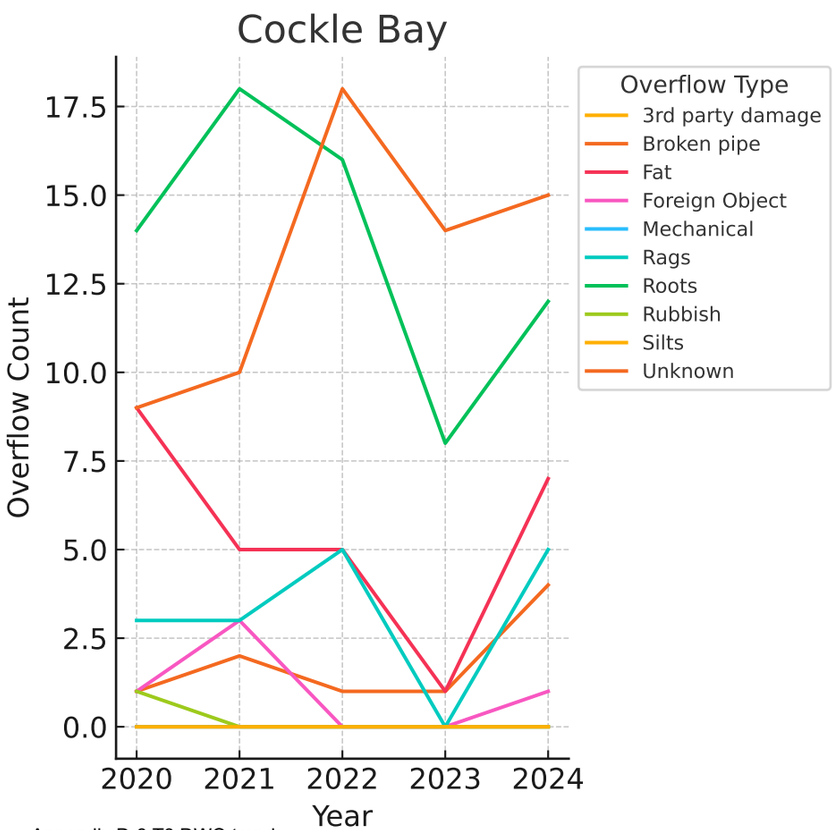
2.5
3.0
3.5
4.0
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Cockle Bay
Overflow Count
Year
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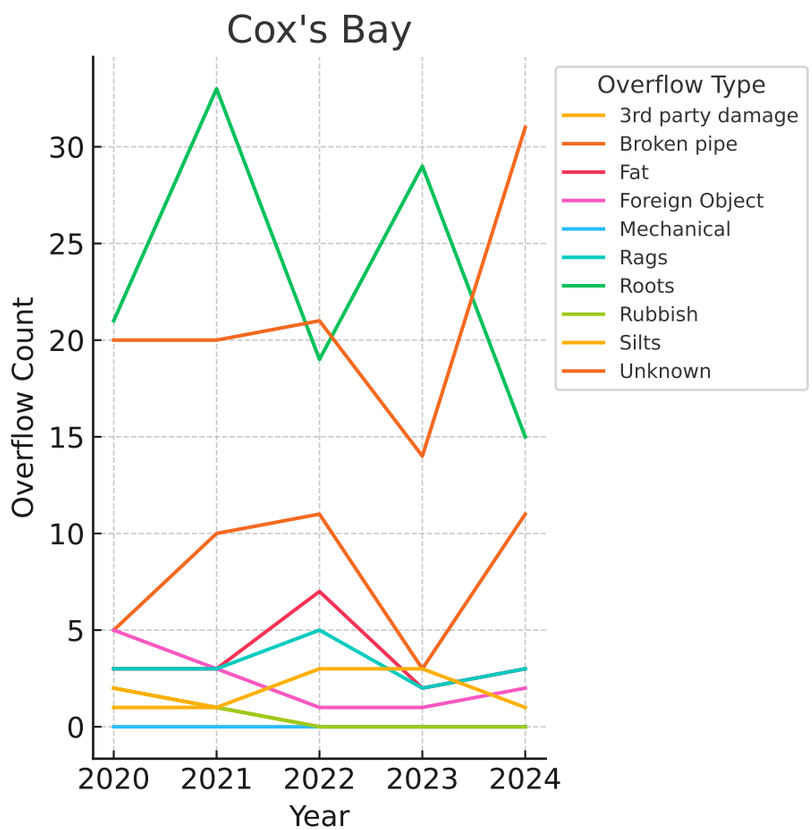
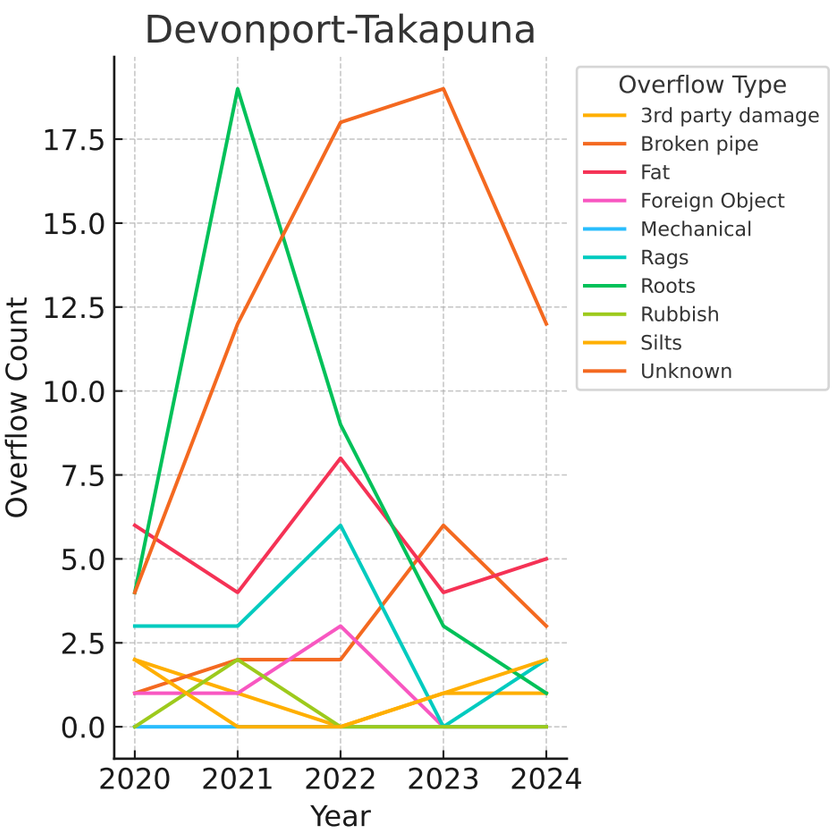
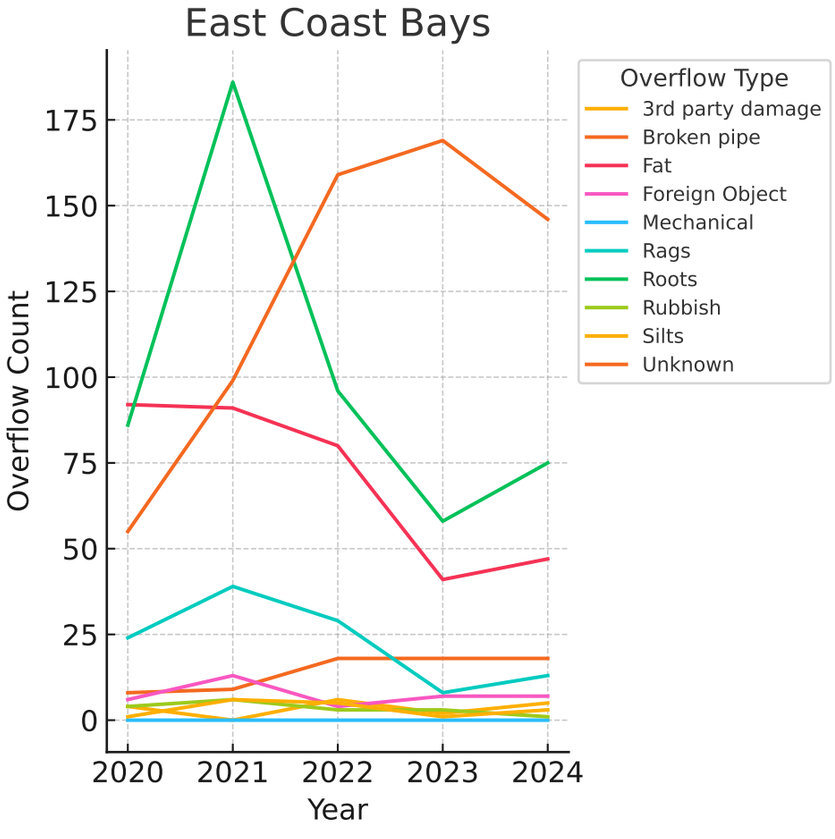
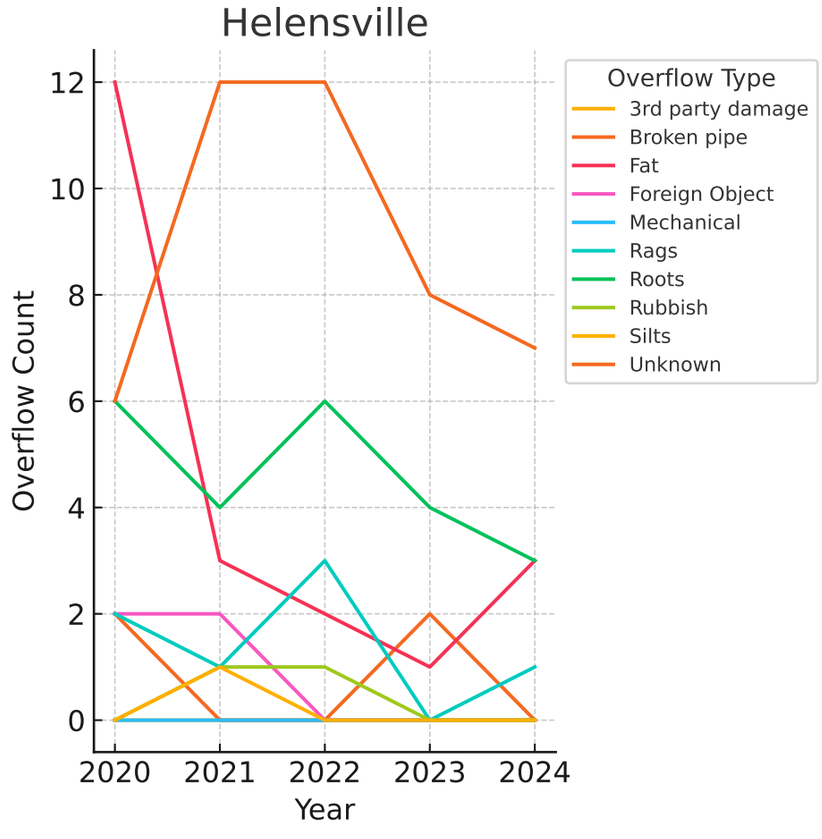
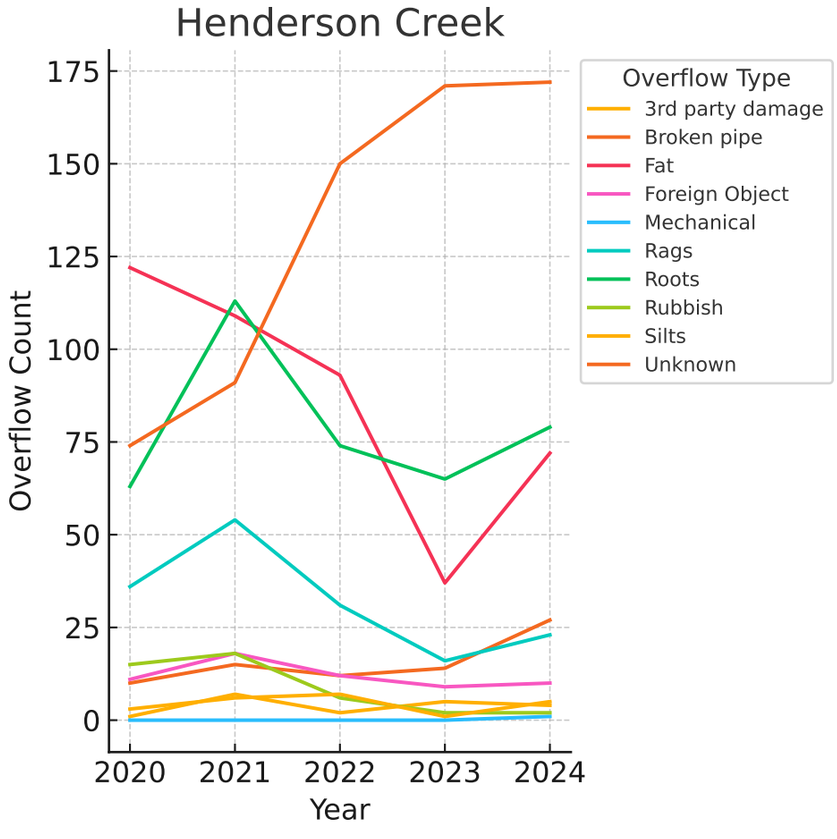
5.0
7.5
10.0
12.5
15.0
17.5
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

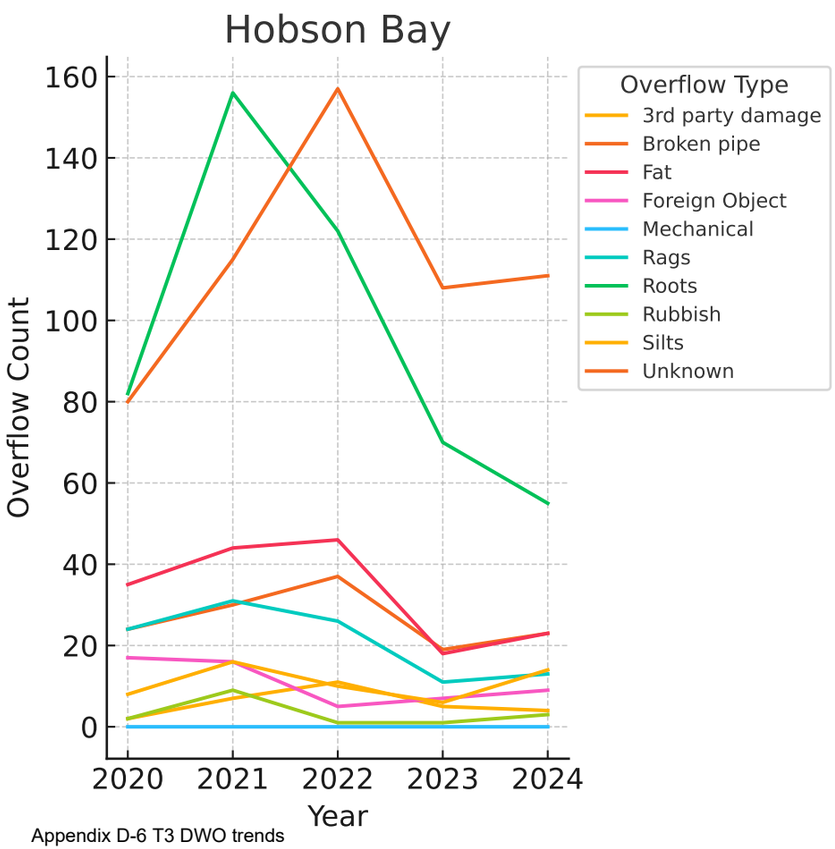

Cox's Bay
Overflow Count
Year
0
5
10
15
20
25
30
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

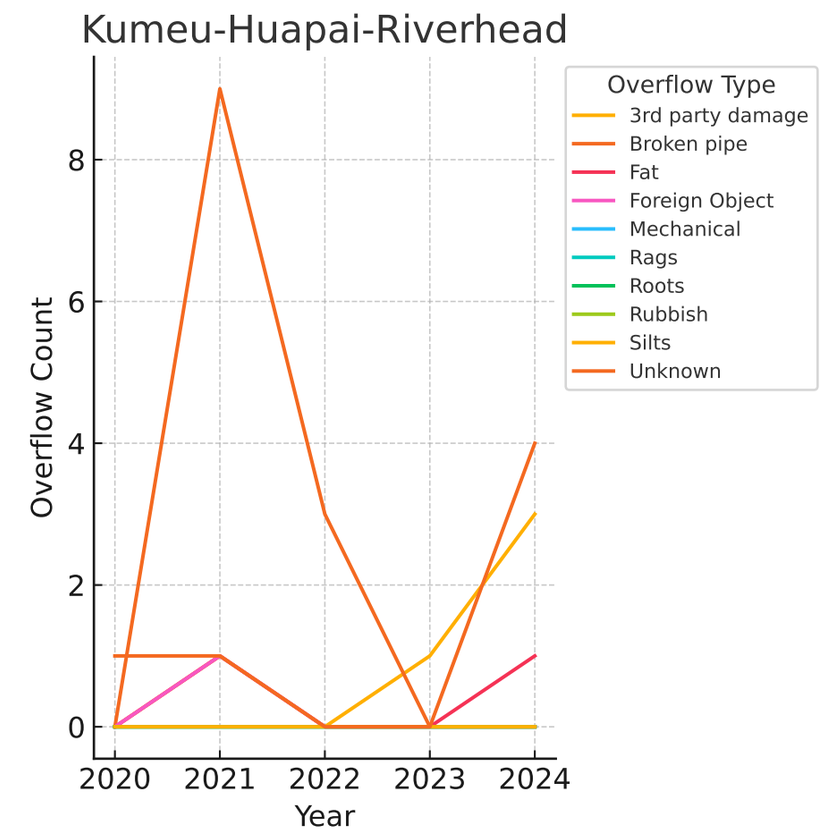

Devonport-Takapuna
Overflow Count
Year
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
2020
2021
2022
2023
2024
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

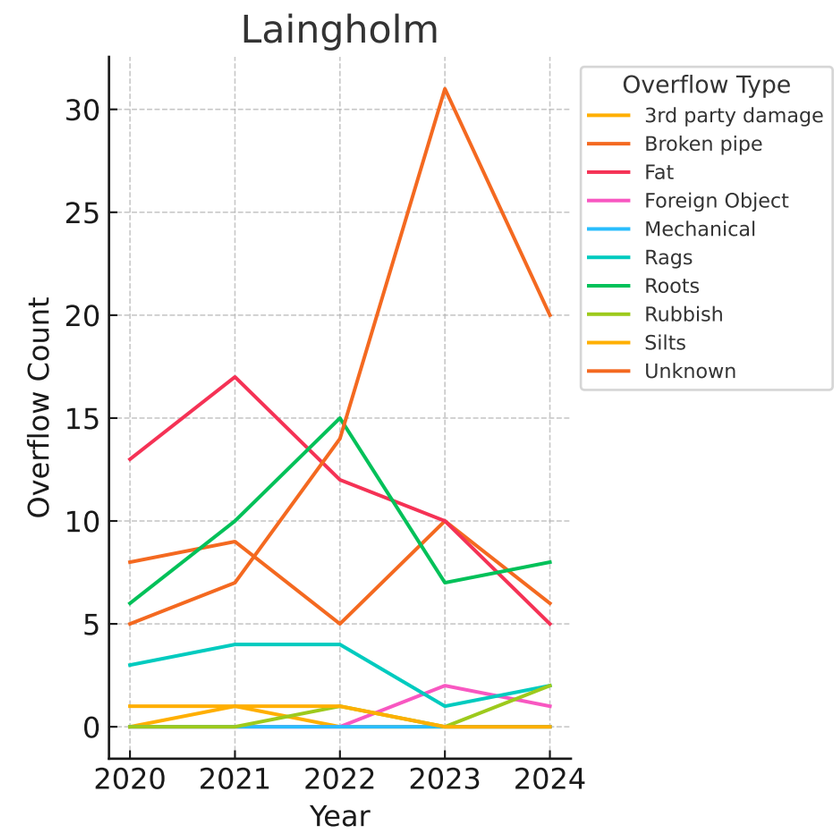

East Coast Bays
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

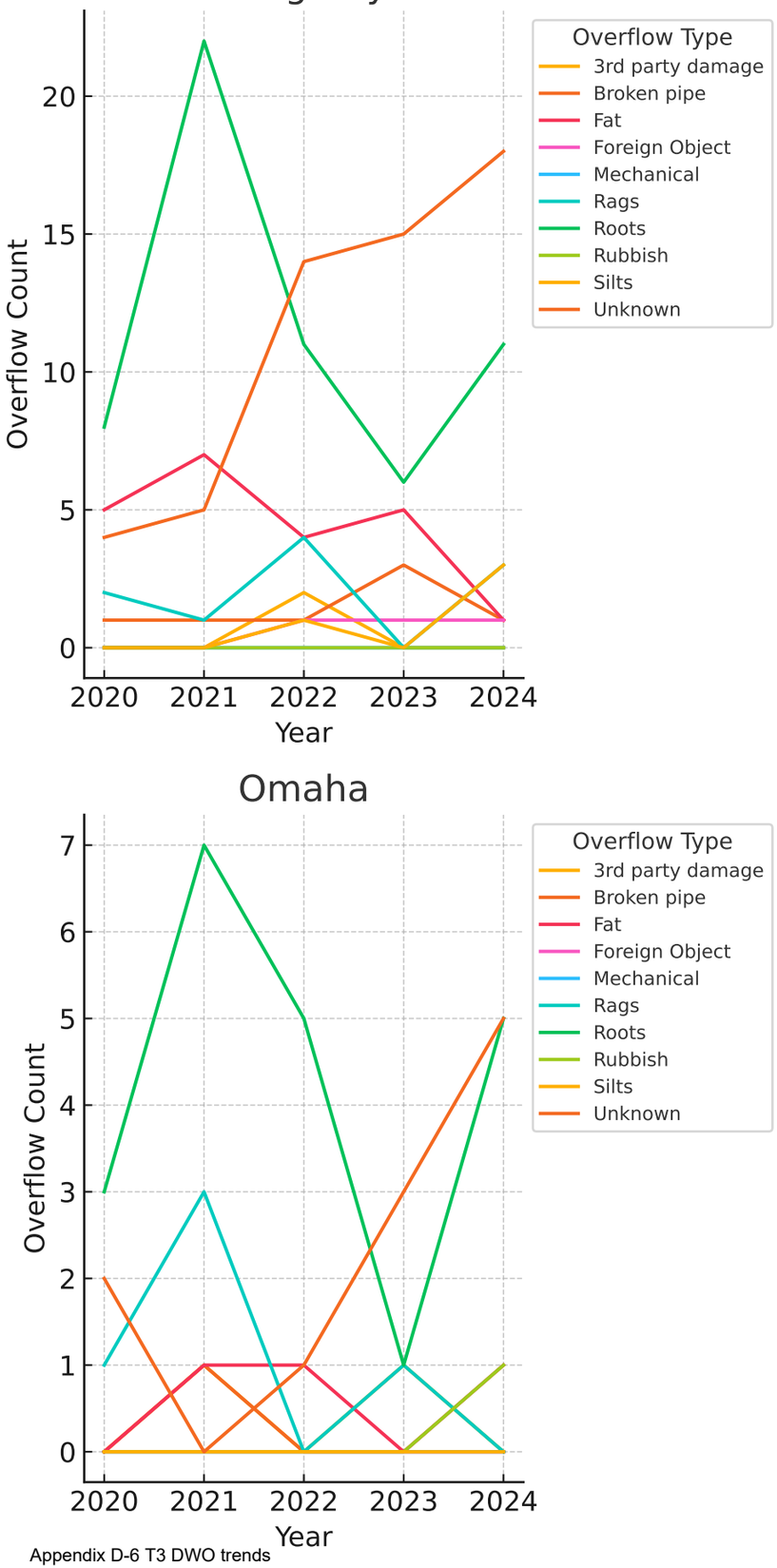

Helensville
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

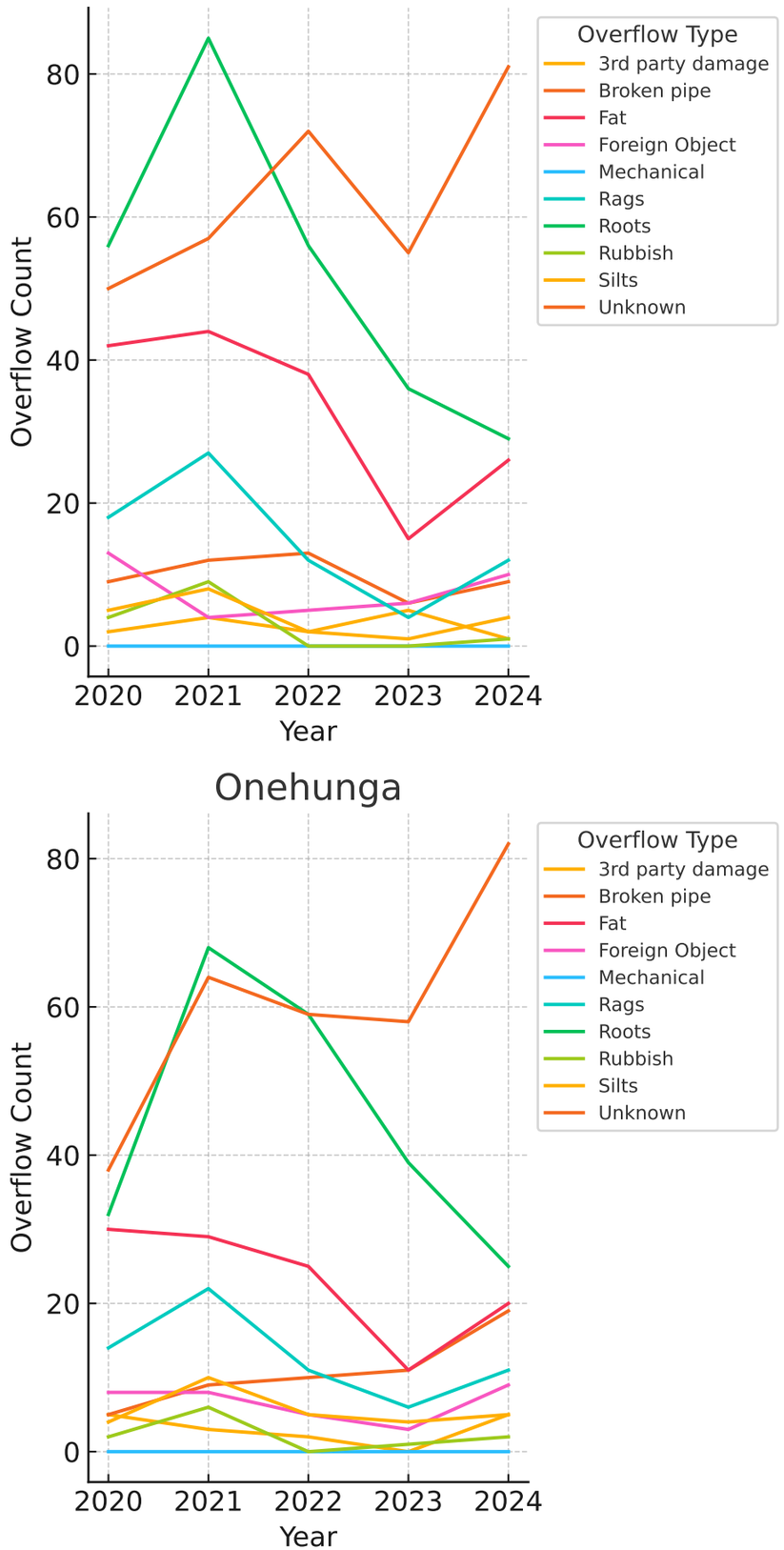

Henderson Creek
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

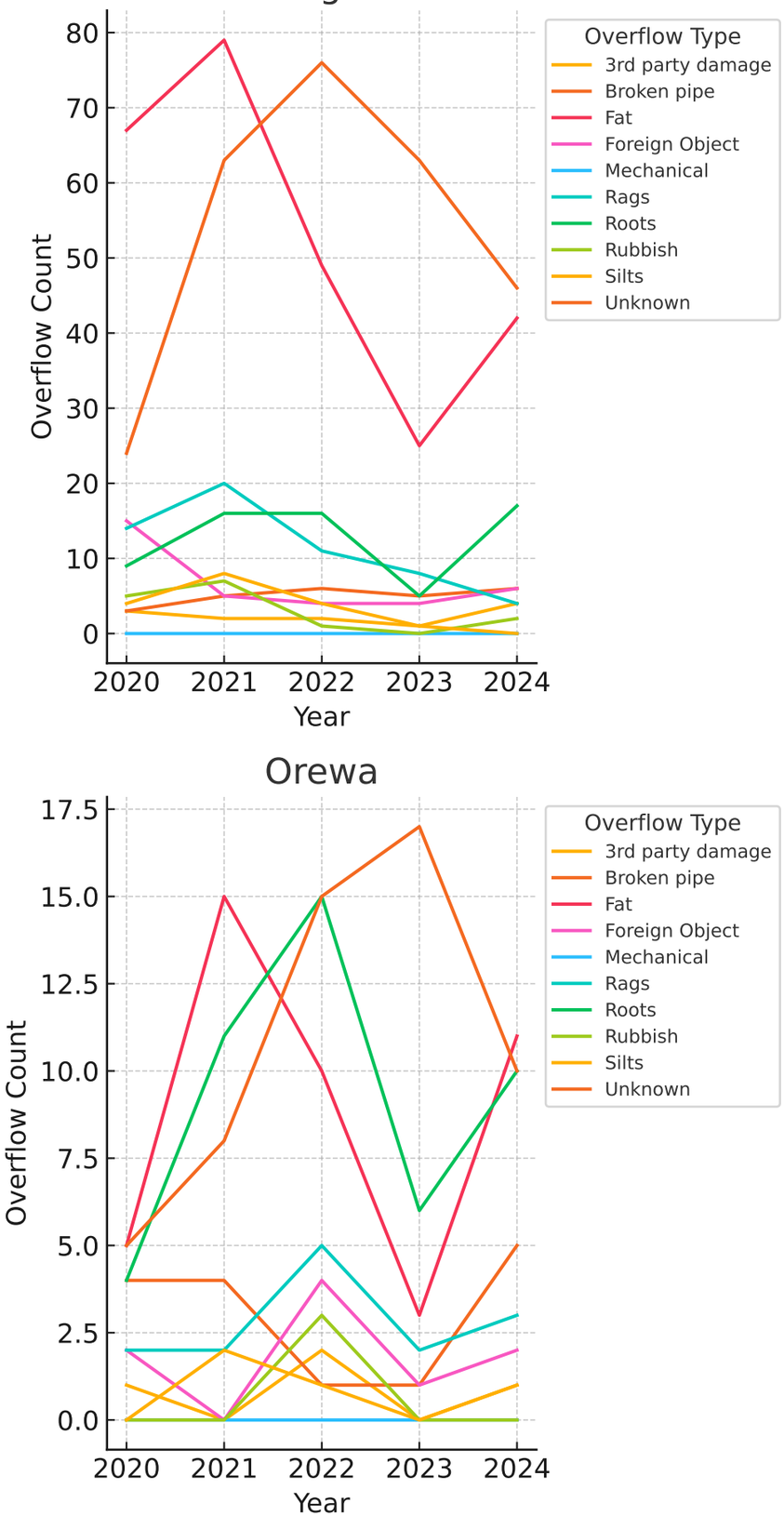

Hobson Bay
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Kumeu-Huapai-Riverhead
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Laingholm
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Long Bay
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Lower Tamaki River
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

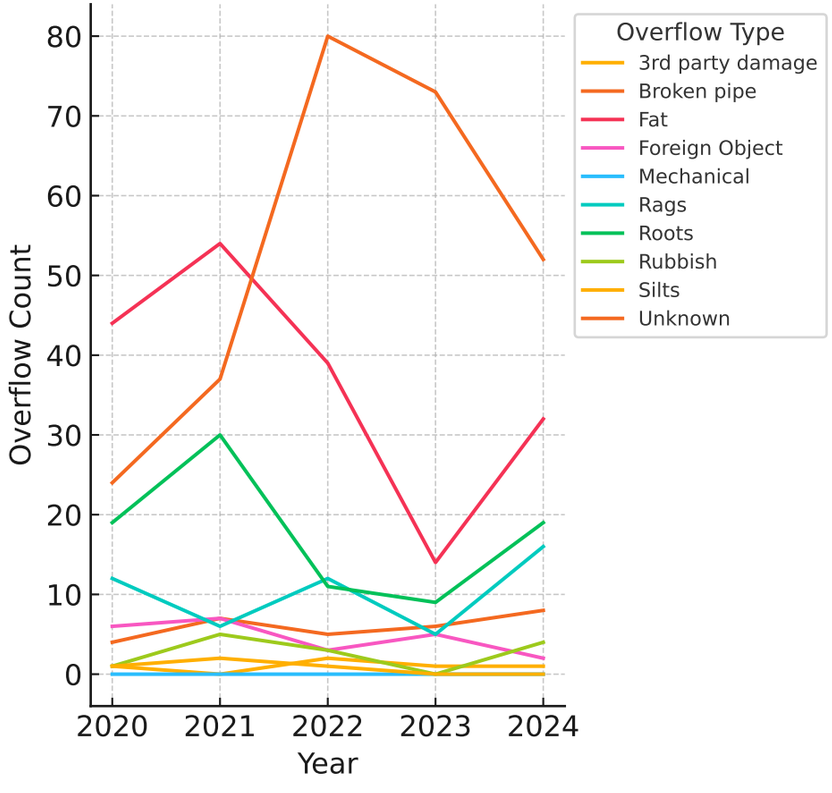

Mangere
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

Omaha
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

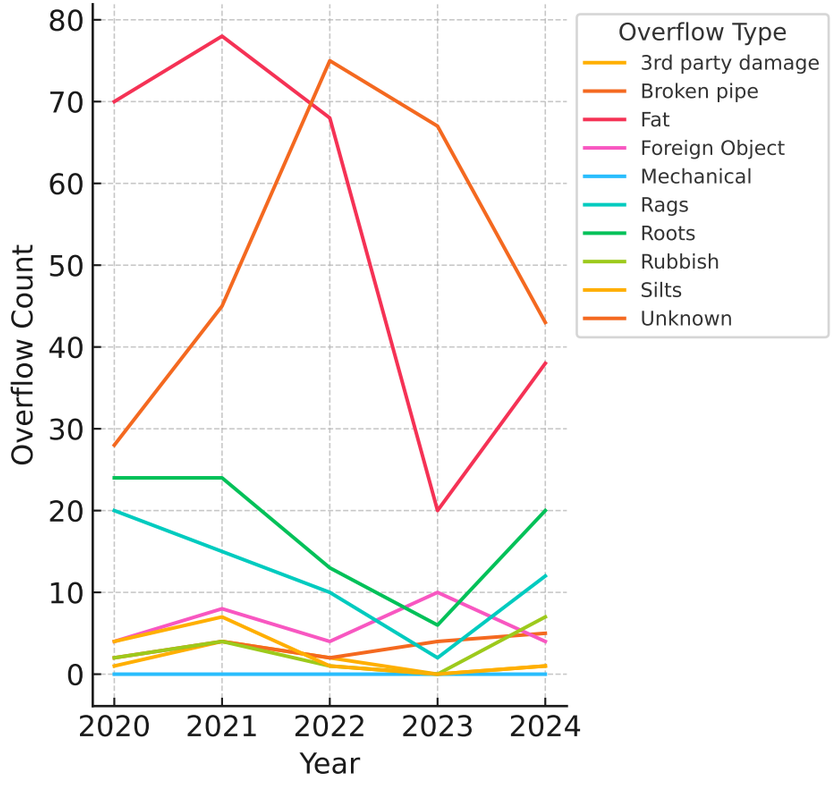
Onehunga
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

Orewa
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

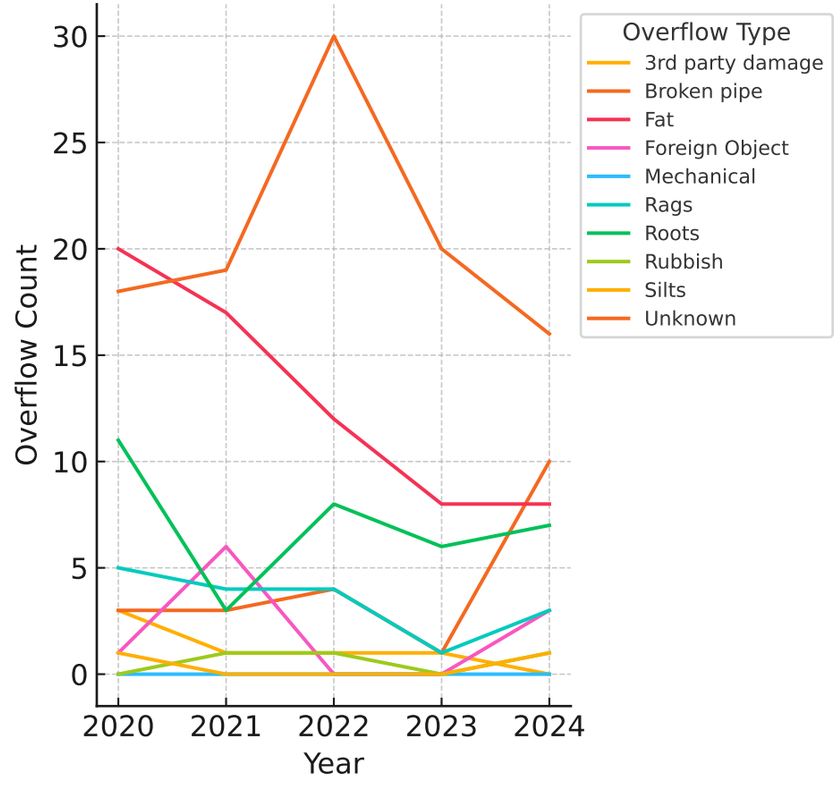
Pahurehure Inlet



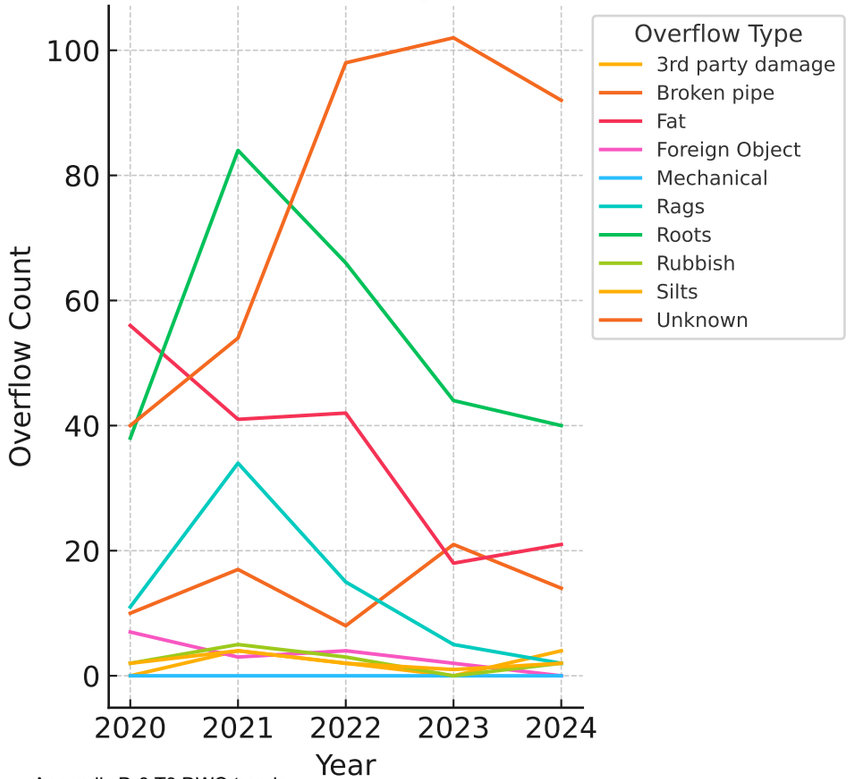
Puhinui



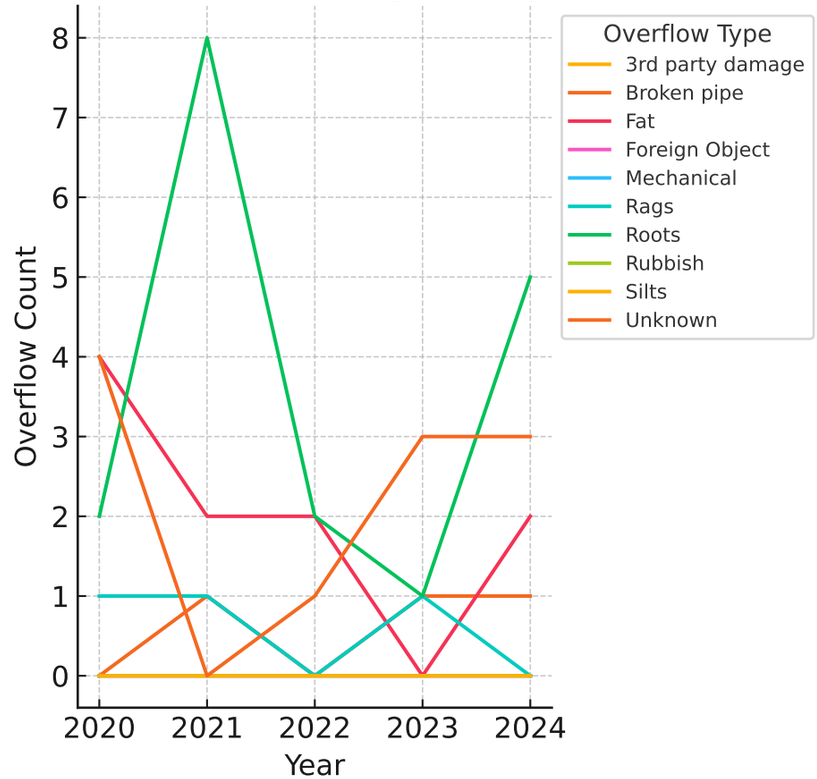
Pukekohe



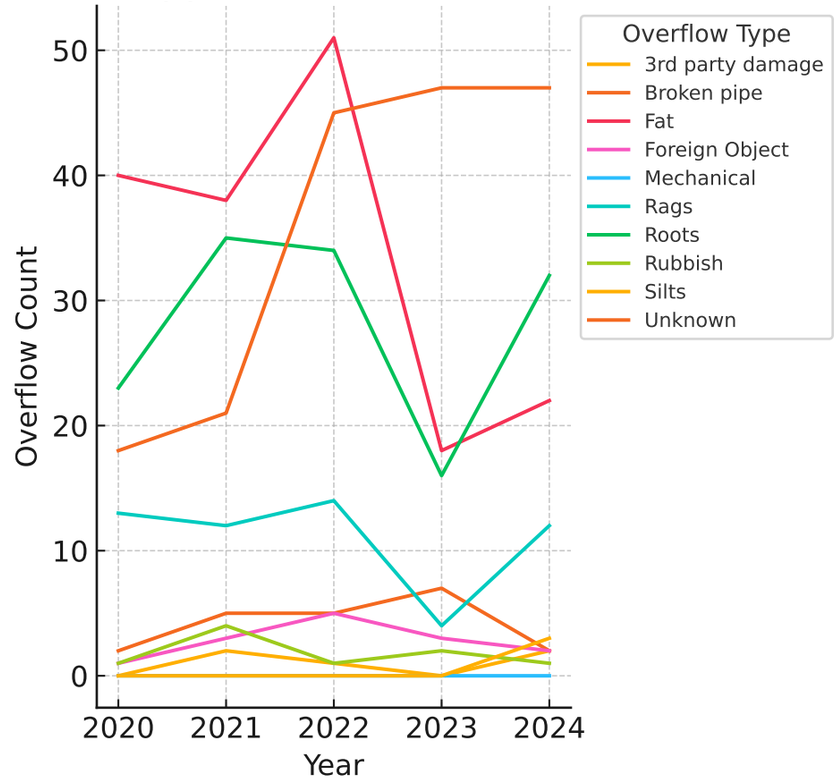
Shoal Bay

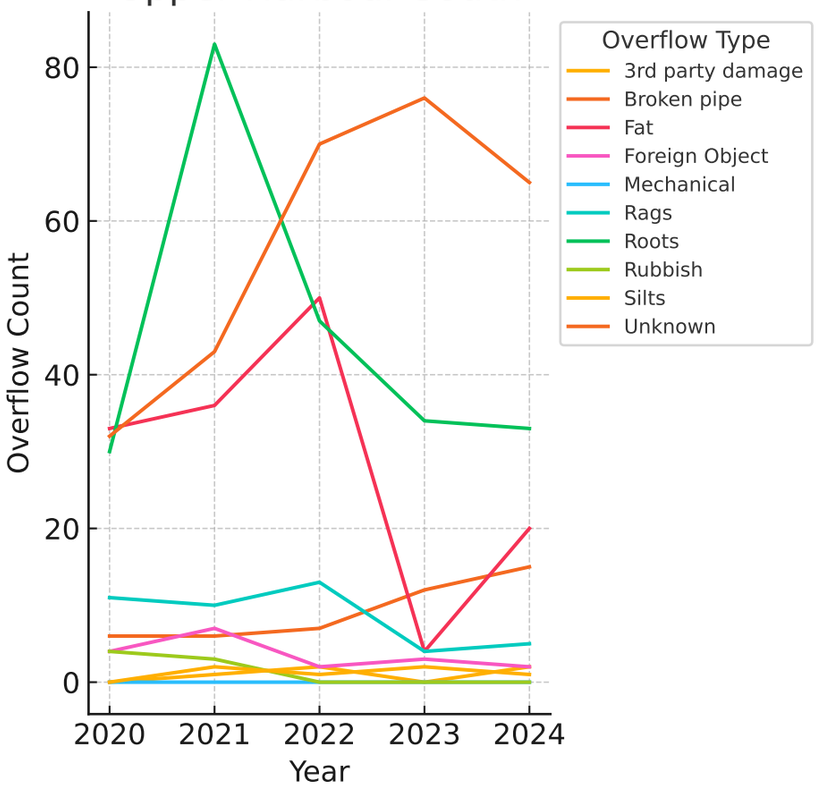


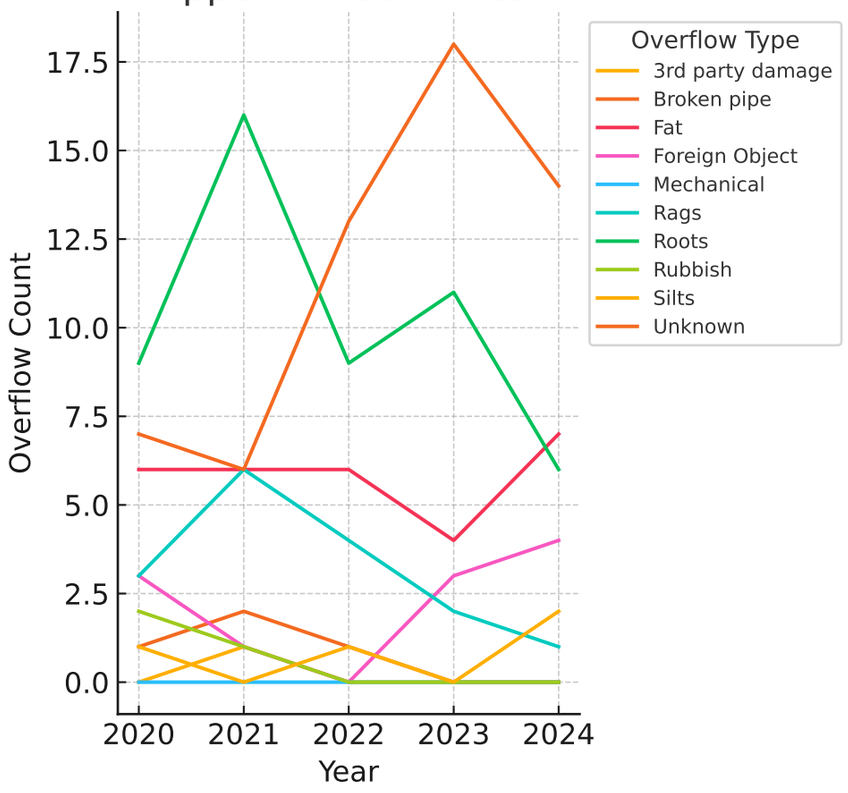
Snells Beach/ Algies Bay

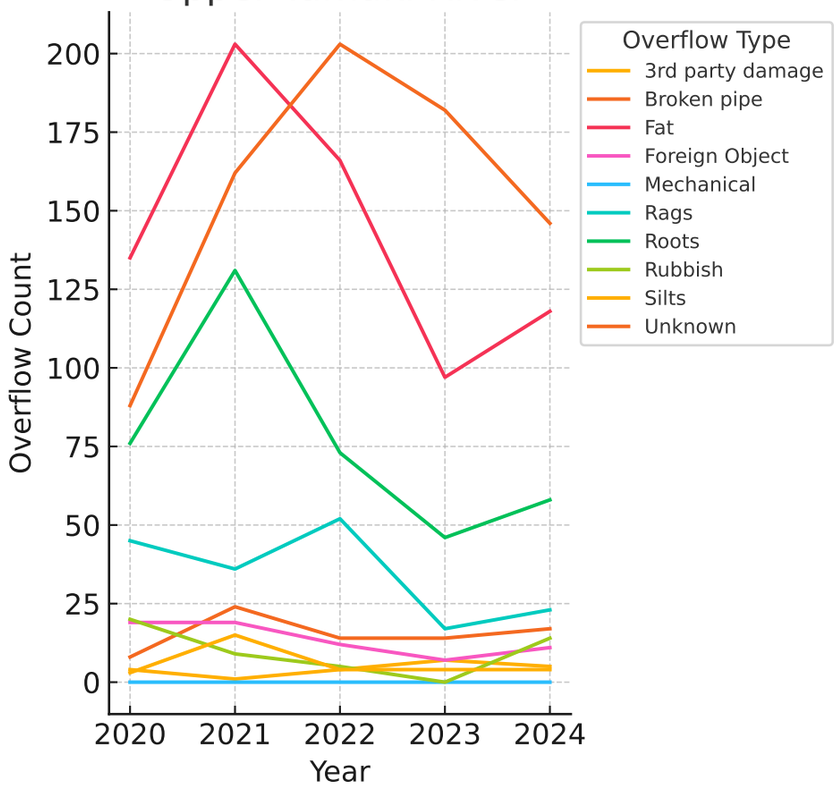


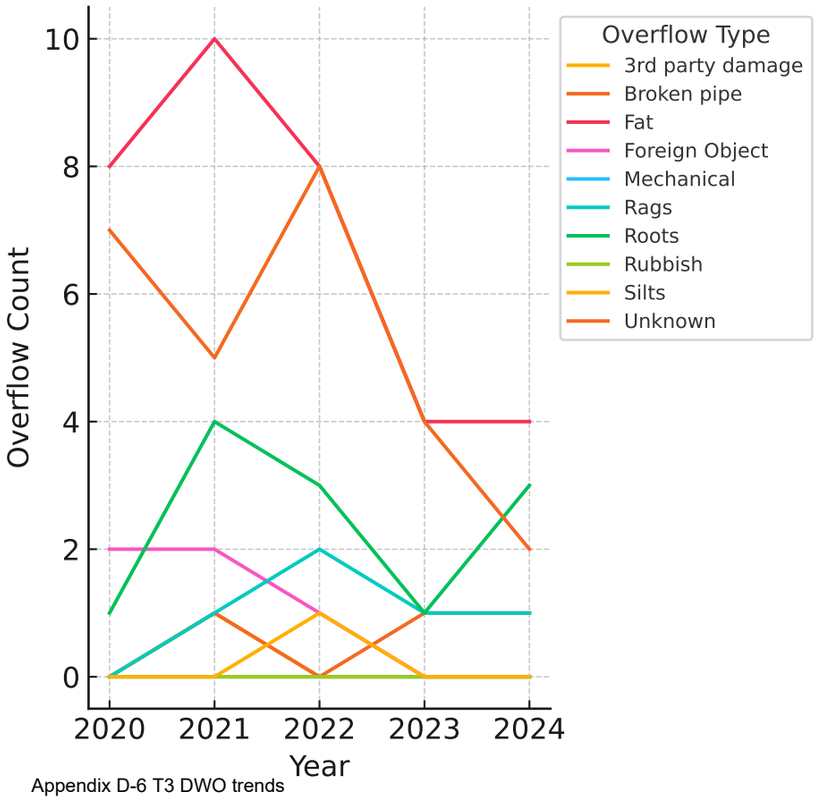
Upper Harbour North

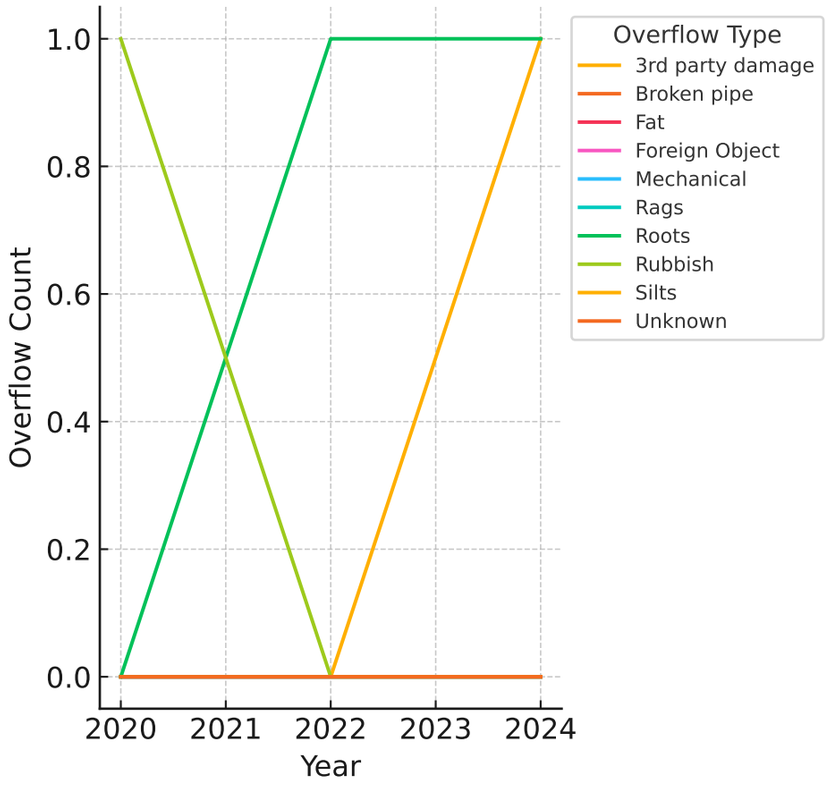


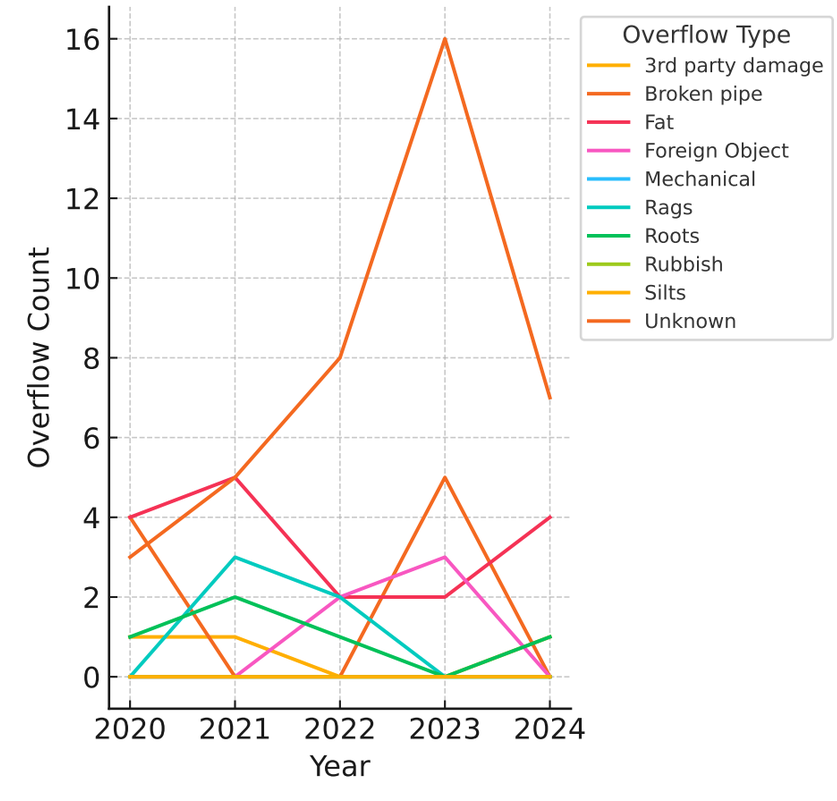

Upper Harbour South
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Upper Harbour West
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

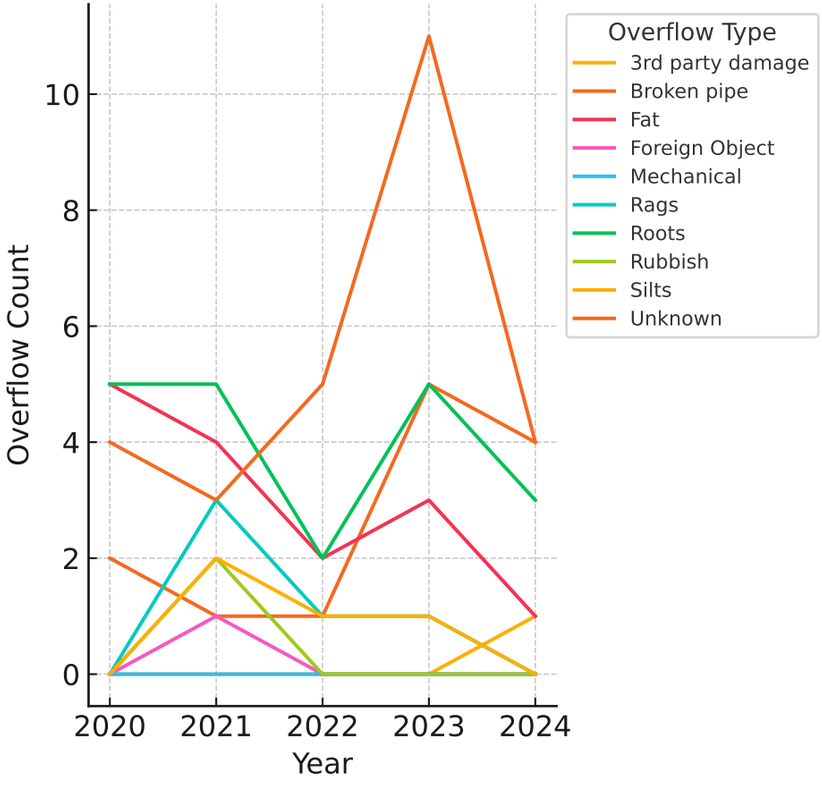

Upper Tamaki River
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Waiuku
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

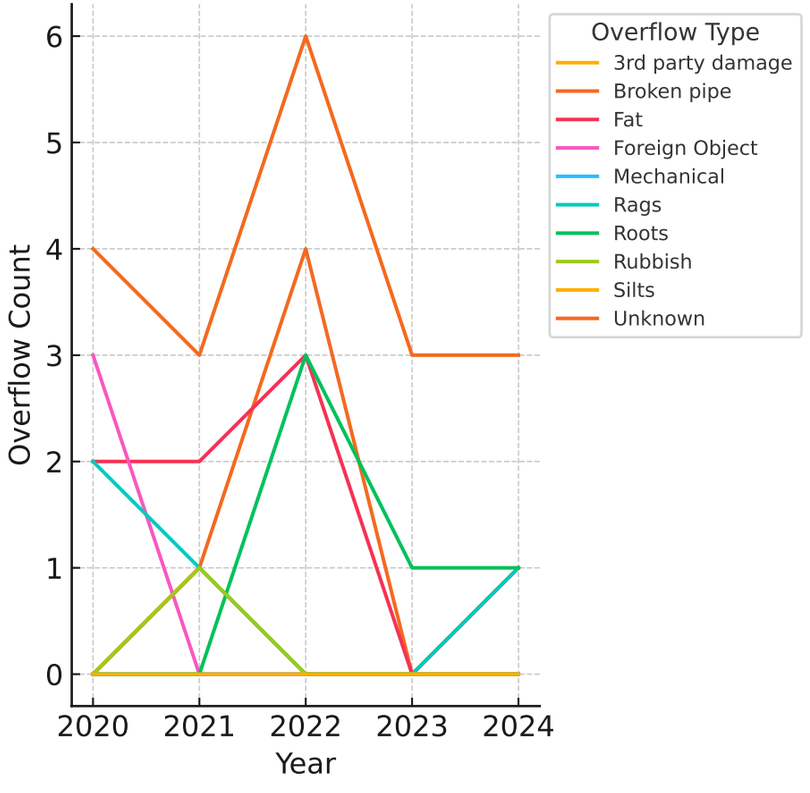

Waiwera
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown


Warkworth
Overflow Count
Year
Overflow Type
3rd party damage
Broken pipe
Fat
Foreign Object
Mechanical
Rags
Roots
Rubbish
Silts
Unknown

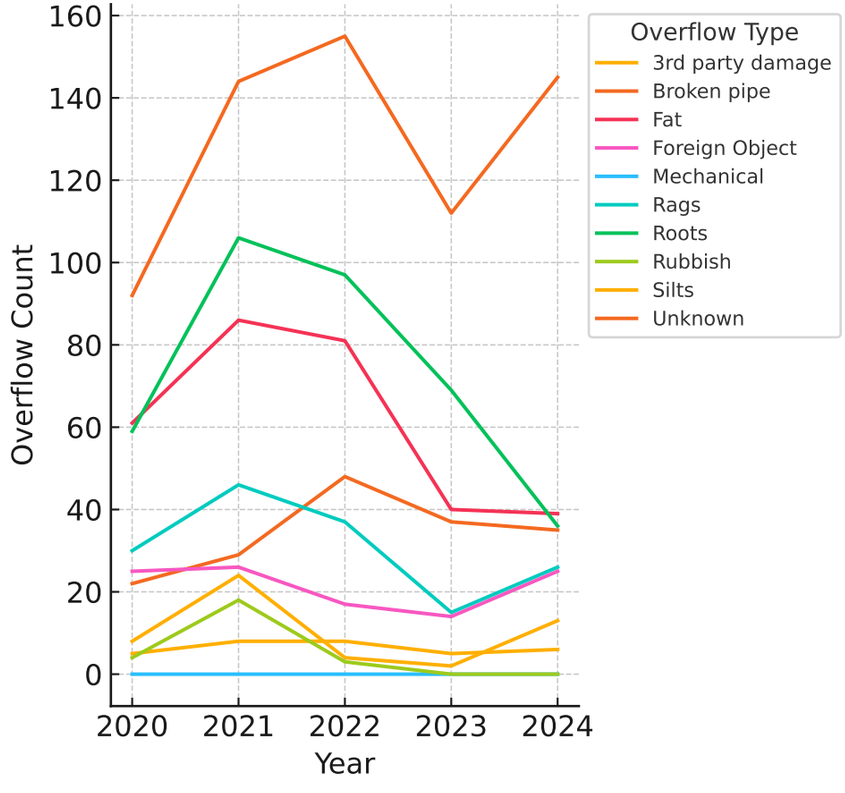
Weiti



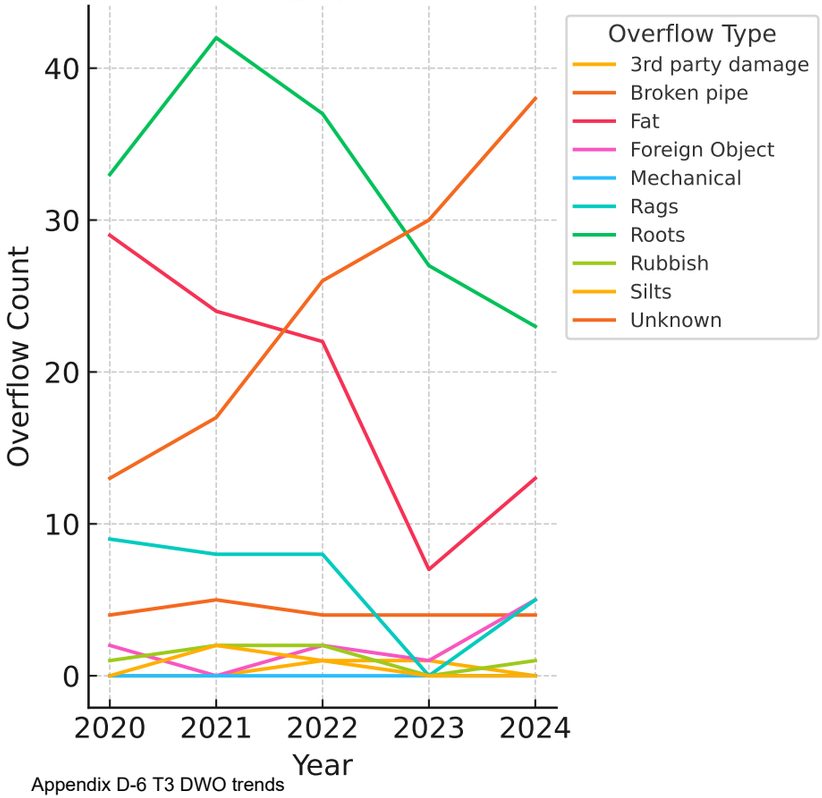
Wellsford



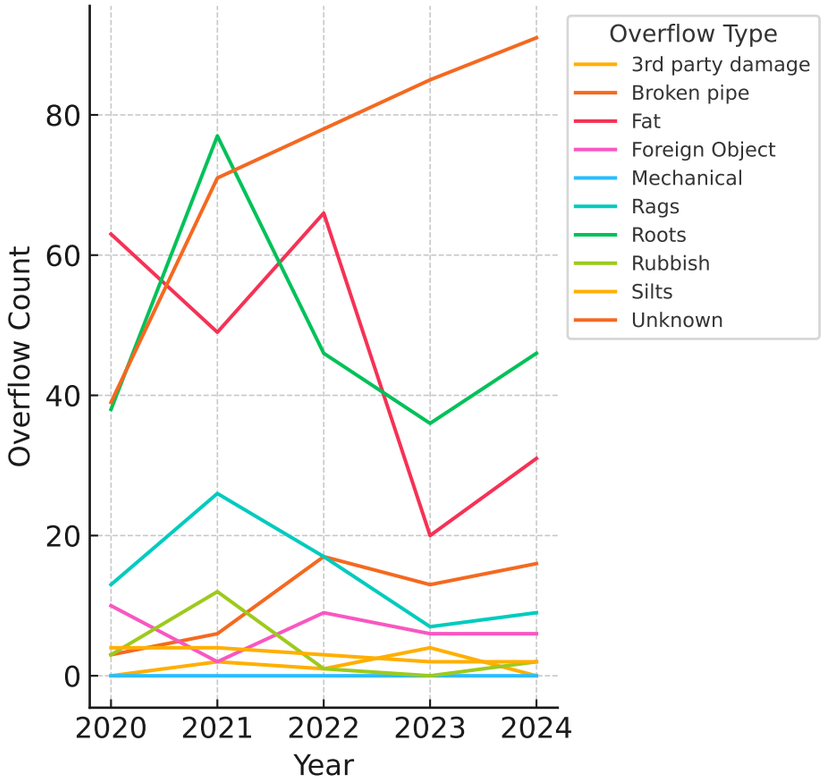
Western Isthmus

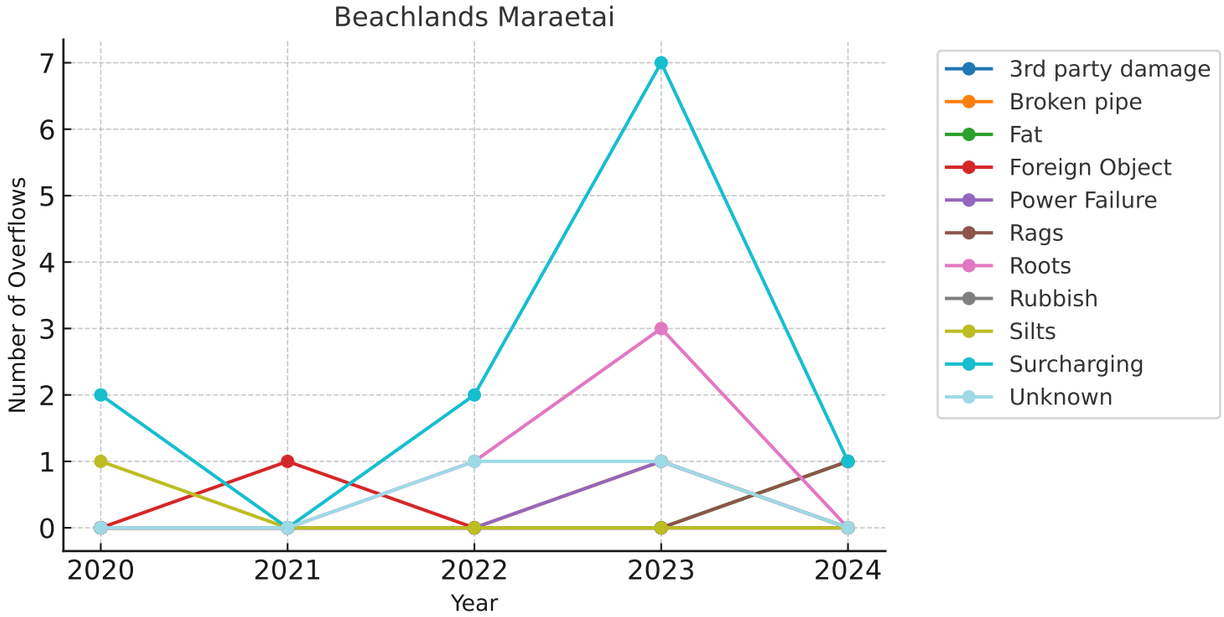


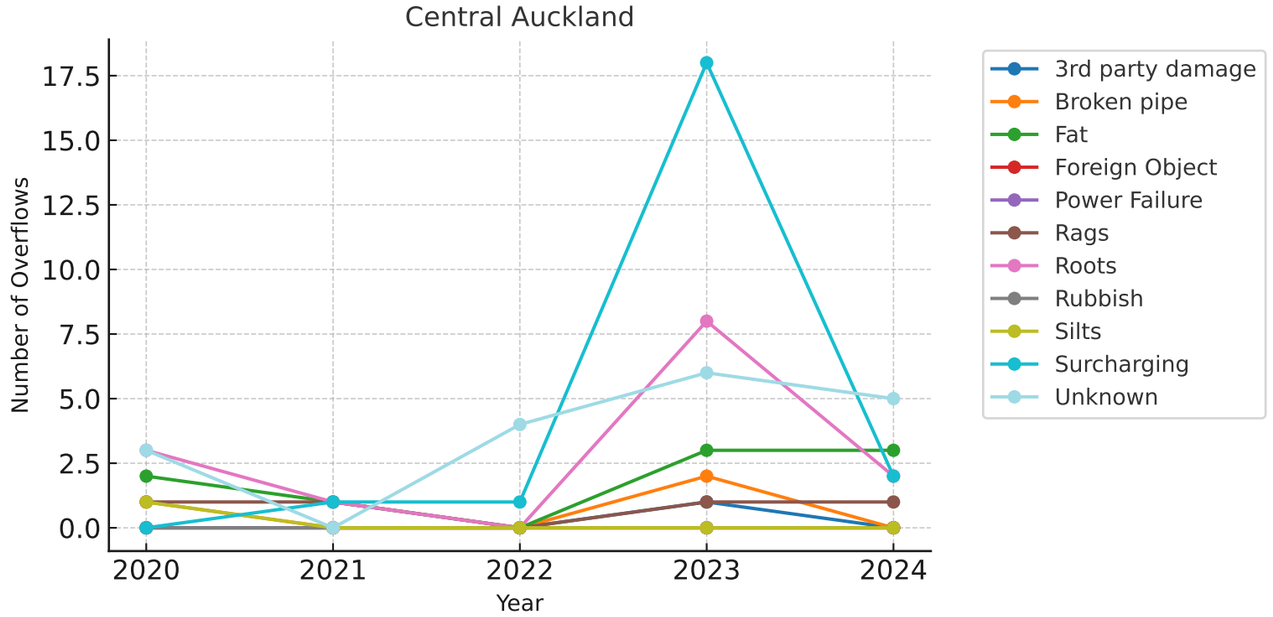
Whangaparaoa

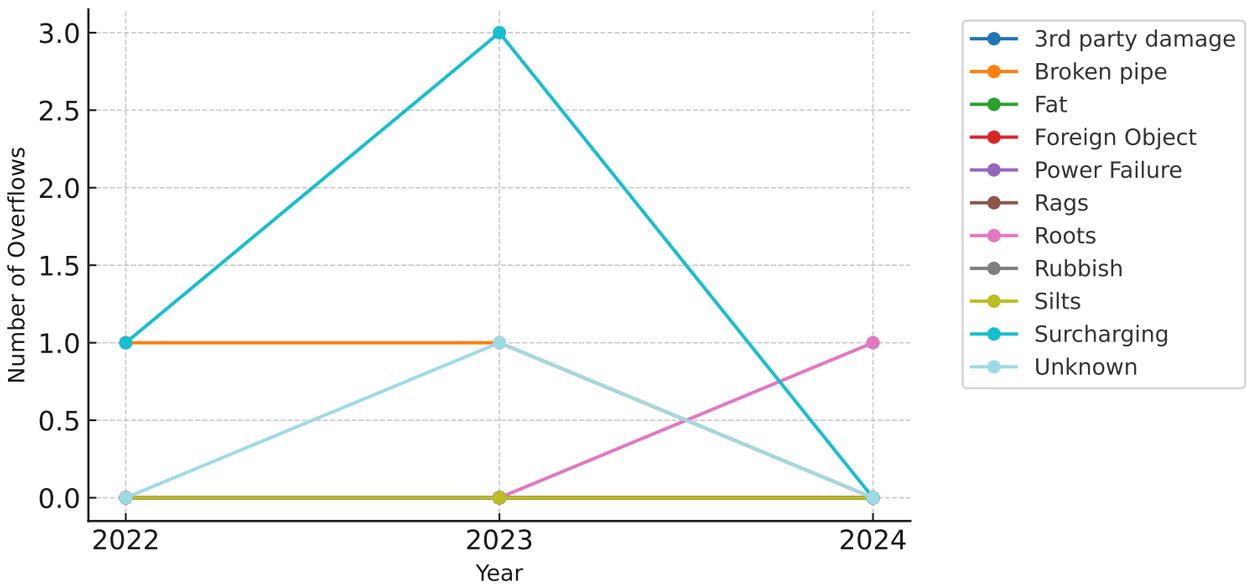


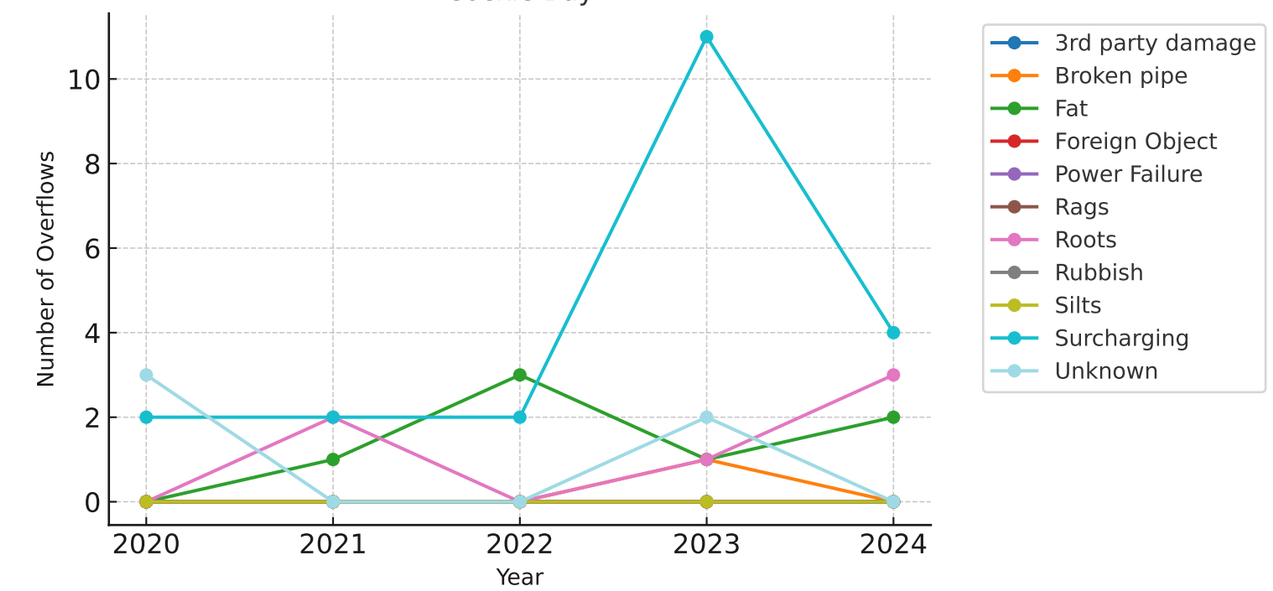
Whau River

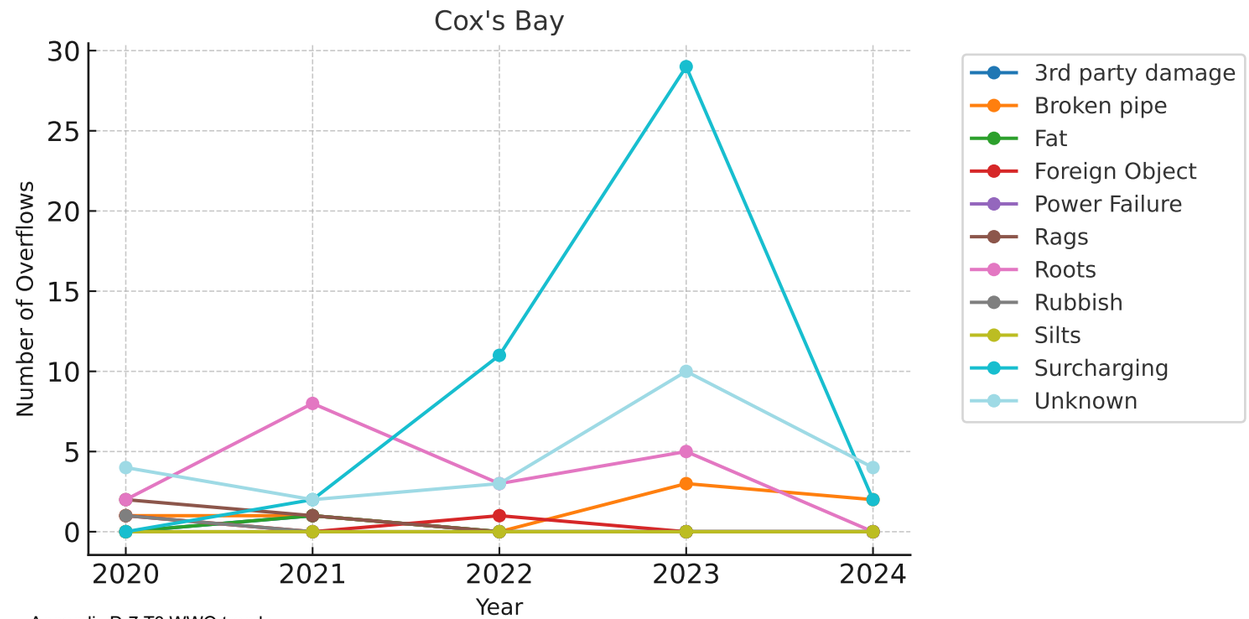


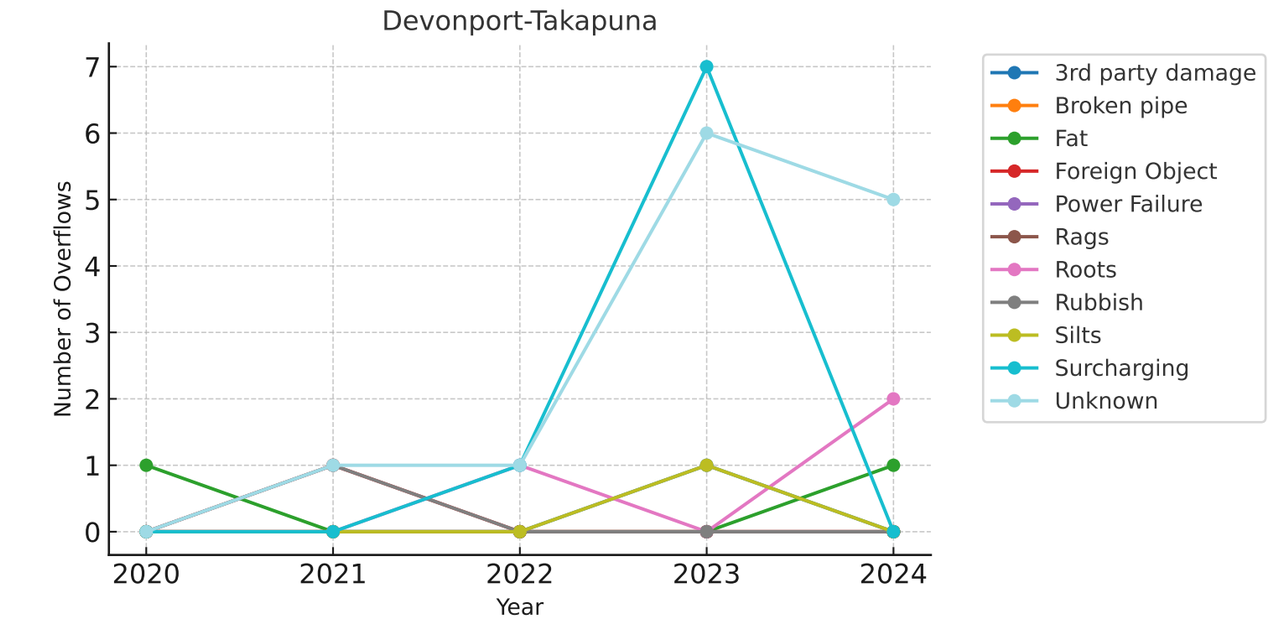

Beachlands Maraetai
Number of Overflows
Year
0
1
2
3
4
5
6
7
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Central Auckland
Number of Overflows
Year
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

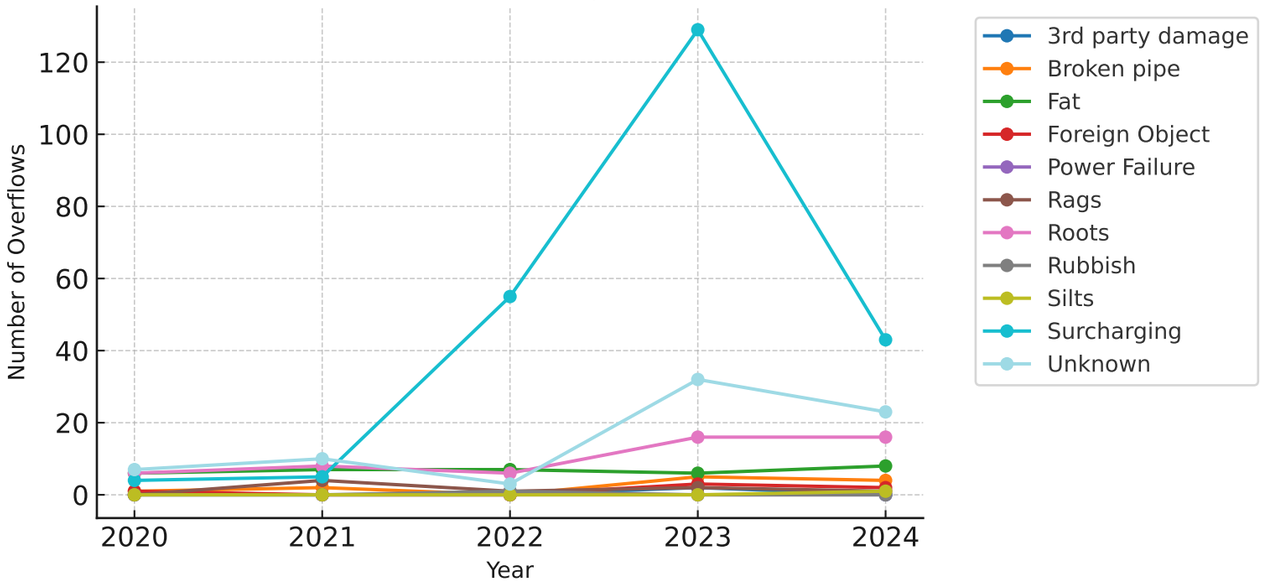

Clarks Beach
Number of Overflows
Year
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Cockle Bay
Number of Overflows
Year
0
2
4
6
8
10
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

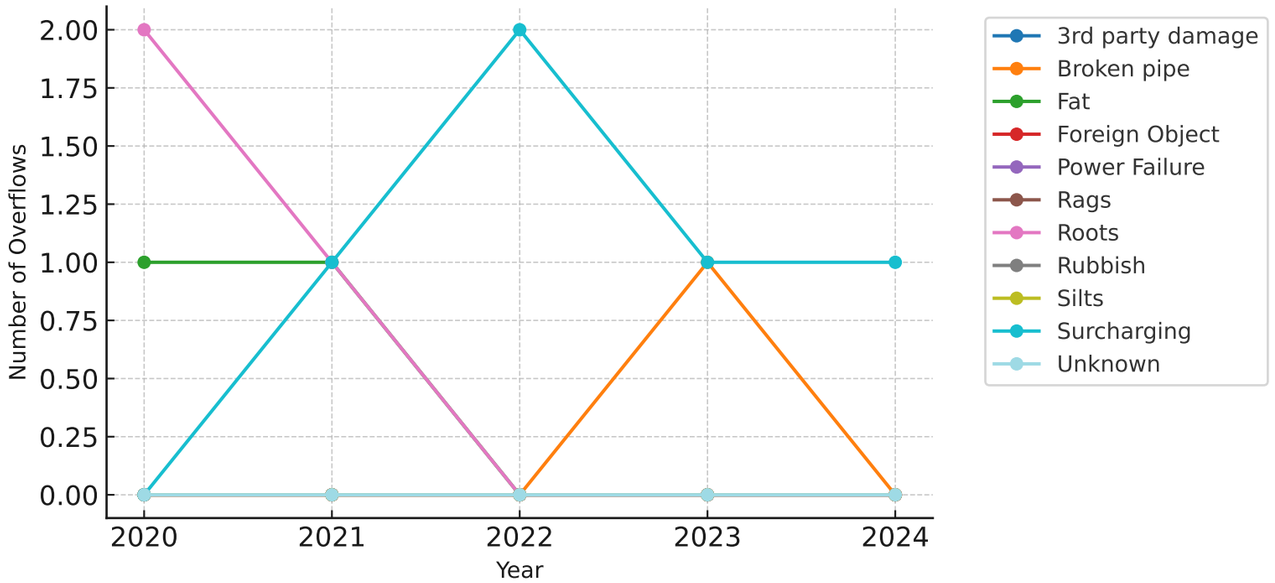

Cox's Bay
Number of Overflows
Year
0
5
10
15
20
25
30
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Devonport-Takapuna
Number of Overflows
Year
0
1
2
3
4
5
6
7
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

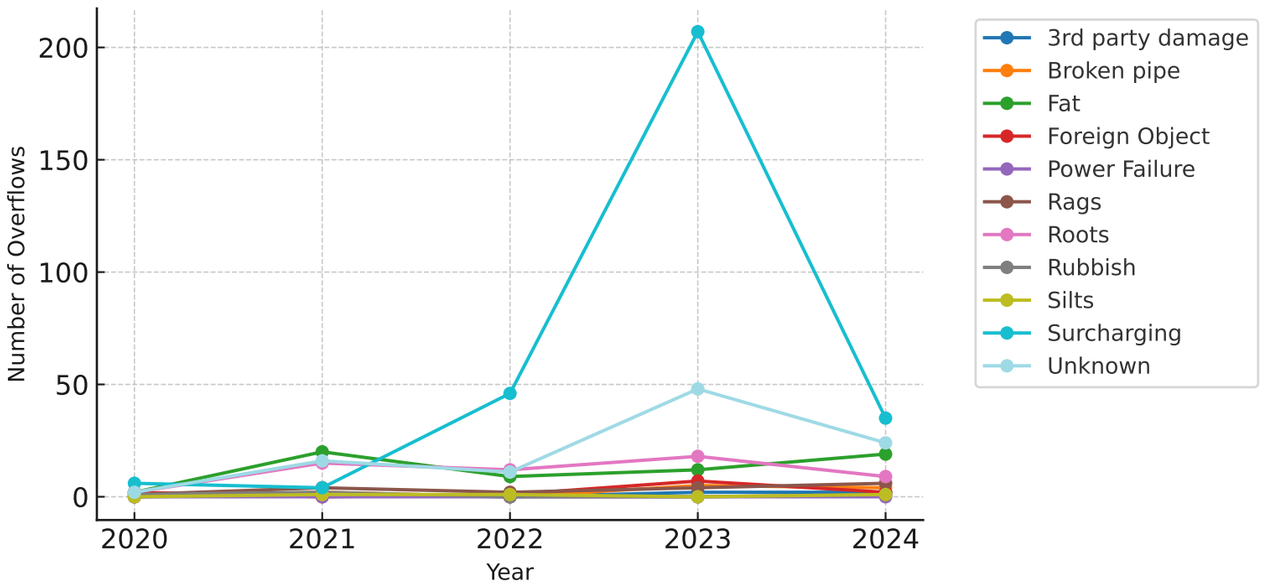
East Coast Bays



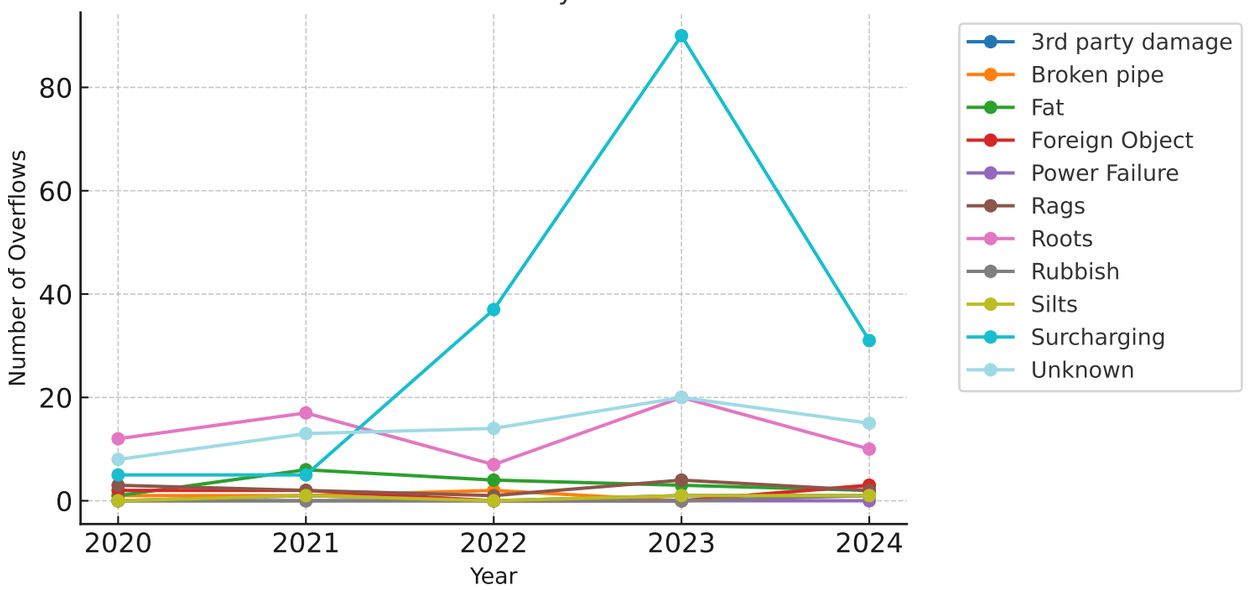
Helensville



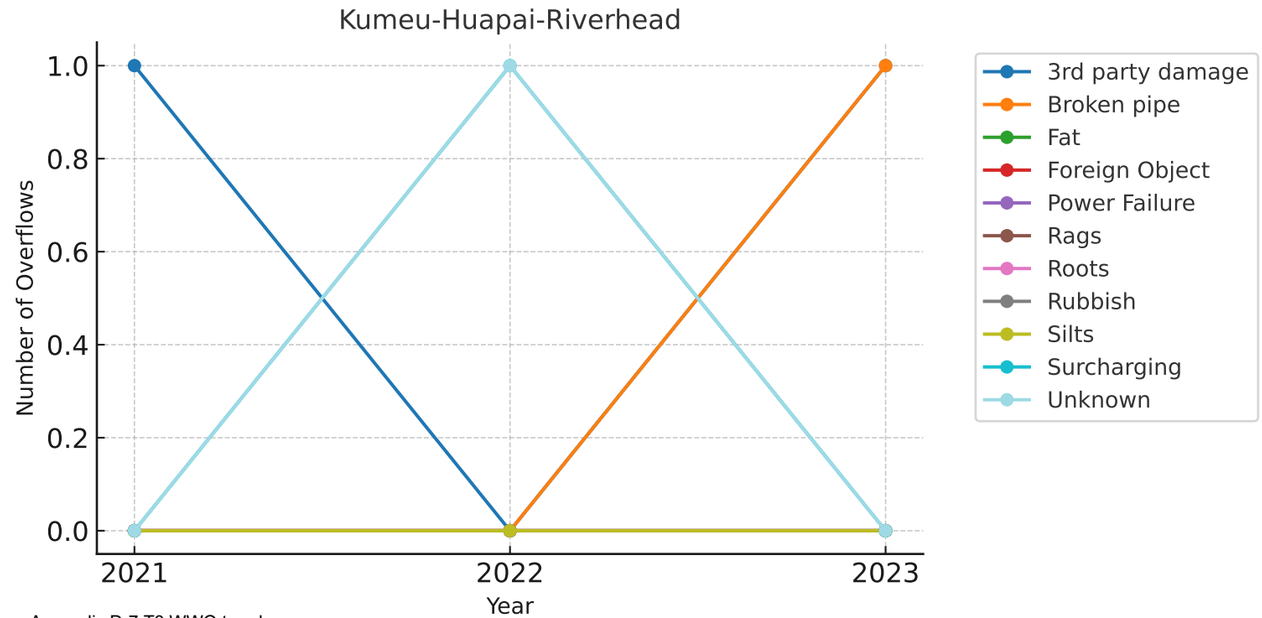
Henderson Creek



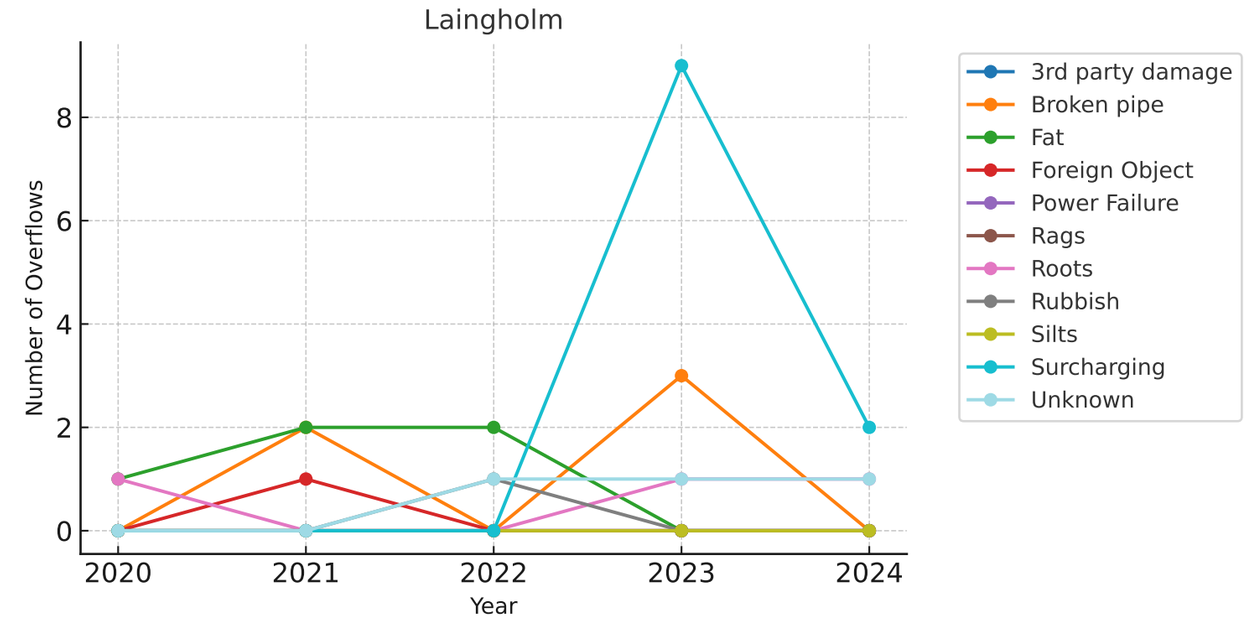
Hobson Bay

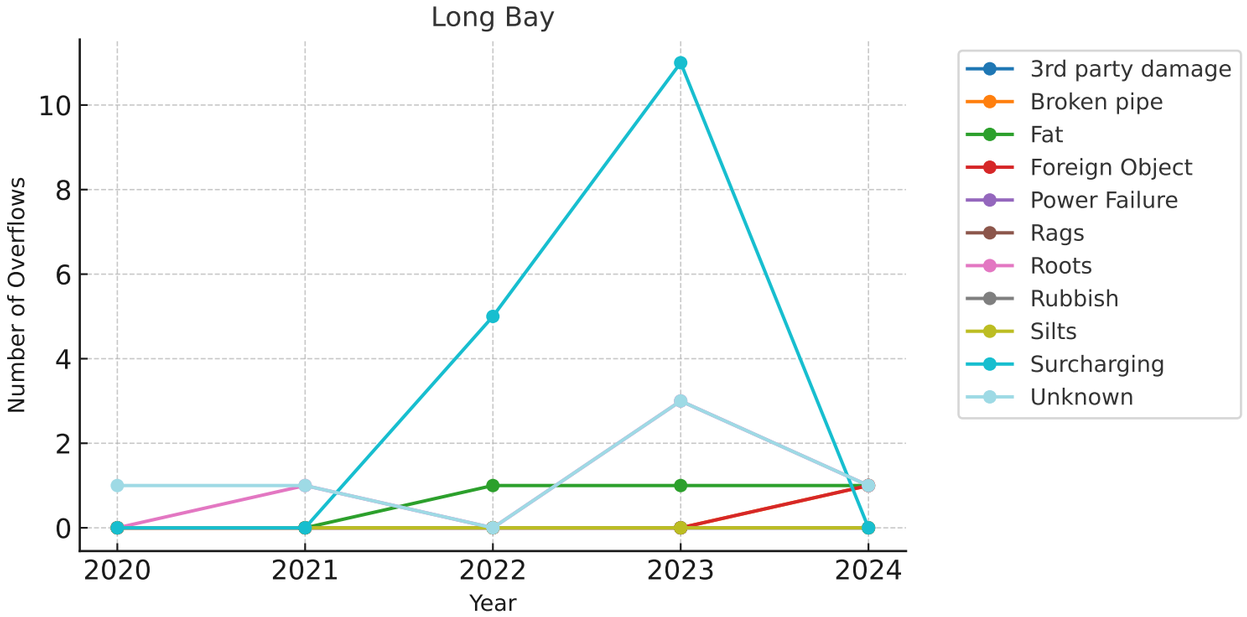


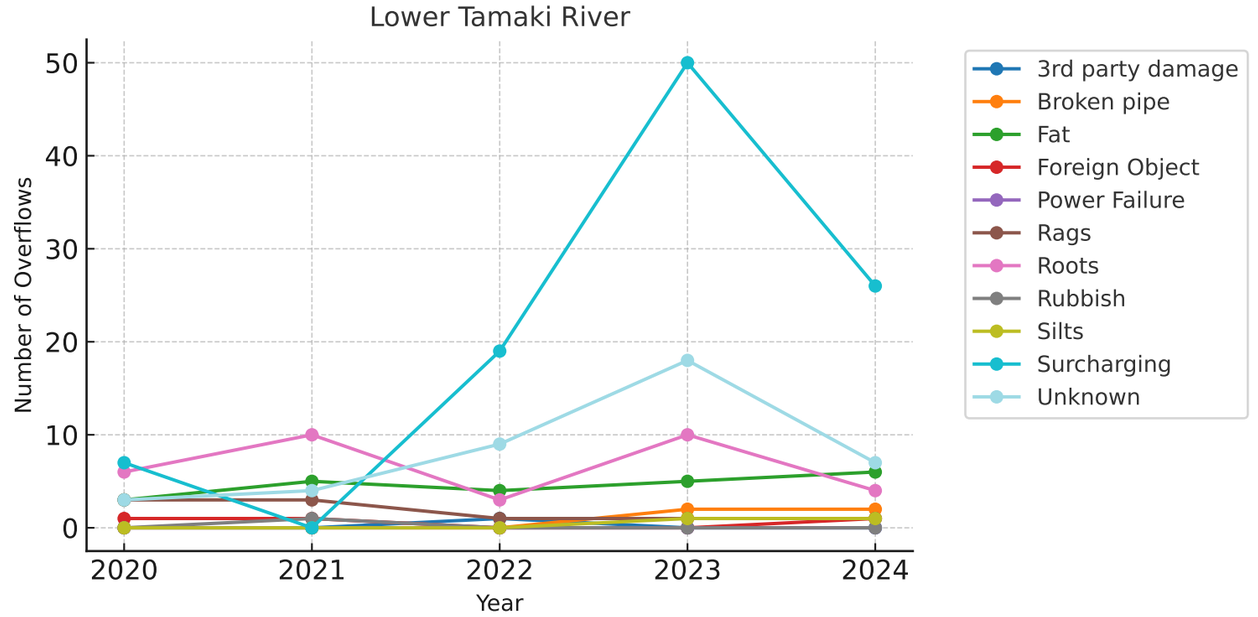
Kumeu-Huapai-Riverhead

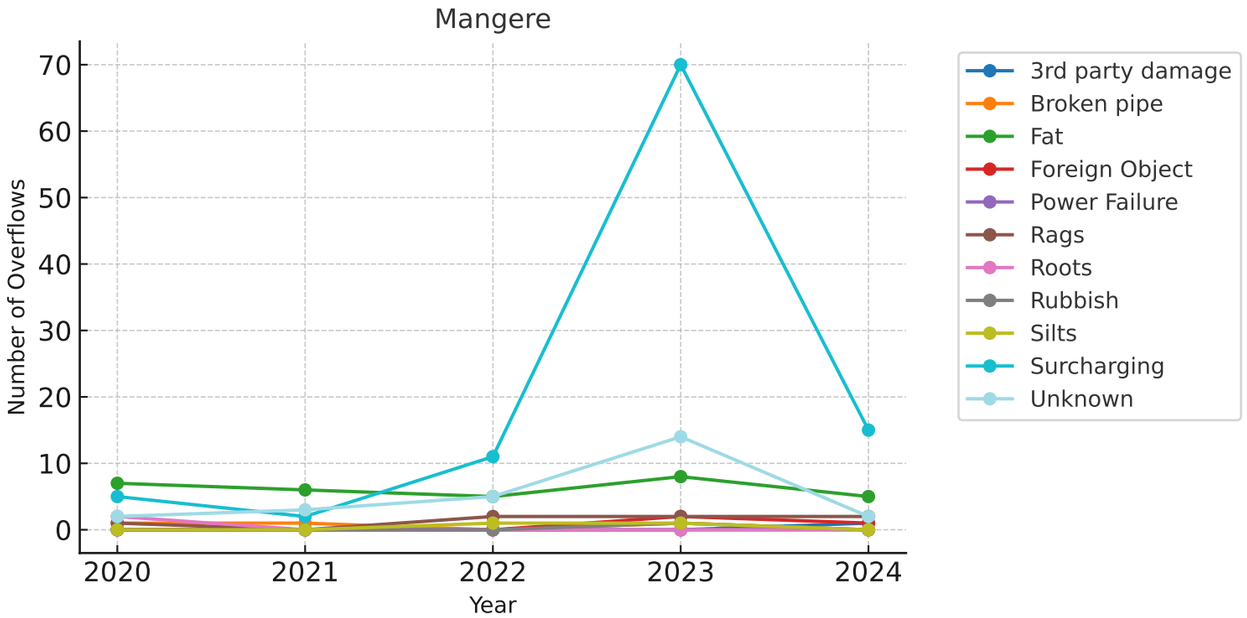


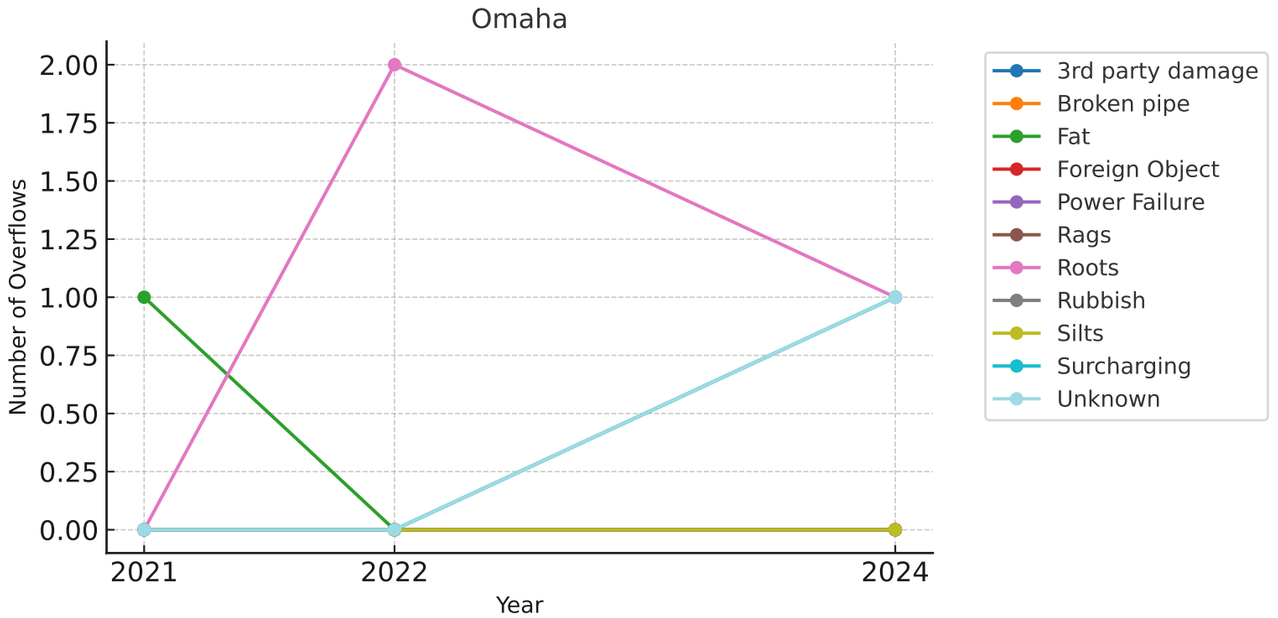
Laingholm

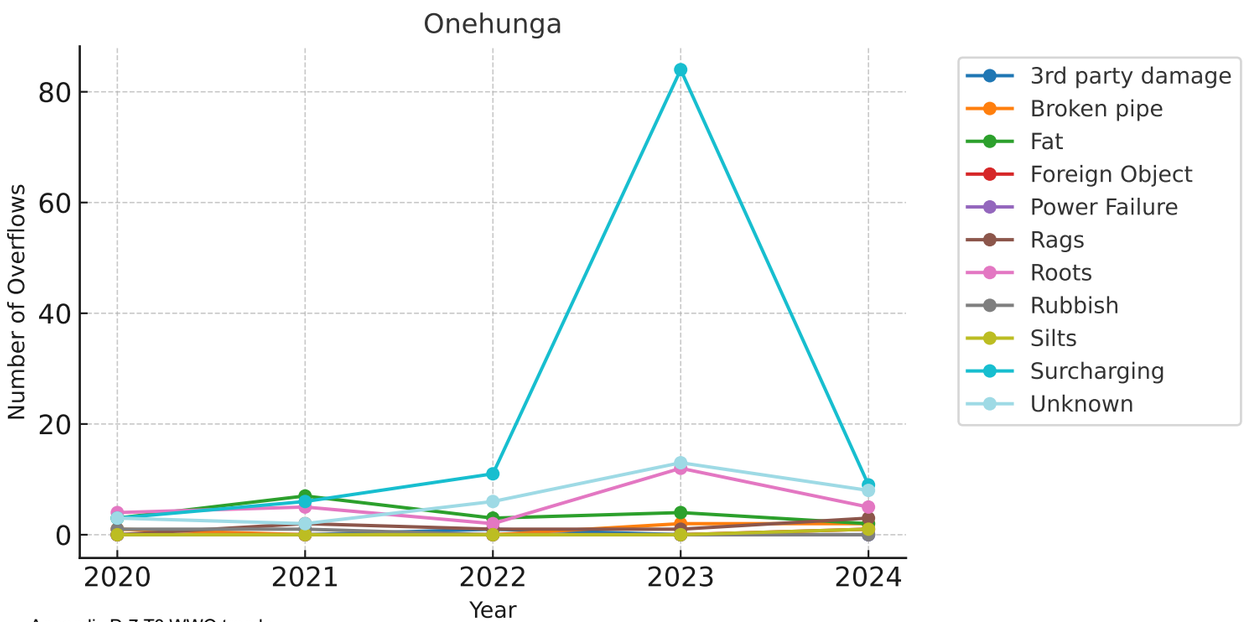


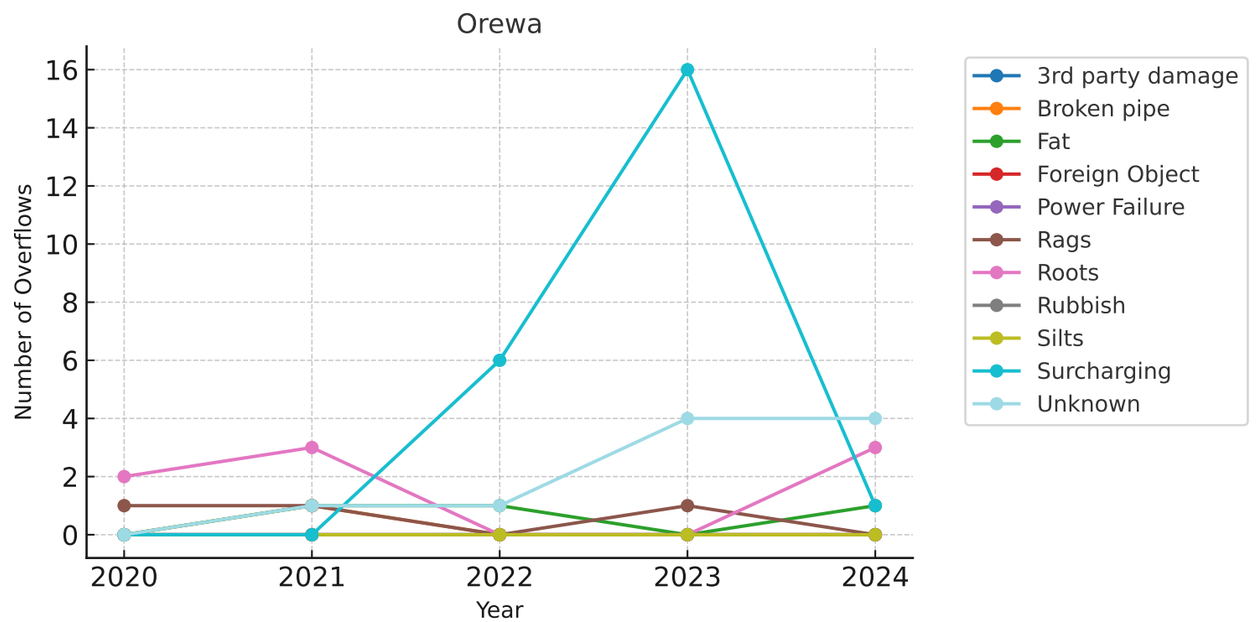

Long Bay
Number of Overflows
Year
2020
2021
2022
2023
2024
0
2
4
6
8
10
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

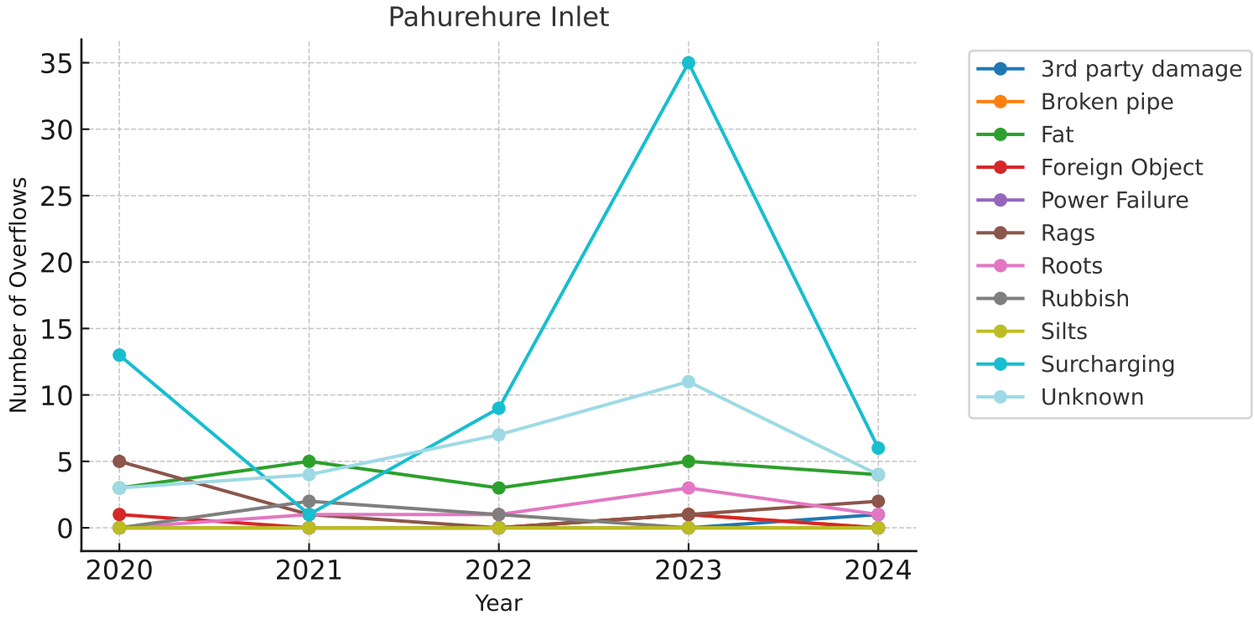

Lower Tamaki River
Number of Overflows
Year
2020
2021
2022
2023
2024
0
10
20
30
40
50
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

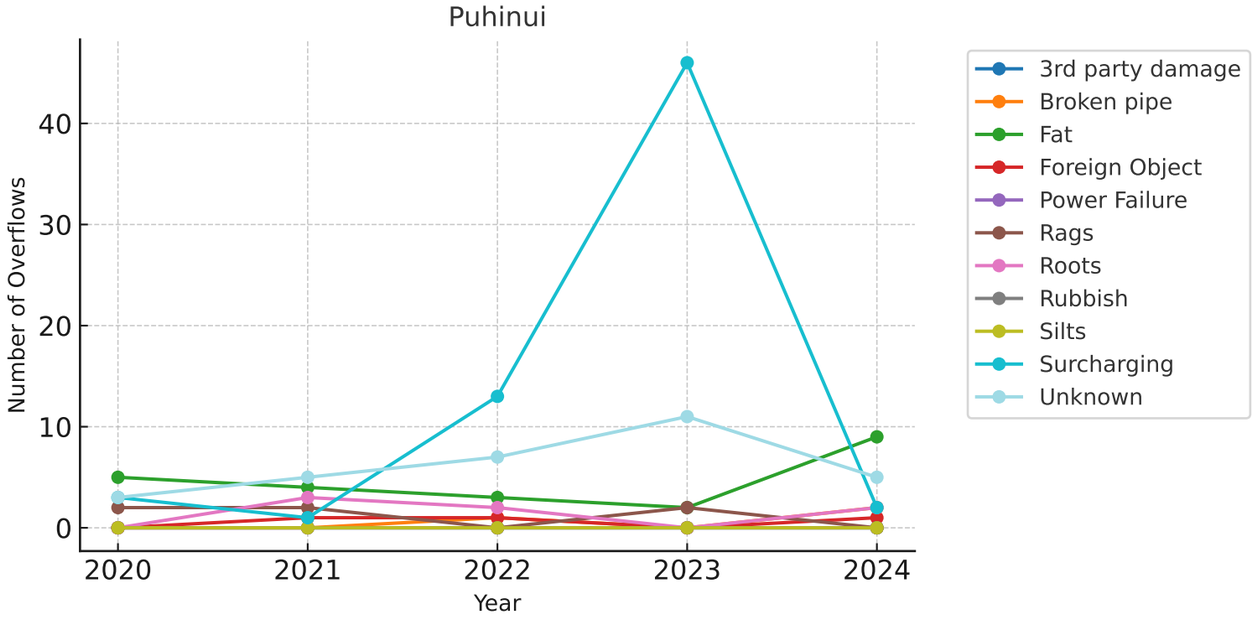

Mangere
Number of Overflows
Year
2020
2021
2022
2023
2024
0
10
20
30
40
50
60
70
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

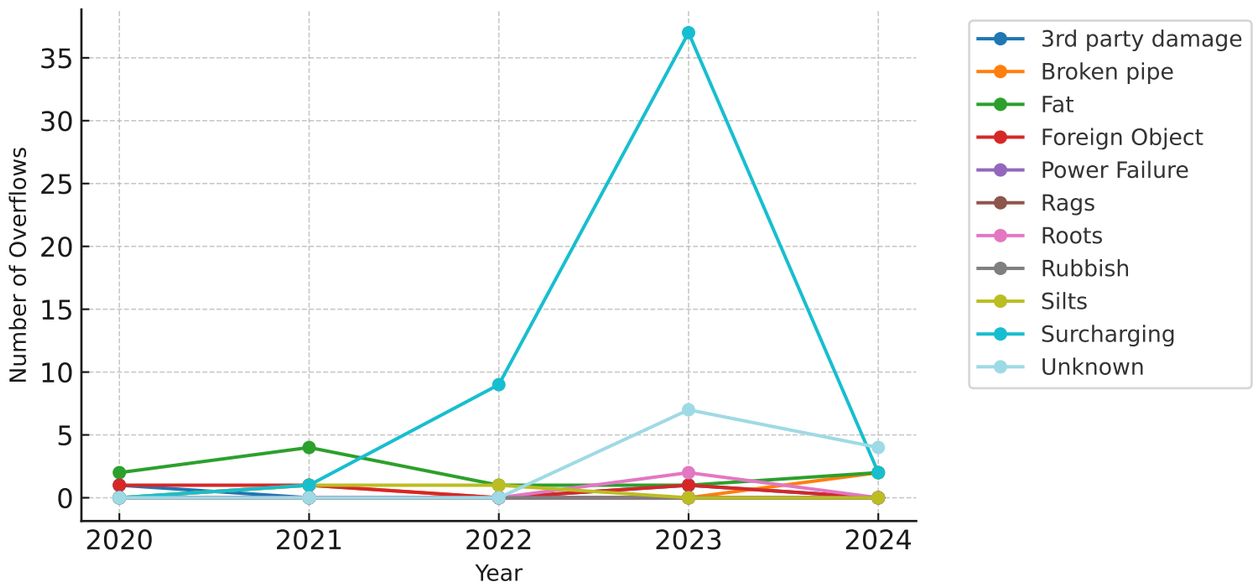

Omaha
Number of Overflows
Year
2021
2022
2024
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

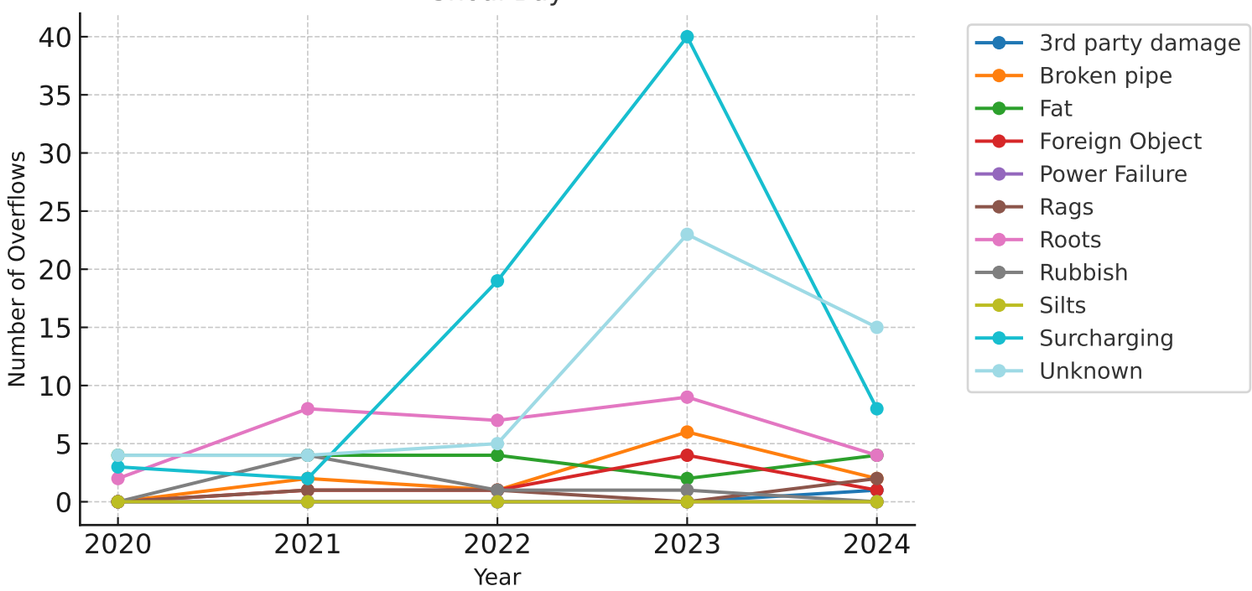

Onehunga
Number of Overflows
Year
2020
2021
2022
2023
2024
0
20
40
60
80
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

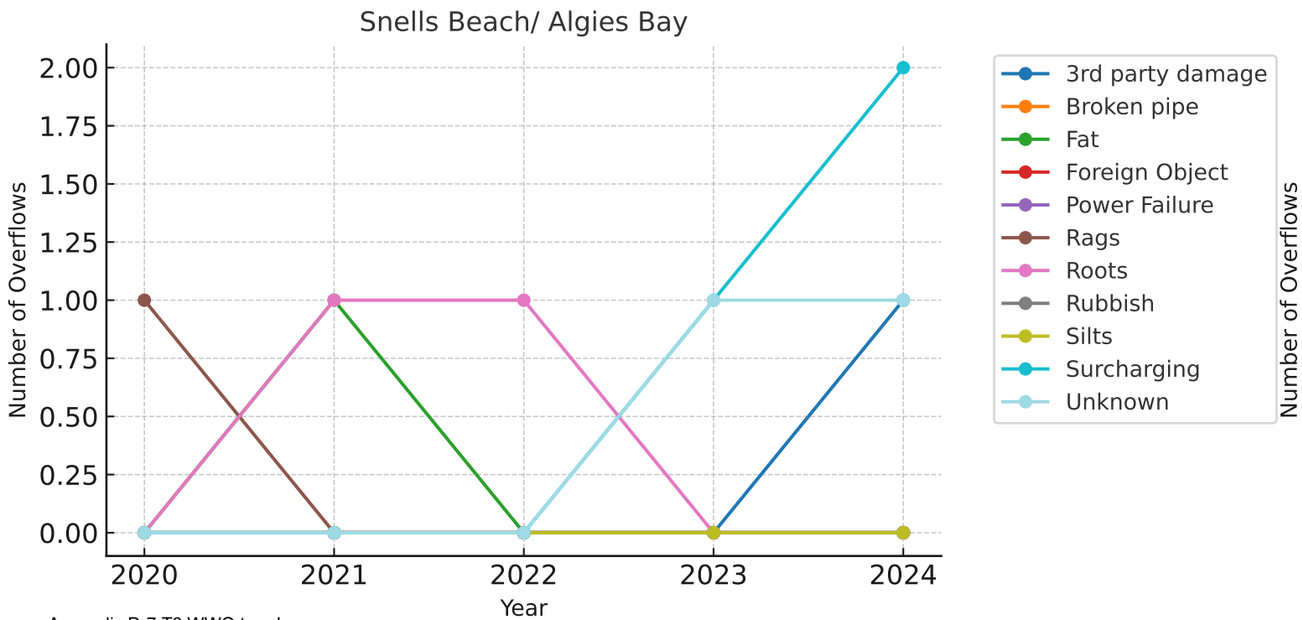

Orewa
Number of Overflows
Year
2020
2021
2022
2023
2024
0
2
4
6
8
10
12
14
16
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

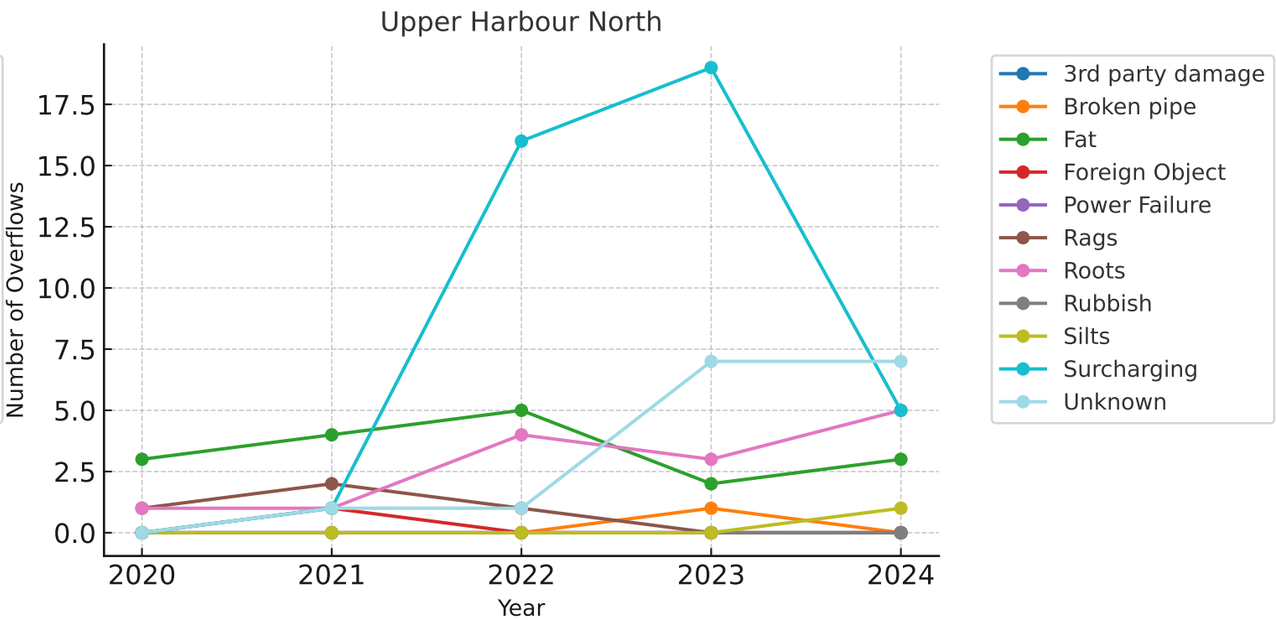

Pahurehure Inlet
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

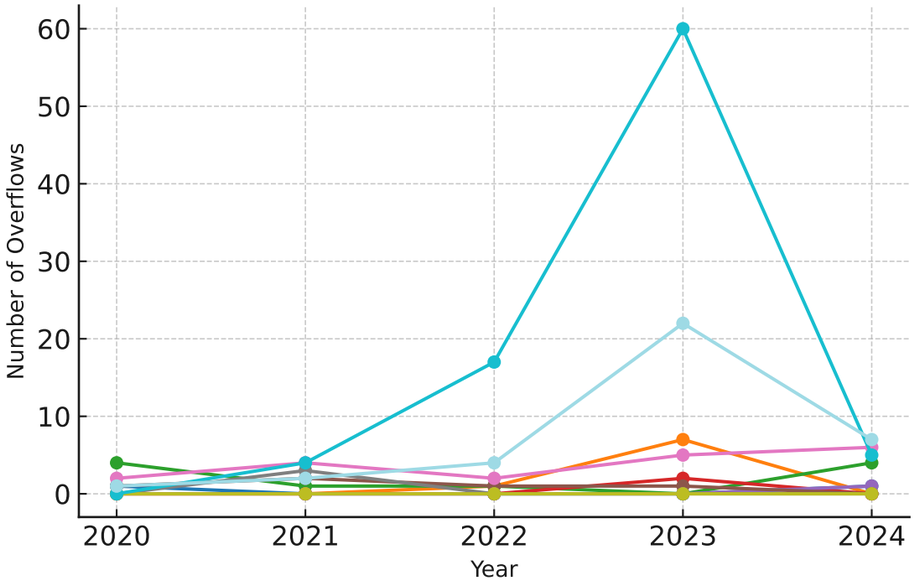

Puhinui
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

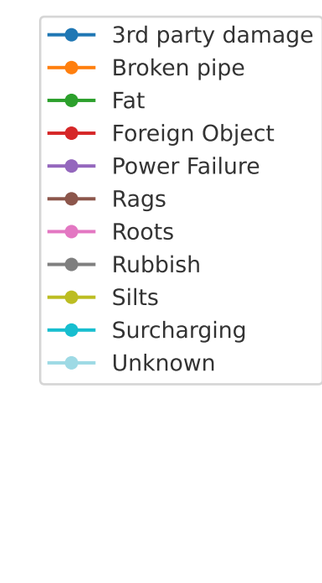

Pukekohe
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

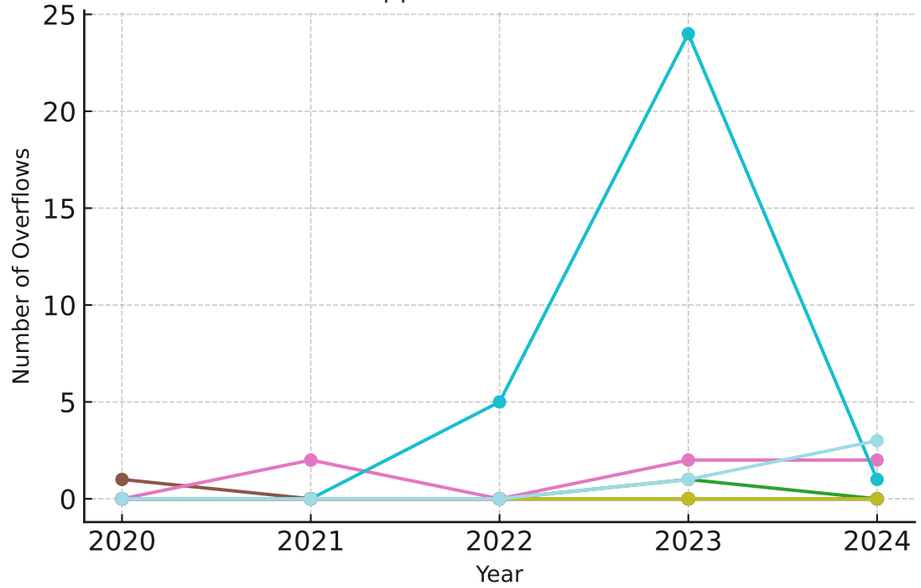

Shoal Bay
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

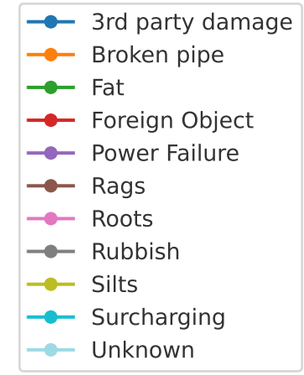

Snells Beach/ Algies Bay
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

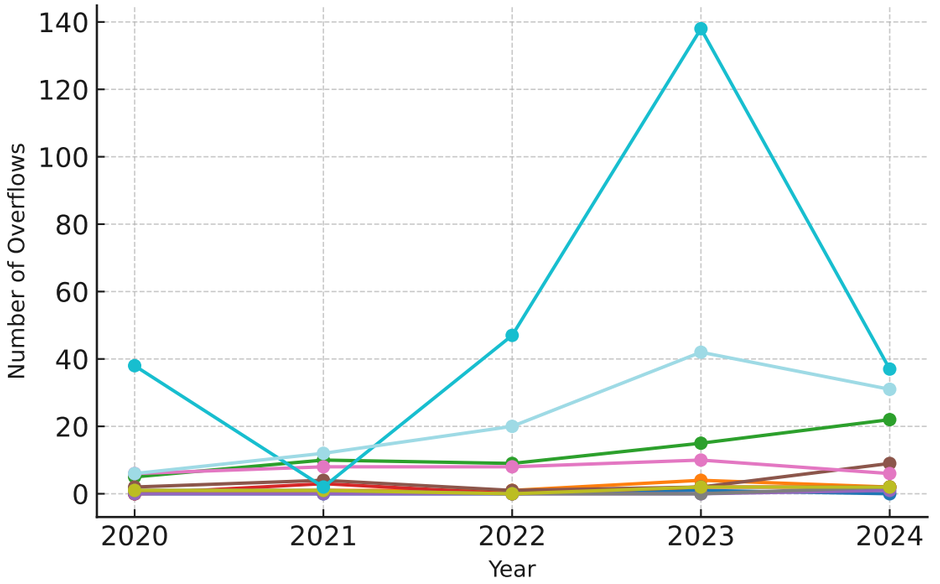

Upper Harbour North
Number of Overflows
Year
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

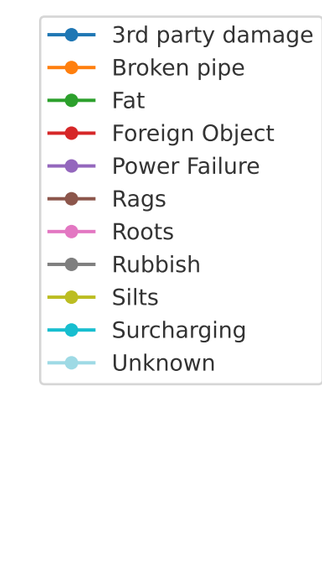

Upper Harbour South
Number of Overflows
Year
0
10
20
30
40
50
60
2020
2021
2022
2023
2024

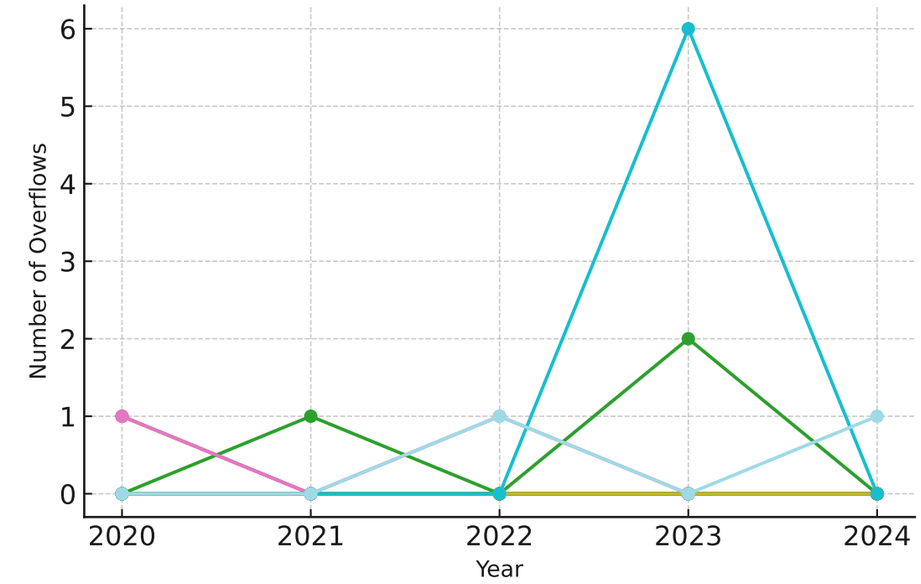

3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

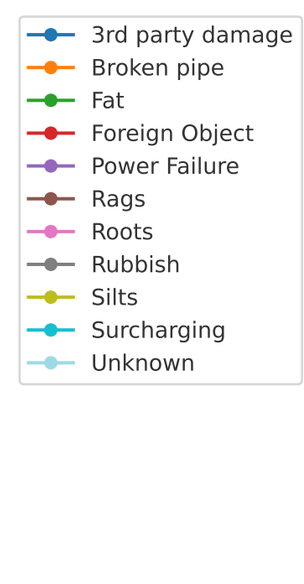

Upper Harbour West
Number of Overflows
Year
0
5
10
15
20
25
2020
2021
2022
2023
2024

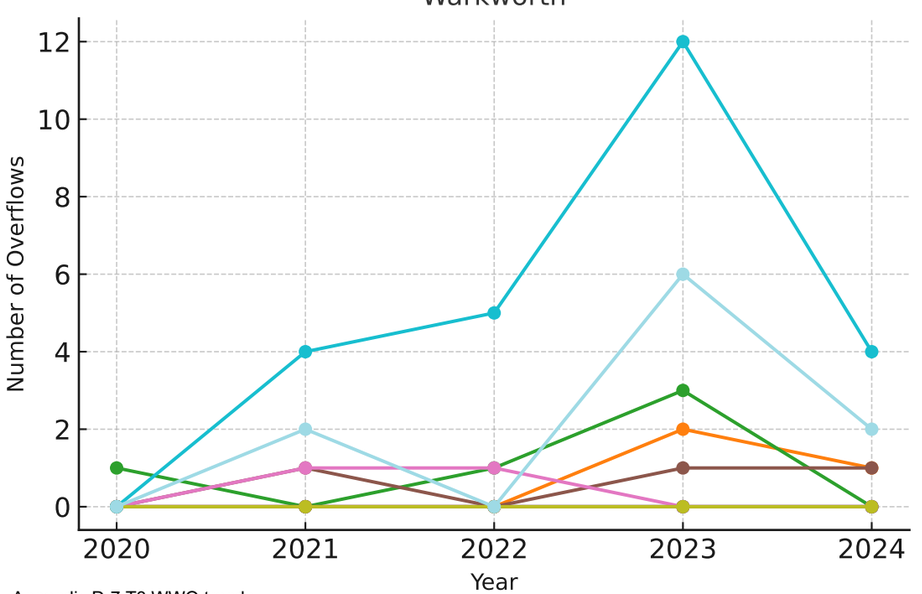

3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

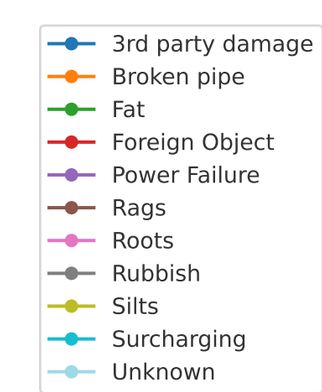

Upper Tamaki River
Number of Overflows
Year
0
20
40
60
80
100
120
140
2020
2021
2022
2023
2024

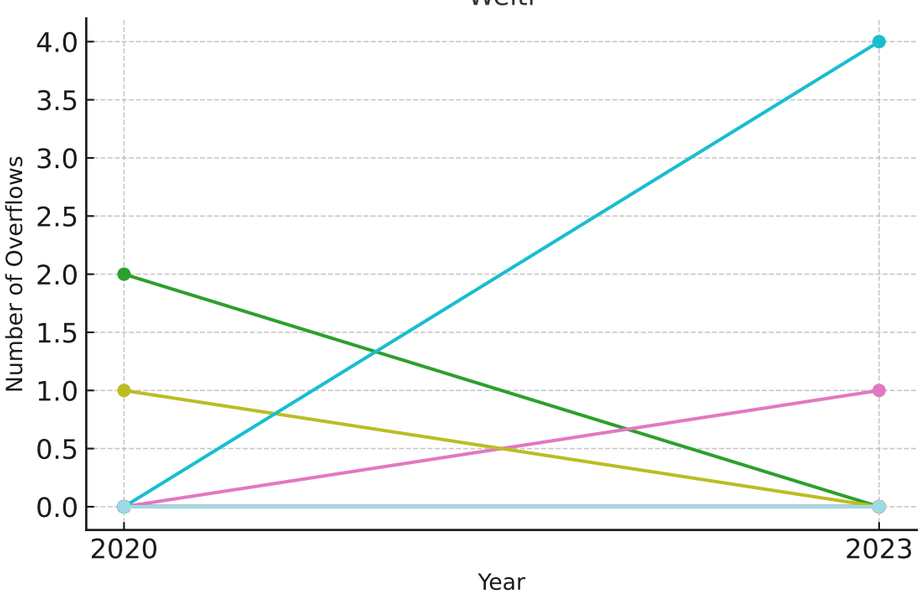

3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

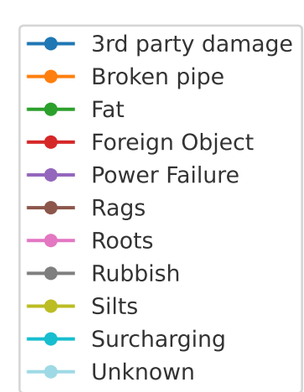

Waiuku
Number of Overflows
Year
0
1
2
3
4
5
6
2020
2021
2022
2023
2024

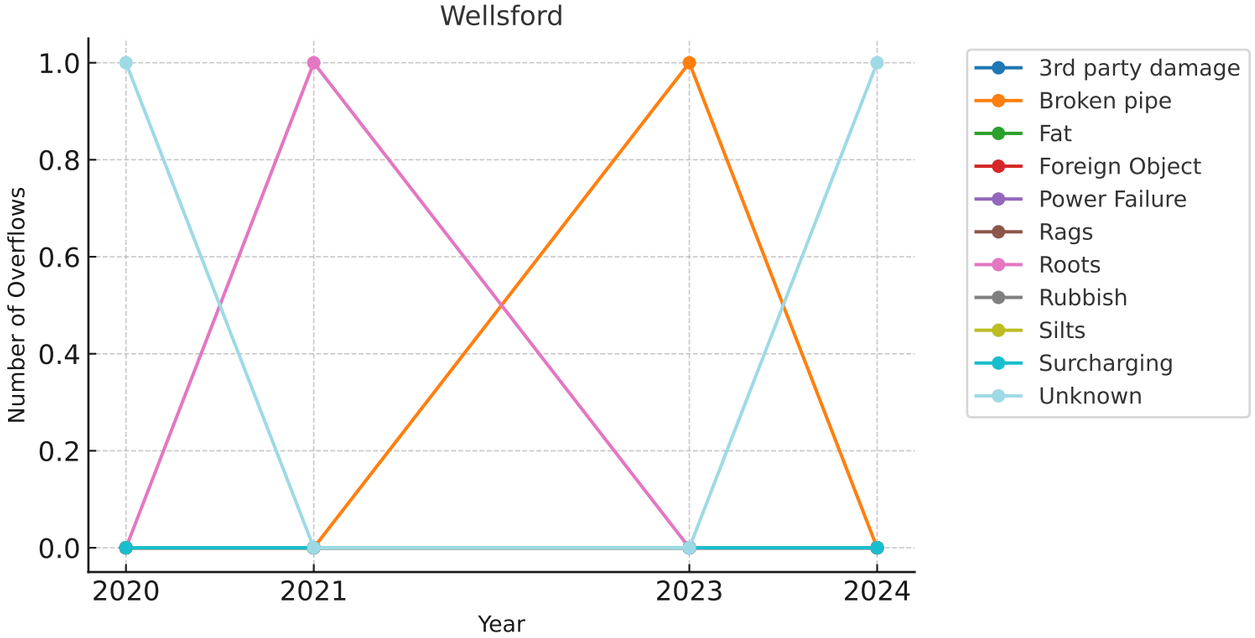

3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

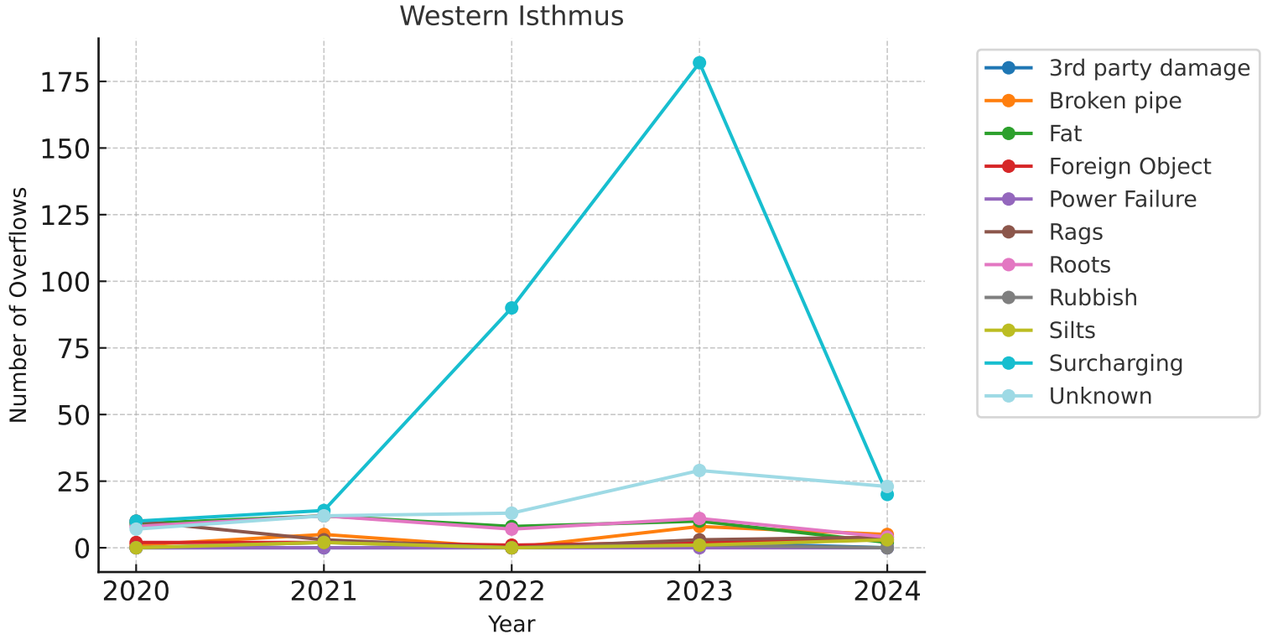

Warkworth
Number of Overflows
Year
0
2
4
6
8
10
12
2020
2021
2022
2023
2024

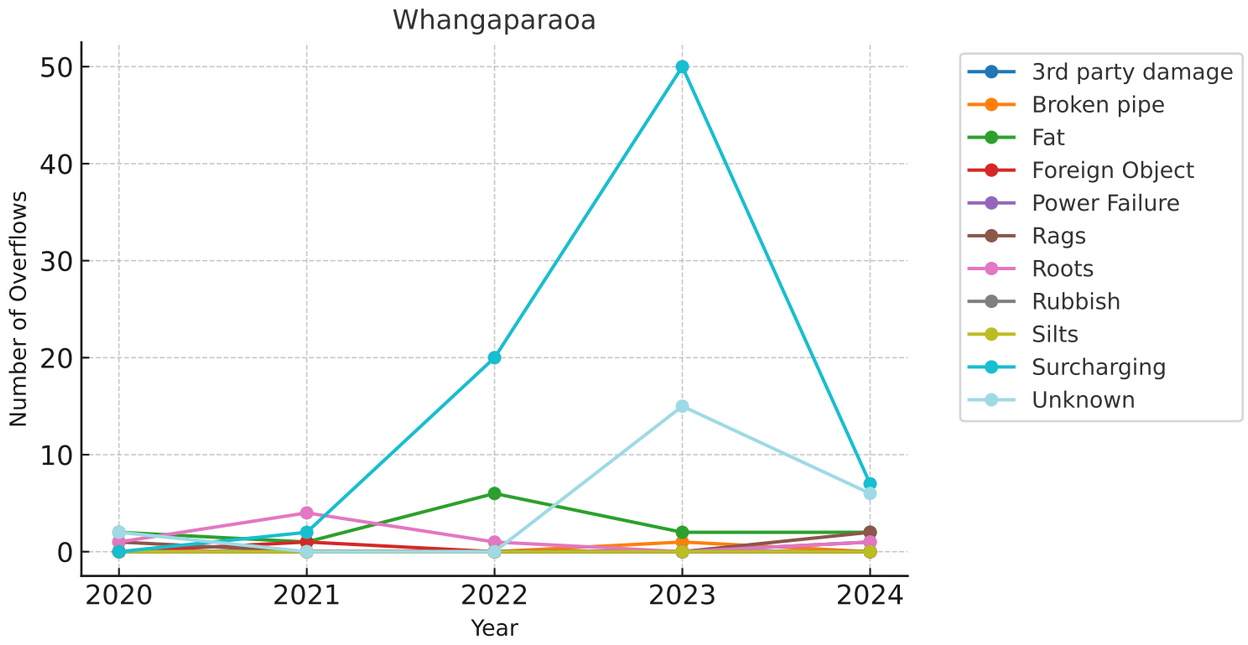

3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

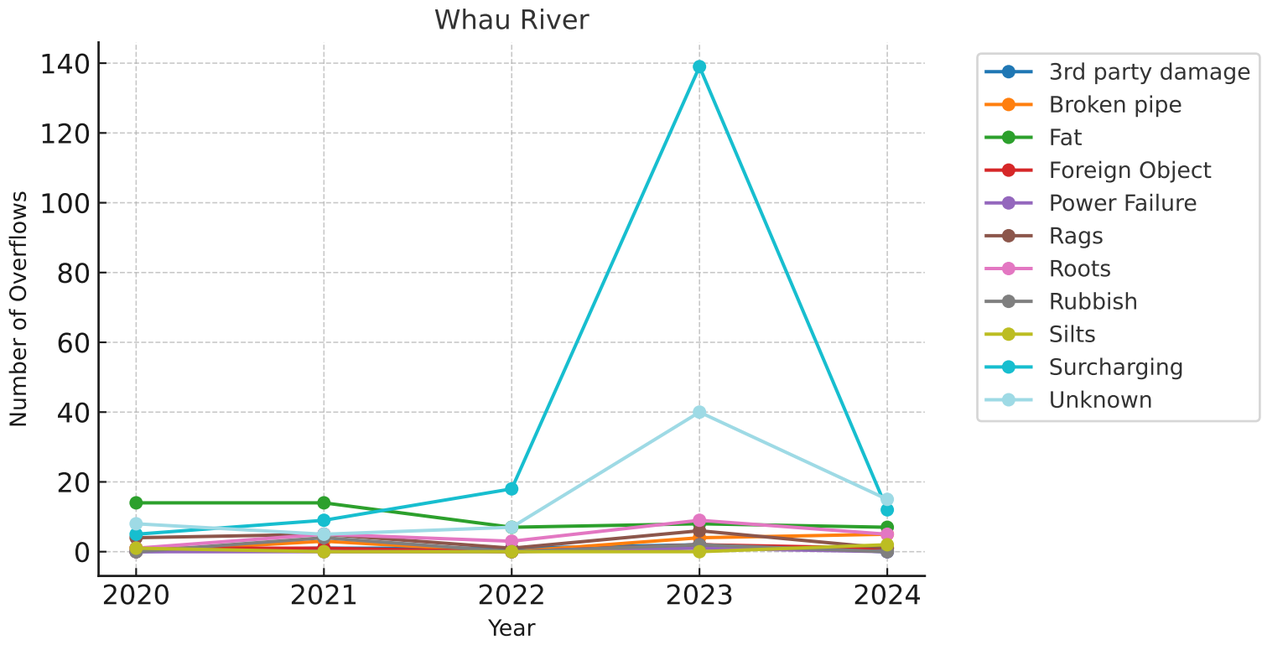

Weiti
Number of Overflows
Year
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
2020
2023


3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Wellsford
Number of Overflows
Year
0.0
0.2
0.4
0.6
0.8
1.0
2020
2021
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Western Isthmus
Number of Overflows
Year
0
25
50
75
100
125
150
175
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Whangaparaoa
Number of Overflows
Year
0
10
20
30
40
50
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown


Whau River
Number of Overflows
Year
0
20
40
60
80
100
120
140
2020
2021
2022
2023
2024
3rd party damage
Broken pipe
Fat
Foreign Object
Power Failure
Rags
Roots
Rubbish
Silts
Surcharging
Unknown

Appendix E. Statistical Analysis

Table E-1 Type 3 linear regression output for DWOs across Auckland

Table E-2 Type 3 linear regression output for WWOs across Auckland

Type E-3 Type 3 linear regression output for DWOs at individual catchments

Type E-4 Type 3 linear regression output for WWOs at individual catchments

Appendix E-1 Type 3 linear regression summary output for causes of DWOs across Auckland

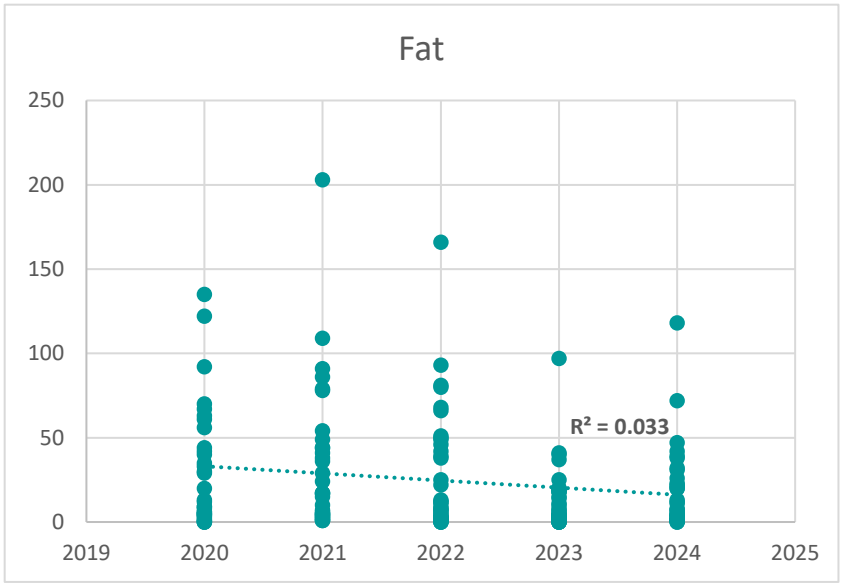
SUMMARY OUTPUT

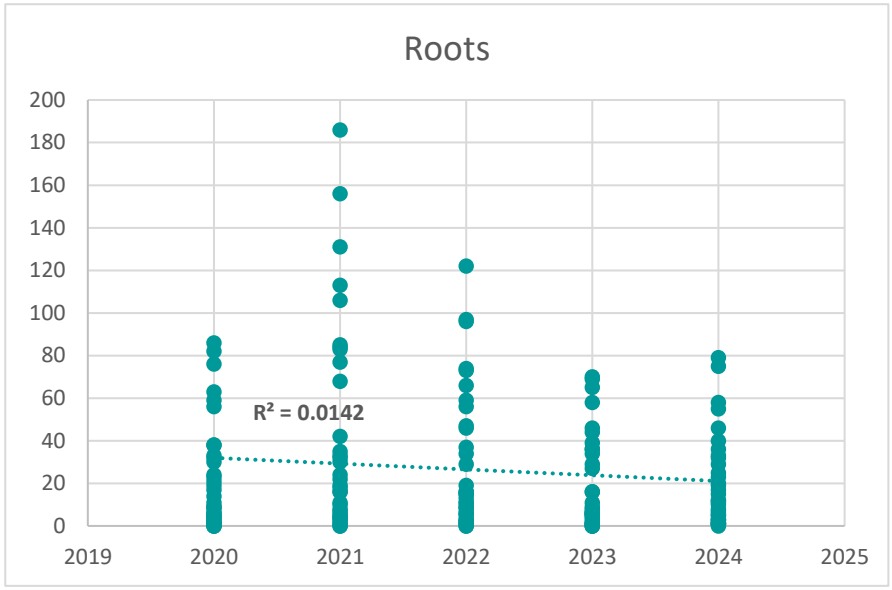
Regression Statistics	
Multiple R	0.56633
R Square	0.32073
Adjusted R Square	0.27432
Standard Error	1.21170
Observations	173

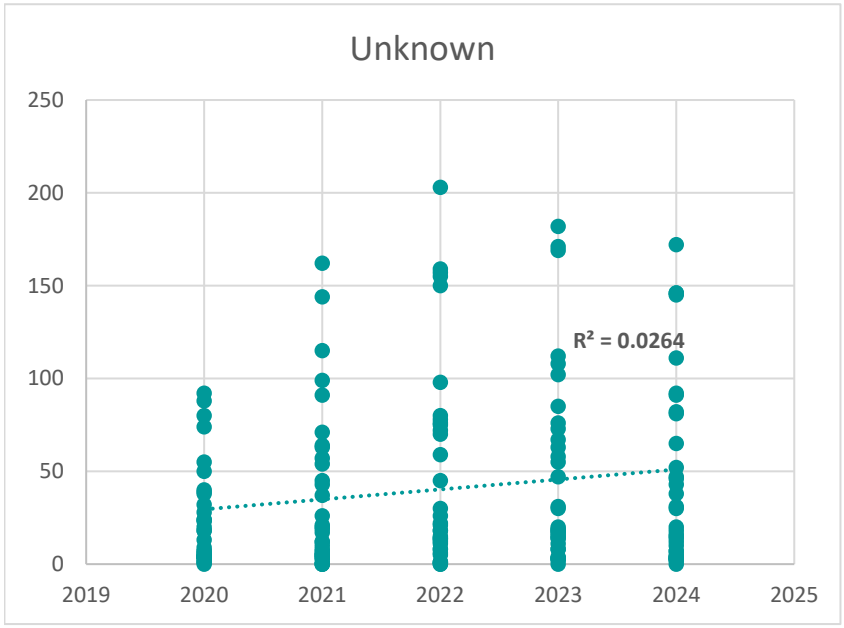
ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	11	111.61525	10.14684	6.91094	1.70566E-09
Residual	161	236.38475	1.46823		
Total	172	348			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2022.00072	0.12665	15965.00325	0.00000	2021.75060	2022.25083	2021.75060	2022.25083
3rd party damage	-0.06464	0.07740	-0.83520	0.40484	-0.21748	0.08820	-0.21748	0.08820
Broken pipe	0.01466	0.02446	0.59944	0.54972	-0.03365	0.06298	-0.03365	0.06298
Fat	-0.01813	0.00685	-2.64652	0.00894	-0.03165	-0.00460	-0.03165	-0.00460
Foreign Object	-0.05894	0.03422	-1.72203	0.08698	-0.12652	0.00865	-0.12652	0.00865
Mechanical	0.41432	1.26288	0.32807	0.74328	-2.07964	2.90827	-2.07964	2.90827
Power Failure	0.02333	0.20402	0.11437	0.90909	-0.37957	0.42624	-0.37957	0.42624
Rags	-0.03200	0.02772	-1.15433	0.25007	-0.08674	0.02274	-0.08674	0.02274
Roots	-0.01401	0.00626	-2.24030	0.02644	-0.02637	-0.00166	-0.02637	-0.00166
Rubbish	0.07145	0.04939	1.44646	0.14999	-0.02610	0.16899	-0.02610	0.16899
Silts	0.00500	0.04651	0.10748	0.91454	-0.08685	0.09685	-0.08685	0.09685
Unknown	0.02917	0.00475	6.14420	0.00000	0.01979	0.03855	0.01979	0.03855







Appendix E-1 T3 linear regression output for DWOs across Auckland

Appendix E-2 Type 3 linear regression summary output for causes of WWOs across Auckland

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.50501
R Square	0.25503
Adjusted R Square	0.19966
Standard Error	1.26308
Observations	160

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	11	80.83059	7.34824	4.60601	5.14317E-06
Residual	148	236.11316	1.59536		
Total	159	316.94375			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	*2021.898029*	*0.133343656*	*15163.06135*	*0*	*2021.634525*	*2022.161532*	*2021.634525*	*2022.161532*
3rd party damage	0.29211	0.26422	1.10557	0.27071	-0.23002	0.81424	-0.23002	0.81424
Broken pipe	0.20552	0.10893	1.88666	0.06116	-0.00974	0.42078	-0.00974	0.42078
Fat	-0.03772	0.04144	-0.91021	0.36419	-0.11961	0.04417	-0.11961	0.04417
Foreign Object	-0.25892	0.16185	-1.59975	0.11179	-0.57876	0.06092	-0.57876	0.06092
Power Failure	1.32580	0.63567	2.08566	0.03873	0.06963	2.58196	0.06963	2.58196
Rags	-0.17995	0.09405	-1.91330	0.05764	-0.36581	0.00591	-0.36581	0.00591
Roots	-0.04825	0.03607	-1.33774	0.18303	-0.11952	0.02302	-0.11952	0.02302
Rubbish	-0.24684	0.17883	-1.38028	0.16958	-0.60024	0.10656	-0.60024	0.10656
Silts	0.17511	0.25089	0.69798	0.48628	-0.32067	0.67089	-0.32067	0.67089
Surcharging	-0.00570	0.00654	-0.87286	0.38416	-0.01862	0.00721	-0.01862	0.00721
Unknown	0.09382	0.03602	2.60476	0.01013	0.02264	0.16499	0.02264	0.16499

Appendix E-3 Type 3 linear regression summary output for significant trends in dry weather overflows at individual catchments

SUMMARY OUTPUT FOR BROKEN PIPES

Regression Statistics	Onehunga	East CoastBays	Upper Harbour
R	0.927	0.879	0.929
R Square	0.859	0.773	0.862
Adjusted R Square	0.812	0.697	0.816
Standard Error	2.221	2.869	1.751

ANOVA

Onehunga	**df**	**SS**	**MS**	**F**	**P**
Regression	1	90.00	90.00	18.24300	0.02400
Residual	3	14.80	4.93		
Total	4	104.80	26.20		
East Coast Bays					
Regression	1	84.100	84.100	10.215	0.049
Residual	3	24.700	8.233		
Total	4	108.800	27.200		
Upper Harbour South					
Regression	1	57.600	57.600	18.783	0.023
Residual	3	9.200	3.067		
Total	4	66.800	16.700		

		Coefficients	**Standard Error**	**t Stat**	**P-value**
Onehunga	Constant	-55.200	15.484	-3.565	0.038
	Yr	3.000	0.702	4.271	0.024
E C B	Constant	-49.600	20.003	-4.480	0.089
	Yr	2.900	0.907	3.196	0.049
U H South	Constant	-43.600	12.208	-3.571	0.038
	Yr	2.400	0.554	4.334	0.023

SUMMARY OUTPUT FOR RUBBISH & FAT

Regression Statistics	Henderson Cr/ rubbish	East Coast Bays/ fat	Pukekohe/ fat	Shoal Bay/ fat	Weiti/ fat
R	0.889	0.905	0.969	0.926	0.9
R Square	0.790	0.818	0.939	0.857	0.81
Adjusted R Square	0.720	0.758	0.918	0.809	0.747
Standard Error	3.950	12.039	1.538	6.935	0.796

ANOVA

	df	SS	MS	F	P
Henderson Cr/ rubbish					
Regression	1	176.40	176.40	11.30800	0.04400
Residual	3	46.80	15.60		
Total	4	223.20	55.80		
East Coast Bays/ fat					
Regression	1	1960.000	1960.000	13.523	0.035
Residual	3	434.800	144.933		
Total	4	2394.800	598.700		
Pukekohe/ fat					
Regression	1	108.900	108.900	46.014	0.007
Residual	3	7.100	2.367		
Total	4	116.000	29.000		
Shoal Bay/ fat					
Regression	1	864.900	864.900	17.981	0.024
Residual	3	144.300	48.100		
Total	4	1009.200	252.300		
Weiti/ fat					
Regression	1	8.100	8.100	12.789	0.037
Residual	3	1.900	0.633		
Total	4	10.000	2.500		

		Coefficients	Standard Error	t Stat	P-value
Henderson Cr	Constant	101.000	27.535	3.668	0.035
	Yr	-4.200	1.249	-3.363	0.044
E C B /fat	Constant	378.200	83.927	4.506	0.020
	Yr	-14.000	3.807	-3.677	0.035
Pukekohe/fat	Constant	85.600	10.725	7.982	0.004
	Yr	-3.300	0.486	-6.783	0.007
Shoal Bay/ fat	Constant	240.200	48.349	4.968	0.016
	Yr	-9.300	2.193	-4.240	0.024
Weiti/ fat	Constant	22.800	5.548	4.110	0.026
	Yr	-0.900	0.252	-3.576	0.037

Appendix E-4 Type 3 linear regression summary output for significant trends in wet weather overflows at individual catchments

SUMMARY OUTPUT FOR BLOCKAGES + BREAKS

Regression Statistics	Devonport-Takapuna	Puhinui	Upper Harbour North
R	0.894	0.887	0.991
R Square	0.799	0.786	0.983
Adjusted R Square	0.732	0.715	0.977
Standard Error	1.742	1.713	0.632

ANOVA

Devonport- Takapuna	**df**	**SS**	**MS**	**F**	**P**
Regression	1	36.10	36.10	11.90100	0.04100
Residual	3	9.10	3.03		
Total	4	45.20	11.30		
Puhinui					
Regression	1	32.400	32.400	11.045	0.045
Residual	3	8.800	2.933		
Total	4	41.200	10.300		
Upper Harbour North					
Regression	1	67.600	67.600	169.000	<0.001
Residual	3	1.200	0.400		
Total	4	68.800	17.200		

		Coefficients	**Standard Error**	**t Stat**	**P-value**
D-T	Constant	-3837.400	1113.631	-3.446	0.041
	Yr	1.900	0.551	3.450	0.041
Puhinui	Constant	-25.000	11.940	-2.094	0.127
	Yr	1.800	0.542	3.323	0.045
U H North	Constant	-46.400	4.409	-10.524	0.002
	Yr	2.600	0.200	13.000	<0.001

Appendix F. New Assets

Table F-1 Details of wastewater manholes installed

Table F-2 Details of wastewater fittings installed

Table F-3 Details of wastewater pipes installed

Table F-1 Number of new wastewater manholes installed during 2023-24 reporting period

Catchment	Manhole Process				Existing Urban Area	Future Urban Area	Total New Manholes
	Chamber	Grille	Grille Hinge	Standard			
Wellsford							0
Omaha							0
Warkworth		1	22			23	23
Snells Beach/ Algies Bay							0
Waiwera							0
Helensville			20		20		20
Orewa			143		53	90	143
Weiti			12		12		12
Whangaparāoa			45		45		45
Long Bay			11		11		11
East Coast Bays		3	101		104		104
Devonport-Takapuna			2		2		2
Shoal Bay	1		57		58		58
Upper Harbour North			80		80		80
Upper Harbour South		2	32		34		34
Upper Harbour West			95		17	78	95
Henderson Creek	2	1	275		278		278
Whau River			61		61		61
Laingholm							0
Cox's Bay			6		6		6
Central Auckland							0
Hobson Bay	3		50		53		53
Onehunga			30		30		30
Māngere	1		38		39		39
Lower Tāmaki River	1		36		37		37
Upper Tāmaki River		1	316		317		317
Cockle Bay			7		7		7
Puhinui		1	115		116		116
Pahurehure Inlet		2	356	1	257	102	359
Oneroa							0
Beachlands Maraetai			19		19		19
Clarks Beach			1		1		1
Waiuku			77		77		77
Pukekohe			97		97		97
Western Isthmus	1		105		106		106
Totals	**9**	**11**	**2209**	**1**	**1937**	**293**	**2230**

Table F-2 Number of new wastewater fittings installed during 2023-24 reporting period

Catchment	Asset Type					Catchment Status		Total New Fittings
	Boundary Kit	End Cap	Insp Point	Node	Valve	Existing	Future	
Wellsford								0
Omaha	6			6	4	16		16
Warkworth		3					3	3
Snells Beach/ Algies Bay				1		1		1
Waiwera								0
Helensville		1		1		2		2
Orewa		11		4		9	6	15
Weiti	35	4		11	3	53		53
Whangaparāoa		10		2		12		12
Long Bay		2		3		5		5
East Coast Bays		59		47		106		106
Devonport-Takapuna		1				1		1
Shoal Bay		28		14		42		42
Upper Harbour North		19		6		25		25
Upper Harbour South		16		20		36		36
Upper Harbour West	29	10		6	5	6	44	50
Henderson Creek		147		55		202		202
Whau River		34	1	22		57		57
Laingholm				1		1		1
Cox's Bay		2		5		7		7
Central Auckland								0
Hobson Bay		18		22		40		40
Onehunga		16		16		32		32
Māngere		26		14		40		40
Lower Tāmaki River		20		20		40		40
Upper Tāmaki River		173		58	1	232		232
Cockle Bay		4		1		5		5
Puhinui		38	2	19		59		59
Pahurehure Inlet		153	3	67	23	220	26	246
Beachlands Maraetai								0
Clarks Beach		25		23	16	64		64
Waiuku		3		2	3	3	5	8
Pukekohe		5		2		7		7
Kumeū/ Huapai/ Riverhead		17		6	16	31	8	39
Western Isthmus	53			1	2	56		56
Totals	**123**	**845**	**6**	**455**	**73**	**1410**	**92**	**1502**

Table F-3 New wastewater network pipes installed during 2023-24 reporting period

Catchment	Gravity	Overflow	Pressurised	Rising	Existing Urban Area	Future Urban Area	Total New Pipes	Length (m)
Wellsford								
Omaha			8		8		8	180.41
Warkworth	23					23	23	846.12
Snells Beach/ Algies Bay							0	0
Waiwera							0	0
Helensville	21				21		21	716.67
Orewa	156				59	97	156	4348.42
Weiti	21		4		25		25	652.05
Whangaparāoa	55				55		55	1427.82
Long Bay	13				13		13	451.65
East Coast Bays	151				151		151	2515.12
Devonport-Takapuna	2				2		2	27.35
Shoal Bay	68				68		68	1335.82
Upper Harbour North	91				91		91	2357.76
Upper Harbour South	49				49		49	712.63
Upper Harbour West	101		6		18	89	107	2948.06
Henderson Creek	384				384		384	8396.03
Whau River	85				85		85	1360.03
Laingholm	1				1		1	1.65
Cox's Bay	7	2			9		9	127.44
Central Auckland							0	0
Hobson Bay	74	1			75		75	1158.26
Onehunga	43				43		43	694.66
Māngere	59				59		59	1176.46
Lower Tāmaki River	59				59		59	1060.2
Upper Tāmaki River	420				420		420	9894.71
Cockle Bay	9				9		9	101.9
Puhinui	134				134		134	3958.56
Pahurehure Inlet	467			19	361	125	486	19232.27
Central Auckland CBD								
Beachlands Maraetai	39		19		58		58	1529.62
Clarks Beach	1		4	1	2	4	6	500.64
Waiuku	79				79		79	4044.38
Pukekohe	110		6	2	114	4	118	5857.24
Kumeū/Huapai/ Riverhead			2		2		2	458.67
Western Isthmus	160				160		160	2784.21
Totals	**2882**	**3**	**49**	**22**	**2614**	**342**	**2956**	**80856.81**

Appendix G. Ōrākei Sewer Main Incident Documentation

Watercare - Ōrākei Sewer Main Incident Summary

Coast & Catchment - Assessment on coastal Water quality and ecology

Streamlined Environmental - High-level review and ecological risk assessment

WSP - Failure Analysis Report

Ōrākei Sewer Main Incident Summary

Introduction

In late September 2023, the Ōrākei main sewer collapsed after a sinkhole developed at St Georges Bay Road. This sewer main serves most of the central and western parts of the old Auckland City area, from northern Mt Roskill and eastern Avondale to Parnell. Trade waste inputs include Auckland Hospital (but no morgue waste), laundromats, shipyards, three tertiary institutions (Unitec, AUT and University of Auckland), craft breweries, along with cafes and restaurants, but no major industry.

The collapse occurred on 27 September, and between then an 18 October, approximately 400-600 m^3/s raw sewage flowed into the Waitematā, split across two locations, one in Wynyard Quarter and one in Mechanics Bay. On 18 October, Watercare started operation of a series of bypass pumps, reducing the overflow volumes. By 26 October, this bypass, in conjunction with clearing sufficient debris to allow some flow through the main sewer, meant overflows from the main sewer ceased.

This document provides a summary of environmental works to date (December 2023) associated with this incident.

Key Events

- 27 September
  - Main collapses.
  - Watercare raises black flags at all Waitematā beaches and engages with Healthy Waters to increase frequency of beach sampling.
  - Overflow location confirmed at Mechanics Bay and Wynyard Quarter (initially thought overflows would be further back along system at Cox's Bay, Meola etc.)
- 28 September
  - DHI engaged to model potential extent of overflow.
  - Ngāti Whātua Ōrākei place rāhui over affected area - the entire inner Waitematā, west from Takaparawhau (Bastion Point) and Maungauika (North Head)
- 29 September
  - First Safeswim results come in, suggest affected area may be smaller than initially assumed.
- 2 October – 9 October
  - Drone surveys across affected areas to understand scale of visible effects.
  - Surveys by SeaCleaners report no physical debris in water.
  - No debris reported from beach surveys.
- 12 October
  - Daily (weekday) harbour sampling for wider range of water quality parameters commences.
- 16 October
  - Initial sediment samples collected.
- 18 October
  - Bypass pumps fully operational
- 25 October
  - Ngāti Whātua Ōrākei lift rāhui from all areas except active discharge points.

- 26 October
  - Blockage sufficiently cleared to enable continuous flows.
  - All overflows cease.
- 3-4 November
  - Targeted sediment and benthic ecology sampling and submarine video transects take place.

Water quality sampling reduced to twice weekly in November and to weekly in December. Sentinel oyster sampling was fortnightly. All sampling carried out as part of the emergency response will cease by 22 December.

Response

Water quality testing results to date indicate that the harbour's water quality was noticeably poorer during the overflow event but has returned to a more "normal" state since overflows ceased. Nonetheless, Watercare acknowledges that this incident has had a significant adverse effect on the harbour's ecological system. Furthermore Watercare also acknowledges that the Waitematā and its feeding tributaries have been receiving overflows for decades prior, and such (smaller) overflows, especially in wet weather, continue to occur. In response, Watercare is taking the following steps:

- Applying for an emergency discharge consent under Section 330 of the Resource Management Act
  - This application will include four technical environmental reports that cover:
    - Water quality, sediment quality, contaminant uptake in oysters, and ecological impacts (Coast & Catchment)
    - A review of emerging contaminants potentially in the overflows (Streamlined Environmental)
    - A Quantitative Microbial Risk Assessment (ESR)
    - Updated modelling data (DHI)
- With Healthy Waters, conducting inspections, and cleaning, if necessary, of the stormwater pipes that conveyed the raw sewage from the sewer main to the harbour.
- In conjunction with Revive our Gulf and Morphum Environmental, and with oversight from Ngāti Whātua Ōrākei:
  - Conducting a literature review of best-practice response to such environmental incidents
  - Developing a map of all overflows across the Opoututeka (Cox's Bay), Central Business District (CBD) and Te Waitaramoa (Hobson Bay) catchments that have occurred over the last five years.
  - Investigating how Watercare can develop a wastewater literacy programme to educate people about the effects wastewater can have on water, and to engage people to change behaviour and make a positive difference.
  - Commissioning an aerial survey of aquatic habitat in the affected area to determine areas of high value and areas that would best benefit from restoration projects.
  - Exploring partnership opportunities with other restoration projects including Te Ara Tukutuku and with Ports of Auckland.

WATERCARE SERVICES

ASSESSMENT OF WAITEMATĀ OVERFLOW ON COASTAL WATER QUALITY AND ECOLOGY

COAST & CATCHMENT
ENVIRONMENTAL CONSULTANTS

WATERCARE SERVICES

ASSESSMENT OF WAITEMATĀ OVERFLOW ON COASTAL WATER QUALITY AND ECOLOGY

Shane Kelly

Al Alder

Carina Sim-Smith

March 2024

Client report for Watercare Services Ltd

Report Number: 2024-02

Reviewer: Mark James (Aquatic Environmental Sciences)

Disclaimer

This report has been prepared based on the information described to Coast and Catchment Ltd by the client, and its extent is limited to the scope of work agreed between these two parties. No responsibility is accepted by Coast and Catchment Ltd or its directors, servants, agents, staff or employees for the accuracy of information provided by third parties, and/or for the use of any part of this report for purposes beyond those described in the scope of work. The information in this report is intended for use by the client and no responsibility is accepted for its use by other parties.

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2 EXECUTIVE SUMMARY

The collapse and blockage of the Orakei Main Sewer at 67 St George's Bay Road, Parnell on 26 September 2023, led to dry weather overflows that discharged very large volumes of untreated wastewater to the Waitematā Harbour through outfalls along the central Auckland waterfront. The dry weather overflows persisted for around one month, with diminishing flows following the initiation of temporary bypass pumping by Watercare Services (Watercare) on 7 October 2023, and ceased after the commissioning of a system for pumping wastewater over the blockage (over-pumping) was complete on 27 October 2023 (Utting 2024).

It quickly became clear following the event on 26 September 2023, that identifying and implementing effective remedial actions to repair the collapse would potentially take weeks to months to complete. Public health effects were mitigated through warnings issued through media releases, alerts on Auckland Council's Safeswim website, and notices on swimming beaches and around key outfalls. A rāhui was also imposed by Ngāti Whātua-o-Ōrākei.

All beaches within Waitematā Harbour were issued with precautionary 'black' (Do not swim (wastewater overflow)) water quality alerts as soon as the Safeswim team were made aware of the sewer blockage and wastewater discharges. Watercare also funded Safeswim to conduct additional water quality sampling for microbial indicators of human health risk, beginning on 27 September and continuing to 17 November 2023. During that period 47 sites in and around Waitematā Harbor were sampled between 15 and 31 times.

Water quality testing showed swimming beaches on the north and west sides of the Waitematā were not impacted by wastewater contamination from the Ōrākei main wastewater overflow. However, Safeswim kept black alerts in place throughout the Waitematā to respect the rāhui. The alerts were removed once water quality testing indicated that it was safe to swim at beaches outside of the rāhui area. Once the rāhui was lifted and water quality testing indicated it was safe to swim, black alerts at other beaches around the Waitematā were also lifted — with each beach being reviewed on a case-by-case basis[1].

Watercare also sought advice on the other effects of the discharges and commissioned a sampling and assessment programme to assess their environmental impacts. Initial sampling of general water quality was initially carried out by drone and shore-based sampling around the Brigham Street outfall (Discharge A) on 6 October 2023 (10 days after the collapse) (Figure 1). Regular sampling over a much broader area was initiated on 11 October and included the measurement of an extensive list of parameters aimed at determining the effects of (or on) fundamental indicators of water quality, nutrients, primary productivity, dissolved oxygen, suspended particulates and turbidity, human health risk, and chemical toxicity. Samples were obtained from 10 coastal stations arranged along an

[1] Occasional warnings associated with wet weather overflows are ongoing — consistent with the normal performance of the Orakei main sewer in wet weather.

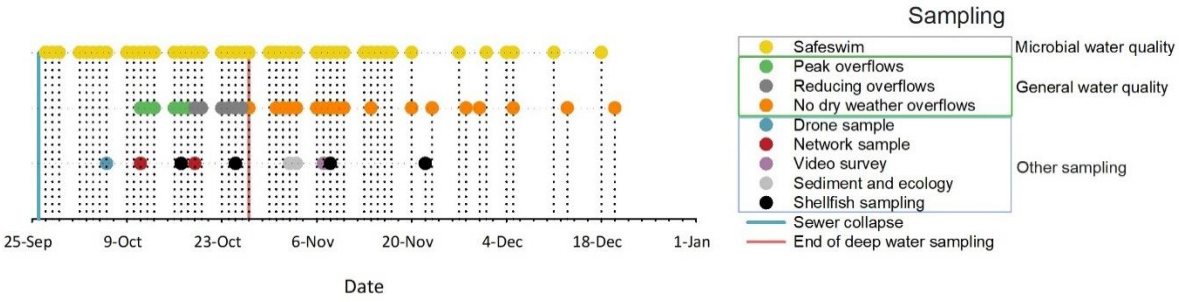
approximately 11.8 km line running from the Central Waitematā Harbour through the Waitematā Harbour entrance channel and out into Motukorea Channel, slightly east of Bean Rocks. Two outfall sites directly below the major discharge points (Brigham St outfall - Discharge A and Freyberg outfall - Discharge D) were also sampled on the same days as the coastal sites, and wastewater in the pipe network was sampled on two occasions. The water quality sampling was complemented by the analysis of microbiological indicator and heavy metal concentrations in caged oysters.

Samples from the coastal water quality and outfall sites were obtained 3–5 days per week between 11 October and 10 November 2023 (network modelling indicates that dry weather overflows had ceased by 27 October (Utting 2024)), with both surface and deep-water samples being obtained from the coastal sites up until 27 October, when deep water sampling was discontinued. The frequency of all water quality sampling was reduced after 10 November 2023, thereafter, surface samples were collected and deep-water readings of dissolved oxygen were made at 2–8-day intervals until 20 December 2023.

Seabed sediment sampling for benthic ecology and sediment quality occurred at 12 sites between Westhaven Marina and Ōkahu Bay on 2 & 3 November 2023 — six to seven days after network modelling and observations indicate that dry weather overflows had ceased. A seabed ecological video survey (21 transects) was carried out four days later on 7 November 2023, overlapping the sediment sampling sites and covering an area between the Harbour Bridge and Ōkahu Bay.

The EIANZ guideline for ranking the magnitude of marine effects was used in this report, with consideration also given to the temporary nature of the impacts.

Figure 1: Sampling timeline.



Overall, the key effects of the discharges are summarised below:

Water Quality:

1. Effects on microbial indicators of human health risk were assessed using enterococci concentrations:
    a. Extreme spikes of up to 60,000 MPN/100mL in enterococci concentrations occurred at the Freemans coastal monitoring site (the coastal site closest to Brigham St outfall (Discharge A)), with much lower spikes at the other coastal monitoring sites.
    b. Very large spikes of up to 17,000 MPN/100mL continued for some time at the Freemans coastal monitoring site after network modelling and observations

indicate dry weather overflows had ceased, but enterococci concentrations were below detection limits for the last five sampling rounds between 28 November and 20 December 2023.

c. Concentrations at the other monitoring sites never exceeded guideline values after network modelling and observations indicate dry weather overflows had ceased.

Overall, the discharges had a large, but localised and temporary impact on microbial indicator concentrations. Due to the temporary and localised nature of that impact, the overall effect on microbial indicators is considered to have been Low.

2. The discharges had little effect on dissolved oxygen concentrations at the coastal monitoring sites with:

   a. Initially high concentrations that declined during the peak discharge period.

   b. An ongoing decline in concentrations through to the end of the reducing-discharges period.

   c. Increasing concentrations after discharges had nominally ceased, followed by a decline and stabilisation around, or slightly below, median concentrations from Auckland Council's Henderson water quality monitoring site in the central Waitematā Harbour.

   In addition:

   a. Deep-water concentrations of dissolved oxygen were significantly higher than surface concentrations while the overflows were occurring.

   b. Occasional, short term, dips occurred at the Freemans coastal monitoring site.

   Overall, impacts on dissolved oxygen were temporary and not considered to be sufficient to cause adverse ecological effects of concern. Effects on dissolved oxygen are therefore considered to have been Negligible.

3. The discharges caused a temporary, moderate increase in total suspended solids concentrations (lasting around six weeks), with the areas most affected located adjacent to, and west of, the Port of Auckland. The increase in total suspended solids concentrations is considered to have been a minor and temporary shift away from baseline conditions, that will not lead to lasting changes. As such the overall effect is considered to have been Low.

4. Effects on coastal nutrients and phytoplankton were greatest at coastal sites around Brigham St outfall (Discharge A), with:

   a. Extreme, short-term spikes in nutrient concentrations at the Freemans site.

   b. Smaller spikes in nutrient concentrations at other sites.

   c. Short-lived, low to moderate strength phytoplankton blooms.

   d. Median nutrient concentrations remaining below, or returning to concentrations below those reported from surrounding Auckland Council monitoring sites once dry weather discharges had ceased.

   Extreme spikes in nutrient concentrations occurred at the Freemans site during the overflow. However, due to the temporary and localised nature of that impact, and

because there was little discernible effect on phytoplankton, the overall effects of nutrients are considered to have been Low.

5. Of the nine heavy metals monitored, total recoverable copper and zinc concentrations were the only ones to exceed default guideline values for the protection of 95% of species. The relative contributions of the wastewater discharges to those exceedances cannot be determined, but those water quality effects would have rapidly dissipated once the discharges ceased.

Shellfish:

6. Concentrations of *Escherichia coli* were compared to median and 90th percentile values specified in the Ministry of Primary Industries Regulated Control Scheme's for the farming of bivalve molluscan shellfish for human consumption.
7. Extremely high concentrations of *E. coli* and faecal coliforms of >160,000 MPN/100 g were obtained from caged Pacific oysters beside the Brigham St outfall (Discharge A) at the beginning and end of sampling.
8. *Escherichia coli* concentrations at the Harbour Bridge and Mechanics Bay sites declined from initial peaks on 17 October 2023 that were well above the control scheme values, and subsequently fluctuated around the median value. Concentrations at the Ōkahu Wharf site fluctuated from below the median to between the median and the 90th percentile value.
9. In general, the consumption of shellfish gathered from urban areas poses an elevated human health risk. The wastewater discharges significantly exacerbated that risk near the outfalls where discharges occurred, but the effects caused by the discharges were localised. When sampling ended, the consumption of shellfish around the Brigham St outfall (Discharge A) continued to pose a significant health risk, due to frequent, ongoing wet weather overflows related to the normal network performance. This highlights the fact that that shellfish gathered from that location always pose a significant health. The effects of the discharges therefore represented an increase in a high pre-existing risk. Based on that the overall effect, is assessed to have been Low to Moderate.

Sediment quality:

10. Sediment characteristics varied considerably among sites. This is consistent with:
    a. The port basins and surrounding bays being low energy, depositional environments, subject to the runoff of urban stormwater and wastewater contaminants, and inputs from marine activities.
    b. Channel areas being high energy environments where fine particulate material and associated contaminants are unlikely to accumulate.
11. Overall, there appears to be little evidence that the discharges have markedly altered the characteristics of sediments in the area. The effects of the discharges on sediment quality are therefore considered to have been negligible.

Ecology:

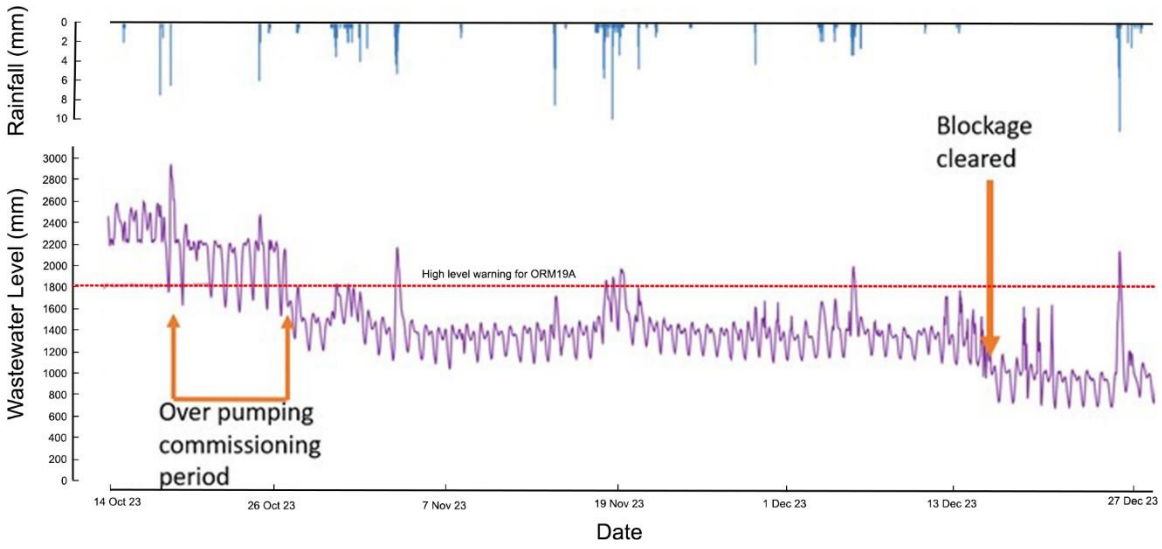
12. Areas within, and surrounding, the Port continued to sustain a variety of marine communities, whose characteristics are consistent with the nature of the sediments present and site energetics.
13. No obvious signs of recent mortalities of benthic epifauna or macroalgae were observed at any of the sites surveyed within, immediately adjacent to, or up/down current of the outfalls discharging the dry-weather overflows.
14. No evidence of accumulated gross solids, bacterial mats, or algal mats was observed.
15. We are unaware of any reports of unusual fish mortality associated with the discharges, and fish were commonly observed in video footage obtained throughout the survey area.
16. Overall, there is little evidence of the discharges having a marked effect on benthic communities or fish. The ecological effects on benthic communities are therefore considered to have been Negligible.

3 BACKGROUND

The collapse and blockage of the Orakei Main Sewer at 67 St George's Bay Road, Parnell on 26 September 2023, led to dry weather overflows that discharged very large volumes of untreated wastewater to the Waitematā Harbour through outfalls along the central Auckland waterfront (Figure 3).

The dry weather overflows persisted for around one month, with diminishing flows following the initiation of temporary bypass pumping by Watercare Services (Watercare) on 7 October 2023, and ceased after the commissioning of a system for pumping wastewater over the blockage (over-pumping) was complete on 27 October 2023 (Utting 2024).

Figure 2: Measured wastewater levels in manhole ORM018A, and rainfall depths between 14 October and 30 December 2023. Levels above the high level warning line lead to overflows and discharges from coastal outfalls (figure from Utting 2024).



It quickly became clear following the event on 26 September 2023, that identifying and implementing effective remedial actions to repair the collapse would potentially take weeks to months to complete. Public health effects were mitigated through warnings issued through media releases, alerts on Auckland Council's Safeswim website, and notices on swimming beaches and around key outfalls. A rāhui was also imposed by Ngāti Whātua-o-Ōrākei.

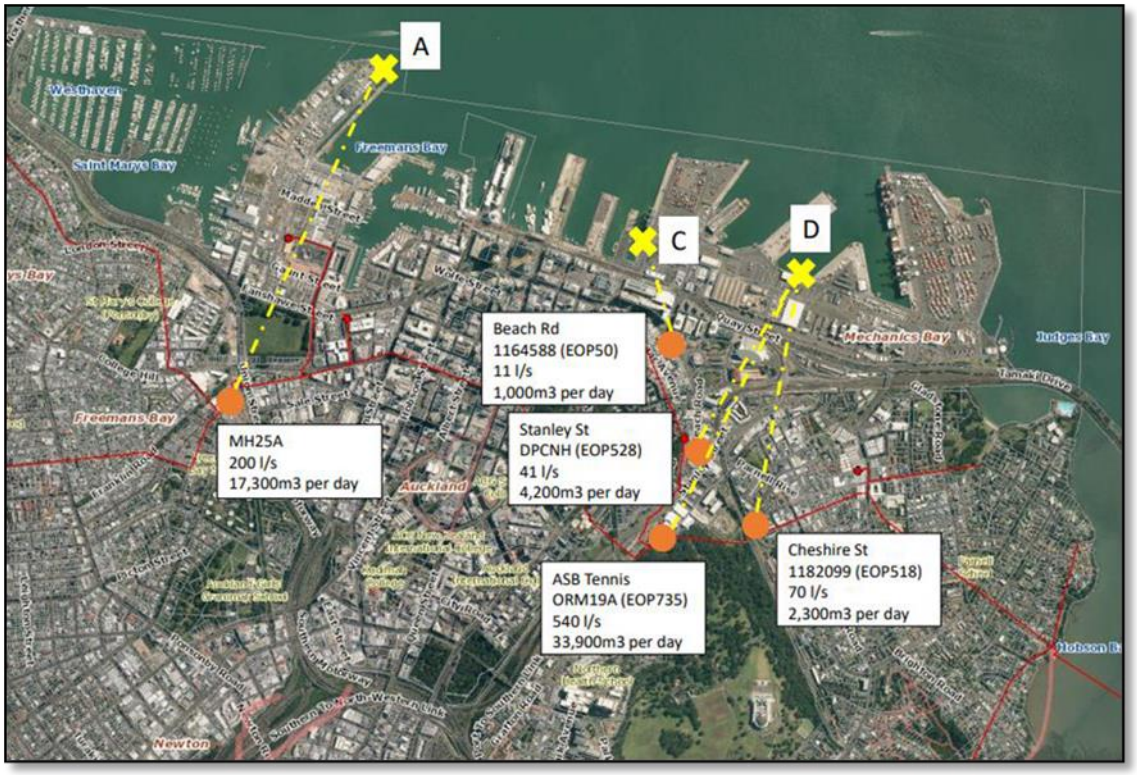
All beaches within Waitematā Harbour were issued with precautionary 'black' (Do not swim (wastewater overflow)) water quality alerts as soon as the Safeswim team were made aware of the sewer blockage and wastewater discharges. Watercare also funded Safeswim to conduct additional water quality sampling for microbial indicators of human health risk, beginning on 27 September and continuing to 17 November 2023. During that period 47 sites in and around Waitematā Harbor were sampled between 15 and 31 times.

Water quality testing showed swimming beaches on the north and west sides of the Waitematā were not impacted by wastewater contamination from the Ōrākei main wastewater overflow. However, Safeswim kept black alerts in place throughout the Waitematā to respect the rāhui. The alerts were removed once water quality testing indicated that it was safe to swim at beaches outside of the rāhui area. Once the rāhui was

lifted and water quality testing indicated it was safe to swim, black alerts at other beaches around the Waitematā were also lifted — with each beach being reviewed on a case-by-case basis[2].

Watercare also initiated the monitoring of discharge effects on general harbour water quality, shellfish contamination, sediment quality and benthic communities in the harbour. Coast and Catchment were commissioned to provide technical advice on, and assist with, the harbour monitoring and assessments. This report presents the results and analysis of the data obtained on water and sediment quality, shellfish contamination (using oysters as an indicator species), and benthic ecology. It supplements a related report on contaminants of emerging concern (Stewart 2024), with supplementary information regarding the duration and volume of overflows provided by Watercare Services.

Figure 3: Engineered overflow points and coastal outfalls where dry-weather discharges occurred. Estimates of peak flow rates and volumes are provided.



3.1 ENVIRONMENTAL SETTING

The discharges occurred from outfalls spread along the Port of Auckland Limited's (POAL) wharves and seawalls (Figure 3). The area is highly modified, with considerable, and ongoing, change occurring since the construction of Wynyard Pier in 1851 (Golder Associates 2018b). The present shoreline now consists of a major port with a series of wharves, port basins and berthing facilities, with navigable depths being maintained through dredging. The area also contains the southern hemisphere's largest recreational marina (Westhaven), and

[2] Occasional warnings associated with wet weather overflows are ongoing — consistent with the normal performance of the Orakei main sewer in wet weather.

is a base for marine supply and support industries. In addition to that development, the waterfront is also subject to stormwater runoff from the Port and an intensively developed urban catchment, along with frequent discharges wet-weather wastewater overflows (Golder Associates 2018b, Kelly & Sim-Smith 2018, KEL 2020, Utting 2024) and antifoulant leaching (Gadd & Cameron 2012). Large parts of the Herne Bay and Freemans Bay catchments have a combined pipe network, which conveys both stormwater and wastewater flows in separate channels within a single pipe. Wastewater overflows from that network, resulting in discharges to coastal outfalls (such as the Brigham Street outfall at the end of Daldy Wharf), can occur during all more than minor rainfall events (Utting 2024).

The channel of the harbour entrance is subject to strong tidal currents of around 2 knots[3]. However, wharves, seawalls and other structures along the southern shore provide shelter from wind, waves, and tidal currents, producing low energy basins that trap and retain fine sediments and contaminants (Golder Associates 2018a). Past sediment mapping shows that sediment characteristics vary through the entrance channel from sandy-mud in wharf and marina basins along the southern shore, changing to gravelly-sand along the channel margins, and gravel with >50% shell (calcium carbonate) in central channel areas (Gregory et al. 1994). Those general patterns are likely to persist but dredging since 1994 may have resulted in some localised changes.

A 2017 survey of the benthic community in Wynyard Basin and the outer Viaduct harbour identified 33 taxa from samples at 12 stations. The deposit feeding community was reported to be similar to that previously found around Princes, Jellicoe and Fergusson wharves, and from surveys conducted 30–40 years earlier. Overall, the community was considered to reflect the soft and disturbed nature of the seabed sediments (Golder Associates 2018a). This is consistent with the findings of a 2003 biosecurity baseline survey of the port, involving pile scraping, sampling with benthic sleds and grabs, gravity coring, and baited fish, crab, starfish and shrimp traps, which identified relatively few species compared to other ports and marinas surveyed over the summers of 2001–02 and 2002–03 (Inglis et al. 2006). Overall, a total of 173 taxa were identified, with 114 native species, 13 non-indigenous species, 24 cryptogenic species (those whose geographic origins are uncertain) and 22 species indeterminata (taxa for which there is insufficient taxonomic or systematic information available to allow identification to species level).

However, ecological surveys carried out in and around the port also show that variation in hydrodynamics and the characteristics of the seafloor have a strong influence on benthic communities in the area. For instance, the distributions of subtidal soft-bottom species associations defined by Hayward et al. (1997) strongly align with features shown in the sediment map of Gregory et al. (1994), with more diverse communities with higher ecological values found in high current areas. More recently, a 2018 video survey of the Wynyard-Halsey Basin found that the seabed within the basin consisted of a bare muddy substrate, with a high density of burrows. This transitioned to shelly and/or reef substrate north of the basin, containing a relative diverse assemblage of sessile invertebrates including sponges, horse mussels, and patches of kelp immediately beyond wharf structures (Kelly & Sim-Smith 2018).

[3] Marine Chart NZ 5322

Overall, available information indicates that the environment that was present prior to the discharges was already highly modified, subject to contaminants from a variety of sources, and contained a mix of degraded benthic habitats, with ecological values increasing out into the Waitematā entrance channel.

4 ASSESSMENT OF GENERAL WATER AND SEDIMENT QUALITY, SHELLFISH AND ECOLOGICAL EFFECTS

4.1 METHODS

4.1.1 OVERVIEW AND TIMING

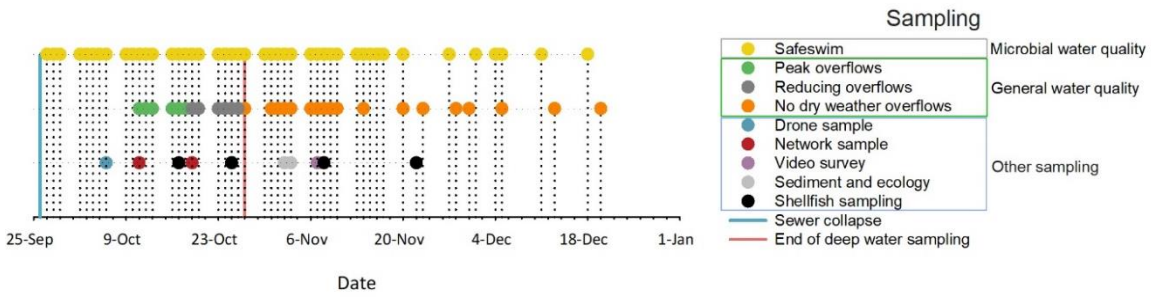
Initial water quality sampling was carried out by drone and shore-based sampling around the Brigham Street (Discharge A) outfall on 6 October—10 days after the emergency overflows started (Figure 4). Regular sampling over a much broader area was initiated five days later and included the measurement of an extensive list of parameters aimed at determining the effects of (or on) fundamental indicators of water quality, nutrients, primary productivity, dissolved oxygen, suspended particulates and turbidity, human health risk, and chemical toxicity. Samples were obtained from 10 coastal stations arranged along an approximately 11.8 km line running from the Central Waitematā Harbour through the Waitematā Harbour entrance channel and out into Motukorea Channel, slightly east of Bean Rocks. Two outfall sites directly below the major outlets (Brigham St (Discharge A) and Freyberg (Discharge D)) were also sampled on the same days as the coastal sites to obtain information on discharge quality. Furthermore, wastewater in the pipe network was sampled on two occasions. The water quality sampling was complemented by the analysis of microbiological indicator and heavy metal concentrations in caged oysters.

Samples from the coastal water quality and outfall sites were obtained 3–5 days per week between 11 October and 10 November (by which time network modelling and observations indicate dry weather overflows had ceased (Utting 2024)). Over that period surface and deep-water samples were obtained from the coastal sites. Thereafter, the frequency of sampling was reduced, with surface samples being collected and deep-water readings of dissolved oxygen being made at 2–8-day intervals until 20 December.

Seabed sediment sampling for benthic ecology and sediment quality occurred at 12 sites between Westhaven Marina and Ōkahu Bay six to seven days after network modelling and observations indicate dry weather overflows had ceased. A seabed ecological video survey (21 transects) was carried out four days later, overlapping the sediment sampling sites and covering an area between the Harbour Bridge and Ōkahu Bay.

Further details of the sampling methods and data analyses are provided below.

Figure 4: Sampling timeline.



4.1.2 WASTEWATER

Wastewater grab samples were obtained from five sampling points along the pipe network and where the discharge entered the coast immediately below the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls. Samples from sampling points within the pipe network were collected on the 11 and 19 of October 2023, while samples immediately below the outfalls were obtained whenever coastal water sampling occurred (see Section 4.1.3). On each occasion, single wastewater samples were obtained from each sampling point and immediately transferred into appropriate sample bottles, stored in cooler bins, and delivered to Watercare Laboratories on the day of sampling.

Samples obtained from within the network were analysed for the wastewater parameters listed in Table 1, although polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides, semi-volatile organic compounds, and phthalates were only measured on the 11 October, and cobalt was only measured on the 19 October.

Measured concentrations of PAHs, organochlorine pesticides, and semi-volatile organic compounds were all below detection limits. The results for phthalates, pharmaceuticals and personal care products are assessed in a separate report (Stewart 2024). Consequently, organic contaminants are not considered further in this report.

A selection of nutrient, metal and microbial indicator concentrations obtained from network samples were plotted using bar plots with a $\log_{10}$ scale (note that a one log change is equivalent to a 10-fold change on a linear scale), and compared to results obtained from samples taken directly below Brigham St (Discharge A) and Freyberg (Discharge D) outfalls, and from the coastal sites nearest to those outfalls (Freemans and Mechanics, respectively).

Table 1: Parameters measured in network wastewater samples.

Parameter Group	Parameter
Fundamental Parameters	Conductivity (mS/m)
Fundamental Parameters	pH (@ 20°C)
Fundamental Parameters	Salinity (ppt)
Fundamental Parameters	Total Hardness (as $CaCO_3$) (mg/l)
Fundamental Parameters	Dissolved Total Hardness (as $CaCO_3$) (mg/l)
Organic Matter, Suspended Solids and Oxygen Demand	CBOD (mg/l)
Organic Matter, Suspended Solids and Oxygen Demand	Dissolved Organic Carbon
Organic Matter, Suspended Solids and Oxygen Demand	Total Suspended Solids (mg/l)
Organic Matter, Suspended Solids and Oxygen Demand	Volatile Solids (mg/l)
Nutrients	Ammoniacal-N (mg/l)
Nutrients	Dissolved Reactive Phosphorus (mg/l)
Nutrients	Nitrate-N (mg/l)
Nutrients	Nitrite-N (mg/l)
Nutrients	Total Nitrogen (mg/l)
Nutrients	Total Oxidised Nitrogen (mg/l)
Nutrients	Total Phosphorus (mg/l)
Microbial	Enterococci (MPN/100 ml)
Microbial	*Escherichia coli* (cfu/100 ml)
Microbial	Faecal coliforms (cfu/100 ml)

Parameter Group	Parameter
Metals - Total Recoverable	Total Arsenic (mg/l)
Metals - Total Recoverable	Total Cadmium (mg/l)
Metals - Total Recoverable	Total Calcium (mg/l)
Metals - Total Recoverable	Total Chromium (mg/l)
Metals - Total Recoverable	Total Cobalt (mg/l)
Metals - Total Recoverable	Total Copper (mg/l)
Metals - Total Recoverable	Total Lead (mg/l)
Metals - Total Recoverable	Total Magnesium (mg/l)
Metals - Total Recoverable	Total Mercury (mg/l)
Metals - Total Recoverable	Total Nickel (mg/l)
Metals - Total Recoverable	Total Zinc (mg/l)
Metals - Dissolved	Dissolved Arsenic (mg/l)
Metals - Dissolved	Dissolved Cadmium (mg/l)
Metals - Dissolved	Dissolved Calcium (mg/l)
Metals - Dissolved	Dissolved Chromium (mg/l)
Metals - Dissolved	Dissolved Cobalt (mg/l)
Metals - Dissolved	Dissolved Copper (mg/l)
Metals - Dissolved	Dissolved Lead (mg/l)
Metals - Dissolved	Dissolved Magnesium (mg/l)
Metals - Dissolved	Dissolved Mercury (mg/l)
Metals - Dissolved	Dissolved Nickel (mg/l)
Metals - Dissolved	Dissolved Zinc (mg/l)
Organic contaminants	Polycyclic aromatic hydrocarbons (PAHs)
Organic contaminants	Organochlorine pesticides
Organic contaminants	Semi-volatile organic compounds
Organic contaminants	Phthalates
Organic contaminants	Pharmaceuticals and personal care products

Figure 5: Wastewater network sampling points.

4.1.3 COASTAL WATER QUALITY

Monitoring of general coastal water quality began on the 6 October 2023[4], with initial coastal water quality samples being collected by drone, approximately 30 m and 75 m offshore from the Brigham Street (Discharge A) outfall. Regular sampling over a much broader area was initiated five days later, and included the measurement of an extensive list of parameters designed to assess the potential effects of the discharges on the coastal water quality (Table 2 and Table 3). Of particular concern were the effects of (or on) nutrients, primary productivity, dissolved oxygen, suspended particulates and turbidity, microbial contamination, and chemical toxicity.

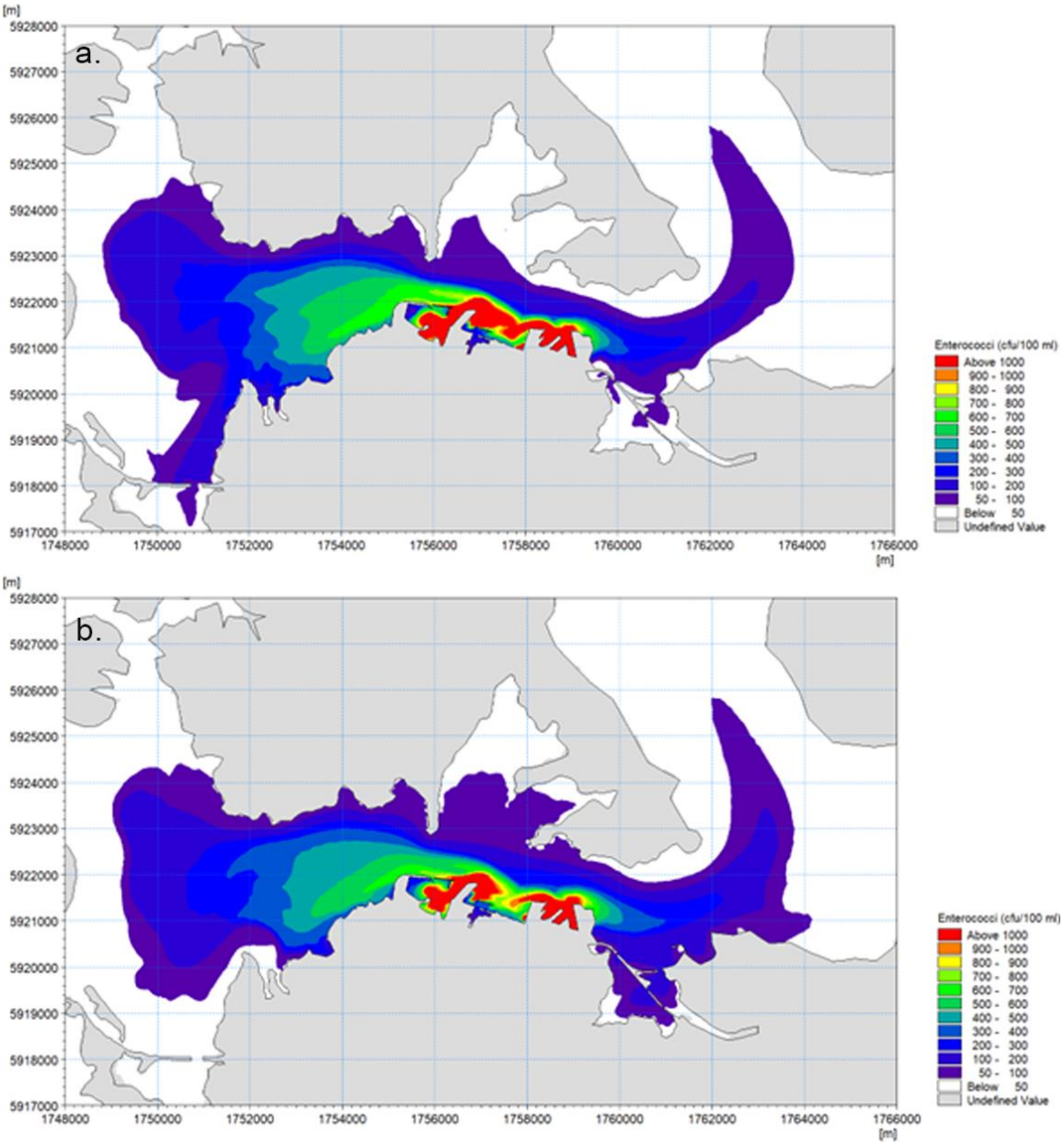
The results provided a general picture of the range of conditions experienced at specific sites arranged along the entrance channel. Sampling was carried out during daylight hours (generally the morning/early afternoon period), rather than at fixed times relative to tidal stage. This was done because of the high frequency and potentially long duration of sampling, and because of difficulties around the use of charter vessels, which meant that sampling at fixed times relative to the tide would have been problematic. Fixed sites were

[4] Note that Safeswim sampling of coastal water quality for indicators of human health risk started on 27 September — see Section 3 for details.

preferred because mixing and variation in weather conditions meant that discrete plumes were not always obvious when the discharges were occurring, and because plumes would not be present once the discharges ceased.

The extent of the survey area and locations of fixed monitoring sites were informed by initial modelling predictions of enterococci dispersal from the primary outfalls (see Figure 6). Samples were obtained from 10 coastal stations arranged along an approximately 11.8 km line running from the Central Waitematā Harbour, through the Waitematā Harbour entrance channel, and out into Motukorea Channel slightly east of Bean Rocks (Figure 7). Two outfall sites directly below the Brigham Street (Discharge A) and Freyberg (Discharge D) outlets were also sampled to obtain information on discharge quality (Figure 7). Samples were obtained 3–5 days per week between the 11 October and 10 November (by which time, network modelling and observations indicate dry weather overflows had ceased (Utting 2024)). The frequency of sampling was then reduced, with samples being collected at 2–8 day intervals until the 20 December.

Figure 6. Predicted dispersal of enterococci from all outfalls under maximum wastewater concentrations and: a. N-NE wind, and b. S-SW winds (adapted from Tuckey 2023).



Initially, oxygen depletion related to the sinking and decomposition of organic matter was a particular concern. Therefore, sampling originally included both surface and deep-water samples from the 10 sites. Surface samples were obtained by dipping a 2 L container into the water, while deep-water samples were obtained by lowering a Van Dorn sampler close to the seabed. Samplers avoided contact with the seabed to prevent sample contamination from the suspension of seabed material.

Water quality sampling was conducted by experienced field staff from Watercare Laboratory Services. Channel sites were sampled by boat, while samples from the discharge plume directly below the Brigham Street (Discharge A) and Freyberg (Discharge D) outfalls, were collected by boat or by lowering a sampling container into the water from the shore. On each occasion, single water samples were obtained from each site and sampling depth, and immediately transferred into appropriate sample bottles, stored in cooler bins, and delivered

to Watercare Laboratories on the day of sampling. Field measurements of salinity, conductivity, dissolved oxygen saturation and concentration, temperature and pH were also recorded.

Samples were analysed for wastewater indicators of:

- nutrients, primary productivity (using chlorophyll *a* as a proxy indicator) and organic enrichment;
- particulates and water turbidity;
- indicators of microbial health risk; and,
- dissolved and total recoverable concentrations of heavy metals[5] (Table 3).

Note that, the parameters analysed varied among sites and times due to the large number of samples being collected, the extensive range of parameters being assessed, and the capacity of the analytical laboratory to carry out the exceptionally large volume of testing sought. Capacity issues and little evidence of oxygen depletion also led to the collection and analysis of deep-water samples being stopped once dry weather overflows had ceased (as indicated by network modelling and observations (Utting 2024)). However, field readings of dissolved oxygen, pH, salinity, and temperature continued until 20 December.

4.1.3.1 DATA ANALYSIS

The lack of baseline water quality data from the core area affected by the overflows meant that direct before and after impact comparisons could not be made. Alternative approaches were therefore taken, that involved:

- Identifying potential direct and indirect water quality effects and indicators of effect (Table 2).
- Examining spatial and temporal trends in indicators of those effects, with the expectation that:
    - effect sizes would be greatest during the period of highest dry weather overflow volumes (i.e., the Peak Discharge period 26 September to 18 October[6]);
    - effect sizes would be greatest at sites closest to the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls and decline with distance from the outfalls;
    - effect sizes would diminish once over-pumping began (i.e., during the Reducing–Discharge period (19 October to 27 October),
    - spatial variation and indicator values would return to ambient levels (which includes the ongoing effects of wet-weather overflows) once the dry weather discharges had ceased pipes cleared and coastal flushing occurred (No Overflows period after 27 October).

[5] Other organic and emerging contaminants were also assessed but are not reported here.

[6] Note that over-pumping began on 17 October.

- Comparing the values of key water quality indicators with median values obtained from Auckland Council's near-monthly sampling of nearby water quality monitoring sites (Helensville in the Central Waitematā and Browns Bay along the open east coast) between July 2017 and June 2022 (see Kelly & Kamke 2023).
- Using available Ministry for the Environment and Ministry of Health (2003) and ANZG (2018) guideline values to assess the potential for human health and environmental toxicity effects.

When it was considered appropriate, additional analyses were also carried out to check for differences among surface and deep-water samples.

Differences among sampling sites, periods and water depths were assessed by plotting the monitoring data, and through statistical analyses using general linear modelling with Type III sum of squares. Fixed factor ANOVAs were conducted for combinations of site, discharge periods (Peak Discharge, Reducing Discharges, and No Discharges), and sampling depths (Surface, Deep). Assumptions of normality and equal variance were checked using normal probability and residual plots. In cases where these assumptions were not met, one or more of the following approaches were used:

- data for the Freemans site, which displayed extreme variation in results for some parameters, were removed from the analysis;
- outliers were omitted from an analysis (with a maximum of three omissions);
- data were $\log_{10}$ transformed.

In some cases, (e.g., where the dataset for a parameter contained a combination of extreme values and a high proportion of values below detection limits) the assumptions could not be met, even after applying the above approaches (e.g., for ammoniacal-N). In that situation, statistical analyses were not carried out (or considered necessary), as key differences between sites and periods were readily apparent in the plotted data.

Figure 7: Monitoring sites for coastal water quality and discharge quality sampled between 11 October and 20 December.

Table 2: Summary of the potential water quality effects of wastewater and key indicators.

Water quality effect	Key water quality indicators
Localised changes in water pH and salinity	pH, salinity, conductivity
Promotion of microalgal and nuisance macroalgae blooms by increasing the availability of nutrients for primary production	Total ammoniacal-nitrogen (NH_3-NH_4-N), nitrate nitrogen (NO_3-N), nitrite nitrogen (NO_2-N), total nitrogen, dissolved reactive phosphorus, total phosphorus, and chlorophyll *a*
Decreasing oxygen levels in the water column by increasing respiration by phytoplankton (at night) and through the decay of organic matter	Dissolved oxygen concentration and saturation, indicators of oxygen demanding substances (Biological Oxygen Demand (BOD), Carbonaceous Biochemical Oxygen Demand (CBOD))
Reducing water clarity by promoting microalgae productivity, increasing the concentrations of suspended solids, or the (unlikely) discharge of strongly coloured substances	Turbidity and total suspended solids
Increasing the concentrations of microbial contaminants that pose a human health risk	Enterococci, faecal coliforms, and *Escherichia coli*
Toxicity	Heavy metals, ammonia, organic compounds (including legacy and emerging contaminants of concern)

Table 3: Key parameters measured during water quality monitoring (excludes legacy and general organic and emerging contaminants).

General category of indicator	Parameter
Nutrients and productivity	Chlorophyll *a* (mg/l)
Nutrients and productivity	Ammoniacal-N (mg/l)
Nutrients and productivity	Nitrate-N (mg/l)
Nutrients and productivity	Nitrite-N (mg/l)
Nutrients and productivity	Total Oxidised Nitrogen (mg/l)
Nutrients and productivity	Total Nitrogen (mg/l)
Nutrients and productivity	Dissolved Reactive Phosphorus (mg/l)
Nutrients and productivity	Total Phosphorus (mg/l)
Particulates and water clarity	Total Suspended Solids (mg/l)
Particulates and water clarity	Turbidity by Nephelometry
Particulates and water clarity	Volatile Suspended Solids (mg/l)
Fundamental parameters	Dissolved Oxygen (%)
Fundamental parameters	Dissolved Oxygen (mg/l)
Fundamental parameters	CBOD (mg/l) (few measurements taken because of capacity issues)
Fundamental parameters	pH
Fundamental parameters	Salinity (ppt)
Fundamental parameters	Conductivity (mS/m)
Fundamental parameters	Temperature (°C)
Microbial indicators	Enterococci (MPN/100 ml)
Microbial indicators	*Escherichia coli* (MPN/100 ml)

General category of indicator	Parameter
Microbial indicators	Faecal coliforms (cfu/100 ml)
Heavy metals	Dissolved Arsenic (mg/l)
Heavy metals	Dissolved Cadmium (mg/l)
Heavy metals	Dissolved Chromium (mg/l)
Heavy metals	Dissolved Cobalt (mg/l)
Heavy metals	Dissolved Copper (mg/l)
Heavy metals	Dissolved Lead (mg/l)
Heavy metals	Dissolved Mercury (mg/l)
Heavy metals	Dissolved Nickel (mg/l)
Heavy metals	Dissolved Zinc (mg/l)
Heavy metals	Total Recoverable Arsenic (mg/l)
Heavy metals	Total Recoverable Cadmium (mg/l)
Heavy metals	Total Recoverable Chromium (mg/l)
Heavy metals	Total Recoverable Cobalt (mg/l)
Heavy metals	Total Recoverable Copper (mg/l)
Heavy metals	Total Recoverable Lead (mg/l)
Heavy metals	Total Recoverable Mercury (mg/l)
Heavy metals	Total Recoverable Nickel (mg/l)
Heavy metals	Total Recoverable Zinc (mg/l)

Table 4. Number of samples obtained from water quality monitoring sites during the three discharge periods used in data analyses (Peak Overflows, Reducing Overflows, and No Overflows (dry weather)).

Date	Period	Site												Sample depth	
		Outer Harbour	Devonport	Ōkahu	Judges	Discharge D	Mechanics	Bledisloe	Princes	Freemans	Brigham St (Discharge A)	Westhaven	Inner Waitematā	Surface	Deep
11–18 Oct	Peak Overflows						6							✓	✓
19–26 Oct	Reducing Overflows						6							✓	✓
27 Oct–20 Dec	No Overflows						18							✓	Field measurements only

Table 5: ANZG (2018) marine water quality guideline values for the ecological toxicity of key metals in mg/l.

Toxicant name	Level of protection		
	95%	90%	80%
Cadmium	0.0055	0.0140	0.0360
Chromium (CrIII)	0.0274	0.0486	0.0906
Chromium (CrVI)	0.0044	0.0200	0.0850
Cobalt	0.001	0.0140	0.1500
Copper	0.0013	0.0030	0.0080
Lead	0.0044	0.0066	0.0120
Mercury (inorganic)	0.0004	0.0007	0.0014
Nickel	0.0700	0.2000	0.5600
Zinc	0.0150	0.0230	0.0430
Ammonia	0.9100	1.2000	1.7000

4.1.4 SEDIMENT QUALITY AND MACROFAUNA

Sampling was conducted from Coast and Catchment's survey vessel, Mārama on the 2 & 3 November 2023. Sediment and ecological grab samples were obtained from 12 sites

(Figure 8) using a 6 L van Veen grab. The sites were grouped into the following general areas:

- Eastern Bays: three sites in bays east of the port area—Ōkahu, Ōrākei, and Judges;
- Port Basins: four sites in port basins—Westhaven, Jellicoe, Cloud, and Fergusson;
- Port Channel: three sites in channel areas on the southern side of the harbour entrance—Hamer, Halsey, and Bledisloe;
- Northern Channel—two sites in northern channel areas that were less likely to be adversely affected by the discharges.

At each site, samples were obtained from five random stations. The coordinates for each station were generated in QGIS by placing a 50 m buffer around the centre point of each site, and randomly allocating five sampling stations, separated by a minimum of 20 m, within that area. Macrofaunal samples were collected from all stations (60 samples in total), with sediment from one side of the grab being sieved through a 0.5 mm sieve and preserved in 100% isopropanol before being sent to an experienced benthic taxonomist for taxa identification and enumeration. Samples for the analysis of grainsize, total organic carbon, total organic matter, heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni, Zn), total nitrogen, and total phosphorus were obtained from the top 5 cm of sediments in grab samples taken from the 1st, 3rd, and 5th sampling stations. Sediment samples were stored on ice and refrigerated, before being sent to Watercare Laboratory Services (chemistry) or Hill Laboratories (sediment texture) for analysis, within two days of sampling.

4.1.4.1 DATA ANALYSIS

4.1.4.1.1 SEDIMENT

Sediment grain size data were plotted using stacked bar plots showing mean percentages of each sediment fraction at each site. In addition, bar plots of the mean percentages (± 95% C.I.) of mud, total organic carbon, and volatile solids were produced. Site concentrations of total recoverable metals (including phosphorus) and total nitrogen were also plotted using bar plots, and key patterns were interpreted visually. Heavy metals results were also compared to the Effects Level guidelines of MacDonald et al. (1996)_ENREF_13 which have been adapted for use by Auckland Council, and ANZG (2018) sediment quality guideline values (see Table 6).

Table 6: Commonly used sediment quality guidelines referred to in this report.

	Guidelines			
		MacDonald	ANZG (2018)	
Metal/Metalloid	TEL	PEL	DGV	DGV-High
Arsenic	7.2	41.6	20	70
Cadmium	0.68	1.2	1.5	10
Chromium	52	160	80	370
Copper	18.7	108	65	270
Lead	30.2	112	50	220
Nickel	15.9	43	21	52
Zinc	124	271	200	410

4.1.4.1.2 ECOLOGY

Ecological data were analysed using indicators of diversity, abundance, taxa evenness and diversity that included:

- number of taxa;
- total counts of individuals;
- Pielou's evenness; and,
- Shannon's diversity.

Shannon diversity (or Shannon entropy – denoted H') takes into account both the number of species (or taxa) and how evenly individuals are spread among those species (or taxa). It is a measure of the uncertainty associated with correctly predicting which species a randomly selected specimen belongs to. That uncertainty decreases as the number of taxa and evenness decreases. If nearly all individuals belong to a single species, Shannon diversity approaches zero (it equals zero if there is only one species). Conversely, Shannon diversity increases as the number of taxa and evenness increases, with the maximum value (H'max) achieved when each taxa has the same number of individuals (H'max equals the log of the number of species). Shannon diversity values are sensitive to sampling effort and the logarithm base used. Therefore, results should only be compared among studies with similar sampling designs and for results using the same logarithm base (Clarke & Warwick 2001; Pla et al. 2012).

Pielou's evenness (J') is a measure of how even (i.e., similar) the abundances of individual species are at a site. Low index values indicate that the site is dominated by a single, or a few, species which occur in high abundance(s). The remaining species occur in relatively low abundances. In contrast, high index values indicate that the abundances of all species are similar. Pielou's evenness is derived from the Shannon diversity value of a sample divided by the maximum possible Shannon diversity value of that sample (i.e., J' = H'/H'max) (Clarke & Warwick 2001; Pla et al. 2012).

Data were plotted and one-way ANOVAs were used to test for overall differences between sites for each indicator. Assumptions of normality and equal variance were checked using normal probability plots of residuals, and scatterplots of predicted and observed residuals.

Data that did not meet the assumptions of were log_{10} transformed. When significant differences were detected ($p<0.05$), post-hoc comparisons were conducted to identify homogeneous sites using Tukey honestly significant difference tests.

Multivariate analyses were also carried out to examine variation in community composition. The analyses included:

- Non-metric multidimensional scaling (nMDS) of averaged site data, using square-root transformation and Bray Curtis similarity. nMDS plots provide a two-dimensional representation of overall community composition, with sites (or samples) plotted close together being more similar than those further apart.
- Hierarchical clustering and similarity profile analysis. Those methods identify statistically significant clusters of sites based on the similarity of benthic communities. The degree of similarity (and dissimilarity) among sites is estimated and presented using dendrograms.
- Similarity of percentages routine (SIMPER) which was used to identify and rank taxa that cumulatively explained 70% of the dissimilarity between clusters.

Data analyses and plotting were carried out using Primer-E (v7), Statistica (v12) and Sigmaplot (v14). Adobe Photoshop was used to consolidate and annotate plots and images.

Figure 8. Sediment quality and benthic infaunal sampling sites.

4.1.5 SHELLFISH

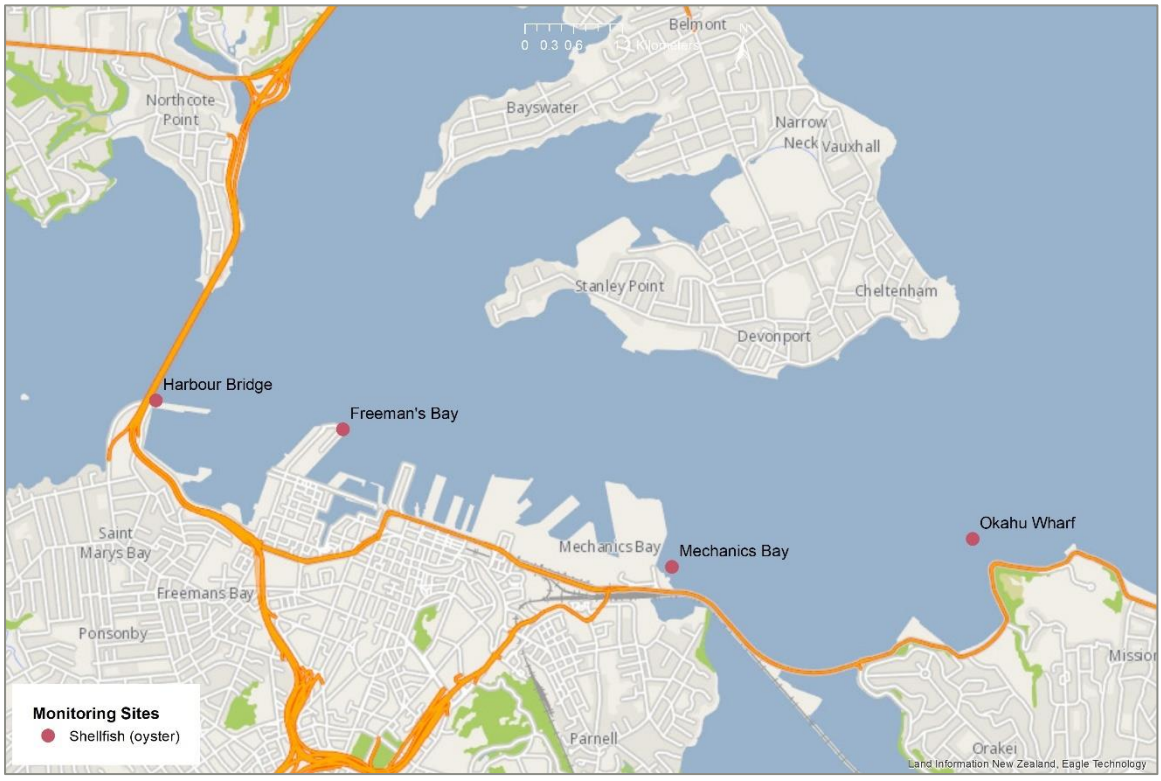
Live Pacific oysters, *Crassostrea gigas* were obtained from a Mahurangi Harbour oyster farm then secured in oyster baskets and chained to seawall or wharf structures at four locations along the southern Waitematā shore: Harbour Bridge, Freemans Bay, Mechanics Bay and

Ōkahu Wharf (Figure 9 and Figure 10). Every two weeks, caged oysters were collected for analysis, and fresh replacements were added to the cages.

Collections occurred on two occasions in October (17 and 25), November (8 and 22) and December (7 and 20). Once collected, samples were immediately transferred into cooler boxes and transported to Watercare Laboratory Services on the day of collection for the analysis of microbiological indicators of human health risk (enterococci, *Escherichia coli*, faecal coliforms, and bacteriophages), and dry weight concentrations of total recoverable heavy metals/metalloids (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, and zinc).

Shellfish results were plotted and analysed visually, and through correlation analyses. Median (230 MPN/100 g) and 90th percentile (700 MPN/100 g) values from the Ministry of Primary Industries, Regulated Control Scheme for farming of bivalve molluscan shellfish for human consumption (Ministry for Primary Industries 2018[7]) were also provided on the plots of *E. coli* concentrations.

Figure 9. Shellfish (Pacific oyster) monitoring sites.



[7] These values are consistent with the European Union Class A standard (Campbell et al. 2022).

Figure 10: Caged oysters at the Freeman's Bay monitoring site.

4.1.6 BENTHIC EPIBIOTA

On 7 November 2023, 21, ~200 m underwater video tows were taken within an area from west of the Harbour Bridge to Ōkahu Bay (Figure 11). Habitats in that area included harbour channel, subtidal flats, and port basin habitats in and around the vicinity of the wastewater discharges.

The video tow camera was "flown" above the seafloor to minimise the disturbance of biogenic features. Visual contact between the video and seabed was maintained using a live video feed and manual control of the tow line. Footage was recorded on a GoPro Hero 11, while video tracks were recorded using a Garmin handheld 78sc GPS, fitted with a GA38 GPS/GLONAS external aerial.

Video recordings were assessed by playing them in a darkened room and making observations on the general characteristics of the substrate, benthic habitat, any large epibiota present, evidence of recent mortality, accumulated gross solids, bacterial mats, and/or algal mats.

Figure 11. Location of video transect run-lines.

4.1.7 BRIGHAM ST OUTFALL (DISCHARGE A)—INTERTIDAL SEAWALL SURVEY

The seawall west of the Brigham Street (Discharge A) outfall was surveyed on the 6 November 2023. The Brigham Street (Discharge A) and the Freyberg (Discharge D) outfalls had the greatest flows, but latter outfall was not surveyed because it was located in a hazardous area of the port and did not contain any intertidal rocky habitat.

The seawall beside the Brigham Street (Discharge A) outfall (between the seven sampling stations shown in Figure 12) was walked over at low tide, with observations of the intertidal community and any signs of adverse effects potentially caused by the wastewater discharge being recorded. In addition, quadrats (0.25 m^2) were photographed near the low tide mark at each station, and the intertidal community within each quadrat was examined for species composition and any signs of recent mortality.

Figure 12. Location of the intertidal inspection stations at the northern end of Brigham Street. Stormwater outfalls were located on the rock seawall above stations 1 and 7. Wastewater overflowed from the Brigham St (Discharge A) outfall beside station 1.

4.1.8 RANKING OF EFFECTS

Adverse effects occur along a continuum ranging from no effects on the values of interest to their complete loss. Environmental Institute of Australia and New Zealand (EIANZ) guidelines rank the magnitude of adverse environmental effects for terrestrial and freshwater impacts using five categories (Roper-Lindsay et al. 2018), while Quality Planning guidelines rank adverse effects using six categories, which take into account both the magnitude of effects and their potential to be remedied or mitigated (Quality Planning 2017). Unlike terrestrial and freshwater ecosystems, few practicable and proven options are available for actively

remedying or mitigating most marine impacts. We have therefore adopted the EIANZ guideline terminology for assessing the magnitude of marine effects in this report (Table 7).

The EIANZ guidelines also include criteria for assigning ecological values to terrestrial and freshwater habitats. However, similar guidelines are not provided for marine habitats, and neither guideline addresses temporary effects particularly well. In this case, the temporary nature of the discharges is considered to be an important mitigating factor, which is taken into account in the assessment of effects.

In this report a "Low" EIANZ effect is considered a "less than minor" effect under the applicable RMA planning/legal framework; and a "Moderate" EIANZ effect is considered to straddle a "minor" and "more than minor" range.

Table 7: Ranking systems developed the EIANZ (Roper-Lindsay et al. 2018) for assessing the magnitude of adverse environmental effects.

EIANZ guidelines	
Magnitude	Description
Negligible	Very slight change from the existing baseline condition. Change barely distinguishable, approximating to the 'no change' situation; AND/OR having negligible effect on the known population or range of the element/feature.
Low	Minor shift away from existing baseline conditions. Change arising from the loss/alteration will be discernible, but underlying character, composition and/or attributes of the existing baseline condition will be similar to pre-development circumstances or patterns; AND/OR having a minor effect on the known population or range of the element/feature.
Moderate	Loss or alteration to one or more key elements/features of the existing baseline conditions, such that the post-development character, composition and/or attributes will be partially changed; AND/OR loss of a moderate proportion of the known population or range of the element/feature.
High	Major loss or major alteration to key elements/features of the existing baseline conditions such that the post-development character, composition and/or attributes will be fundamentally changed; AND/OR loss of a high proportion of the known population or range of the element/feature.
Very high	Total loss of, or very major alteration to, key elements/features/ of the existing baseline conditions, such that the post-development character, composition and/or attributes will be fundamentally changed and may be lost from the site altogether; AND/OR loss of a very high proportion of the known population or range of the element/feature.

4.2 RESULTS

4.2.1 WASTEWATER

Wastewater samples obtained from the pipe network were characterised by:

- Concentrations of microbial indicators (*E. coli* and enterococci) up to 4 logs higher than concentrations obtained from the Freemans and Mechanics coastal sites, with intermediate concentrations obtained from samples taken directly below the outfalls (Figure 13).
- High ammoniacal-N, total nitrogen, dissolved reactive phosphorus and total phosphorus concentrations, with concentrations that were up to 3 logs, or more, higher than those obtained from the Freemans and Mechanics coastal sites. Concentrations from samples taken directly below outfalls A and D varied from being

similar to those obtained from network samples, to being similar to those from the nearby coastal sites (Figure 14).

- Relatively low total oxidised nitrogen concentrations, with network concentrations similar to those obtained from the Freemans and Mechanics coastal sites (Figure 14).
- High total recoverable copper and zinc concentrations, with concentrations that were around 1–3 logs higher than those obtained from the Freemans and Mechanics coastal sites. Concentrations from samples taken directly below outfalls A and D varied from being similar to those obtained from network samples to concentrations similar to those from the nearby coastal sites (Figure 15).
- Relatively low to moderately elevated concentrations of other heavy metals (arsenic, cadmium, chromium, cobalt, lead, mercury, and nickel), with network concentrations similar to those obtained from the Freemans and Mechanics coastal sites (Figure 15).

Plots showing temporal variation in the concentrations of key analytical parameters in samples obtained from directly below the Brigham (Discharge A) and Freyberg (Discharge D) outfalls (Figure 16), indicate that:

- Concentrations of separate parameters were strongly correlated.
- Highest concentrations of most parameters were obtained from the Brigham St (Discharge A) site (the exception was total oxidised nitrogen).
- Concentrations generally declined around mid-November, but occasional spikes were still occurring in December.

Figure 13: Concentrations of enterococci and *Escherichia coli* in samples obtained from: the wastewater network (sites Pipe MH17, Pipe MH21, Pipe MH1, Pipe MH17, Pipe MH21, Pipe MH1); directly below the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls; and, from the nearest coastal monitoring sites to those outfalls (Mechanics and Freemans).

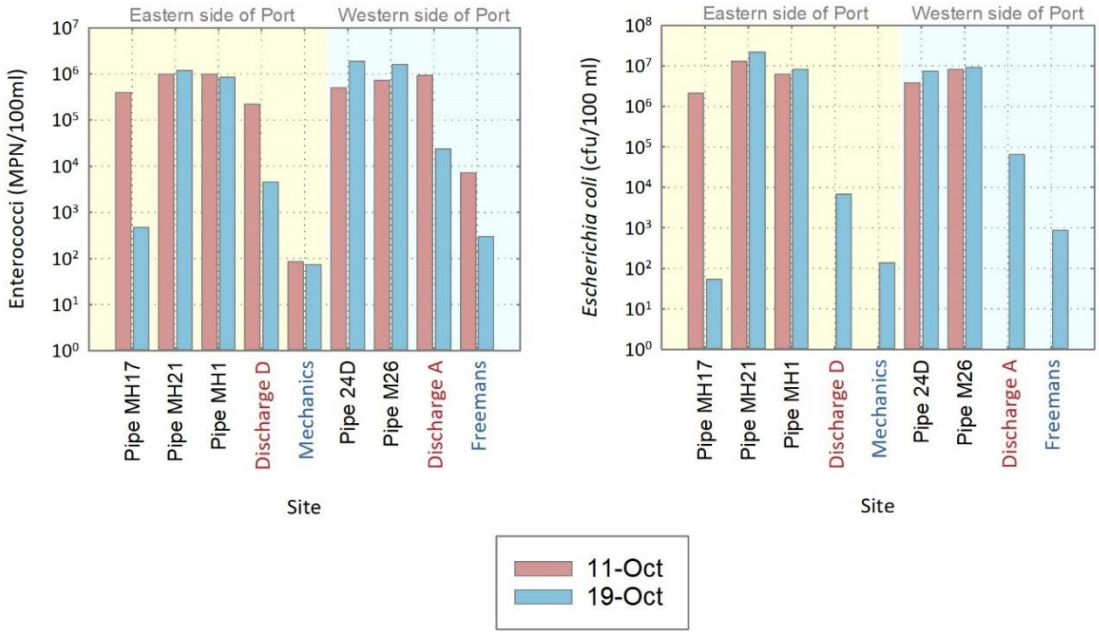


Figure 14: Concentrations of key nutrients and total suspended solids in samples obtained from: the wastewater network (sites Pipe MH17, Pipe MH21, Pipe MH1, Pipe MH17, Pipe MH21, Pipe MH1); directly below the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls; and from the nearest coastal monitoring sites to those outfalls (Mechanics and Freemans).

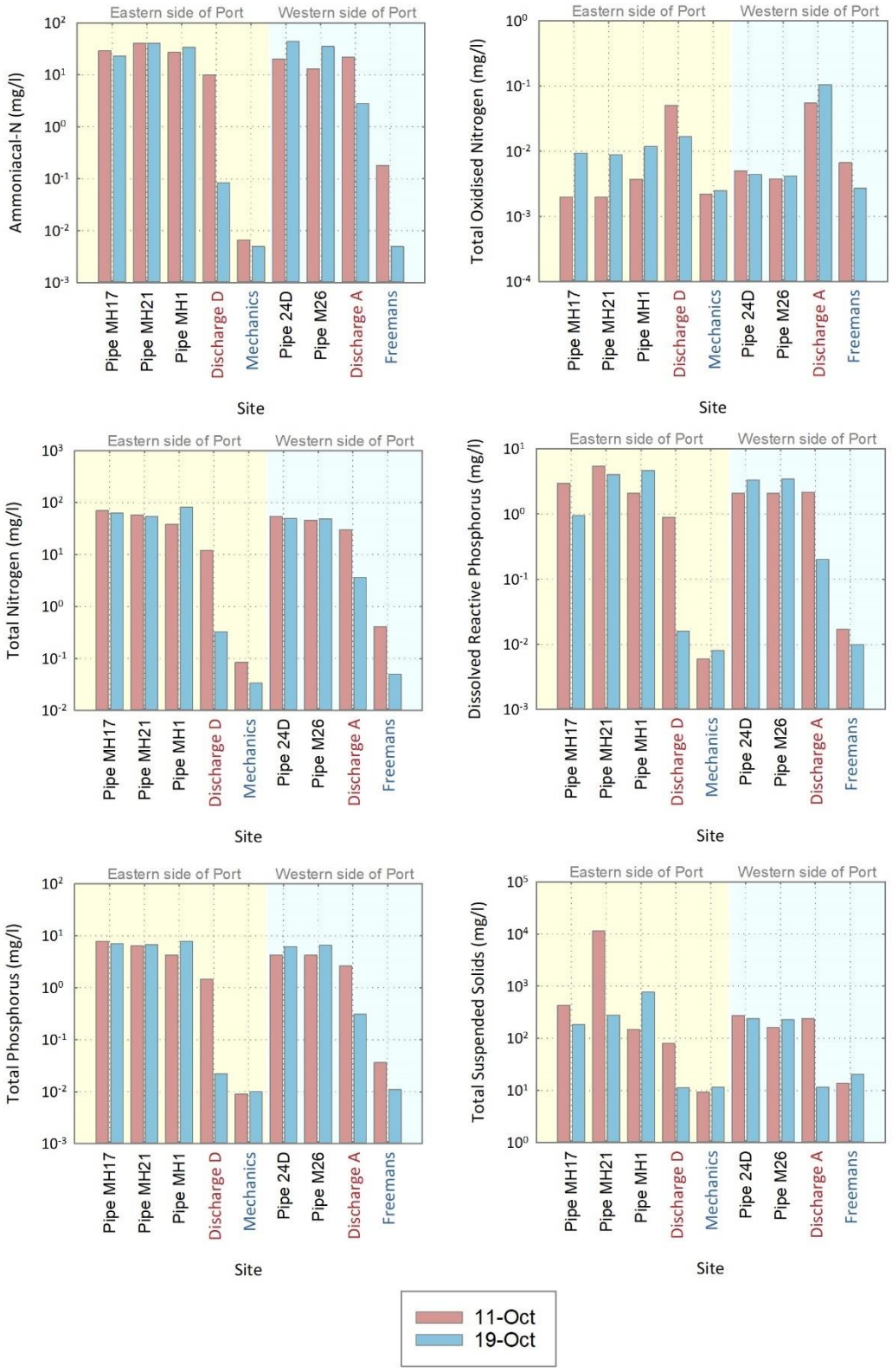


Figure 15: Total recoverable concentrations of key metals in samples obtained from: the wastewater network (sites Pipe MH17, Pipe MH21, Pipe MH1, Pipe MH17, Pipe MH21, Pipe MH1); directly below the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls; and from the nearest coastal monitoring sites to those outfalls (Mechanics and Freemans). The red horizontal line shows the ANZG (2018) for 95% of species protection.

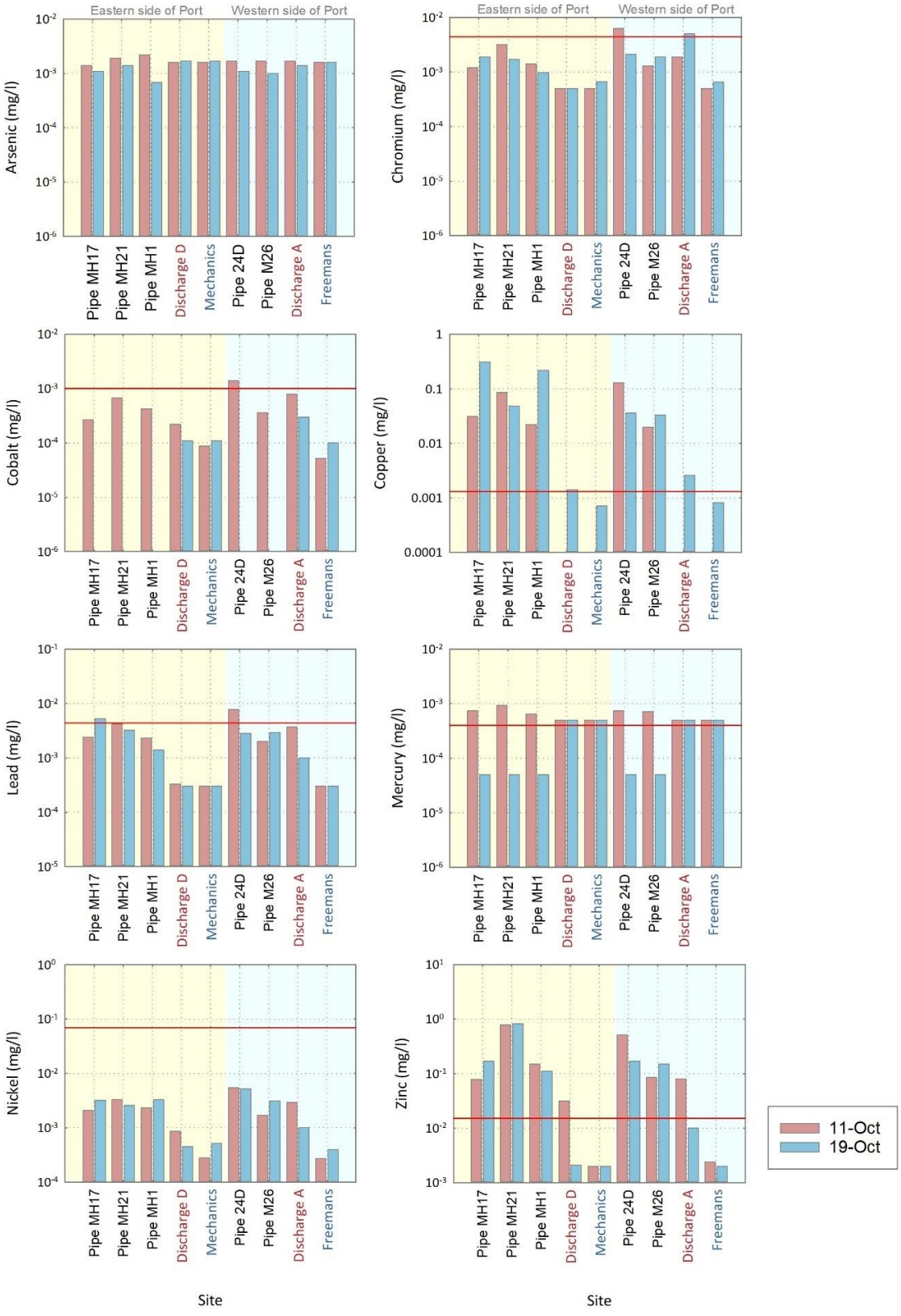
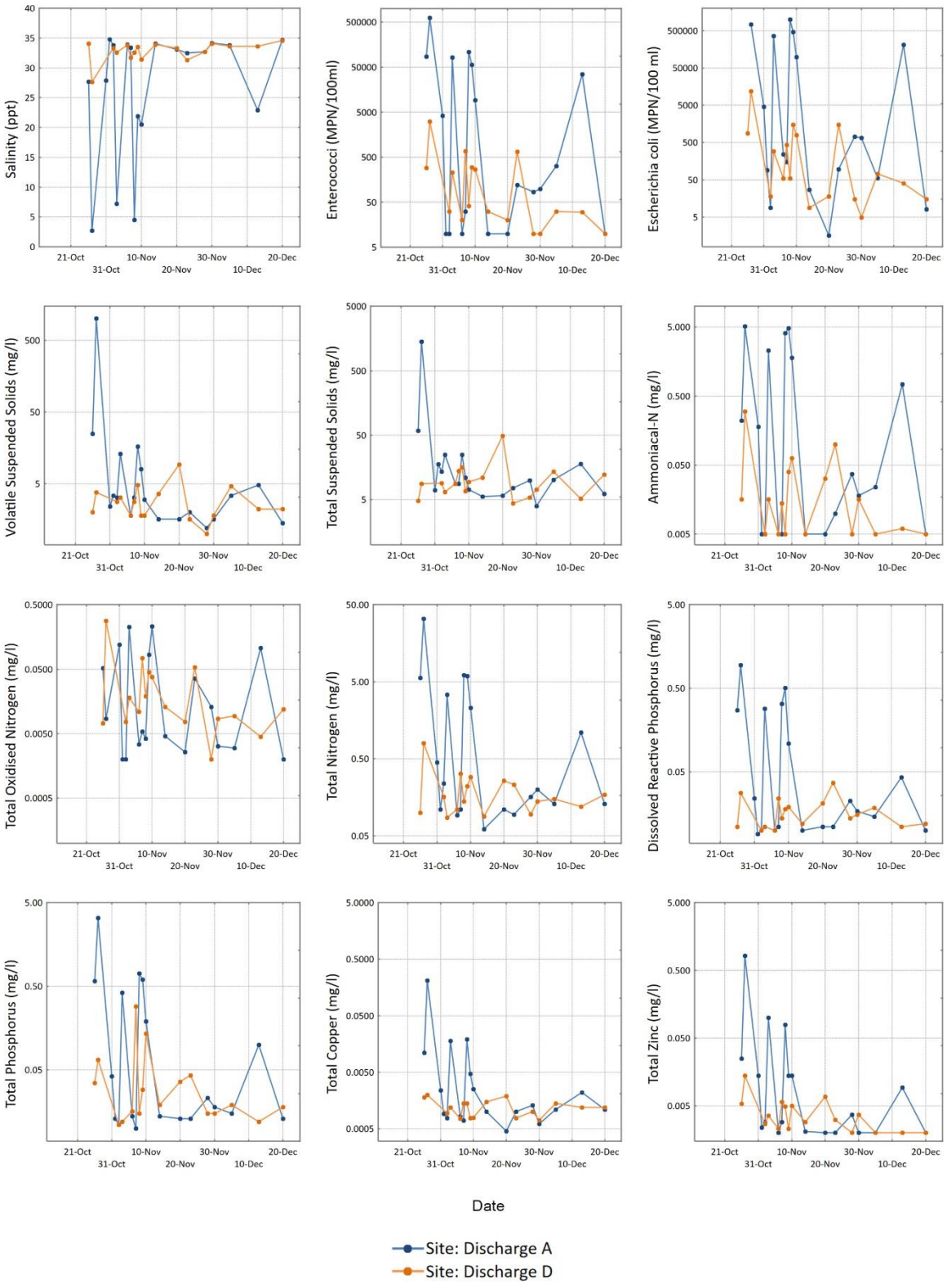


Figure 16: Variation in the concentrations of key wastewater indicators at the Brigham St (Discharge A) and Freyberg (Discharge D) outfall sites over the monitoring period.



4.2.2 COASTAL WATER QUALITY

4.2.2.1 MICROBIAL INDICATORS OF HUMAN HEALTH RISK

Enterococci concentrations were assessed over the full period of monitoring, but laboratory processing capacity issues meant that faecal coliform concentrations were only determined for samples collected from 6 to 17 October, with *E. coli* being assessed after that time. Therefore, this assessment focusses on variation in enterococci concentrations, noting that $\log_{10}$ concentrations of the two indicators were highly correlated ($p<0.0001$, $r=0.8716$), and plots of both enterococci and *E. coli* are provided for reference (Figure 17 and Figure 18).

Extreme enterococci concentrations were recorded, with a peak of 60,000 MPN/100 ml obtained from the Freemans site on 12 October—the closest coastal site to the Brigham St (Discharge A) outfall (Figure 17—note that concentrations reached 2,000,000 MPN/100 ml in the wastewater stream directly below the outfall). Peak concentrations at other sites were considerably less, with peaks of 990, 1200 and 1400 MPN/100 ml recorded at the Bledisloe, Princes, and Mechanics sites, respectively, between the 12 and 19 October. Apart from the Freemans site, concentrations fell over the period when discharge volumes were reducing (19–26 Oct), and never exceeded the Ministry for the Environment and Ministry of Health (2003) guidelines for contact recreation during the monitoring period when network modelling and observations (Utting 2024) indicate that dry weather overflows had ceased (27 Oct to 20 Dec) (Figure 17). Concentrations at the Freemans site also declined, but two additional spikes occurred during the period when dry weather overflows had ceased, reaching concentrations of 17,000 MPN/100 ml on 8 November. The last spike of 570 MPN/100 ml was recorded on 23 November.

Figure 17: Concentrations of enterococci (MPN/100 ml) in surface water samples from inner to outer Waitematā Harbour monitoring sites. Marine bathing guideline values for enterococci are provided as horizontal lines (orange = alert and red = action levels) (Ministry for the Environment & Ministry of Health 2003). Brown vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024).

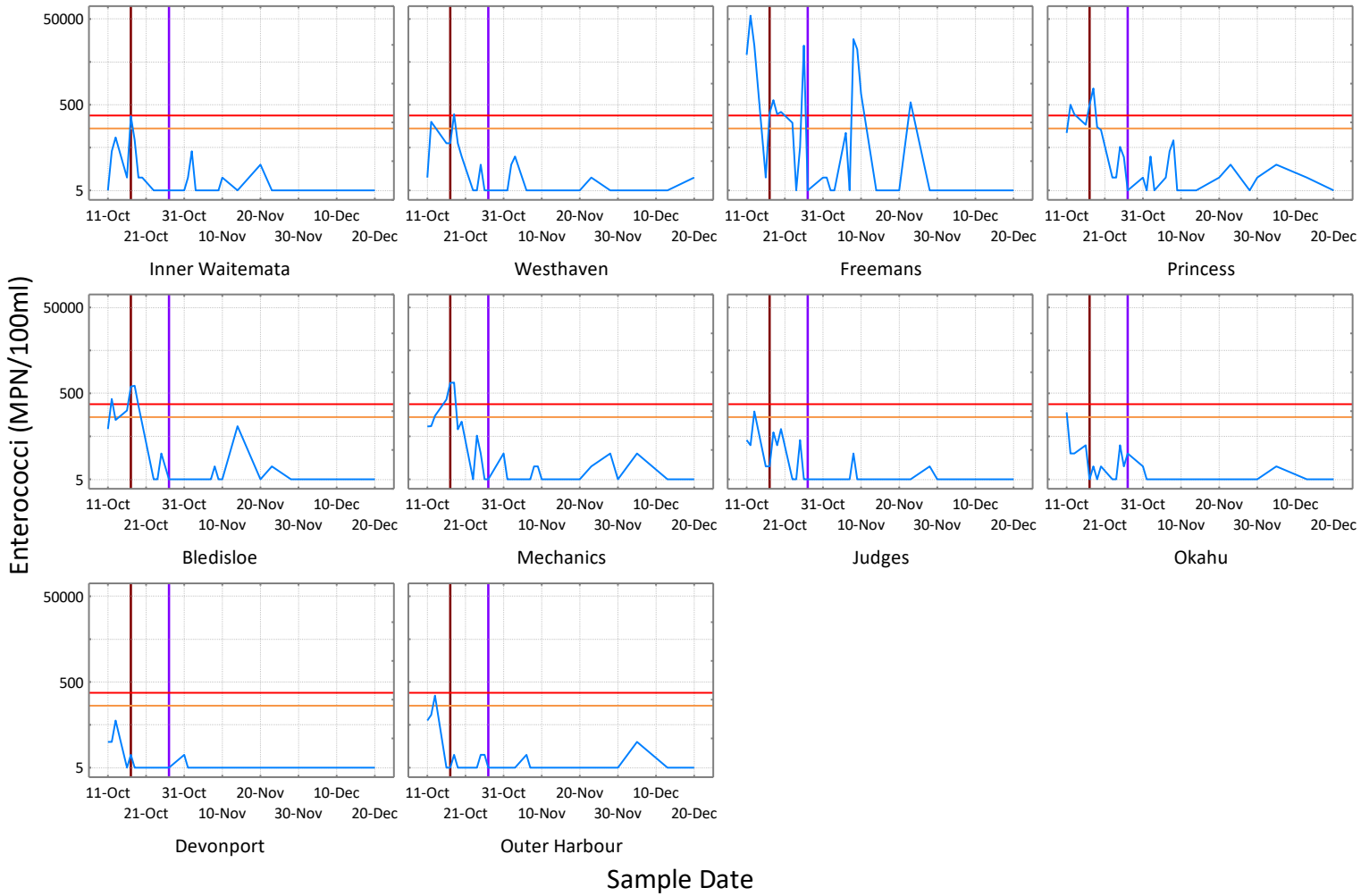
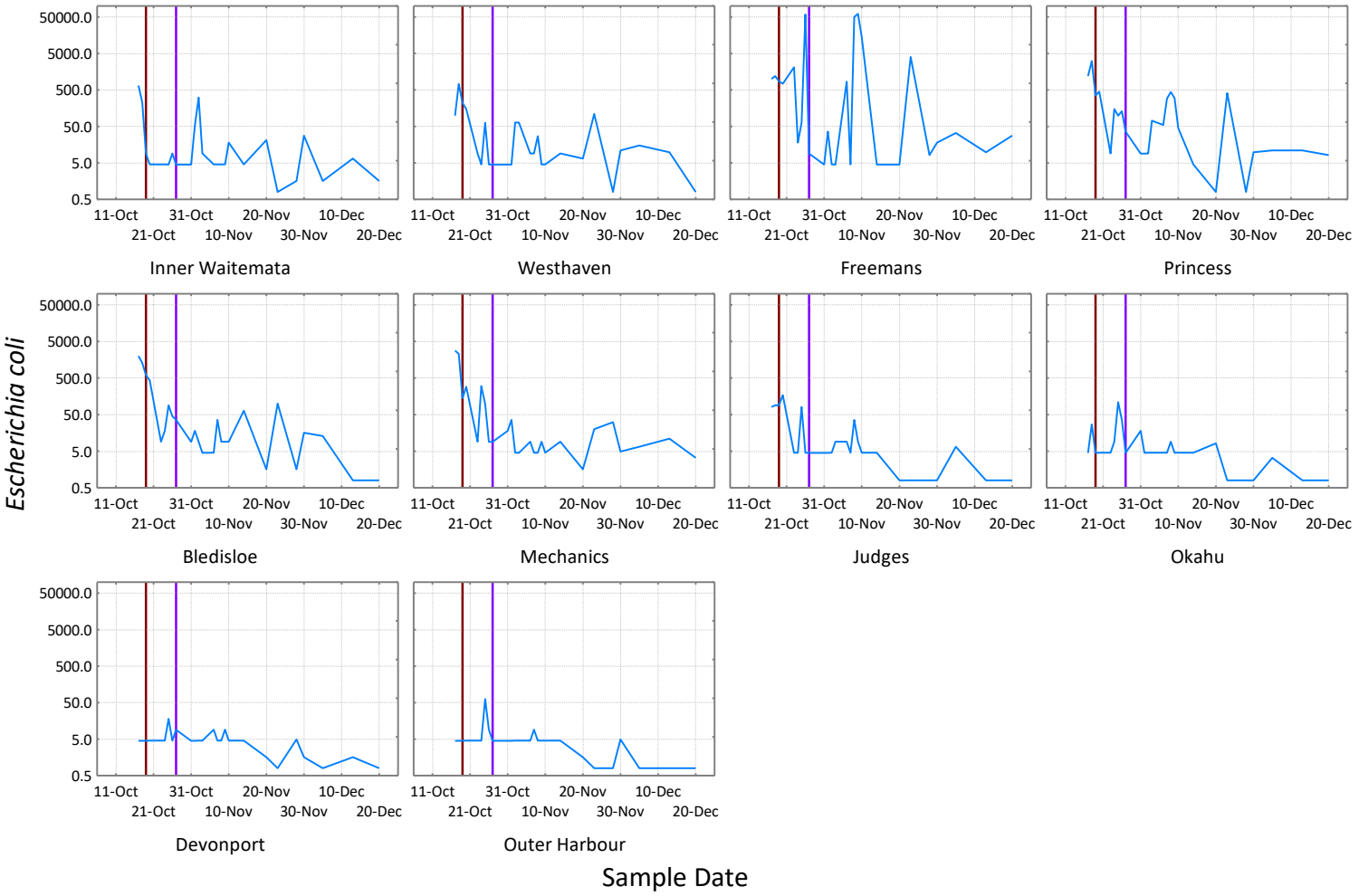


Figure 18: Concentrations of *Escherichia coli* (cfu/100 ml) in surface water samples from inner to outer Waitematā Harbour monitoring sites. Brown vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines Utting 2024.



4.2.2.2 DISSOLVED OXYGEN, AND SUSPENDED AND VOLATILE SOLIDS

Variation in dissolved oxygen, and suspended and volatile solids were examined using:

- scatterplots of surface water concentrations;
- statistical analyses using fully crossed, fixed factor ANOVAs with terms for sampling site, period (categorised into "peak discharges" (26 Sept to 18 Oct), "reducing discharges" (19 Oct to 26 Oct), and in the case of "no overflows" (27 Oct to 20 Dec—dissolved oxygen only)), and depth (surface and deep); and,
- mean (± 95% C.I.) plots that visualised ANOVA results.

Scatterplots of dissolved oxygen in surface water samples showed that concentrations generally displayed consistent temporal pattern among sites, with:

- initially high concentrations that declined during the peak discharge period;
- an ongoing decline in concentrations through to the end of the reducing discharges period; and,
- increasing concentrations after discharges had nominally ceased, followed by a decline and stabilisation around, or slightly below, median concentrations from the Henderson site.

Apart from the Freemans site, dissolved oxygen concentrations at each site were highly correlated with each other, with r-squared values ranging from 0.78 to 0.9 (i.e., variation at one site explained 78% to 90% of the variation at others).

In the analysis of dissolved oxygen concentrations, one outlying data point was excluded (a low dissolve oxygen concentration of 4.7 mg/l obtained from the Freemans site on the 9 November (i.e., the no overflows period – see Figure 19)[8]. Significant differences in dissolved oxygen concentrations were detected amongst sites, periods, and depths ($p<0.002$), with no significant interactions between those factors (Figure 22). Tukey's HSD tests indicated that:

- the site difference was due to Freemans having lower concentrations than the Outer Harbour, Devonport and Ōkahu sites, and Westhaven and Mechanics having lower concentrations than the Outer Harbour ($p<0.05$);
- deep water concentrations were higher than surface water concentrations ($p<0.001$);
- concentrations in the peak overflow period > reducing overflows period > no overflow period ($p<0.001$).

The highest total suspended solids concentration recorded was 35 mg/l in deep water samples from the Freemans site on 27 October, while the highest surface water concentration recorded was 31 mg/l at the Westhaven site on the same date. Line plots indicate that larger spikes in total suspended solids concentrations occurred at western sites, particularly the Inner Waitematā Harbour and Westhaven sites, and that largest spikes in total suspended solids concentrations at all sites occurred during and shortly after the period of dry weather overflows (Figure 20). Surface water concentrations in the latter

[8] This is thought to have been caused by a sampling error.

sampling period were generally lower and fluctuated around the 5-year median values obtained from Auckland Council's Helensville and Browns Bay water quality monitoring sites.

An ANOVA of total suspended solids of data obtained during the periods when overflows were occurring detected significant differences between sites ($p<0.05$), and the peak and reducing overflow periods ($p<0.05$)[9]. However, significant differences were not detected between depths, or for any of the interaction terms (Figure 23 and Figure 24). Examination of the significant differences showed that:

- the site difference was due to concentrations at Westhaven being greater than those at the Outer Harbour site ($p<0.05$);
- concentrations during the peak overflow period were greater than in the period when overflows were reducing.

Significant differences between sites ($p<0.05$) were detected when the analysis was limited to surface water samples over the whole monitoring period. A Tukey HSD test indicated this was due to the Westhaven site having higher concentrations than the Outer Harbour, Devonport and Ōkahu sites ($p<0.05$, Figure 24).

Highest volatile suspended solids concentrations of 11.6 mg/l were obtained from a surface water sample obtained from the Freemans site on 12 October, followed by 9.6 mg/l being obtained from the Outer Harbour site on 10 November (Figure 25). Both samples had to be excluded from the ANOVA analysis to meet the assumption of normally distributed residuals. When factors for site, "peak" and "reducing" overflow periods, and depth were included in the analysis of volatile suspended solids concentrations, significant differences were only detected between and the "peak" and "reducing" overflow periods ($p<0.0001$). Concentrations during the peak overflow period were greater than those when overflows were reducing (Figure 25). Significant differences were also only detected between periods ($p<0.0001$), when the analysis was limited to surface water samples and samples from the "no discharges" period were also included. A Tukey HSD test indicated this was due to the peak overflows period having higher concentrations than the reduced and no overflows periods ($p<0.001$, Figure 26).

[9] Noting that deep water TSS and VSS concentrations were not obtained during the no overflow period.

Figure 19: Concentrations of dissolved oxygen (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing median concentrations at the Henderson site in the central Waitematā (orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024).

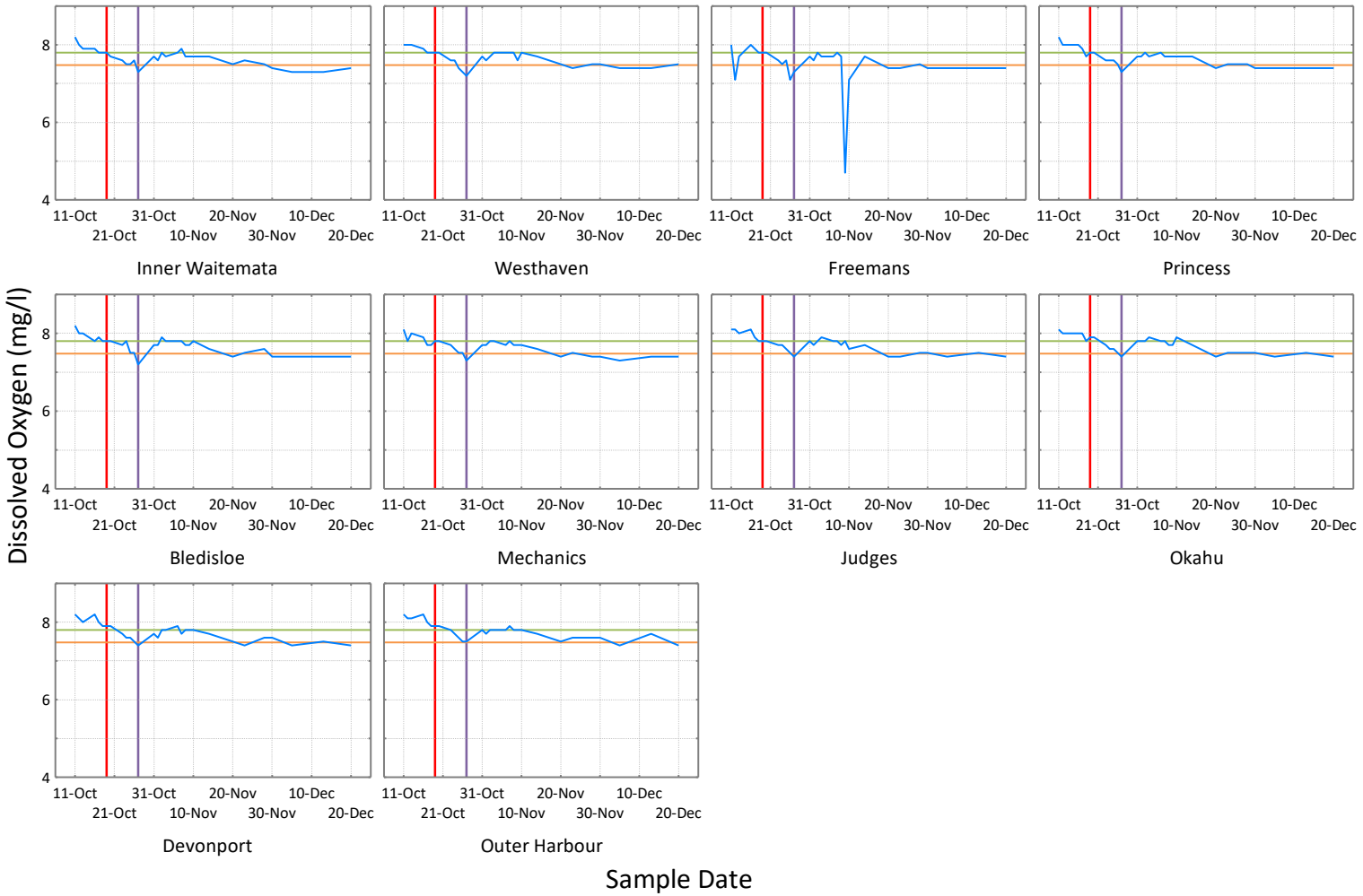


Figure 20: Concentrations of total suspended solids (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing median concentrations at the Henderson site in the central Waitematā (orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024).

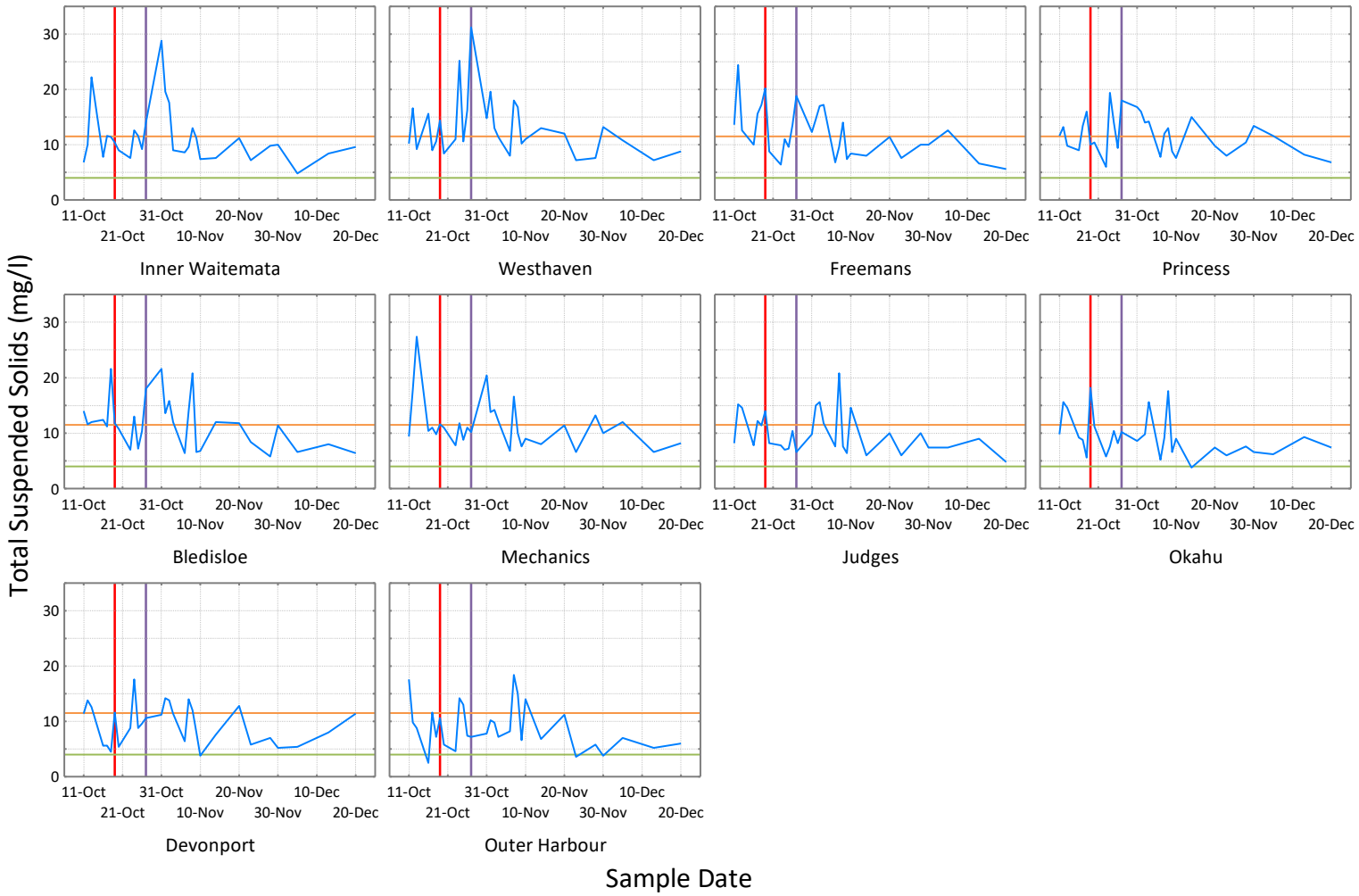


Figure 21: Concentrations of volatile suspended solids (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024).

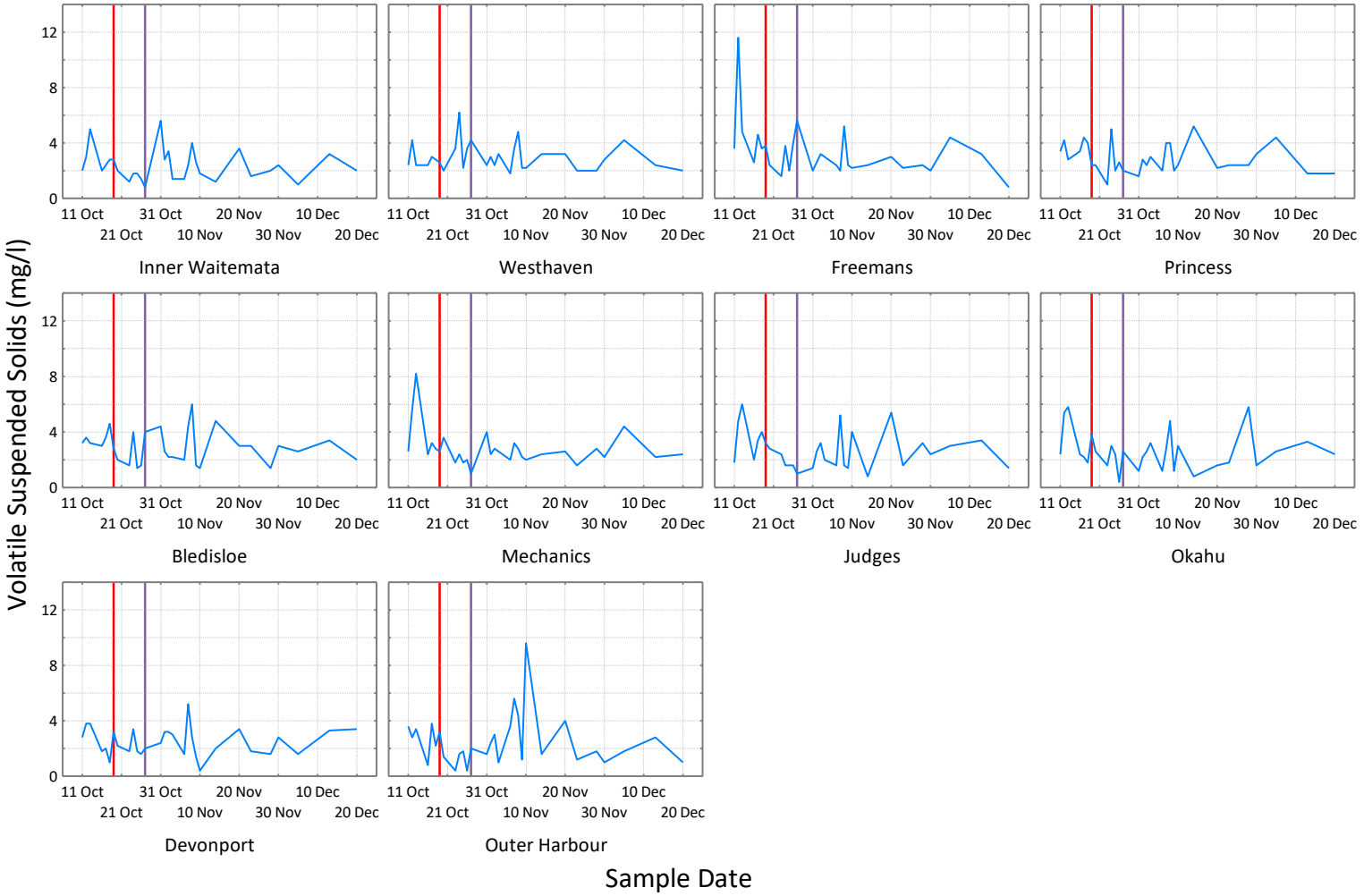


Figure 22: Variation in mean (± 95% C.I.) dissolved oxygen concentrations in surface and deep water samples obtained from inner to outer Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and reducing dry weather discharge volumes (19 to 26 October) and no dry weather discharges (27 October to 20 December). N=6 for each combination of factors during peak and reducing overflows, n=18 for each combination during the no overflow period.

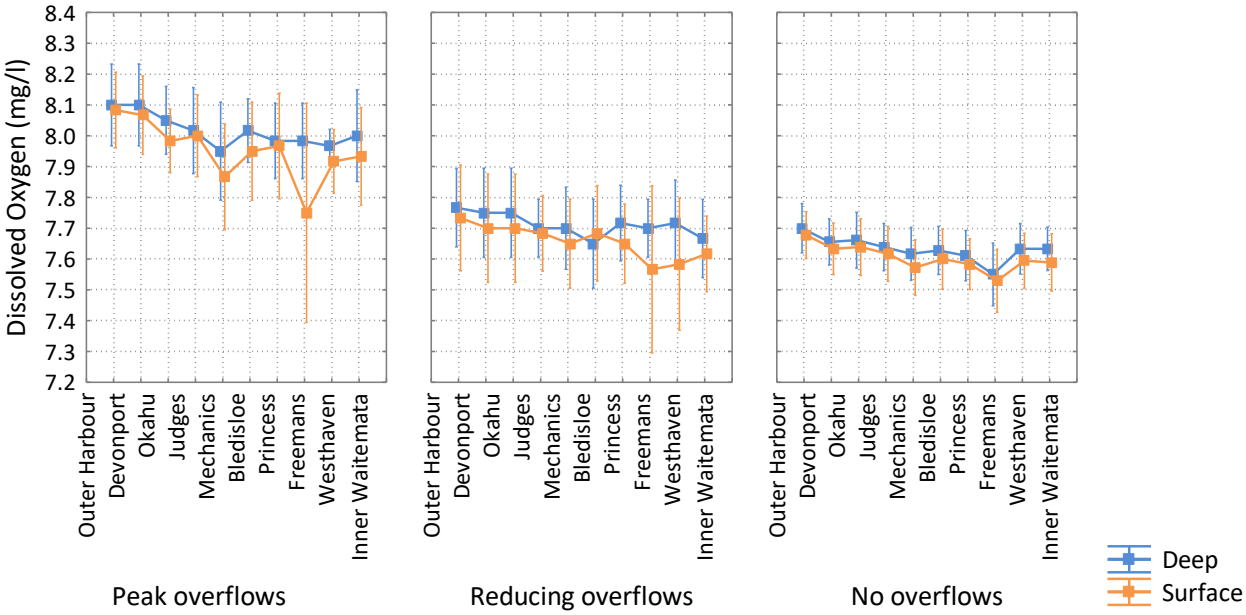


Figure 23: Variation in the mean concentrations of total suspended solids (± 95% C.I.) in surface and deep water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October) (n=6 for each combination of site, depth, and period).

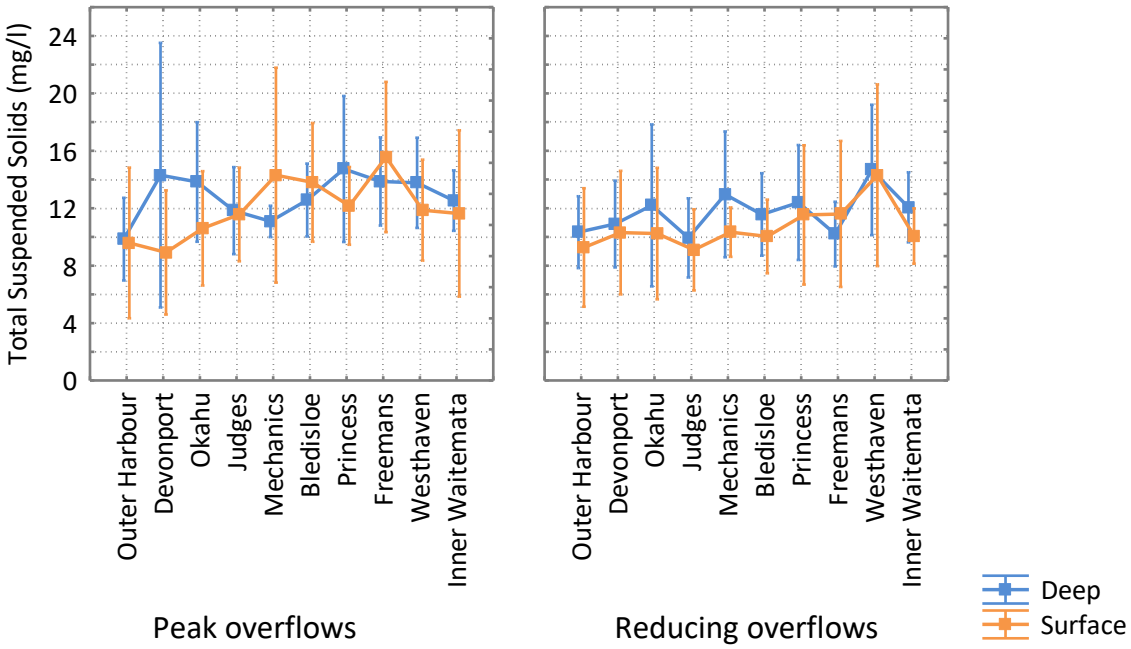


Figure 24: Variation in the mean concentrations of total suspended solids (± 95% C.I.) in surface water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October), and no overflows (n=6 for each combination of site and period in the peak and reducing periods, n=18 for each combination in the no overflows period).

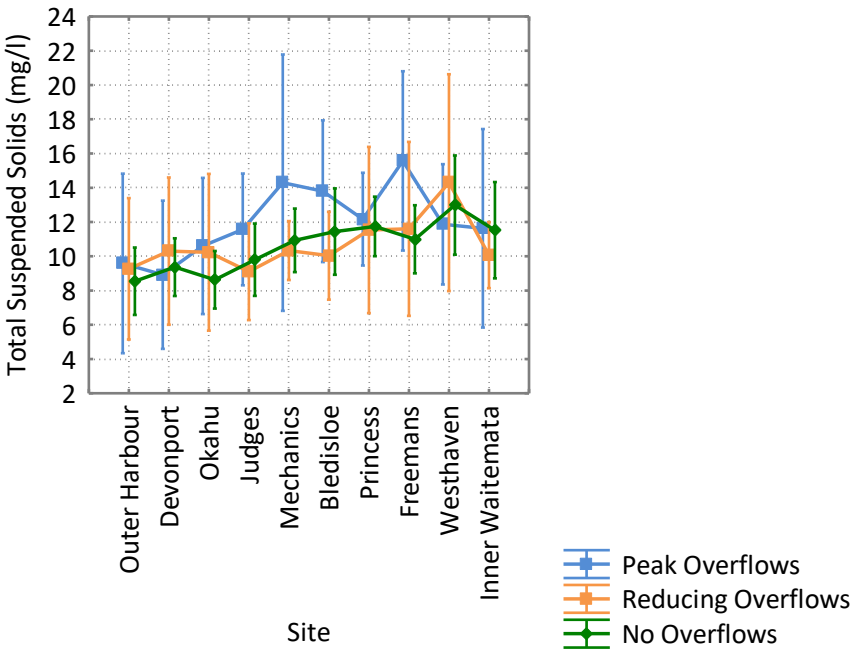


Figure 25: Variation in the mean concentrations of volatile suspended solids (± 95% C.I.) in surface and deep water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October) (n=6 for each combination of site, depth and period).

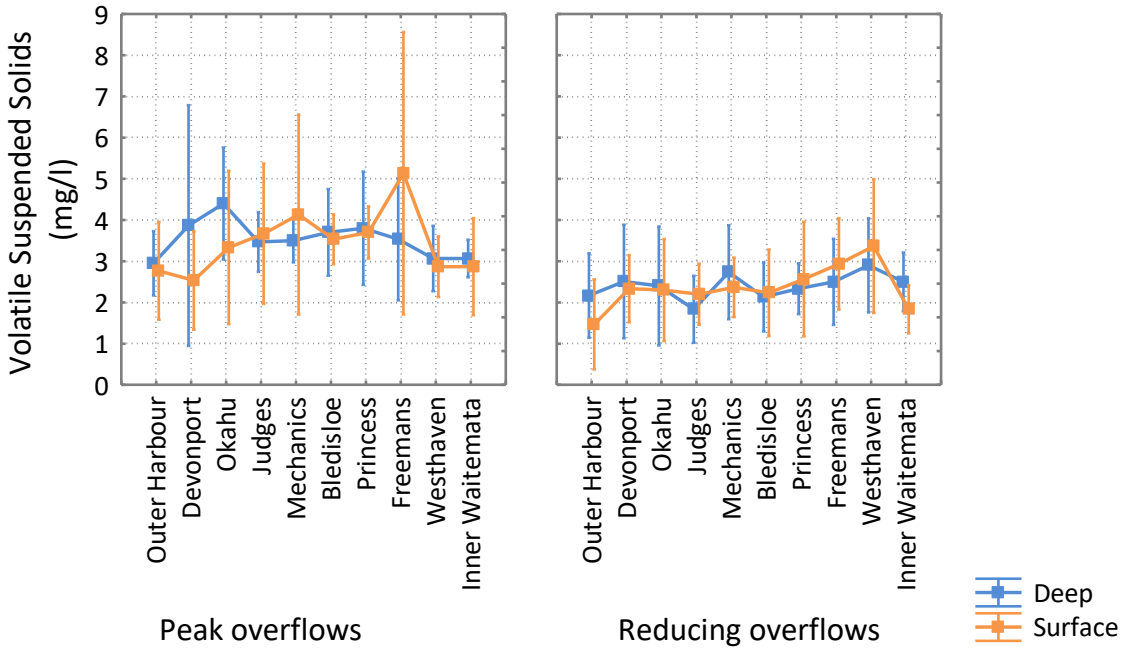
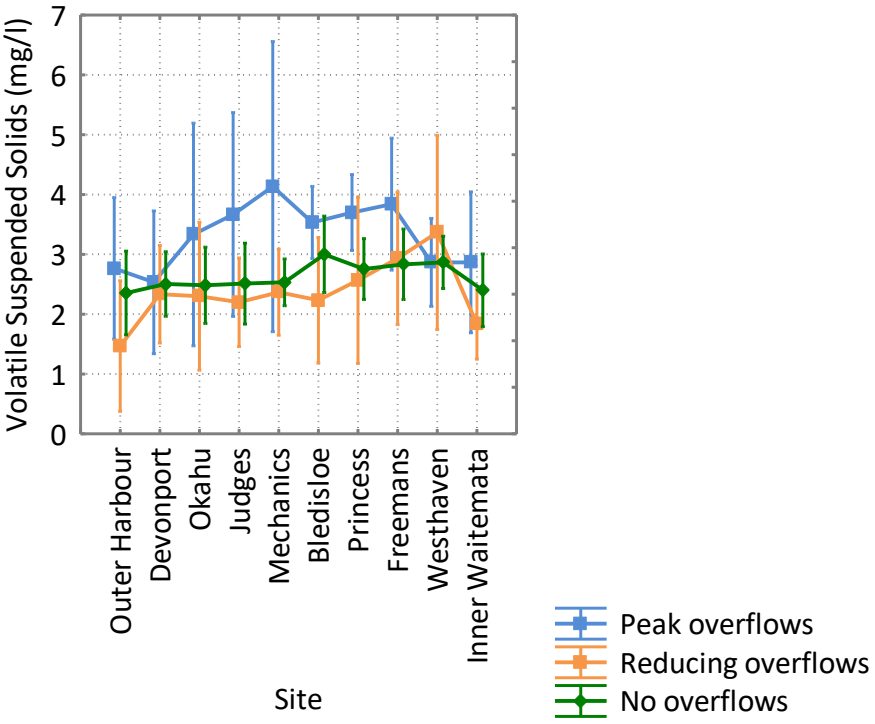


Figure 26: Variation in the mean concentrations of volatile suspended solids (± 95% C.I.) in surface water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October), and nominally no overflows (n=6 for each combination of site and period in the peak and reducing periods, n=18 for each combination in the no overflows period).



4.2.2.3 NUTRIENTS AND PRIMARY PRODUCTIVITY

Spatial and temporal variation in nitrogen and phosphorus were examined using boxplots (provided in APPENDIX 2) and line and scatter plots of ammoniacal-N, total oxidised nitrogen, total nitrogen, dissolved reactive phosphorus and total phosphorus. Plotted data were categorised into peak discharge (26 Sept to 18 Oct), reducing discharges (19 Oct to 26 Oct), and no dry weather overflow (27 Oct to 20 Dec) periods, and compared against 5-year median concentrations (July 2017 to June 2022) from Auckland Council's monthly sampling of its Henderson site in Waitematā Harbour and its closest East Coast site (Browns Bay) (5-year summary statistics from Kelly & Kamke, 2023) (with Henderson having the worst water quality and Browns Bay having the best quality).

Nutrient concentrations in samples obtained during the period of peak discharge volumes were characterised by very large spikes in ammoniacal-N, total nitrogen, and total phosphorus at the Freemans site, approximately 230 m NE of the Brigham Street (Discharge A) outfall (Figure 27–Figure 29). Large reductions in all three nutrient forms occurred at the Freemans site during the "reducing overflow volumes" period, with median concentrations dropping well below 5-year medians from Auckland Council's Henderson and Browns Bay monitoring sites. However, even after network modelling and observations indicate dry

weather overflows had ceased (Utting 2024), a short concentration spike (of lower magnitude than the spikes in the overflow periods) occurred.

Smaller spikes in ammoniacal-N occurred at the Inner Waitematā, Westhaven, Princes, Bledisloe, and Mechanics sites during the period of peak discharge volumes, but apart from Mechanics, median values remained below the 5-year medians from Auckland Council's Henderson and Browns Bay monitoring sites. Similar spikes in ammoniacal-N occurred at the Judges and Ōkahu sites during the peak overflow period, but maximum concentrations were much lower than those at the above sites. Concentrations at all sites subsequently settled at low levels. The assumptions of ANOVA were not met for ammonia-N concentrations. Therefore, formal statistical analyses were not carried out to test for differences between depth, site, and sampling period (nor were they considered necessary).

The potential for ammonia toxicity was also examined. Total ammoniacal-N concentrations (as NH_3-NH_4^+-N) were measured during water quality monitoring, whereas the ANZECC (2000) 95% trigger and corresponding ANZG (2018) DGV of 0.91 mg/l for total ammonia toxicity applies to unionised total ammonia as NH_3 (at pH 8). Table 8.3.6 of ANZECC (2000) provides percentage estimates for the amounts of ammonia in the unionised form at various combinations of pH and temperature. The highest total ammoniacal-N concentration recorded at the coastal site nearest to the Brigham St outfall – discharge A (Freemans which was around 230 m offshore) was 1.8 mg/l (or 0.07 mg/l of unionised ammonia) on 12 October[10]. Consequently, the total ammonia toxicity guideline value was never exceeded at the coastal monitoring sites.

Extreme variability meant that factorial ANOVA tests could not be carried out on total nitrogen and total phosphorus using the full dataset. As noted above, the Freemans site was clearly different to the other sites, with four samples (three taken from the 11 to 13 Oct and one from 26 Oct) with moderately to extremely high surface sample concentrations and relatively low deep-water concentrations (this is likely to reflect the close proximity of this site to the Brigham Street (Discharge A) outfall and the buoyancy of the surface plume). The Freemans site was therefore excluded from analyses of the differences in total nitrogen concentrations among sites, periods[11] and depths. Total nitrogen and total phosphorus data were $\log_{10}$ transformed prior to analysis to meet the assumptions of normality and equal variance.

Statistically significant differences in total nitrogen concentrations were not detected for any of the three factors, and neither were interactions among the factors (Figure 27). Analysis of $\log_{10}$ transformed total phosphorus concentrations[12] detected a significant difference among sites ($p<0.0001$), but not between depths, periods, or any interactions.

The analyses were rerun using surface samples only, with all three periods and all sites excluding Freemans. No statistically significant differences in total nitrogen concentrations were detected between periods or sites (Figure 33). Three outliers from the inner

[10] This was also the highest concentration recorded at any coastal site apart from those immediately below the outfall structures.

[11] Peak and reducing overflow periods only because deep-water data was not collected once overflows ceased.

[12] All Freemans samples and one outlier sample obtained from Judges on 13 Oct 2023 (with a TP concentration of 0.078 mg/l) were excluded from the analysis.

Waitematā, Princes, and Judges sites were excluded from the analysis of total phosphorus (see Figure 28). In that analysis, significant differences were detected between sites ($p<0.00001$) and periods ($p<0.00001$). Plots and Tukey's HSD tests indicated that concentrations were significantly higher once dry weather discharges had nominally ceased ($p<0.0001$), which was the opposite to what was expected. Concentrations at sites west of Judges were also significantly higher than concentrations at the Outer Harbour site ($p<0.01$). There were no significant differences in concentrations during the peak and reducing discharge periods, or among other sites (Figure 34).

Smaller spikes that covered a wider area and lasted longer were observed in total oxidised nitrogen (TON) and dissolved reactive phosphorus (DRP). The largest of those spikes were centred around the Freemans site and extended to the Westhaven and Princes sites. At the Freemans site, elevated TON concentrations persisted through to 10 November in the "no dry weather overflow" period. This was followed by two sampling rounds with concentrations below detection limits, and a final, substantial spike on 23 November. Concentrations at that site subsequently settled at low levels. Total oxidised nitrogen concentrations at the Inner Waitematā, Westhaven and Princes sites also displayed substantial, but short-lived spikes during the period when no dry weather overflows occurred (Figure 30 and Figure 79). However, concentrations of TON and DRP at the other sites predominantly remained below the 5-year median from Auckland Council's Browns Bay monitoring site, and often below detection limits. Formal statistical analyses were not considered necessary for these variables.

Differences in surface sample concentrations of chlorophyll *a* among sampling sites and periods were examined using fully crossed, fixed-factor ANOVAs with terms for site and period. Significant differences were detected for both site ($p=0.005$) and period ($p<0.0001$). Tukey HSD tests indicated that the site difference was due to the Bledisloe having higher concentrations than the Outer Harbour site ($p=0.023$), while concentrations in the peak discharge period were greater than those in the reducing overflow ($p=0.00002$) and no overflow ($p=0.00002$) periods (Figure 35).

The maximum concentration from any site recorded was related to a short spike of 0.005 mg/l in a deep-water sample at the Freemans site on 12 October, with a corresponding surface water concentration of 0.0046 mg/l. Several sites (including sites west and east of the port) also displayed spikes with concentrations > 0.003 mg/l on 20 December. When compared to variation in chlorophyll *a* concentrations at other coastal sites in the Auckland Region, all of these spikes appear consistent with a widespread, short-term phytoplankton blooms of relatively low strength (see Kelly & Kamke 2023).

Figure 27: Concentrations of total nitrogen (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024). Note different y-axis scales for some sites.

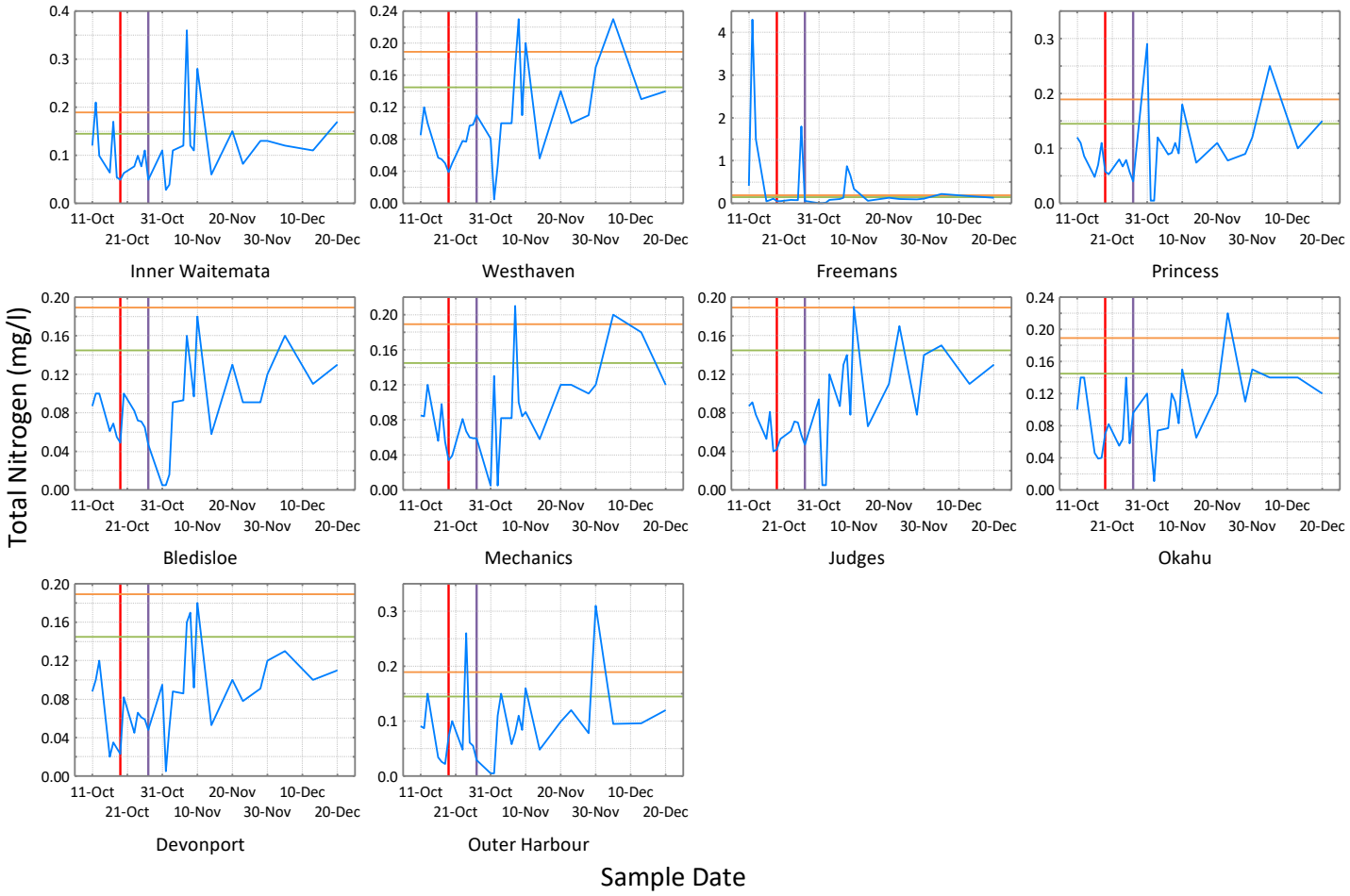


Figure 28: Concentrations of total phosphorus (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–amber) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Reference lines are not apparent when their concentrations exceed the y-axis range. Brown vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by red vertical lines (Utting 2024). Note different y-axis scales for some sites.

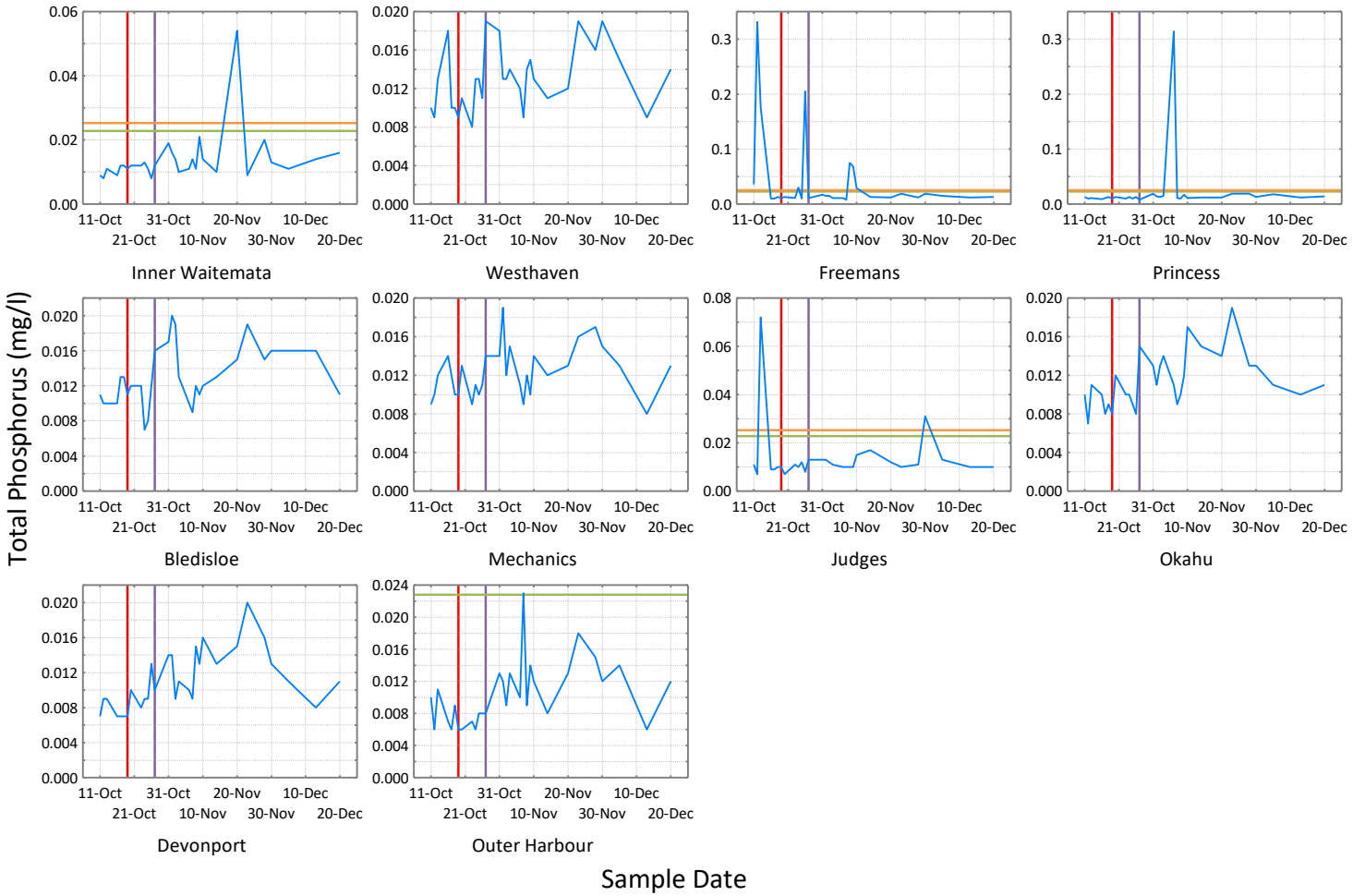


Figure 29: Concentrations of ammoniacal nitrogen (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–amber) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024). Note different y-axis scales for some sites.

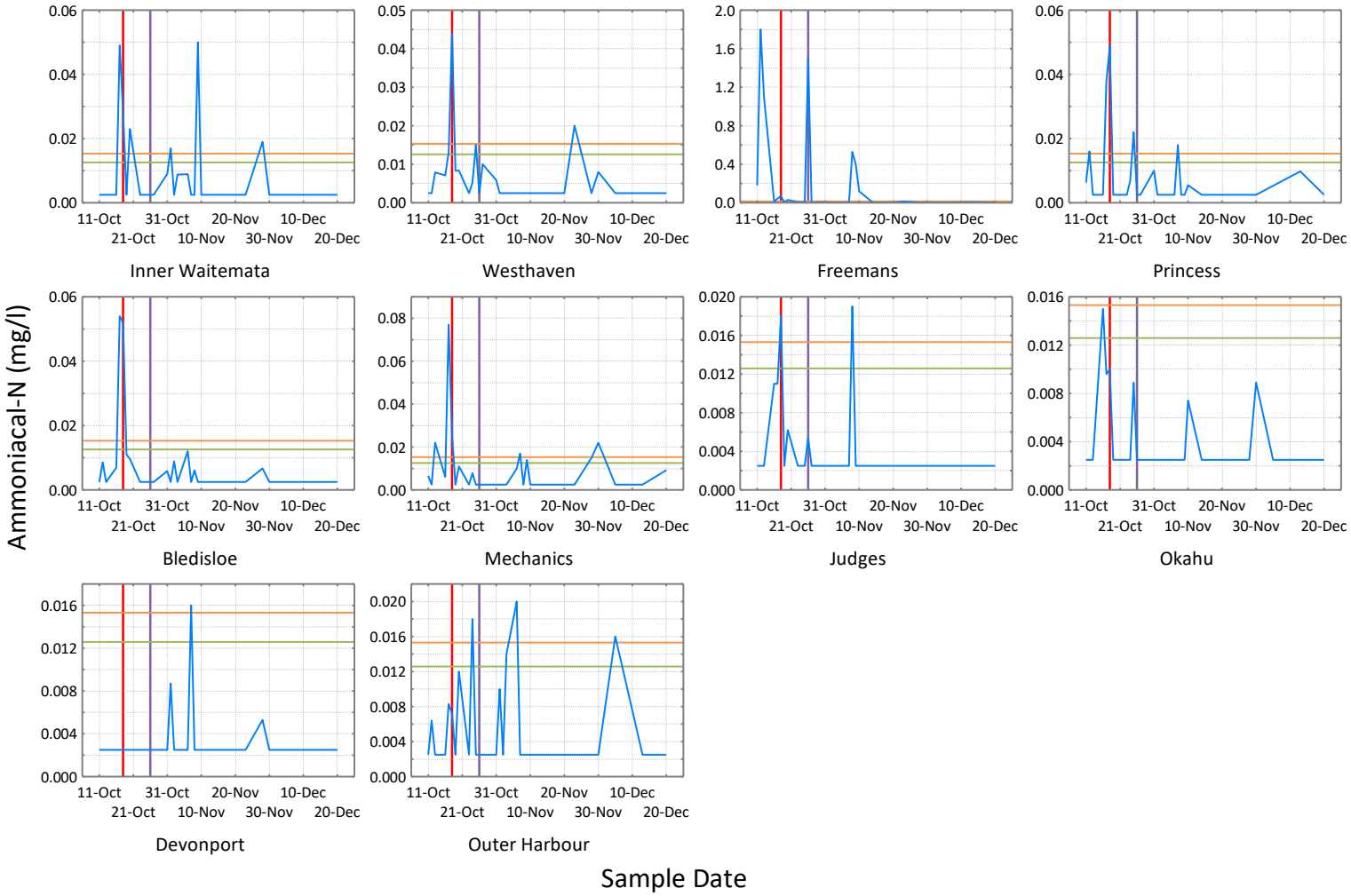


Figure 30: Concentrations of total oxidised nitrogen (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023) Reference lines are not apparent when their concentrations exceed the y-axis range. Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024). Note different y-axis scales for some sites.

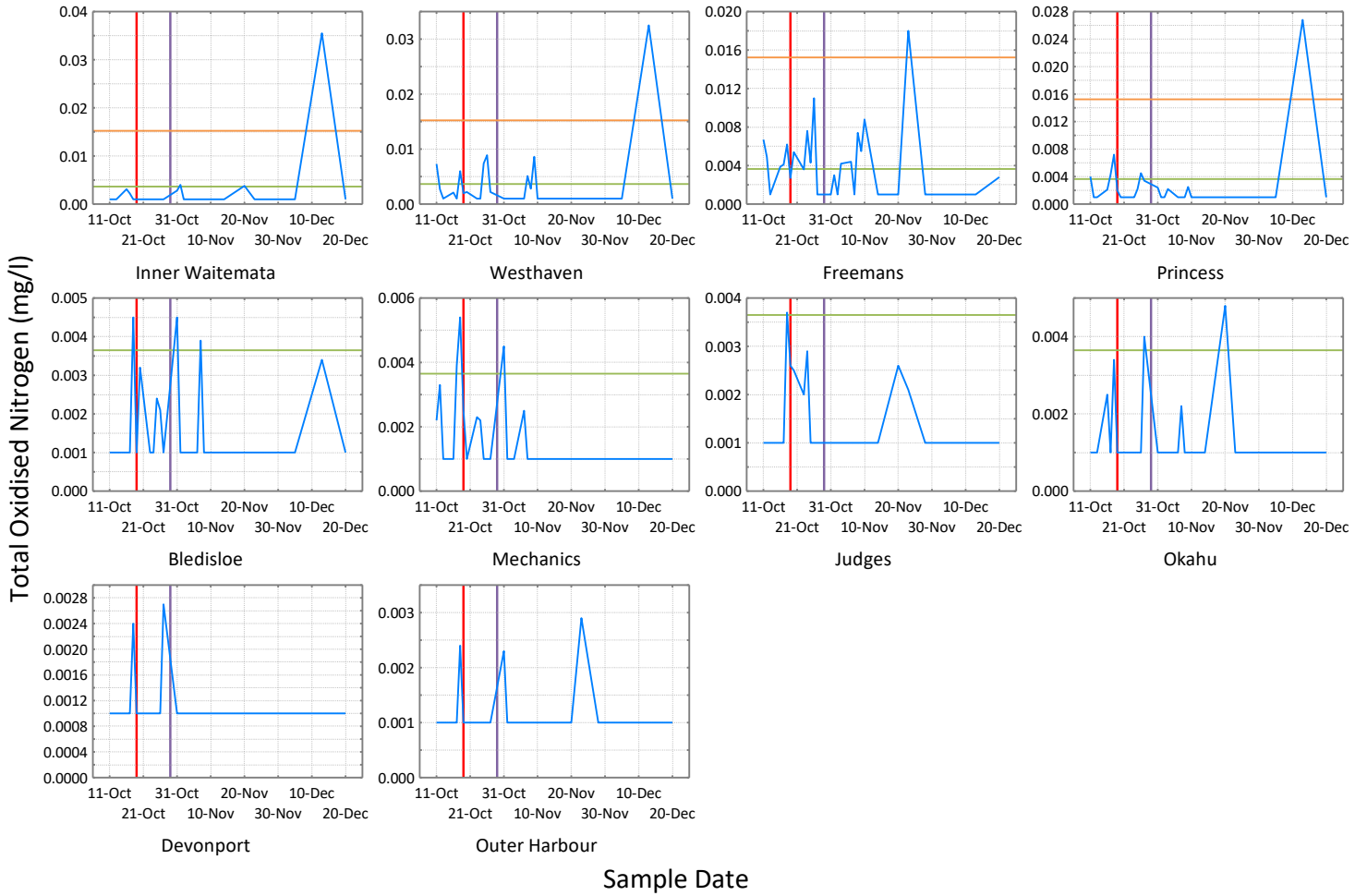


Figure 31: Concentrations of dissolved reactive phosphorus (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Reference lines are not apparent when their concentrations exceed the y-axis range. Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024). Note different y-axis scales for some sites.

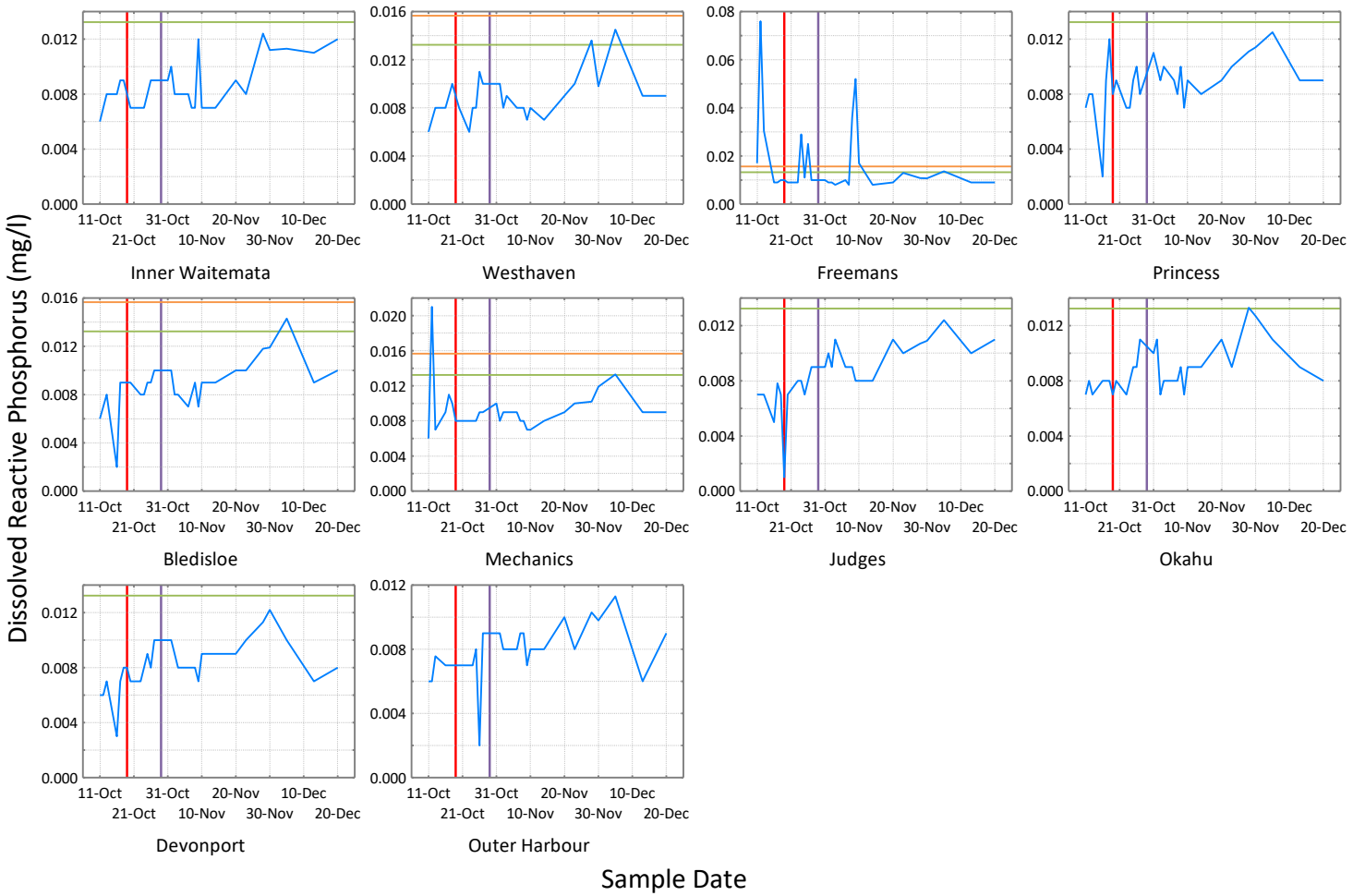


Figure 32: Concentrations of chlorophyll *a* (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. (mg/l). For context, reference lines have been provided showing mean concentrations at the site with the highest mean in the central Waitematā (Henderson–orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023). Red vertical lines show when the bypass had been put in place and discharges were reducing, while dry weather overflows had ceased by the date indicated by purple vertical lines (Utting 2024). Note different y-axis scales for some sites.

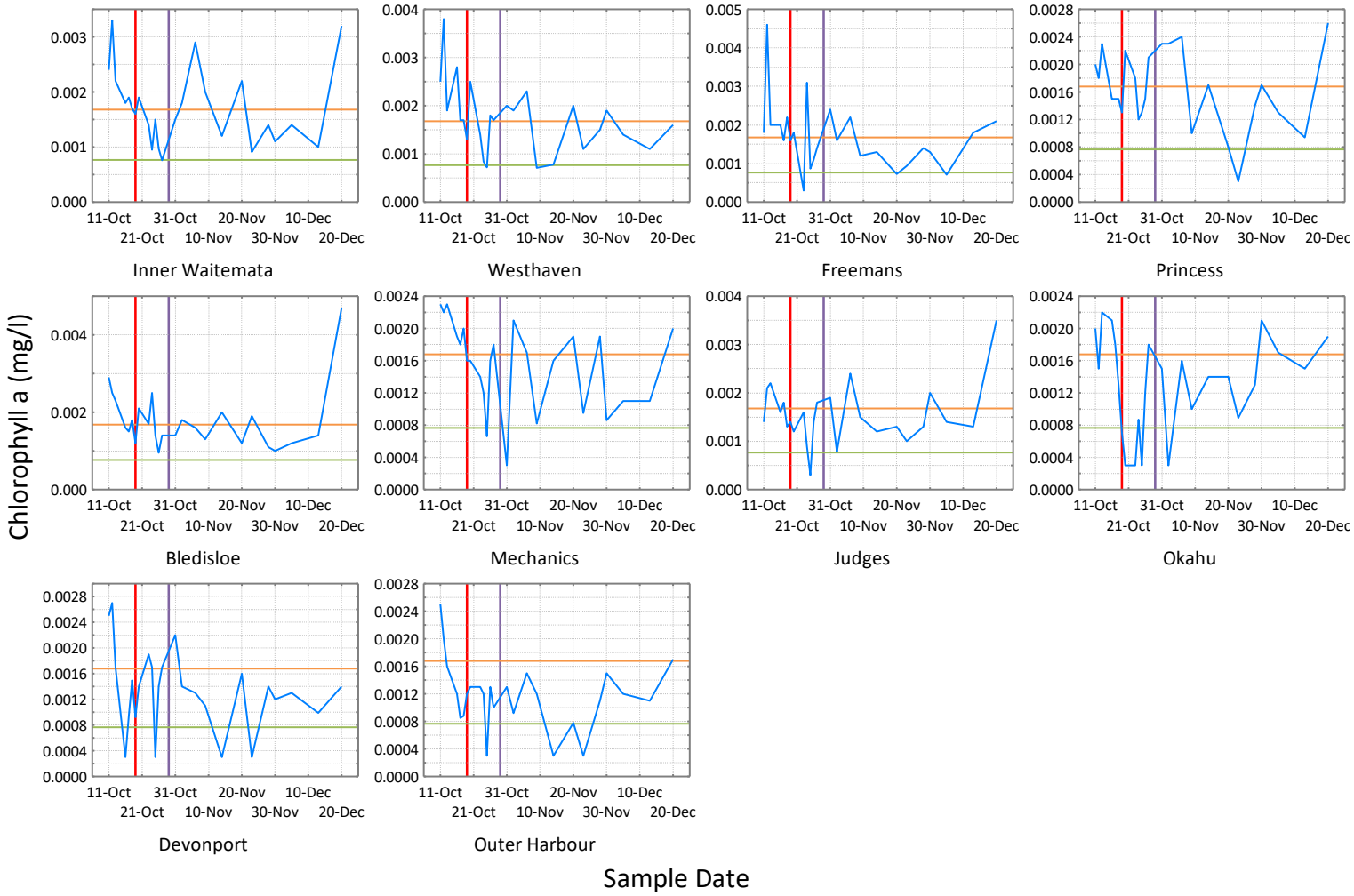


Figure 33: Variation in the mean log_{10} transformed total nitrogen concentrations (± 95% C.I.) in surface water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October) (n=6 for each combination of site, depth and period), and the no dry weather overflow period (after 26 October n = 18). The Freemans site has been excluded.

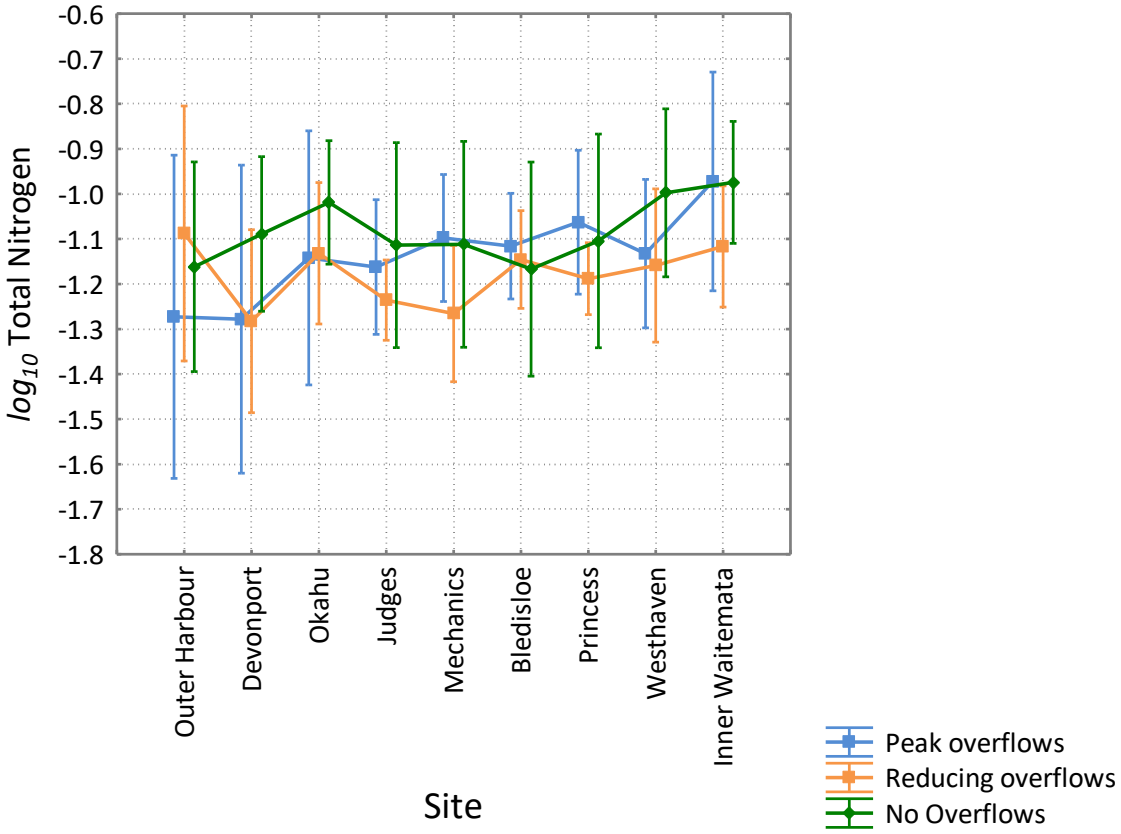


Figure 34: Variation in the mean log_{10} transformed total phosphorus concentrations (± 95% C.I.) in water samples obtained from outer to inner Waitematā Harbour sites during the periods of peak dry weather discharge volumes (11 to 18 October) and declining dry weather discharge volumes (19 to 26 October) (n=6 for each combination of site and period), and the no dry weather overflow period (after 26 October n = 18). The Freemans site has been excluded.

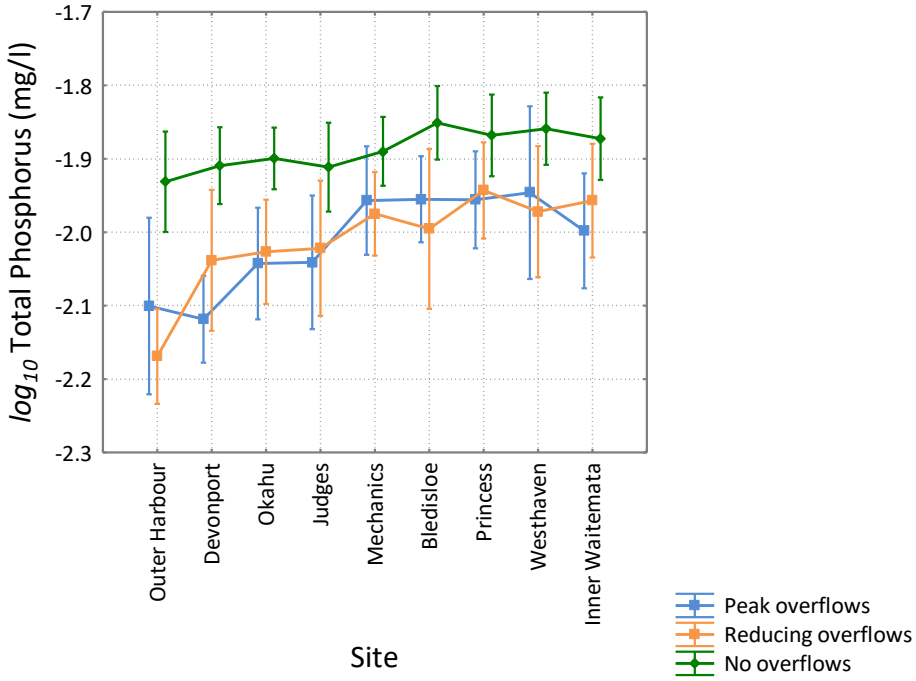
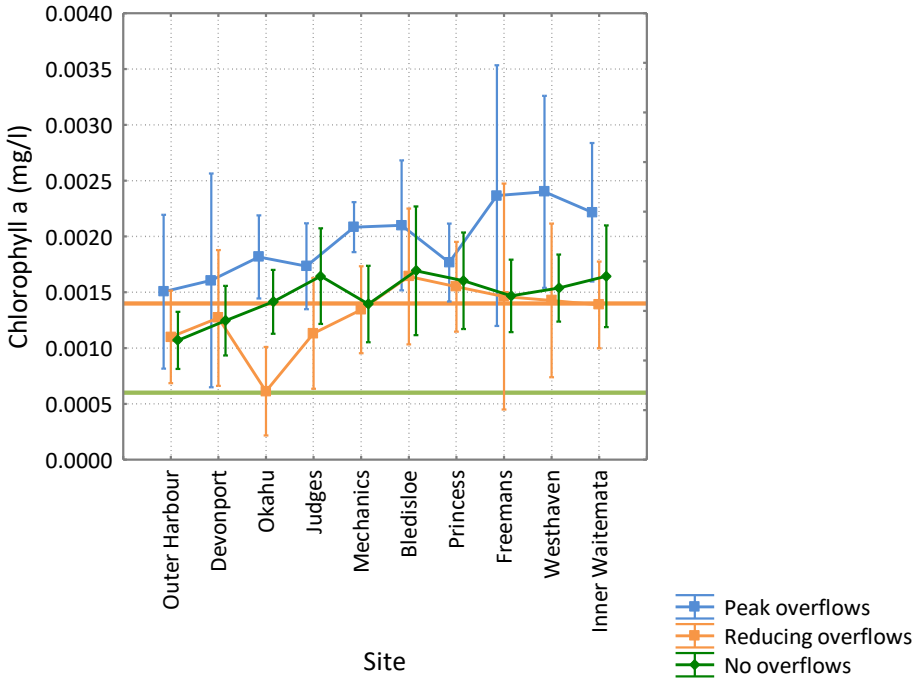


Figure 35: Mean (± 95% C.I.) concentrations of chlorophyll *a* in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, reference lines have been provided showing median concentrations at the Henderson site in the central Waitematā (orange) and closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023).



4.2.2.4 HEAVY METAL/METALLIOD AND AMMONIA TOXICITY

Line plots of total recoverable arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, and zinc concentrations showed that:

- Total recoverable cadmium and mercury were always below detection limits. Therefore, plots of those metals are not provided. In the case of mercury, the reported detection limit (0.0005 mg/l) was slightly greater than the ANZG (2018) DGV for the protection of 95% of species (0.0004 mg/l).
- Concentrations of lead were frequently below detection limits (82% of samples).
- Total recoverable chromium, cobalt and nickel concentrations remained well below their respective ANZG (2018) DGVs for the protection of 95% of species (Figure 36 to Figure 38).
- Total recoverable copper concentrations in around 14% of samples exceeded the ANZG (2018) DGV for the protection of 95% of species (Figure 39). Largest exceedances occurred at the Inner Waitematā (21 times the DGV on 7 November and 13 times on the 26 October), Devonport (20 times the DGV on 25 October) and Outer Harbour (5 times the DGV on the 24 October) sites. Dissolved copper concentrations only exceeded the DGV twice and exceedances were marginal on both occasions (Figure 40).
- Total recoverable zinc concentrations in around 2% of samples exceeded the ANZG (2018) DGV for the protection of 95% of species (Figure 39). Largest exceedances occurred at the Bledisloe (100 times the DGV on 25 October) and Outer Harbour (67 times the DGV on the 25 October) sites. Exceedances at other sites ranged from 1.1 to 8 times the DGV. All dissolved zinc concentrations were well below the DGV (Figure 42).

Figure 36: Total recoverable chromium concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, red reference lines have been provided showing ANZG (2018) chromium (CrVI) water quality DGVs for the protection of 95% of species. Reference lines are not apparent when their concentrations exceed the y-axis range. Half detection limits have been used when reported concentrations were below those limits. Note different y-axis scales for some sites.

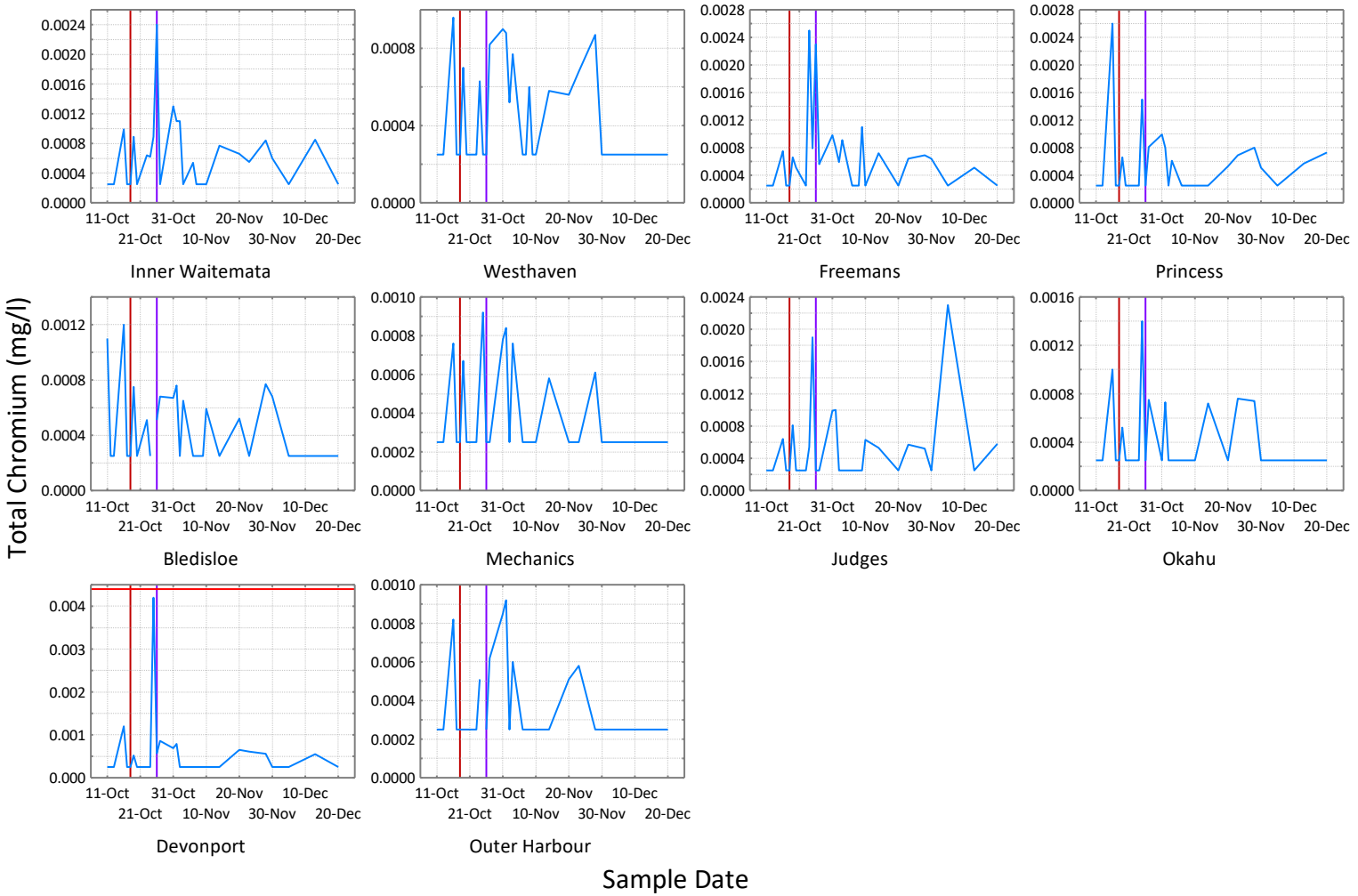


Figure 37: Total recoverable cobalt concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. Concentrations at all sites remained well below the ANZG (2018) water quality DGVs for the protection of 95% of species. Half detection limits have been used when reported concentrations were below those limits. Note different y-axis scales for some sites.

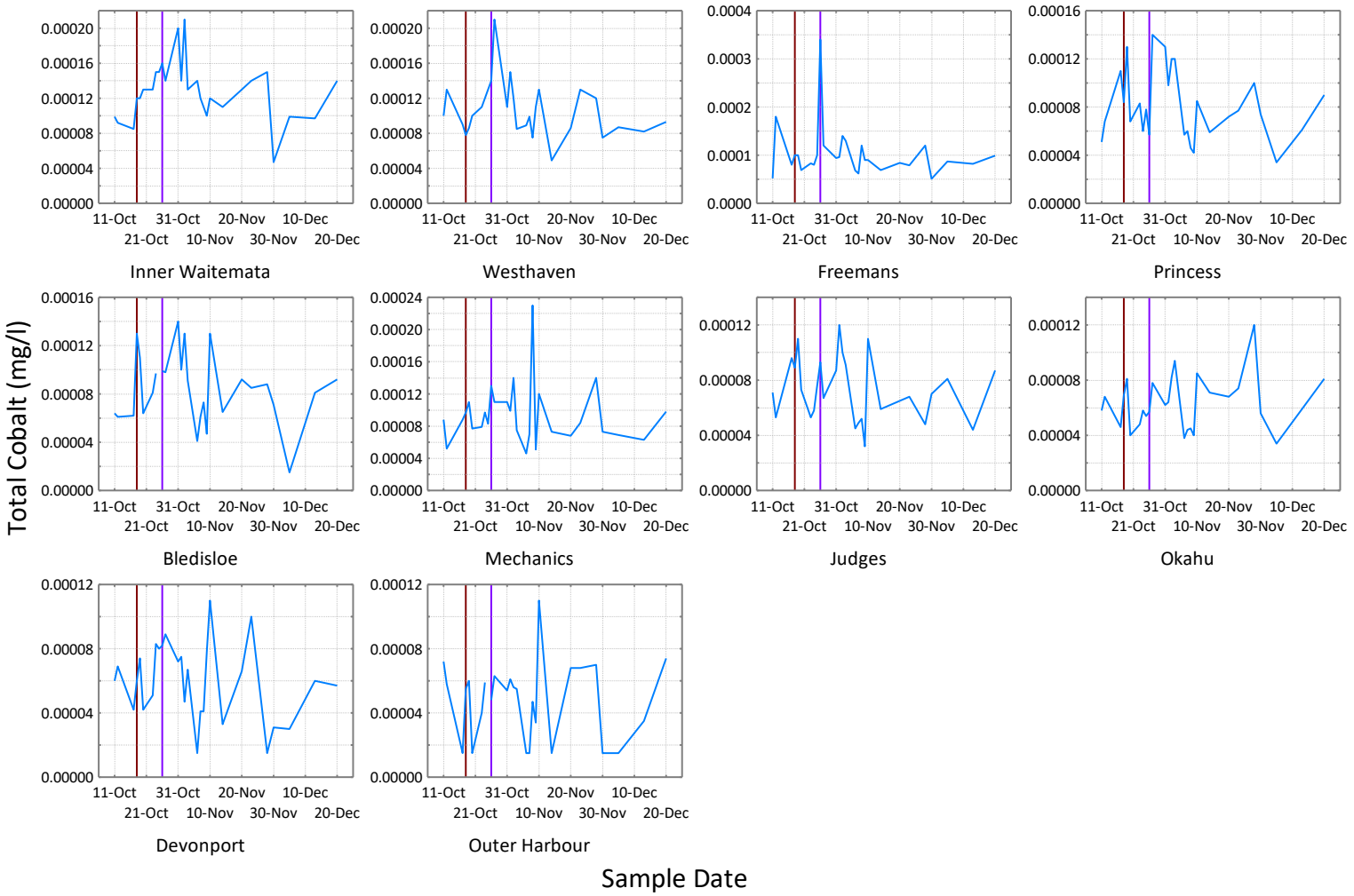


Figure 38: Total recoverable nickel concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. Concentrations at all sites remained well below the ANZG (2018) water quality DGVs for the protection of 95% of species. Half detection limits have been used when reported concentrations were below those limits. Note different y-axis scales for some sites.

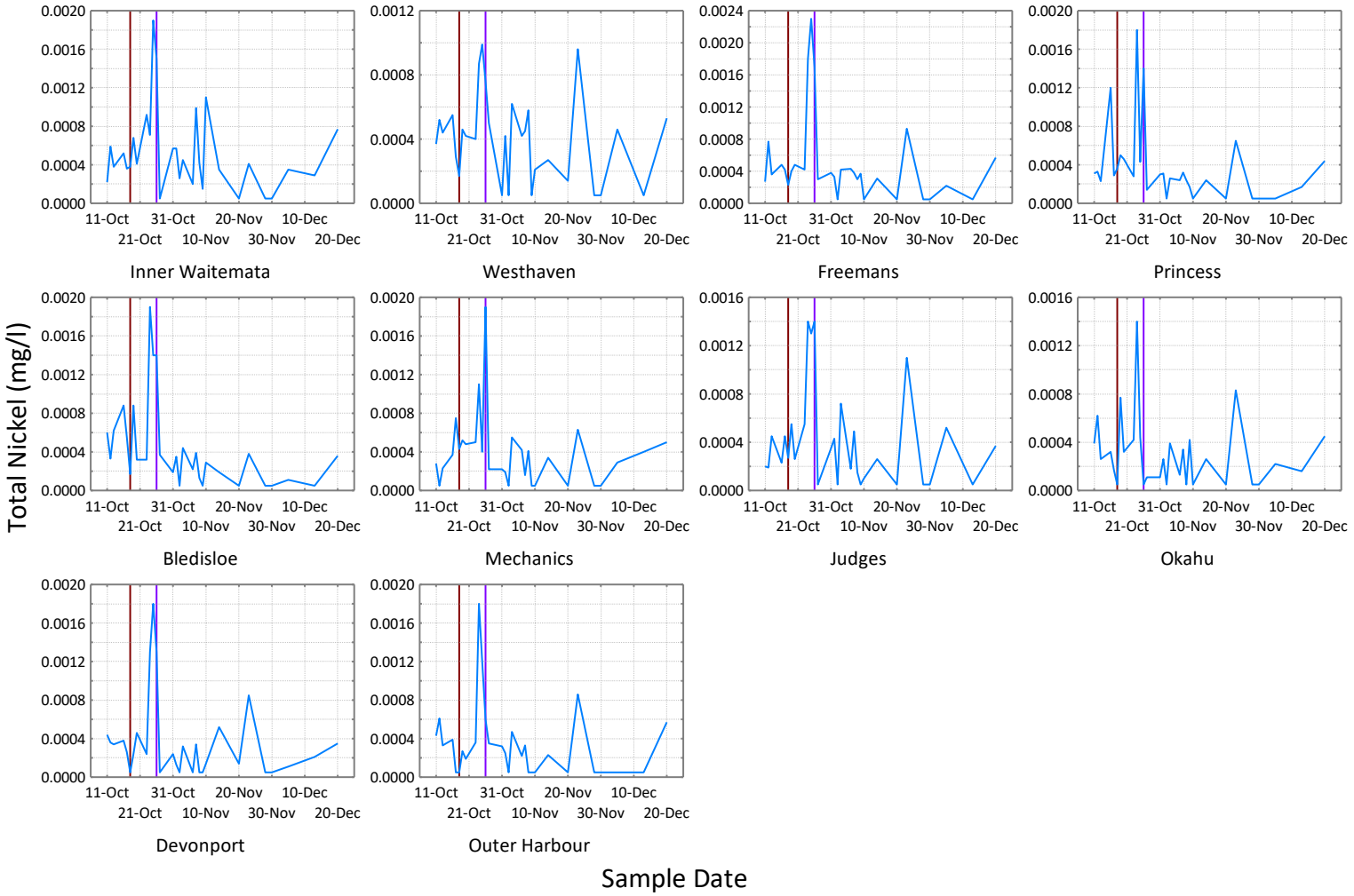


Figure 39: Total recoverable copper concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, red reference lines have been provided showing ANZG (2018) the water quality DGVs for the protection of 95% of species. Half detection limits have been used when reported concentrations were below those limits. Note different y-axis scales for some sites.

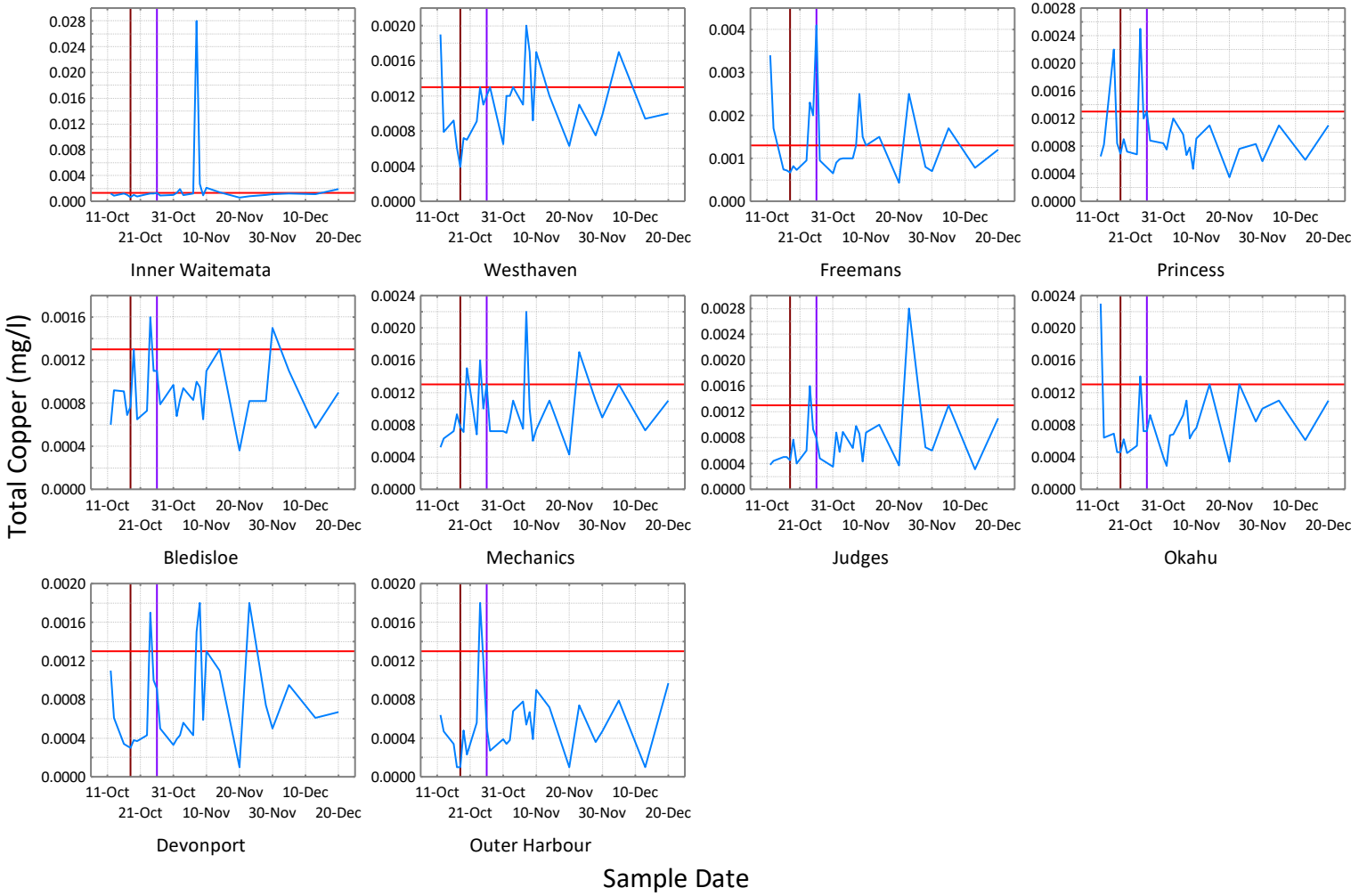


Figure 40: Dissolved copper concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, red reference lines have been provided showing ANZG (2018) water quality DGVs for the protection of 95% of species. Half detection limits have been used when reported concentrations were below those limits.

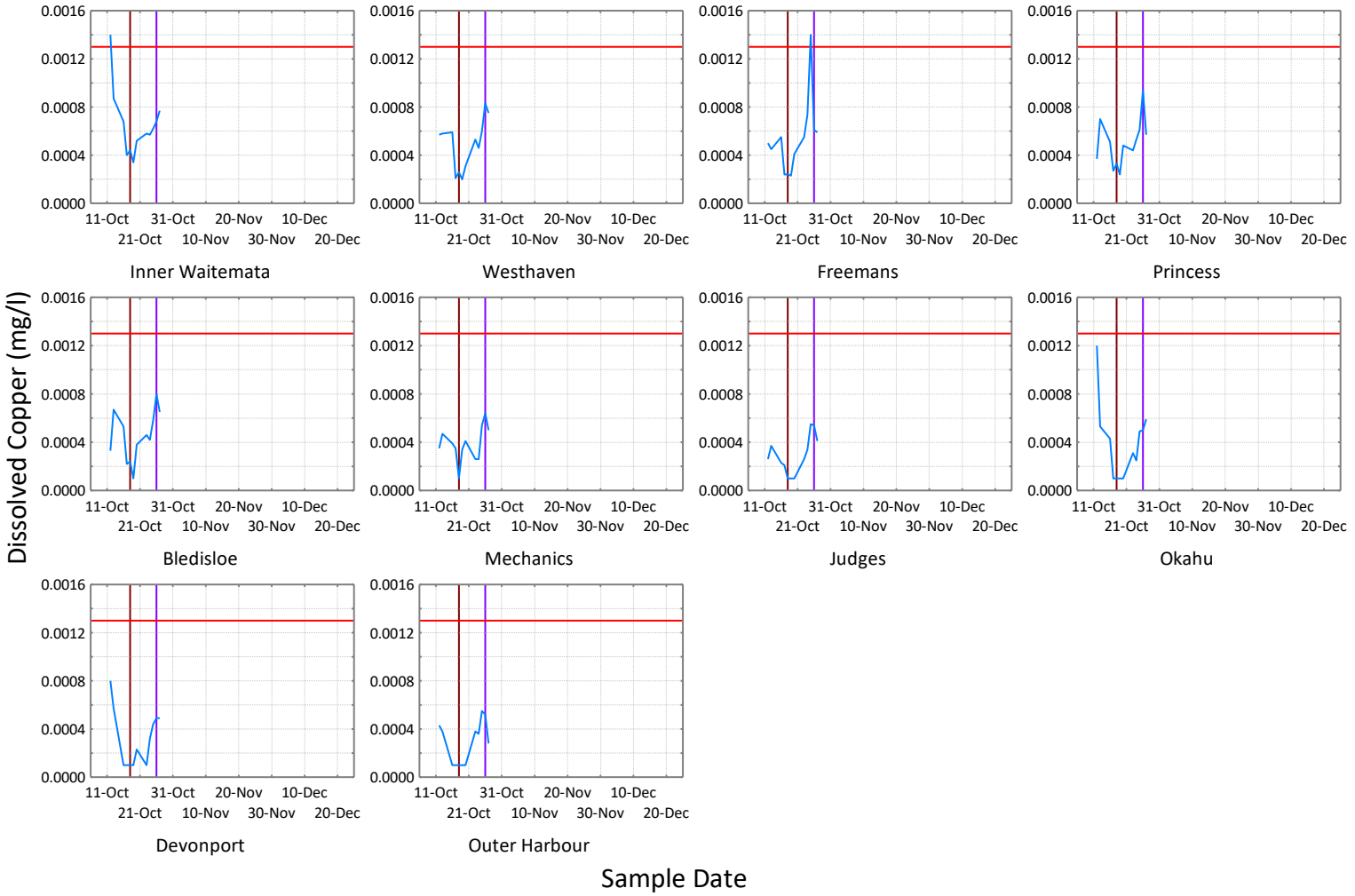


Figure 41: Total recoverable zinc concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, red reference lines have been provided showing ANZG (2018) water quality DGVs for the protection of 95% of species. Reference lines are not shown when their concentrations exceed the y-axis range. Half detection limits have been used when reported concentrations were below those limits, and anomalous data points of 1 and 1.5 mg/l recorded from the Outer Harbour and Bledisloe sites, respectively, on the 25 October have been excluded. Note different y-axis scales for some sites.

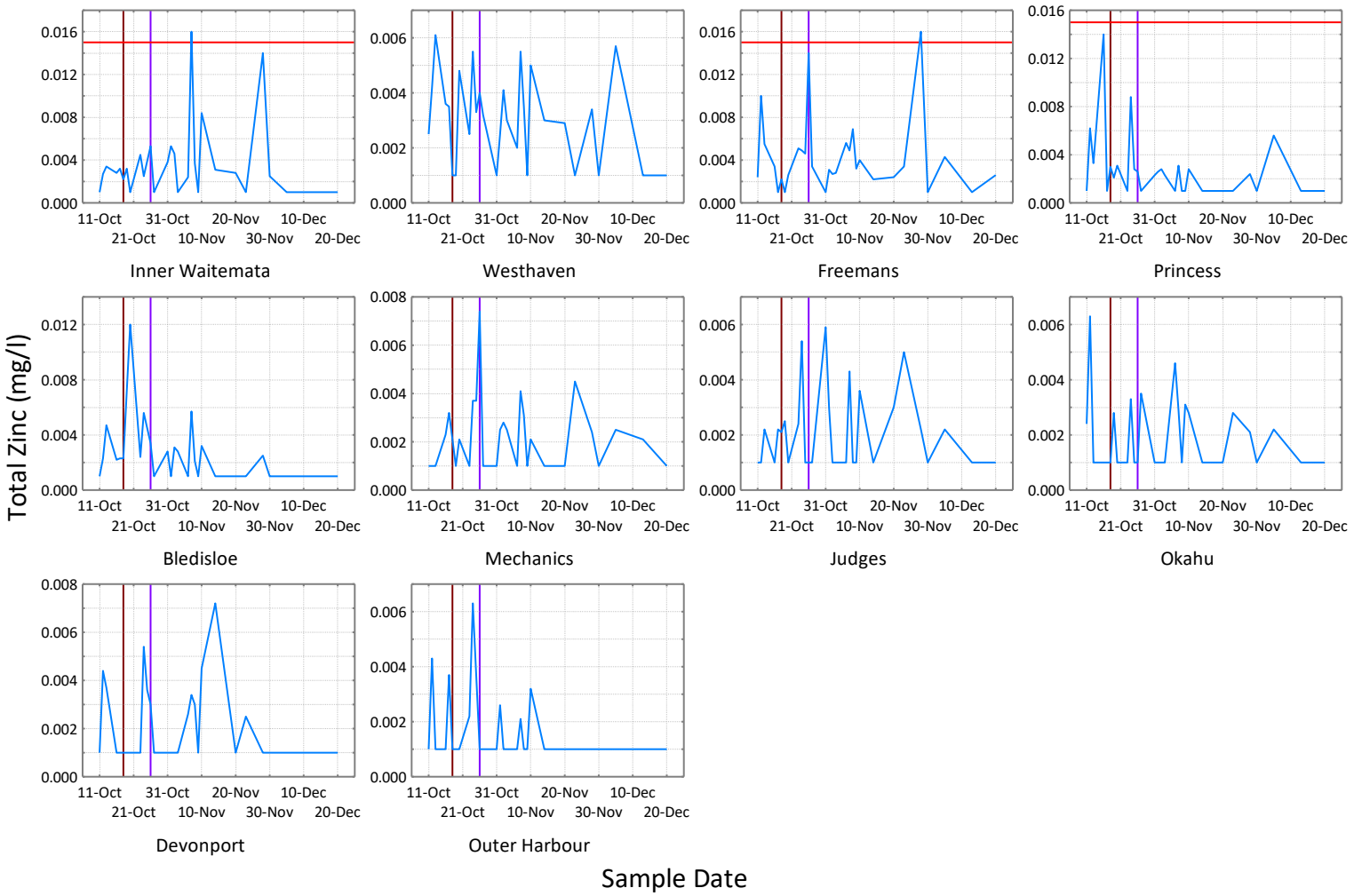
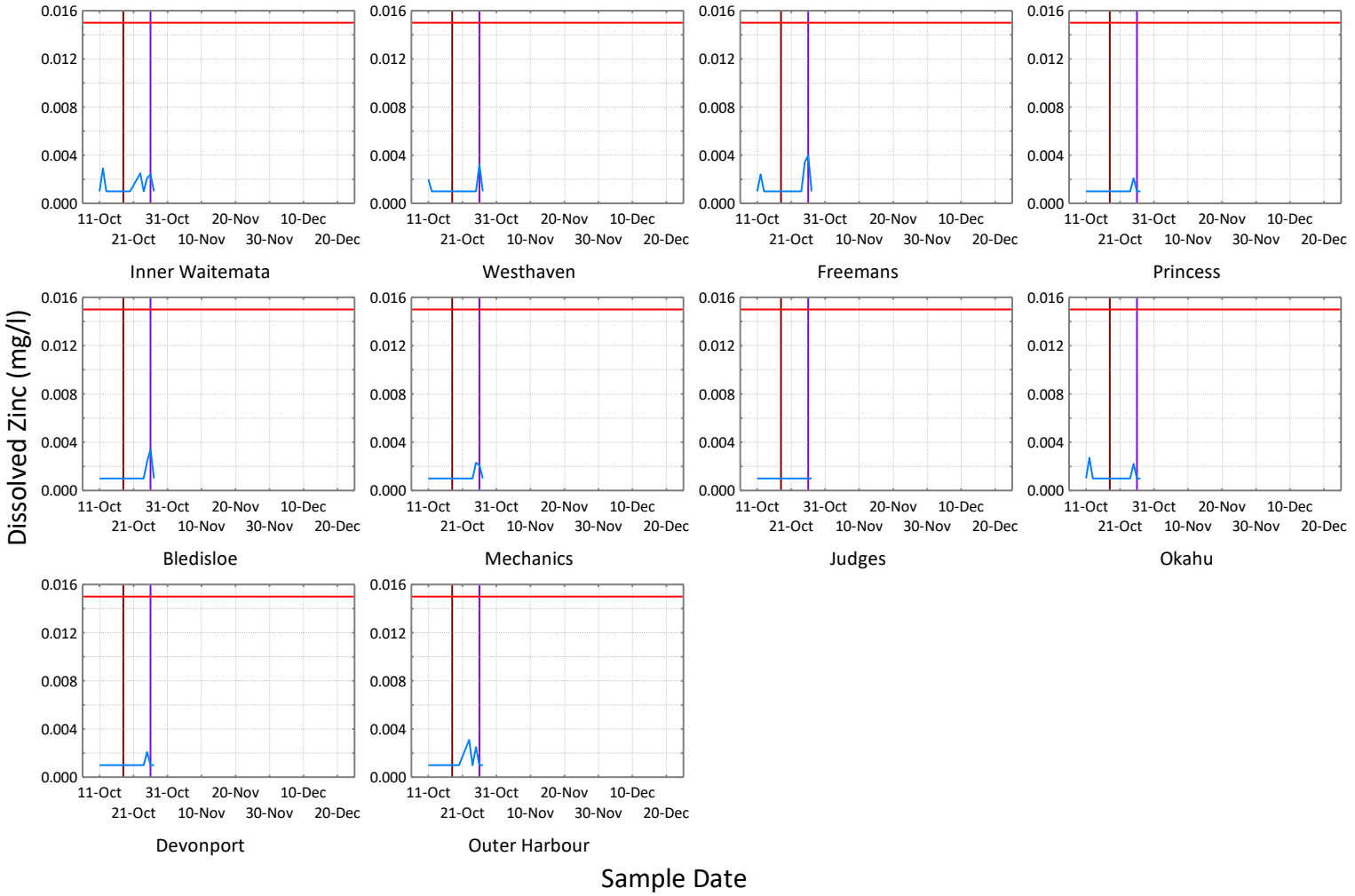


Figure 42: Dissolved zinc concentrations (mg/l) in surface water samples from inner to outer Waitematā Harbour monitoring sites. For context, red reference lines have been provided showing ANZG (2018) water quality DGVs for the protection of 95% of species. Half detection limits have been used when reported concentrations were below those limits.



4.2.3 SHELLFISH CONTAMINATION

Elevated concentrations of all four microbial indicators of human health risk (*E. coli*, faecal coliforms, enterococci, and bacteriophages) were detected in oysters (Figure 43 and Figure 44), and concentrations of all four were highly correlated ($p < 0.001$, r values of 0.7542 to 0.9882, Figure 45).

Peak concentrations from the Freemans Bay site (where oysters were set directly beside the Brigham Street (Discharge A) outfall), were exceptionally high, with *E. coli* and faecal coliform concentrations of >160,000 MPN/100 g being recorded on 17 October (i.e., during the overflow period) and at the conclusion of sampling on 20 December (i.e., over 50 days after network modelling and observations indicate that dry weather overflows had ceased). Concentrations at the relatively remote, Ōkahu Wharf site were much lower (around two logs less), while intermediate concentrations were obtained from the Harbour Bridge and Mechanics Bay sites.

Escherichia coli concentrations at the Freemans Bay site were consistently well above the median (230 MPN/100 g) and 90th percentile (700 MPN/100 g) concentrations of the Ministry of Primary Industries, Regulated Control Scheme for farming of bivalve molluscan shellfish for human consumption (Ministry for Primary Industries 2018[13]). Concentrations at the Harbour Bridge and Mechanics Bay sites declined from initial peaks well above the Regulated Control Scheme's reference values on 17 October, and subsequently fluctuated between the scheme's median and 90th percentile values. Concentrations at the Ōkahu Wharf site fluctuated between, or below, the median and 90th percentile values (Figure 43).

Oyster metal concentrations displayed the following general patterns:

- Arsenic, cadmium, cobalt, copper, mercury, and zinc concentrations were highly correlated ($r = 0.7661$ to 0.9935, $p<0.001$, Figure 46) and tended to increase over the sampling period, with no clear differences between most sites. The exception was the Mechanics Bay site, where copper, cobalt, mercury, and zinc concentrations were relatively stable over time (Figure 47 to Figure 51).
- Chromium concentrations were stable for a period, and then increased after 20 November (Figure 48).
- Lead concentrations were initially high at the Harbour Bridge site but declined substantially between the second and third sampling round. Concentrations were similar and stable, or increased slightly over time, at the other sites (Figure 49).
- Nickel concentrations fluctuated at all sites over time, with no consistent pattern and no clear differences among sites (Figure 50).

[13] These values are consistent with the European Union Class A standard (Campbell et al. 2022).

Figure 43: *Escherichia coli* (left) and faecal coliform (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay and Ōkahu Wharf monitoring sites. For reference, *E. coli* median (orange line–230 MPN/100 g) and 90th percentile (red line–700 MPN/100 g) concentrations from the Regulated Control Scheme for farming of bivalve molluscan shellfish for human consumption (Ministry for Primary Industries 2018) are provided.

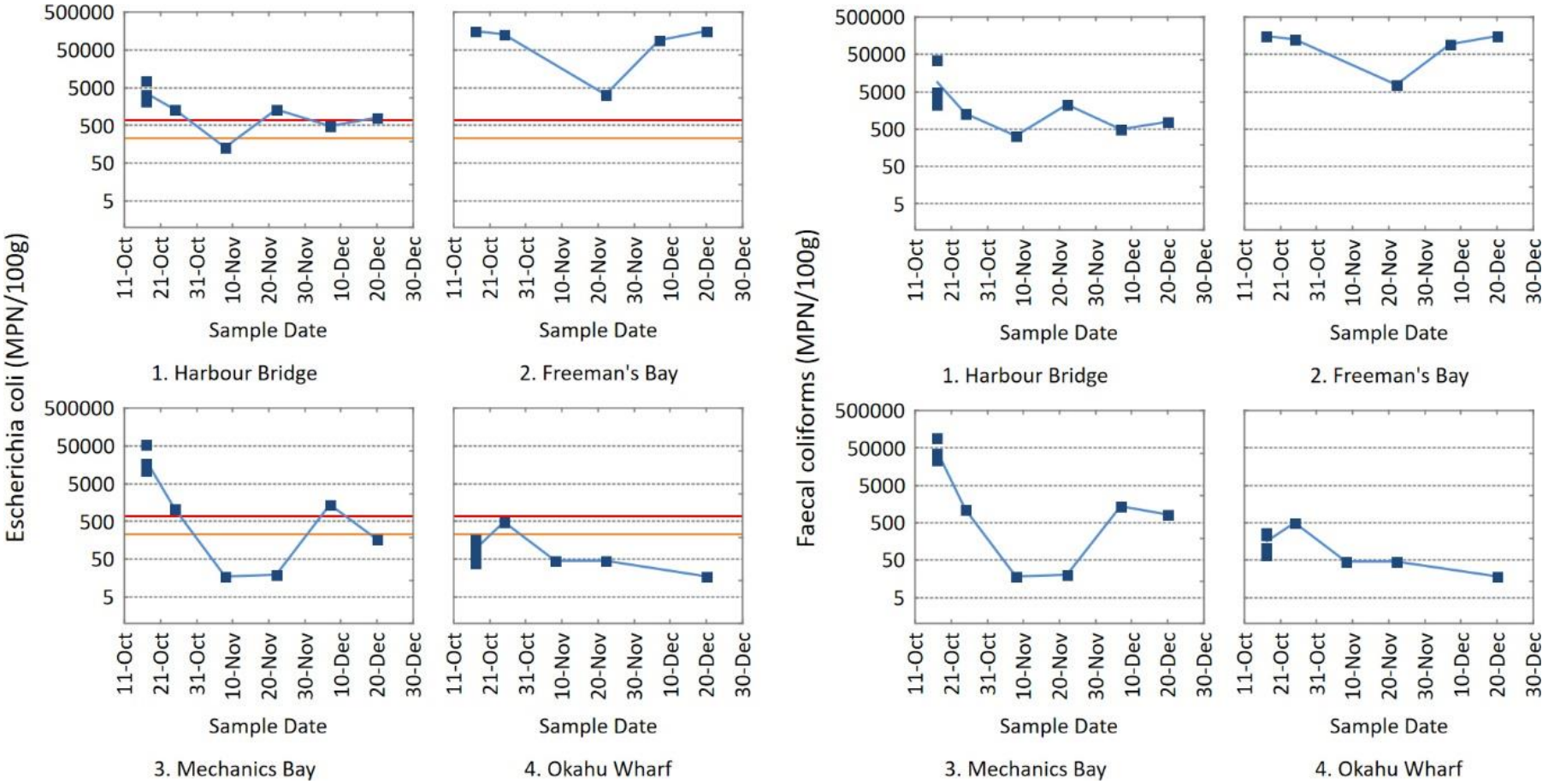


Figure 44: Enterococci (left) and bacteriophage (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay and Ōkahu Wharf monitoring sites.

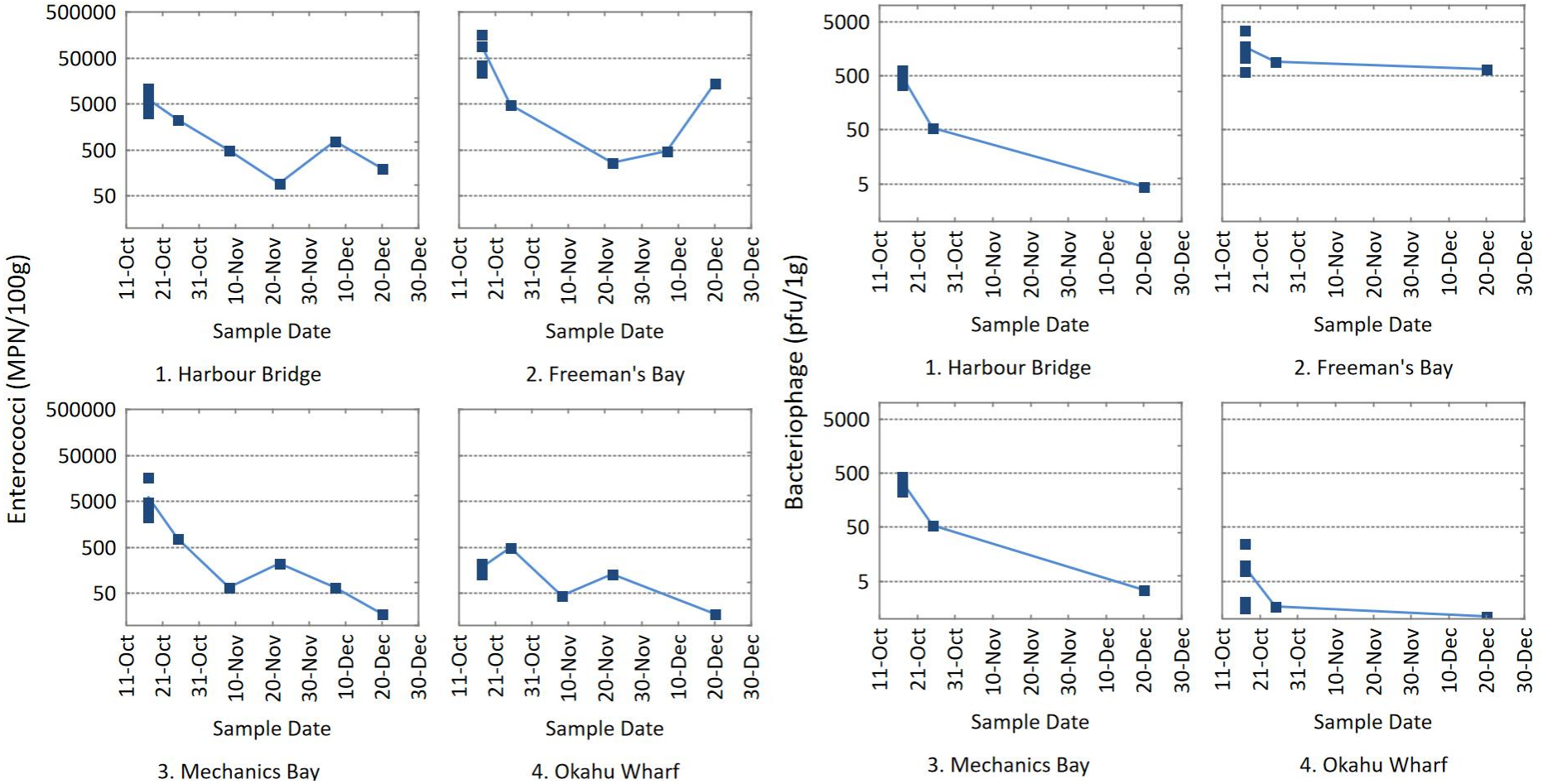


Figure 45: Correlations between log_{10} concentrations of microbial health risk indicators. Least squares linear regression (± 95% C.I.) fitted.

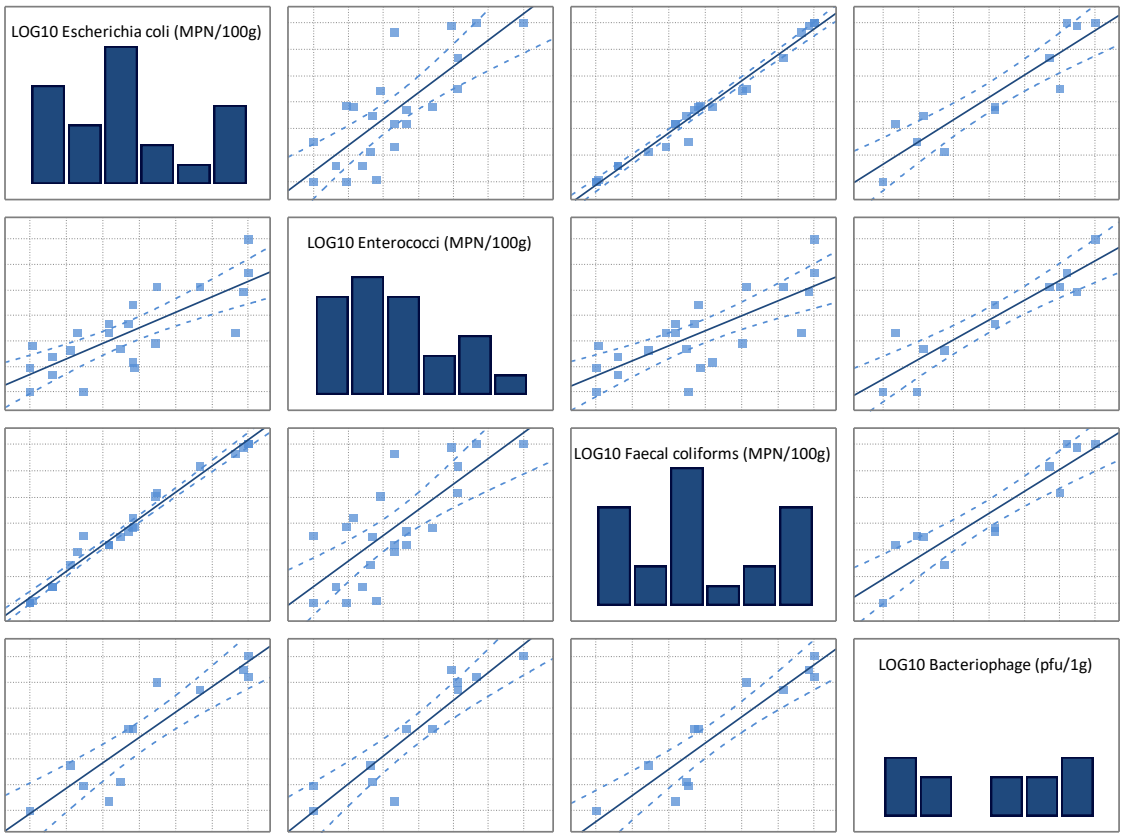


Figure 46. Correlations between total recoverable metal concentrations in oysters. Least squares linear regression (± 95% C.I.) are fitted.

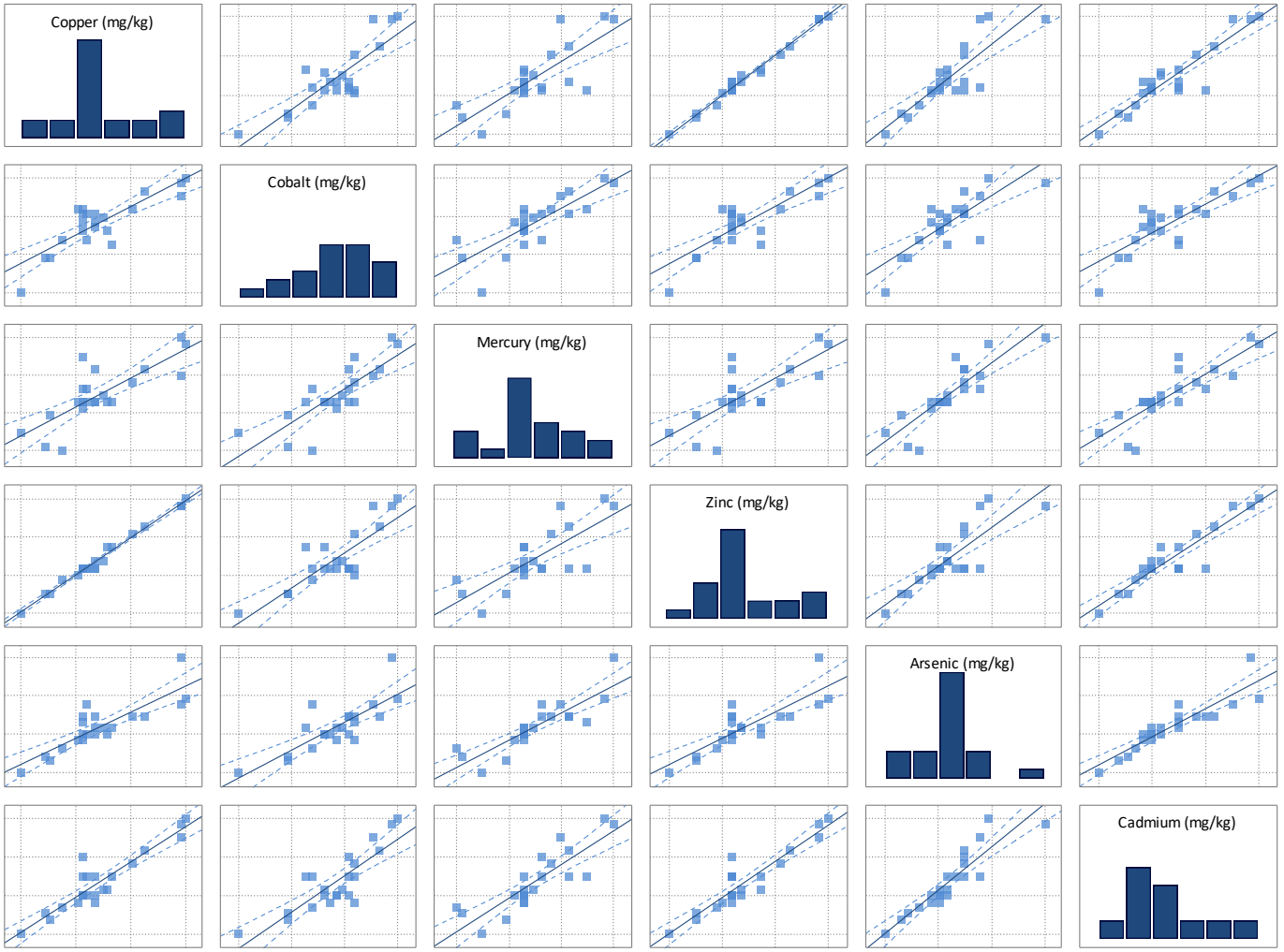


Figure 47: Total recoverable arsenic (left) and cadmium (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay, and Ōkahu Wharf monitoring sites.

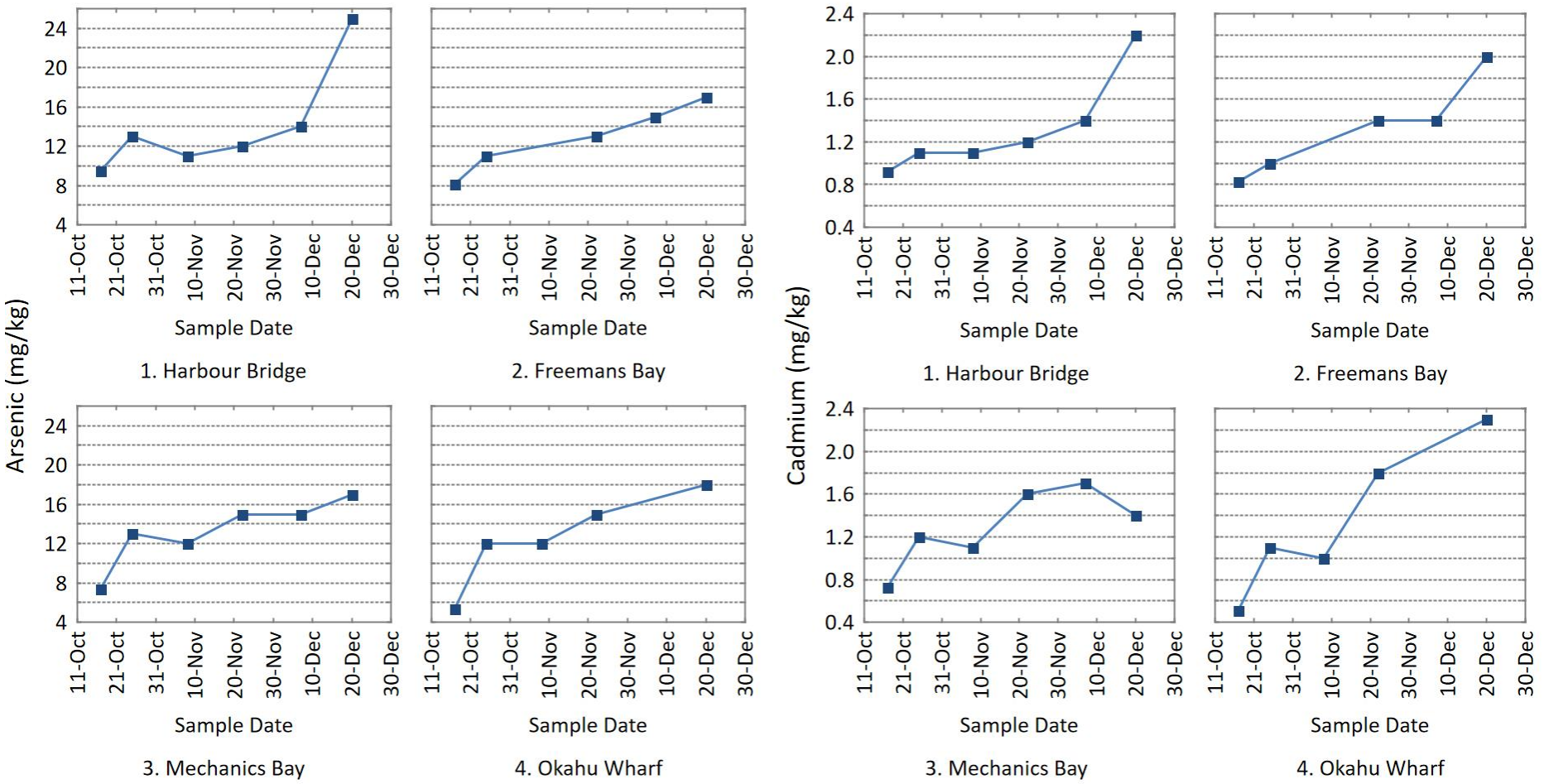


Figure 48: Total recoverable chromium (left) and cobalt (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay, and Ōkahu Wharf monitoring sites.

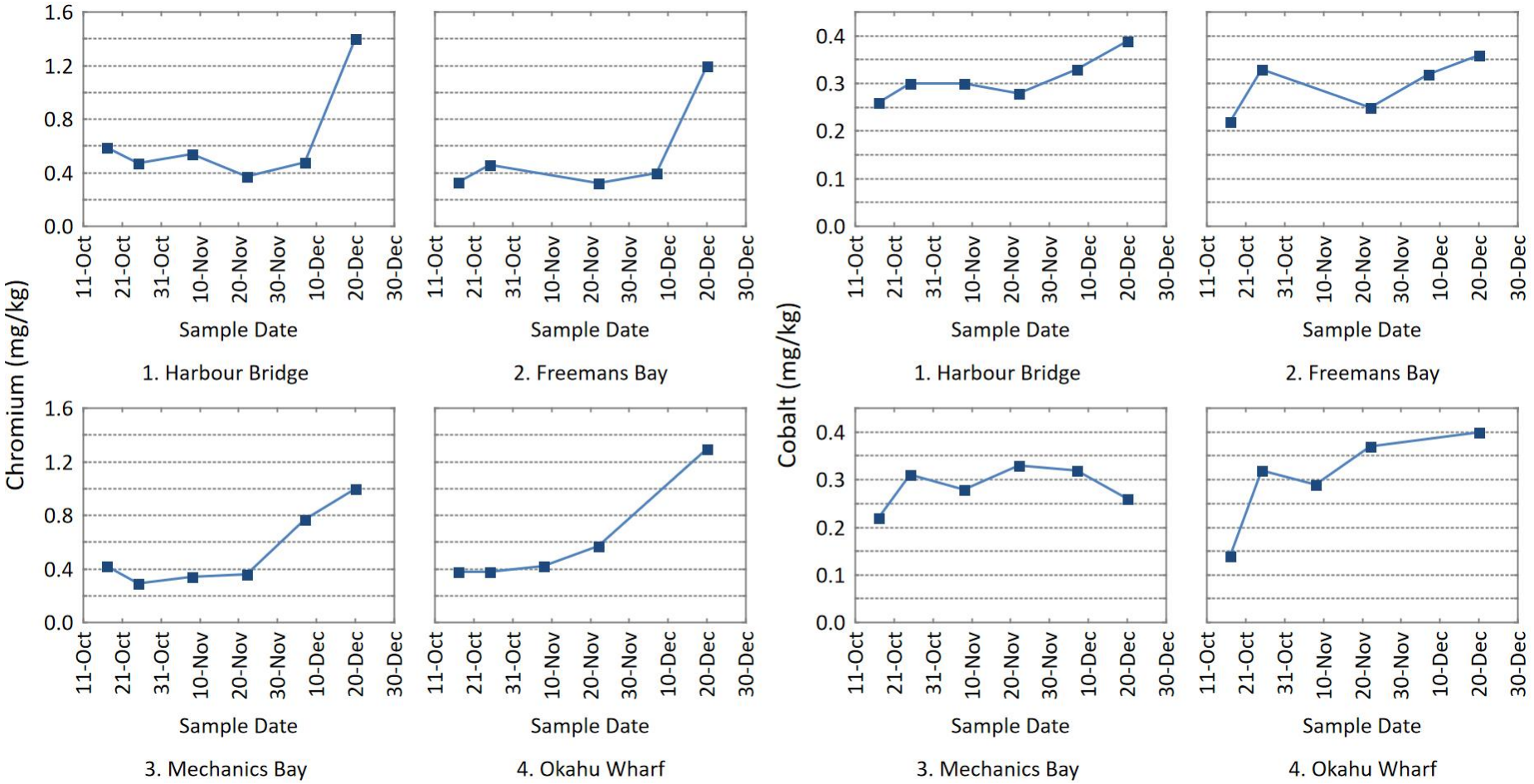


Figure 49: Total recoverable copper (left) and lead (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay, and Ōkahu Wharf monitoring sites.

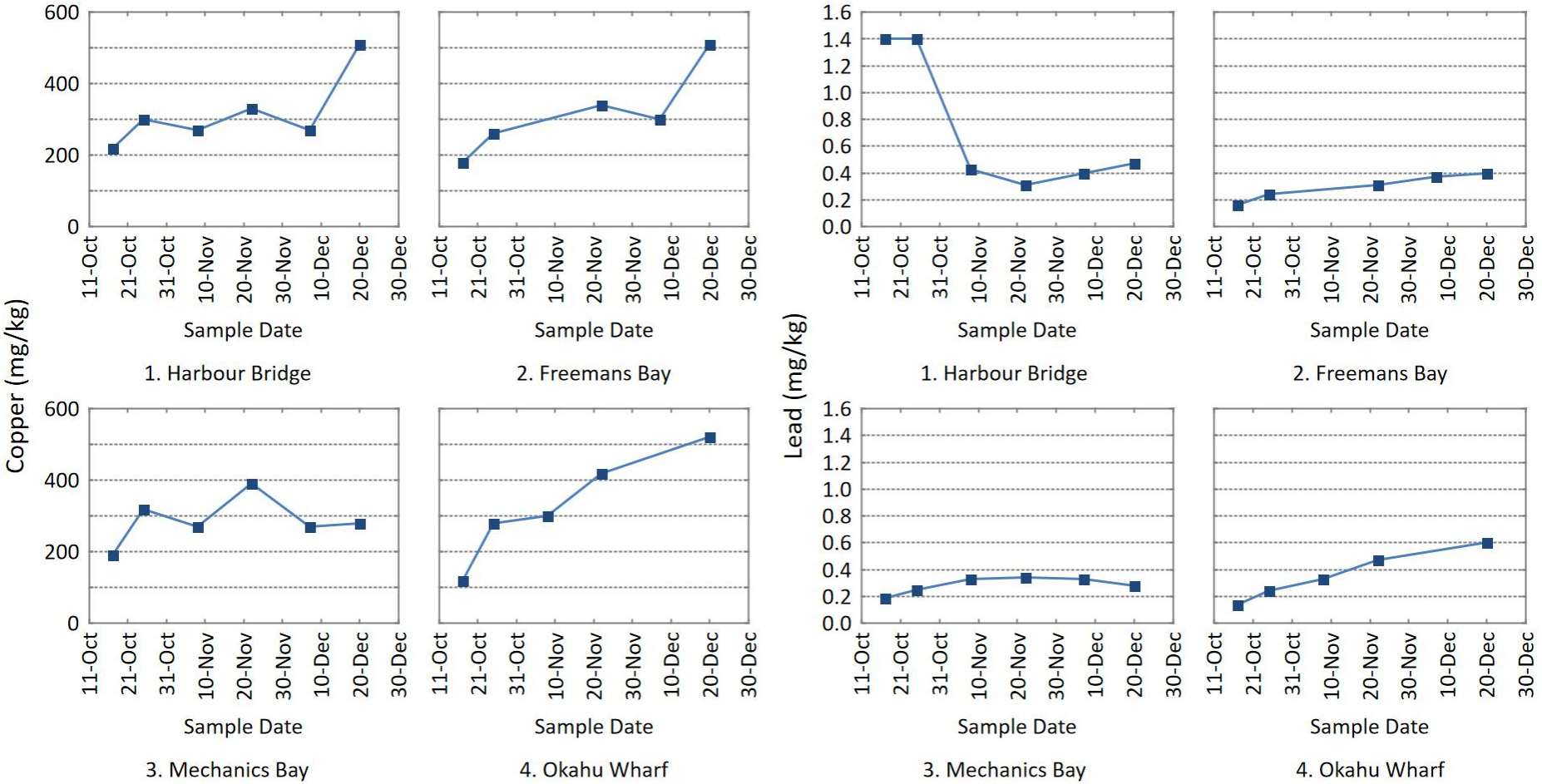


Figure 50: Total recoverable mercury (left) and nickel (right) concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay, and Ōkahu Wharf monitoring sites.

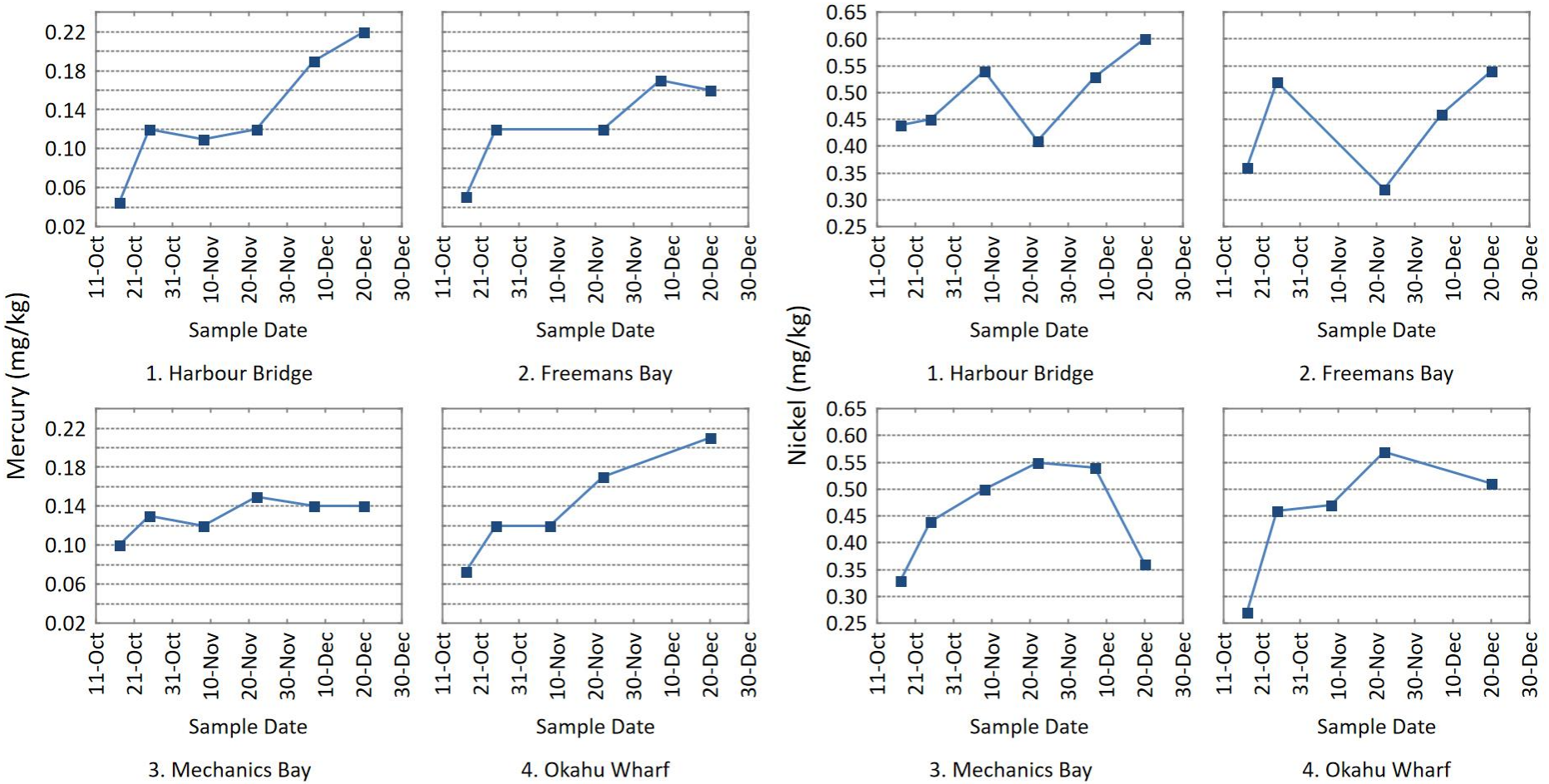
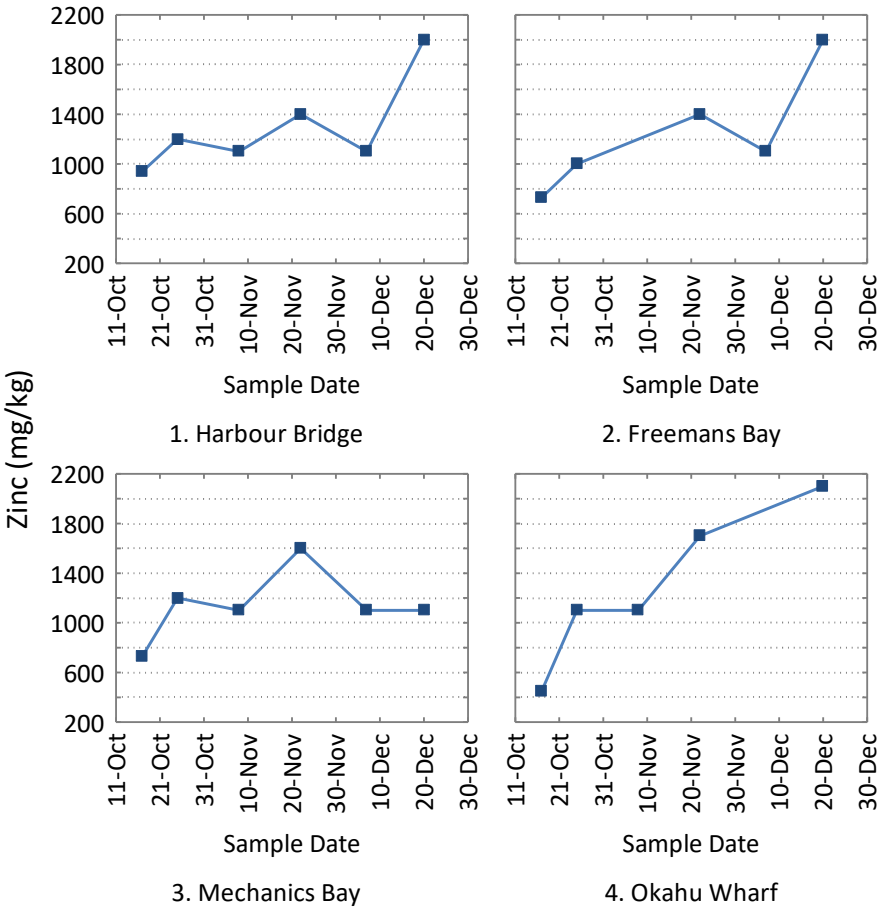


Figure 51: Total recoverable zinc concentrations in individual (17 Oct) and composite samples (other dates) of oysters at the Harbour Bridge, Freemans Bay, Mechanics Bay, and Ōkahu Wharf monitoring sites.



4.2.4 SEDIMENT QUALITY

Sediment texture varied considerably among sampling areas (Figure 52 and Figure 53):

- Sediments within the Eastern Bays sites were dominated by very fine sand and mud, with less fine sand and small proportions of coarser fractions.
- Sediments within the Port Basins sites were dominated by mud, with secondary contributions of fine and very fine sand, and minor proportions of coarser fractions.
- Mixed sediments were present within the Port Channel sites, with the gravel (i.e., coarse shell) and mud fractions varying considerably among and within sites. In particular, the mean percentage of mud at the Halsey site, which was situated at the outer margin of the Jellicoe/Viaduct Harbour basins, was more similar to percentages obtained from sites in bays east of the port.
- Mixed sediments were present within the Northern Channel sites that were dominated by gravelly material i.e., coarse shell) and a mix of mud, very fine and fine sand.

Sediments from sites in port basins had mean percentages of mud ranging from 73% ± 20.4 (95% C.I.) at the Westhaven site to 88% ± 7.0 (95% C.I.) at the Jellicoe site, while those in channel areas had mean proportions of 7% ± 5.8 (95% C.I.) at the Channel West to 38% ± 24.6 (95% C.I.) at the Halsey site. Sites in bays east of the port had mean mud contents varying from 28% ± 9.6 (95% C.I.) at the Ōrākei site to 47% ± 8.9 (95% C.I.) in Judges Bay.

Patterns in the mean proportions of total organic carbon, and volatile solids were similar, with highest mean percentages occurring in the port basin sites. Results from the sites closest to the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls were similar to those from other sites (Figure 53 and Figure 55).

Mean percentages of total organic carbon in sites from the eastern bay, port channel and northern channel areas were in the B band of Robertson et al. (2016), which is considered to be indicative of minor stress on sensitive intertidal organisms. Mean percentages of total organic carbon in port basin sites were in the C band, which is considered indicative of moderate stress.

Sites in the port basins also had the highest concentrations of chromium, copper, nitrogen and phosphorus, but differences were not apparent in the results from sites closest to the outfalls with the largest discharges, although highest nitrogen concentrations were obtained from the closest port basin site (Figure 54 and Figure 56). Mean concentrations of arsenic, copper, lead and mercury marginally exceeded their TEL guideline values at some sites, but concentrations were well below the ANZG (2018) DGV guidelines (Table 6 & Figure 54). There was little indication that metal concentrations were higher near the outfalls. When compared with Auckland Council's regional sediment dataset, copper, lead, mercury and zinc concentrations were relatively low—particularly given their location, surrounding land and marine uses, and long history of development and use (Figure 54, and Figure 57 to Figure 60).

Figure 52: Sediment grain size (mean percentages of each size fraction per site) in samples obtained from seabed sampling sites surveyed on 3 November 2023.

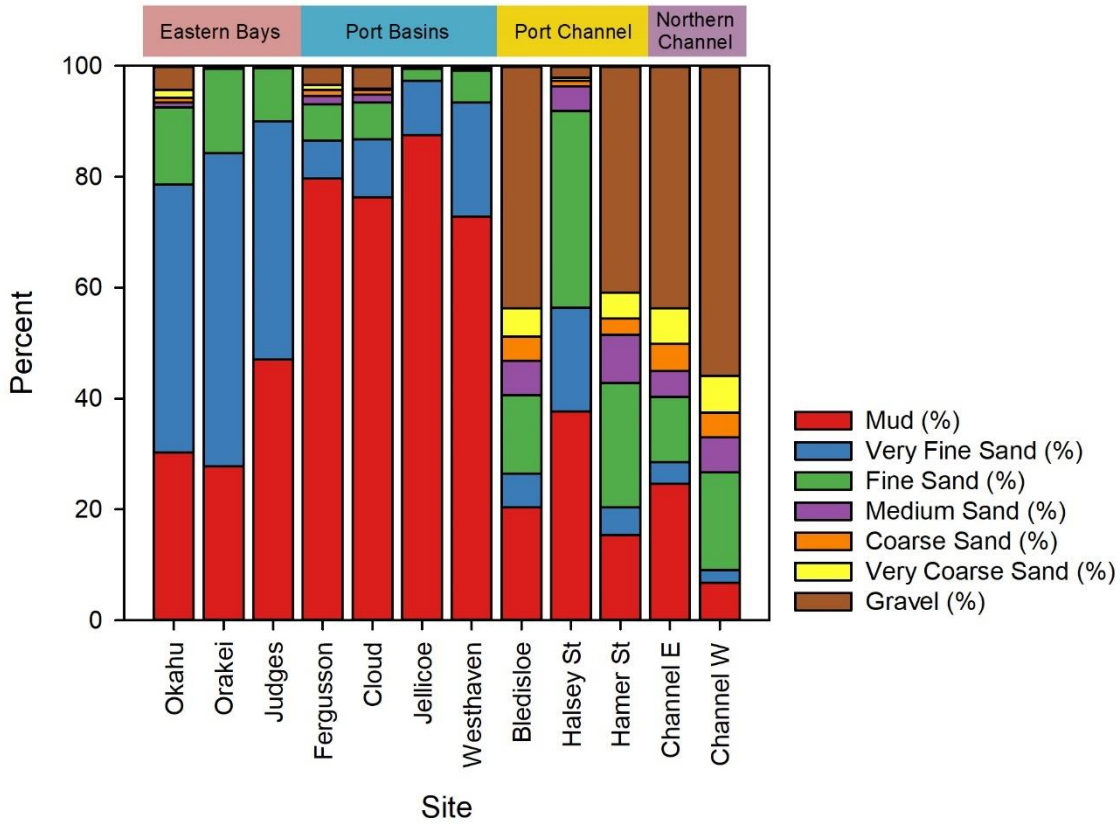


Figure 53: Mean (± 95% C.I.) percentages of total organic carbon, sediment mud content and volatile solids in samples obtained from seabed sampling sites surveyed on 3 November 2023.

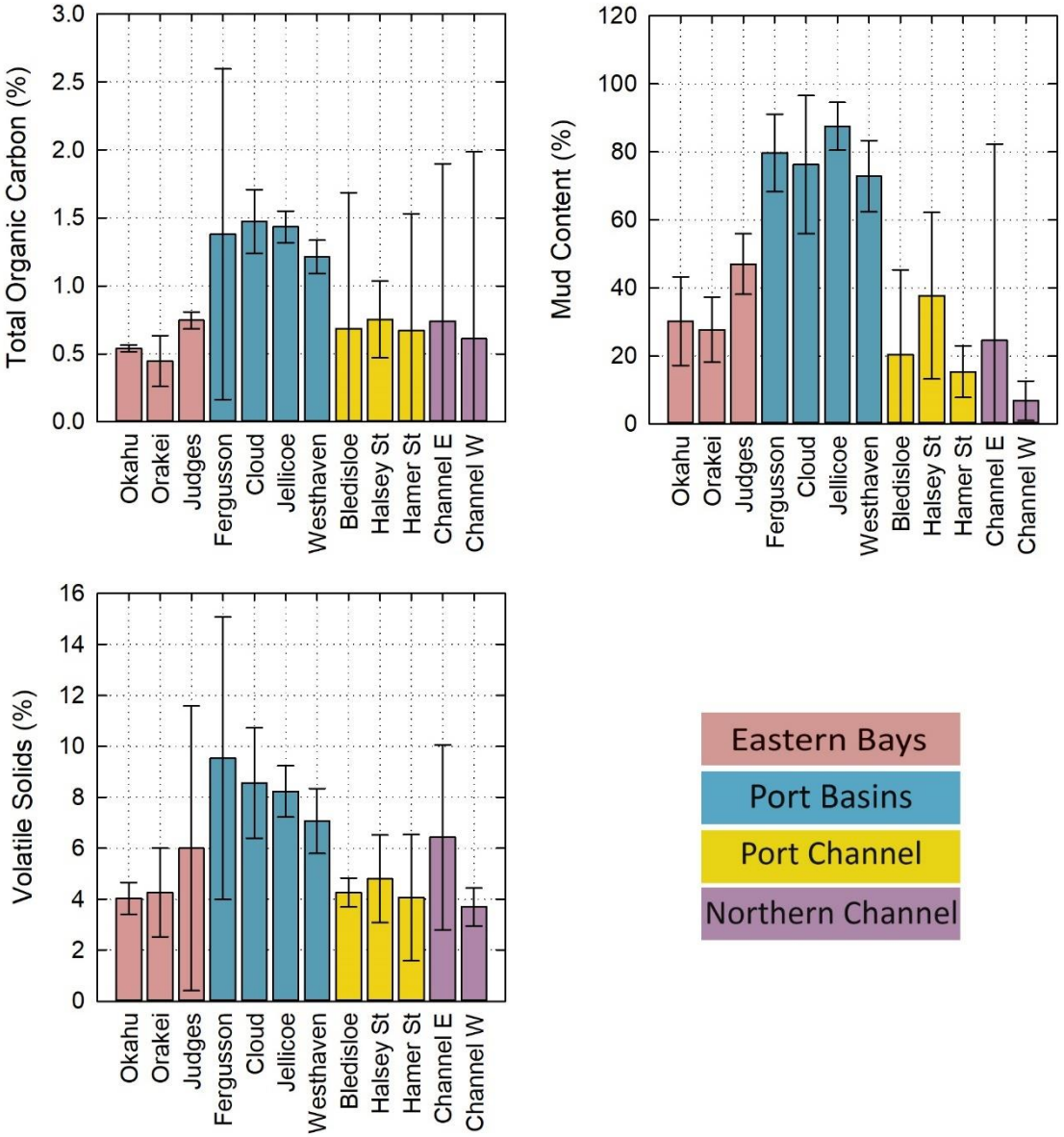


Figure 54: Mean (± 95% CI) total recoverable concentrations of key metals and concentrations of key nutrients in samples obtained from seabed sampling sites surveyed on 3 November 2023. Note that concentrations obtained from opportunistically collected single samples are not included in these plots. Orange reference lines show threshold effects level guideline values for metals.

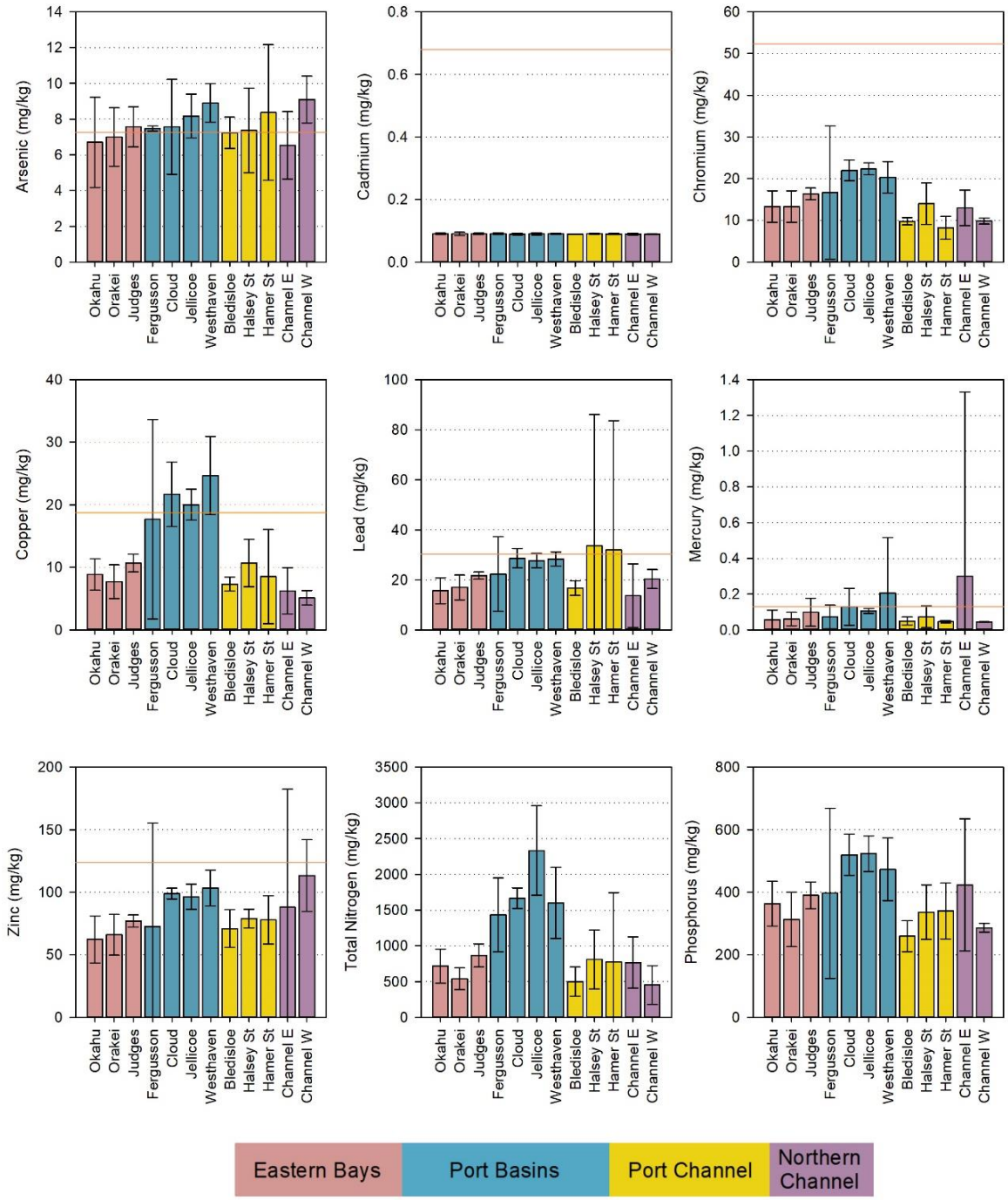


Figure 55: Bubble plots showing mean percentages of a) sediment mud content (<63 µm), and b) total organic carbon. The locations of wastewater overflow points are provided for reference.

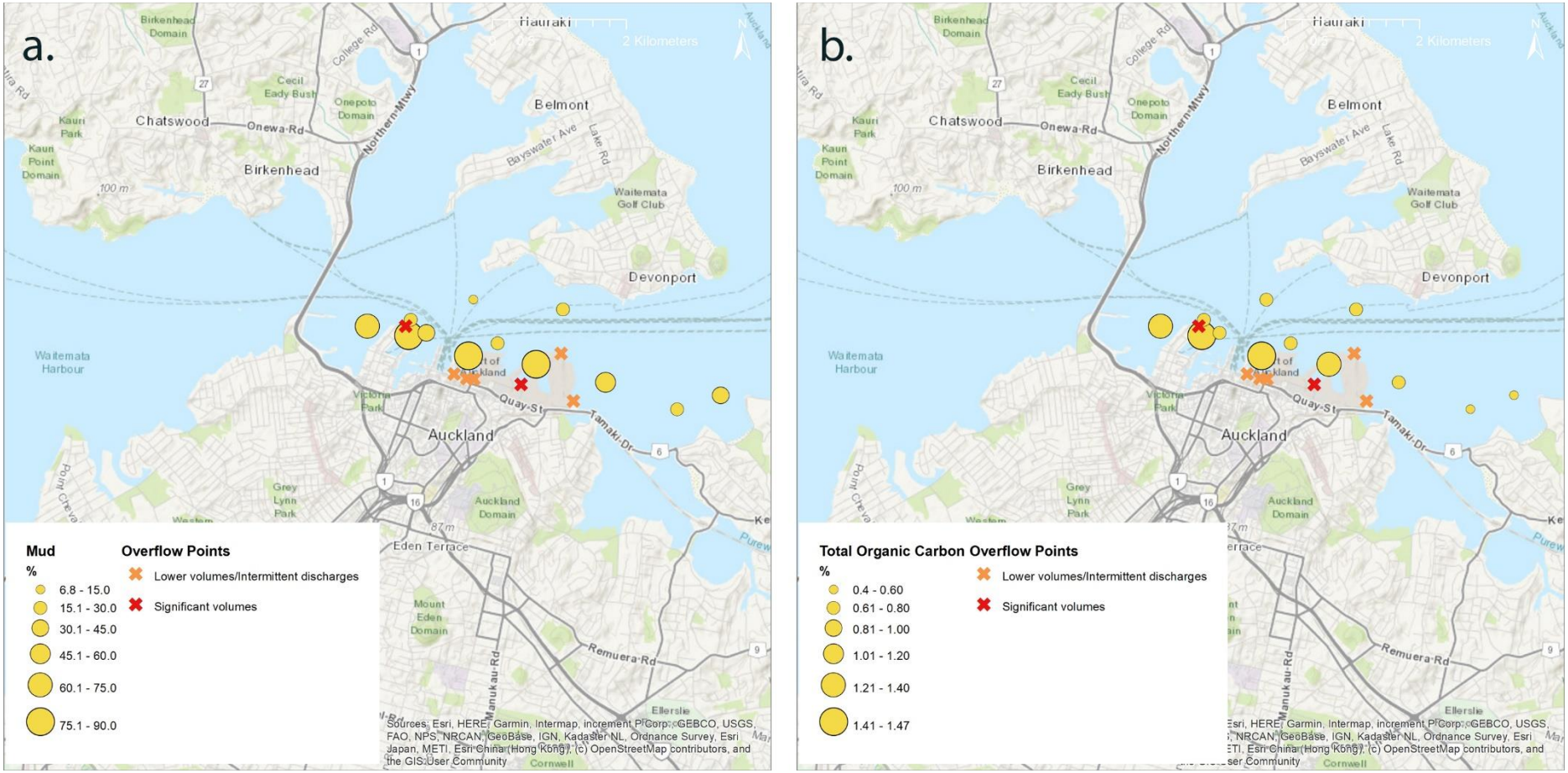


Figure 56: Bubble plots showing mean and opportunistically collected single-sample concentrations of a) total nitrogen, and b) total recoverable phosphorus. The locations of wastewater overflow points are provided for reference. Mean concentrations were obtained from seabed samples collected on 3 November 2023. Single -samples concentrations were obtained from opportunistically obtained samples on 18 October 2023.

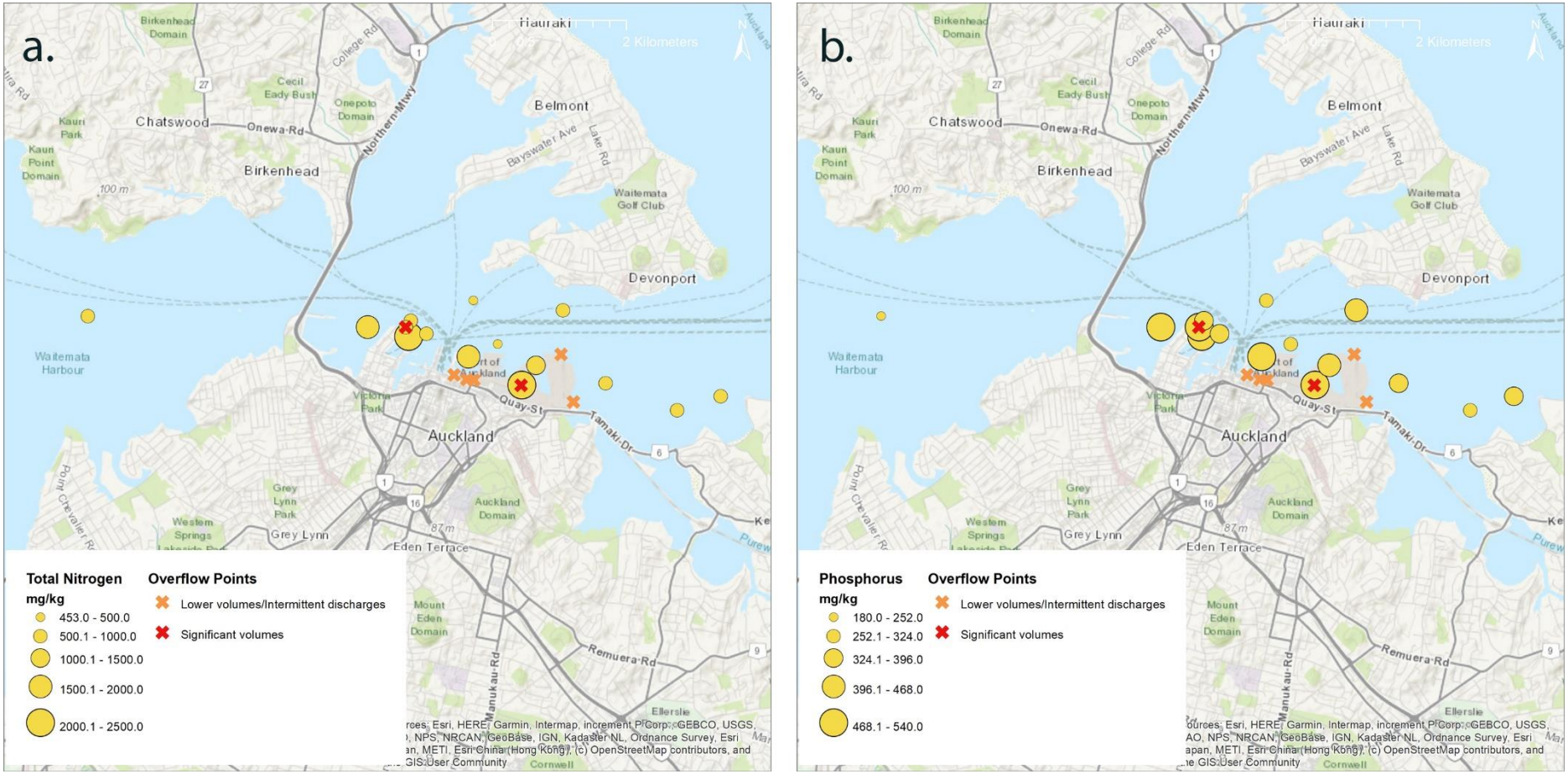


Figure 57: Bubble plots showing mean and opportunistically collected single-sample concentrations of total recoverable a) arsenic, and b) chromium. The locations of wastewater overflow points are provided for reference. Mean concentrations were obtained from seabed samples collected on 3 November 2023. Single-samples concentrations were obtained from opportunistically obtained samples on 18 October 2023.

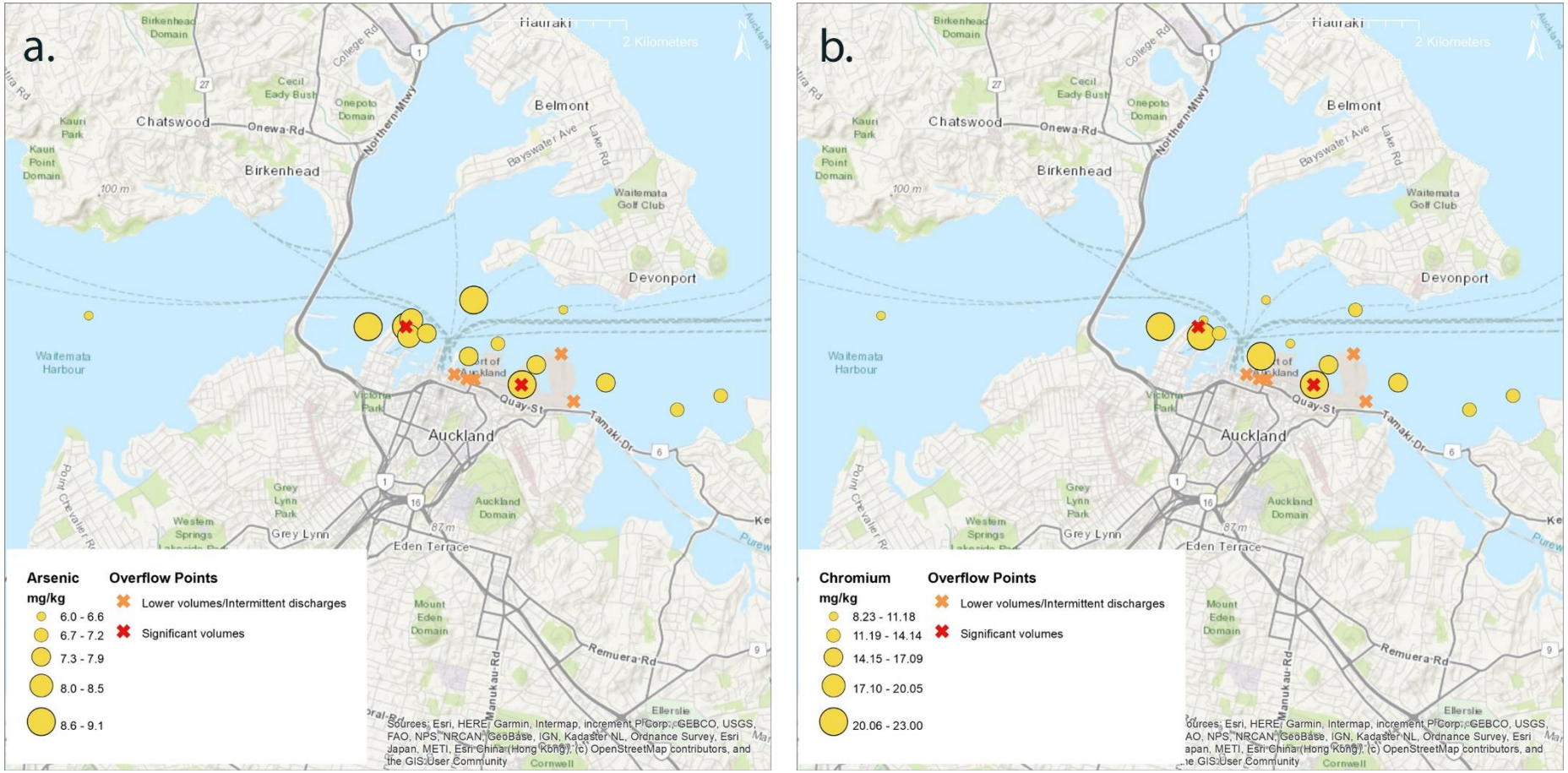


Figure 58: Bubble plots showing mean and opportunistically collected single-sample concentrations of total recoverable a) copper, and b) lead. The locations of wastewater overflow points are provided for reference. Mean concentrations were obtained from seabed samples collected on 3 November 2023. Single-samples concentrations were obtained from opportunistically obtained samples on 18 October 2023.

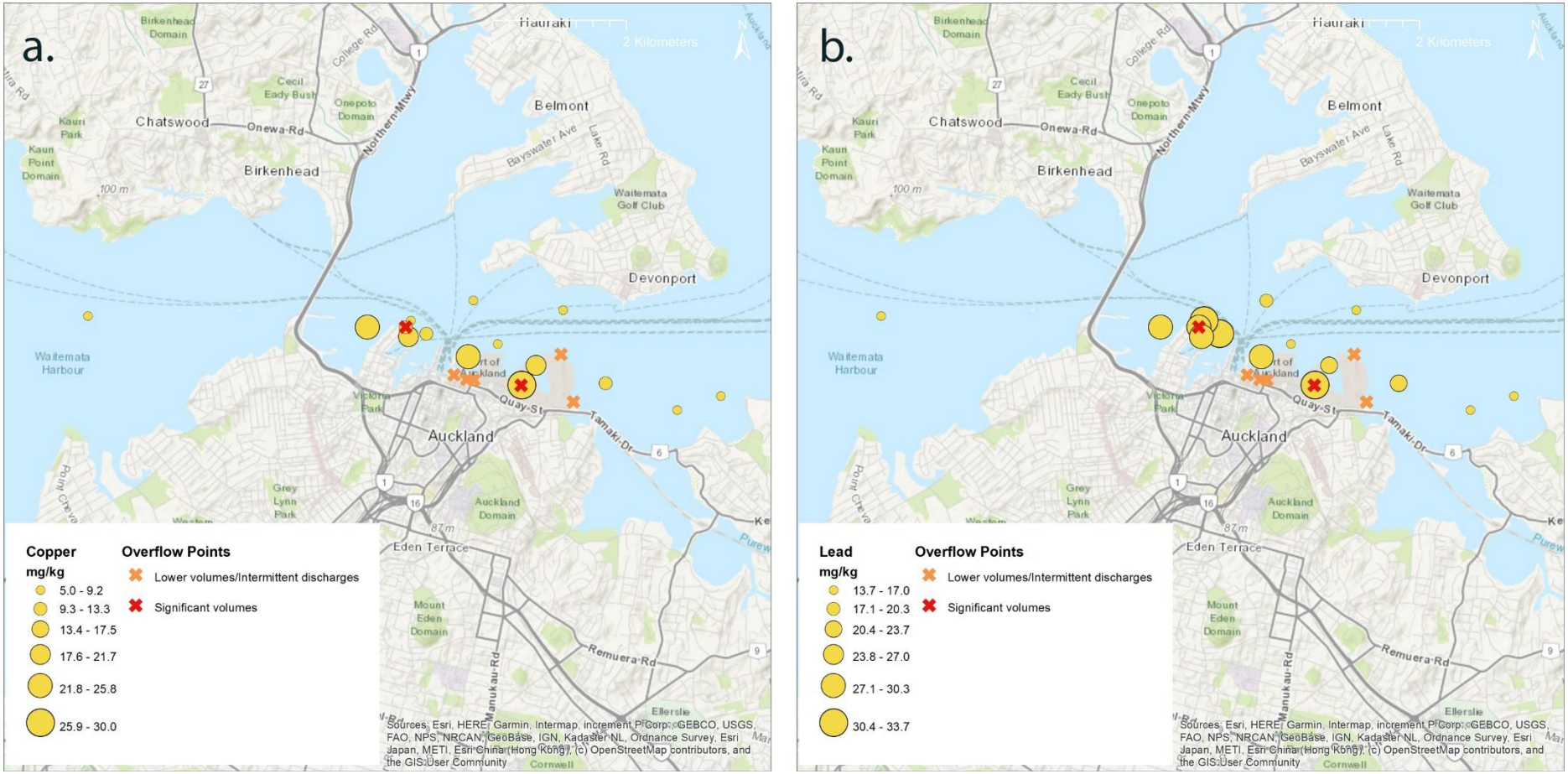


Figure 59: Bubble plots showing mean and opportunistically collected single-sample concentrations of total recoverable a) mercury, and b) zinc. The locations of wastewater overflow points are provided for reference. Mean concentrations were obtained from seabed samples collected on 3 November 2023. Single-samples concentrations were obtained from opportunistically obtained samples on 18 October 2023.

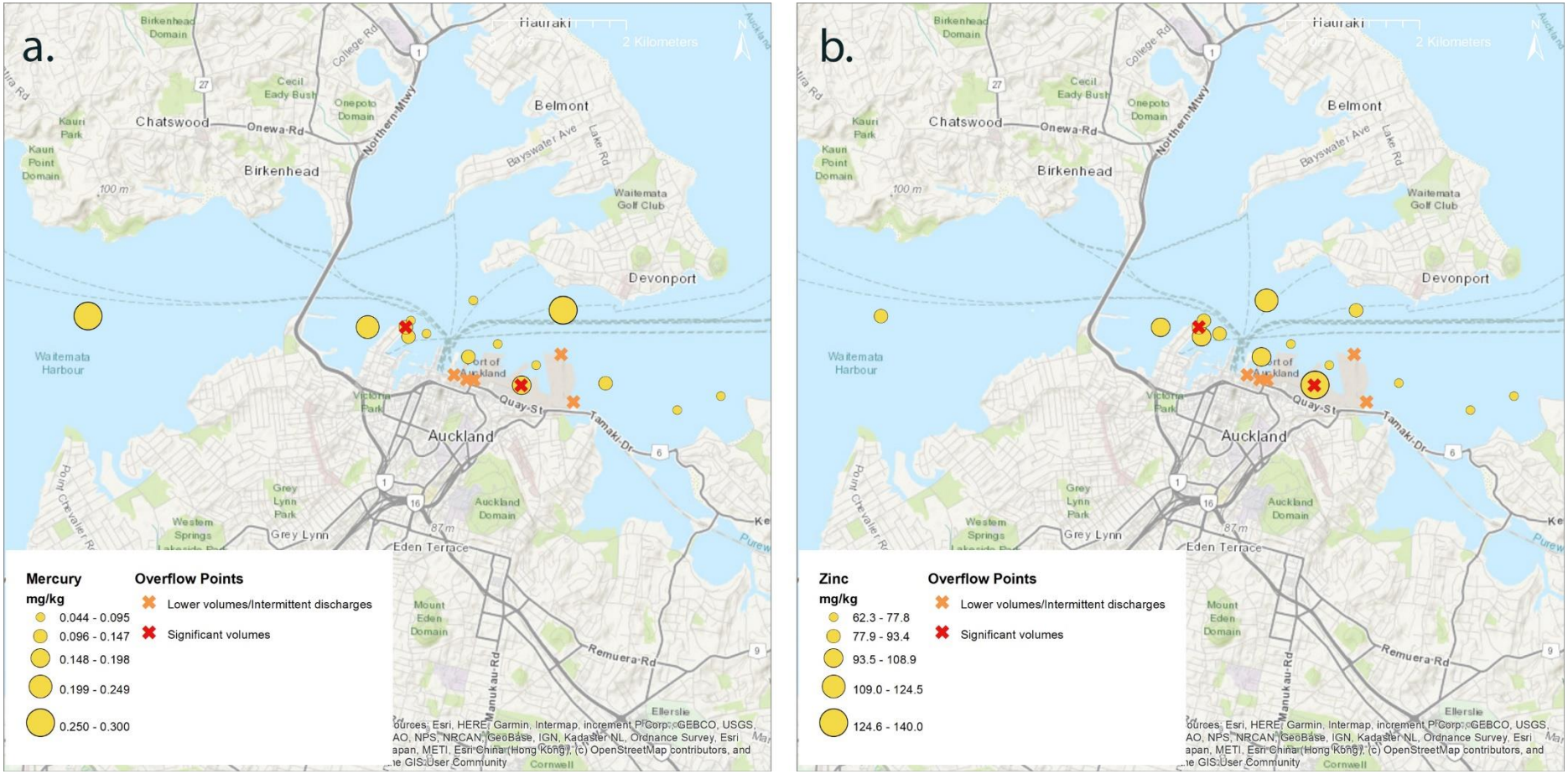
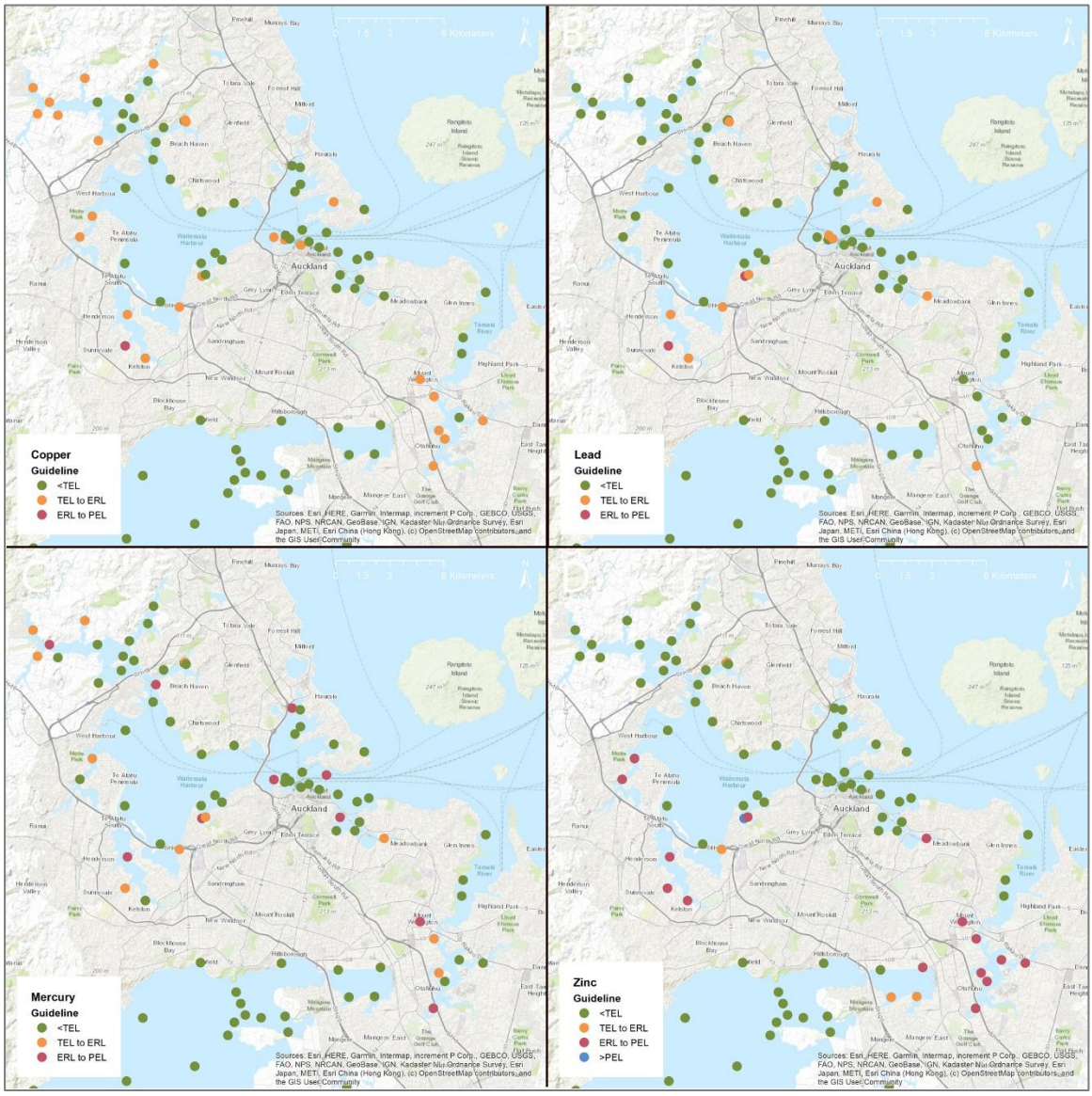


Figure 60: Mean concentrations of copper, lead, mercury, and zinc relative to sediment quality guideline values. The plots include data obtained for this assessment on 3 November 2023, and data from surrounding sites provided by Watercare Services and the Auckland Council's Research and Evaluation Unit (RIMU).



4.2.5 BENTHIC ECOLOGICAL COMMUNITY

4.2.5.1 INFAUNA

Total numbers of taxa obtained from the 12 survey sites ranged from 73 taxa at the Channel West site on the northern side of the harbour entrance to 14 taxa at the Cloud and Westhaven sites (Figure 61). Total numbers of individual specimens ranged from 811 at the Hamer site to 83 at the Jellicoe site. The Hamer and Channel West sites stood out for having high numbers of taxa and individuals.

The Halsey site, which was situated at the outer margin of the Jellicoe/Viaduct Harbour basins, east of Discharge A had total numbers of taxa and individuals that were more similar to those obtained from sites in port basins and bays east of the port. That finding, together with the elevated mud content and paucity of shell in sediments from the Halsey site indicates that it would be more appropriately grouped with the less energetic basin and eastern sites (Figure 52 and Figure 64).

One-way ANOVAs detected significant differences in the mean numbers of taxa and individuals between sites ($p<0.0001$). Tukey's honestly significant difference tests indicated that site differences generally occurred along a continuum (Table 8 and Table 9), with greatest differences occurring between port basin and channel sites (Figure 62). A similar pattern was detected for Shannon diversity, but relatively few significant differences in Pielou's evenness were detected between sites.

Cluster and similarity profile analysis, and non-parametric multidimensional scaling (MDS) plots of site averaged counts of taxa, indicated that benthic community composition varied among sites. A MDS stress value of 0.05 indicated that the plot provided an excellent representation of the data with "*no prospect of misinterpretation*" (Clarke & Warwick 2001). Four site clusters were identified with similar communities, which were statistically distinct from the communities at sites in other clusters (Figure 63).

Except for the Halsey site, benthic communities from the channel sites formed a distinct cluster (cluster-a). That cluster contained the Hamer channel site, directly offshore from Discharge A. The Halsey site was clustered with port basin and an eastern bays site, including the nearby Jellicoe and Westhaven sites (both close to Discharge A), and the Judges site (which is relatively remote from the discharges) (cluster-d). The other two clusters contained Cloud and Fergusson (which was offshore from Discharge D; cluster-b), and Ōrākei and Ōkahu (cluster-c).

Greatest separation in the MDS occurred between clusters-a and d. This is consistent with substantial differences in the characteristics of the seabed at each site, with sediments in cluster-a sites containing large amounts of coarse shell, while sediments in cluster-d sites comprised mostly finer fractions that passed through a 500 µm mesh sieve (Figure 52 and Figure 64). Similarity percentage analysis attributed 70% of that difference to the cumulative effects of 40 taxa (with contributions of 0.71% to 6.95% each), of which, 21 were not present in cluster-d samples. The assemblage of taxa that were absent from cluster-d samples was relatively diverse and, among other taxa, included: hermit crabs (*Pagurus* sp.), large turret shells (*Maoricolpus roseus roseus*), the chiton (*Leptochiton inquinatus*), amphipods from the family Lysianassida, encrusting bryozoa, the fan worm *Euchone pallida*, tanaid shrimps, the slipper limpet *Sigapatella novaezelandiae*, the bivalves *Tawera spissa*, *Melliteryx parva*, *Zemysia zealandica*, and *Limaria orientalis*. Taxa that were present in cluster-d and contributed to the 70% difference consisted of various worms (12 taxa); amphipod, cumacean, ostracod crustaceans (4 taxa); the invasive bivalve *Theora lubrica*, and an unidentified brittle star. MDS bubble plots showing spatial variation in total counts of eight taxa that contributed to differentiating clusters-a and d are provided in Figure 65.

Seventy percent of the difference between the communities in clusters-c and d was attributed to variation in 21 taxa: 14 of which were polychaete, nereid, and nemertean worms. The other taxa that contributed to the difference between those clusters were three amphipod and cumacean crustaceans, the estuarine prawn *Palaemon affinis*, a tanaid

shrimp, an unidentified hydroid, and three bivalves (*Corbula zelandica*, *Arthritica bifurca* and *T. lubrica*). Most taxa were present in both clusters, but abundances tended to be higher in cluster-c.

A similar number of taxa (20) separated clusters-b and d, 12 of which were polychaete, oligochaete, or nemertean worms. The remaining taxa included four small crustaceans, two bivalves, and two unidentified, probable bryozoans.

Seventy percent of the difference between the communities in clusters-b and c was attributed to variation in the counts of 24 taxa, of which, 14 were polychaete and oligochaete worms, six small crustaceans, a tanaid shrimp, unidentified hydroids, a probable bushy bryozoan, and the invasive bivalve *T. lubrica*. Twelve of those taxa were not present in cluster-c sites, while one taxa was not present at the cluster-b sites.

Figure 61: Total numbers of individual specimens and taxa.

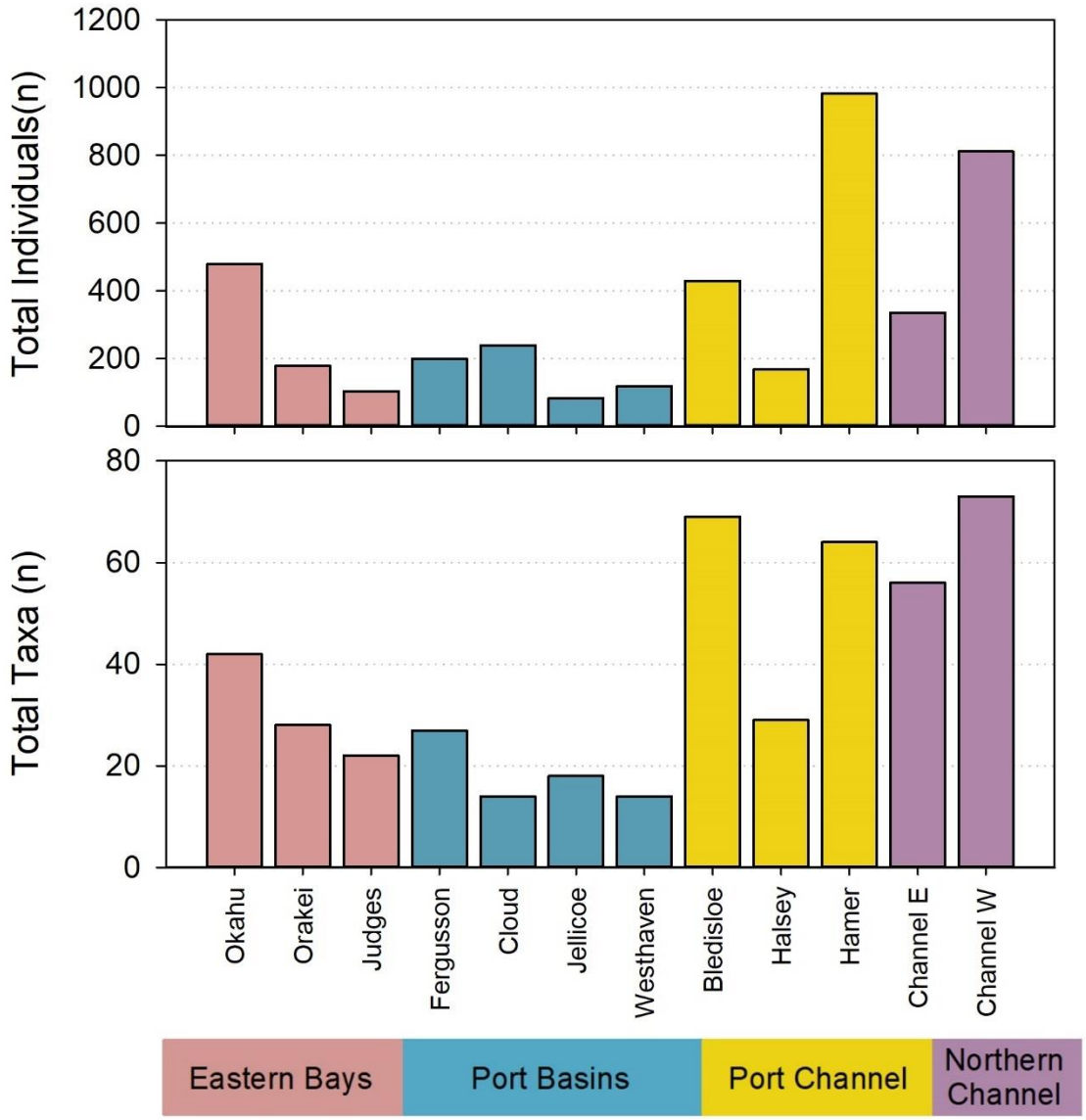


Figure 62: Mean (± 95% C.I.) numbers of individual specimens and taxa, Shannon diversity, and Pielou's evenness.

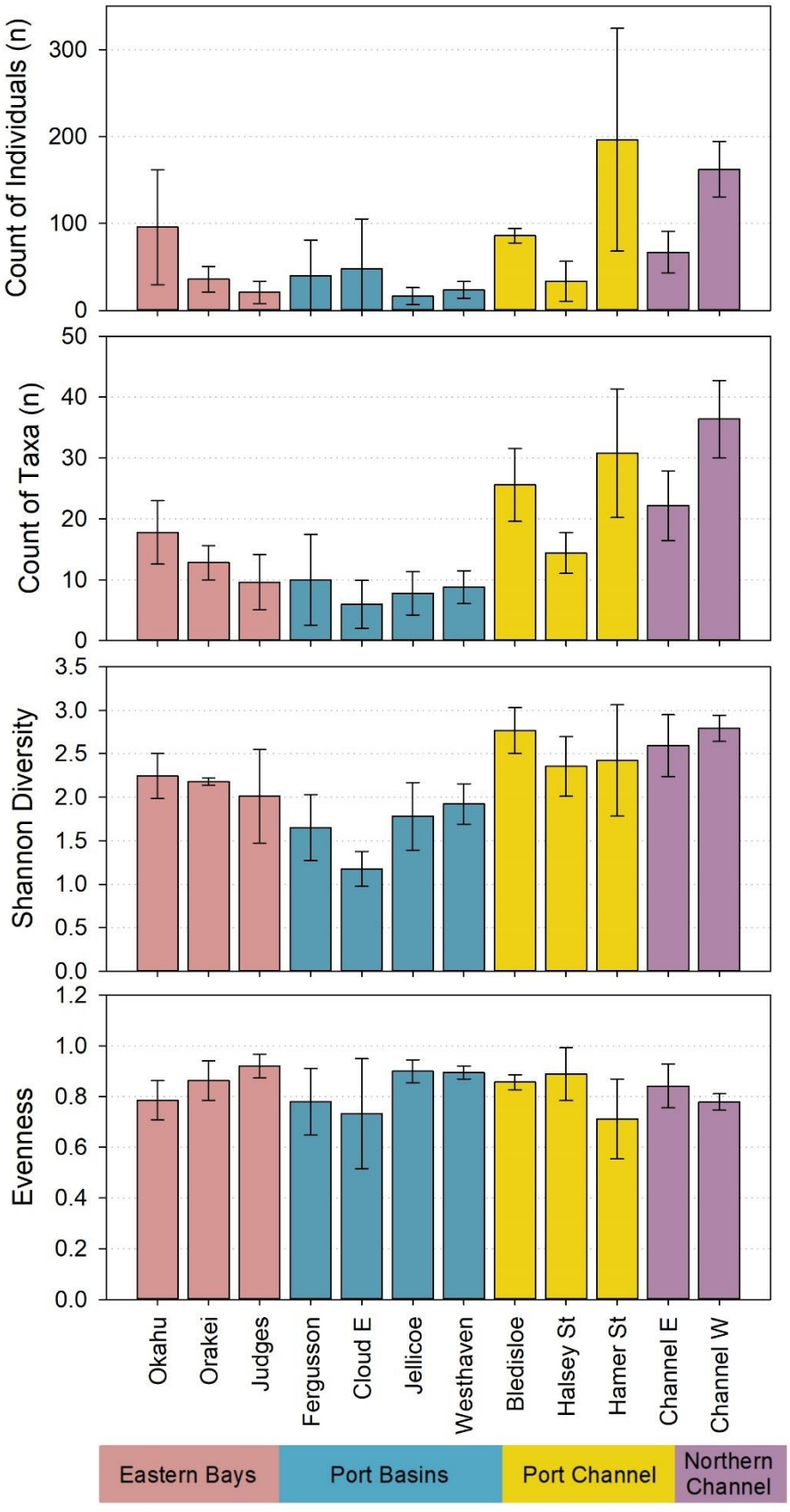


Table 8: Six homogeneous groups of sites identified using one way ANOVA and Tukey's post hoc tests of log_{10} transformed numbers of taxa. One outlier sample from the Cloud site was excluded from the analysis to meet the assumption of equal variance and normality. Sites closest to the Discharge A are labelled in red and the site closest to Discharge D is labelled in white. Homogeneous group cells are coloured by the general area given in column two.

Site	General Area	Taxa (Mean)	Homogeneous Groups					
			1	2	3	4	5	6
Cloud	Port Basin	6.0						
Jellicoe	Port Basin	7.8						
Westhaven	Port Basin	8.8						
Judges	Eastern Bays	9.6						
Fergusson	Port Basin	10.0						
Ōrākei	Eastern Bays	12.8						
Halsey	Port Channel	14.4						
Ōkahu	Eastern Bays	17.8						
Channel E	Northern Channel	22.2						
Bledisloe	Port Channel	25.6						
Hamer	Port Channel	30.8						
Channel W	Northern Channel	36.4						

Table 9: Five homogeneous groups of sites identified using one way ANOVA and Tukey's post hoc tests of log_{10} transformed numbers of individuals. Sites closest to the Discharge A are labelled in red and the site closest to Discharge D is labelled in white. Homogeneous group cells are coloured by the general area given in column two.

Site	General Area	log_{10} Individuals (Mean)	Homogeneous Groups				
			1	2	3	4	5
Jellicoe	Port Basin	1.16					
Judges	Eastern Bays	1.25					
Westhaven	Port Basin	1.35					
Fergusson	Port Basin	1.47					
Halsey	Port Channel	1.48					
Ōrākei	Eastern Bays	1.53					
Cloud	Port Basin	1.68					
Channel E	Northern Channel	1.81					
Ōkahu	Eastern Bays	1.93					
Bledisloe	Port Channel	1.93					
Channel W	Northern Channel	2.21					
Hamer	Port Channel	2.25					

Figure 63: Cluster and non-parametric multidimensional scaling (MDS) plots of site averaged counts of taxa from each survey site, together with a map of site clusters. Different coloured dots are statistically significantly different (5%), identified using similarity profile analysis (SimProf).

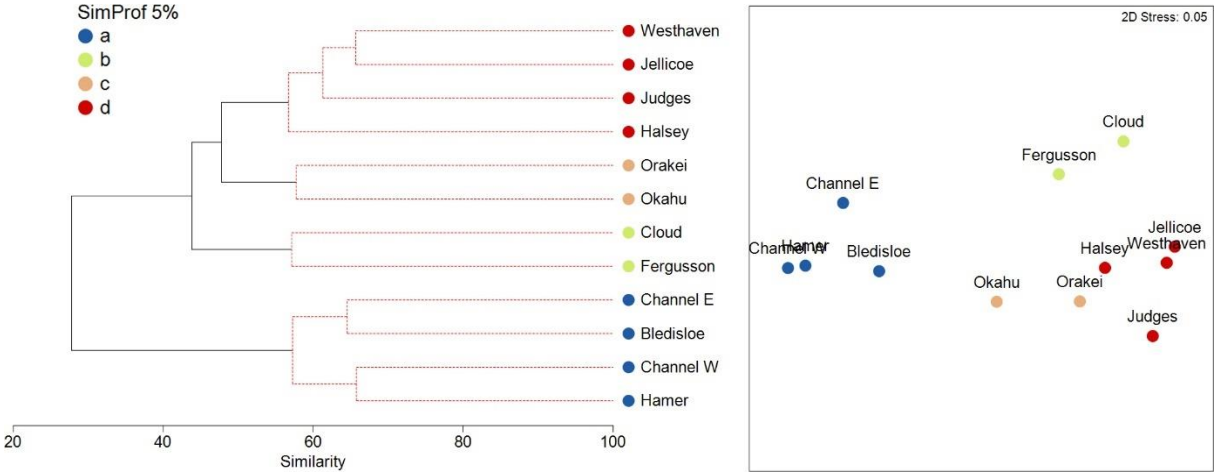


Figure 64: Representative examples of sieved (500 µm) sediment samples obtained from each site for the analysis of benthic macrofauna. Coloured and labelled boxes indicate which statistical cluster that each site was grouped into (see Figure 63).

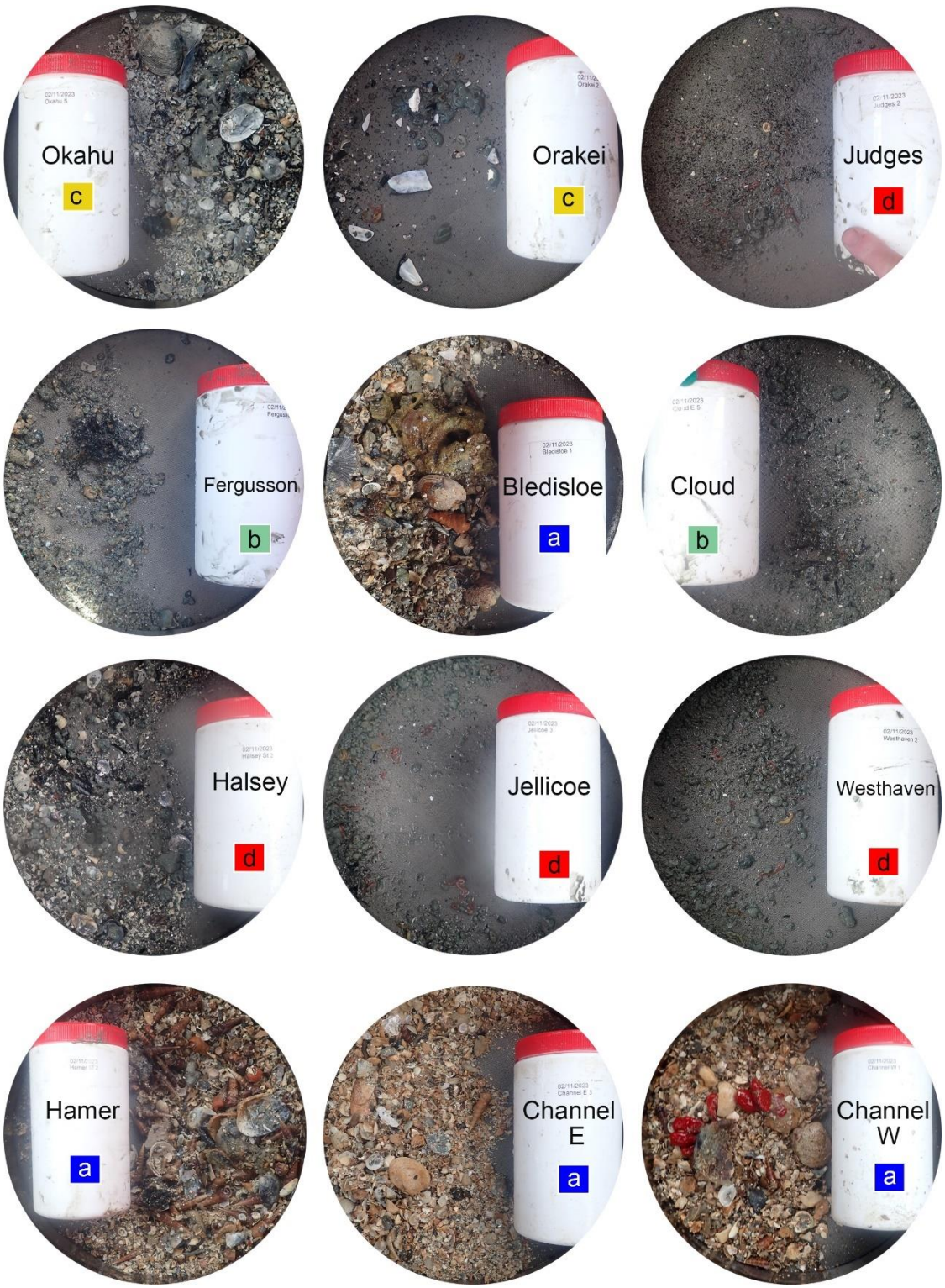
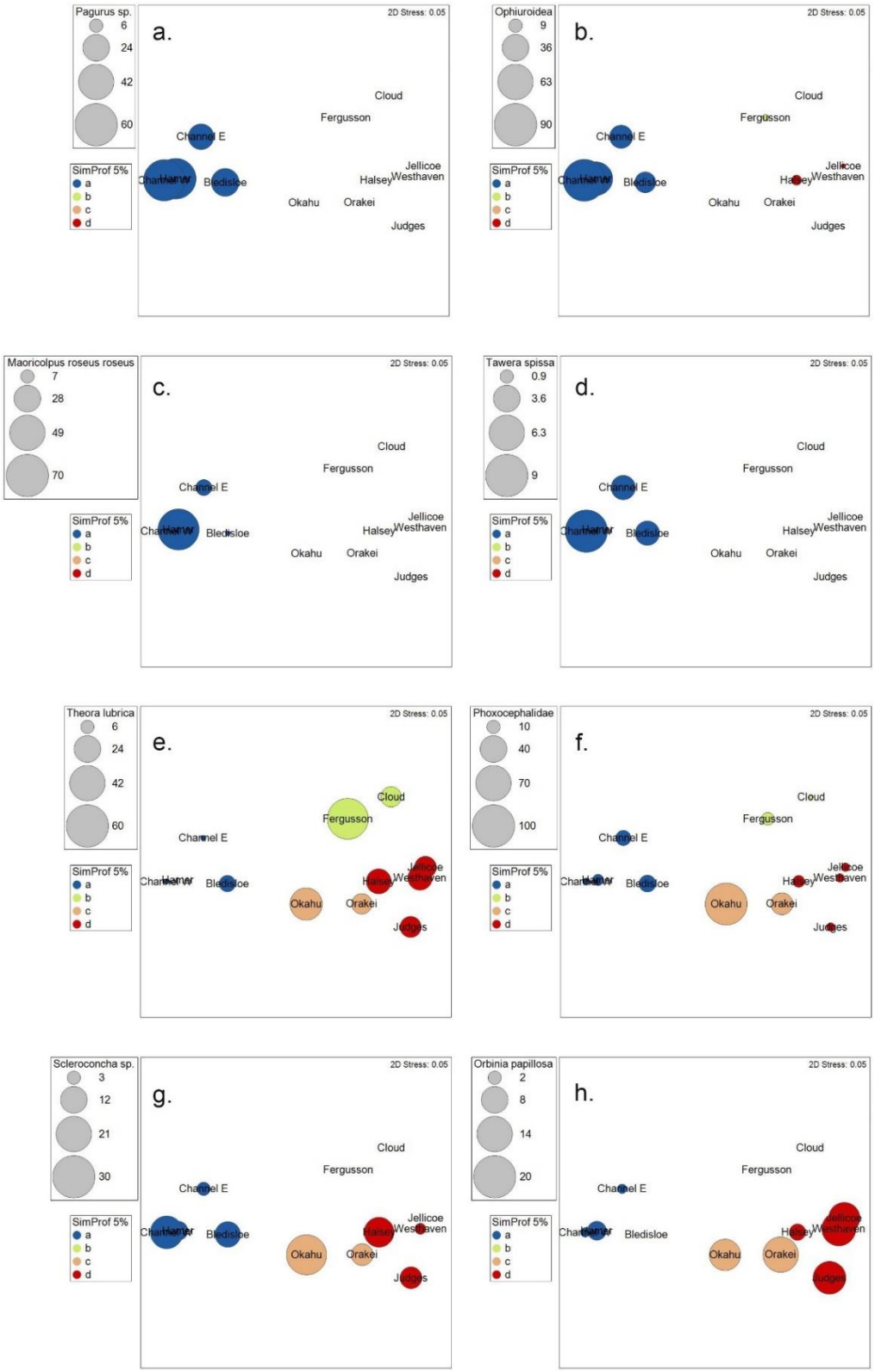


Figure 65: Examples of MDS bubble plots showing total counts of a) hermit crabs *Pagurus* sp. b) Ophiuroid brittle stars, c) the large turret shell *Maoricolpus roseus roseus*, d) the morning star bivalve *Tawera spissa*, e) the invasive, window shell bivalve *Theora lubrica*, f) phoxocephalid amphipod crustaceans, g) the ostracod crustacean *Scleroconcha* sp., and h) the polychaete worm *Orbinia papillosa*. Bubble size is proportional to total counts at each site and bubble colour indicates its statistical cluster.



4.2.5.2 EPIBIOTA

A variety of benthic epibiota and mobile fauna, including fish (e.g., see Figure 66) were observed in tow camera footage, with the highest diversity observed within and along the margins of the Waitematā Harbour Channel. The benthic environment in the surveyed area was broadly grouped into five main bottom-types (Figure 67):

1. Shallow subtidal sandflats, west of the harbour bridge.
2. Muddy inshore environments with numerous small burrows and limited epifauna, in Westhaven Marina access channel, port basins, and bays east of the port.
3. The southern side of Waitematā Harbour channel with coarse shell and a range of epifaunal communities.
4. Central to northern Waitematā Harbour Channel with shell armour and a range of epifaunal communities.

Various species of sessile organisms, including a variety of sponges, ascidians, and what appears to be bryozoans were observed on both the muddy substrates within the depositional environment of the POAL and outer Viaduct Harbour, and on coarser substrates within and along the Waitematā Harbour entrance channel. Mobile epifauna, such as sea stars, hermit crabs, and gastropods were observed at most sites, while live filter feeding bivalves including scallops and green-lipped mussels (associated with mussel beds created in Ōkahu Bay) were also observed.

No obvious signs of recent mortalities of benthic epifauna were observed at any of the sites surveyed within, immediately adjacent to, or up/down current of the outfalls discharging the dry-weather overflows. There was also no evidence of accumulated gross solids, bacterial mats, or algal mats throughout the survey.

More detailed summaries of the observations and images taken from the video footage are provided below.

Figure 66: Examples of fish observed within the video transects: A, B, white arrows) Juvenile snapper. C) A flatfish was observed on the seafloor of Westhaven Marina. D) A spotty was observed along the margins of the Waitematā Harbour Channel.

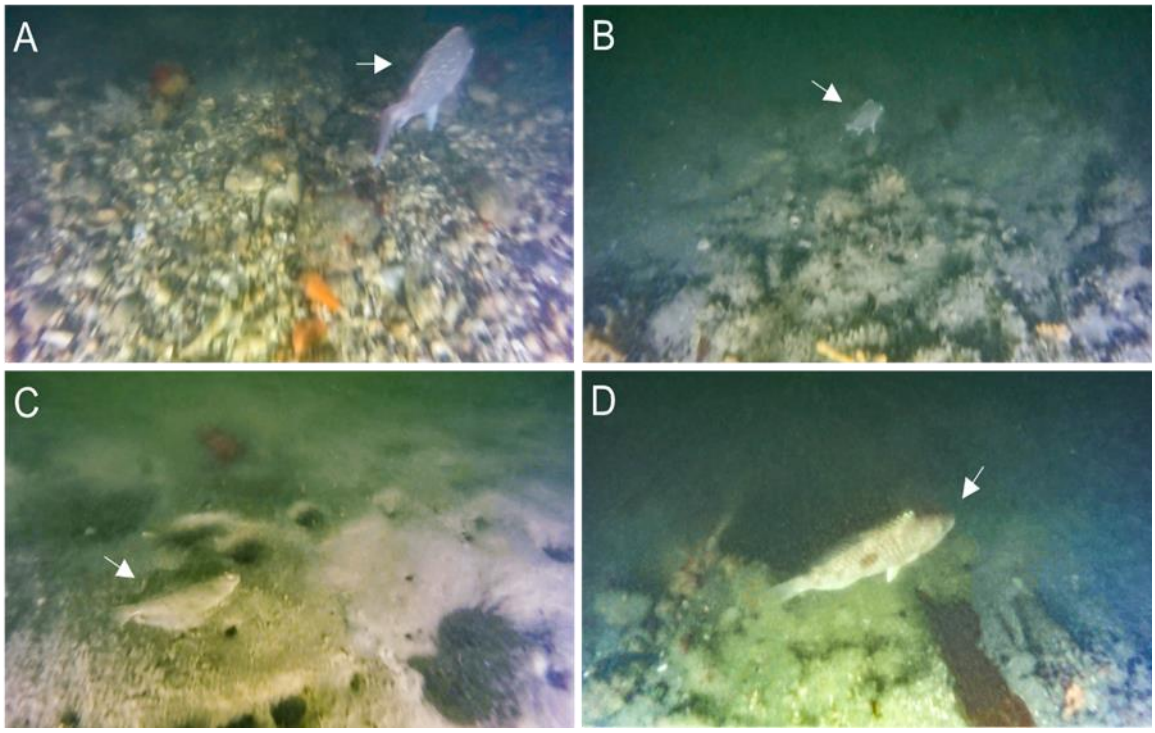


Figure 67: Bottom types along video transect run-lines.

4.2.5.2.1 SHALLOW SANDFLATS WEST OF THE HARBOUR BRIDGE

1. West Harbour Bridge Channel (Transect 21): This area consisted of a mix of sand with small, scattered shell hash. Numerous patches of the green macroalgae *Codium fragile* subsp. *novae-zelandiae*, occasional individuals of other unidentified algae, sponges, cushion stars, and the invasive clubbed tunicate *Styela clava* were observed (Figure 68).

4.2.5.2.2 MUDDY INSHORE ENVIRONMENTS

1. Westhaven entrance (Transects 6 & 7): The substrate at the Westhaven entrance mainly consisted of fine, silty mud with occasional small shell fragments and abundant burrows. Very few epifauna were observed throughout this area, with limited observations of Mediterranean fan worm (*Sabella spallanzanii*) a possible bryozoan, a possible sponge, and gastropod tracks (Figure 69). A small burrowing fish, possibly an estuarine goby (*Favonigobius lentiginosus*) and a small flatfish were observed.
2. Halsey and Cloud grab sample sites (Transects 9 & 11): The substrate within these sites mainly consisted of fine, silty mud and intermittent burrows. Occasional Mediterranean fan worm, probable bryozoans, and a sponge patch were observed (Figure 69). Mobile fauna included occasional cushion sea stars (*Patriella regularis*), some small benthic fish, possibly estuarine gobies, and an unidentifiable demersal fish. Signs of recent gastropod tracks were also recorded throughout. In one instance, small woody debris was observed.
3. Fergusson Wharf site (Transect 14): The Fergusson Wharf basin habitat mainly consisted of hummocks of mud with intermittent burrows across the length of the transect. A structure, possibly debris from POAL activities, with an assortment of biofouling biota (e.g., sponges, ascidians, and probable bryozoans) was observed. Mobile fauna included an unidentifiable demersal fish, a possible rig shark (*Mustelus lenticulatus*), and a leatherjacket (*Meuschenia scaber*) (Figure 70).
4. Eastern Bays, including Judges, Ōrākei and Ōkahu grab sample sites (Transects 15–19): The sites to the southeast of the POAL mainly consisted of fine, silty mud with occasional small fragments of shell material scattered throughout (Figure 71). Very few epifauna were observed in survey transects throughout this area (apart from Transect 18), with the most evidence of biological activity represented by intermittent burrows. Occasional Mediterranean fan worms were observed throughout. Occasional small burrowing fish, possibly estuarine gobies, and cushion sea stars were observed within the Ōrākei mooring area and Ōkahu Bay. Transect 18 covered a small portion of the restored, green-lipped mussel (*Perna canaliculus*) beds currently being monitored in Ōkahu Bay (Figure 71). Live mussels, Mediterranean fan worm, and an 11-armed sea star (*Coscinasterias muricata*) were observed within the path of the video tow.

4.2.5.2.3 WAITEMATĀ HARBOUR ENTRANCE CHANNEL: SOUTH

1. Channel sites at the western end of port, including the Hamer grab sample site (Transects 8 & 10): Habitat at these sites consisted of a shelly base with numerous sessile and encrusting organisms observed throughout (Figure 73). Encrusting sponges, ascidians, and probable bryozoans were interspersed throughout, sometimes attaching to unidentifiable debris. Numerous cushion sea stars were

observed over the course of each transect. Additional mobile fauna included 11-armed sea stars, a scallop (*Pecten novaezealandiae*), and juvenile snapper (*Chrysophrys auratus*). Occasional litter was observed.

2. Channel sites at the eastern end of port, including the Bledisloe grab sample site (Transects 12 & 13): Habitat at these sites consisted of a mixture of mud patches, muddy-sand, and small shell hash. These locations contained a wide assortment of sponges, probable bryozoans, and encrusting ascidians. Mobile fauna included cushion sea stars, a spotty (*Notolabrus celidotus*), and a juvenile snapper (Figure 74).
3. Channel off Westhaven (Transect 20): Habitat in this area consisted of a mixture of muddy sand with small, scattered shell hash. Numerous epibiota were observed including what appear to be horse mussels encrusted with sponges, ascidians and other biota, occasional scallops, probable bryozoans, the invasive clubbed tunicate, and encrusting ascidians (Figure 72). Mobile fauna included the 11-armed sea star and a small unidentified demersal fish.

4.2.5.2.4 WAITEMATĀ HARBOUR ENTRANCE CHANNEL: NORTH

1. Northern Waitematā Harbour Channel, including Channel East and West grab sample sites (Transects 1–5): Transects on the northern margin and centre of the Waitematā Harbour channel were characterised by whole shell fragments and generally coarser sediments (Figure 75). Abundant epifauna were observed throughout this area and included a variety of ascidians, probable bryozoans, sponges, gastropods (e.g., turret shells *Maoricolpus roseus*), a kina (*Evechinus chloroticus*), hermit crabs (family Paguroidea), and filter feeding shellfish (e.g., scallops). Occasional clusters and individual Mediterranean fan worms were observed throughout the area.

Figure 68: Video stills taken from transect 21 on a shallow sandflat west of the Harbour Bridge A) sandflat; B) cushion star (arrow); C) clubbed tunicate *Styela clava* (arrow) and D) green macroalgae *Codium fragile* subsp. *novae-zelandiae* (arrow).

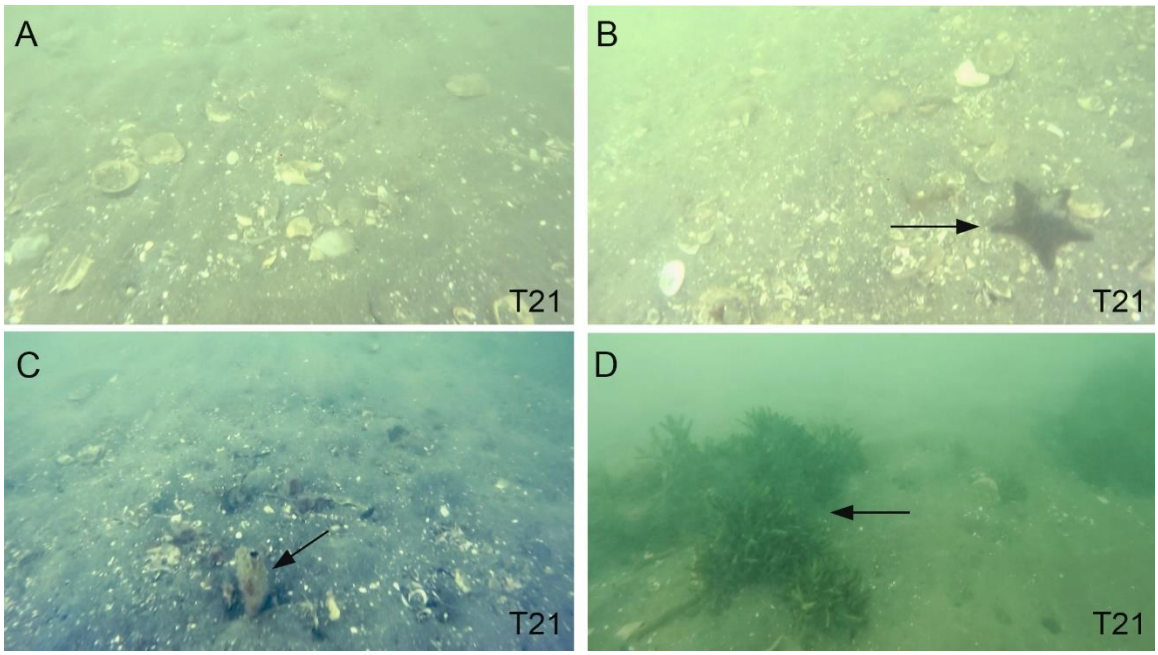


Figure 69: Examples of video stills taken from muddy port basins (Transects 6, 7, 9 and 11): A) Fine mud with burrows, but little epibiota. B) A flatfish (white arrow). C) An unidentified sponge (white arrow) and what appears to be a bushy bryozoan. D) Small, unidentified burrowing fish (white arrow).

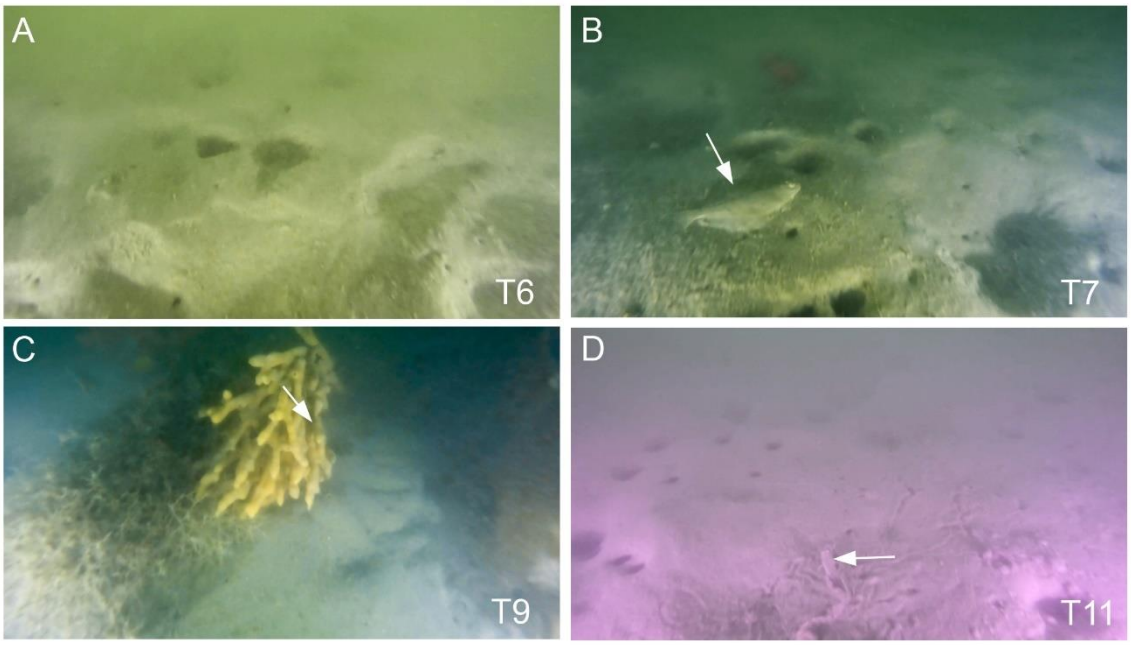


Figure 70: Video stills taken from the video transect in Fergusson Wharf basin (Transect 14): A) predominantly bare sediment. B) Cushion star *Patiriella regularis* (white arrow). C) Leatherjacket *Meuschenia scaber* (white arrow) and Mediterranean fan worm (yellow arrow). D and E) The sponge *Ciocalypta polymastia* (white arrows). F) Mediterranean fan worm (white arrow). G) An unidentified demersal fish. H) A shark (rig?)..

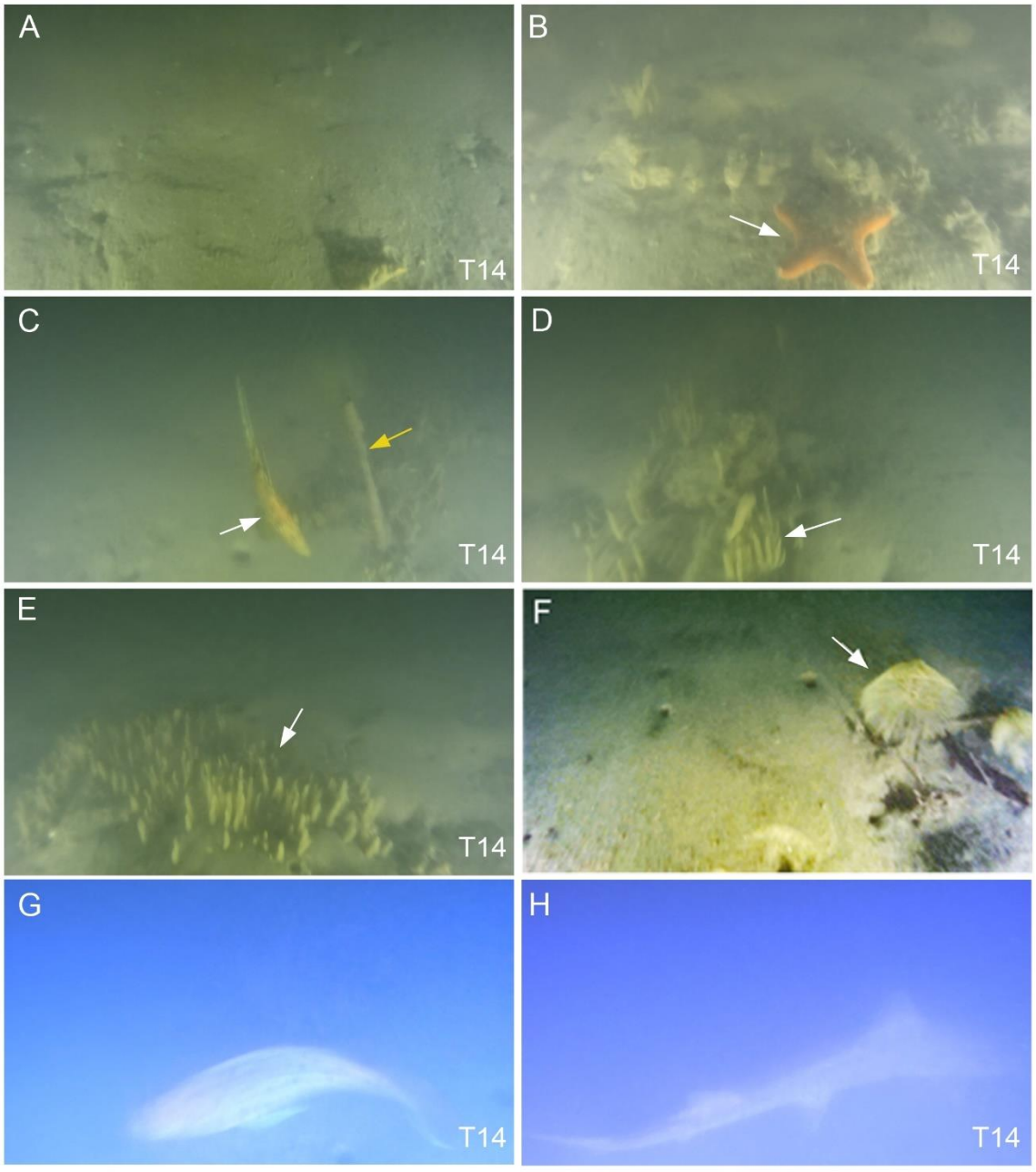


Figure 71: Examples of video stills taken from southern Waitematā transects east of the port (T15—T19). Seabed features included muddy sediment with: A) numerous burrows; B) kelp (*Ecklonia radiata*) frond; C) Mediterranean fan worm (white arrow); D) burrowing fish (white arrow). Transect 18 includedrestored green-lipped mussel reefs with: E). live green-lipped mussels; F) 11-armed starfish on mussels; G & H) Mediterranean fan worm growing on mussels (white arrows).

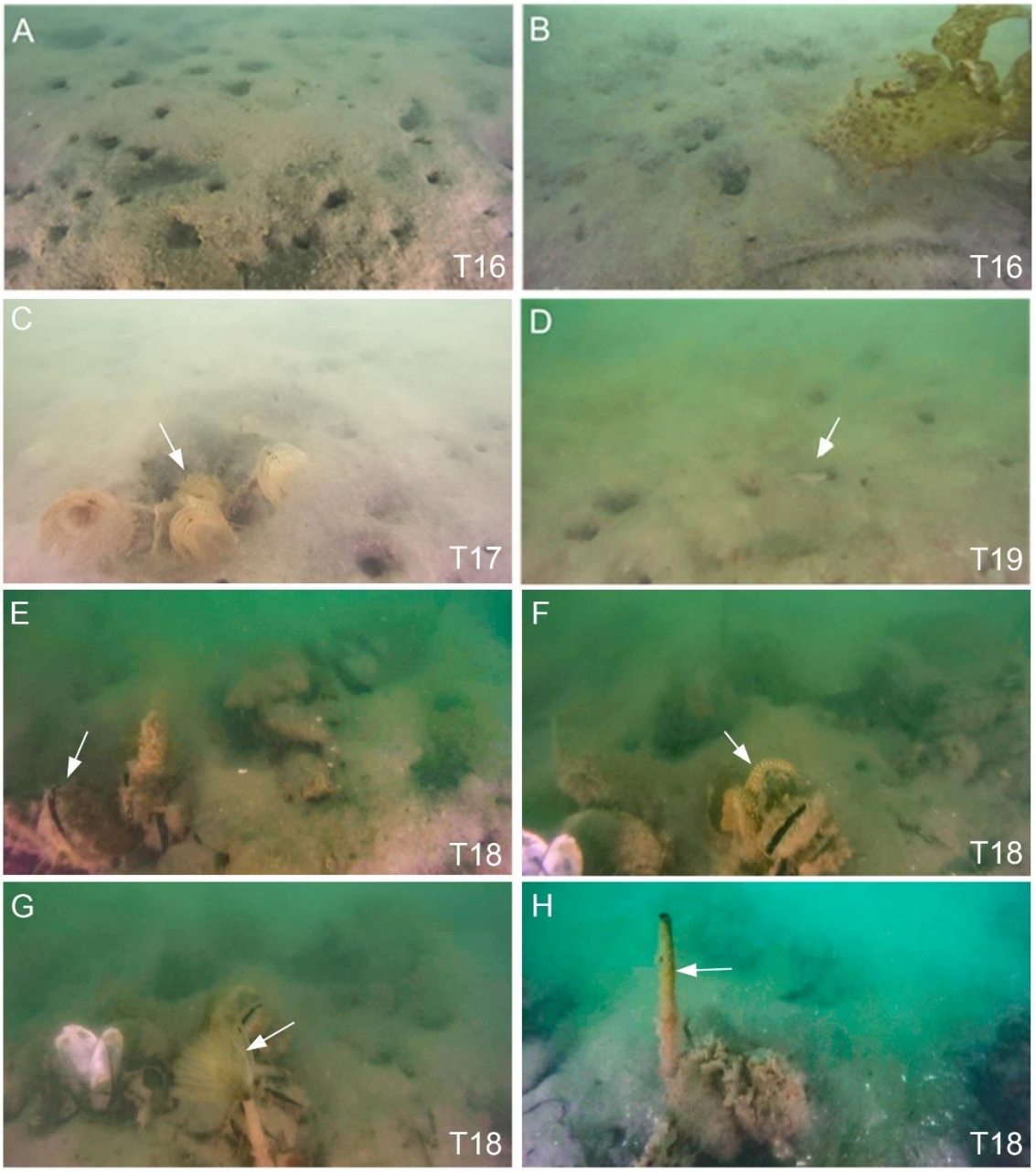


Figure 72: Video stills taken from southern Waitematā channel transect T20, adjacent to Westhaven Marina: A) scallops (arrows); B) what appears to be a horse mussel (white arrow) encrusted in sponges and ascidians (yellow arrow); C) what appear to be encrusted horse mussels (arrow); D) what appear to be encrusted horse mussels (white arrows) and a probable bushy bryozoan (yellow arrow).

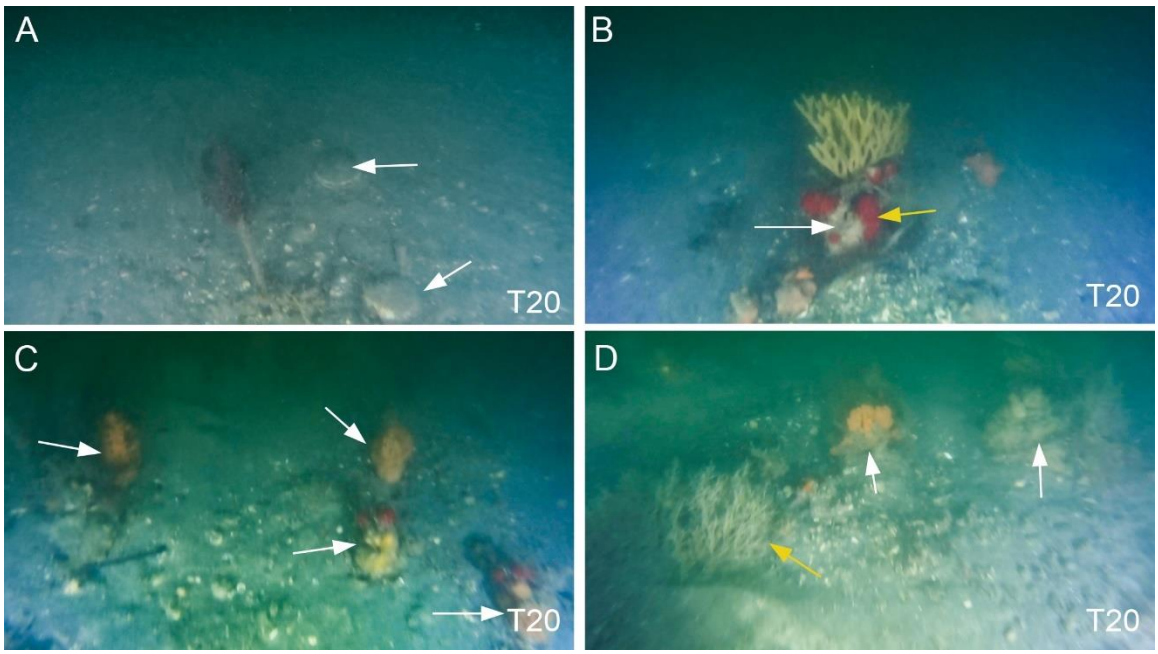


Figure 73: Video stills taken from southern channel Transects 8 and 10: A) shell rubble; B) sponges and an old can (arrow); C) snapper above shell rubble (arrow); D) Mediterranean fan worm (arrow); E) live scallop (arrow); F) ascidians (yellow arrow) and sponges (white arrow); G) unidentifed biota (arrow); H) probable bushy bryozoans (arrows); I) eleven-armed starfish (arrow); and J) Mediterranean fan worm (arrow).

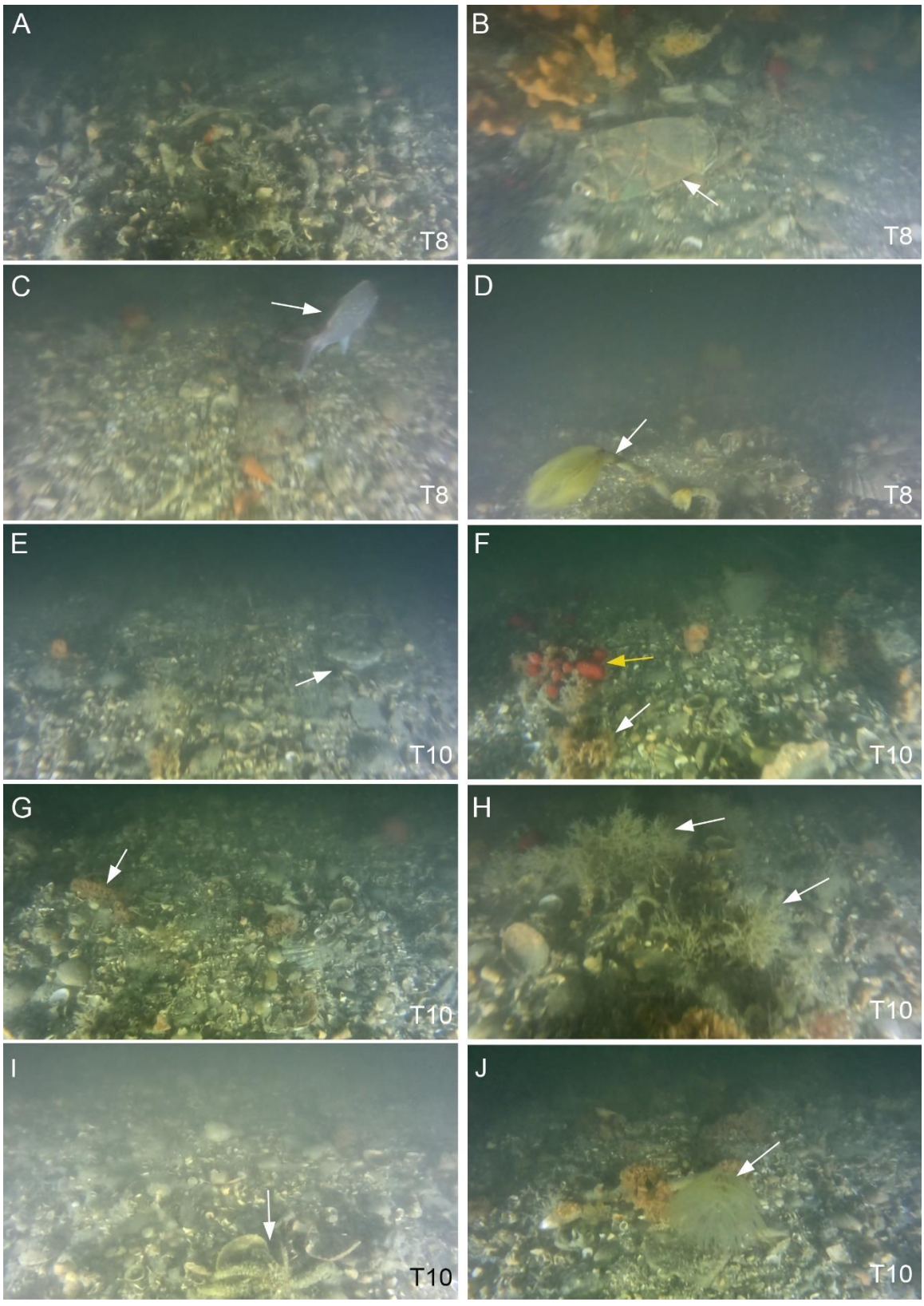


Figure 74: Video stills taken from southern channel transects T12 and T13 adjacent to Fergusson Wharf, including: A) bare sediment; B) exposed clay; C to H) complex physical and biogenic structures covered in a variety of sessile invertebrates such as sponges, probable bryozoans, worms, and ascidians; I) shell rubble; and J) a spotty (fish). White arrows point to a juvenile snapper (E), red ascidians (G), a cushion star (H), and a spotty (J).

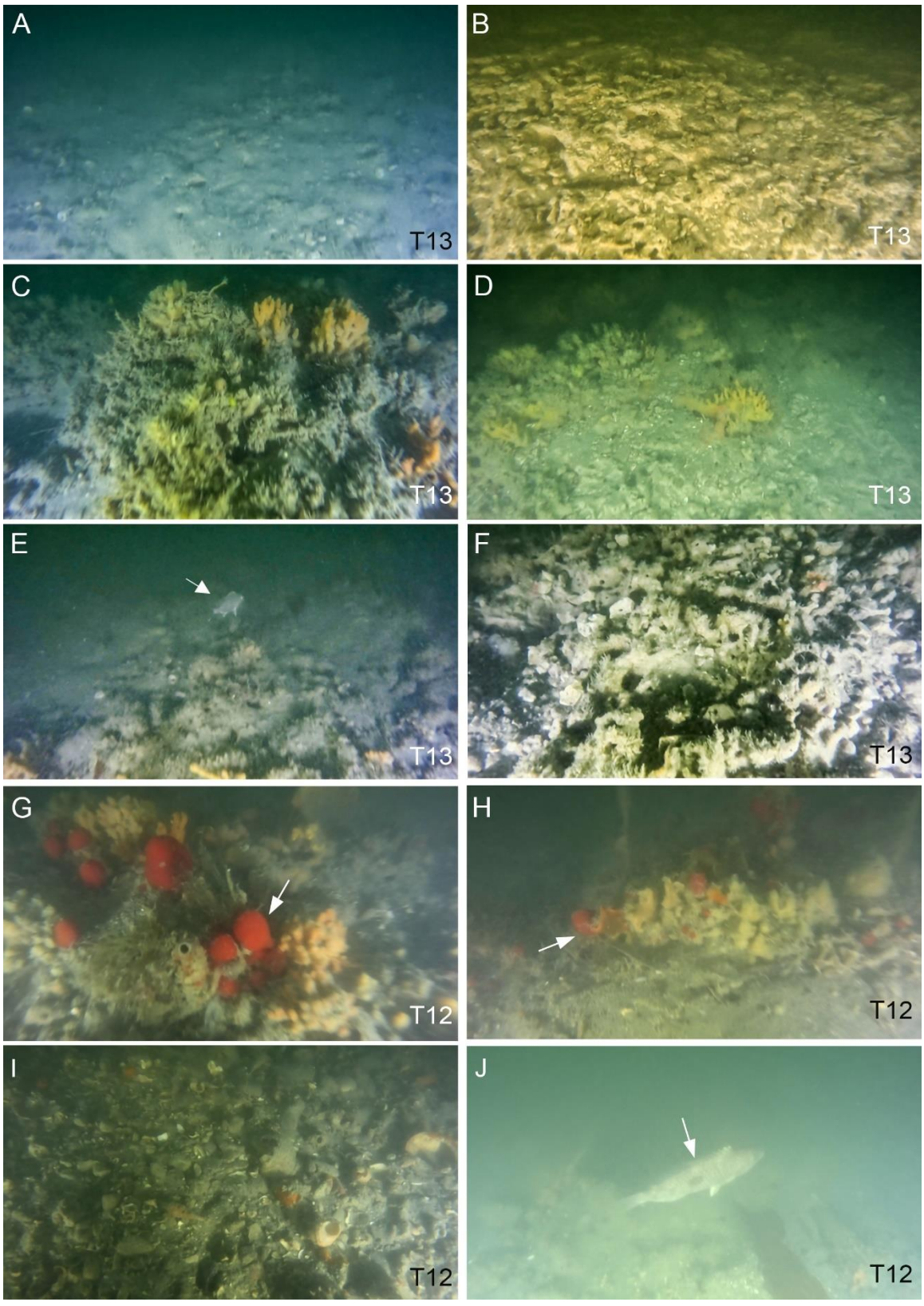
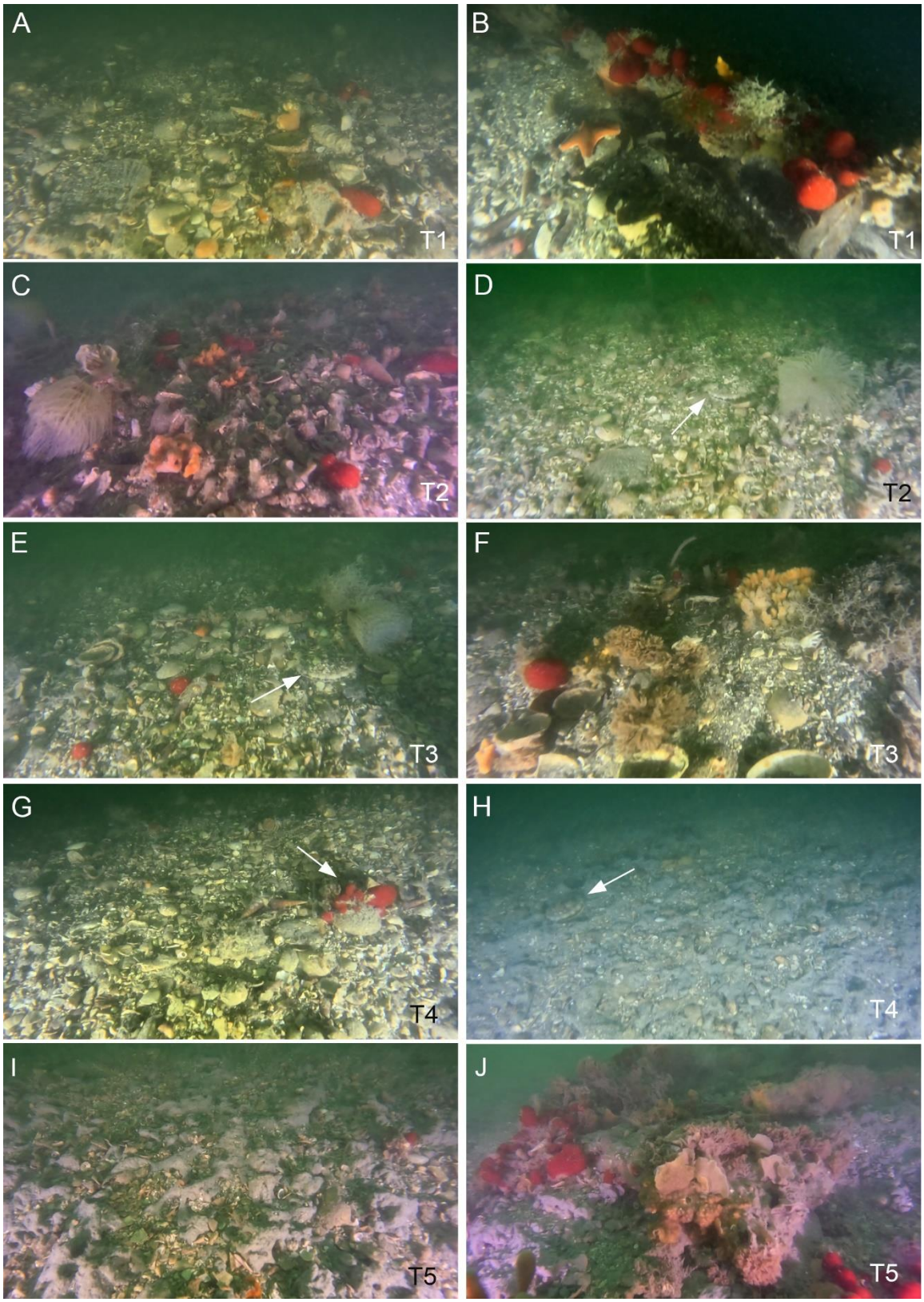


Figure 75: Video stills taken from northern channel Transects 1 to 5: A) shell rubble; B) sponges, probable bryozoans, ascidians and a cushion star on a log; C) Mediterranean fan worm, sponges and ascidians in shell rubble; D & E) scallops in shell rubble (arrows); F) diverse mix of biogenic species; G) ascidian in shell rubble; H) scallop (arrow) in mix of shell rubble and encrusting grey sponge (arrows); I) encrusting grey sponge on shell rubble; and J) diverse mix of biogenic species.



4.2.6 ROCKY INTERTIDAL COMMUNITY AROUND DISCHARGE A

A visual survey of the intertidal seawall, west of the Brigham Street (Discharge A) outfall was surveyed on the 6 November 2023 (i.e., ~1 ½ weeks after network modelling and observations indicate that dry weather overflows had ceased), and photographs of biota within seven, low tide, 0.25 m^2 quadrats taken.

Rocks above the upper tidal range were devoid of marine life. In intertidal areas on the lower portion of the seawall, Pacific oysters (*Crassostrea gigas*), snakeskin chitons (*Sypharochiton pelliserpentis*), and black nertias (*Nerita melanotragus*) were abundant. Other species that were occasionally observed on the rocks included the oyster borer (*Haustrum scobina*), spotted black top shells (*Diloma aethiops*), ornate limpets (*Cellana ornata*) and plicate barnacles (*Epopella plicata*). Near the low tide mark and in the shallow subtidal region a variety of macroalgae were observed including *Ecklonia radiata*, *Capophyllum flexuosum*, *Hormosira banksii*, *Codium convolutum*, *Colpomenia* sp., unidentified red algae and corralline turfing algae (Figure 76).

No unusual smells, discoloration of the water, or signs of recent mortality were observed during the intertidal survey. Nor were bacterial or algal mats, or nuisance algae species present. Empty oyster shells observed were missing the top valve or were weathered, indicating that they had died some time ago (Figure 77).

Figure 76. A) Upper seawall slightly west of the Brigham Street (Discharge A) outfall and above station 1. B) Rock seawall looking west from station 4. C) Looking down onto the rock seawall. D) Various macroalgae growing on the rocks at the low tide mark near station 4. E) Kelp and *Capophyllum* sp. growing in the subtidal area just below the seawall between stations 1 and 2.

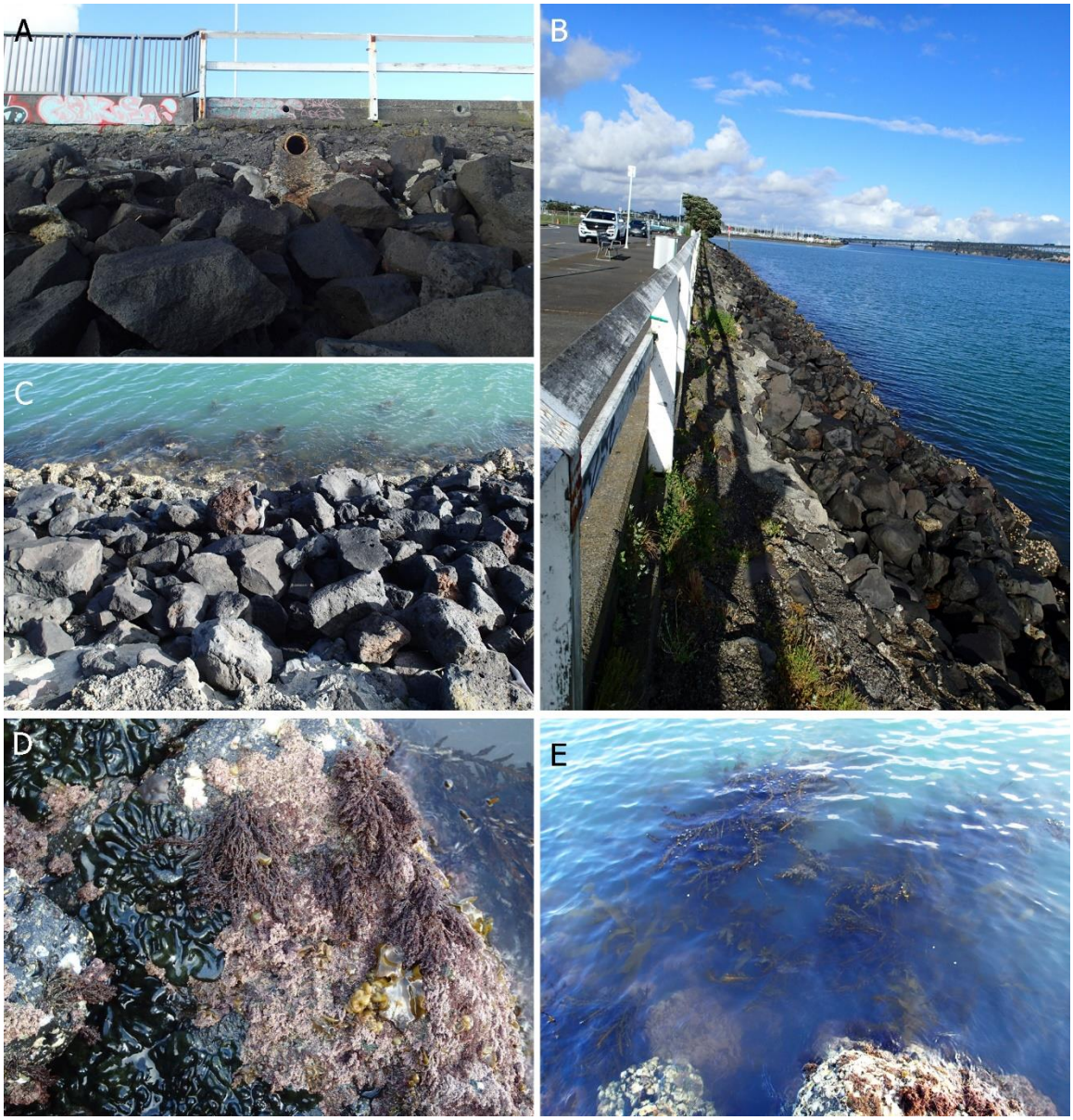
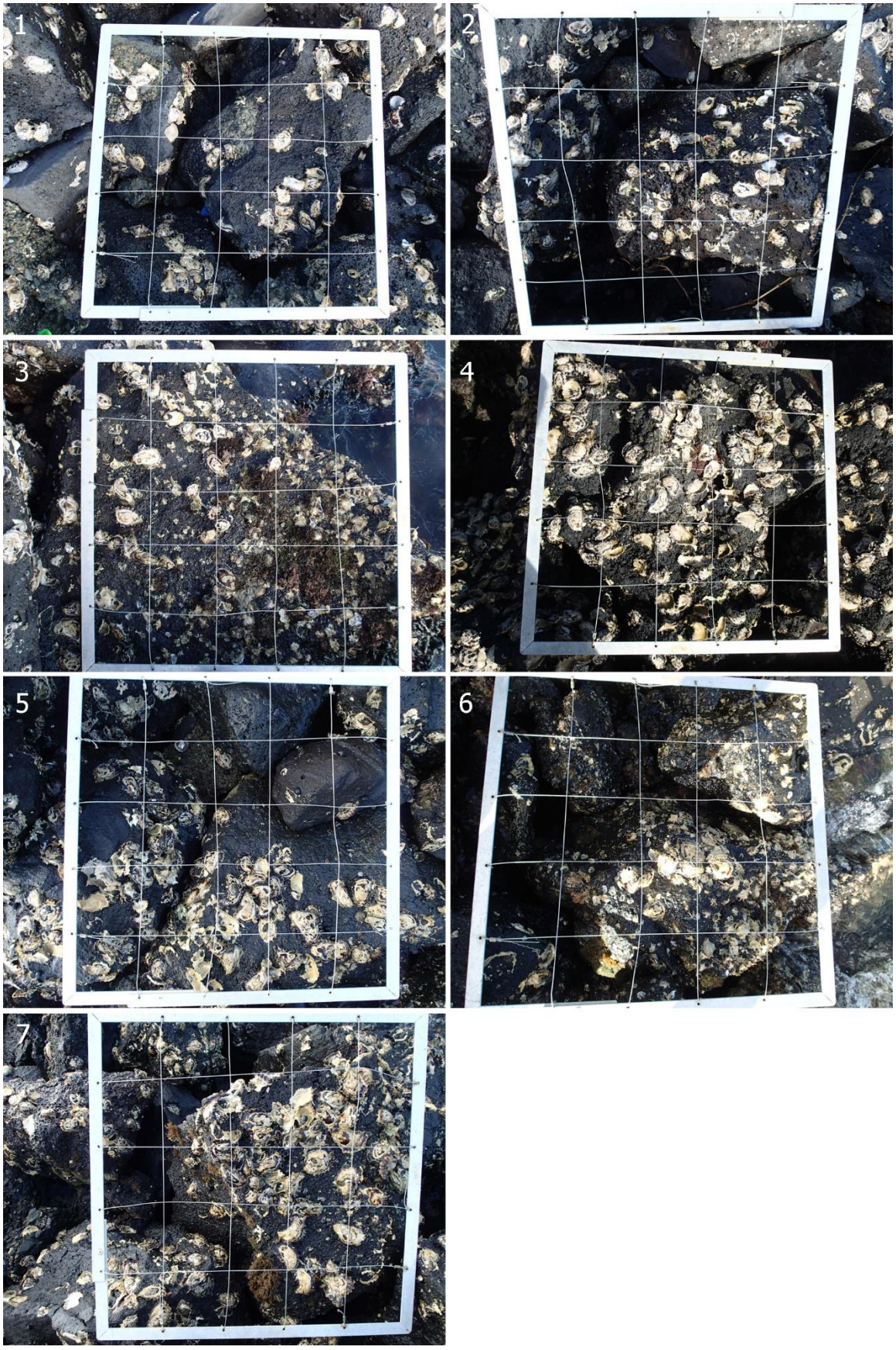


Figure 77. The inspection quadrats taken at stations 1–7 along the seawall.



4.3 DISCUSSION AND CONCLUSIONS

The collapse and blockage of the Ōrākei sewer main led to large volumes of untreated wastewater being discharged directly to the outer Waitematā Harbour over an extended period. Large, visible plumes of wastewater made it immediately clear that the discharges had the potential to have a significant impact on water quality, public health, and marine communities and habitats in surrounding coastal areas. It was also clear that identifying and implementing effective remedial actions to repair the collapse would potentially take weeks to months to complete. Watercare therefore sought advice on the potential effects of the discharges and commissioned a sampling and assessment programme to assess their environmental impacts.

Initial water quality sampling was carried out by drone and shore-based sampling around the Brigham Street (Discharge A) outfall on 6 October (10 days after the collapse). Regular sampling over a much broader area was initiated five days later and included the measurement of an extensive list of parameters aimed at determining the effects of (or on) fundamental indicators of water quality, nutrients, primary productivity, dissolved oxygen, suspended particulates and turbidity, human health risk and chemical toxicity. Samples were obtained from 10 coastal stations arranged along an approximately 11.8 km line running from the Central Waitematā Harbour through the Waitematā Harbour entrance channel and out into Motukorea Channel slightly east of Bean Rocks. Two outfall sites directly below the major discharge outlets (Brigham St (Discharge A) and Freyberg (Discharge D)) were also sampled on the same days as the coastal sites, and wastewater in the pipe network was sampled on two occasions. The water quality sampling was complemented by the analysis of microbiological indicator and heavy metal concentrations in caged oysters.

Samples from the coastal water quality and outfall sites were obtained 3–5 days per week between 11 October and 10 November (by which time network modelling and observations indicate that dry weather overflows had ceased). Over that period surface and deep-water samples were obtained from the coastal sites. Thereafter, the frequency of sampling was reduced, with surface samples being collected and deep-water readings of dissolved oxygen being made at 2–8-day intervals until 20 December.

Seabed sediment sampling for benthic ecology and sediment quality was conducted at 12 sites between Westhaven Marina and Ōkahu Bay, six to seven days after network modelling and observations indicate dry weather overflows had ceased (Utting 2024). A seabed ecological video survey (21 transects) was carried out four days later, overlapping the sediment sampling sites and covering an area between the Harbour Bridge and Ōkahu Bay.

4.4 WASTEWATER

Concentrations of microbial indicators (*E. coli* and enterococci) in wastewater samples taken from the pipe network were up to four logs higher than concentrations obtained from coastal sites closest to the Brigham Street (Discharge A) and Freyberg (Discharge D) outfalls (i.e., the Freemans and Mechanics coastal monitoring sites). Intermediate concentrations were obtained from samples collected from the discharge plume directly below the outfalls.

Ammoniacal-N, total nitrogen, dissolved reactive phosphorus, and total phosphorus concentrations in the pipe network were up to three logs, or more, higher than those obtained from the above coastal sites, but total oxidised nitrogen concentrations were

similar. Wastewater also had elevated total recoverable copper and zinc concentrations that were around 1–3 logs higher than those obtained from the coastal sites, but concentrations of other heavy metals (arsenic, cadmium, chromium, cobalt, lead, mercury, and nickel) were similar.

4.5 COASTAL WATER QUALITY

Enterococci concentrations were primarily used for the assessment of microbial water quality risk. Extreme enterococci concentrations were recorded, with a peak of 60,000 MPN/100 ml at the closest coastal site to the Brigham Street (Discharge A) outfall on 12 October. Peak concentrations were considerably lower at other sites. Concentrations at those sites fell over the period when discharge volumes were reducing (19–26 Oct), and never exceeded the Ministry for the Environment and Ministry of Health (2003) "Action" guideline for contact recreation of 280 MPN/100 ml after network modelling and observations indicate dry weather overflows had ceased (Utting 2024 — 27 Oct to 20 Dec). Concentrations at the Freemans site also declined from initial peaks, but two additional spikes occurred after network modelling and observations indicate that dry weather overflows had ceased, reaching concentrations of 17,000 MPN/100 ml on 8 November and 570 MPN/100 ml on 23 November. Hydraulic modelling and monitoring suggests that spikes occurring after the dry weather overflows had ceased, were related to the normal wet weather performance of the wastewater network, which frequently overflows around the Scotland St overflow location (Utting 2024).

Highest concentrations of dissolved oxygen were recorded at all coastal sites during the first week of monitoring. Oxygen concentrations progressively declined over the peak and reducing discharge periods, then increased and stabilised around, or slightly below, median concentrations from Auckland Council's Henderson monitoring site once dry weather overflows had ceased (Utting 2024). It is possible that the initially high, then declining concentrations of dissolved oxygen were related to an initial phytoplankton bloom and/or the bacterial decomposition of organic matter. However, the high correlation in dissolved oxygen concentrations between all sites except Freemans, suggests that if the discharges caused the observed temporal variation, then apart from Freemans, all sites were almost equally affected. That seems unlikely given the variation in distance (and dilution) of the sites from the discharges. Importantly, apart from the dips at the Freemans site, fluctuations in dissolved oxygen concentrations were generally around the 5-year median values obtained from Auckland Council's Helensville and Browns Bay monitoring sites. Together, this suggests that any potential adverse effects on dissolved oxygen at the coastal sites were generally of a Negligible magnitude, localised, and never reached levels of concern.

Significant differences were not detected in mean total suspended solids concentrations from surface and deep-water samples when analyses were limited to the period when overflows were occurring, or between overflow periods when the full dataset of surface water concentrations was analysed. However, the Westhaven site had significantly higher concentrations than the Outer Harbour, Devonport and Ōkahu sites, with the largest spikes in total suspended solids concentrations occurring during, and shortly after, the period that dry weather overflows occurred. Surface water concentrations in the latter sampling period were generally lower and fluctuated around the 5-year median values obtained from Auckland Council's Helensville and Browns Bay monitoring sites. Together, this suggests that adverse effects on total suspended solids at the coastal sites were temporary (lasting around

six weeks), of relatively Low magnitude, and mainly confined to areas adjacent to, and west of the port. Less variation was apparent in volatile suspended solids concentrations. Slightly (and statistically) higher concentrations occurred during the peak overflow period relative to the period when overflow volumes were reducing. However, statistical differences were not detected among sites, water depths, or between surface concentrations during the peak overflow and no overflow periods. This suggests that discharge effects on volatile suspended solids at the coastal sites were also Low.

Nutrient concentrations during the period of peak discharge volumes were characterised by very large spikes in ammoniacal-N, total nitrogen, and total phosphorus at the Freemans site, approximately 230 m NE of Discharge A, but the ANZG (2018) total ammonia default guideline value (DGV) for the protection of 95% of species was never exceeded at any of the coastal water quality monitoring sites. Large reductions in the concentrations of ammoniacal-N, total nitrogen, and total phosphorus occurred at the Freemans site during the "reducing overflow volumes" period, with median concentrations dropping well below 5-year medians from Auckland Council's Henderson and Browns Bay monitoring sites, but occasional spikes of high concentrations still occurred up to 10 November.

Smaller spikes in ammoniacal-N occurred at several sites surrounding Freemans Bay, but apart from Mechanics, median values remained below the 5-year medians from Auckland Council's Henderson and Browns Bay monitoring sites. Subsequently, ammoniacal-N concentrations at all sites settled at low levels.

When the Freemans site was excluded, no statistically significant differences in total nitrogen concentrations were detected among depths, sites, or sampling periods. However, total phosphorus concentrations were significantly higher after the overflows had nominally ceased, and concentrations at the Outer Harbour were significantly lower than at sites west of the Judges site[14]. Median concentrations of total nitrogen and total phosphorus remained below the 5-year medians from Auckland Council's Henderson and Browns Bay monitoring sites throughout the monitoring period.

Smaller spikes that covered a wider area and lasted longer were observed in total oxidised nitrogen (TON – nitrate-nitrite-N) and dissolved reactive phosphorus (DRP). The largest of those spikes were centred around the Freemans site and extended to the Westhaven and Princes sites. At the Freemans site, elevated TON concentrations persisted through to 10 November in the "no dry weather overflow" period. This was followed by two sampling rounds with concentrations below detection limits, and a final, substantial spike (0.018 mg/l) on 23 November, when a similar spike in enterococci concentrations also occurred suggesting it was associated with an overflow event. Total oxidised nitrogen concentrations at that site subsequently settled at low levels.

Total oxidised nitrogen concentrations at the Inner Waitematā, Westhaven and Princes sites also displayed substantial, but short-lived spikes during the period when no dry weather overflows occurred. However, concentrations of TON and DRP at the other sites predominantly remained below the 5-year median from Auckland Council's Browns Bay monitoring site, and often below detection limits.

[14] Three outliers from the inner Waitematā, Princes, and Judges sites were excluded from the analysis of total phosphorus.

Significant differences in mean surface water concentrations of chlorophyll *a* were detected between the Bledisloe and Outer Harbour site (differences were not detected between concentrations at other sites), while concentrations in the peak discharge period were greater than those in the reducing overflow and no overflow periods. The maximum chlorophyll *a* concentration recorded from any site was a short spike of 0.005 mg/l in a deep-water sample at the Freemans site on 12 October. The corresponding surface water sample had a concentration of 0.0046 mg/l. Several sites (including sites west and east of the port) also displayed spikes with concentrations >0.003 mg/l on 20 December. Compared to concentrations at Auckland Council sites, all of these spikes are consistent with a short-term phytoplankton blooms of low to moderate strength (see Kelly & Kamke 2023).

Concentrations of most heavy metals/metalloids were below ANZG (2018) DGVs for the protection of 95% of species. The exceptions were copper and zinc concentrations. Total recoverable copper concentrations exceeded the DGV in around 14% of samples with largest exceedances occurring at the sites that were furthest from the discharges (Inner Waitematā, Devonport and Outer Harbour sites). Dissolved copper concentrations only exceeded the DGV twice and exceedances were marginal on both occasions. Total recoverable zinc concentrations exceeded the DGV in around 2% of samples, with largest exceedances occurring at the Bledisloe and Outer Harbour sites. All dissolved zinc concentrations were well below the DGV. Measured wastewater concentrations of copper and zinc were high, but the above patterns of remote coastal sites having the highest concentrations, suggest that the wastewater discharges were not the key, or only, contributor of heavy metals. There also appears to be little concordance between concentrations at the Brigham St (Discharge A) and Freyberg (Discharge D) outfall sites, and the days when the highest concentrations at the above sites occurred (see Figure 16, Figure 39 and Figure 41). Other significant sources of zinc and/or copper include urban stormwater runoff (Griffiths & Timperley 2005; Kennedy & Sutherland 2008) and antifoulants (Gadd & Cameron 2012), but the relative contributions of various sources cannot be determined. However, any effects of the discharges on heavy metal concentrations in surrounding coastal water would have rapidly dissipated once the discharges ceased.

4.6 SHELLFISH

Elevated concentrations of all four microbial indicators of human health risk (*E. coli*, faecal coliforms, enterococci, and bacteriophages) were detected in caged Pacific oysters at Harbour Bridge, Freemans Bay, Mechanics Bay and Ōkahu Wharf sites. Samples were swapped out at 2-week intervals. Peak concentrations at the Freemans Bay site (where oysters were set directly beside the Brigham Street (Discharge A) outfall), were exceptionally high, with *E. coli* and faecal coliform concentrations of >160,000 MPN/100 g being recorded on 17 October (i.e., during the overflow period), and at the conclusion of sampling on 20 December (i.e., over 50 days after network modelling and observations indicate that dry weather overflows had ceased). Concentrations at the relatively remote, Ōkahu Wharf site were much lower (around two logs less), while intermediate concentrations were obtained from the Harbour Bridge and Mechanics Bay sites.

Escherichia coli concentrations at the Freemans Bay site were consistently well above the median (230 MPN/100 g) and 90th percentile (700 MPN/100 g) concentrations of the Regulated Control Scheme for farming of bivalve molluscan shellfish for human consumption. Concentrations at the Harbour Bridge and Mechanics Bay sites declined from

initial peaks well above the Regulated Control Scheme's reference values on 17 October, and subsequently fluctuated around the scheme's median and 90th percentile values. Concentrations at the Ōkahu Wharf site fluctuated between, or below, the median and 90th percentile values.

Oyster concentrations of arsenic, cadmium, cobalt, copper, mercury, and zinc were highly correlated and tended to increase over the sampling period, with no clear differences between most sites. Consistent patterns were not detected in chromium, lead, or nickel concentrations.

It should be noted that in general, the consumption of shellfish gathered from urban areas poses an elevated human health risk. Overall, the wastewater discharges significantly exacerbated that risk near the outfalls where discharges occurred, but the effects caused by the discharges were localised. When sampling ended, the consumption of shellfish around the Brigham St outfall (Discharge A) continued to pose a significant health risk, due to frequent, ongoing wet weather overflows (Utting 2024). This highlights the fact that that shellfish gathered from that location would always pose a significant health risk. The effects of the discharges therefore represented an increase in a high pre-existing risk. Based on that the overall effect, is assessed as having been Low to Moderate.

4.7 SEDIMENT QUALITY

Sediment quality varied considerably among sites from: mixed sediment with high proportion of shell gravel in channel areas; to, predominantly muddy sediments in port basins. Patterns in the proportions of total organic carbon and volatile solids were similar, with highest mean percentages occurring in the muddy sediments of the port basin sites. The port basins also had the highest mean concentrations of chromium, copper, nitrogen, and phosphorus. This is consistent with available information and the port basins being low energy, depositional environments, subject to urban stormwater runoff, wastewater contaminants, and inputs from marine activities. Mean concentrations of arsenic, copper, lead and mercury marginally exceeded their TEL guideline values at some sites, but concentrations were well below the ANZG (2018) DGV guidelines. Mean concentrations of other metals were all below guideline values. Surprisingly, compared with Auckland Council's regional sediment dataset, copper, lead, mercury, and zinc concentrations were relatively low—particularly given their location, surrounding land and marine uses, long history of development and use, and elevated copper and zinc concentrations recorded in wastewater samples.

Other sediment sampling conducted in the port has mainly involved the collection and analysis of 1 m long by 60 mm diameter core samples, and is therefore, not directly comparable to results obtained here. However, as a reference, results for key metals (copper, lead and zinc) from a 2016–17 survey (Golder Associates 2018c) are provided below (Table 10) and show that TEL (MacDonald et al. 1996) values were frequently exceeded and DGV values were occasionally exceeded.

Overall, there appears to be little evidence that the discharges have markedly altered the characteristics of sediments present before the discharges occurred. The magnitude of effects on sediment quality is therefore assessed as Negligible.

Table 10: Minimum and maximum total recoverable copper, lead and zinc concentrations obtained from composite core samples in the Port of Auckland (data from Golder Associates (2018c). Red numbers exceed PEL, orange numbers exceed DGV, blue numbers exceed TEL, and green numbers are below guideline values.

Site	No. of Samples	Copper (mg/kg)		Lead (mg/kg)		Zinc (mg/kg)	
		Min.	Max.	Min.	Max.	Min.	Max.
Bledisloe West	3	19.1	66	25	109	86	200
Fergusson West	2	16.7	28	18.1	25	70	109
Freyberg East	1	25	25	21	21	96	96
Freyberg West	3	27	32	27	38	100	130
Jellicoe East	3	26	86	35	51	116	148
Princes East	3	18.2	24	19.1	31	74	99
Queens East	3	22	28	34	143	110	177
Queens West	3	22	26	29	31	94	105
Wynyard West	3	19.5	39	25	50	81	154

4.8 ECOLOGY

Ecological sampling and a video survey carried out soon after network modelling and observations indicates that dry weather overflows had ceased (Utting 2024) and showed that areas within and surrounding the Port continued to sustain a variety of marine communities, whose characteristics were consistent with the nature of the sediments present and site energetics. Benthic diversity and the occurrence of biogenic features were lowest within the low energy, depositional areas of the port basins, and highest in channels subject to strong current and with a seabed of coarse shell. However, sediment dwelling communities (infauna) from channel and basin sites closest to the Brigham St (Discharge A) and Freyberg (Discharge D) outfalls had similar characteristics to communities from more remote sites. Of note, was the similarity between the infaunal communities at the Hamer site, which was directly offshore from the Brigham St (Discharge A) outfall, and the Channel West, which was a remote site on the northern side of the harbour entrance. Those sites stood out for having the most diverse infaunal communities, high numbers of individuals, and a very similar mix of taxa, even though the Hamer site was the channel site most affected by the discharges.

The video survey also recorded diverse communities of sessile and mobile organisms, including sponges, ascidians, probable bryozoans, possible horse mussels[15], gastropods, scallops, cushion stars, 11-armed starfish, fan worms, and fish in the Waitematā Harbour entrance channel beside the port. A similar variety of species were observed on the central/northern side of the channel, although the degree of shell armouring was greater in that area.

The occurrence of large epifauna was less common in muddy environments within the depositional environment of port basins. The seabed in those areas largely comprised

[15] These were heavily fouled by other taxa, so their identification was based on experience and observations of them appearing in similar forms in other areas.

muddy sediments with numerous burrows. Mediterranean fan worm, small burrowing fish (assumed to be the estuarine goby) and flatfish were reasonably common in those areas, while sponges, probable bryozoans and cushion stars were occasionally observed. Interestingly, an assortment of sessile and mobile biota including sponges, ascidians, probable bryozoans, cushion stars, a shark and other fish were observed in a transect run through the Fergusson Wharf basin, close to Freyberg (Discharge D) outfall.

Similar habitats and communities to those described for the port basins were observed in bays east of the port. However, one transect in that area covered a small portion of the restored, green-lipped mussel beds currently being monitored in Ōkahu Bay. Live mussels were evident within the path of the video tow, with no evidence of unusual mussel mortality. Only one transect was run on the western side of the Harbour Bridge. The area covered contained a mix of sand with small, scattered shell hash, and patches of the green macroalgae *Codium fragile* subsp. *novae-zelandiae*, occasional individuals of other unidentified algae, sponges, cushion stars, and the invasive clubbed tunicate *Styela clava.*

No obvious signs of recent mortalities of benthic epifauna or algae were observed at any of the sites surveyed within, immediately adjacent to, or up/down current of the outfalls discharging the dry-weather overflows. We are also unaware of any reports of unusual fish mortality.

4.9 OVERALL CONCLUSIONS

Overall, the key effects of the discharges are summarised below:

Water Quality:

9. Effects on microbial indicators of human health risk were assessed using enterococci concentrations:
    a. Extreme spikes in enterococci concentrations of up to 60,000 MPN/100 mL occurred at the Freemans coastal monitoring site, with much lower spikes at the other coastal monitoring sites.
    b. Very large spikes of up to 17,000 MPN/100 mL continued for some time at the Freemans coastal monitoring site after network modelling and observations indicate that dry weather overflows had ceased, but enterococci concentrations were below detection limits for the last five sampling occasions.
    c. Concentrations at the other monitoring sites never exceeded guideline values after network modelling and observations indicate that dry weather overflows had ceased.

    Despite the extreme spikes in enterococci concentrations that occurred at the Freemans site, the overall effects on microbial indicator concentrations are considered to have been Low due to the temporary and localised nature of that impact.

10. The discharges had little effect on dissolved oxygen concentrations at the coastal monitoring sites with:
    a. Initially high concentrations that declined during the peak discharge period.
    b. An ongoing decline in concentrations through to the end of the reducing-discharges period.

c. Increasing concentrations after discharges had nominally ceased, followed by a decline and stabilisation around, or slightly below, median concentrations from Auckland Council's Henderson water quality monitoring site.

In addition:

d. deep-water concentrations of dissolved oxygen were significantly higher than surface concentrations while the overflows were occurring.

e. occasional, short-term, dips occurred at the Freemans coastal monitoring site.

Overall, impacts on dissolved oxygen were temporary and not considered to be sufficient to cause adverse ecological effects of concern. Effects on dissolved oxygen are therefore considered to have been Negligible.

11. The discharges caused a temporary, moderate increase in total suspended solids concentrations (lasting around six weeks), with the areas most affected located adjacent to, and west of, the port. The impact of total suspended solids concentrations is considered to have been a minor and temporary shift away from baseline conditions, that will not lead to lasting changes. As such the overall effect is considered to have been Low.

12. Effects on coastal nutrients and phytoplankton were greatest at coastal sites around Discharge A, with:

    a. Extreme, short-term spikes in nutrient concentrations at the coastal site closest to the Brigham Street (Discharge A) outfall (i.e.. Freemans).

    b. Smaller spikes in nutrient concentrations at other sites.

    c. Short-lived, low to moderate strength phytoplankton blooms.

    d. Median nutrient concentrations remaining below, or returning to concentrations below, those reported from surrounding Auckland Council monitoring sites once dry weather discharges had nominally ceased.

    While extreme spikes in nutrient concentrations occurred at the Freemans site, due to the temporary and localised nature of that impact, and because there was little discernible effect on phytoplankton, the overall effects of nutrients are considered to have been Low.

13. Of the nine heavy metals monitored, total recoverable copper and zinc concentrations were the only ones to exceed default guideline values for the protection of 95% of species. The relative contributions of the wastewater discharges to those exceedances cannot be determined, but water quality effects would have rapidly dissipated once the discharges ceased.

Shellfish:

14. Concentrations of *E coli* were compared to median and 90th percentile values specified in the Ministry of Primary Industries Regulated Control Scheme's for the farming of bivalve molluscan shellfish for human consumption.

15. Extremely high concentrations of *Escherichia coli* and faecal coliforms of >160,000 MPN/100 g were obtained from caged Pacific oysters beside the Brigham St outfall (Discharge A) at the beginning and end of sampling.

16. *Escherichia coli* concentrations at the Harbour Bridge and Mechanics Bay sites declined from initial peaks on 17 October that were well above the control scheme values, and subsequently fluctuated around its values. Concentrations at the Ōkahu Wharf site fluctuated from below the median to below the 90th percentile value.

17. In general, the consumption of shellfish gathered from urban areas poses an elevated human health risk. The wastewater discharges significantly exacerbated that risk near the outfalls where discharges occurred, but the effects caused by the discharges were localised. When sampling ended, the consumption of shellfish around the Brigham St outfall (Discharge A) continued to pose a significant health risk. However, it should be noted that shellfish gathered from that location generally pose a significant health risk at any time, given that the outfall is associated with the combined stormwater-wastewater network. The effects of the discharges therefore represented an increase in a high pre-existing risk. Based on that the overall effect, is assessed as have been Low to Moderate.

Sediment quality:

18. Sediment characteristics varied considerably among sites. This is consistent with:

    f. The port basins and surrounding bays being low energy, depositional environments, subject to urban stormwater runoff, wastewater contaminants, and inputs from marine activities.

    g. Channel areas being high energy environments where fine particulate material and associated contaminants are unlikely to accumulate.

19. Overall, there appears to be little evidence that the discharges have markedly altered the characteristics of sediments in the area. The effects of the discharges on sediment quality are therefore considered to have been Negligible.

Ecology:

20. Areas within and surrounding the Port continued to sustain a variety of marine communities, whose characteristics are consistent with the nature of the sediments present and site energetics.

21. No obvious signs of recent mortalities of benthic epifauna or macroalgae were observed at any of the sites surveyed within, immediately adjacent to, or up/down current of the outfalls discharging the dry-weather overflows.

22. No evidence of accumulated gross solids, bacterial mats, or algal mats was observed.

23. We are unaware of any reports of unusual fish mortality associated with the discharges, and fish were commonly observed in video footage obtained throughout the survey area.

24. Overall, there is little evidence of the discharges having marked effect on benthic communities or fish. The ecological effects on benthic communities are therefore considered to have been Negligible.

5 ACKNOWLEDGEMENTS

Field work was conducted with the assistance of John McMeeking and Laurie Beamish. Water sampling was conducted by staff from Watercare Services and Watercare Laboratory Services. Sediment, shellfish, and water quality samples were analysed by Watercare Laboratory Services. Benthic ecological samples were processed by Biolive.

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7 APPENDICES

7.1 APPENDIX 1

7.2 WATER QUALITY MONITORING SAMPLE SIZES

Site	Depth	Period	Number samples
Bledisloe	Deep	Peak overflows	6
Bledisloe	Deep	Reducing overflows	6
Bledisloe	Deep	No overflows	18
Bledisloe	Surface	Peak overflows	6
Bledisloe	Surface	Reducing overflows	6
Bledisloe	Surface	No overflows	18
Devonport	Deep	Peak overflows	6
Devonport	Deep	Reducing overflows	6
Devonport	Deep	No overflows	18
Devonport	Surface	Peak overflows	6
Devonport	Surface	Reducing overflows	6
Devonport	Surface	No overflows	18
Freemans	Deep	Peak overflows	6
Freemans	Deep	Reducing overflows	6
Freemans	Deep	No overflows	18
Freemans	Surface	Peak overflows	6
Freemans	Surface	Reducing overflows	6
Freemans	Surface	No overflows	18
Inner Waitematā	Deep	Peak overflows	6
Inner Waitematā	Deep	Reducing overflows	6
Inner Waitematā	Deep	No overflows	18
Inner Waitematā	Surface	Peak overflows	6
Inner Waitematā	Surface	Reducing overflows	6
Inner Waitematā	Surface	No overflows	18
Judges	Deep	Peak overflows	6
Judges	Deep	Reducing overflows	6
Judges	Deep	No overflows	18
Judges	Surface	Peak overflows	6
Judges	Surface	Reducing overflows	6
Judges	Surface	No overflows	18
Mechanics	Deep	Peak overflows	6
Mechanics	Deep	Reducing overflows	6
Mechanics	Deep	No overflows	18
Mechanics	Surface	Peak overflows	6
Mechanics	Surface	Reducing overflows	6
Mechanics	Surface	No overflows	18
Ōkahu	Deep	Peak overflows	6
Ōkahu	Deep	Reducing overflows	6
Ōkahu	Deep	No overflows	18
Ōkahu	Surface	Peak overflows	6
Ōkahu	Surface	Reducing overflows	6
Ōkahu	Surface	No overflows	18
Outer Harbour	Deep	Peak overflows	6
Outer Harbour	Deep	Reducing overflows	6
Outer Harbour	Deep	No overflows	18
Outer Harbour	Surface	Peak overflows	6
Outer Harbour	Surface	Reducing overflows	6
Outer Harbour	Surface	No overflows	18

Site	Depth	Period	Number samples
Princes	Deep	Peak overflows	6
Princes	Deep	Reducing overflows	6
Princes	Deep	No overflows	18
Princes	Surface	Peak overflows	6
Princes	Surface	Reducing overflows	6
Princes	Surface	No overflows	18
Westhaven	Deep	Peak overflows	6
Westhaven	Deep	Reducing overflows	6
Westhaven	Deep	No overflows	18
Westhaven	Surface	Peak overflows	6
Westhaven	Surface	Reducing overflows	6
Westhaven	Surface	No overflows	18

7.3 APPENDIX 2

7.3.1 WATER QUALITY BOXPLOTS

Figure 78: Boxplots showing site variation in a) and b) ammoniacal-N, c) and d) total nitrogen and e) and f) total phosphorus between the peak discharge (26 Sept to 18 Oct), reducing discharges (19 Oct to 26 Oct), and no (dry weather) overflow (27 Oct to 20 Dec) periods. Outliers have been excluded. For context, reference lines have been provided showing median concentrations at the Henderson site in Waitematā Harbour (orange) and the closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023).

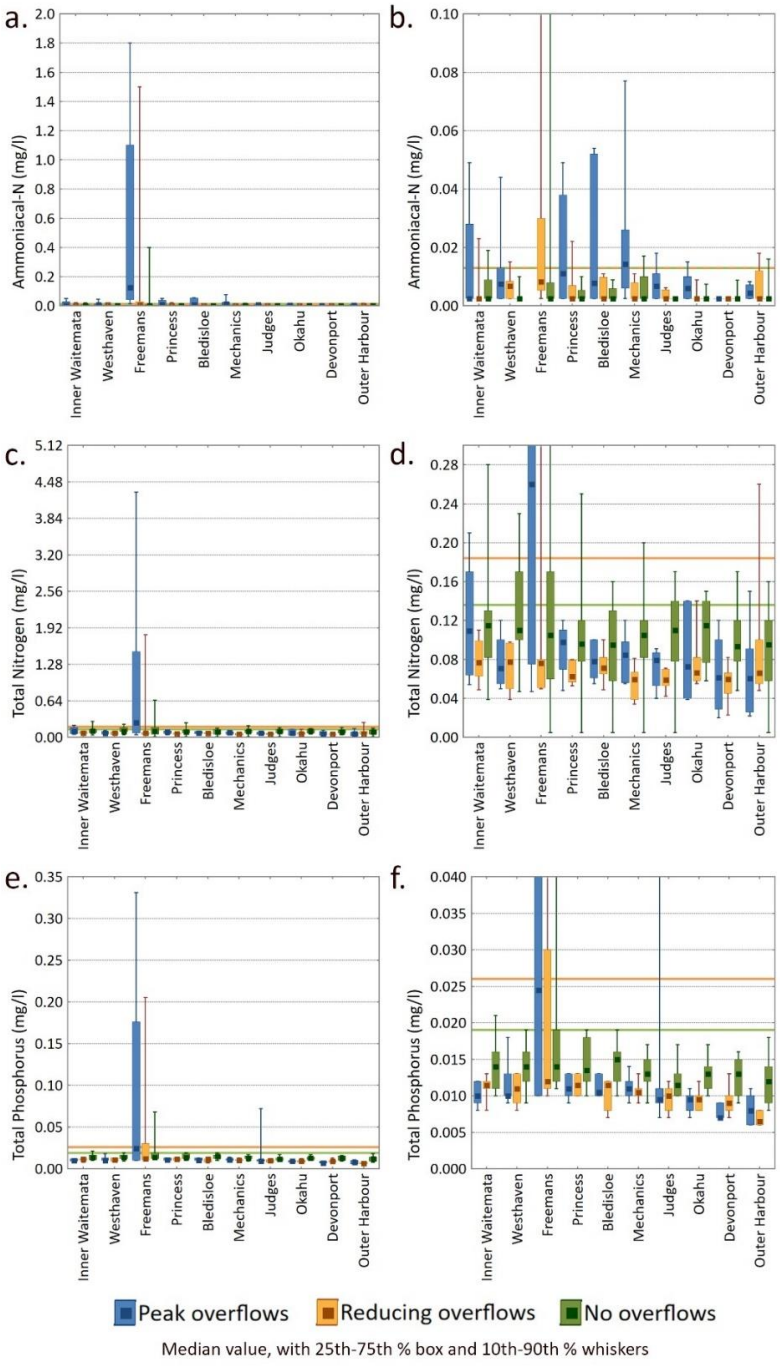


Figure 79: Boxplots showing site variation in a) total oxidised nitrogen b) dissolved reactive phosphorus, c) chlorophyll *a*, d) total suspended solids, and e) volatile suspended solids concentrations, and f) water turbidity between the peak discharge (26 Sept to 18 Oct), reducing discharges (19 Oct to 26 Oct), and no (dry weather) overflow (26 Oct to 20 Dec) periods. For context, reference lines have been provided showing median concentrations at the Henderson site in Waitematā Harbour (orange) and the closest East Coast site (Browns Bay–green) (5-year summary statistics from Kelly & Kamke 2023).

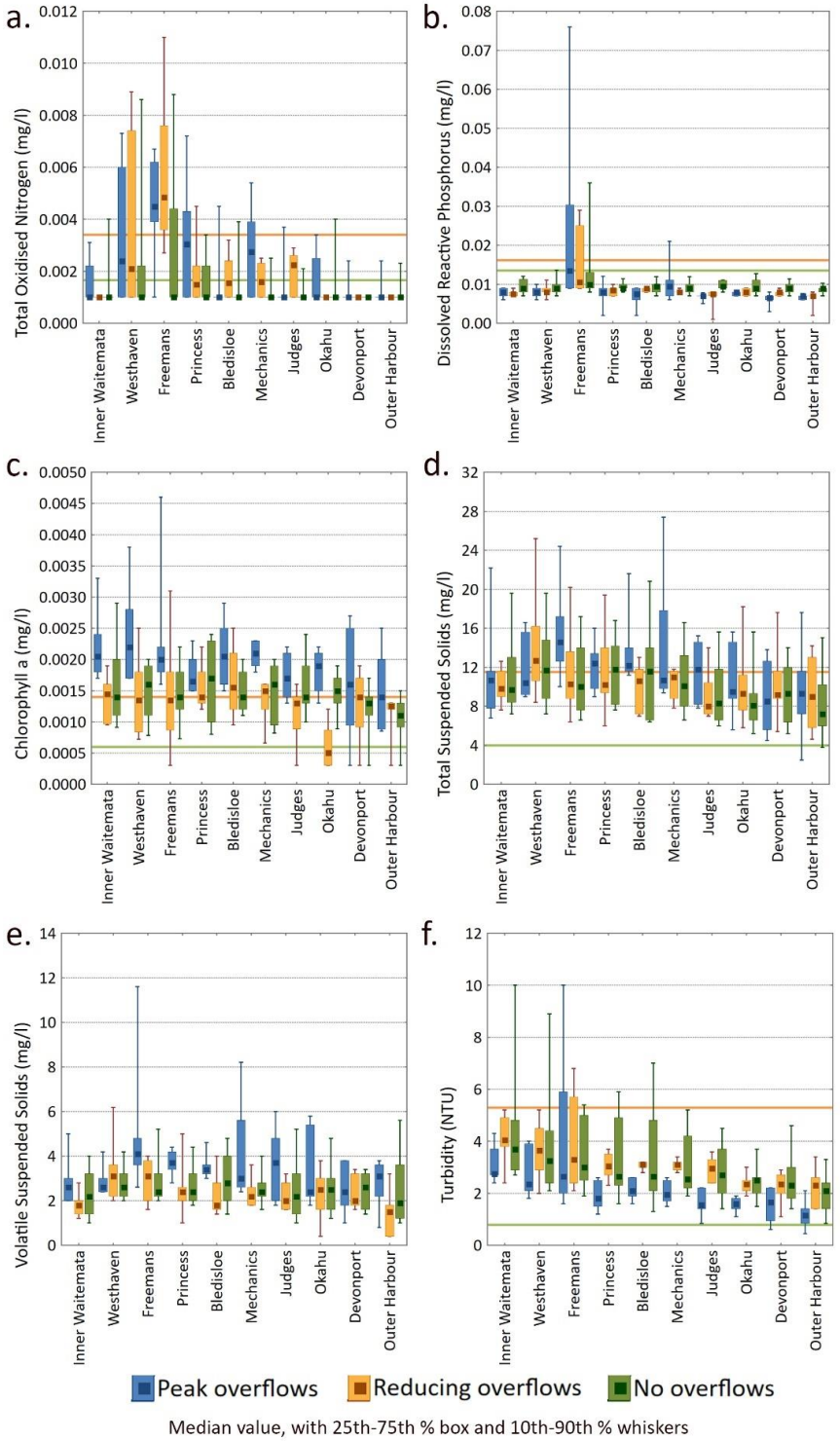
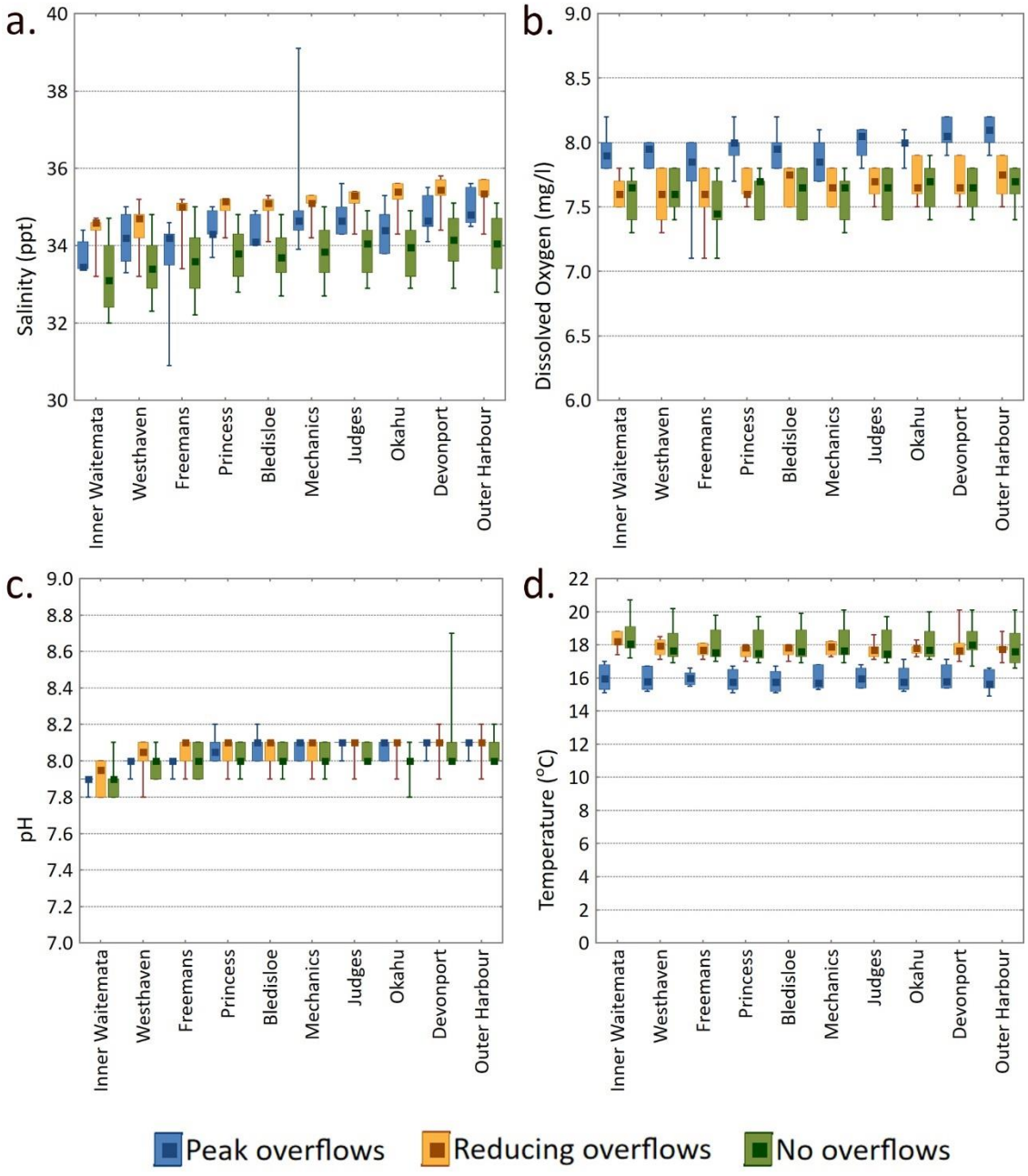


Figure 80: Boxplots showing site variation in a) salinity b) dissolved oxygen concentrations, c) pH, and d) temperature between the peak discharge (26 Sept to 18 Oct), reducing discharges (19 Oct to 26 Oct), and no (dry weather) overflow (27 Oct to 20 Dec) periods.



High-level review and ecological risk assessment for Emerging Organic Contaminants in untreated sewage from Ōrākei main sewer collapse

Action	Personnel	Version	Date
Preparation of draft for internal review	Mike Stewart	D1	14/12/23
Internal technical review	Ngaire Phillips	D2	15/12/23
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Preparation of final	Mike Stewart	F1	19/02/24

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Executive Summary

The Ōrākei main sewer collapse in central Auckland in late September 2023 resulted in large volumes of untreated wastewater discharging into the Port area of Waitemata Harbour. Dry weather overflows commenced on 28th September 2023 and continued until 26th October 2023.

This was an unprecedented event in New Zealand, and its impact in terms of ecological risks in the receiving environment were unknown. As such, Watercare Services Limited (Watercare) requested that Streamlined Environmental Ltd (SEL) undertake a high-level review and risk assessment of emerging organic contaminants (EOCs) present in the untreated wastewater discharging from the collapsed Ōrākei main sewer into the Port area and wider receiving environment of Waitemata Harbour.

Our review and risk assessment was undertaken using a combination of measured data (collected by Watercare from multiple wastewater treatment plants (WWTPs) and sites within and outside the Port) and literature data, literature-derived effects concentrations (marine PNEC[1] or Predicted No-Effect Concentration), and hydrodynamic modelling of the discharge plume from the sewer (to provide predicted dilutions).

To estimate the ecological risk of EOCs to the receiving environment, hazard risk quotients (RQs) were calculated as EOC concentration (ng/L)/marine PNEC (ng/L). This was a 2-step process:

1. Calculating the potential ecological risk of EOCs in the influent (RQ_{inf}); and
2. Calculating the risk of EOCs in the receiving environment (RQ_{RE}).

For the first step, RQ_{inf} was calculated for each EOC in WWTP influent (measured or literature) and/or Ōrākei sewer main influent (measured only). In simplistic terms, the RQ_{inf} is the dilution required to reduce ecological effects in the receiving environment to low. Two RQ_{inf} were calculated, approximating scenarios of:

- Normal case – mean influent concentration (mean EOC concentration/PNEC), and
- Worst-case – maximum influent concentration (maximum EOC concentration/PNEC).

From over 100 EOCs assessed, 31 were refined to a list of those assessed as being of priority, based primarily on an elevated RQ_{inf}.

For the second step, depending on the data source, the methodology from here diverged.

For Watercare data, the risk quotient at receiving environment sites (RQ_{RE}) was evaluated primarily on EOC concentrations measured at receiving environment sites. There were two issues with this approach:

- These sites did not provide a sufficiently extensive coverage of the wider receiving environment.

[1] In the absence of appropriate toxicity data on marine species, and following a precautionary approach, a scaling factor of 10 is used on the freshwater PNEC to derive the marine PNEC. This adds another layer of conservatism to the risk assessment undertaken.

- EOC concentrations measured in the receiving environment by Watercare generally had high detection limits and had limited suitability to use in assessing the risk, especially those where the predicted ecological effects concentrations are very low.

Therefore, predicted dilutions at water quality sites from modelled time-series dilutions were also included for the Watercare data.

RQ_{RE} from priority EOCs (literature and Watercare) were evaluated based on time-series dilutions. Four scenarios were used:

1. Highest sewer concentration/lowest receiving environment dilution.
2. Highest sewer concentration/median receiving environment dilution.
3. Average sewer concentration/lowest receiving environment dilution.
4. Average sewer concentration/median receiving environment dilution.

RQ_{RE} were calculated for the four scenarios above from the dilution series data.

For pharmaceutical and personal care products (PPCPs) Watercare data showed:

- For sites within the Port area, RQs were extremely high for ibuprofen under all four scenarios (RQ 99 – 5348), and moderately high for diclofenac and triclosan when dilution was low (RQ 4.2/11.8 and 2.9/6.8 for diclofenac and triclosan, respectively). Under the highest sewer concentration/lowest receiving environment dilution scenario, RQs were >1 for venlafaxine (2.7), naproxen (1.4), caffeine (1.4), and diphenhydramine (1.2). All other PPCPs had RQs <1 under all four scenarios, suggesting negligible effects.
- For sites outside the Port area, for all four scenarios, ibuprofen was the only PPCP with RQ>1, ranging from 56 to 267. With high RQ and the likelihood that some sites outside the Port area have higher ecological values than within the Port area, these data suggest that ibuprofen is of potential concern.

For literature EOC data:

- For sites within the Port area, when dilutions were at their lowest, up to 9 EOCs presented potential elevated risk. Based on the highest literature influent concentrations, RQs ranged from 2.3 (PFOS) to 51 (17β-estradiol). Based on average concentrations, 7 EOCs presented elevated risk, with RQs ranging from 1.4 (PFOS) to 14 (17β-estradiol). Under median dilutions, only 17β-estradiol presented a borderline elevated risk (RQ 1.4). In other words, most of the time, based on literature influent concentrations of EOCs, there was negligible risk for all but 17β-estradiol within the Port area, while 17β-estradiol provided a minor risk.
- For sites outside the Port area, 17β-estradiol was the only PPCP with RQ>1, and only under the scenario of highest literature concentration and lowest dilution, with an RQ of 2.5.

The risk assessment showed that the majority of the risk from EOCs was for a few analytes with the risk primarily confined to the Port area. In other words, most EOCs were calculated to be below effects concentrations outside the Port area. Exceptions were ibuprofen, which showed potential for adverse effects outside the Port area for all discharge and dilution scenarios, and 17β-estradiol, which showed potential for effects only under the scenario of highest

concentration and lowest dilution. These risks were based on a conservative assumption of no degradation in the receiving environment. There are arguments that some degradation will occur for both ibuprofen and 17β-estradiol.

As significant time has elapsed since the bypass was completed, and the short half-life of 17β-estradiol (1 day), the concentration of 17β-estradiol in the receiving environment will likely have reduced significantly. Therefore, while the bypass is functioning, and untreated wastewater is not being discharged into the Port area, I consider that further measurement of 17β-estradiol is not required. However, I recommend that ibuprofen is measured at discharge sites A and D in the future to ascertain that concentrations have reduced to below effects thresholds.

1. Introduction

The Ōrākei main sewer collapse in central Auckland in late September 2023 resulted in large volumes of untreated wastewater discharging into the Port area of Waitemata Harbour. Dry weather overflows commenced on 28th September 2023 and continued until 26th October 2023.

This was an unprecedented event in New Zealand, and ecological risks in the receiving environment arising from the event were unknown. As such, Watercare Services Limited (Watercare) requested that Streamlined Environmental Ltd (SEL) undertake a high-level review and risk assessment of emerging organic contaminants (EOCs) present in the untreated wastewater discharging from the collapsed Ōrākei main sewer into the Port area and wider receiving environment of Waitemata Harbour.

This report outlines the assessment undertaken.

2. Environmental risk assessment methodology

2.1 Risk quotient methodology

2.1.1 Ecological effects

The catalogue of identified EOCs, and information on their ecological effects is continually evolving. Importantly, there are little data on New Zealand specific species effects and so only a high-level effects assessment can be undertaken based on international effects data for a Predicted No-Effect Concentration (PNEC). Databases such as the European Chemicals Agency (ECHA)[2] and United States Environmental Protection Agency (USEPA) Ecotox Knowledgebase[3] provide some PNEC and/or No-Effect Concentration (NOEC) data for contaminants, but their coverage of EOCs is generally sparse. To my knowledge, the most complete database for ecotoxicity of EOCs is the NORMAN[4] Ecotoxicology Database,[5] where lowest freshwater and marine PNEC for many EOCs are provided.

Lowest PNECs are either predicted by Quantitative Structure Activity Relationship (QSAR) or obtained experimentally and voted on by NORMAN ecotoxicology experts. Lowest PNECs are used primarily for prioritisation purposes. NORMAN states that most of the lowest PNECs have been derived for freshwater. As there are likely to be differences in effects of freshwater and marine species in terms of responses to EOCs, conversion of PNECs is required. The lowest PNEC for marine water is calculated by lowest PNEC for freshwater/10. Therefore, by using this scaling factor risk to derive the marine PNEC the risk assessment process follows a precautionary approach. This adds another layer of conservatism to the risk assessment undertaken.

All PNEC data for this assessment have been extracted from the NORMAN database. However, PNECs are frequently being updated as more information becomes available. For example, many PNECs used for an ecological risk assessment of EOCs from 3 Auckland WWTPs in September 2022 (Stewart, 2022) have changed since this time. Of particular note, ibuprofen had a marine PNEC of 100 ng/L in 2022 but is currently 1.1 ng/L, a 91-fold decrease. In another example, the marine PNEC for triclosan has increased from 2.0 ng/L in 2022 to 6.9 ng/L currently, a 3.5-fold increase. Therefore, the most recent PNECs were used in this risk assessment.[6]

Human health effects were not assessed. The largest human health risk regarding EOCs is for drinking water, however this is not applicable as the receiving environment is marine. To my knowledge there are no effects data for EOCs relating to contact recreation. Therefore, this risk assessment is for ecological effects only.

[2] https://echa.europa.eu/information-on-chemicals
[3] https://cfpub.epa.gov/ecotox/search.cfm
[4] NORMAN is a network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances. NORMAN has a membership of more than 70 leading laboratories and authorities across Europe and North America.
[5] https://www.norman-network.com/nds/ecotox/lowestPnecIndex.php
[6] PNECs extracted from NORMAN database on 6th November 2023.

2.1.2 Risk quotient

To estimate the ecological risk of the EOCs to the receiving environment, hazard risk quotients (RQs) were calculated. This was a two-step process:

1. Calculating the potential ecological risk of EOCs in the influent; and
2. Calculating the risk of EOCs in the receiving environment.

The first step involved the calculation of an RQ for each EOC in WWTP influent (measured or literature) and/or Ōrākei sewer main influent (measured only). This risk quotient (RQ_{inf}) was calculated as EOC concentration (ng/L)/marine PNEC (ng/L), with a value >1 indicating a potential ecological effect from undiluted and untreated wastewater. In simplistic terms, the RQ_{inf} is the dilution required to reduce ecological effects in the receiving environment to low. Two RQs were calculated, approximating scenarios of:

- Normal case – mean influent concentration (mean EOC concentration/PNEC), and
- Worst-case – maximum influent concentration (maximum EOC concentration/PNEC).

A summary of PNECs and RQs (for each scenario) for all EOCs to be assessed as part of this risk assessment is provided in **Appendix 3**.

Priority EOCs were classed as those with RQ_{inf} >10, i.e. at least a 10-fold dilution is required to reduce ecological effects to low.

Thirteen 13 PPCPs were classed as priority EOCs from Watercare WWTP influent data, based on worst-case scenario (maximum influent WWTP concentration), while 9 were classed as priority EOCs based on normal-case scenario (mean influent WWTP concentration). The data were similar for sewer mains. Furthermore, although caffeine and cotinine did not meet these criteria (as priority EOCs) for both sources, they are useful wastewater trackers so were included in the risk assessment, giving a total of 15 priority PPCPs. RQs are summarised in Section 3.1.1: **Figure 3**.

For literature data 13 EOCs measured by Northcott Research Consultants (NRC) from New Zealand WWTP influent were classed as priority based on the worst-case scenario (maximum influent WWTP concentration). Furthermore, PFOS, and the opiates tramadol and codeine were also considered to be priority EOCs based on Lenka (2022), and international literature (see Section 2.2.2.3), respectively, giving a total of 16 priority EOCs from literature. RQs are summarised in Section 3.2.1: **Figure 5**.

For the second step, depending on the data source, the methodology from here diverges.

For Watercare data, the risk quotient at receiving environment sites (RQ_{RE}) was evaluated primarily on EOC concentrations measured at receiving environment sites. As these sites did not provide a sufficiently extensive coverage of the wider receiving environment, predicted dilutions at water quality sites from modelled time-series dilutions were also included (see Section 2.4).

For literature data, RQ_{RE} from priority EOCs were evaluated based on time-series dilutions.

2.2 Data hierarchy

Data for EOCs used to undertake the risk assessment followed the following hierarchy:

1. Pharmaceutical and personal care products (PPCPs) and wastewater marker data provided by Watercare.
2. Literature data.
    a. Influent EOC concentration data (mean and maximum) from 14 New Zealand wastewater treatment plants (WWTP) not included in 1.
    b. Other national and international WWTP influent concentration data not included in 2a.
    c. National and international WWTP influent concentration data to provide context.

2.2.1 Watercare PPCP data

Watercare have developed an analytical suite of 29 PPCPs and wastewater markers that can be measured by liquid chromatography-triple quadrupole mass spectrometry (LC-MS/MS).

Measurement of this PPCP suite was undertaken on:

- Influent data for six[7] wastewater treatment plants (WWTP) in Auckland.
- Ōrākei sewer mains[8] (on 2 occasions: 11th and 19th October 2023 – see **Figure 1** for site locations).
- The receiving environment at three sites around the Port and wider Waitemata Harbour (from 7 to 10 sampling events per site – see **Figure 1** for site locations).[9]

Of the 29 PPCPs in the analytical suite, 23 were used for this assessment (**Table 1**). Five – DEET, ciprofloxacin, doxycycline, varenicline, benzophenone – were all below detection limits in WWTP influent and also not included in the analytical suite for measurement in sewer mains or receiving environment, so they have been removed from this assessment.[10] I could not obtain a literature ecological effects concentration for norcotinine, so it was also removed. I note some PPCPs measured by Watercare were also reported by NRC from New Zealand WWTPs in the following section. For these, to avoid confusion, only the Watercare data were used.[11] Ideally these data would provide a robust dataset from source (WWTP and sewer pipes) to receiving environment, from which the risk profile could be assessed based on measured concentrations. In practice this was not always appropriate (see later) so risk was also assessed using modelled dilutions of the discharge plume (Section 2.4). The full PPCP dataset is provided in **Appendix 1**.

Further, the Watercare analyte suite does not include other EOCs of potential risk, especially those of industrial origin. These data were supplemented from literature and risk assessment undertaken using modelled dilutions of the discharge plume (Section 2.4).

[7] Army Bay, Kingseat, Mangere, Pukekohe, Rosedale, and Warkworth.
[8] Data from the sewer mains shows effectively what was being discharged into the environment via the overflows.
[9] I note that surface and deep water samples were collected and analysed at Princess Wharf and Outer Harbour.
[10] Phthalate plasticisers were also measured on occasion at receiving environment sites but had high detection limits (2000 ng/L) and were not measured in WWTP or sewer mains. These data were supplemented from literature.
[11] With one exception, ibuprofen (see later sections).

Table 1. Characteristics of Watercare PPCP analytical suite used for the risk assessment. Analytes *italicised* were also measured in New Zealand WWTP influent by NRC.

Class	Analyte	CAS#
Wastewater marker	Acesulfame	33665-90-6
Pharmaceutical	Atenolol	29122-68-7
Pharmaceutical	Bupropion	34911-55-2
Wastewater marker	Caffeine	58-08-2
Pharmaceutical	*Carbamazepine*	*298-46-4*
Wastewater marker	Cotinine	486-56-6
Pharmaceutical	*Diclofenac*	*15307-86-5*
Pharmaceutical	Diltiazem	34933-06-7
Pharmaceutical	Diphenhydramine	58-73-1
Pharmaceutical	Fluoxetine	54910-89-3
Pharmaceutical	Gabapentin	60142-96-3
Pharmaceutical	Gemfibrozil	25812-30-0
Pharmaceutical	*Ibuprofen*	*15687-27-1*
Pharmaceutical	Lamotrigine	84057-84-1
Pharmaceutical	Metoprolol	37350-58-6
Pharmaceutical	*Naproxen*	*22204-53-1*
Pharmaceutical	*Paracetamol*	*103-90-2*
Wastewater marker	Sucralose	56038-13-2
Antibiotic	Sulfamethoxazole	723-46-6
Antimicrobial	Triclocarban	101-20-2
Antimicrobial	*Triclosan*	*3380-34-5*
Antibiotic	Trimethoprim	738-70-5
Pharmaceutical	Venlafaxine	93413-69-5

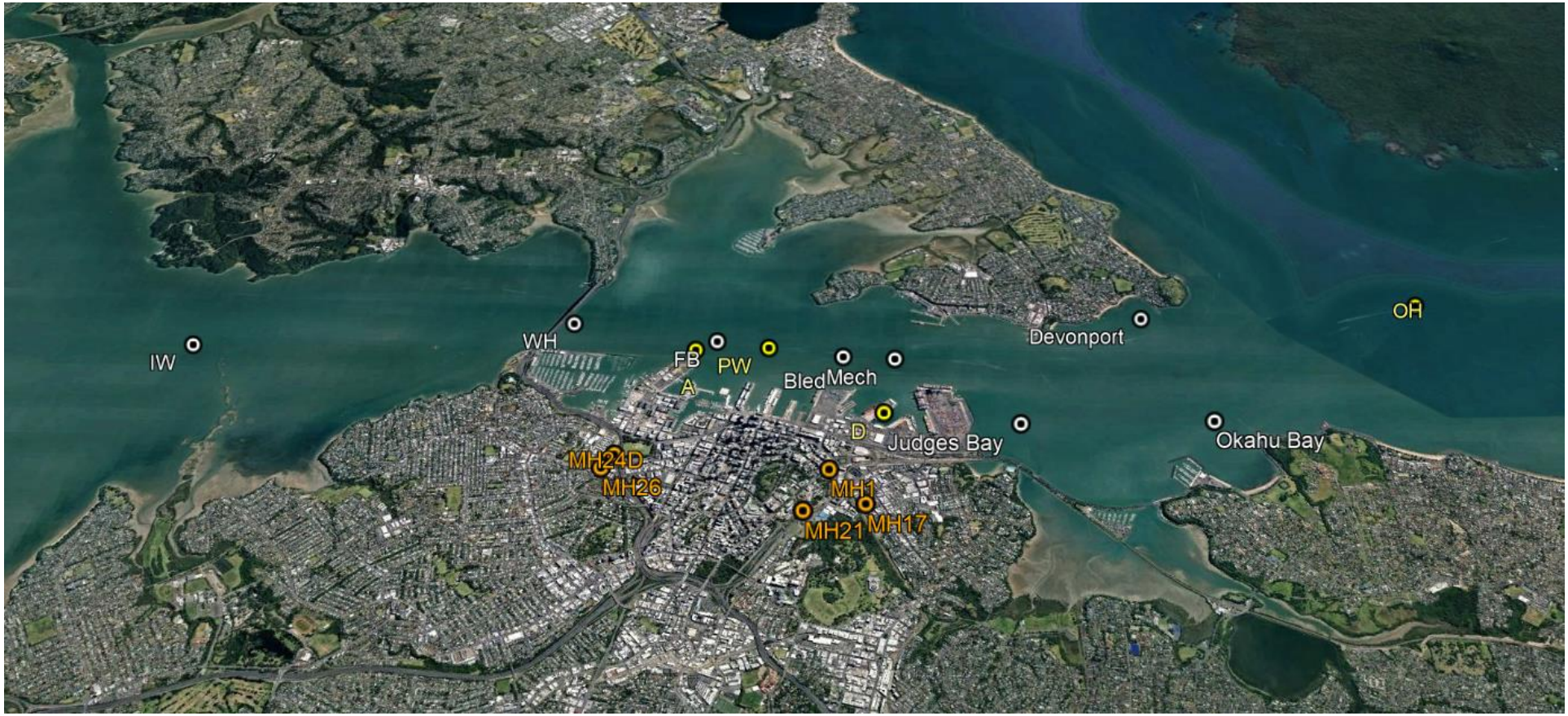

Figure 1. Site locations for sewer mains (MH) and receiving environment monitoring. Key: IW = Inner Waitematā; WH = Westhaven; A = Discharge A; FB = Freemans Bay; PW = Princess Wharf; Bled – Bledisloe Wharf; Mech = Mechanics Bay; D = Discharge D; OH = Outer Harbour. Sites coloured orange are sewer mains, and sites coloured yellow are where PPCPs have been measured by Watercare.

2.2.2 Literature influent data

2.2.2.1 New Zealand WWTP statistical data

Minimum, mean and maximum influent concentration data for 86 EOCs from up to 14 New Zealand WWTPs[12] was provided (Grant Northcott, personal communication) and included in **Appendix 2**. The data are all from municipal WWTPs. They comprise of:

- Steroid hormones (12)
- Antimicrobials (8)
- Paraben preservatives (11)
- Industrial alkylphenols (7)
- Alkylphosphate flame retardants (11)
- Musk Fragrances (11)
- Plasticisers and phthalate esters (13)
- Insect repellents (3)
- Pharmaceuticals (10)

For ease in reporting, only 'priority EOCs' – those EOCs which are considered to pose elevated ecological risk based on their reported and effects concentrations (see Section 2.1) – are summarised in this assessment (see **Table 2**).

2.2.2.2 PFAS

Per- and polyfluorinated substances (PFAS) comprise more than 4,700 analytes (Cousins et al., 2020). PFAS are persistent and highly resistant to physical, chemical and biological degradation (HEPA, 2018).

Lenka et al. (2022) measured 38 PFAS chemicals in the influent of two New Zealand WWTPs: Māngere and Pukete (Hamilton).[13] PFOS and PFOA influent data were used as surrogate data for potential risk from PFAS from the Ōrākei sewer overflows.

2.2.2.3 National and international data

A review of international literature of PFAS was undertaken to provide context for national data, or to fill knowledge gaps for EOCs not covered. PFAS and pharmaceutical influent and effluent data are summarised in **Appendix 2**. PFOA and PFOS are the dominant PFAS analytes in municipal WWTPs (Barisci and Suri, 2021).

The literature data in Appendix 2 includes the opiates morphine, codeine, and tramadol, which were not present in national data. Therefore, opiates are a knowledge gap. Codeine and tramadol were reported at concentrations in influent above effects concentrations (so would not qualify as priority EOCs using the above criteria). However, as they are commonly used analgesics, codeine and tramadol were included as priority EOCs in the risk assessment process (**Table 2**).

[12] The number of WWTPs included varied from 8 to 14 for each analyte.

[13] This study was published in an international peer reviewed journal, however the WWTP identities were not disclosed. Māngere and Pukete (Hamilton) WWTPs were confirmed by the corresponding author (Lokesh Padhye) in an email dated 30th May 2022.

Table 2. Priority EOCs from New Zealand and international WWTP influent used in this assessment.

Class	Analyte[1]	CAS#
Steroid hormone	17β-estradiol	50-28-2
Steroid hormone	Estrone	53-16-7
Phthalate plasticiser	MEHP	4376-20-9
Steroid hormone	Estriol	50-27-1
Steroid hormone	17α-ethinylestradiol	57-63-6
Phthalate plasticiser	DEHP	117-81-7
Antimicrobial	Dichlorophen	97-23-4
Antimicrobial	Chloroxylenol	88-04-0
Pharmaceutical	Meclofenamic acid	644-62-2
Phthalate plasticiser	DOP	117-84-0
Alkylphosphate flame retardant	TBEP	78-51-3
Alkylphenol	Tech-NP-equivalents	84852-15-3
Alkylphenol	o-phenylphenol	90-43-7
PFAS	PFOS	1763-23-1
Opiate	Tramadol	27203-92-5
Opiate	Codeine	76-57-3

[1] MEHP = mono-2-ethylhexyl phthalate, DEHP = di-2-ethylhexyl phthalate, DOP = di-n-octylphthalate, TBEP = tri(2-butoxyethanol) phosphate, Tech-NP-equivalents = technical nonylphenol equivalents, PFAS = per- and polyfluorinated substances, PFOS = perfluorooctanesulfonic acid.

2.3 Data manipulation

To enable statistical analysis, where concentration data were below the detection limit (DL) it was replaced with 0.5 x DL. I note that this was not always sensible as DLs were extremely high for some analytes in certain samples and not representative of the whole sample data for some analytes. This is discussed in later sections.

2.4 Hydrodynamic modelling

DHI undertook hydrodynamic modelling of the sewer main discharges into the Port and wider receiving environment (Tuckey, 2023). Dilution data derived from this modelling are provided in **Appendix 4**. The model was initially run from 25th September to 31st October, noting important changes that occurred to the discharge over that period:

- 28th September – dry weather overflows commence (no pumps in place anywhere).
- 16th October – major bypass pumps are activated – constant overflow reduction of 600 L/s.
- 16th October – 26th October – overflows steadily decrease.
- 26th October no more overflows directly related to the sewer main collapse.

After discussion with DHI, the model was re-run, extending the end date to 15th November to allow for longer term dilution effects after overflows ceased.

Time series dilutions were provided by DHI for all sites shown in **Figure 1** and **Table 3**. Importantly, the model used a conservative tracer, simulating no decay (biodegradation) of the chemicals. Daily average dilutions are shown for sites in the vicinity of the discharges (Inside Port

Area (Top): Discharge A/D, Freemans Bay, Princess Wharf, Bledisloe Wharf, and Mechanics Bay), and sites further afield (Outside Port area (Bottom): Inner Waitemata, Westhaven, Judges Bay, Okahu Bay, Outer Harbour, and Devonport) (**Figure 2)**.

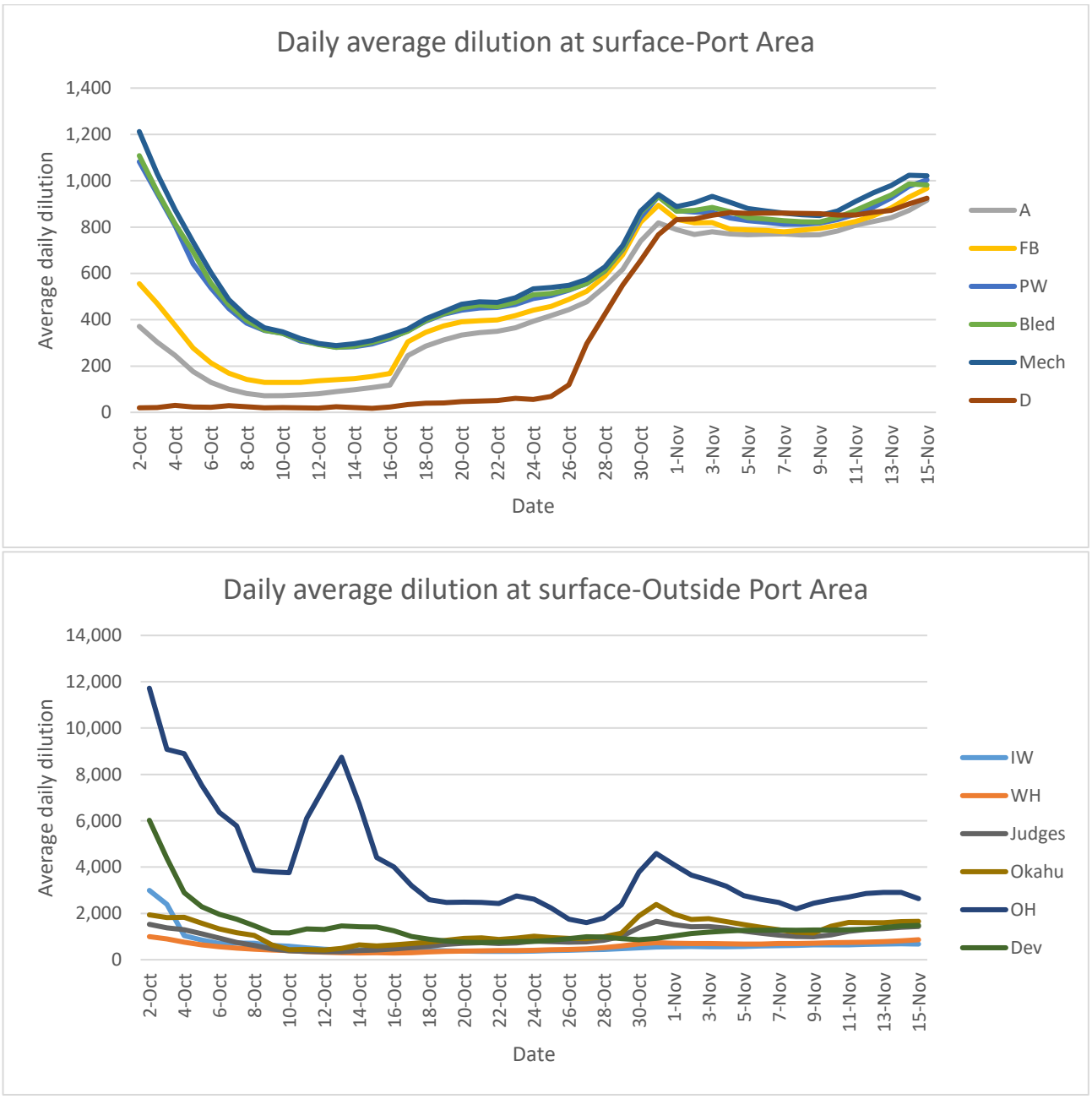

Figure 2. Daily average dilutions at surface for sites in vicinity of discharges (Port Area: Top) and further removed from discharges (Outside Port Area: Bottom). Key: A/D = Discharge A/D, FB = Freemans Bay, PW = Princess Wharf, Bled = Bledisloe Wharf, Mech = Mechanics Bay, IW = Inner Waitemata, WH = Westhaven, Judges = Judges Bay, Okahu = Okahu Bay, OH = Outer Harbour, and Dev = Devonport. Note different dilution scales for two graphs.

As shown in **Figure 2**, dilutions reduced in early October while the discharges were occurring, the size of the plume expanded and concentrations of the modelled tracer rose within it.[14] Once the bypass was completed (16th October), dilutions started to increase at sites in the Port area (**Figure 2: Top**). Dilutions increased as the overflows reduced. After 1st November there appeared to be a plateau of dilutions, with only slight increases. At sites outside the Port area (**Figure 2: Bottom**), the effects of the bypass were not as apparent, with gradual increases note. The above dilution profile was consistent with model predictions as the plume slowly dispersed (Ben Tuckey, DHI, personal communication).

Minimum dilutions were at Discharge D[15], running at a median of 55-fold (minimum 17-fold and maximum 119-fold) during the full and partial overflow scenarios. Once the overflows ceased, dilutions rapidly increased to around 800-fold by 1st November (**Figure 2**).

Table 3. Minimum and median dilutions at receiving environment sites calculated from hydrodynamic modelling of the discharges.

Area	Site	Site code	Minimum	Median
Port	Discharge A	A	72	437
Port	Freemans Bay	FB	129	523
Port	Princess Wharf	PW	281	703
Port	Bledisloe Wharf	Bled	281	706
Port	Mechanics Bay	Mech	288	735
Port	Discharge D	D	17	55
Port	**ALL**		**17**	**613**
Outside Port	Inner Waitemata	IW	360	565
Outside Port	Westhaven	WH	290	641
Outside Port	Judges Bay	Judges Bay	341	999
Outside Port	Okahu Bay	Okahu Bay	419	1191
Outside Port	Outer Harbour	OH	1602	3202
Outside Port	Devonport	Devonport	742	1277
Outside Port	**ALL**		**341**	**1095**

[14] I note that extremely high dilutions for some sites, primarily those further removed from the discharge, were noted from 28th September. This is due to the time taken for the plume to build and be transported. Therefore, dilutions were only graphed from 2nd October.

[15] Discharge D is discharging into a very low energy environment with low currents (tidal or wind driven), hence why you see a build-up in this area (Ben Tuckey, DHI, personal communication).

3. Environmental risk assessment results and discussion

3.1 Watercare PPCP data

3.1.1 WWTPs and sewer mains

Worst-case and normal case risk quotients for 15 'priority' PPCPs measured in WWTP influent and sewer mains are summarised in **Figure 3**. WWTP influent RQs ranged from 2-36,000 for normal case and 5-95,000 for worst-case. Sewer mains RQs ranged from <1-61,000 for normal case and 1-91,000 for worst-case. There is some variability in RQs for individual PPCPs between the WWTP influent and sewer mains data, but general agreement between the two sources.

These data show that significant dilution and/or degradation in the receiving environment would be required to avoid adverse effects from the sewer mains discharge.

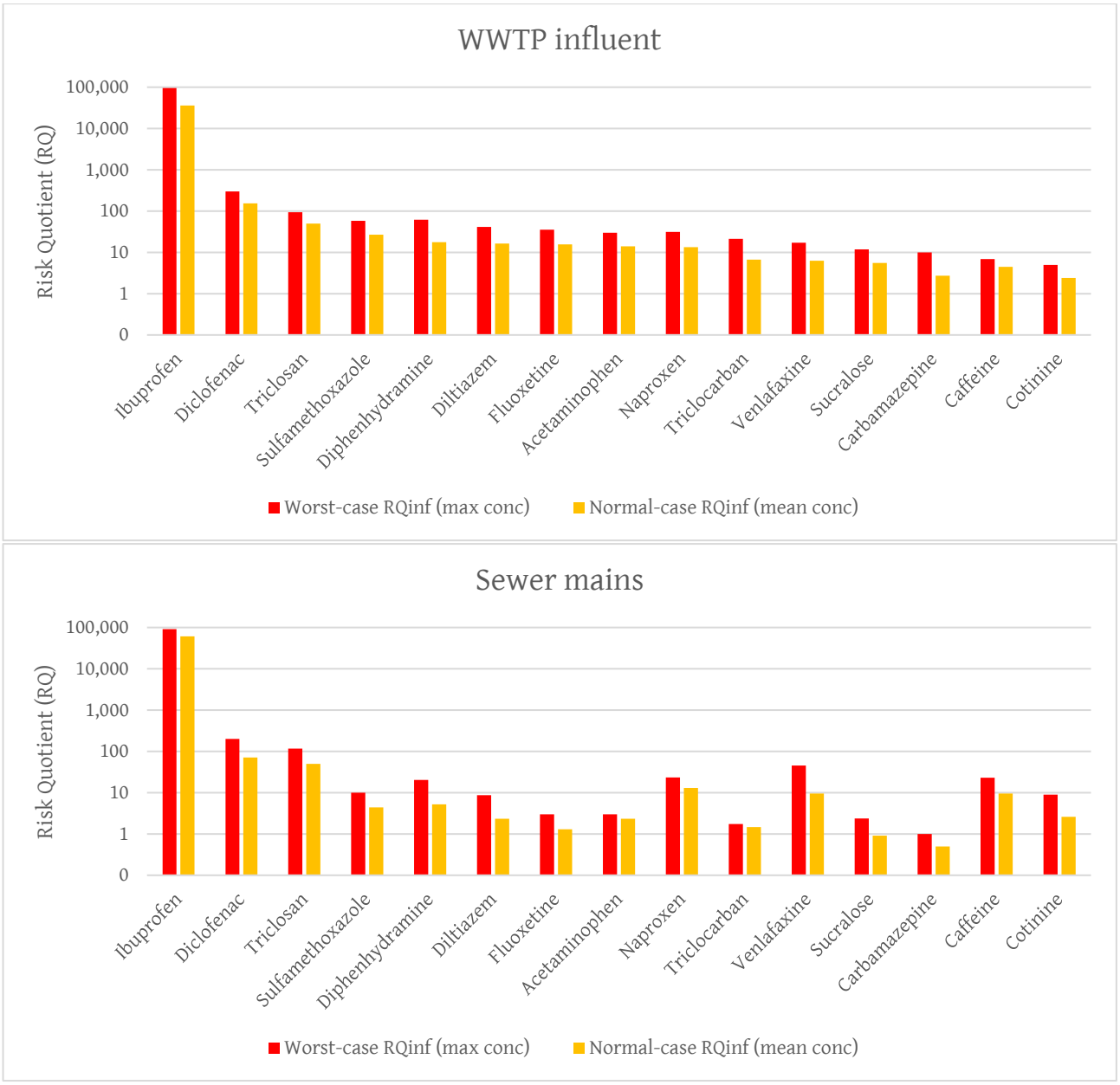

Figure 3. Priority EOCs from Watercare PPCP suite based on WWTP influent data (top) and sewer mains (bottom). Note log scale.

3.1.2 Receiving environment

3.1.2.1 Risk based on measured concentrations

Worst-case and normal-case risk quotients for 15 'priority' PPCPs measured at receiving environment sites are summarised in **Figure 4.**

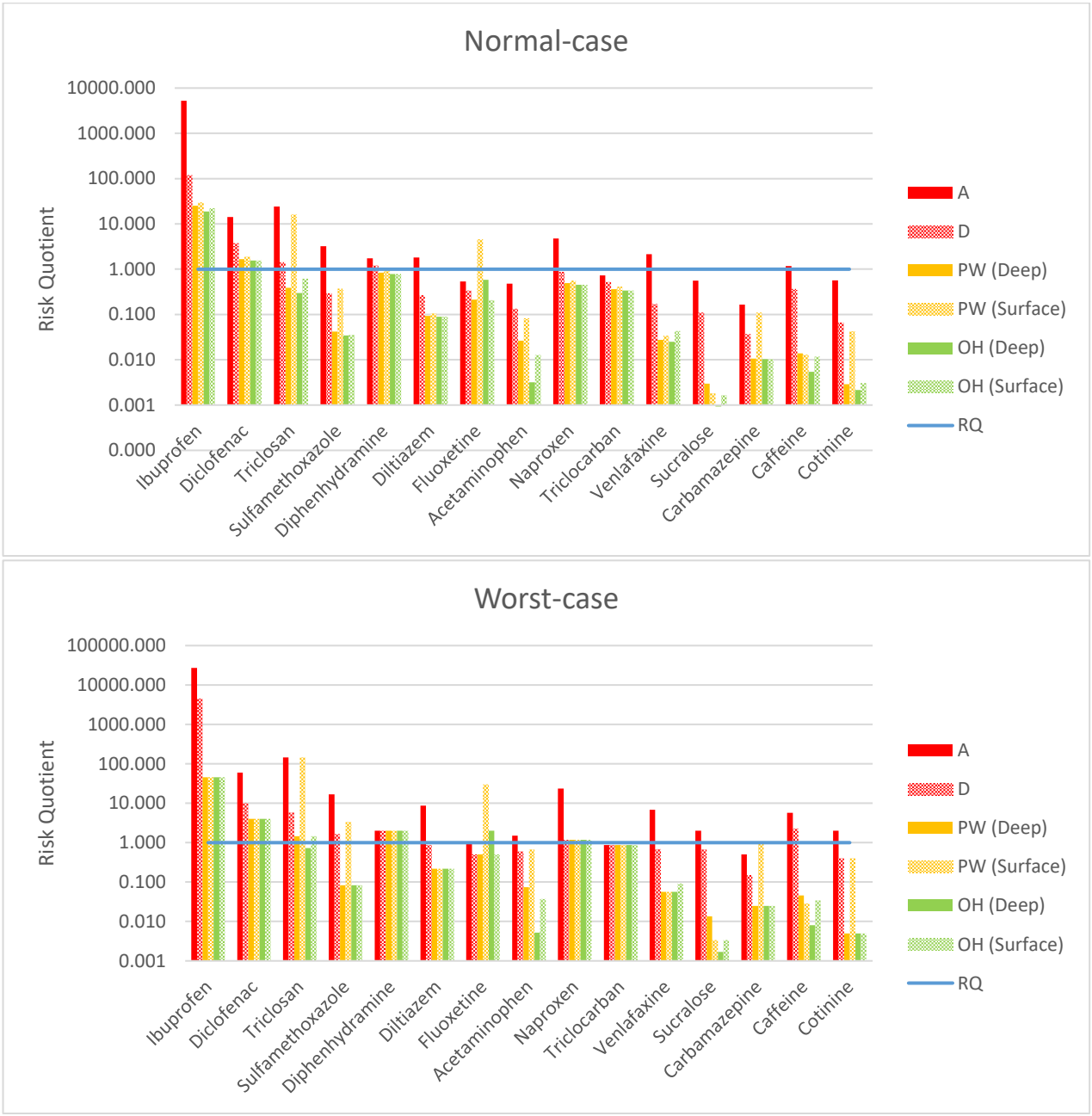

Figure 4. Risk quotients for priority EOCs from Watercare PPCP suite based on normal-case (top) and worst-case (bottom). Note log scale and RQ value of 1. Key: A = Discharge A; FB = Freemans Bay; PW = Princess Wharf; D = Discharge D; OH = Outer Harbour.

Under both scenarios there is a reduction of RQ with distance from the discharge points (A and D).

Under the normal-case scenario the only PPCPs of concern (i.e. with RQs>1) at the Outer Harbour site were ibuprofen and diclofenac. Ibuprofen had an RQ of 19/22, while diclofenac had an RQ of 1.6/1.6, at Outer Harbour deep/surface sites, respectively.

Under worst-case scenario, the data appear to be skewed by maximum PPCP concentration values, with many RQs identical across all six sites. Therefore, these maximum data are not useful in identifying the dilution profile across the sites.

As stated in the methods section, where a result is <DL this is replaced with 0.5 x DL. This is also problematic and potentially skewing the data as DL are not only analyte specific, they are also sample specific. For example, ibuprofen has DLs ranging from 5 to 100 ng/L, while diclofenac DLs ranged from 2 to 40 ng/L. Furthermore, ibuprofen was detected in only 39% of samples, and diclofenac in 10%. The latter data are even more stark, as diclofenac was only detected at discharge sites A and D. This is reflective of the data in general, where DLs are often too high for receiving environment samples and may not be appropriate to assess environmental risk. For example, for the PPCPs of highest risk, the minimum ibuprofen DL was 5 ng/L, while the marine PNEC was 1.1 ng/L. Diclofenac marine PNEC was 5 ng/L, which is marginally above the minimum detection limit of 2 ng/L for these data.

Therefore, with reservations on the suitability of the data from measurement at receiving environment sites, the risk assessment approach of predicting dilutions from hydrodynamic modelling of the wastewater discharge (sewer mains) at receiving environment sites was also undertaken for PPCPs.

3.1.2.2 Risk based on modelled dilutions

RQ_{RE} were calculated at receiving environment sites based on sewer concentrations and dilution data from the hydrodynamic modelling (**Table 3**). Four scenarios were used:

- Highest sewer concentration/lowest receiving environment dilution.
- Highest sewer concentration/median receiving environment dilution.
- Average sewer concentration/lowest receiving environment dilution.
- Average sewer concentration/median receiving environment dilution.

RQs were calculated for sites within the Port area (**Table 4**) and outside the Port area (**Table 5**).

For sites within the Port area (**Table 4**), RQs were extremely high for ibuprofen under all scenarios (RQ 99 – 5348), moderately high for diclofenac and triclosan when dilution was low (RQ 4.2/11.8 and 2.9/6.8 for diclofenac and triclosan, respectively). Under highest sewer concentrations and lowest receiving environment concentrations, RQs were >1 for venlafaxine (2.7), naproxen (1.4), caffeine (1.4), and diphenhydramine (1.2). All other PPCPs had RQs <1 under all scenarios, suggesting negligible effects.

For sites outside the Port area (**Table 5**), irrespective of the scenario, ibuprofen was the only PPCP with RQ>1, ranging from 56 to 267. With high RQ and the likelihood that some sites outside the Port area have higher ecological values than within the Port area, these data suggest that ibuprofen is of potential concern. Further discussion on ibuprofen is provided later.

Table 4. RQs for PPCPs for four scenarios based on dilutions within the Port area. RQ>1 are bolded red.

Analyte	Highest concentration/ lowest dilution	Highest concentration / median dilution	Average concentration/ lowest dilution	Average concentration/ median dilution
Ibuprofen	**5348**	**148**	**3586**	**99**
Diclofenac	**11.8**	0.3	**4.2**	0.1
Triclosan	**6.8**	0.2	**2.9**	0.1
Venlafaxine	**2.7**	0.1	0.6	0.02
Naproxen	**1.4**	0.04	0.8	0.02
Caffeine	**1.4**	0.04	0.6	0.02
Diphenhydramine	**1.2**	0.03	0.3	0.01
Sulfamethoxazole	0.6	0.02	0.3	0.01
Cotinine	0.5	0.01	0.2	0.004
Diltiazem	0.5	0.01	0.1	0.004
Fluoxetine	0.2	0.005	0.1	0.002
Acetaminophen	0.2	0.005	0.1	0.004
Sucralose	0.1	0.004	0.1	0.001
Triclocarban	0.1	0.003	0.1	0.002
Carbamazepine	0.1	0.002	0.03	0.001

Table 5. RQs for PPCPs for four scenarios based on dilutions outside the Port Area. RQ>1 are bolded red.

Analyte	Highest concentration/ lowest dilution	Highest concentration / median dilution	Average concentration/ lowest dilution	Average concentration/ median dilution
Ibuprofen	**267**	**83**	**179**	**56**
Diclofenac	0.59	0.18	0.21	0.06
Triclosan	0.34	0.11	0.15	0.05
Venlafaxine	0.13	0.04	0.03	0.01
Naproxen	0.07	0.02	0.04	0.01
Caffeine	0.07	0.02	0.03	0.01
Diphenhydramine	0.06	0.02	0.02	0.005
Sulfamethoxazole	0.03	0.01	0.01	0.004
Cotinine	0.03	0.01	0.01	0.002
Diltiazem	0.03	0.01	0.01	0.002
Fluoxetine	0.01	0.003	0.004	0.001
Acetaminophen	0.01	0.003	0.007	0.002
Sucralose	0.01	0.002	0.003	0.001
Triclocarban	0.01	0.002	0.004	0.001
Carbamazepine	0.003	0.001	0.001	0.0005

3.2 Literature influent data

3.2.1 WWTP influent

Of the 86 EOCs from New Zealand WWTPs, and additional PFAS and opiates, sixteen were identified as priority risk (**Figure 5**). For worst-case scenario, RQs ranged from 9 (codeine) to 863 (17β-estradiol). For normal-case scenario, RQs ranged from 2 (o-phenylphenol) to 231 (17β-estradiol).

These data show that significant dilution and/or degradation in the receiving environment would be required to avoid adverse effects for these priority EOCs.

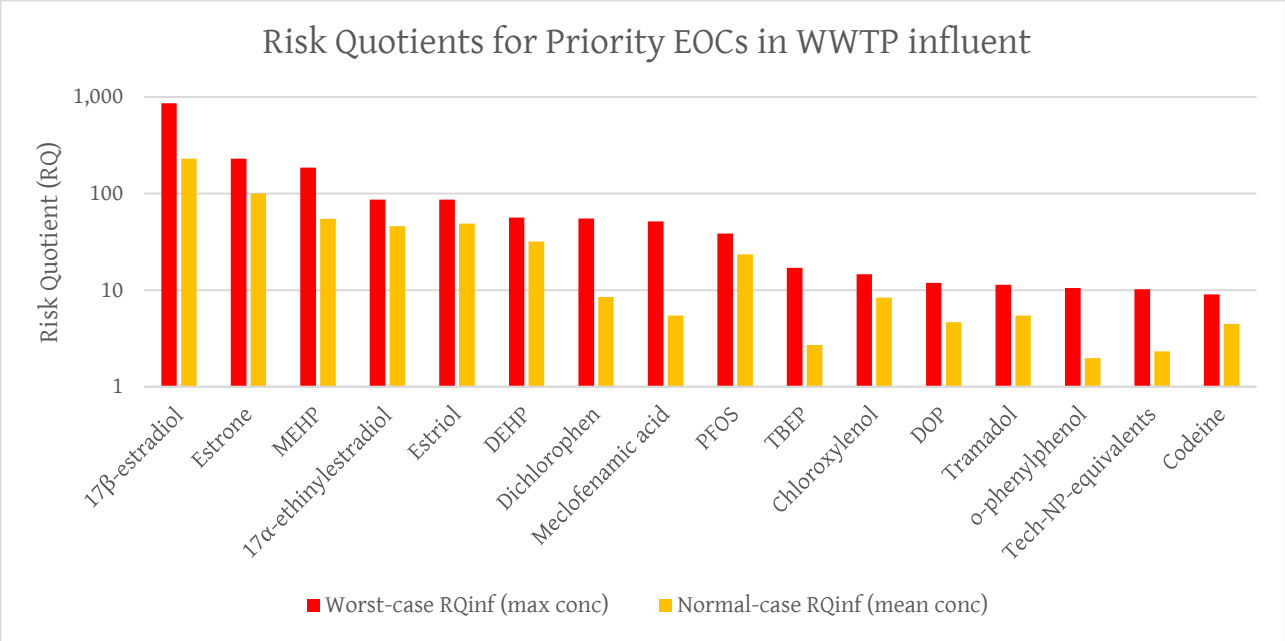

Figure 5. Priority EOCs based on literature WWTP influent data. Note log scale.

3.2.2 Receiving environment

3.2.2.1 Risk based on modelled dilutions

Using the same approach as for Section 3.1.2.2, RQs for literature-based data are shown in **Table 6** for sites within the Port area, and **Table 7** for sites outside the Port area.

For sites within the Port area (**Table 6**), when dilutions were at their lowest, up to 9 EOCs presented potential elevated risk. Based on the highest literature influent concentrations, RQs ranged from 2.3 (PFOS) to 51 (17β-estradiol). Based on average concentrations, 7 EOCs presented elevated risk, with RQs ranging from 1.4 (PFOS) to 14 (17β-estradiol). Under median dilutions, only 17β-estradiol presented a borderline elevated risk (RQ 1.4). In other words, most of the time, based on literature influent concentrations of EOCs, there was negligible risk for all but 17β-estradiol within the Port area, while 17β-estradiol provided a minor risk.

Table 6. RQs for literature EOCs for four scenarios based on dilutions within the Port area. RQ>1 are bolded red.

Analyte	Highest concentration/ lowest dilution	Highest concentration / median dilution	Average concentration/ lowest dilution	Average concentration/ median dilution
17β-estradiol	**51**	**1.4**	**14**	0.4
Estrone	**14**	0.4	**5.9**	0.2
MEHP	**11**	0.3	**3.2**	0.1
17α-ethinylestradiol	**5.1**	0.1	**2.7**	0.1
Estriol	**5.1**	0.1	**2.9**	0.1
DEHP	**3.3**	0.1	**1.9**	0.1
Dichlorophen	**3.2**	0.1	0.5	0.01
Meclofenamic acid	**3.0**	0.1	0.3	0.01
PFOS	**2.3**	0.1	**1.4**	0.04
TBEP	1.0	0.03	0.2	0.004
Chloroxylenol	0.9	0.02	0.5	0.01
DOP	0.7	0.02	0.3	0.01
Tramadol	0.7	0.02	0.3	0.01
o-phenylphenol	0.6	0.02	0.1	0.003
Tech-NP-equivalents	0.6	0.02	0.1	0.004
Codeine	0.5	0.01	0.3	0.01

Table 7. RQs for literature EOCs for four scenarios based on dilutions outside the Port Area. RQ>1 are bolded red.

Analyte	Highest concentration/ lowest dilution	Highest concentration / median dilution	Average concentration/ lowest dilution	Average concentration/ median dilution
17β-estradiol	**2.5**	0.8	0.7	0.2
Estrone	0.7	0.2	0.29	0.09
MEHP	0.5	0.2	0.16	0.05
17α-ethinylestradiol	0.3	0.1	0.13	0.04
Estriol	0.3	0.1	0.14	0.04
DEHP	0.2	0.1	0.09	0.03
Dichlorophen	0.2	0.1	0.02	0.008
Meclofenamic acid	0.2	0.05	0.02	0.005
PFOS	0.1	0.04	0.07	0.021
TBEP	0.05	0.02	0.01	0.002
Chloroxylenol	0.04	0.01	0.02	0.008
DOP	0.03	0.01	0.01	0.004
Tramadol	0.03	0.01	0.02	0.005
o-phenylphenol	0.03	0.01	0.01	0.002
Tech-NP-equivalents	0.03	0.01	0.01	0.002
Codeine	0.03	0.01	0.01	0.004

For sites outside the Port area (**Table 7**), 17β-estradiol was the only PPCP with RQ>1, and only under the scenario of highest concentration and lowest dilution, with an RQ of 2.5.

17β-estradiol has a reported half-life of 1 day in seawater (Robinson and Hellou, 2009), suggesting that the RQ of 2.5 outside the Port area is likely significantly over-estimated. Further, as significant time has elapsed since the bypass was completed, the concentration of 17β-estradiol will likely have reduced significantly. Therefore, while the bypass is functioning, and untreated wastewater is not being discharged into the Port area, I consider that further measurement of 17β-estradiol is not required.

3.3 Ibuprofen discussion

Based on measurements undertaken by Watercare, RQs calculated for ibuprofen were extremely high in the WWTP influent and sewer mains (ca. 10,000 – 100,000), reduced at discharge site A (ca. 1,000 – 10,000), further reduced at discharge site D (ca. 4 – 12), and between 1 and 5 at sites further afield. This rapid decrease in the receiving environment based on measured concentrations is not consistent with the hydrodynamic modelling dilutions where RQs at receiving environment sites outside the Port area were at least 50. Reasons for this include high DLs for the measured ibuprofen concentrations, meaning that the risk assessment approach, which often used 0.5 of the DL for measured concentrations, is not appropriate in this case.

Literature data for wastewater influent from 14 NZ WWTPs (see **Appendix 2**), provided ibuprofen concentrations ranging from 44.6 ng/L to 10,755 ng/L, with a mean of 6,054 ng/L. Importantly, there were no data below DL. The DL was not provided in the data, but for comparison, for treated WWTP discharge, the DL for ibuprofen is 0.1 ng/L (Stewart, 2022). These concentrations equate to RQs of 5504/9777 in raw effluent, RQ of 9-575 in the Port area, and 5-29 at sites outside the Port area. These RQ are around 10-fold lower than those calculated based on Watercare PPCP data, further supporting the conclusion that the Watercare PPCP data are not appropriate in this case.

Further, the modelling approach does not account for attenuation in the receiving environment through degradation processes, potentially biodegradation or photodegradation, or through accumulation in sediment. In other words, other processes are likely occurring to reduce the conservative RQ provided in this report.

Ibuprofen's structural properties appear to make it resistant to biodegradation by microorganisms. The biodegradation process by microorganisms is complex. ECHA state that ibuprofen is moderately/partly biodegradable, however this was based on an activated sludge test system.[16] This is supported by the Watercare ibuprofen influent/effluent paired data for three WWTPs (Army Bay, Mangere, and Rosedale) which showed a removal rate of 91-98% for ibuprofen. Biodegradation in the marine receiving environment is not well understood. Jan-Roblero and Cruz-Maya (2023) state that ibuprofen biodegradation assays have been developed in the laboratory, but these conditions rarely occur in the receiving environment. However, they state that although ibuprofen is highly mobile experimental data shows it has low persistence compared with other pharmaceuticals, indicating it is being degraded. I note that this was based on observation and no comment was provided on the potential degradation pathways.

[16] https://echa.europa.eu/registration-dossier/-/registered-dossier/1270/5/3/2

Further, ibuprofen's structural properties suggest it is highly mobile in water, will not preferentially partition to sediment and will not bioaccumulate.[17] Therefore, ibuprofen shows a high affinity for water over sediment and its dispersal will be driven primarily by the assessed plume hydrodynamics (dilution).

Therefore, the risk from ibuprofen provided in this assessment is conservative. However, I recommend that further monitoring at discharge sites A and D be undertaken for ibuprofen to establish that its concentrations are declining to below effects thresholds.

4. Conclusions

Using a combination of measured data and literature data, literature effects concentrations, and hydrodynamic modelling of the discharge plume, an ecological risk assessment of EOCs was undertaken from the discharge of untreated sewage into the Port area of Waitemata Harbour from the Ōrākei sewer collapse.

From over 100 EOCs assessed, 31 were refined to those of priority, based on an elevated risk quotient calculated from influent and effects concentrations.

EOC concentrations measured in the receiving environment by Watercare (PPCPs) generally had high detection limits, and were not suitable to assess the risk, especially those where the predicted ecological effects concentrations are very low.

The risk assessment showed that the majority of the risk from EOCs contained in the untreated discharges was confined to the Port area. The main exception was ibuprofen, which showed potential for adverse effects outside the Port area for all discharge and dilution scenarios, highlighting potential concern. I recommend that ibuprofen is measured at discharge sites A and D in the future to ascertain that concentrations have reduced to below effects thresholds.

17β-estradiol showed potential for adverse effects outside the Port area only under the scenario of highest concentration and lowest dilution. Further, as significant time has elapsed since the bypass was completed, and the short half-life of 17β-estradiol (1 day), the concentration of 17β-estradiol in the receiving environment will likely have reduced significantly. Therefore, while the bypass is functioning, and untreated wastewater is not being discharged into the Port area, I consider that further measurement of 17β-estradiol is not required.

Risks were based on a conservative assessment of no degradation in the receiving environment. There are arguments that some degradation will occur for both, however this has not been quantified.

[17] http://www.chemspider.com/Chemical-Structure.3544.html?rid=df079da3-b753-4322-ad77-fcdd36b8d506#acdLabsTab

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Appendix 1. Concentration statistics for Watercare PPCPs

Watercare WWTP influent and sewer mains data

Analyte	WWTP influent mean concentration (ng/L)	WWTP influent maximum concentration (ng/L)	Sewer main mean concentration (ng/L)	Sewer main maximum concentration (ng/L)
Ibuprofen	39,683	104,500	67,050	100,000
Diclofenac	774	1,500	355	1,000
Triclosan	342	650	344	800
Sulfamethoxazole	1,602	3,500	263	600
Diphenhydramine	1,739	6,158	520	2,000
Diltiazem	374	950	54	200
Fluoxetine	156	355	13	30
Acetaminophen	186,549	400,000	31,100	40,000
Naproxen	2,263	5,352	2,210	4,000
Triclocarban	1,533	4,921	340	400
Venlafaxine	550	1,502	842	4,000
Sucralose	16,425	35,100	2,704	7,000
Carbamazepine	542	2,002	100	200
Caffeine	39,024	60,000	83,000	200,000
Cotinine	2,393	5,000	2,603	9,000
Metoprolol	1,947	5,002	356	1,000
Lamotrigine	1,368	4,502	469	900
Gemfibrozil	51	124	9	10
Acesulfame	4,361	6,165	1,330	4,000
Bupropion	50	125	28	100
Trimethoprim	1,108	2,502	233	600
Gabapentin	3,384	9,000	1,276	4,000
Atenolol	383	1,002	83	300

Watercare receiving environment (priority only)

Analyte/Site	Average concentration (ng/L)					
	Discharge A	Discharge D	Princess Wharf - Deep	Princess Wharf - Surface	Outer Harbour - Deep	Outer Harbour - Surface
Acetaminophen	6,431	1,800	352	1,095	43	170
Caffeine	10,257	3,200	120	112	48	103
Carbamazepine	33	7.4	2.1	22	2.1	2.1
Cotinine	568	66	2.9	43	2.2	3.1
Diclofenac	71	19	8.3	10	7.8	7.8
Diltiazem	42	6.1	2.1	2.4	2.1	2.1
Diphenhydramine	171	120	83	95	78	78
Fluoxetine	5.4	3.4	2.1	46	5.8	2.1
Ibuprofen	8,493	826	28	33	21	24
Naproxen	814	149	83	95	78	78
Sucralose	1,652	329	8.8	5.4	2.8	4.9
Sulfamethoxazole	193	18	2.5	22	2.1	2.1
Triclocarban	171	120	83	95	78	78
Triclosan	168	10	2.7	111	2.1	4.3
Venlafaxine	188	15	2.4	3.0	2.2	3.8

Analyte/Site	Maximum concentration (ng/L)					
	Discharge A	Discharge D	Princess Wharf - Deep	Princess Wharf - Surface	Outer Harbour - Deep	Outer Harbour - Surface
Acetaminophen	20,000	8,000	1,000	9,000	70	500
Caffeine	50,000	20,000	400	250	70	300
Carbamazepine	100	30	5	200	5	5
Cotinine	2,000	400	5	400	5	5
Diclofenac	300	50	20	20	20	20
Diltiazem	200	20	5	5	5	5
Diphenhydramine	200	200	200	200	200	200
Fluoxetine	10	5	5	300	20	5
Ibuprofen	30,000	5,000	50	50	50	50
Naproxen	4,000	200	200	200	200	200
Sucralose	6,000	2,000	40	10	5	10
Sulfamethoxazole	1,000	100	5	200	5	5
Triclocarban	200	200	200	200	200	200
Triclosan	1,000	40	10	1,000	5	10
Venlafaxine	600	60	5	5	5	8

Appendix 2. National and international EOC data

Concentration statistics for EOCs (ng/L) from 8 to 14 New Zealand WWTPs. Values in red are detection limit/2.

Analyte/*class*	minimum	mean	maximum	n
Steroid hormones				
Androstenediol	0.15	15.9	62.6	14
Androstenedione	0.15	39.8	80.7	14
19-Nortestosterone	0.15	6.73	23.5	14
Testosterone	13.5	91.9	275	14
17α-estradiol	0.15	52.6	196	14
17β-estradiol	0.15	9.22	34.5	14
Estriol	103	292	518	14
Estrone	4.17	36.1	83.0	14
17α -ethynylestradiol	0.15	0.17	0.32	14
Mestranol	0.15	2.01	17.8	14
19-Norethindrone	0.25	2.15	26.8	14
Norgestrel	0.25	0.53	2.04	14
Antimicrobials				
Chloroxylenol	1033	5875	10212	14
Chlorophene	9.35	74.1	218	14
Chlorophenesin	315	902	1585	8
Dichlorophen	0.05	305	1987	10
o-phenylphenol	0.05	35.5	189	14
methyl triclosan	0.05	3.30	45.6	14
Triclosan	0.1	118	229	14
Tetra-bromocresol	0.5	0.5	0.5	10
Paraben preservatives				
Benzylparaben	0.25	120	1676	14
Butylparaben	0.25	14.1	50.3	14
isobutylparaben	0.25	0.25	0.25	8
Ethylparaben	0.25	114	377	14
Heptylparaben	0.25	0.25	0.25	8
Hexylparaben	0.25	0.25	0.25	8
Methylparaben	0.25	734	1602	14
Pentylparaben	0.25	0.25	0.25	8
Phenylparaben	0.25	0.25	0.25	8
Propylparaben	0.25	476	904	14
isopropylparaben	0.25	0.25	0.25	8
Industrial alkylphenols				
4-n-Amylphenol	0.25	0.75	4.66	14
4-t-Amylphenol	0.25	4.93	12.2	14
4-t-heptyphenol	0.25	54.1	746	14
4-n-nonylphenol	0.25	0.25	0.25	14
Tech-NP-equivalents	201	1233	5424	14

Analyte/*class*	minimum	mean	maximum	n
4-n-octylphenol	0.25	0.25	0.25	14
4-t-octylphenol	0.25	12.2	71.4	14
Alkylphosphate flame retardants				
TBEP	533	6511	40920	14
TCEP	42	211	500	14
TCPP	843	2580	8927	14
TiBP	0.25	87.4	291	14
TBP	60.4	192	426	14
TDCP	108	352	718	14
TEHP	0.25	3.89	33.7	14
ToCP	2.5	2.5	2.5	14
TmCP	2.5	3.15	8.90	14
TpCP	2.5	2.60	3.88	14
TPP	23.3	83.5	137	14
Musk Fragrances				
Cashmeran	0.5	105	263	14
Celestolide	0.5	3.63	8.42	14
Galaxolide	842	1787	4002	14
Musk ambrette	0.5	0.5	0.5	14
Musk ketone	11.4	26.0	42.1	14
Musk moskene	0.5	0.5	0.5	14
Musk tibetene	0.5	0.5	0.5	14
Musk xylene	0.5	0.5	0.5	14
Phantolide	0.5	0.5	0.5	14
Tonalide	16.2	51.9	110	14
Traseolide	0.5	0.5	0.5	14
Plasticisers and phthalate esters				
BPA	68.5	504	2167	14
4-bromophenyl phenyl ether	0.1	0.1	0.1	14
Chloro-ethoxymethane	2.5	2.5	2.5	14
4-Chlorophenyl phenyl ether	0.1	0.1	0.1	14
Benzylbutyl phthalate	43.5	186	329	14
Di-n-butylphthalate	224	618	1376	14
Diethylhexylphthalate	1458	4129	7356	14
Diethylphthalate	3.64	94.2	284	14
dimethylphthalate	103	354	1220	14
Di-n-octylphthalate	2.5	2.84	7.27	14
Monobutyl-PAE	45.3	321	799	14
MonoEH-PAE	169	1043	3522	14
Monomethyl-PAE	0.58	197	667	14
Insect repellents				
Benzylbenzoate	0.5	223	1153	14
DEET	0.5	1064	2197	14
Picaradin	264	971	1953	14
Pharmaceuticals				

Analyte/*class*	minimum	mean	maximum	n
Acetaminophen	42.0	87257	764037	14
Aspirin	0.05	1257	4795	14
Carbamazepine	0.05	446	1284	14
Clofibric acid	0.25	1.16	5.18	14
Diclofenac	0.05	425	893	14
Ibuprofen	44.6	6054	10755	14
Ketoprofen	0.05	138	1037	14
Meclofenamic Acid	0.25	52.8	498	14
Naproxen	17.7	2922	7400	14
Salicylic acid	204	22913	82398	14

PFAS international WWTP data

PFAS/Statistic	Influent concentration (ng/L)	Effluent concentration (ng/L)	Country	Reference	Removal (%)
PFOA	3	65	Spain	Lorenzo et al (2019)	-2067
	6	6	China	Zhou et al (2019)	0
	100	110	USA	Houtz et al (2018)	-10
	5	22	Australia	Gallen et al (2018)	-340
	3	8	Sweden	Filipovic and Berger (2015)	-167
	10	10	France	Pasquini et al (2014)	0
	204	341	China	Zhang et al (2015)	-67
	7	11	USA	Xiao et al (2012)	-57
	26000	28000	China	Sun et al (2012)	-8
	0.9-120,592	1.4-12,759	Multiple	Phong Vo et al (2020)	-460 - 89
Minimum	3	6			-2067
Mean	2,926	3,175			-302
Median	7	22			-57
Maximum	120,592	12,759			89
PFOS	11	35	Spain	Lorenzo et al (2019)	-218
	2	1	Sweden	Filipovic and Berger (2015)	50
	1-32	1-67	China	Zhang et al (2013)	-109
	2-176	1-75	China	Sun et al (2012)	50-57
	0.4-1,907,840	1.4-29,876	Multiple	Phong Vo et al (2020)	-225 - 98
Minimum	0.4	1			-225
Mean	NA	NA			NA
Median	NA	NA			NA
Maximum	1,907,840	29,876			98

Influent concentration range for pharmaceuticals (ng/L) (Summarised from data in Khasawneh and Palaniandy, 2021)

Analyte/Region	Asia	Europe	North America	Other	All
Sulfamethoxazole	3-3,931	4-5,300	100-2,146	0.6-112,000	0.6-112,000
Acetaminophen	7-105,817	6-623,000	370-892,000	1,390-1,090,000	6-1,090,000
Ibuprofen	11-55,957	100-39,800	370-96,519	1,670-81,000	11-81,000
Ketoprofen	13-1,030	8-6,560	150-45,386	414-7,976	8-45,386
Naproxen	2-15,100	9-38,000	825-23,300	1,220-9,585	2-38,000
Diclofenac	2-22,800	4-15,630	86-2,470	81-2,319	2-22,800
Carbamazepine	8-21,600	7-38,240	34-3,124	26-2,210	7-38,240
Gabapentin	790-15,359	6,442-16,608	No data	No data	790-15,359
Fluoxetine	<DL-61.8	<DL	9.0-26	33-67	9.0-67
Venlafaxine	6.2-7,684	4-765	169-609	3.0-100	3.0-7,684
Atenolol	49-11,239	50-26,500	55-90	62-2,198	49-26,500
Metoprolol	3-1,572	50-5,489	No data	2,636-7,443	3-7,443
Morphine	60-180	No data	16-77	108-334	16-334
Codeine	40-242	279-2,110	143-538	317-6,510	40-6,510
Tramadol	No data	381-9,860	No data	No data	381-9,860
Caffeine	5-220,000	102-273,000	11,509-63,000	2,444-59,408	5-273,000
Estrone (E1)	3-700	0.3-15	<DL-700	129-3,050	0.3-3,050
Estradiol (E2)	3-150	4.0-9.8	<DL-72	38-776	3-776
Ethinylestradiol	0.3-1.9	No data	<DL	24-3,180	0.3-3,180
Gemfibrozil	13-76,100	160-9,730	20-8,500	No data	13-76,100

Appendix 3. PNECs and RQs for all EOCs included in this risk assessment

Analyte	CAS#	NORMAN PNEC Marine 2023 (ng/L)	Influent mean concentration (ng/L)	Influent maximum concentration (ng/L)	RQ (mean)	RQ (max)	Data source
Ibuprofen	15687-27-1	1.1	39,683	104,500	36,076	95,000	WSL WWTP
Ciprofloxacin	85721-33-1	8.9	5,046	26,000	567	2,921	WSL WWTP
Doxycycline	564-25-0	20	5,046	26,000	252	1,300	WSL WWTP
Diclofenac	15307-86-5	5.0	774	1,500	155	300	WSL WWTP
Triclosan	3380-34-5	6.9	342	650	50	94	WSL WWTP
Diphenhydramine	58-73-1	99	1,739	6,158	17.6	62.2	WSL WWTP
Sulfamethoxazole	723-46-6	60	1,602	3,500	26.7	58.3	WSL WWTP
Diltiazem	34933-06-7	23	374	950	16.3	41.3	WSL WWTP
Fluoxetine	54910-89-3	10	156	355	15.6	35.5	WSL WWTP
Naproxen	22204-53-1	170	2,263	5,352	13.3	31.5	WSL WWTP
Acetaminophen	103-90-2	13,400	186,549	400,000	13.9	29.9	WSL WWTP
Varenicline	249296-44-4	30	126	650	4.2	21.7	WSL WWTP
Triclocarban	101-20-2	230	1,533	4,921	6.7	21.4	WSL WWTP
Venlafaxine	93413-69-5	88	550	1,502	6.2	17.1	WSL WWTP
Benzophenone	119-61-9	2,000	5,046	26,000	2.5	13.0	WSL WWTP
Sucralose	56038-13-2	2,970	16,425	35,100	5.5	11.8	WSL WWTP
Carbamazepine	298-46-4	200	542	2,002	2.7	10.0	WSL WWTP
Caffeine	58-08-2	8,700	39,024	60,000	4.5	6.9	WSL WWTP
Metoprolol	37350-58-6	860	1,947	5,002	2.3	5.8	WSL WWTP
Lamotrigine	84057-84-1	800	1,368	4,502	1.7	5.6	WSL WWTP
Cotinine	486-56-6	1,000	2,393	5,000	2.4	5.0	WSL WWTP
Gemfibrozil	25812-30-0	50	51	124	1.0	2.5	WSL WWTP
Bupropion	34911-55-2	110	50	125	0.5	1.1	WSL WWTP
Acesulfame	33665-90-6	7,240	4,361	6,165	0.6	0.9	WSL WWTP
Trimethoprim	738-70-5	12,000	1,108	2,502	0.1	0.2	WSL WWTP
Gabapentin	60142-96-3	100,000	3,384	9,000	0.03	0.1	WSL WWTP

Analyte	CAS#	NORMAN PNEC Marine 2023 (ng/L)	Influent mean concentration (ng/L)	Influent maximum concentration (ng/L)	RQ (mean)	RQ (max)	Data source
Atenolol	29122-68-7	15,000	383	1,002	0.03	0.1	WSL WWTP
TBEP	78-51-3	2400	6511	40920	2.7	17.1	NZ WWTP 2023
TBP	126-73-8	35000	192	426	0.01	0.01	NZ WWTP 2023
TCEP	115-96-8	6500	211	500	0.03	0.1	NZ WWTP 2023
TCPP	13674-84-5	64000	2580	8927	0.04	0.1	NZ WWTP 2023
TDCP	13674-87-8	1000	352	718	0.4	0.7	NZ WWTP 2023
TEHP	78-42-2	3.9	3.9	33.7	1.0	8.6	NZ WWTP 2023
TiBP	126-71-6	1100	87	291	0.1	0.3	NZ WWTP 2023
TmCP	563-04-2	2.3	3.2	8.9	1.4	3.9	NZ WWTP 2023
ToCP	78-30-8	11	2.5	2.5	0.2	0.2	NZ WWTP 2023
TpCP	78-32-0	2.3	2.6	3.9	1.1	1.7	NZ WWTP 2023
TPP	115-86-6	370	84	137	0.2	0.4	NZ WWTP 2023
4-n-Amylphenol	14938-35-3	140	0.8	4.7	0.01	0.03	NZ WWTP 2023
4-n-nonylphenol	104-40-5	25	0.25	0.25	0.01	0.01	NZ WWTP 2023
4-n-octylphenol	1806-26-4	47	0.25	0.25	0.01	0.01	NZ WWTP 2023
4-t-Amylphenol	80-46-6	1000	5	12	0.005	0.01	NZ WWTP 2023
4-t-heptylphenol	1987-50-4	100	54	746	0.5	7.5	NZ WWTP 2023
4-t-octylphenol	140-66-9	630	12	71	0.02	0.11	NZ WWTP 2023
Tech-NP-equivalents	84852-15-3	530	1233	5424	2.3	10.2	NZ WWTP 2023
Chlorophene	120-32-1	54	74	218	1.4	4.0	NZ WWTP 2023
Chloroxylenol	88-04-0	700	5875	10212	8.4	15	NZ WWTP 2023
Dichlorophen	97-23-4	36	305	1987	8.5	55	NZ WWTP 2023
Methyl triclosan	4640-01-1	6.8	3.3	45.6	0.5	6.7	NZ WWTP 2023
o-phenylphenol	90-43-7	18	36	189	2.0	10.5	NZ WWTP 2023
Tetra-bromocresol	576-55-6	15	0.5	0.5	0.03	0.03	NZ WWTP 2023
Triclosan	3380-34-5	6.9	118	229	17	33	NZ WWTP 2023
Benzylbenzoate	120-51-4	1680	223	1153	0.1	0.7	NZ WWTP 2023
DEET	134-62-3	8800	1064	2197	0.1	0.2	NZ WWTP 2023
Picaridin	119515-38-7	31400	971	1953	0.03	0.1	NZ WWTP 2023

Analyte	CAS#	NORMAN PNEC Marine 2023 (ng/L)	Influent mean concentration (ng/L)	Influent maximum concentration (ng/L)	RQ (mean)	RQ (max)	Data source
Cashmeran	33704-61-9	400	105	263	0.3	0.7	NZ WWTP 2023
Celestolide	13171-00-1	4.3	3.6	8.4	0.8	2.0	NZ WWTP 2023
Galaxolide	1222-05-5	440	1787	4002	4.1	9.1	NZ WWTP 2023
Musk ambrette	83-66-9	50	0.5	0.5	0.01	0.01	NZ WWTP 2023
Musk ketone	81-14-1	14	26	42	1.9	3.0	NZ WWTP 2023
Musk moskene	116-66-5	7.6	0.5	0.5	0.1	0.1	NZ WWTP 2023
Musk tibetene	145-39-1	27	0.5	0.5	0.02	0.02	NZ WWTP 2023
Musk xylene	81-15-2	110	0.5	0.5	0.005	0.005	NZ WWTP 2023
Phantolide	15323-35-0	4.8	0.5	0.5	0.1	0.1	NZ WWTP 2023
Tonalide	21145-77-7	220	52	110	0.2	0.5	NZ WWTP 2023
Traseolide	68140-48-7	0.7	0.5	0.5	0.7	0.7	NZ WWTP 2023
Benzylparaben	94-18-8	290	120	1676	0.4	5.8	NZ WWTP 2023
Butylparaben	94-26-8	510	14	50	0.03	0.1	NZ WWTP 2023
Ethylparaben	120-47-8	1000	114	377	0.1	0.4	NZ WWTP 2023
Heptylparaben	1085-12-7	110	0.25	0.25	0.002	0.002	NZ WWTP 2023
Hexylparaben	1083-27-8	No data	0.25	0.25	No data	No data	NZ WWTP 2023
Isobutylparaben	4247-02-3	1010	0.25	0.25	0.0002	0.0002	NZ WWTP 2023
Isopropylparaben	4191-73-5	1130	0.25	0.25	0.0002	0.0002	NZ WWTP 2023
Methylparaben	99-76-3	400	734	1602	1.8	4.0	NZ WWTP 2023
Pentylparaben	6521-29-5	320	0.25	0.25	0.001	0.001	NZ WWTP 2023
Phenylparaben	17696-62-7	280	0.25	0.25	0.001	0.001	NZ WWTP 2023
Propylparaben	94-13-3	640	476	904	0.7	1.4	NZ WWTP 2023
Acetaminophen	103-90-2	13400	87257	764037	6.5	57	NZ WWTP 2023
Aspirin	50-78-2	1850	1257	4795	0.7	2.6	NZ WWTP 2023
Carbamazepine	298-46-4	200	446	1284	2.2	6.4	NZ WWTP 2023
Clofibric acid	882-09-7	1650	1.2	5.2	0.001	0.003	NZ WWTP 2023
Diclofenac	15307-86-5	5	425	893	85	179	NZ WWTP 2023
Ibuprofen	15687-27-1	1.1	6054	10755	5504	9777	NZ WWTP 2023
Ketoprofen	22071-15-4	210	138	1037	0.7	4.9	NZ WWTP 2023

Analyte	CAS#	NORMAN PNEC Marine 2023 (ng/L)	Influent mean concentration (ng/L)	Influent maximum concentration (ng/L)	RQ (mean)	RQ (max)	Data source
Meclofenamic acid	644-62-2	9.7	53	498	5.4	51	NZ WWTP 2023
Naproxen	22204-53-1	170	2922	7400	17	44	NZ WWTP 2023
Salicylic acid	69-72-7	20000	22913	82398	1.1	4.1	NZ WWTP 2023
4-bromophenyl phenyl ether	101-55-3	4.2	0.1	0.1	0.01	0.01	NZ WWTP 2023
4-Chlorophenyl phenyl ether	7005-72-3	85	0.1	0.1	0.001	0.001	NZ WWTP 2023
Bisphenol A	80-05-7	16000	504	2167	0.03	0.1	NZ WWTP 2023
BBP	85-68-7	750	186	329	0.2	0.4	NZ WWTP 2023
DEHP	117-81-7	130	4129	7356	32	57	NZ WWTP 2023
DEP	84-66-2	1200	94	284	0.1	0.2	NZ WWTP 2023
DMP	131-11-3	19200	354	1220	0.02	0.1	NZ WWTP 2023
DBP	84-74-2	1000	618	1376	0.6	1.4	NZ WWTP 2023
DOP	117-84-0	0.61	2.8	7.3	5	12	NZ WWTP 2023
MBP	131-70-4	230	321	799	1.4	3.5	NZ WWTP 2023
MEHP	4376-20-9	19	1043	3522	55	185	NZ WWTP 2023
Monomethyl-PAE	4376-18-5	1470	197	667	0.1	0.5	NZ WWTP 2023
17α-estradiol	57-91-0	410	53	196	0.1	0.5	NZ WWTP 2023
17α-ethinylestradiol	57-63-6	0.0037	0.17	0.32	46	86	NZ WWTP 2023
17β-estradiol	50-28-2	0.04	9.2	35	231	863	NZ WWTP 2023
19-Norethindrone	68-22-4	450	2.2	27	0.005	0.1	NZ WWTP 2023
19-Nortestosterone	434-22-0	420	6.7	24	0.02	0.1	NZ WWTP 2023
Androstenediol	521-17-5	420	16	63	0.04	0.1	NZ WWTP 2023
Androstenedione	63-05-8	860	40	81	0.05	0.1	NZ WWTP 2023
Estriol	50-27-1	6.0	292	518	49	86	NZ WWTP 2023
Estrone	53-16-7	0.36	36	83	100	231	NZ WWTP 2023
Mestranol	72-33-3	120	2.0	18	0.02	0.1	NZ WWTP 2023
Testosterone	58-22-0	440	92	275	0.2	0.6	NZ WWTP 2023
PFOS	1763-23-1	0.2	4.7	7.7	23.5	38.5	Lenka 2022
PFOA	335-67-1	18	2.9	4.0	0.2	0.2	Lenka 2022
Tramadol	27203-92-5	870	4,740	9,860	5.4	11.3	International literature

Analyte	CAS#	NORMAN PNEC Marine 2023 (ng/L)	Influent mean concentration (ng/L)	Influent maximum concentration (ng/L)	RQ (mean)	RQ (max)	Data source
Codeine	76-57-3	720	3,235	6,510	4.5	9.0	International literature
Morphine	57-27-2	540	159	334	0.3	0.6	International literature

Appendix 4. Hydrodynamic modelling (DHI) data

Average daily dilutions at surface for receiving environment sites calculated from DHI model

Overflow scenario	Date	IW	WH	A	FB	PW	Bled	Mech	D	Judges	Okahu	OH	Dev
Full	28-Sep	1E+40	2E+40	7E+09	2E+15	9E+39	3E+40	5E+39	3E+02	3E+40	2E+38	2E+40	3E+40
Full	29-Sep	2E+07	2E+03	5E+02	1E+03	3E+03	3E+03	3E+03	2E+01	5E+03	6E+03	1E+06	1E+05
Full	30-Sep	7E+04	2E+03	4E+02	8E+02	2E+03	2E+03	2E+03	2E+01	2E+03	3E+03	9E+04	2E+04
Full	1-Oct	2827	1235	437	677	1319	1334	1494	29	1871	2367	28752	8531
Full	2-Oct	2993	997	371	556	1082	1108	1212	20	1533	1939	11724	6021
Full	3-Oct	2391	903	303	470	944	954	1031	21	1382	1824	9087	4373
Full	4-Oct	1039	758	246	376	807	815	876	30	1292	1837	8893	2900
Full	5-Oct	849	641	177	278	641	694	735	24	1123	1574	7527	2287
Full	6-Oct	704	559	129	213	537	558	604	22	932	1335	6362	1964
Full	7-Oct	718	495	100	169	449	464	487	29	750	1162	5773	1754
Full	8-Oct	709	454	82	143	385	397	414	24	619	1047	3866	1473
Full	9-Oct	620	420	72	130	353	354	365	20	467	645	3789	1162
Full	10-Oct	584	397	72	129	342	341	347	21	379	436	3763	1159
Full	11-Oct	508	352	76	129	308	313	319	20	364	446	6103	1327
Full	12-Oct	455	331	81	136	296	293	297	19	341	419	7446	1307
Full	13-Oct	416	306	90	141	281	281	288	24	350	485	8743	1458
Full	14-Oct	417	294	98	146	283	286	297	21	401	643	6735	1425
Full	15-Oct	447	298	107	155	295	302	311	17	424	595	4412	1414
Full	16-Oct	434	290	117	168	318	323	333	23	468	635	4001	1244
Partial	17-Oct	410	307	245	304	352	350	360	33	519	695	3202	999
Partial	18-Oct	391	338	286	345	393	396	404	39	587	758	2589	887
Partial	19-Oct	382	362	312	373	424	426	435	40	663	842	2470	801
Partial	20-Oct	369	377	334	391	442	451	467	47	717	919	2488	763
Partial	21-Oct	360	385	344	396	450	463	477	49	737	942	2471	742
Partial	22-Oct	360	391	350	399	453	456	474	51	703	871	2424	754
Partial	23-Oct	362	400	366	418	465	476	495	61	724	933	2752	784
Partial	24-Oct	373	411	393	441	492	507	533	55	807	1011	2609	791
Partial	25-Oct	401	425	418	457	504	514	539	69	785	961	2227	835
Partial	26-Oct	410	447	444	487	528	530	549	119	763	915	1749	912
No	27-Oct	426	471	477	523	557	557	574	296	765	909	1602	990
No	28-Oct	444	521	543	588	610	613	628	424	842	993	1794	980
No	29-Oct	473	595	618	680	703	706	721	550	999	1146	2371	909
No	30-Oct	512	687	739	820	842	863	869	655	1381	1894	3777	868
No	31-Oct	544	740	818	894	933	932	940	767	1657	2387	4586	919
No	1-Nov	560	713	789	833	870	868	889	832	1514	1976	4104	1027
No	2-Nov	565	702	768	818	865	872	905	834	1425	1741	3655	1133
No	3-Nov	564	699	780	820	864	885	933	851	1436	1774	3426	1194
No	4-Nov	560	682	770	791	840	867	908	863	1366	1650	3175	1240
No	5-Nov	572	676	767	787	828	840	880	859	1242	1521	2760	1274

Overflow scenario	Date	IW	WH	A	FB	PW	Bled	Mech	D	Judges	Okahu	OH	Dev
No	6-Nov	594	680	769	785	821	834	869	861	1140	1402	2608	1269
No	7-Nov	610	698	770	780	813	828	861	860	1058	1292	2477	1283
No	8-Nov	619	702	766	787	813	823	853	859	1008	1191	2190	1277
No	9-Nov	636	708	767	794	817	822	849	858	987	1159	2442	1279
No	10-Nov	640	734	783	807	832	842	869	852	1074	1441	2586	1285
No	11-Nov	639	747	807	824	855	872	910	853	1225	1606	2711	1290
No	12-Nov	663	760	824	848	886	906	948	864	1301	1603	2864	1322
No	13-Nov	680	782	841	883	926	938	979	872	1336	1597	2908	1391
No	14-Nov	687	817	872	929	976	986	1024	900	1398	1648	2902	1459
No	15-Nov	674	865	916	967	1004	982	1022	924	1437	1655	2641	1480
Minimum	ALL	360	290	72	129	281	281	288	17	341	419	1602	742
Median	ALL	565	641	437	523	703	706	735	55	999	1191	3202	1277

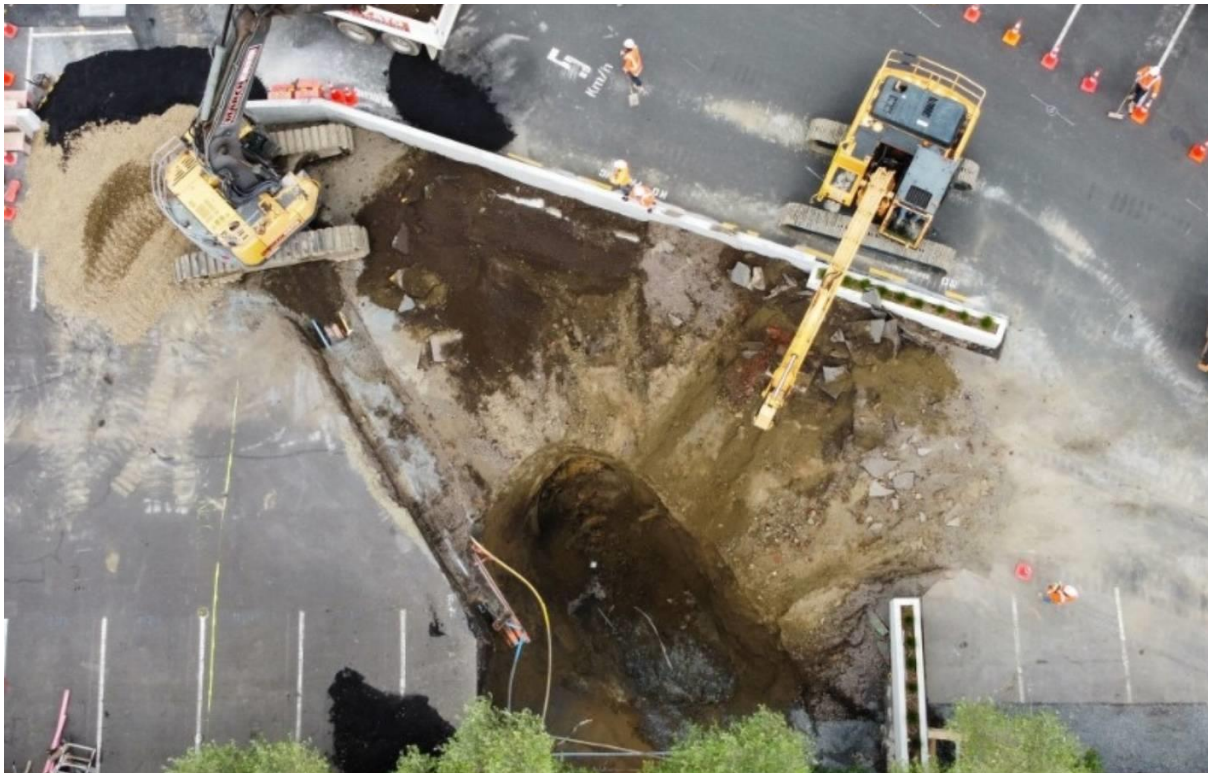
A/D = Discharge A/D, FB = Freemans Bay, PW = Princess Wharf, Bled = Bledisloe Wharf, Mech = Mechanics Bay, IW = Inner Waitemata, WH = Westhaven, Judges = Judges Bay, Okahu = Okahu Bay, OH = Outer Harbour, and Dev = Devonport.

Watercare Services Limited

ŌRĀKEI MAIN SEWER
FAILURE ANALYSIS REPORT

1 MARCH 2024

FINAL



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ŌRĀKEI MAIN SEWER
FAILURE ANALYSIS REPORT

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REV	DATE	DETAILS
1	16/01/2024	Draft for Client Review
2	20/02/2024	Final Draft Report
3	01/03/2024	Final Report

	NAME	DATE
Prepared by:	Philip McFarlane	01/03/2024
Reviewed by:	Dr Jonathan Morris	01/03/2024
Approved by:	Carl Devereux	01/03/2024

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EXECUTIVE SUMMARY

This report investigates the collapse of the Ōrākei Main Sewer (OMS) that occurred in the vicinity of 79 St Georges Bay Road in September 2023.

The likely cause of the failure has been identified to the extent possible from the information available. Watercare's condition assessment, maintenance and renewal practices for interceptor sewers have been reviewed and compared with best practice. Improvements to address learnings from the collapse have been identified.

Background

The OMS is 13km long. It conveys wastewater from central Auckland suburbs to the Eastern Interceptor in Ōrākei. Wastewater is then conveyed through the Eastern Interceptor to the Māngere Wastewater Treatment Plant where it is treated and discharged.

The OMS was constructed circa 1910's. It was constructed in an egg-shape. The section that collapsed is 2.3m high and 10m underground. The base of the sewer is constructed from cast in place concrete. The top is a concrete block arch with mortar between the blocks.

On 26 September 2023, a contractor who was excavating a trench for a power cable noticed a hole in the ground above the OMS and alerted Watercare. The hole grew over the next 24 hours into a large sinkhole. On 27 September the sewer collapsed, and the OMS became fully blocked.

Repair Works

To stabilise the sinkhole a steel caisson was installed over the collapsed sewer. The sides of the sinkhole were lined with concrete.

Bypass pumping was installed to convey wastewater around the collapsed section and avoid wastewater being discharged directly into the harbour during dry weather. The pumping arrangement was operational within three weeks of the collapse. Its pumping capacity is comparable to the larger pumpstations in Watercare's network which take several years to design and construct. The capacity of the temporary arrangement was limited, however, by the availability of pumps, the space required to site pumps, noise and vibration impacts and hydraulic constraints.

Installation of the bypass pumping enabled the collapsed section to be exposed and strengthening works around the collapse to be completed in December 2023.

Watercare intend to rehabilitate the section of OMS that collapsed using segmented slip-lining. This is expected to be completed in early 2024.

Likely Cause of Sinkhole and Sewer Collapse

The collapse occurred in the block arch portion of the OMS. It is likely that it was caused by the following factors acting together:

— general deterioration and weakening of the sewer over the 110 years that the OMS has been in service.

— exceptionally wet weather in 2023. The year was the wettest on record for Auckland. In the 9 months leading up to the collapse 50% more rain fell than the average for an entire year.

Significant rainfall events include the Auckland Anniversary floods, Cyclone Gabrielle and heavy rainfall on 9th May 2023.

— weak blockwork at the location that collapsed. Some of the blocks retrieved after the collapse were a lot weaker than others. They had very little strength and crumbled when disturbed. It wasn't possible to determine the extent of the weak section as most of it had collapsed into the OMS but it is unlikely that the weak section was more than 5m long.

The reason for the weak blockwork is unclear but one possible explanation is that the location could have been used as a portal for building the tunnel for the OMS. When construction was completed, equipment might have been brought out through the opening and the arch formed from the outside. The weak blocks could have been part of the final piece to close in the arch and constructed from concrete mixed on site. This has not been able to be confirmed, but it is plausible given that when the OMS was constructed the area was a natural low point.

Based on the review of the available information the likely failure mechanism is:

1. The internal surface of the block arch slowly deteriorated through a combination of corrosion and erosion.
2. High wastewater flows in the OMS during the 2023 storms accelerated erosion of the deteriorated concrete blocks and mortar joints. It is possible that some blocks were dislodged.
3. Infiltration of groundwater into the OMS increased due to its deteriorated state and the raised groundwater and flooding above the sewer.
4. Fine soil particles around the OMS were eroded by the infiltrating groundwater causing cavities to form.
5. Fluctuating groundwater levels due to the repeated wet weather caused the cavities to grow and a sinkhole to form.
6. Excavation for the power cable disturbed the already unstable sinkhole cavity, causing it to grow further and become visible at the ground surface.
7. The block arch was not able to withstand the uneven loading caused by the sinkhole. Eventually it failed under buckling and the material above it fell in and blocked the OMS.

The weaker blocks observed near the failed section most likely contributed to the sinkhole and collapse as they were:

— more susceptible to being eroded and dislodged by the high sewer flows in January and February 2023 which would have increased flow of groundwater and soil into the OMS and hastened the formation of the sinkhole.

— less able to withstand the uneven loading applied to the arch section of the OMS due to the sinkhole.

The very wet weather experienced in 2023 also contributed to the collapse by:

— increasing wastewater flows in the OMS, causing the block arch to be fully exposed to flows which accelerated erosion of the blockwork and mortar.

— causing flooding above the OMS which increased the hydrostatic loading on the pipe. The collapse is below an overland flowpath where stormwater flows across the ground surface in large rain events. The flowpath is obstructed by a solid brick wall which causes water to pond

above the OMS. This increased flow of sediment ladened groundwater into the OMS either starting the formation of the sinkhole cavity or increasing existing cavities.

— repeated rain events causing fluctuations in groundwater loading which would have hastened the formation of the sinkhole.

It should be noted however that the overland flowpath and its obstruction are potential contributory factors only and are unlikely to have been the primary cause of the sinkhole formation.

Watercare's Condition Inspection Practices

Watercare's standard practice is to inspect wastewater interceptor sewers like the OMS every five years. This is aligned to the practices of other utilities. More frequent inspections are undertaken where there are concerns about the condition of pipelines.

The OMS was inspected in 2012 and 2019 using CCTV inspection, laser scanning and sonar. CCTV provides images of the inside of the pipeline from which the general condition can be assessed while laser profiling and sonar measure internal dimensions which can be used to determine the extent and severity of corrosion. Watercare were an early adopter of the profiling technology which is now used by other large utilities including Wellington Water and Sydney Water.

The CCTV inspections undertaken in 2012 and 2019 did not provide a sufficiently clear view of the pipeline to enable all defects to be identified due to limitations with the equipment available at the time. In addition, in 2019 the profiling data was not analysed as Watercare's policy at the time was to only acquire the analysis reports if issues were observed from the CCTV inspection.

An independent assessment of the 2012 and 2019 condition inspections was undertaken during the preparation of this report. This covered 1.6km of the OMS either side of the collapsed section and included assessment of the 2019 profiling information that was not available until recently. The assessment found that significant deterioration had occurred along the OMS between 2012 and 2019. If identified at the time this level of deterioration should have triggered a more in-depth investigation of the pipeline condition and likelihood of collapse, involving activities such as walkthrough inspection, coring, and testing of pipe wall. However, if these investigations had been undertaken it is quite possible that the weak blockwork which was a significant contributor to the collapse still might not have been picked up as the weak blocks only cover about 5m a pipeline section that is 118m long between manholes.

It is a primary recommendation of this report that Watercare adopt the following to improve the identification of condition issues:

1. Profiling reports be provided with all inspections so the extent and rate of deterioration can be assessed.
2. The quality and resolution of the CCTV inspections be improved to provide a clearer view of the pipe wall and aid the identification of faults.
3. Undertake more in-depth assessments to determine the strength of blockwork at low points where tunnel portals for the construction of the OMS might have been located. This could involve laser profiling to determine the extent of erosion, followed by core sampling and testing at potentially weak areas.

Watercare's Condition Assessment and Renewal Practices

Timely renewal of interceptor sewers to avoid failures will become increasingly important as the assets age and extreme weather events like those experienced in 2023 become more prevalent due to climate change.

Whilst Watercare's investment into renewal of wastewater pipes has been low over recent years, a significant increase in renewals is planned. The latest Asset Management Plan has allocated $1.9b over the next 20 years, which will increase investment to more than double the median amount currently being spent by European Countries.

But it is important that the money available for renewals be invested into the right assets at the most appropriate time, particularly for wastewater interceptors where there is a high consequence of failure. This requires assessment of the information collected from condition inspections and other sources to determine the likelihood and consequence of failure.

Whilst Watercare's corporate level policies and asset management practices are aligned to international standards, there is limited guidance on how these corporate level documents should be applied to the management and renewal of wastewater systems.

It is a primary recommendation of this report that Watercare adopt the following to improve condition assessment and renewals practices:

1. Develop a Condition Assessment Strategy that specifies:
    - timing of inspections, which will depend on the consequence of failure, the previously observed condition of the asset and the forecast rate of deterioration.
    - condition inspection techniques to be used under various circumstances.
    - processes for deriving likelihood of failure rankings from condition inspections and other information collected.
    - trigger levels for undertaking more intensive or additional investigations, e.g. evidence of increased corrosion or major rainfall that could cause high flows.
2. Develop a Renewals Interventions Strategy that:
    - specifies triggers for undertaking repairs and renewals based on the observed defects/condition and the consequence of failure.
    - enables a prioritised list of pipelines for renewal to be developed based on the triggers set out above.

It is understood that preparation of these documents is underway and is due to be completed by June 2024.

RECOMMENDATIONS

Condition Inspection Practices

It is recommended that Watercare continue to inspect transmission sewers every 5 years using CCTV and laser and sonar profiling with inspections being undertaken on tighter frequencies on pipelines where there are concerns about condition. However, to improve identification of condition issues it is recommended that the following be adopted:

- Timing of inspections
  - Undertake condition inspections after events that could trigger rapid decline in condition, e.g. after large storms.
- Inspection Practices
  - Improve the quality and resolution of the CCTV inspections to provide a clearer view of the pipe wall and aid the identification of faults. Either use a CCTV camera that can pan towards the pipe wall and zoom into issues or use the latest CCTV and laser & sonar profiling units which have multiple cameras that look both straight ahead and towards the pipe wall
  - Reinstate cleaning of the OMS using the plough, subject to addressing health and safety concerns. This will improve the identification of defects as the personnel who are required to travel down the sewer with the plough will also be able to observe the condition of the sewer and report on issues. Watercare have already started investigating reinstating the use of the plough. It is also worth investigating whether suitable camera equipment could be installed to allow unmanned inspections while cleaning the line with the plough
  - Produce detailed CCTV logsheets to record inspections. Assign Structural Condition Grades to provide an initial grading of condition and to identify the need for more intensive condition assessment and likelihood of failure analysis. Use a logging and grading system better suited to assessing defects in brick pipelines, e.g. the 4th Edition of the New Zealand Pipe Inspection Manual or the Conduit Inspection Reporting Code of Australia, both of which were published since the last inspections were undertaken on the OMS.
- Analysis of Condition Assessment
  - Change standard practice so that laser and sonar profiling inspections are analysed as a matter of course rather than only if issues are identified from the CCTV inspection. This could identify faults not picked up from the CCTV inspection
  - Compare laser profiling against previous inspections to determine the extent and severity of corrosion that could signal a trigger for renewal.

Condition Assessment and Renewal Practices

It is recommended that Watercare continue with a risk-based approach to the management of assets. This approach prioritises condition assessment and renewal of assets with a high consequence of failure like transmission sewers.

However, to help ensure that the condition assessment and renewal works are undertaken on the the right assets at the most appropriate time, it is recommended that Watercare develop the guidance documents and practices outlined below for the management of interceptor sewers.

Documentation of procedures and the reasoning behind decisions will also help auditing of decision quality and give a starting point for refining practices over time to facilitate continuous improvement.

- Consequence of Failure
  - Update processes for determining the criticality of pipelines to include all factors that could impact the consequence of failure or ease of repair, e.g. pipes under buildings, deep pipes, pipes near sensitive receiving environments. This will highlight transmission mains that might warrant more frequent condition assessment or earlier renewal.
- Likelihood of Failure
  - Develop a Condition Assessment Strategy that specifies:
    - Condition inspections – the techniques to be used under various circumstances
    - Timing of inspections, which depend on the consequence of failure, the previously observed condition of the asset and the forecast rate of deterioration
    - Other information be collected, e.g. past issues in the vicinity of the sewer
    - Processes for deriving likelihood of failure ranking from the condition inspections and other information collected
    - Circumstances that may necessitate the need for additional inspections, e.g. after high flows that could cause rapid deterioration
    - Trigger levels for undertaking more intensive investigations.
- Renewals Processes
  - Renewals interventions strategy be documented that specifies the repairs and renewals to be undertaken and the urgency for undertaking these works based on the observed defects/condition and the consequence of failure. This will improve transparency of renewals decisions
  - Consider undertaking structural analysis of block and brick-built sewers using finite element analysis to determine the extent of pipe wall deterioration that can be tolerated under various loading conditions. Sensitivity to uncertainties such as block strength should be considered. This will improve assessment of the likelihood of failure and enable the setting of trigger levels for intervention
  - Develop a prioritised list of pipelines for renewal based on observed condition and the triggers set out in the Renewals Intervention Strategy.

It is understood that Watercare are in the process of improving the documentation of their processes in line with the recommendations above. They expect to be complete by July 2024.

ABBREVIATIONS

AMP	Asset Management Plan
ARI	Average Reoccurrence Interval
CIPP	Cured In Place Pipe
EOP	Engineered Overflow Points
FEA	Finite Element Analysis
GRP	Glass Reinforced Plastic
IIMM	International Infrastructure Management Manual
MBGL	Metres Below Ground Level
MH	Manhole
OLFP	Overland Flow Paths
OMS	Ōrākei Main Sewer
RCM	Reliability Centred Maintenance
WSAA	Water Services Association of Australia
WSL	Watercare Services Limited
WWTP	Wastewater Treatment

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1 INTRODUCTION

1.1 PURPOSE OF REPORT

This report considers the collapse of the Ōrākei Main Sewer (OMS) that occurred in the vicinity of 79 St Georges Bay Road in September 2023. Watercare Services Limited ('Watercare' or WSL) engaged WSP to conduct a failure analysis of the incident. As per the Terms of Reference (Appendix A), this assessment is split into three parts:

- Investigation of the incident and likely cause of failure.
- Review of Watercare's maintenance and condition assessment practices.
- Review of Watercare's rehabilitation and renewal planning.

WSP has compared Watercare's practices for interceptor sewers with best practice and provided recommendations for improvements.

Information made available for this work was believed to be complete and correct at the time it was made available, but it is possible that additional or better information may become available over time, which could influence the findings of the report. Therefore, before undertaking any physical works, further investigations should be carried out to confirm the underlying assumptions.

1.2 OVERVIEW OF INCIDENT

On Tuesday 26 September 2023, Watercare was alerted to the formation of a sinkhole over the OMS at 79 St Georges Bay Road in Parnell.

The sinkhole grew over the next 24 hours. On 27 September 2023 the sewer collapsed, and the OMS became fully blocked. This resulted in sewer flows being discharged into the Waitematā Harbour via two engineered overflow points (EOPs) – one at Mechanics Bay and another at Daldy Street. The situation remained until 17 October 2023 when temporary bypass pumping was installed.

A more complete timeline is included in Appendix B.

Further site investigation showed that the blockage spanned 25 metres. It comprised mainly of large rocks and clay. Indications were that a section of the roof of the OMS, approximately 3.5m long, had collapsed.

2 BACKGROUND

2.1 OVERVIEW ŌRĀKEI MAIN SEWER

The OMS is a transmission main sewer, i.e. a large pipe that collects wastewater from local wastewater pipes to convey the flow for downstream pumping or treatment (also called an 'interceptor'). The OMS is 13km long. It runs from the Oakley Creek Esplanade Reserve to Ōrākei Domain, conveying wastewater from central Auckland suburbs to the Eastern Interceptor, refer Figure 2:1.

When the OMS was constructed in the 1910's, it discharged wastewater into the Waitematā Harbour through an outfall at Ōrākei Bay. The OMS was connected to the Eastern Interceptor in 1960's (Smith, Rogers, Graham, & Brown, 2016). Wastewater is now conveyed through the Eastern Interceptor to the Mangere Wastewater Treatment Plant where it is treated and discharged.

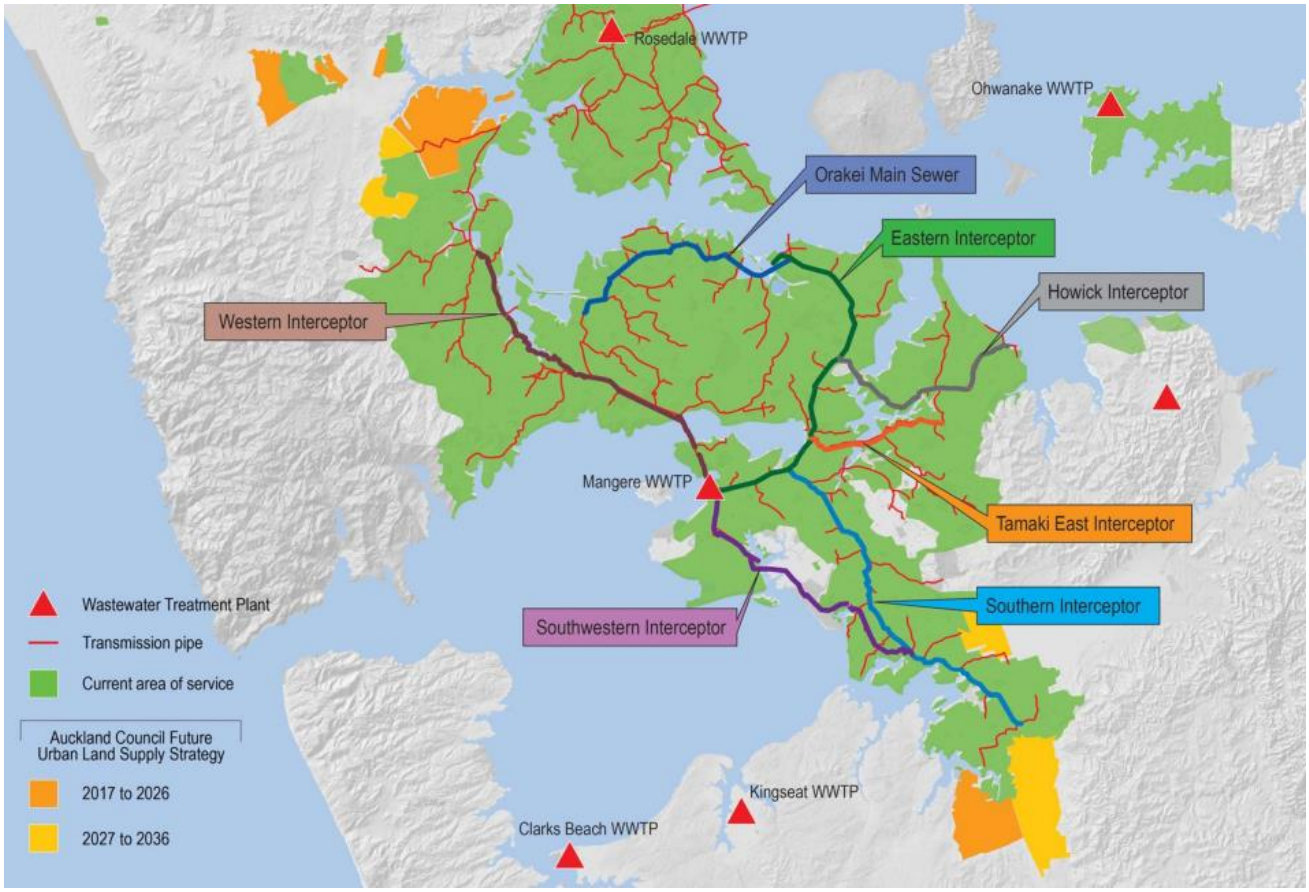

Figure 2:1 Map of wastewater transmission pipes in Auckland (Auckland Council, 2021)

2.2 LOCATION OF THE FAILURE

The sinkhole and collapse occurred at 79 St Georges Bay Rd. Figure 2:2 shows an aerial photograph of the collapse after initial works to stabilise the area had begun.

The collapse is located approximately midway between Manholes 15 and 16, shown on Figure 2:3 i.e. 65m downstream of Manhole 16, 54m upstream of manhole 15. At this location, the OMS has a nominal diameter of 2.1m and is about 10m underground (WSL, 2023a).

Figure 2:3 also shows the location relative to buildings and other services. A 1.35m diameter stormwater pipe crosses above the pipe near the collapse, implications of this are discussed in Section 3.3.

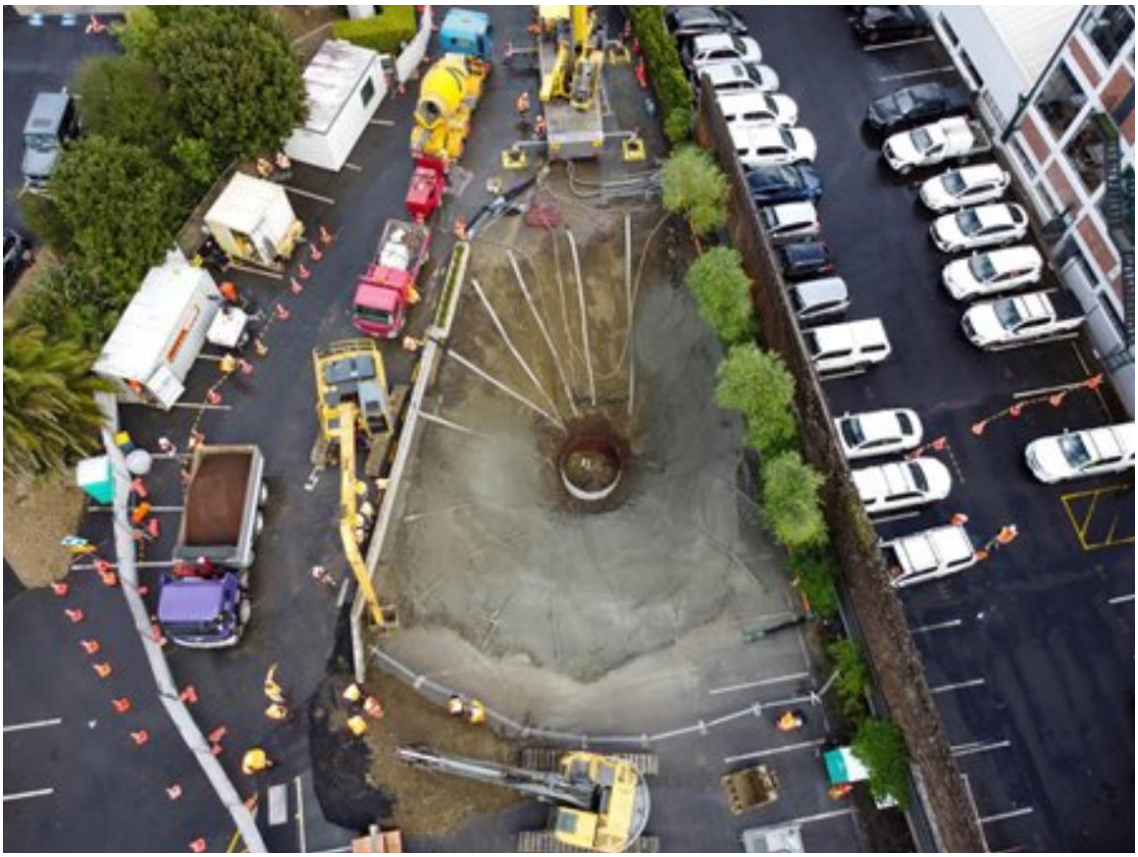

Figure 2:2 Drone aerial image of the sinkhole on 29/09/2023 (photo supplied by WSL)

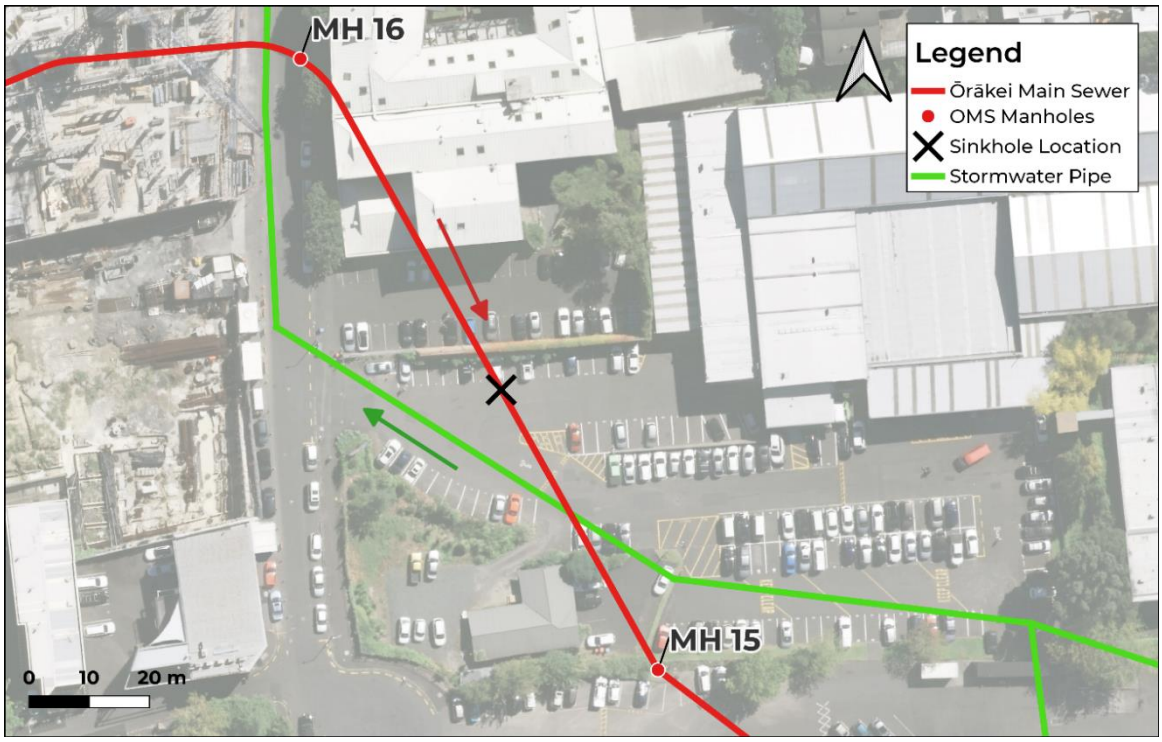

Figure 2:3 Map of sinkhole location, including arrows showing pipe flow directions

2.3 EVENTS LEADING UP TO INCIDENT

Two notable activities happened prior to the incident:

Very Wet Weather

- 1,690mm of rain fell in the 9 months of 2023 preceding the incident. This is 50% more than the average for an entire year
- There were three significant rainfall events in the first half of 2023. These events occurred in January (Auckland Anniversary Floods, >100yr ARI), February (Cyclone Gabrielle, ~20yr ARI) and 9th May (2-5yr ARI)[1].

Transformer installation

- A landowner was installing an electrical transformer adjacent the collapsed section
- A 900mm deep trench for a power cable was being excavated across the location where the sinkhole was discovered
- At the time, the asphalt surface had been cut for the trench and the ground below was exposed to weather
- Watercare had issued a works over permit giving permission for the works to be undertaken near the OMS. There is no indication that the contractor carrying out the works damaged the OMS in any way.

Refer to Appendix B for an extended timeline of events relating to the OMS and its 2023 failure.

2.4 IMMEDIATE REPAIR WORKS

Immediately after the collapse the following works were undertaken, refer Figure 2:4:

1. Stabilisation of sinkhole
   - 3m diameter steel caisson (protective casing around the hole in the OMS) was installed over the collapsed sewer
   - Shotcrete was sprayed on the sides of the sinkhole.
2. Unblocking of sewer
   - Hydro-excavation (jetting water) was used to clear the blockage. This was only partially successful due to the extent of the blockage and the size of the debris.
3. Temporary bypass pumping installed (refer Figure 2:5)
   - A stop log (steel door) was installed at manhole 16 to restrict wastewater flows
   - Six bypass pumps (nominal diameter 200mm) were installed at manhole 16

[1] ARI (Average Recurrence Interval) is the frequency of an event expressed in years. This refers to the average time between rainfall events that exceed a certain magnitude.

— A bypass pipeline was installed to convey wastewater around the collapse, discharging back into the OMS at MH14.

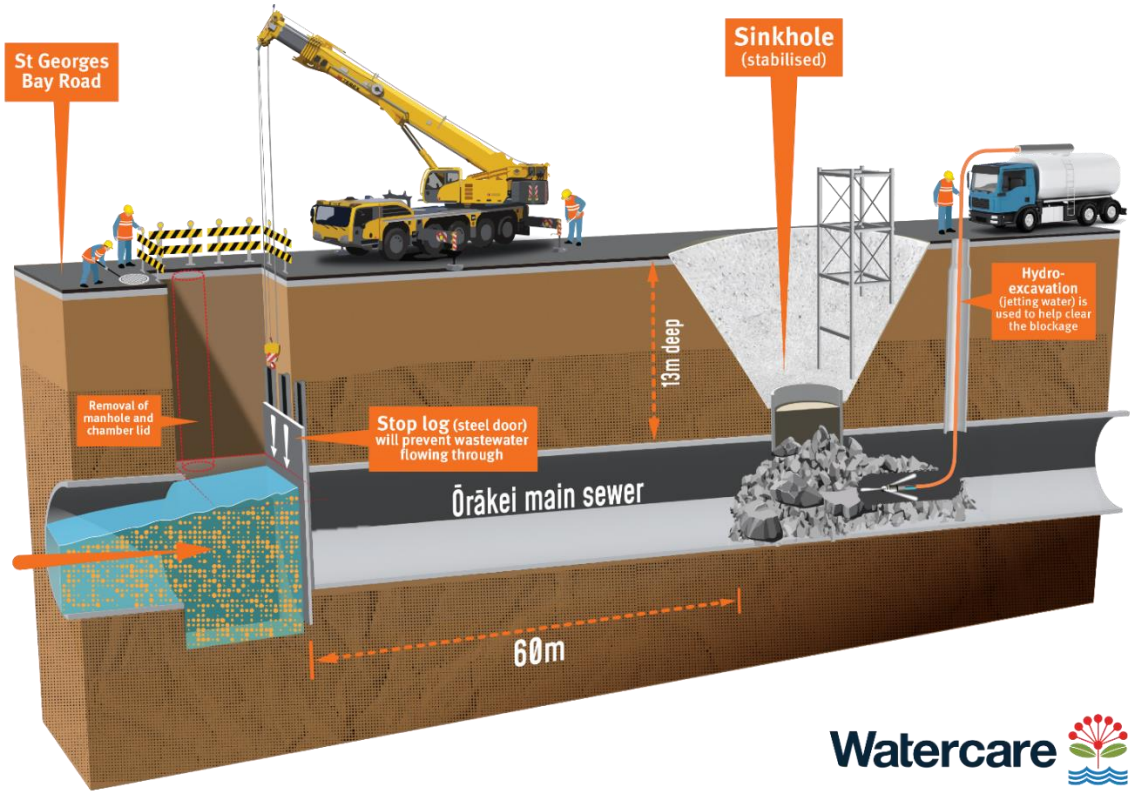

Figure 2:4 Graphic of OMS failure and initial repairs (supplied by WSL)

The bypass pumping conveyed about 600L/s which is approximately the average dry weather flow of the OMS. The pumping capacity is comparable to some the largest pumpstations in the Watercare network.

The capacity of the temporary bypass pumping was limited by:

— Availability of pumps at short notice

— Space available to site pumps

— Noise and vibration impacts

— Pump suction head limitations which meant that the pumpstation site had to be excavated and the pumps located below ground level. This added to the space constraints

— Hydraulic constraints – in a permanent pumpstation, the pumps would normally draw water from a wet well (tank). The wet well would be sized so that wastewater was efficiently drawn out when multiple pumps were operating. But it wasn't possible to construct a wet well for the temporary pumpstation due to space and time constraints. The pumps suck wastewater directly out of the OMS itself which isn't hydraulically efficient. As more pumps are added, they begin to compete against each other, and pumping capacity reaches a threshold.

Bypass pumping was operational from 17 October 2023. This avoided wastewater being discharged directly into the harbour during dry weather. The installation of the bypass pumping also enabled unblocking and repair works to be undertaken in a dry setting. Design and construction of a permanent pumpstation and rising main of this size would normally take several years to complete.

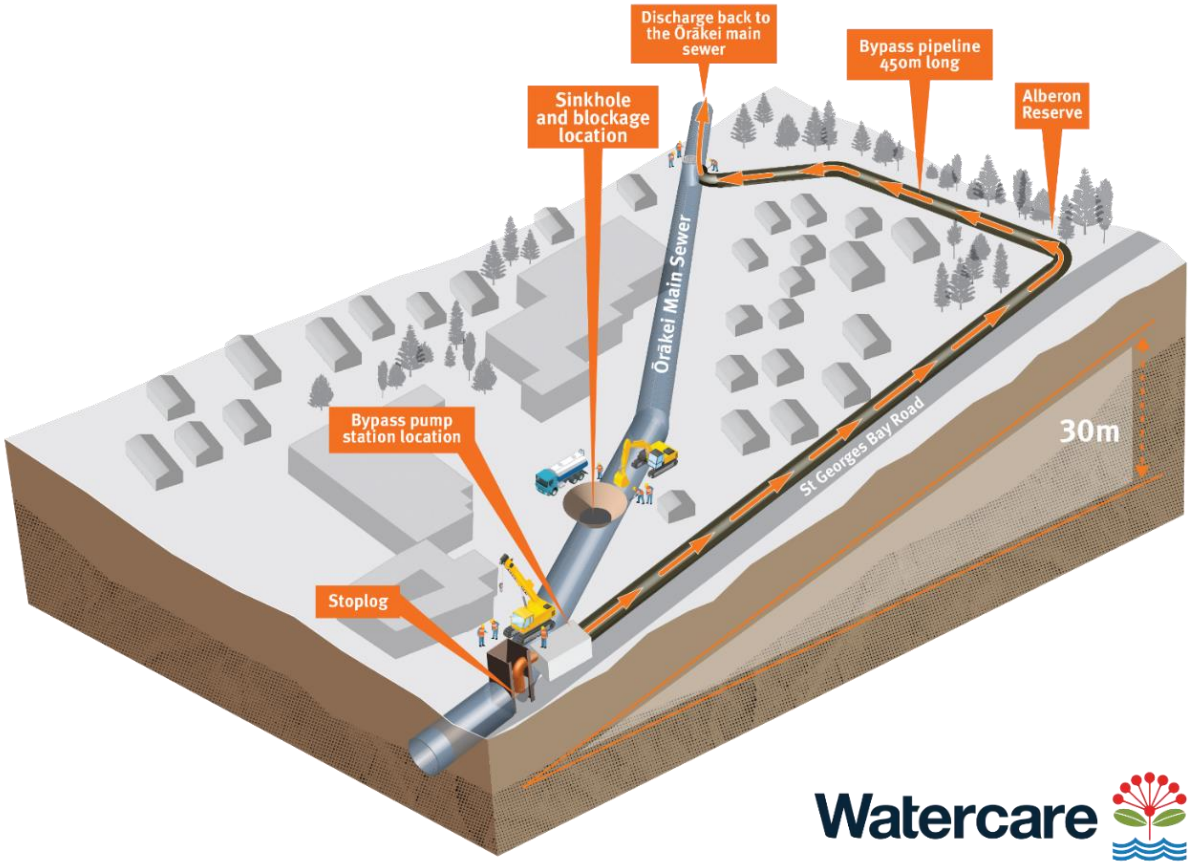

Figure 2:5 Graphic showing sinkhole location and temporary bypass pipeline (supplied by WSL)

The following steps are being undertaken to repair the OMS:

1 Expose the collapsed section (completed November 2023)

2 Strengthen the pipe around the collapse (completed December 2023)

3 Rehabilitate the OMS from manhole 16 to manhole 15 using segmented slip-lining (refer to Section 8.5.3 for details of this rehabilitation technique)

2.5 CONSTRUCTION METHOD

The OMS was constructed in 1911. It is oviform (egg shaped), refer Figure 2:6. Appendix C contains some of the original OMS drawings.

The section in St Georges Bay Rd that collapsed is 2.29m high by 1.52m wide. The base of the sewer is constructed from cast in place concrete. The top is a concrete block arch which appears to have been constructed from rectangular blocks. The depth to the invert is approximately 10.4m.

Figure 2:7 shows a photograph from the construction of a similar sewer. However, the arch section of the OMS is formed from concrete blocks rather than from bricks as shown in the photograph.

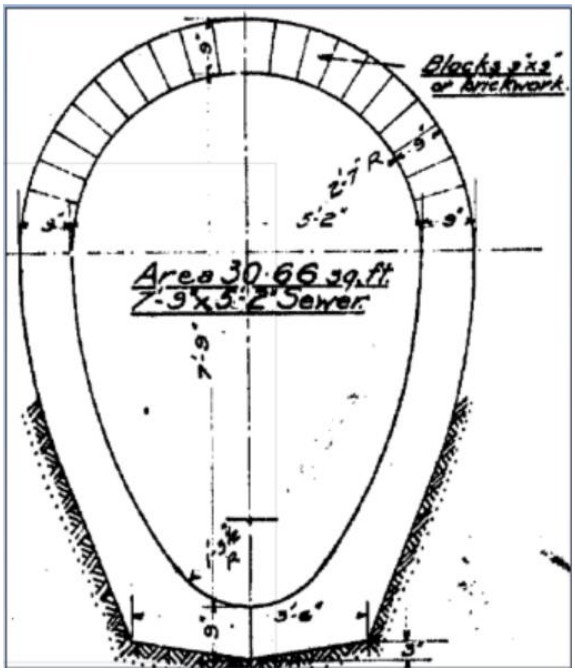

Figure 2:6 Profile of OMS (Extract from drawings – Appendix C)

Figure 2:7 Photo of Hobson Bay Sewer Construction in 1910 (WSL, 2018)

The OMS was either constructed within a hand dug tunnel or a trench depending on the depth of the pipeline. It is uncertain which method was used for construction of section in St George Bay Rd that collapsed.

The sequence of construction for the OMS was:

1 Dig hand dug tunnel or trenched

2 Cast concrete base in place

3 Install block arch

4 Backfill tunnel or trench above pipe.

Where the pipe was installed in a tunnel, it is quite possible that either a void remained between the top of the arch and tunnel or the gap was filled with poorly compacted material (refer to Section 5.2.1).

3 INVESTIGATIONS AND FURTHER INFORMATION

3.1 SEWER FLOWS

The OMS was originally constructed as a combined sewerage system conveying both wastewater and stormwater flows, which was common practice at the time. Modern practice is to install separated systems for conveyance of wastewater and stormwater.

The catchments served by the OMS (shown in Figure 2:1) have been extended and modified over time. The OMS now serves catchments that were originally constructed as:

— combined systems

— separated systems

— combined systems but have since been largely separated.

As a result, there is significant variation between dry weather and wet weather flows, refer Figure 3:1.

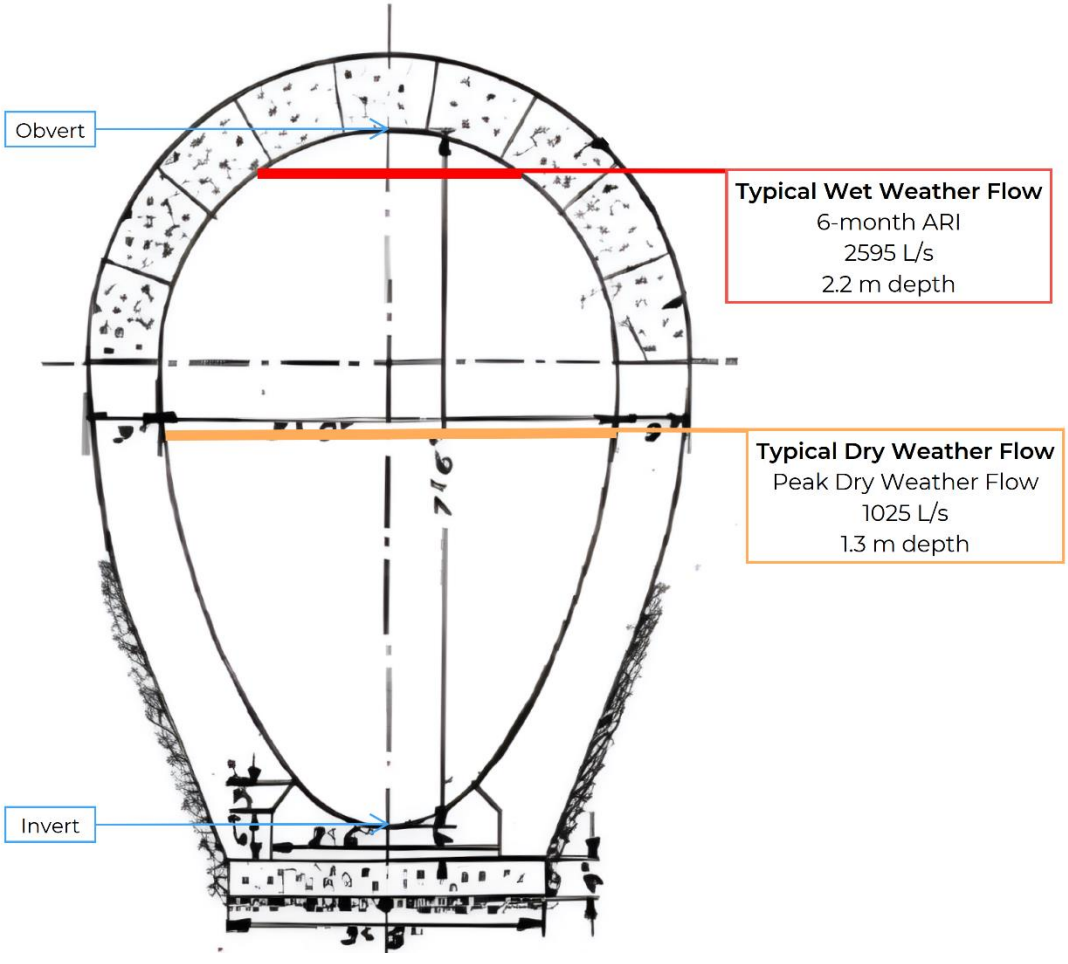

Figure 3:1 Depth of typical flow rates relative to the OMS cross-section (supplied by WSL)

During dry weather, the OMS largely conveys wastewater from households and industry, i.e. water that goes down sinks, washing machines, showers, baths and toilets. Wastewater flows will vary throughout the day based on usage patterns. Peak daily dry weather flow is estimated by Watercare to be 1,025L/s. The flow depth is 1.3m. That is, under dry weather conditions wastewater flows will be contained within the cast concrete base of the OMS.

During wet weather the OMS also conveys:

- Stormwater from catchments that are fully combined or only partially separated
- Inflow, i.e. water that directly enters the wastewater system from sources such as roof downpipes, gully traps, and drain connections. Ideally these sources shouldn't be present but in practice they occur in almost all wastewater systems
- Infiltration, i.e. groundwater that seeps into the system through leaks in pipes and manholes. Whilst infiltration should be minimised as much as practical, it does occur in most wastewater systems.

The amount of wet weather flow typically increases with the severity and duration of the storm. Wet weather events are described in terms of Average Recurrence Interval (ARI), i.e. the average period between events of a certain size. For example, a six-month ARI flow will occur on average once every six months. It is important to note however that these are average return periods and there could be times when actual return periods are shorter or longer than the average.

The flowrate during a 6-month ARI event is 2,595L/s, i.e. 2.5 times the peak dry weather flow. The flow is 2.17m deep, so the concrete block arch is partially exposed to flows.

During severe storms, there can be a rapid rise in flows due to increased inflow caused by surface flooding overtopping gully traps and other wastewater features that have been positioned to avoid water entry under normal conditions. There can also be increased infiltration due to high ground water levels.

Two severe storms occurred during January and February 2023, refer Section 3.3. The storm during Auckland Anniversary Weekend in January 2023 is estimated to have an ARI greater than 100 years. During this storm, the OMS would have been running full (i.e. the top of the concrete arch would have been exposed to flows) and the pipe may have been subjected to up to 800mm of surcharge[2]. This surcharge could have applied upward pressure on the block structure causing the arch to destabilise and possibly washing out weak mortar.

[2] This is based on measures recorded by WSL elsewhere on the OMS. Surcharge refers to the additional pressure on a pipe when it's at full capacity.

3.2 GROUND CONDITIONS

The technical memo in Appendix D introduces the engineering geological setting and geotechnical conditions and discusses the potential impact the ground conditions might have on the failure mechanism of the sewer.

The site is located at base of an infilled stream gully. As such the top portion of the ground profile consists of fill comprising mostly clayey silt, silty clay, and silt, underlain by residual soils of the East Coast Bays Formation (ECBF) that are comprised of clayey silt, sandy silt, and silt, transitioning into highly to moderately weathered ECBF.

The inferred ground profile based on historical geotechnical reports for adjacent building sites (Tonkin & Taylor Ltd) is shown in Figure 3:2. The ground profile from site observations made after the discovery of the collapse (Baseline Geotechnical Ltd) are summarised in Table 3:1.

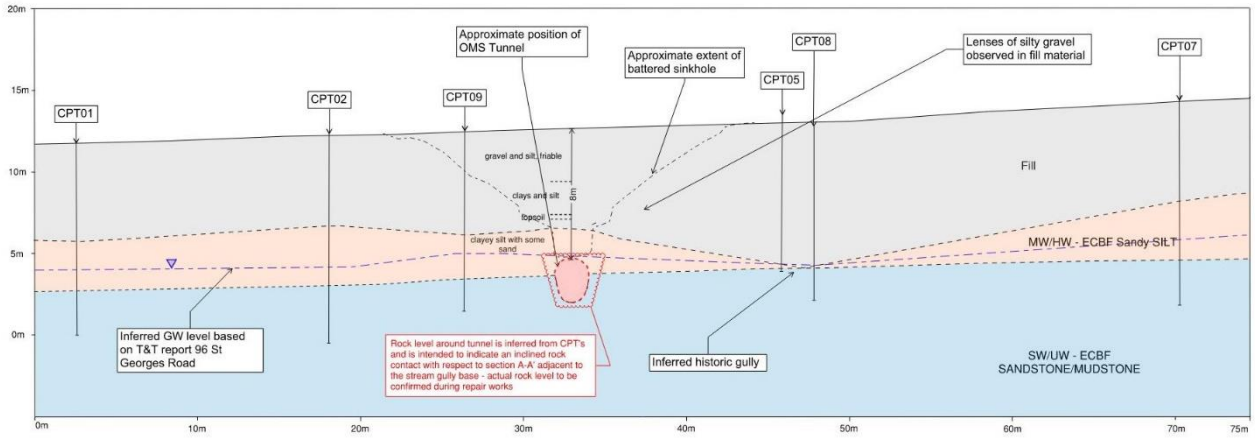

Figure 3:2 Cross-section showing the profile of the historic infilled gully in relation to the sinkhole and pipeline.

Table 3:1 Summary of soil profile above the crown hole collapse

Depth (mbgl)	Geology Unit	Material Description
0-3.5m	Fill	Gravel and silt, brown and friable
3.5-5.3m	Fill	Clays and silts, mottled orange, light brown and brown
5.3-5.6m	Buried Topsoil	Clayey silt with organics, dark brown to black
5.6-8.8m	Weathered ECBF	Clayey silt with some sand, brown

Note: mbgl = metres below ground level.
The invert of the OMS is approximately 10m below ground level at this location.

3.3 STORMWATER

Based on a desktop assessment of available information, and site observations, (refer to Appendix E) it is considered that stormwater may have contributed to the formation of the sinkhole in the following ways:

Overland Flow Paths (OLFPs)

- The collapse is in a low point. During large events, stormwater pipes become full, and the excess stormwater flows over the ground surface via OLFPs
- There were at least three rainfall events in the first half of 2023 that are likely to have led to the activation of OLFPs through 79 St Georges Bay Road. These events occurred in January (>100yr ARI), February (~20yr ARI) and May (2-5yr ARI)
- The high total rainfall during the nine months leading up to the formation of the sinkhole (1,690mm versus an annual average of 1,137mm) is likely to have resulted in saturated ground conditions and more frequent activation of OLFPs
- The existing OLFPs are obstructed by a solid brick wall near the location of the sinkhole, creating a trapped low point (refer Figure 3:3). This would cause water to pond above the location of the sinkhole to depth of ~0.25-0.50m
- Ponded water at the trapped low point would seep into the ground through weak points in the seal or other pervious areas (e.g. garden beds, gravel areas).

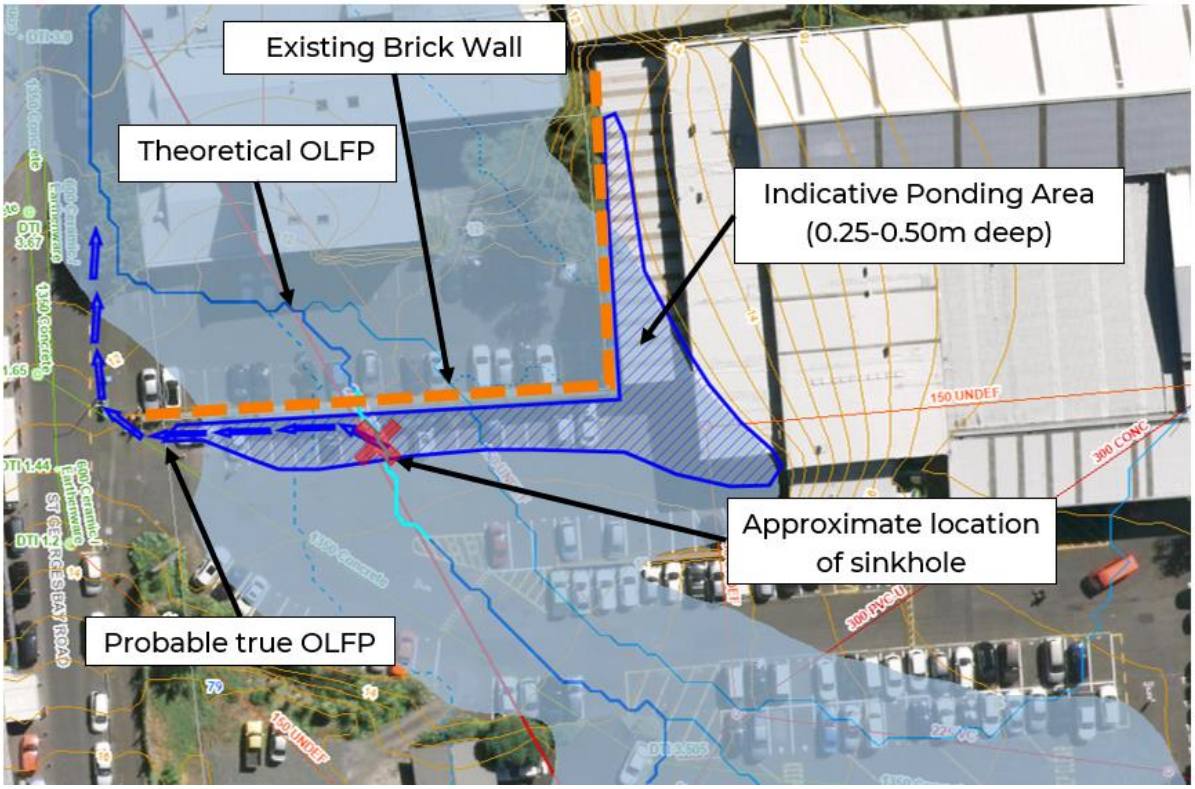

Figure 3:3 Overland flow paths near the sinkhole location

Reticulated Stormwater Network

- The existing stormwater network within 79 St Georges Bay Rd and upstream has an approximate capacity to accommodate between a 2 year and 10-year ARI event
- The existing stormwater network was likely to have been under surcharge pressure during the significant rainfall events in January, February, and May 2023
- It is understood that there are no significant faults in the DN1350 stormwater pipe that crosses above the OMS, upslope of the sinkhole location (we have not been able to sight CCTV inspections to confirm). However, it is likely that the surcharge conditions would have caused water to exfiltrate from the pipe into the surrounding trench material adding to subsurface groundwater flows.

The combination of the above would have likely led to significantly elevated local groundwater flows and levels in the vicinity of the OMS.

It is important to note that the stormwater factors above in and of themselves are considered potential contributory factors only and are unlikely to have been the primary cause of the sinkhole formation. While it would have led to elevated subsurface flows there would need to have been a preferential flow path in the soils above the OMS for this to have influenced the formation of the sinkhole.

3.4 PREVIOUS REPAIRS UNDERTAKEN IN THE VICINITY OF THE COLLAPSE

Since the OMS was constructed in 1911, several repairs have been undertaken, including work in the general vicinity of the collapse. Figure 3:4 is a map showing the location of the repairs in relation to the 2023 failure. The repairs are further described in the following subsections.

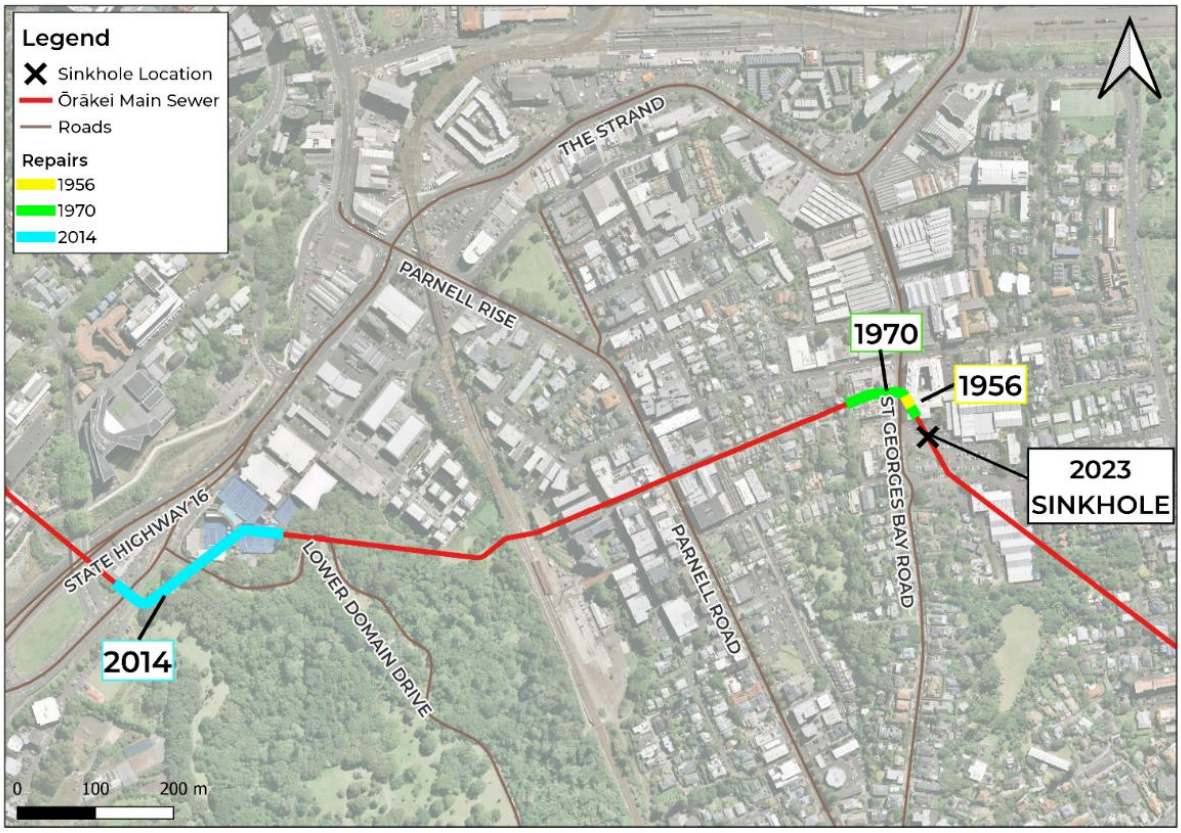

Figure 3:4 Locations of previous OMS repairs in relation to the 2023 failure

3.4.1 FAULT UNDER NESTLÉ BUILDING – 1956

In 1939, the Nestlé chocolate factory building was constructed on the corner of Cleveland Rd and St Georges Bay Road, see Figure 3:5. Part of the factory was built directly above the OMS.

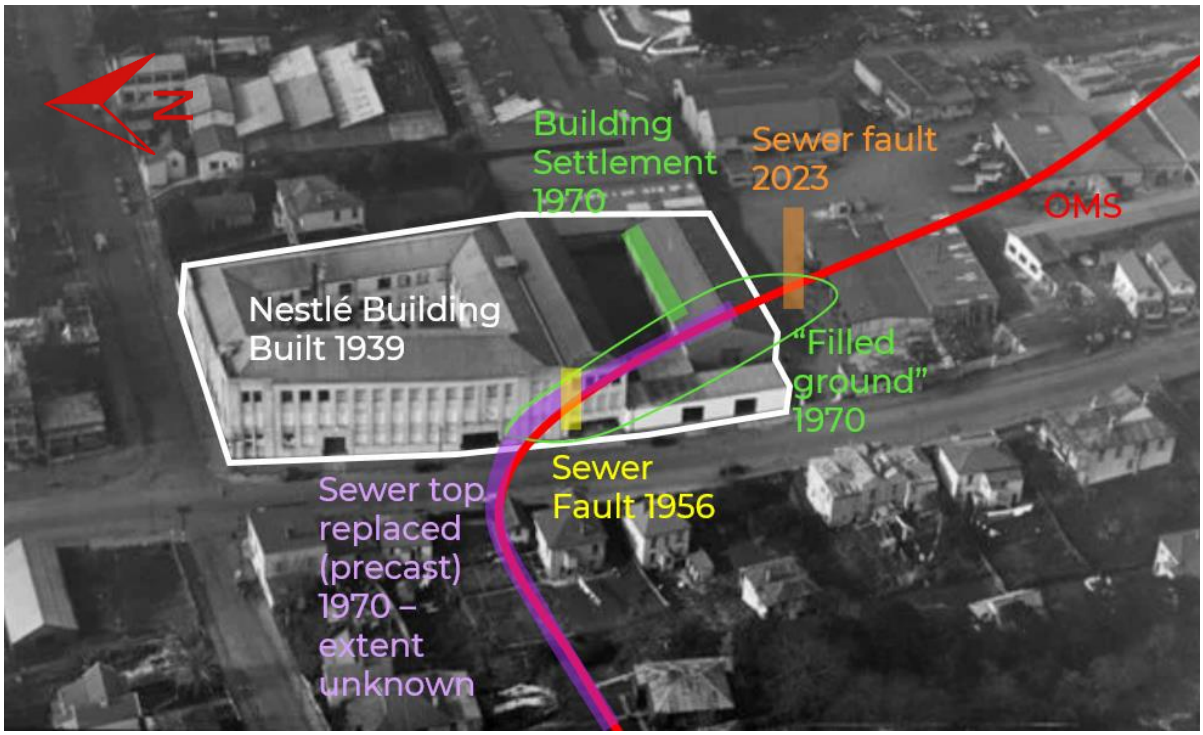

Figure 3:5 Annotated 1949 aerial image (supplied by WSL)

In 1956, a fault occurred in the OMS underneath the Nestlé building. The extent and cause of this issue is unclear. It would appear from the sketches from the time, shown in Figure 3:6, that the issue might have been localised and a result of damage caused by the building foundations. However, it has not yet been possible to confirm this.

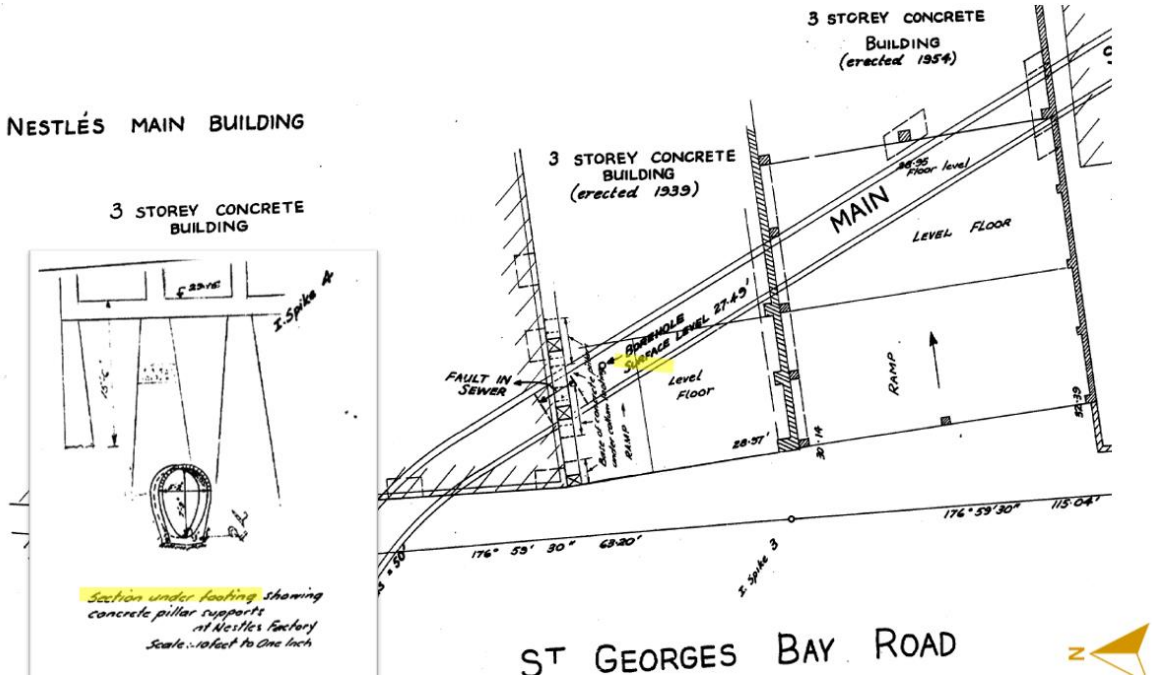

Figure 3:6 Fault Under Nestlé Building circa 1956

3.4.2 NESTLÉ SUBSIDENCE – 1970

Subsidence and cracking were recorded at the Nestlé building in the late 1960s. It is unclear whether this was directly related to the OMS. However, in 1970, the arch section of the OMS under the building was replaced with new precast concrete sections. This involved tunnelling above and to the side of the OMS, refer Figure 3:7. The timber tunnel sets were left in place. The gap between the sets and the OMS was backfilled with stabilised scoria. This repair extends from MH 16 to 47m downstream, i.e. less than 20m from the collapse.

There is currently no reason to believe that the issues that might have caused the arch section of the OMS to be replaced here extend through to the location of the 2023 collapse, i.e. there are no indications of cracking or general deformation of the pipe visible on the CCTV inspections or laser profiling.

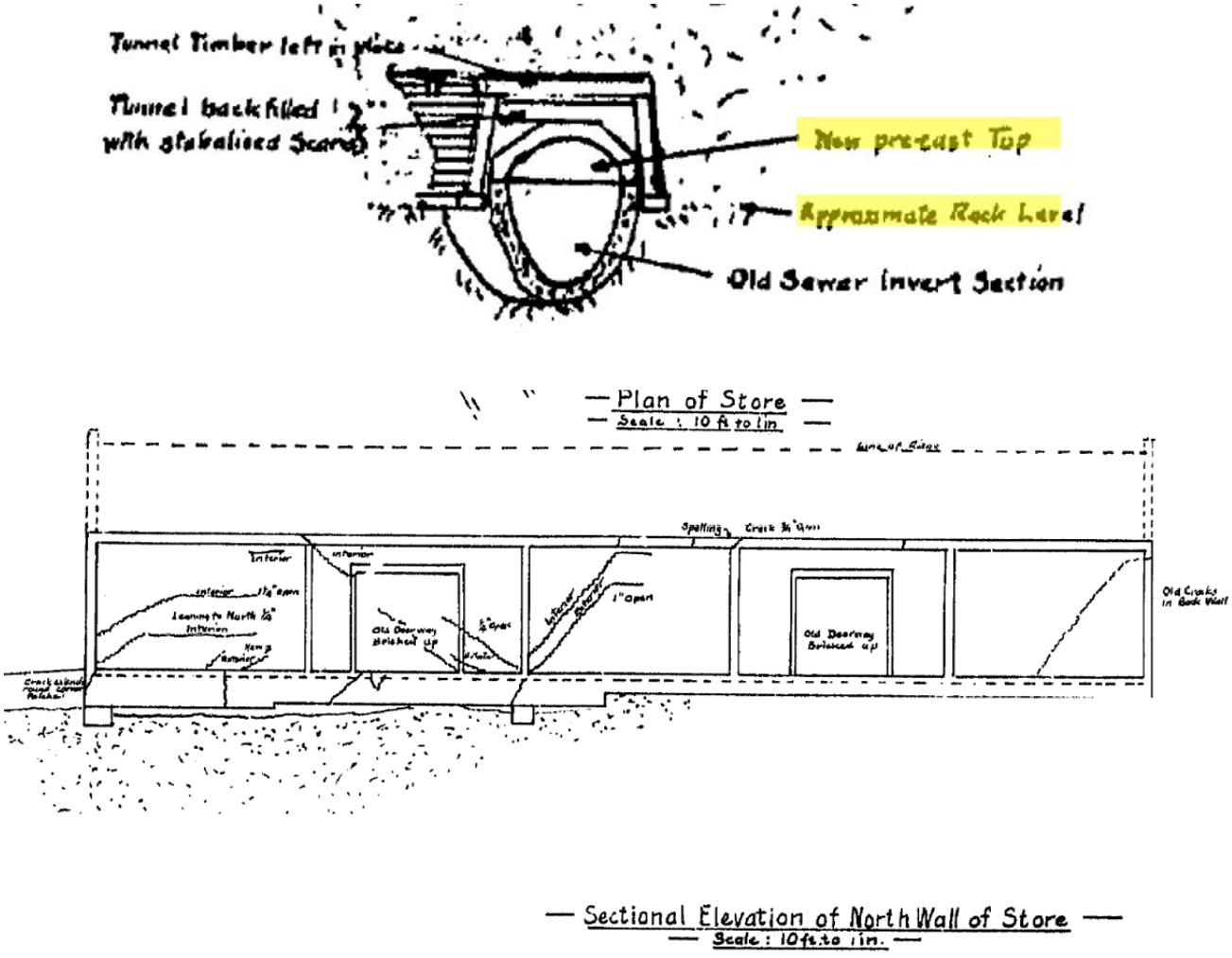

Figure 3:7 Nestle's subsidence/ cracks in 1970

3.4.3 STANLEY ST REHABILITATION – 2014

In 2011 the sewer between MH21 and MH19 (refer Figure 3:8) was identified as being in poor condition. Rehabilitation was recommended (AECOM, 2011). This section is approximately 1 km upstream of the section that collapsed in 2023.

The condition assessment undertaken at the time provides an indication of the possible condition of other sections of the OMS.

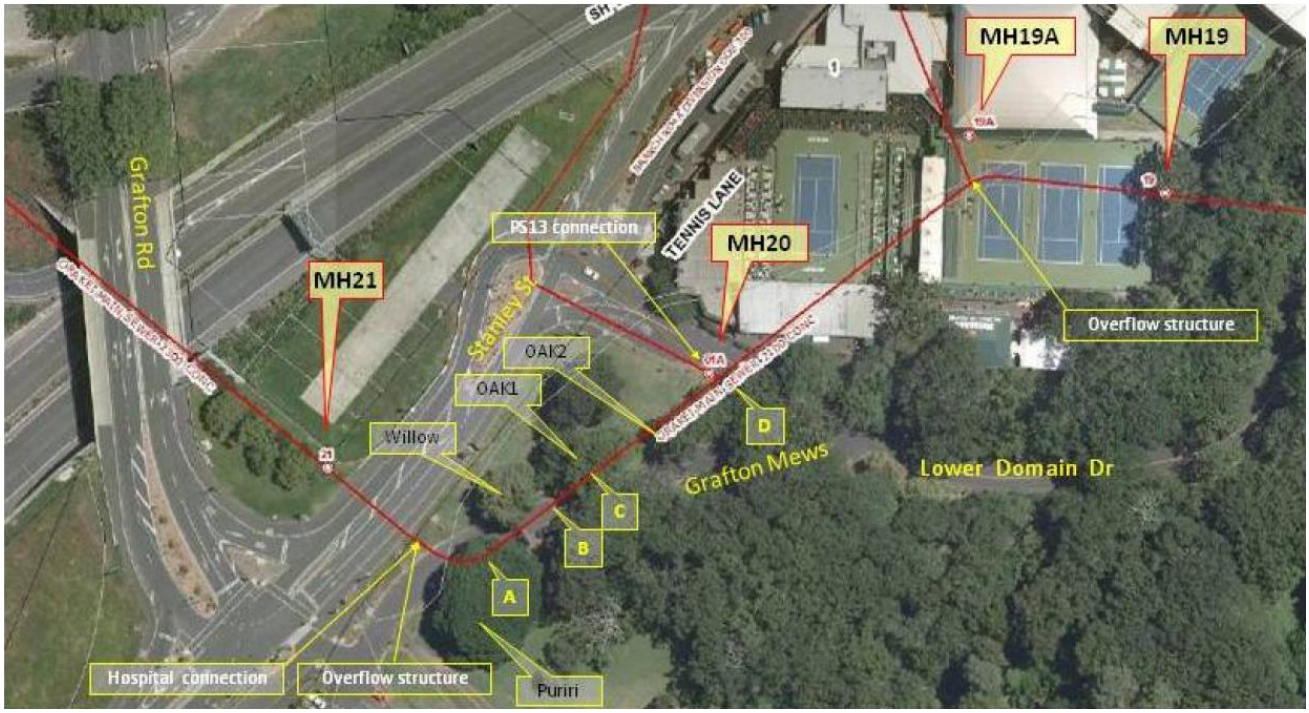

Figure 3:8 Location of Stanley St rehabilitation in 2014

The preliminary design report for the works noted that the "structure (of this section of the OMS) has suffered from attack by corrosive gases[3], and recently, penetration by tree roots, particularly in the area lying under Grafton Mews. During the last decade, the extent of the damage to this stretch of the sewer has become more apparent" (AECOM, 2011).

It was noted from a walkthrough inspection that there were "many joints (in the concrete block crown) where the mortar has completely disappeared." However, "there was no obvious indication of any serious damage to the cast-in-place lower part of the sewer".

From the compression tests carried out on core samples taken from block arch, AECOM deduced "that the majority of the blockwork is made up of material with a compressive strength of 15Mpa or less" (AECOM, 2011).

Figure 3:9 taken during the subsequent repair of the OMS demonstrates the poor condition of the block work and mortar joints. Note that the capping layer was installed during the repair and was not part of the original construction of the OMS.

[3] Strictly speaking, corrosion of concrete in pipelines that carry wastewater is caused by acid produced by microbes that convert hydrogen sulfide gas to an acid, but the gas itself does not attack the concrete.

The preliminary design report recommended that the section between points A and D, as marked on Figure 3:8, be rehabilitated “through the installation of glass reinforced plastic (GRP or “fibreglass”) linings to provide a structural solution, and non-structural rehabilitation be undertaken on the remaining parts of the reach between MH21 and MH19 by application of corrosion resistant calcium aluminate cement (CAC) mortar.” This work was undertaken in 2014.

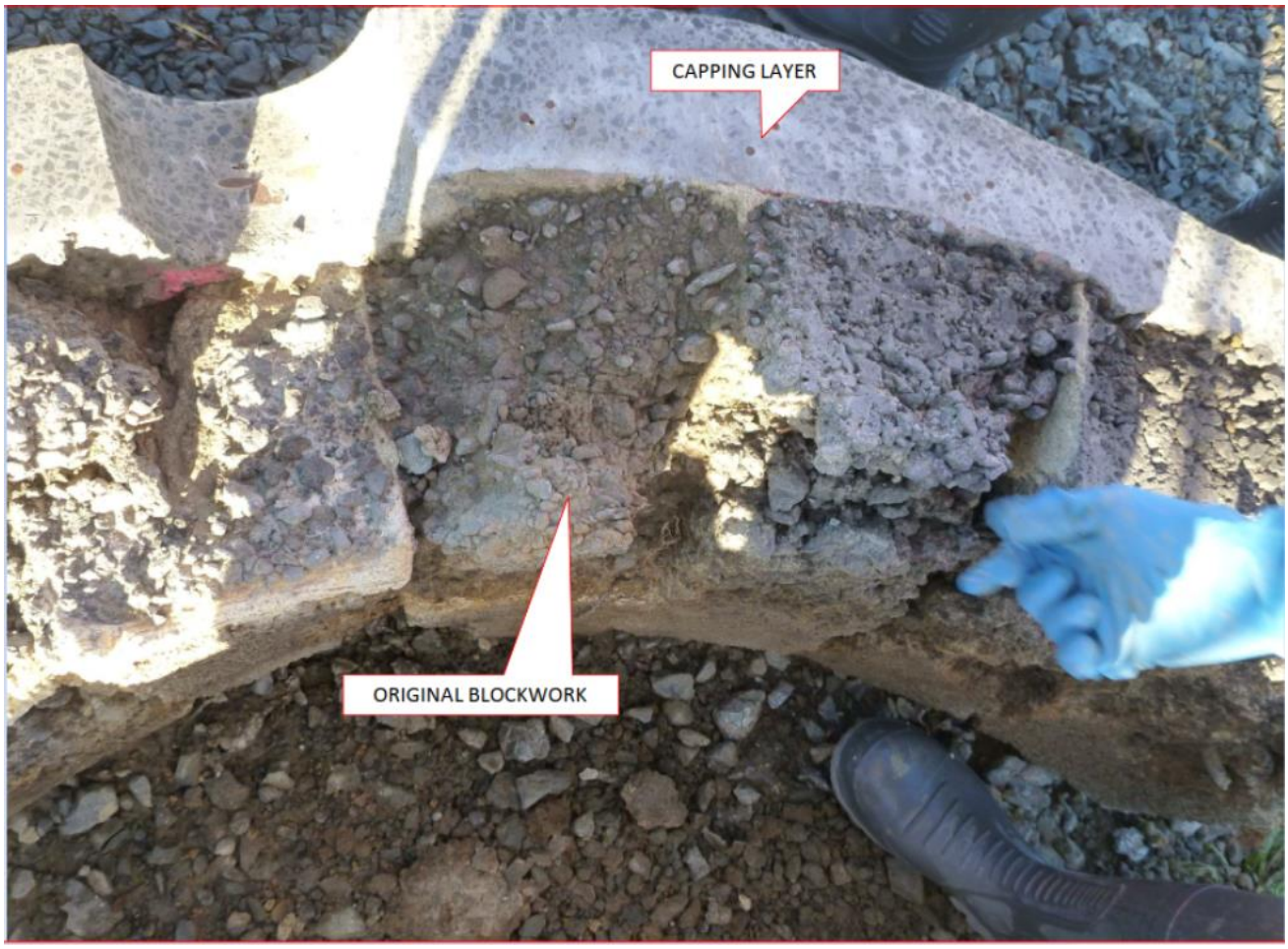

Figure 3:9 Photo of capping layer and original blockwork

4 REVIEW OF PREVIOUS OMS CONDITION ASSESSMENTS

4.1 INSPECTIONS UNDERTAKEN

The aim of a condition assessment is to establish current condition, to identify the risk of failure and to enable proactive interventions to be undertaken to keep the risk of failure below tolerable levels.

4.1.1 SUMMARY OF INSPECTIONS

The following inspections were undertaken on the OMS in the 11 years prior to the collapse:

— 2012 – CCTV, sonar, and laser profiling

— 2019 – CCTV, sonar, and laser profiling, but profiling data was not acquired

A description of the inspection techniques used, the information they provide, and their limitations is provided in Section 7.5.4.

The OMS had been cleaned with a plough prior to these inspections being undertaken, refer to Section 7.2.2.1 for more information.

The inspection data for the pipe assets shown in Table 4:1 was reviewed by WSP in the preparation of this report. These cover 1,600m of the OMS from manhole ORM018 which is located adjacent to Albert Park through to manhole ORM013 which is in Takutai Reserve. The failure occurred in the pipeline section between manhole ORM016 and ORM015 which is highlighted in bold in the table.

Table 4:1 CCTV Inspections and Laser & Sonar Profiling Reviewed

Asset no.	Inspection year 2019		Inspection year 2012	
	CCTV	Laser	CCTV	Laser
10007054 (ORM018-OMR017)	Yes	Yes	Yes	Yes
10007053 (ORM017-ORM016)	Yes	Yes	Yes	Yes
10007052 (ORM016-ORM015)	Yes	Yes	Yes	Yes
10007051 (ORM015-ORM014J)	Yes	Yes	Yes	Yes
10007050 (ORM014J-ORM014)	Yes	Yes	Yes	Yes
10007049 (ORM014-ORM013J)	Yes	Not available	Yes	Yes
10099260 (ORM013J-ORM013)	Yes	Not available	No	Not available

After the collapse the following inspections were undertaken:

- Analysis of the sonar and laser profiling completed in 2019
- Drone inspection of the section of pipe between the collapse and towards downstream manhole 14J (Pipe 10007052 part and Pipe 10007051 part)
- Visual inspection of the collapsed pipe after it had been exposed to undertake repairs.

4.1.2 CCTV INSPECTION AND PROFILING (CONDITION IN 2012 & 2019)

As part of the preparation of this report, WSP undertook an independent assessment of the CCTV inspection and laser & sonar profiling completed in 2012 and 2019 . This included reviewing the profiling reports from 2019 which were not procured at the time and only became available after the collapse had occurred. Refer to Appendix F for further details. WSP's key observations were:

- Both lots of CCTV inspections were of poor quality which limited the identification of defects and assessment of defect severity. The CCTV footage was of low resolution and the camera could only look straight ahead. The camera could not be turned towards the wall to show a better view of defects
- Condition Structural Grades[4] were assigned by WSP from the CCTV to provide an initial indication of the pipe condition as it was when the inspections were undertaken, i.e. 2012 & 2019. Defects were scored according to the criteria defined in the Conduit Inspection Reporting Code of Australia and structural grades assigned. The 2012 CCTV inspection indicated that two pipe sections were in Structural Grade 4, i.e. 100007050 & 10007051. The other three pipes were assigned Grade 5. The 2019 CCTV inspection indicated that all pipes were Structural Grade 5
- Common defects observed were exposed aggregate on the obvert and the cast in-situ base (indicating corrosion), encrustations (indicating that water was infiltrating between the blocks), missing mortar, predominately near the horizontal joint between the blocks and the concrete base
- Missing mortar was particularly prevalent on pipes 100007050, 10007051 & 10007052. In these pipes the number of locations where mortar was missing increased from one location every 2-5m in 2012 to a location every 1.5-2.5m in 2019
- The extent of corrosion observed in the 2012 laser profiling reports varied across the pipes inspected. No corrosion was identified on pipes 100007050 & 10007051. Isolated corrosion to a maximum depth of 29mm was observed on pipes 10007049 & 10007052. More extensive corrosion was observed at the obvert of pipes 10007053 & 10007054 to a maximum depth of 81mm
- The depth and extent of corrosion increased markedly between 2012 & 2019. The maximum depth of corrosion on pipes 100007050 & 10007051 was 54mm and extended across the length of the obvert (whereas no corrosion was observed in 2012). 20mm of additional corrosion was observed on pipes 10007053 & 10007054 to a maximum of 101mm

[4] Condition Structural Grades range from 1 (very good) to 5 (very poor) as per the IIMM (IPWEA, 2020)

— More extensive corrosion was observed on pipe 10007052 which is the pipeline section that failed in 2023. 125mm of corrosion was observed over a short section (less than 1m) near the location of the collapse. Up to 61mm of corrosion was observed across the obvert whereas in 2012 only isolated sections of corrosion were observed.

4.1.3 DRONE INSPECTION (AFTER COLLAPSE)

Two of the key observations from the post-collapse drone inspection were:

— The pipe downstream of the collapse was observed to be in noticeable worse condition than in the 2019 CCTV inspection. Blocks were missing adjacent to manhole 15. There was also a block missing part way between manhole 15 and the collapsed section. Exposed aggregate is clearly visible in the block arch and the concrete base.

  It is likely that the hydro- jetting undertaken to clear the blockage after the collapse caused most of the damage noted. However, some of the damage may occurred between the 2019 inspection and the collapse.

— The section of pipe between manhole 15 and 14 appeared to be in broadly similar condition to that observed in the 2019 CCTV. Noting that only part of this section of pipe was inspected.

Refer to the technical memo in Appendix G for further observations from this footage.

4.1.4 VISUAL INSPECTION OF COLLAPSED SECTION

Key observations of the collapsed section of the OMS from November and December 2023 are:

— It appeared that two types of blocks had been used to construct the OMS at the location that collapsed. Most of the blocks appear to be at least as competent as those observed during the investigations for the Stanley St Rehabilitation undertaken in 2014 (although compressive testing has not been undertaken). However other blocks were very weak and crumbled when touched. Refer to Section 4.2.2. for commentary on why these blocks might have been present

— The blocks constructed from the more competent concrete were approximately 130mm thick, i.e. about 100mm less than the 9inch (228mm) thick blocks shown on the drawings (Appendix C). There was a layer of weak corroded concrete on the inside of the blocks about 30mm thick

— The outside of the block arch was covered by a layer of concrete which was not shown on the drawings, see Figure 4:1. The layer is between 50mm and 120mm thick at the centre of the arch, but less than 30mm thick at the edges where the arch meets the cast in-situ concrete base, see Figure 4:2.

For further observations, refer to the technical memo in Appendix H.

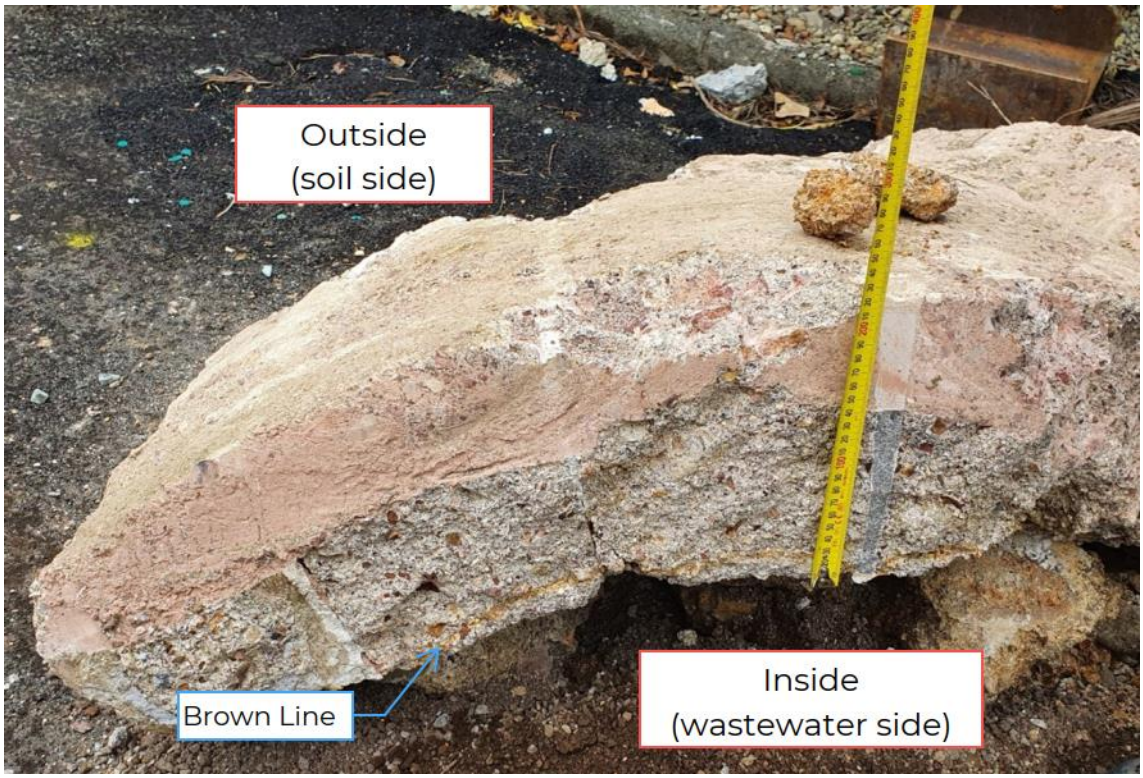

Figure 4:1 Typical block arch section after removal. Note the brown line indicating the extent of corrosion on the inside face

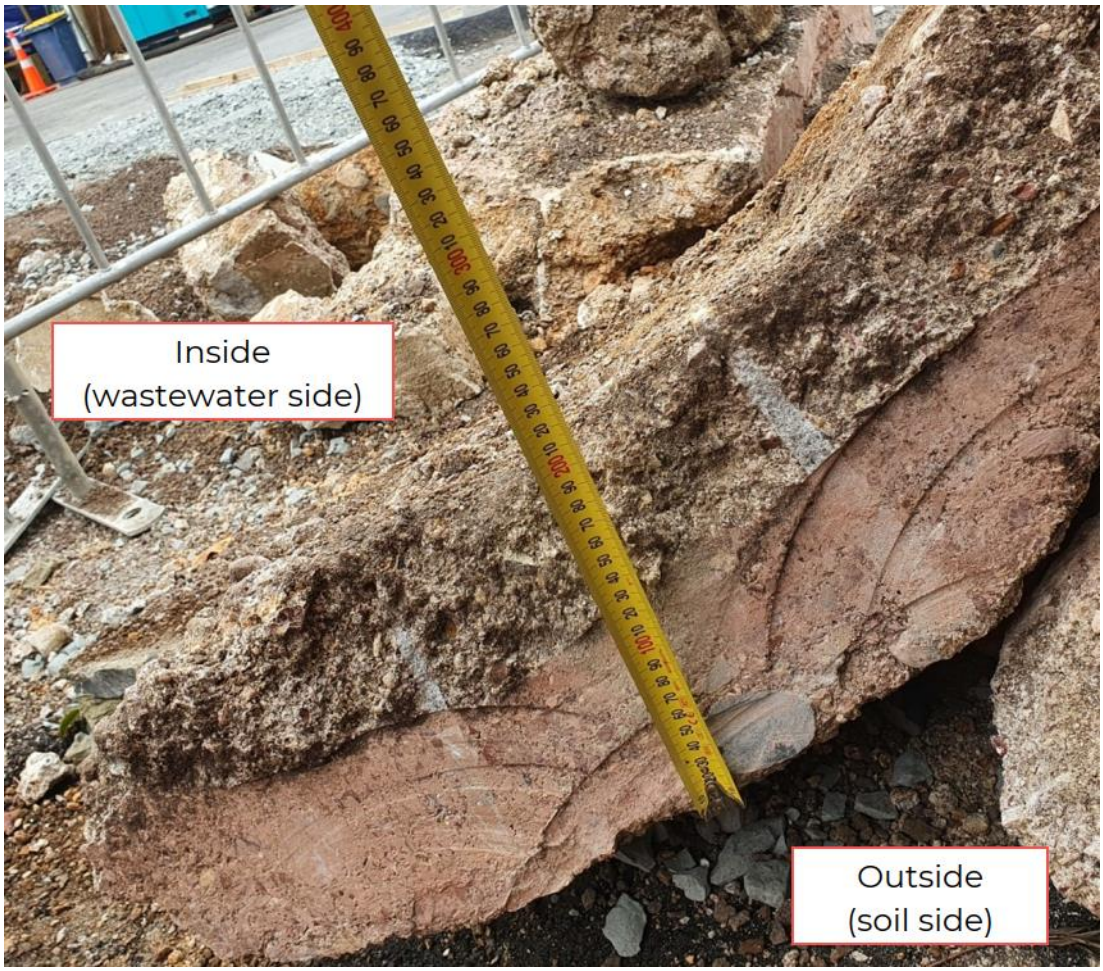

Figure 4:2 Weak blockwork after removal

4.2 COMMENTARY

4.2.1 CONDITION OF SEWERS

The condition grades assigned following WSP's review of the 2012 CCTV inspections (Grades 4 & 5) indicate that significant deterioration had occurred prior to 2012. For these grades the Conduit Inspection Reporting Code of Australia recommends that immediate action be taken to further investigate condition and assess risk (WSAA, 2020). This would involve activities like those undertaken in 2014 to investigate the section of OMS in Stanley St, i.e. walkthrough inspection, coring, and testing of pipe wall.

Corrosion increased between 2012 and 2019. This could not easily have been identified from the CCTV inspections but would have been apparent had the laser profiling undertaken in 2019 been analysed at the time and compared to the previous inspection. The increased corrosion would have been further cause to assess the risk of failure in more depth.

It appears from the drone footage undertaken after the collapse that the OMS has deteriorated further since 2019, particularly the section immediately downstream of the collapse. This is most likely due to the hydro- jetting undertaken to clear the blockage after the collapse.

4.2.2 BLOCK ARCH

Blockwork retrieved from adjacent to the collapse had variable strength. This is likely related to the original materials used for construction.

It is unclear why some of the blockwork was constructed from very weak concrete. One explanation is that when the OMS was constructed this location was used an access point for building the tunnel. When construction was completed, equipment was brought out through the opening and the arch formed from the outside. The weak section might have been a make-up piece constructed onsite to enable the arch to be closed. This has not been able to be confirmed, but it is plausible given that at the time the OMS was constructed the area was a natural low point.

The weak blocks could not have been identified from the CCTV and laser & sonar profiling. They might have been discovered if core samples had been taken as part of more in-depth investigation. However, it is quite possible that they would not have been picked up given they only cover a few metres of a pipeline that is 118m long, i.e. length of pipeline asset between manholes ORM016 & ORM015.

5 SINKHOLES AND SEWER FAILURES

5.1 SINKHOLES AND HOW THEY FORM

A sinkhole is a depression or hole in the ground caused by some form of collapse of the surface layer (Wikipedia, 2023). Sinkholes occur when an underground cavity forms and grows large enough to break through the ground surface, or the ground becomes unstable and collapses into the cavity. Sinkholes can form gradually or suddenly.

Sinkholes form naturally through (or a combination of):

— chemical dissolution of rock, e.g. in the case of the Waitomo where caves have been formed by the limestone substrate being dissolved by groundwater.

— erosion of soil by surface water, e.g. sea caves formed by wave action.

— erosion of soil by groundwater.

The groundwater memo in Appendix I discusses in more detail the formation of sinkholes through erosion of soil by groundwater. The likelihood of sinkholes forming is a function of the amount of groundwater movement and the nature of the soil, e.g. fine-grained soils like silt and clay are more prone to the development of sinkholes.

Human activities can accelerate the formation of sinkholes through erosion by groundwater increasing the movement of water, e.g. mining tunnels can cause sinkholes by providing a water path that increases the downward movement of groundwater, leaching out the ground above.

Underground pipelines can also increase movement of groundwater, accelerating the formation of sinkholes, through:

— groundwater leaking into pipes (infiltration) through cracks or other defects

— the fluid being conveyed by the pipe escaping (exfiltration)

— groundwater moving along the outside of pipes, e.g. along the pipe bedding or through voids around the pipe left during construction.

5.2 FAILURE MECHANISMS OF BLOCK SEWERS

The OMS consists of two components as described in Section 0 i.e. a concrete block arch and a cast in-situ concrete base. It is the concrete block arch that has failed at St Georges Bay Rd. This section describes the generic failure mechanisms and failure modes for block arch structures. Section 6 describes the specific factors that are likely to have led to the failure of the OMS.

5.2.1 ARCH STRUCTURES

Arches are compressive, self-supporting structures that are stabilised by the force of gravity pushing the blocks together. This makes them very stable, and they can support relatively large loads.

However, arches can fail in buckling if loads are not evenly balanced. For example, a sinkhole in the soil above one side of an arch could result in uneven loads being applied.

Also, arches are not able to support tensile loads. Upward forces applied to the underside of an arch may cause the blocks to separate. This could occur when a sewer is surcharged (as was possibly the case for the OMS during the January 2023 storm) if upward tensile forces exceed downward soil, groundwater, and live loads.

Arches formed from keystone (wedge shaped) blocks tend to be more stable than arches constructed from rectangle blocks (as appears the case in OMS). The wedge shape anchors the blocks together. Whereas rectangular blocks rely on the cement mortar to hold the blocks together. Degradation of the mortar can result in block displacement.

5.2.2 DETERIORATION OF BLOCK SEWER

As block sewers age the concrete blocks and the mortar between the blocks corrodes and weakens. The rate of deterioration is influenced by factors such as:

— Hydrogen sulfide (H_2S) – H_2S gas is produced in sewers under anaerobic conditions by sulfate-reducing bacteria. It is not corrosive to concrete. However, H_2S in the headspace above the sewer flow is then oxidized into sulfuric acid by microorganisms on the concrete surface, leading to concrete corrosion. The formation of H_2S in wastewater and its release is influenced by factors such as flow velocity, turbulence of the sewer flow, temperature, and detention time

— Strength of the concrete originally installed - Low strength or poorly placed concrete is more susceptible to corrosion.

The weakened concrete blocks and mortar may be further impacted by erosion caused by:

— Flow of wastewater in the pipe

— Infiltration and exfiltration passing through joints and cracks in the pipe wall

— Tree roots growing through cracks and joints.

Once the arch is weakened it may no longer be able to support soil and other loads. The load carrying capacity of the arch can be further reduced leading to collapse if:

— Blocks are displaced e.g. because of weakened mortar joints, due to tree roots putting pressure on blocks, or blocks are porous and become heavy from groundwater

— Voids are present above the arch causing uneven loading.

Other factors that can increase the likelihood of sewers collapsing include:

— Depth, i.e. increased soil loading

— Depth below groundwater, i.e. increased possibility of infiltration

— Ground type which impacts the loads that are transferred from the soil to the sewer and susceptibility of the soil to erosion and the formation of voids

— Ground movement e.g. shaking from earthquakes or settlement of underlying ground.

As a result of these factors there can be significant variance in the way that individual sewers behave and their rate of deterioration. Also, deterioration may not always be linear, and pipes can experience periods of rapid deterioration.

6 LIKELY FAILURE MECHANISM & POTENTIAL CONDITION OF OTHER SECTIONS OF THE OMS

6.1 LIKELY FAILURE MECHANISM

Based on the factors discussed in the previous sections it is likely that the failure was caused by the following factors acting together:

- General deterioration and weakening of the sewer over the 110 years that the OMS has been in service
- Exceptionally wet weather in 2023. The year was the wettest on record for Auckland. In the 9 months leading up to the collapse 50% more rain fell than the average for an entire year. Significant rainfall events include the Auckland Anniversary floods, Cyclone Gabrielle and heavy rainfall on 9 May 2023
- Weak blockwork at the location that collapsed. Some of the blocks retrieved after the collapse were a lot weaker than others. They had very little strength and crumbled when disturbed.

The likely failure mechanism of the OMS is:

- Deterioration – the block arch section of the OMS was slowly weakened over the 110 years since it was installed through a combination of corrosion and erosion of the internal surface.
  - Deterioration was observed from the 2012 & 2019 inspections and the section of pipe in Stanley St (that was rehabilitated in 2014).
- High sewer flows during the storms in January and February 2023 resulted in:
  - Further and relatively rapid erosion of the deteriorated concrete blocks and mortar joints
  - Wastewater seeping out into the surrounding soils through defects in the sewer pipe contributing to physical scouring of the soil above the pipe.
- Groundwater movement
  - Groundwater levels would have risen notably in January 2023 in response to the heavy rainfall and the surface flooding in the vicinity
  - When wastewater flows in the OMS receded, there would have been a head difference between the ambient groundwater level and the wastewater in the pipe. This likely led to increased seepage of groundwater into the pipe (infiltration). Fine sediment from the soil above the pipe could have been eroded, starting the formation of the sinkhole cavity, or increasing any existing cavities
  - The formation of cavities would have stabilised when the groundwater level dropped below the level of the cavities. However, the cavities would continue to grow when the process was repeated following the second and subsequent storms.

— **Excavation for installation of power cable to transformer –** this could have disturbed the sinkhole cavity further, causing it to grow and be visible at the ground surface. There is no indication, however, that the works triggered the formation of the sinkhole nor damaged the OMS

— **The sinkhole caused uneven loading on the block arch** which it was not able to withstand and eventually it failed under buckling.

The weaker blocks observed near the failed section most likely contributed to the sinkhole and collapse as they were:

— More susceptible to being eroded and dislodged by the high sewer flows in January and February 2023 which would have increased flow of groundwater and soil into the OMS and hastened the formation of the sinkhole

— Less able to withstand the uneven loading applied to the arch section of the OMS due to the sinkhole.

The very wet weather experienced in 2023 also contributed to the collapse by:

— Increasing wastewater flows in the OMS, causing the block arch to be fully exposed to flows which accelerated erosion of the blockwork and mortar

— Causing flooding above the OMS which increased the hydrostatic loading on the pipe. This increased flow of sediment ladened groundwater into the OMS starting the formation of the sinkhole cavity or increasing any existing cavities

— Repeated rain events causing fluctuations in groundwater loading which would have hastened the formation of the sinkhole.

Whilst it is possible that the sinkhole was caused by groundwater running along the outside of the OMS, the signs of infiltration observed from CCTV inspections indicate that groundwater seeping into the OMS is the more likely cause.

6.2 POTENTIAL CONDITION OF OTHER SECTIONS OF THE OMS

Review of the condition assessment covered in Section 4 indicates that the other sections of the OMS that were assessed (i.e. 1.6km from manhole ORM018 to ORM013) are in similar condition to the section that failed.

There are signs of deterioration due to corrosion and erosion. There are also indications that groundwater is infiltrating into the sewer, weakening joints, and providing a pathway for groundwater movement which is required for sinkholes to form.

It is therefore recommended that the section of OMS from ORM018 to ORM013 be scheduled for rehabilitation.

It is also possible that the remainder of the OMS is in similar condition.

It is therefore recommended that the following be undertaken to prioritise rehabilitation works on the portion of OMS that has been assessed and to determine the risk of failure for the remainder of the OMS:

— Complete CCTV and laser & sonar profiling to identify defects and determine the extent of deterioration

— Identify low points where tunnel portals for the construction of the OMS might have been located as there might be weak blockwork at these locations

— Undertake more in-depth condition assessment at low points and where there are concerns about the level of deterioration to determine the strength of blockwork. This could involve walkthrough inspection, coring, and testing of pipe wall

— Consider undertaking structural analysis of pipelines using finite element analysis to improve assessment of the likelihood of failure.

7 MAINTENANCE AND CONDITION ASSESSMENTS

This section covers:

— **Introduction**, outlining the role of condition assessment and the key steps for managing the condition of wastewater pipelines

— **Condition Inspection Techniques**, describing the techniques used by Watercare, outlining other available techniques, and commenting on the appropriateness of the inspections undertaken on the OMS

— **Condition Assessment Approach**, summarising Watercare's relevant asset management practices and how these are applied to the maintenance and condition assessment of Wastewater Transmission pipelines. Commentary is provided on the appropriateness of these practices.

7.1 INTRODUCTION

7.1.1 ROLE OF CONDITION ASSESSESSMENT

The aim of a condition assessment is to establish current condition, to identify the risk of failure and to enable proactive interventions to be undertaken to keep the risk of failure below tolerable levels.

In Section 5.2.2 it was noted that there are many factors that contribute to the deterioration of sewers which results in there being significant variation in the way that individual sewers behave and the rate at which they deteriorate. Deterioration is not always linear, and events can occur that can cause condition to rapidly decline.

Therefore, to target interventions appropriately it is important to understand the condition of individual assets.

7.1.2 KEY MANAGEMENT STEPS

The key steps for managing sewer assets are set out in Figure 7:1. These also apply to management of most other infrastructure assets. The steps are:

— Set priority for management/maintenance based on failure impact assessment

— Undertake condition inspection and assessment to determine actual state of assets

— Decide and undertake next steps which could involve scheduling future inspections, undertaking maintenance or renewing/rehabilitating assets.

Condition assessment does not alter the need to undertake maintenance or renewal/replacement works, rather it facilitates the mitigation of risk by helping to identify assets in need of maintenance or replacement so that works can be undertaken before they fail.

In some cases, it may be appropriate to skip condition assessment, going straight to rehabilitation or maintenance, e.g. if there is a high likelihood that the asset is in poor condition or if the consequence of failure justifies precautionary intervention.

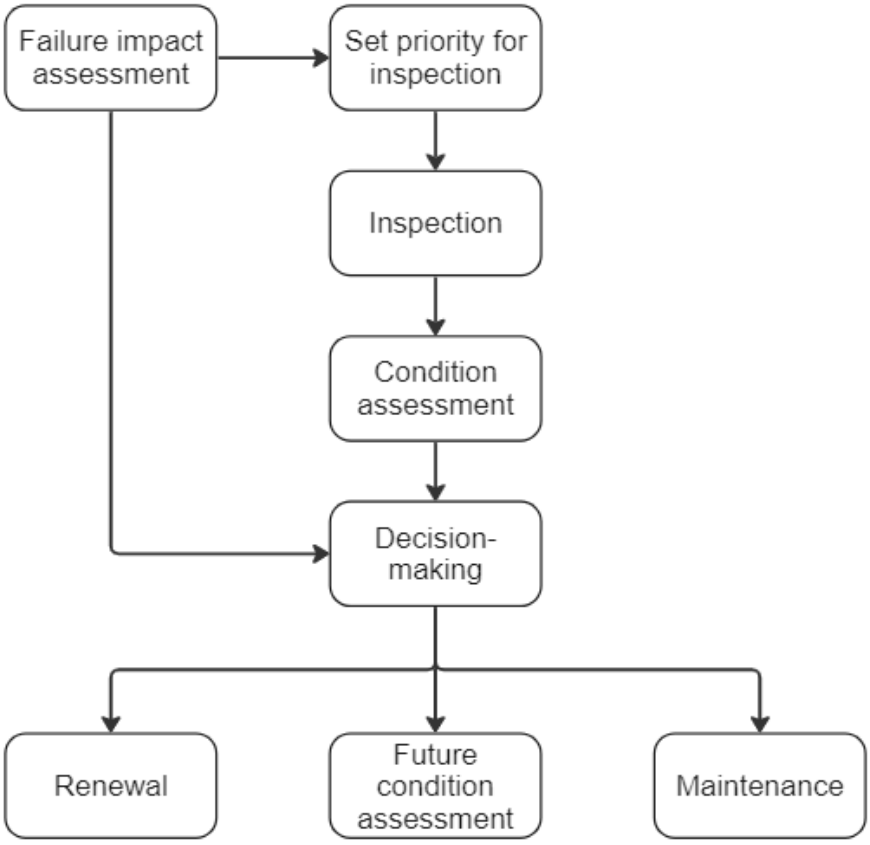

Figure 7:1 Steps for managing sewer assets (Zhao, McDonald, & Kleiner, 2001)

7.2 CONDITION INSPECTIONS

7.2.1 INSPECTIONS UNDERTAKEN ON TRANSMISSION PIPELINES

Watercare's standard practice is to inspect wastewater transmission pipelines every 5 years. More frequent inspections are undertaken on pipelines where there are concerns about condition.

Two sets of condition inspections have been undertaken on the OMS over the last 11 years, i.e. in 2012 and 2019. We note that these inspections occurred 7 years apart, rather than the standard 5-year interval. Refer to Section 4 and Appendix F for details of the inspections reviewed by WSP in the preparation of this report.

7.2.2 EXPLANATION OF METHODS USED

7.2.2.1 CLEANING

Prior to 2017 the OMS was cleaned with a plough prior to inspection.

As the plough moves down the sewer, a head of wastewater builds up behind it. Wastewater jets from a small aperture at its base. The jet of wastewater and turbulence from excess wastewater spilling over the plough scours debris downstream of the plough which is washed into the downstream grit chamber where it can be removed.

Cleaning makes it easier to identify defects when condition inspections are undertaken and provides the opportunity for the personnel who are required to travel down the sewer with the plough to observe the condition of the sewer and report on issues.

However, it presents health and safety concerns as staff are required to enter the confined space of the sewer where they could be exposed to hazardous conditions and rescue would be difficult. For these reasons use of the plough was stopped in 2017.

Watercare are currently reviewing practices for safe operation of the plough. Prior to the St Georges Bay Rd incident, they were planning to recommence ploughing within the next year, subject to being able address health and safety issues.

7.2.2.2 CONDITION INSPECTIONS ROUTINELY USED BY WATERCARE

Inspection typically involves CCTV inspection and laser & sonar profiling using an inspection unit like that shown in Figure 7:2.

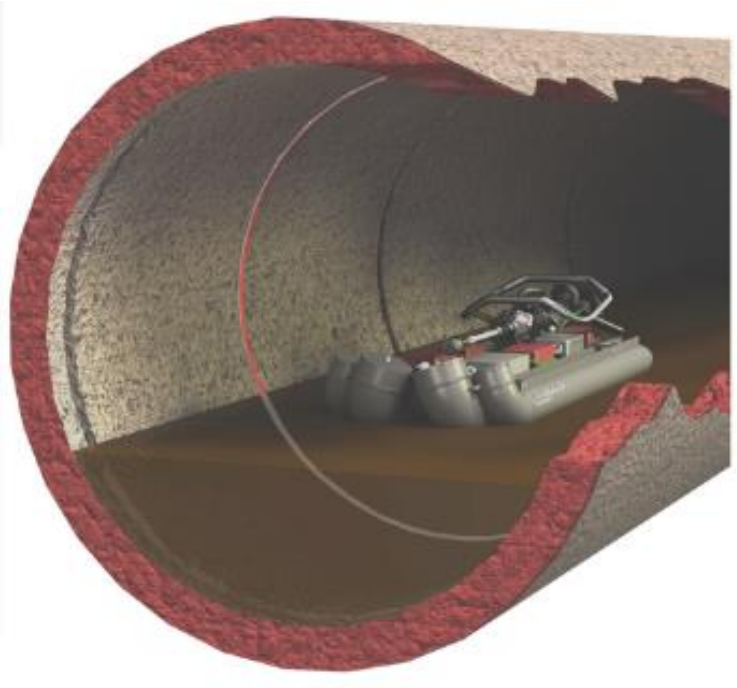

Figure 7:2 Pipe inspection unit (Kawasmi & Brown, 2019)

CCTV inspection provides a video showing the inside of the pipeline. Laser profiling measures the internal surface of the pipe above the waterline which is compared against a reference shape to quantify the depth of corrosion or protrusions. Sonar profiling measures the pipe surface below the waterline to quantify debris. These outputs are merged into an output like that shown in Figure 7:3.

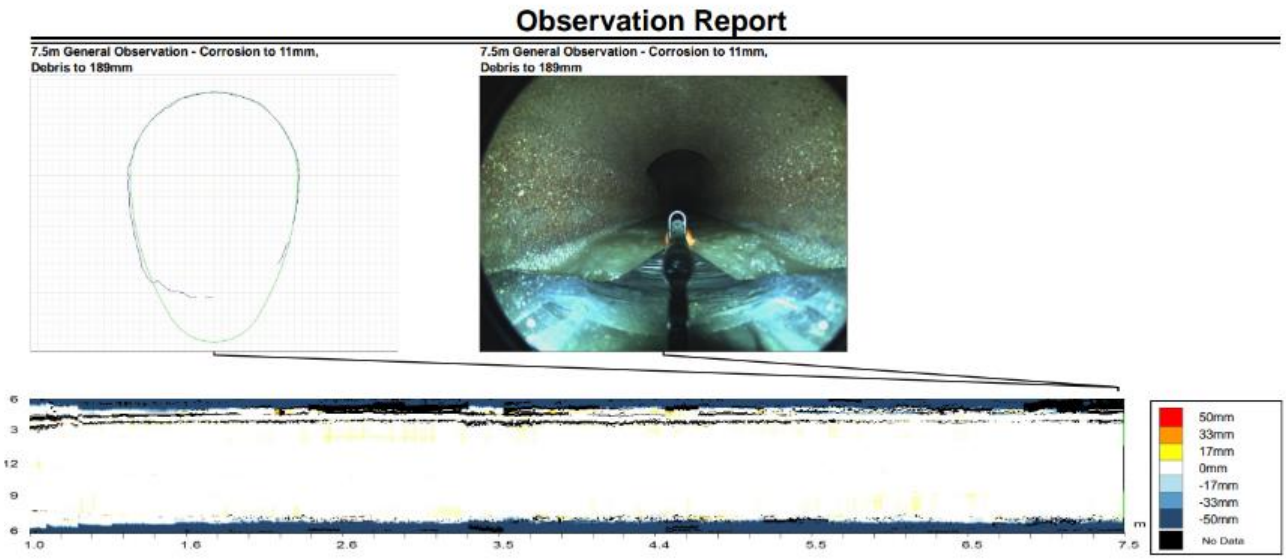

Figure 7:3 Pipe inspection observation report example (from the 2012 inspection of the OMS, supplied by WSL)

CCTV logsheets are also prepared in accordance with the 3rd Edition of the New Zealand Pipe Inspection Manual to record the defects and features observed (Water NZ, 2006). However, the logsheets prepared for the OMS do not record condition scores or condition grades, as is normal practice.

Also defects in brick sewers are not addressed well in the 3rd Edition of the New Zealand Pipe Inspection Manual. This has been improved to a degree in the 4th Edition of the Manual which was issued in 2021 (Water NZ, 2021) and in the Conduit Inspection Reporting Code of Australia (WSAA, 2020).

The practice over the last five years or so has been to undertake laser profiling and sonar profiling inspections but to only analyse the data to generate reports like those shown in Figure 7:3 if an issue is identified from the CCTV inspection. This practice risks overlooking corrosion of the pipeline wall as corrosion cannot easily be identified from CCTV alone.

The combination of CCTV inspection and laser and sonar profiling undertaken by Watercare on sewer transmission pipelines offers the following advantages:

— Provides a visual representation of the pipeline above the waterline

— Measures the internal dimensions of the pipeline and gives an indication of the extent of erosion in the pipe wall and of other defects.

However, it has the following limitations:

— The quality of the CCTV image can be poor, particularly in large pipes, which makes the identification of defects difficult. Refer Figure 7:4 for an example of CCTV image quality

— The CCTV camera only looks straight ahead. It is not possible to pan the camera towards the wall and zoom in on potential defects to get a better view

— Resolution of laser profiling measurements is not fine enough to identify corrosion of the mortar between the blocks

— Provides information on the inside of the pipe wall only. Information on the wall itself or what is behind the wall isn't provided. (This limitation applies to all CCTV inspections not just the units used for the Watercare inspections).

Recent upgrades by the manufacturer of the inspection units have attempted to address the first two points. The resolution of the image captured has been improved and the units now have multiple cameras, with cameras pointing at the pipe wall as well as straight ahead.

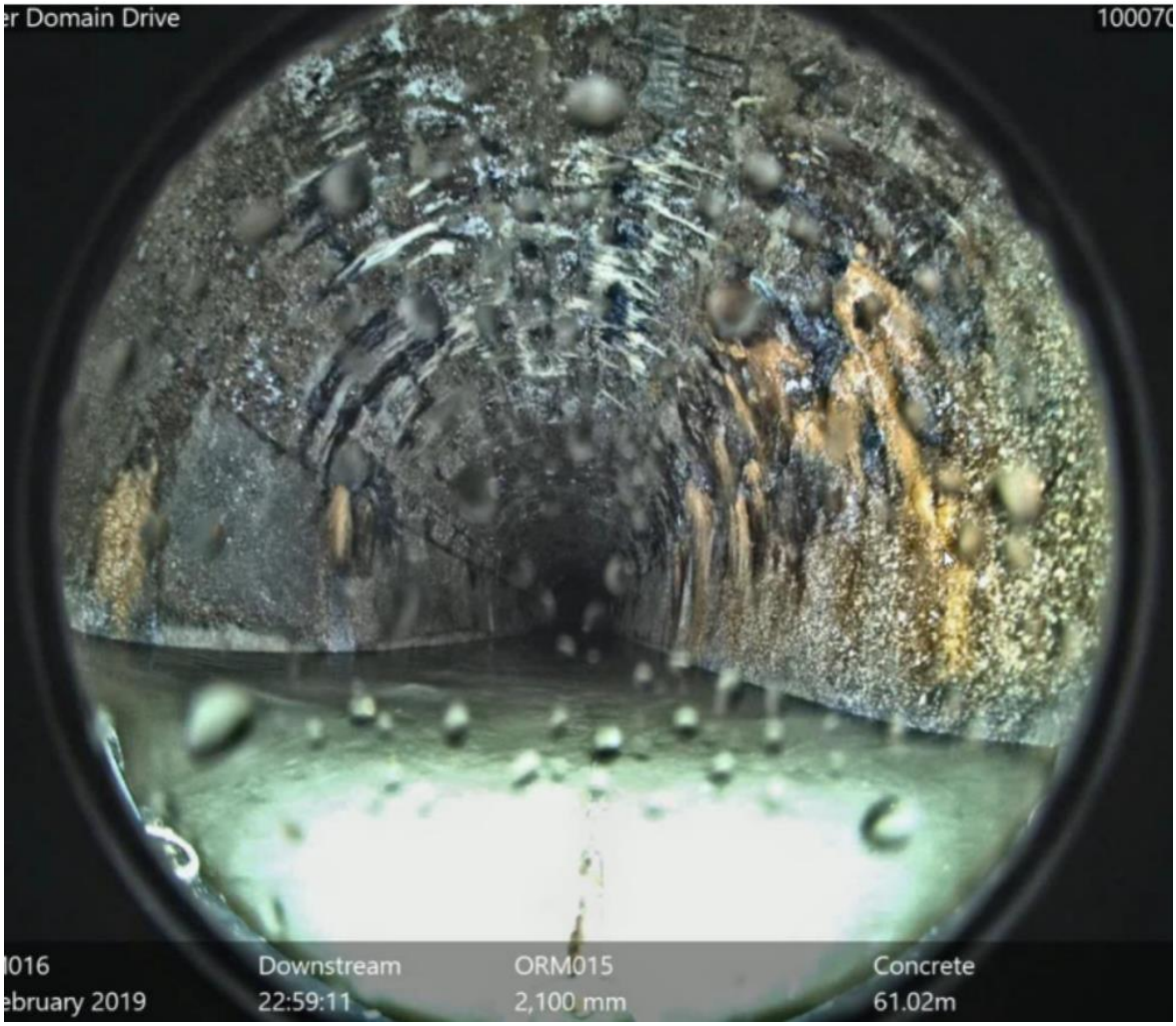

Figure 7:4 Sample CCTV output from OMS in 2019, shows the location near the collapse (supplied by WSL)

7.2.2.3 OTHER CONDITION INSPECTION TECHNIQUES

A summary of other potential condition assessment techniques is provided in Appendix J. This information was derived from the 'Guidelines for Condition Assessment and Rehabilitation of Large Sewers' (Zhao, McDonald, & Kleiner, 2001) and 'New Zealand Gravity Pipe Inspection Manual 4th edition' (Water NZ, 2021).

An emerging technology is the use of drones for the inspection of pipelines. This can be quicker and cheaper than traditional CCTV. However, CCTV and drone inspections only view the inside of the pipe wall.

There are limited techniques available for assessing the condition, strength and thickness of the pipe wall itself or for identifying voids behind the pipe wall. Intrusive techniques such as coring are generally required. These require staff to enter pipes which poses health and safety issues. Also, the testing itself can compromise the condition of the pipeline.

Non-intrusive techniques for assessing the pipe wall and identifying voids are being developed but are these are still in the experimental stage and not widely available. Current best practice is therefore to screen pipes using CCTV inspection, and potentially laser and sonar profiling, to identify areas of potential concern. Then to investigate areas of concern in more detail.

Sydney Water's condition assessment of the Bondi Ocean Outfall Sewer (BOOS) is an example of this approach. The BOOS is like the OMS being 2.4 metres high and constructed from bricks and concrete in an oviform. It was constructed in 1889 i.e. 20 years before the OMS. The following was undertaken:

- CCTV inspection and laser and sonar profiling was undertaken, and scans of the brick reviewed in accordance with Water Services Association of Australia (WSAA) conduit inspection code (WSAA, 2020). Key structural features that were relevant to the condition assessment were cracking, deformation, missing mortar, brick separation and missing bricks
- Laser profiles from previous inspections were also compared to estimate the extent of oviform deformation. Geotechnical records were reviewed to better understand the groundwater profile
- A structural assessment using finite element analysis (FEA) was then undertaken with assumptions for brick strength and ground conditions to assess the likelihood of failure and to determine whether renewal was appropriate.

7.2.2.4 COMMENTARY ON WATERCARE'S APPROACH

Watercare have been an early adopter of inspections using a combination of CCTV inspection and laser and sonar profiling for inspection of transmission pipelines. This reflects good practice, being aligned to practices adopted by other large utility providers. The approach provides a visual representation of the pipeline above the waterline and measures the internal dimensions of the pipeline enabling the extent of corrosion to be quantified.

Watercare's practice of inspecting transmission pipelines on 5-year cycle, with more frequent inspections if concerns are identified, is also in line with the approach used by other utilities.

However, the following improvements are recommended to reflect best practice:

- Timing of inspections
  - Undertake condition inspections after events that could trigger rapid decline in condition, e.g. after large storms
  - Improve the quality and resolution of the CCTV inspections to provide a clearer view of the pipe wall and aid the identification of faults. Either use a CCTV camera that can pan towards the pipe wall and zoom into issues. Or the latest CCTV and laser & sonar profiling units which have multiple cameras that look both straight ahead and towards the pipe wall.
- Inspection Practices
  - Reinstate cleaning of the OMS using the plough, subject to addressing health and safety concerns. This will improve the identification of defects as the personnel who are required to travel down the sewer with the plough will also be able to observe the condition of the sewer and report on issues. Watercare have already started investigating reinstating the use of the plough. It is also worth investigating whether suitable camera equipment could be installed to allow unmanned inspections while cleaning the line with the plough

- Produce detailed CCTV logsheets to record inspections. Assign Structural Condition Grades to provide an initial grading of condition and to identify the need for more intensive condition assessment and likelihood of failure analysis. Use a logging and grading system better suited to assessing defects in brick pipelines, e.g. the 4th Edition of the New Zealand Pipe Inspection Manual or the Conduit Inspection Reporting Code of Australia, both of which were published since the last inspections were undertaken on the OMS.

- Analysis of Condition Assessment
  - Change standard practice so that laser and sonar profiling inspections are analysed as a matter of course as opposed to only analysing profiling data if issues are identified from the CCTV inspection. This will improve the likelihood of identifying faults not picked up from the CCTV inspection
  - Compare laser profiling against previous inspections to determine the progress of corrosion as increased corrosion could signal a trigger for renewal.

7.3 CONDITION ASSESSMENT APPROACH

7.3.1 WATERCARE'S RELEVANT ASSET MANAGEMENT PRACTICES

Watercare's approach to the maintenance and condition assessment of Wastewater Transmission Pipelines is a component of their overall asset management system. As such, it should be considered in the context of the overall system. Watercare's approach to asset management is set out in the Asset Management Policy (WSL, 2023b) and Asset Management Maintenance Manual (WSL, 2023c). These documents are supplemented by Watercare's Wastewater Transmission Operations Manual (WSL, 2017).

7.3.1.1 ASSET MANAGEMENT POLICY

The Policy is a high-level document that describes "how good practice asset management contributes to Watercare's corporate priorities, including giving effect to Te Mana o te Wai" (WSL, 2023b).

The policy sets out Watercare's commitment to delivering on the following Asset Management Principles:

- Zero harm: Public water systems will not cause harm to members of the public, our staff, or service providers
- Delivering customer outcomes: We deliver valued services to customers that are safe, reliable, and affordable
- Meeting demand: Our networks and operations will efficiently meet future demand for water services
- Protecting our environment: Minimise the environmental impact of our assets and our operations, in a manner consistent with Te Mana o te Wai
- Becoming resilient: Our networks and operations are resilient, including to the increasing impacts of climate change.

7.3.1.2 ASSET MANAGEMENT MAINTENANCE MANUAL

The Asset Management Maintenance Manual "sets out important information and guidance for Watercare asset management" covering aspects such as standards, tools, and systems for asset management (WSL, 2023c). It defines corporate level asset management practices to be adopted across all asset classes as well as providing practices for management of some specific asset classes. Management of wastewater pipes is not covered specifically but the corporate level practices are applicable.

The content of the Manual is aligned to international best practice. It references international standards for asset management, service planning and collection and exchange of reliability and maintenance data. It contains content aligned to these standards.

The Manual adopts the principles of Reliability Centred Maintenance (RCM). Maintenance activities are prioritised based on the risk of failure, i.e. the criticality of assets and their likelihood of failure. Generic process for assigning criticality grades and assessing the likelihood of failure are defined.

7.3.1.3 TRANSMISSION OPERATIONS MANUAL

The Transmission Operations Manual sets out tasks and procedures to be performed to operate the Wastewater Transmission System (WSL, 2017).

The Transmission Operations Manual is aligned to the Asset Management Maintenance Manual. It recognises:

- The importance of pipeline asset condition and risk determination, stating that "a good understanding of the level of risk associated with the structural or operational state of pipes and related structures allows for timely intervention as required"
- The asset condition assessment programme is structured based on criticality
- Criticality grades have been assigned to individual wastewater transmission pump station and sewer assets
- Gravity sewers greater than 1500mm diameter, which covers most transmission mains, are allocated the highest Criticality Grade, i.e. Grade 5
- Inspections are scheduled so there is an even distribution of workload over a 5-year period. Individual pipe inspections are scheduled on an annual basis
- A decision to adjust the frequency of pipe inspections may be made based on the most recent inspection if the pipe condition of the pipe is questionable
- Quarterly asset investigation meetings (AIMs) are held to the review the results of inspections and risk determinations. A key outcome of the AIMs is to make decisions regarding both maintenance requirements, frequency of future inspections and recommendations for rehabilitation/replacement.

7.3.2 BEST PRACTICE

7.3.2.1 RISK BASED ASSET MANAGEMENT

Best practice is to adopt a risk-based approach to asset management of pipe networks focusing on those pipes with the highest consequence and likelihood of failure. This is what Watercare are currently doing. It is recommended that they continue to do so as it is neither practical nor cost

effective to manage all assets in the network the same due to the size of sewer networks. The Watercare Wastewater Network for example contains over 8,300km of pipes, 455km of which are transmission mains.

Figure 7:5 shows an extract from the New Zealand Wastewater Renewals Framework which illustrates the risk-based approach to the management of sewers (WSP for Quake Centre, 2018). Interventions, such as condition assessment, maintenance or renewals are prioritised based on the risk of failure, i.e. the combination of the consequence and likelihood of failure.

The intention of inspection and condition assessment is to identify the need for interventions to reduce the likelihood of failure so that the risk of failure remains below the maximum risk threshold.

Proactive interventions are undertaken on assets with a high consequence of failure, but assets with a low consequence of failure may be allowed to run to failure.

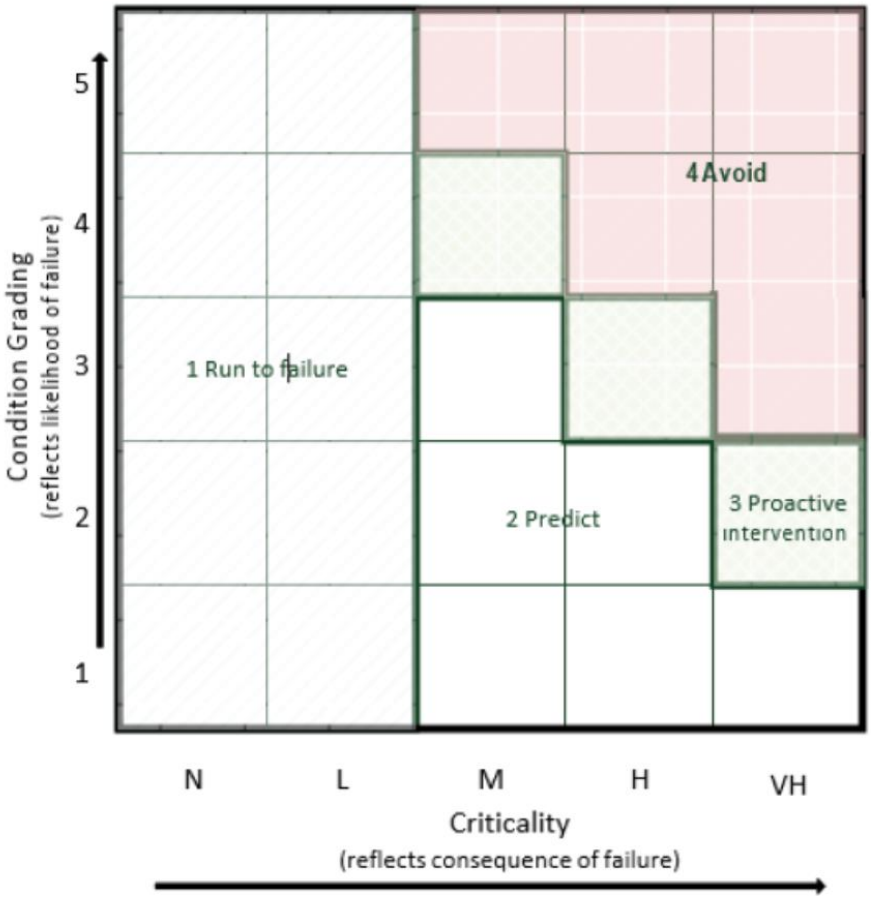

Figure 7:5 Example risk-based renewal matrix (WSP for Quake Centre, 2018)

As example of best practice, Wellington Water has established a Very High Criticality Assets framework which they use to prioritise the need for inspection and intervention. Each asset is assigned a criticality index which is an indicator of how critical the asset is, relative to other assets in the network, for delivering Wellington Water's Customer Service Goals. Asset management decisions such as the priority for undertaking interventions are based on this index. The process promotes transparency and enables a consistent comparison of assets and risks across the many asset types that make up Wellington Water's networks.

Watercare's Asset Management Maintenance Manual sets out a similar approach. However, the criticality of wastewater pipes is assigned solely on the size of the pipeline. It is recommended that

that the approach be updated to consider other aspects that might impact the consequence of failure or ease of repair, e.g. pipes under buildings, deep pipes, pipes near sensitive receiving environments.

7.3.2.2 DOCUMENTED PROCEDURES

A best practice management system includes documented procedures for condition assessment and maintenance management.

In practice, decisions on inspection and intervention may need to accommodate a mix of information that is well defined (e.g. cost, carbon and capacity), along with some information that is incomplete and some factors that are more loosely defined such as environmental, cultural and social impacts (IPWEA, 2020). These decisions can be made through a form of optimised decision making.

Documenting procedures and reasoning behind decisions plays an important role as it enables auditing of the decision quality and gives a starting point for refining the method over time to facilitate continuous improvement.

This an area that Watercare is improving.

Whilst the Transmission Operations Manual references other procedural documents, e.g. for undertaking condition inspections and determining risk scores, these documents were not able to be provided.

Most decisions are made by key staff based on their knowledge and experience which are then confirmed at the AIMs meetings. There is limited documentation describing the reasoning behind decisions.

A best practice management system would include a Condition Assessment Strategy which specifies:

- Condition inspections – the techniques to be used under various circumstances
- Timing of inspections, which depend on the consequence of failure, the previously observed condition of the asset and the forecast rate of deterioration
- Collection of other information that could influence the likelihood of failure, e.g. previous faults, presence of H2S, pipelines under OLFPs
- Processes for deriving likelihood of failure ranking from the condition inspections and other information collected
- Circumstances that may necessitate the need for additional inspections, e.g. after high flows that could cause rapid deterioration
- Trigger levels for undertaking more intensive investigations.

These procedures will feed into Interventions Strategy – that specifies the repairs and renewals to be undertaken and the urgency for undertaking these works based on the observed defects/condition and the consequence of failure. This is discussed in Section 8.3.3.

7.3.2.3 COMMENTARY ON WATERCARE'S APPROACH

Watercare are adopting a risk-based approach aligned to best practice. Wastewater Transmission Pipelines are classified as critical assets. They are regularly inspected and as far as practical they are proactively managed to avoid failures.

However, the following improvements are recommended to reflect best practice:

Consequence of Failure

— Update processes for determining the criticality of pipelines to include all factors that could impact the consequence of failure or ease of repair, e.g. pipes under buildings, deep pipes, pipes near sensitive receiving environments. This will highlight Transmission Mains that might warrant more frequent condition assessment or earlier renewal.

Likelihood of Failure

— Develop a Condition Assessment Strategy, as described in the previous section.

Watercare are in the process of improving the documentation of their processes in line with the recommendations above. They expect to be complete by July 2024.

8 RENEWAL PLANNING

This section covers:

— Introduction, outlining the purpose of renewals and the key steps for determining when to renew wastewater pipelines.

— Renewals programme, Watercare's planned renewal investments are summarised. Commentary is provided on Watercare's practices for prioritising wastewater pipelines for renewal.

— Renewal Methods – the methods currently used by Watercare are compared to typical worldwide industry best practice.

8.1 INTRODUCTION

8.1.1 PURPOSE OF RENEWALS

"Wastewater pipelines should be renewed when failures or the risk of failure can no longer be tolerated, and renewal is the most appropriate intervention" (WSP for Quake Centre, 2018).

For critical pipelines such as interceptor sewers the aim is generally to renew before failures occur because of the high consequence of failure. However, there will always be some residual risk of failure.

Renewals planning for critical assets should be underpinned by a robust programme to understand the condition of individual assets as there can be significant variation in the rate of deterioration of individual pipelines. Also, events may cause rapid deterioration of pipelines which might alter renewal priorities.

8.1.2 KEY MANAGEMENT STEPS

The key management steps for determining when to undertake renewals are the same as those set out in earlier in Figure 7:1, being.

— Determine the impact of failure i.e. consequence of failure

— Assess the condition to determine the likelihood of failure

— Intervene when the risk of failure (taking account of both the consequence and likelihood of failure) exceeds the maximum level that can be tolerated

— Determine the most appropriate intervention, i.e. repair only a section of the existing pipeline, replace with a new pipeline or rehabilitate the whole existing line.

Utilities are faced with a significant challenge when developing renewals programmes. If they renew assets too early, then they might be diverting funds away from investments in other works that will enhance environmental or community outcomes. If renewals are delayed too late, then the impacts of asset failure on the environment and communities could become unacceptable, and repair costs will increase (WSP for Quake Centre, 2018). Renewals planning must therefore be considered in the context of the overall asset management plan.

8.2 RENEWALS PROGRAMME

8.2.1 WATERCARE'S ASSET MANAGEMENT PLAN

Watercare's Asset Management Plan (AMP) sets out the programme of works that it intends to undertake over the 20-year period between 1 July 2021 to 30 June 2041.

Investment is targeted to provide the following beneficial outcomes:

- Catering for a growing Auckland
- Developing a resilient and diverse water system for tomorrow
- Protecting our environment
- Adapting to climate change impacts and reducing emissions
- Delivering value for money by running an efficient operation.

Over the next 20 years, Watercare intend to invest about $18.5 billion to build and maintain water and wastewater infrastructure. Over half of that amount (58%) will be invested into the wastewater network

Key Transmission Sewer Projects include:

- The 14.7km Central Interceptor Wastewater Tunnel to reduce overflows, help clean up local beaches and waterways and cater for growth
- The Northern Interceptor pipeline to divert flows currently treated by the Mangere WWTP to the Rosedale WWTP to support growth
- Construction of additional Transmission Sewers associated with the Western Isthmus Water Quality Improvement Programme to improve water quality in urban streams and the harbours.

These projects will also improve resilience of the wastewater system by diverting flows away from older sections of the network and improving operational flexibility. Watercare plan to invest $3.4b to improve wastewater catchments in the Auckland metropolitan area. The majority of this will be spent on improvements to transmission pipelines.

An additional $1.9b has been allocated to renew wastewater assets to improve system resilience. This includes replacing critical assets, such as transmission mains near the end of their useful lives and non-critical assets that have failed. $0.7b is planned to be spent in the next decade and a further $1.2b between 2031 and 2041.

The gross replacement cost for transmission wastewater pipelines is estimated to be $2.2b and $4.1b for local pipelines.

When establishing the investment programme set out in the AMP, Watercare have had to balance the desire to provide beneficial outcomes to its customers and the people of Auckland, the risk of failure of critical assets such as transmission sewer mains, against funding constraints due to debt restrictions and customer price impacts.

8.2.2 RENEWALS PROGRAMME

Watercare considers all transmission mains to be critical assets which they aim to proactively renew before failure.

In FY23 $10m was spent rehabilitating wastewater pipelines.

The renewals programme for the next 3 years is currently being developed. It is expected that there will be a significant uplift in renewals expenditure to circa $100m/yr. The majority of this will be invested into the renewal of transmission pipelines.

Practices for prioritizing renewals based on the consequence and likelihood of failure are being developed as part of this exercise.

8.2.2.1 RENEWAL OF THE OMS

Prior to the failure at St Georges Bay Rd, renewal of the OMS had been scheduled for the second tranche of work. Consideration was being given to starting its renewal in the next 3 years (expected before 2027), subject to budget constraints.

The intention was to first complete the Central Interceptor which will reduce the flows being conveyed by the OMS. This should provide more headroom for undertaking renewals and could potentially reduce deterioration of the OMS as it will flow full less often, reducing erosion to the arch section.

8.3 DISCUSSION OF WATERCARE'S RENEWALS PROGRAMME

8.3.1 GENERAL LEVEL OF INVESTMENT

When the Water Industry Commission for Scotland (WICS) reviewed Watercare's investment plan in 2020. They recommended that Watercare's investment to replace aging infrastructure be increased to 25% more than current levels to reduce ongoing maintenance and operations costs (WSL, 2021).

Watercare investment over the next 10 years is $827m lower than preferred and a further $1,338m of capital investment over the first four years has also been deferred. This includes deferral of a portion of planned network renewals, along with other improvements (WSL, 2021). Investment has been deferred to later than preferred due to its Auckland Council debt constraint.

8.3.2 WASTEWATER RENEWALS RATES

In recent years the rate of renewal of wastewater pipes has been low with only $10m being invested in FY2022, i.e. a renewal rate less than 0.1%/yr. However, the AMP forecasts a significant increase with $1.9b being allocated over the next 20 years.

This should enable 30% of the total network to be renewed (based on the gross replacement cost quoted in the AMP) and enable most of the wastewater pipelines installed prior to the 1960's to be renewed[5].

[5] 36% of the wastewater network was installed before 1960.

It is likely that a greater percentage of transmission mains will be renewed due to Watercare's proactive approach to renewal of critical pipes. Also, the percentage of network renewed may be higher if a high proportion of pipes are rehabilitated rather than replaced.

The planned rate of renewal compares favourably with renewal rates from European Countries. Data collected from 2017 to 2019 show renewal rates for European Countries between 0.1%/yr and 1.5%/yr with a median of 0.4%/yr (EurEau, 2021). Compared to Watercare's planned rate of 1%/yr

8.3.3 PROCESSES FOR SELECTING SEWERS TO RENEW

Annual renewal rate, however, is not a good measure for comparison. It does not for example take into consideration the age of the respective networks. Even asset age is not the best indicator of asset health and the need for renewal because asset deterioration is dependent on a range of factors such as the interaction between soil type and pipe material and the availability of asset management interventions (NIC, 2023).

The practices used for identifying and prioritising renewal of individual pipelines are of more importance as these ensure that the most appropriate pipes are selected for renewal. Watercare are in the process of documenting these practices and using the practices developed to identify a prioritised list of pipelines for renewal. This is expected to be completed by July 2024.

As discussed in Section 7.3.2.1, best practice is risk based. For critical pipelines with high consequence of failure, such as wastewater transmission mains, the aim is to undertake renewals before failures occur. This requires a good understanding of the condition and likelihood of failure of individual pipelines, i.e. the condition assessment practices outlined in Section 7.

A best practice management system would also include a renewals intervention strategy that specifies the repairs and renewals to be undertaken and the urgency for undertaking these works based on the observed defects/condition and the consequence of failure.

Triggers for renewal would be established from analysis of individual pipelines, which for block or brick-built pipelines could include using finite element analysis to determine, for example, the extent of pipe wall deterioration that can be tolerated under various loading conditions. Sensitivity to uncertainties such as block strength and historic construction practices should also be considered. This approach was adopted by Sydney Water for renewal of the BOOS sewer, refer Section 7.2.2.3.

8.3.4 COMMENTARY ON WATERCARE'S RENEWAL PROCESSES

To reach best practice the following are recommended:

- Renewals interventions strategy be documented that specifies the repairs and renewals to be undertaken and the urgency for undertaking these works based on the observed defects/condition and the consequence of failure. This will improve transparency of renewals decisions
- For block and brick-built lines, consider using structural analysis of pipelines using finite element analysis to determine, for example the extent of pipe wall deterioration that can be tolerated under various loading conditions. Sensitivity to uncertainties such as block strength should be considered. This will improve assessment of the likelihood of failure and enable the setting of trigger levels for intervention
- Develop a prioritised list of pipelines for renewal based on observed condition and the triggers set out in the Renewals Intervention Strategy.

8.4 RENEWAL METHODS

There are two generic approaches to renewal of transmission sewers, being:

— Replacement – installing a new sewer to replace the existing sewer. This has the advantages in that the new sewer can be installed on a more favourable alignment to the existing and its size can be increased. However, installing large transmission sewers in built up areas can be complex and expensive. Installation by tunnelling is generally required

— Rehabilitation – local repair or installing a pipe (a liner) of some form inside the existing pipe. This can be cheaper and less disruptive than replacement. The new pipeline can be designed to either withstand all the loads expected to be applied, independent of the existing pipeline, or the new and existing pipe can be designed to work together as a system.

There are two main types of rehabilitation:

— Close-fit lining where the outside of the liner is in contact with the existing pipeline

— Slip Lining, where the outside diameter of the pipeline installed is smaller than the diameter of the existing pipeline.

Rehabilitation of reticulation sewers is fairly common practice in New Zealand albeit it is specialist work. However, rehabilitation of transmission sewers is more complex due to:

— Large diameters – Increases the thickness and weight of liner to be installed

— Shape – liners for oval and egg-shaped sewers are more complex to design and some techniques are only suitable for circular sewers

— Long lengths between manholes

— Large flows – extensive bypass pumping is required for installation of some techniques.

Common techniques for rehabilitation of transmission sewers are described in the following sections. Most of these techniques are available in New Zealand, however in some cases they have only been used on only a few projects.

8.4.1 CIPP LINING

Cured-in-place lining (CIPP)is a “close fit” lining technique that has been used around the world for over 50 years. Sections of Watercare’s Eastern Interceptor have been rehabilitated using CIPP liners.

Whilst several variants are available, the common feature is the use of a fabric tube impregnated with a resin. The tube is inserted into the existing pipeline and inflated against the pipe wall, then cured (refer Figure 8:1). Curing may be by re-circulating hot water or steam. Some variations use ultra-violet light for curing.

Bypass pumping of wastewater flows is required as the existing pipeline is blocked during installation.

Cured-in-place liners can be manufactured to conform to almost any shape of pipe, making them suitable for lining of non-circular, e.g. ovoid cross-sections.

Pipes up to 2.7m diameter have been rehabilitated using CIPP although installation of CIPP liners in pipes greater than 1.2m is not common. The weight of the liner can be

the limiting factor influencing the maximum length and liner thickness that can be installed. The need for bypass pumping can also be a limiting factor.

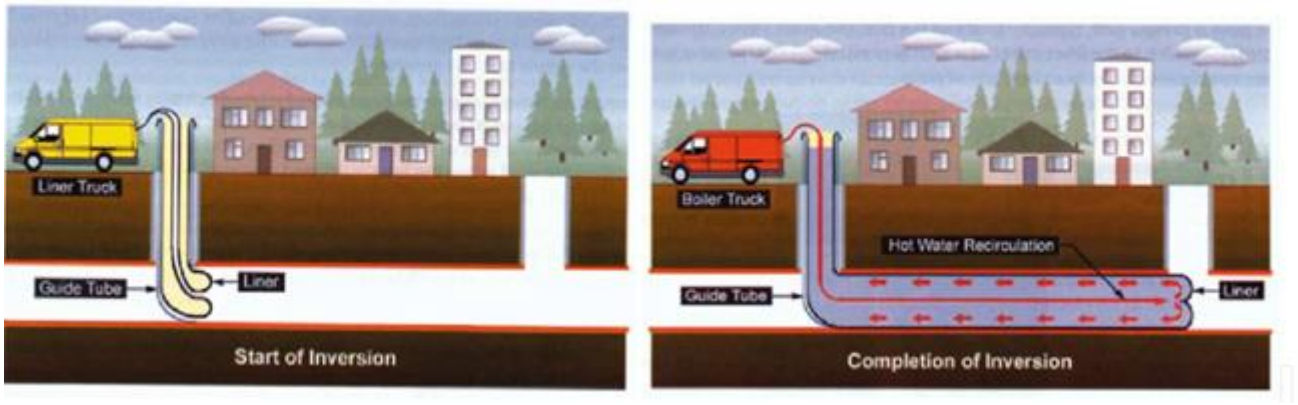

Figure 8:1 Overview of CIPP Process (Hot Water Cured). Figure from ISTT (International Society for Trenchless Technology)

8.4.2 SPIRAL WOUND LINING

A single strip of PVC is spirally wound into the existing pipeline using a patented winding machine, see Figure 8:2. The edges of the strip interlock to form a continuous liner inside the host pipe. The annulus between the host pipe and liner is typically filled with grout.

Spiral wound liners are suitable for lining circular pipes up to at least 1.8m diameter. A range of liner profiles with varying stiffnesses are available to provide liners that meet structural design specifications.

In pipes greater than 1000mm, the winding machine travels down the pipeline. Personnel are required to enter the pipe to change over liner spools, i.e. approximately every 10m of lining. Flow can pass through the liner during installation, avoiding the need for bypass pumping.

Portions of Watercare's Wairau Transmission sewer as well as other sewers have been rehabilitated using Spiral Wound Lining.

Figure 8:2 Spiral bound lining technique

The lining manufacturer has developed a technique for rehabilitation of non-round shapes such a box and arch shapes that uses a guide-frame constructed to mirror the pipeline's shape. These shapes can be anything from a box, horseshoe, teardrop, arch, etc. However, this is not currently available in Australia or New Zealand and it is unclear how successful the technique is in practice.

8.4.3 SEGMENTAL SLIP LINING

Segmental slip lining entails pushing segments of new pipeline into the old one, see Figure 8:3. The technique is suitable for rehabilitation of both circular and non-circular pipes. The annulus between the host pipe and liner is filled with grout after installation.

Segments are typically manufactured from Glass Reinforced Plastic (GRP) with the new segments matching the shape of the host pipe.

Pipe segments can be inserted during active sewer flow, avoiding the need for bypass pumping.

It is normally necessary to excavate the launch pit to provide enough space for jacking equipment. 500m or more of liner can be installed from a launch pit (Channeline International, 2011). Although bends or variations in the internal dimensions of the pipe being lined may reduce the length of installation.

The technique was used to rehabilitate the OMS at Stanley St.

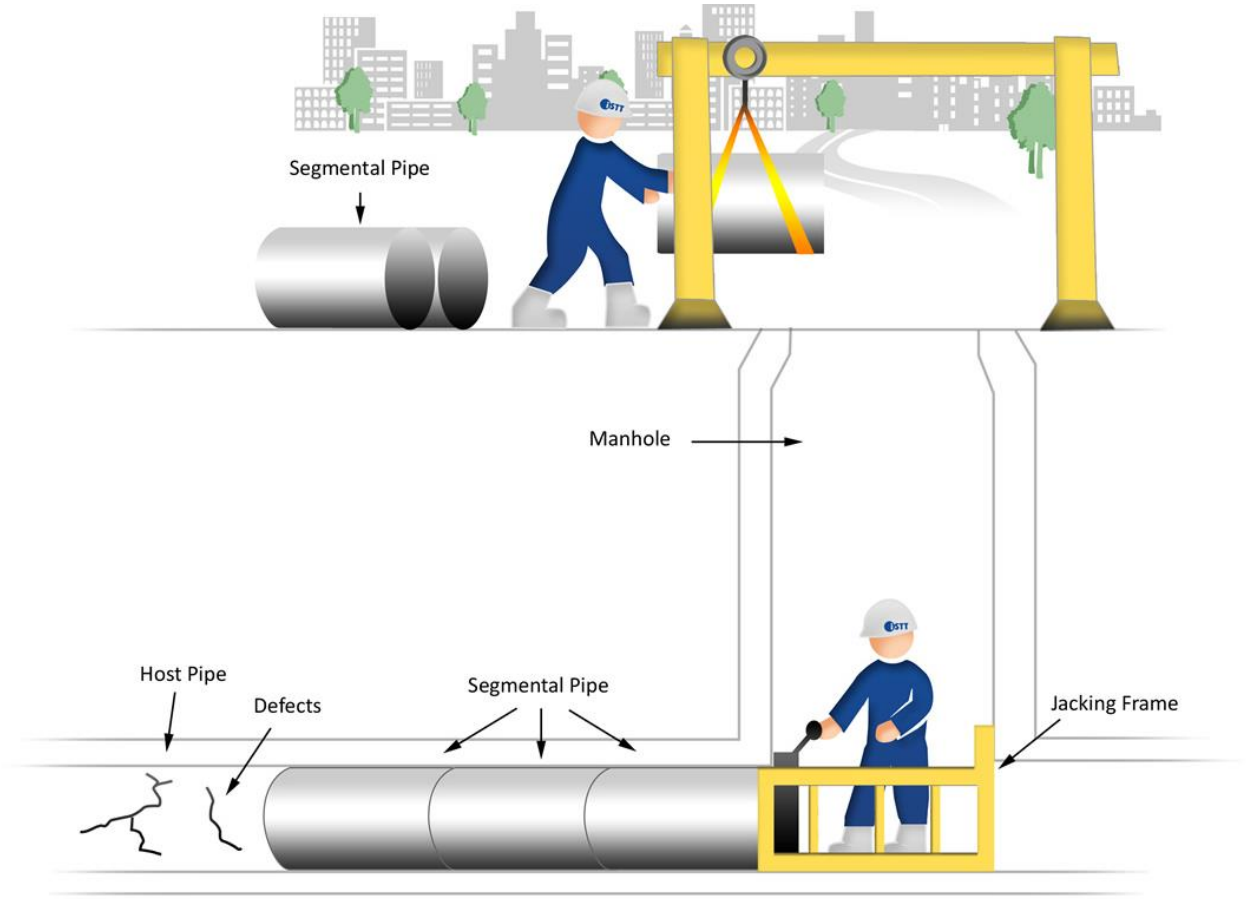

Figure 8:3 Segmental slip lining technique

8.4.4 PANEL LINING

Pre-formed panels are fabricated to fit closely to the interior surface of the pipe or structure to be lined and then are adhered to that interior surface. The technique is suitable for rehabilitation of circular and non-circular sewers between 1.2m and 3m diameter.

Personnel are required to enter the sewer to install the panels.

As far as we are aware, this technique has not been used in New Zealand.

8.4.5 SPRAYED LININGS

Inorganic or polymer products are sprayed onto the inside surface of the pipeline. When cured the sprayed material can act as a repair to restore or improve the strength of the structure, and as a protective barrier to slow or prevent further corrosion and wear. Most sprayed materials can also be trowelled on or cast if the composition is adjusted.

Personnel are required to enter the pipeline during installation of sprayed linings. Sprayed linings can't typically be applied where there is running water.

Sprayed concrete can range from relatively low specification shotcrete, through to specialist engineered concrete mixes that have high strength and faster setting times than conventional concrete. Corrosion resistance is similar to conventional concretes and a protective coating may be needed in corrosive environments.

Geopolymer (alumino silicates) are much like a synthetic stone when set. They provide a fast-setting repair and coating that is strong and very corrosion resistant.

Calcium aluminate cement (CAC) is a specially engineered material that has a faster strength gain and better corrosion resistance to wastewater than conventional concrete. Sections of the OMS in Stanley St were rehabilitated using CAC.

There are many types of sprayed polymer systems, some of which incorporate reinforcing fibres. Polymer coatings are typically very flexible compared to concrete and similar materials (which makes them good where movement can't be avoided) and they can be very resistant to corrosion. and cure times can be fast. However, polymer coatings may need dry and clean conditions to bond effectively, and some do not cure well at lower temperatures.

8.4.6 SUMMARY

The various rehabilitation techniques are summarised in Table 8:1.

Table 8:1 Summary of pipe rehabilitation techniques

Technique	Structural Rehabilitation	Shape	Close-fit	Person Entry	Bypass Pumping Required
CIPP	Yes	All	Yes	No	Yes
Spiral Wound Lining	Yes	Circular	No	Once or twice per day	No
Segmental Slip Lining	Yes	All	No	No	No
Panel Lining	Yes	All	No	Yes	Yes
Sprayed linings	Possibly [1]	All	Yes	Yes	Yes

Note 1. Sprayed linings can be applied as protective coatings or as structural linings.

The most appropriate techniques for rehabilitating transmission sewers will generally be:

— Non-circular pipelines – Segmental Slip Lining

— Circular pipelines – either Segmented Slip Lining or Spiral Wound Lining.

This is general advice. A full options assessment should be undertaken to select the most appropriate rehabilitation technique for each project.

9 SUMMARY

9.1 CONCLUSIONS

9.1.1 LIKELY CAUSE OF SINKHOLE AND SEWER COLLAPSE

The collapse occurred in the block arch portion of the sewer. It is likely that it was caused by a combination of

- **Deterioration** and weakening of the sewer over the 110 years that the OMS has been in service
- **Weak blockwork at the location that collapsed.** This blockwork would have been more susceptible to erosion and dislodgement and be less able to withstand the forces applied to the sewer
- **Exceptionally wet weather in 2023** which increased wastewater flows in the OMS and resulted in flooding and raised groundwater levels in the vicinity of the collapse.

The likely failure mechanism is:

- The internal surface of the sewer slowly deteriorated through a combination of corrosion and erosion
- High flows of wastewater in the OMS during the storms in 2023 caused further and relatively rapid erosion of the deteriorated concrete blocks and mortar joints. It is possible that some blocks were dislodged
- Groundwater infiltration into the OMS increased due to the deteriorated condition and the increased hydrostatic loading from the raised groundwater and flooding caused by the wet weather
- Infiltrating groundwater eroded fine soil particles from around the OMS causing cavities to form
- Fluctuating groundwater levels due to the repeated wet weather caused the cavities to grow and a sinkhole to form.
- Excavation for the power cable disturbed the sinkhole cavity, causing it to become visible at the ground surface
- The block arch was not able to withstand the uneven loading caused by the sinkhole. Eventually it failed under buckling and the material above it fell in and blocked the OMS.

9.1.2 REPAIR WORKS

Watercare stabilised the sinkhole and installed bypass pumping as emergency repair works.

Bypass pumping to convey wastewater around the collapsed section and avoid wastewater being discharged directly into the harbour during dry weather was installed within three weeks of the collapse. The pumping capacity of the temporary arrangement is comparable to some of the largest pumpstations in Watercare's network which normally take several years to design and construct.

The capacity of the temporary arrangement was limited, however, by the availability of pumps, the space required to site pumps, noise and vibration impacts and hydraulic constraints.

Installation of the bypass pumping enabled the collapsed section to be exposed and strengthening works around the collapse to be completed in December 2023.

Watercare intend to rehabilitate the section of OMS that collapsed using segmented slip-lining. This is expected to be completed in early 2024.

9.1.3 CONDITION INSPECTION PRACTICES

Watercare's practice of inspecting interceptor sewers every 5 years with inspections at tighter frequencies where there are concerns about the condition of particular pipelines is aligned to best practice.

The use of laser and sonar profiling combined with CCTV can be considered best practice and more sensitive inspection systems are available or will become available in the near future. The main limitation of these inspection techniques is that they only provide visual information of the inside of the pipe. Non-intrusive techniques for assessing the pipe wall and identifying voids around the pipe are still in the experimental stage and not widely available.

Current best practice is therefore to screen pipes using CCTV inspection, preferably combined with laser and sonar profiling. Then to investigate areas of concern in more detail using intrusive techniques such as coring and undertaking structural assessment using finite element analysis to assess the likelihood of failure.

As deterioration does not always proceed at a linear rate it is important to compare inspections to identify accelerating rates of deterioration. This is more valuable where good supporting information about the current and historic operating conditions, construction and surrounding environment is available.

9.1.4 CONDITION OF OMS

Significant deterioration has occurred along the 1.6km of the OMS that was assessed during the preparation of this report. There are indications that the rate of deterioration has increased since 2019. More in-depth investigations are required (as described in the previous section) to fully assess pipeline condition and likelihood of collapse.

It is likely however that some sections of blockwork have less than 100mm of competent concrete remaining, compared to the original thickness of 228mm.

Even if more in depth investigations had been undertaken back in 2019 when the last proactive inspections were completed, it is quite possible that the weak blockwork which may have contributed to the collapse might not have been picked up given the blocks only cover a few metres of pipeline section that is 118m long, i.e. length of pipeline asset between manholes ORM016 & ORM015.

9.1.5 PLANNED RENEWALS

Whilst Watercare's investment into renewal of wastewater pipes has been low over recent years, a significant increase in renewals is planned. The latest Asset Management Plan has allocated $1.9b over the next 20 years. This investment is less than and later than Watercare's preferred investment profile due to its Auckland Council debt constraint. However, it is more than double the median amount currently being spent by European Countries.

But it is important that the money available for renewals is invested in the right assets at the most appropriate time, particularly for wastewater interceptor pipelines where there is a high consequence of failure. This requires assessment of information collected from condition inspections and other sources to determine the likelihood and consequence of failure.

Watercare's corporate level policies and practices are aligned to international standards. A risk-based approach is adopted which prioritises investment into assets with high consequence of failure like transmission main sewers.

However, guidance on how these corporate level documents are applied to the management and renewal of wastewater systems is still being developed. Many decisions are made by key staff based on their knowledge and experience.

9.1.6 RENEWAL TECHNIQUES

A review of techniques for renewal of interceptor sewers has been undertaken which identified that in general:

- Segmental Slip Lining will generally be the most appropriate for lining non-circular wastewater transmission mains
- For circular wastewater transmission mains either Segmented Slip Lining or Spiral Wound Lining will generally be the most appropriate.

As this is general advice, a full options assessment should be undertaken to select the most appropriate rehabilitation technique for each project.

These techniques are available in New Zealand, albeit there is limited experience in their use in New Zealand for renewing transmission sewers.

9.2 RECOMMENDATIONS

9.2.1 CONDITION INSPECTION PRACTICES

It is recommended that Watercare continue to inspect transmission sewers every 5 years using CCTV and laser and sonar profiling with inspections being undertaken on tighter frequencies on pipelines where there are concerns about condition. However, to improve identification of condition issues it is recommended that the following be adopted:

- Timing of inspections
  - Undertake condition inspections after events that could trigger rapid decline in condition, e.g. after large storms.
- Inspection Practices
  - Improve the quality and resolution of the CCTV inspections to provide a clearer view of the pipe wall and aid the identification of faults. Either use a CCTV camera that can pan towards the pipe wall and zoom into issues or use the latest CCTV and laser & sonar profiling units which have multiple cameras that look both straight ahead and towards the pipe wall
  - Reinstate cleaning of the OMS using the plough, subject to addressing health and safety concerns. This will improve the identification of defects as the personnel who are required to travel down the sewer with the plough will also be able to observe the condition of the sewer and report on issues. Watercare have already started investigating reinstating the use of the plough. It is also worth investigating whether suitable camera equipment could be installed to allow unmanned inspections while cleaning the line with the plough
  - Produce detailed CCTV logsheets to record inspections. Assign Structural Condition Grades to provide an initial grading of condition and to identify the need for more intensive condition assessment and likelihood of failure analysis. Use a logging and grading system better suited to assessing defects in brick pipelines, e.g. the 4th Edition of the New Zealand Pipe Inspection Manual or the Conduit Inspection Reporting Code of Australia, both of which were published since the last inspections were undertaken on the OMS.
- Analysis of Condition Assessment
  - Change standard practice so that laser and sonar profiling inspections are analysed as a matter of course rather than only if issues are identified from the CCTV inspection. This could identify faults not picked up from the CCTV inspection
  - Compare laser profiling against previous inspections to determine the extent and severity of corrosion that could signal a trigger for renewal.

9.2.2 CONDITION ASSESSMENT AND RENEWAL PRACTICES

It is recommended that Watercare continue with a risk-based approach to the management of assets. This approach prioritises condition assessment and renewal of assets with a high consequence of failure like transmission sewers.

However, to help ensure that the condition assessment and renewal works are undertaken on the the right assets at the most appropriate time, it is recommended that Watercare develop the guidance documents and practices outlined below for the management of interceptor sewers.

Documentation of procedures and the reasoning behind decisions will also help auditing of decision quality and give a starting point for refining practices over time to facilitate continuous improvement.

- Consequence of Failure
  - Update processes for determining the criticality of pipelines to include all factors that could impact the consequence of failure or ease of repair, e.g. pipes under buildings, deep pipes, pipes near sensitive receiving environments. This will highlight transmission mains that might warrant more frequent condition assessment or earlier renewal.
- Likelihood of Failure
  - Develop a Condition Assessment Strategy that specifies:
    - Condition inspections – the techniques to be used under various circumstances
    - Timing of inspections, which depend on the consequence of failure, the previously observed condition of the asset and the forecast rate of deterioration
    - Other information be collected, e.g. past issues in the vicinity of the sewer
    - Processes for deriving likelihood of failure ranking from the condition inspections and other information collected
    - Circumstances that may necessitate the need for additional inspections, e.g. after high flows that could cause rapid deterioration
    - Trigger levels for undertaking more intensive investigations.
- Renewals Processes
  - Renewals interventions strategy be documented that specifies the repairs and renewals to be undertaken and the urgency for undertaking these works based on the observed defects/condition and the consequence of failure. This will improve transparency of renewals decisions
  - Consider undertaking structural analysis of block and brick-built sewers using finite element analysis to determine the extent of pipe wall deterioration that can be tolerated under various loading conditions. Sensitivity to uncertainties such as block strength should be considered. This will improve assessment of the likelihood of failure and enable the setting of trigger levels for intervention
  - Develop a prioritised list of pipelines for renewal based on observed condition and the triggers set out in the Renewals Intervention Strategy.

It is understood that Watercare are in the process of improving the documentation of their processes in line with the recommendations above. They expect to be complete by July 2024.

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APPENDIX A: TERMS OF REFERENCE

1. Purpose

On the 26th of September, Watercare was alerted to the formation of a large sinkhole over the Ōrākei Main Sewer (OMS) at 79 St Georges Bay Road in Parnell.

The OMS is a 2.1 - 2.4-metre diameter egg-shaped sewer constructed in 1911. The sewer has a precast concrete base and a brick arch.

The sinkhole grew over the next 24 hours and on the 27th of September the sewer collapsed, and the OMS became fully blocked. Further site investigation showed the blockage spanned 25 metres and is comprised mainly of large rocks and clays. The roof of the OMS collapsed over four metres.

The OMS is currently discharging all flows via several EOPs (Engineered Overflow Points) with the majority of flow discharging via an EOP at Mechanics Bay and another at Daldy Street.

This engagement will review the incident and determine the cause of the failure mode. In addition, the review will include an assessment of Watercare's current condition assessment planning and maintenance practises, asset management procedures, AMP planning process for rehabilitation works on Ōrākei Main Sewer.

2. Terms of reference

The scope of incident review shall be undertaken in three parts and will consider the current incident failure analysis and a wider review of Watercare's current asset management practises.

The three parts of the assessment are as follows:

Part 1: Site investigation and failure review

- Review of all available data from incident (including a site visit to view temporary work, review of CCTV etc.)
- Explanation of failure mechanisms for interceptor sewers like the Ōrākei Main Sewer
- Definition of sinkholes including an explanation of how they form both naturally and around infrastructure.
- Review of available geotechnical data at the failure site (79 St Georges Bay Road)
- Review of the stormwater management at 79 St Georges Bay Road
- Review of available as-built and condition assessment data for the Ōrākei Main Sewer
- Development of a theory for the cause of the sinkhole at 79 St Georges Bay Road and a failure mechanism of the Ōrākei Main Sewer
- Assessment of any proven or potential damage to the Ōrākei Main Sewer outside of the immediate failure site
- Review of the over pumping set up at Weld Street relieving surcharge on the Ōrākei Main Sewer.

Part 2: Maintenance and condition assessment review

- Review of the historical wastewater transmission planned maintenance and condition assessment programs with a brief explanation of the methods used.
- Review of all planned maintenance and condition assessment activities undertaken on the Ōrākei Main Sewer over the last 10 years
- Commentary on the appropriateness of the planned maintenance and condition assessment programmes and a gap analysis between Watercare's current practice and typical worldwide best practice for large diameter brick sewers. A commentary should be added if there are any new or emerging technologies.

Part 3: Rehabilitation and renewal planning review

- Review of Watercare's current capital programme for wastewater transmission sewer rehabilitation including methods for prioritisation
- Provide commentary on how the current methods align with typical worldwide industry best practice.

Any assessment of the impact of the failure on the environment and stakeholders is excluded from this review and will be undertaken as a separate engagement.

It is intended that the outcome of this investigation will be made public. Accordingly, the report's executive summary should take this into account.

The scope of work should allow for the preparation of a draft report for review by Watercare prior to completion of the final report. Watercare will restrict comments to factual correctness and the final report will be the authors'.

APPENDIX B: TIMELINE

Table B:1 Timeline of events regarding the OMS

Date	Event	Source
1911	OMS Constructed	Drawings supplied by WSL (Appendix C)
1956	Recorded Fault	WSL
1960	Mangere Wastewater Treatment Plant opened	(WSL, 2018)
1962	Eastern Interceptor – connection to OMS	(Smith, Rogers, Graham, & Brown, 2016)
1968	Recorded fault repair	WSL
1970	Recorded fault repair/ Nestle subsidence	WSL
2014	Stanley St repair	WSL
Jan 2023	Auckland anniversary weekend floods	(NZIC, 2023)
26 Sep 2023	Sinkhole first observed by a Contractor and reported to Watercare	WSL
27 Sep 2023	Major collapse blocking OMS and causing wastewater overflows to Waitemata harbour	(WSL, 2023a)
28 Sep 2023	Temporary repair work begins	(WSL, 2023a)
17 Oct 2023	Bypass solution (6 pumps) operational	(WSL, 2023a)

APPENDIX C: OMS DRAWINGS

SEE 0134361 001

Note
Manholes shown thus ◎ (12 required) Eleven Covers and One Grid
Lampholes " " ○ (2 ")

MH 13
Bearing, 308° 09' 30"
For Branch 3 SEE 0135212 006
LOGAN CAMPBELL TERRACE
MH No 1
MH 2
SEE 0134411 006
WAITOA STREET
MH 3
MH 4 Angle 85°
PAPAHIA STREET
AWATEA ROAD
BRANCH No 3A
SEE 0134411 006
Finish of Branch No 3A
MH 5
CRESCENT ROAD
BRIDGEWATER ROAD
HOBSON BAY ROAD
HOBSON BAY TERRACE
GLANVILLE TERRACE
ST STEPHENS AVENUE
GLADSTONE ROAD
CLYDE STREET
LITCHFIELD RD
ALBION ST
ALBION PLACE
STRATFORD ST
AVON ST
STANWELL ST
CHERTSEY ST
CANTERBURY PLACE
AWATEA RD
CLIFTON RD
TAURARUA TERRACE
CLEVELAND ROAD
ST GEORGE'S BAY ROAD
RUSKIN ROAD
RUSSELL STREET
PARNELL RISE
WINDSOR ST
BRITOMART PLACE
BATH STREET
GARFIELD ST
AKAROA ST
HENLEY ST
PORTLAND ST
HEATHER STREET
NEWMARKET RAILWAY BRANCH
AUCKLAND PUBLIC DOMAIN
STANLEY STREET
MH 14
MH 15
MH 16
MH 17
MH 18
MH 19
MH 19A
Bearing 308° 09' 11"
Bearing 258° 51' 52"
Bearing 229° 18' 32"
275° 49' 33"
Sealed & buried
Finish of Contract
SEE 0134461 005
Bearing, 265° 41' 06"
Approx bearing, 354° 30'
MHs 1 & 1A
PS 1 ON FARNHAM ST SEE 135292 002
SEE 0134411 006
Finish of Branch No 3B
BRANCH No 3B
180° 33' 08" (approx)
JUDGES BAY ROAD
Approx bearing, 160° 45'
MH 2
Detail plan at St George's Bay Road
Scale, 40 feet to One Inch

Beginning of Contract 13300' (Manhole at 13308') No 13
Angle, 135.4 at Manhole Outings OVERFLOW
Sewer Section and Manhole Outings of Branches 1 & 3 and 3A (See Detail G)
MH No 1 (3A)
No 14 Manhole 12740 (6'0" diam shaft)
Beginning of curve 13656 9' Manhole 15
Finish of curve 13811 8'
℄ of Right of Way, 6' Junction
Beginning of curve 13684 9'
East alignment St Georges Bay Rd
Junction of Branch No 3A 13630 3' Manhole 16
Finish of curve 13698 8'
West alignment St George's Bay Rd
6' Junction 13758 2'
Beginning of curve 13777 1'
Lamphole 13764 6'
Finish of curve 13796 2'
℄ of Selwyn Street
℄ of Glanville Terrace
℄ of St Stephen's Avenue
℄ of Gladstone Road
℄ of Clyde Street
℄ of Bradford Street
℄ of Bath Street
℄ of Manukau Road
℄ of Falcon Street
℄ of Cheshire St
MH 17 Sealed & buried
Beginning of curve 6'
Junction manhole 15696 5'
Finish of curve 15907 1'
℄ of Railway
Beginning of curve 15419 7'
Beginning of curve 15445 8'
Beginning of curve 15543 3'
Finish of curve 15568 9' Manhole 18
℄ of Domain Footpath
Manhole No 19
℄ of Domain Drive
℄ of Domain Drive
Finish of Contract 16548 1'
Manhole No 19A

Datum Line
8'-3" x 5'-6" Egg-Shape Sewer at 1 in 3000
7'-9" x 5'-2" Egg-Shape Sewer at 1 in 3000
Surface down to Invert
Reduced level of Invert
Reduced level of Surface
55' below datum
110 120 130 140 150 160

CONTRACT No. 9

AUCKLAND & SUBURBAN ENGINEER'S OFFICE SEP 24 1910 DRAINAGE BOARD

'E'	4-08	I M	MH17 SEALED & BURIED
'D'	10-8-92	I M	MH15 RELOCATED
'C'	12-10-93	M D	OVERFLOW BR 3/3A JUNCTION
'B'	24-8-93	M D	AMENDED/UPDATED

Scale Horizontal 200 feet / Vertical 20 feet to One Inch.

MAIN SEWER.

Section No 3. and BRANCHES 3A and 3B

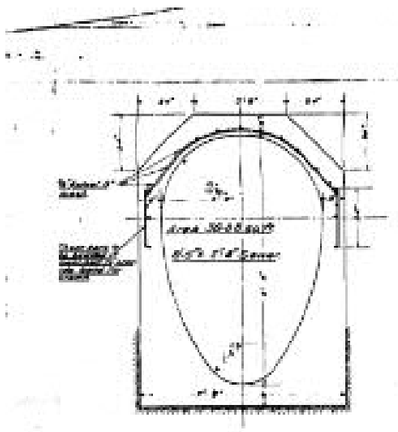
Walker Bush
Drainage Engineer,
Drawn by GRAHD
Checked by

107/1

0134411.005E

8

MICROFILMED Appendix C OMS Independent Reports



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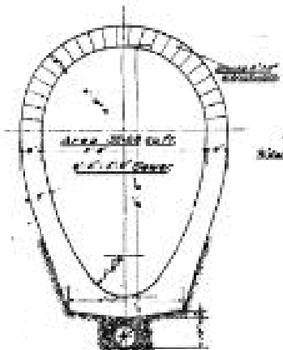

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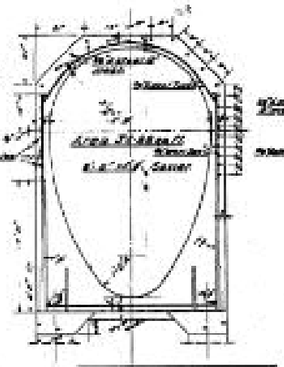

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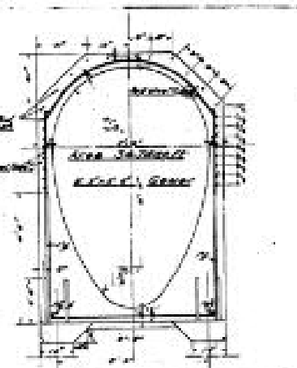

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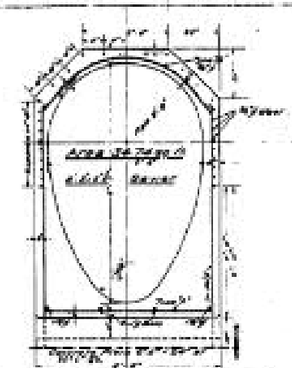

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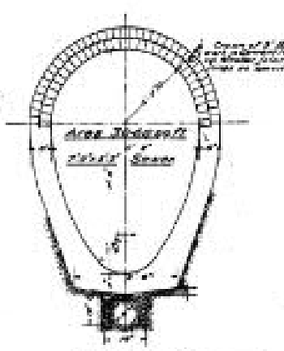

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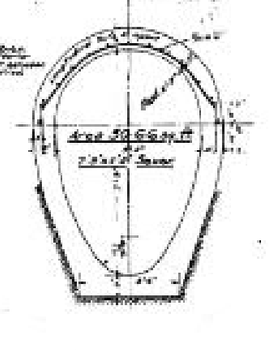

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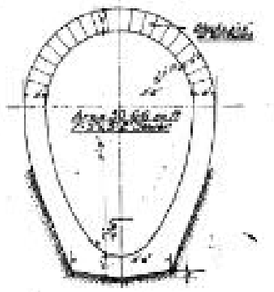

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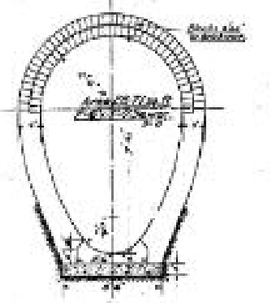

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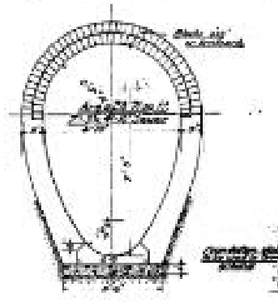

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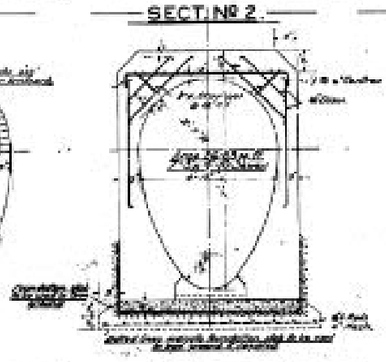

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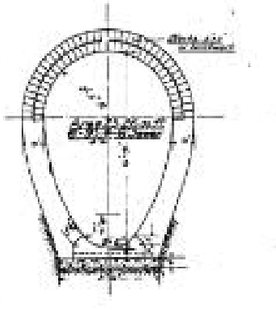

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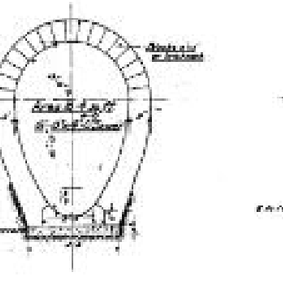

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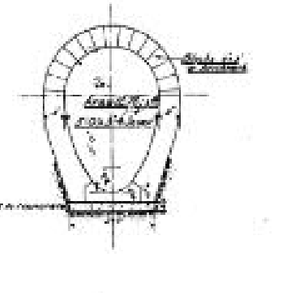

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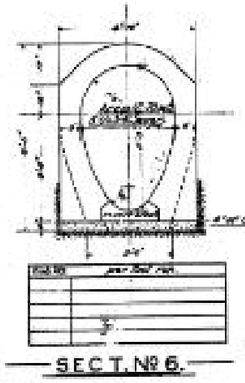

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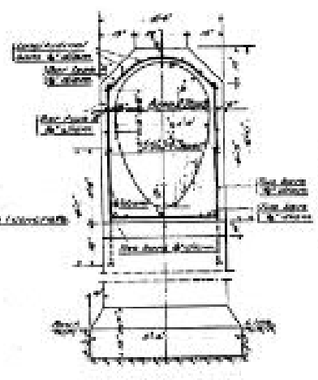
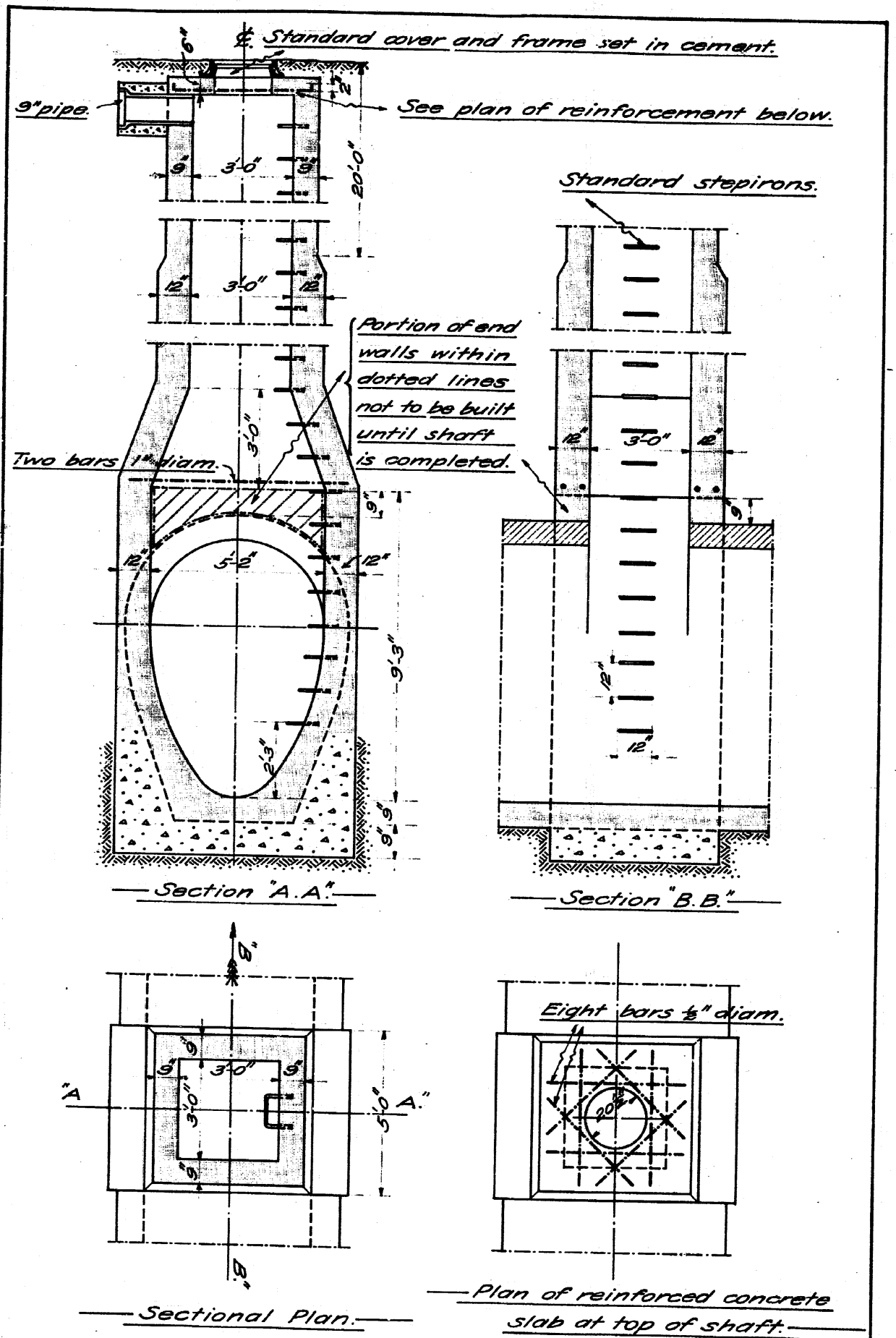


SECT. Nº 6.

½" Scale.

TYPICAL MAIN SEWER SECTIONS.



CONTRACT No. 9

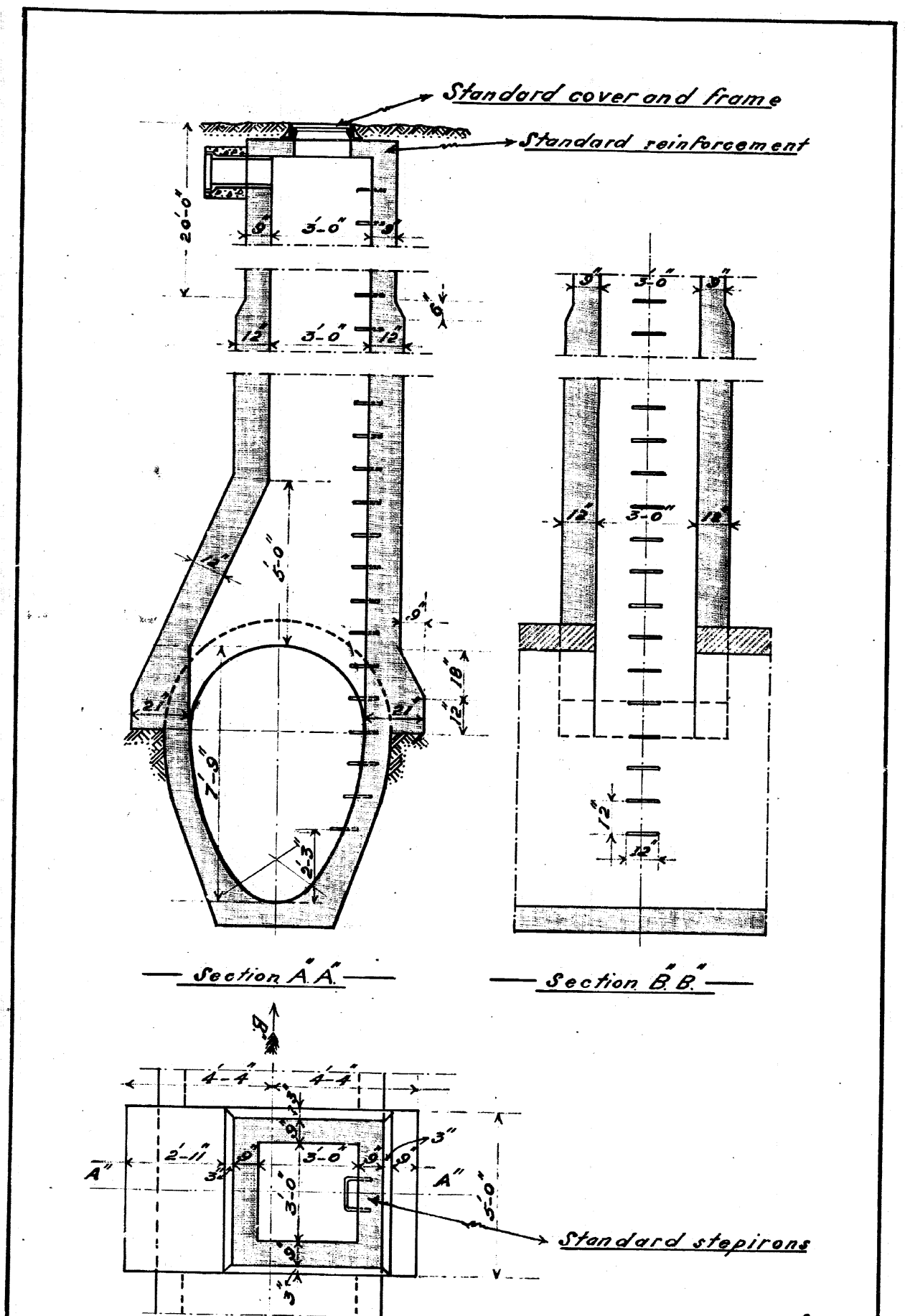
AUCKLAND & SUBURBAN DRAINAGE BOARD ENGINEER'S OFFICE JUL 14 1911

Main Sewer, Section No 3.

Amended details of Manhole at 127+

¼" Scale.

135/3 Dr D



NTRACT No. 9

Sectional Plan

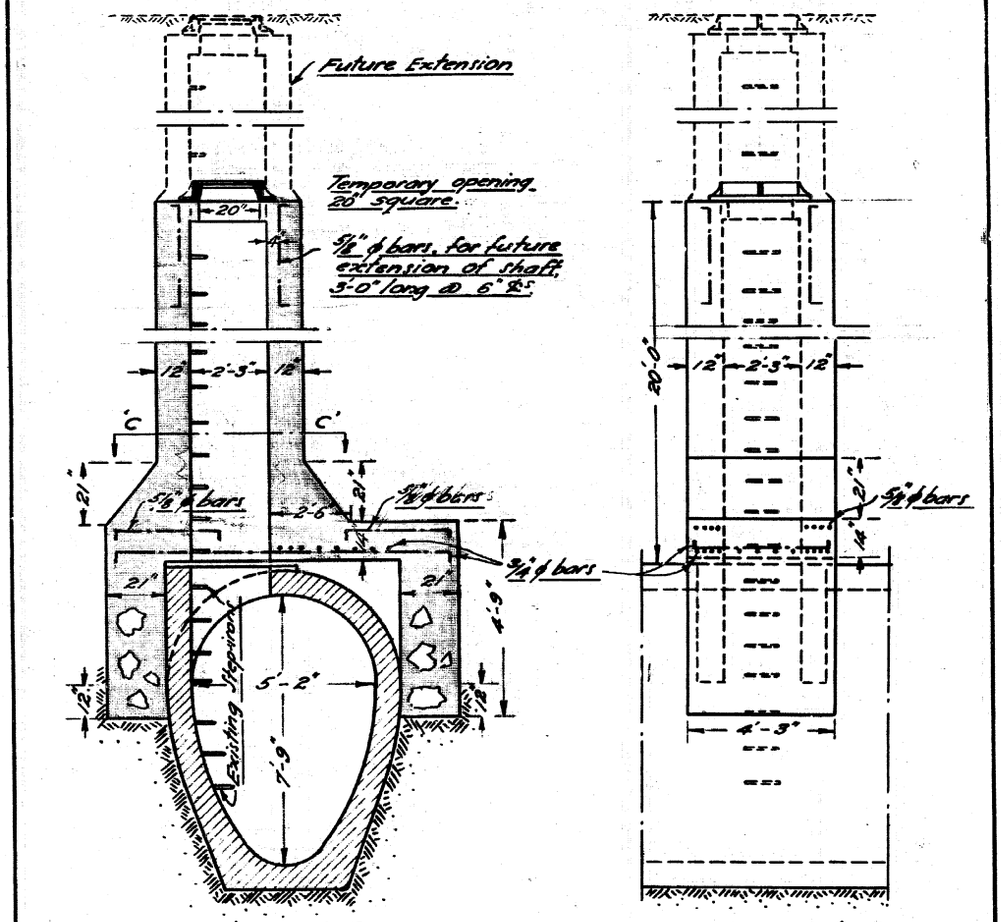
CKLAND & SUBURBAN
ENGINEER'S
MAY 14 1912
OFFICE
RAINAGE BOARD

Main Sewer, Section No 3

Amended details of Manhole at 13257.

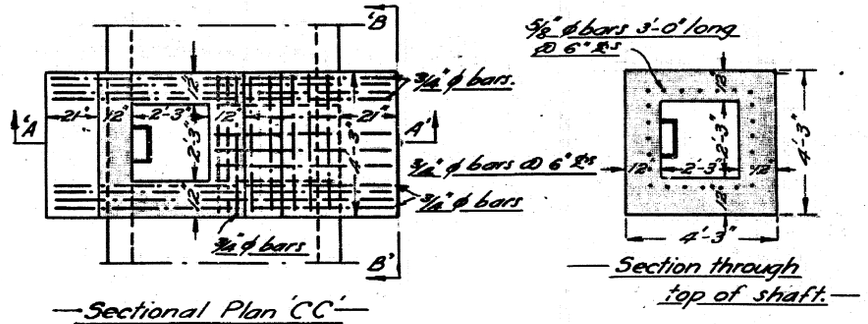
½" Scale

135/5



Section 'AA'

Side Elevation 'BB'



Sectional Plan 'CC'

Section through top of shaft.

MAIN SEWER. SECTION N°3.

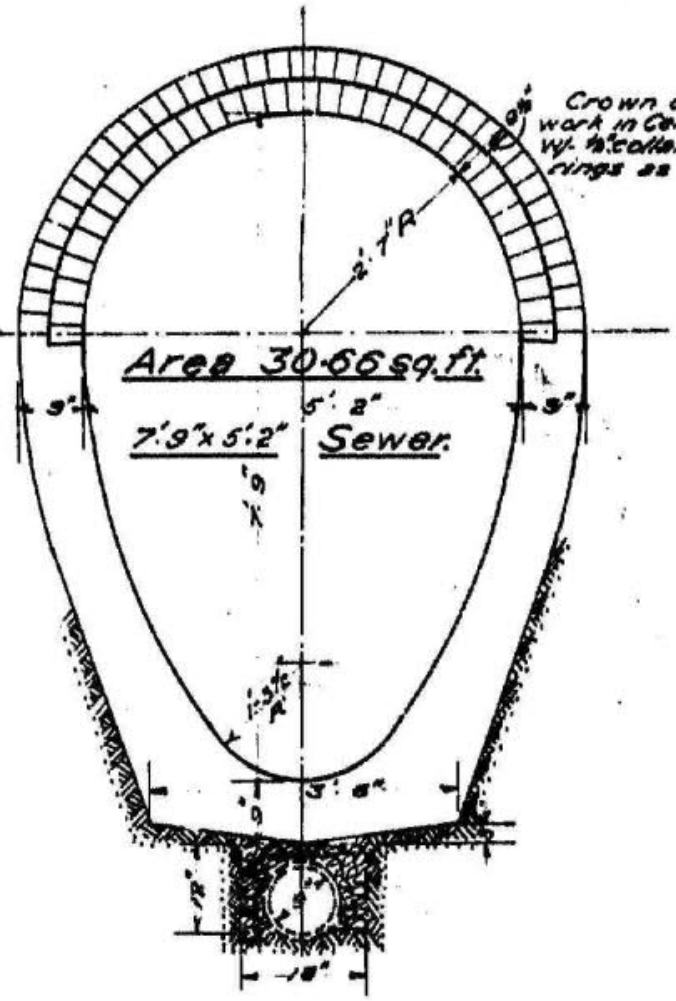
Alteration to Manhole N° 13

1/4" Scale.

MAY 7 1936
OFFICE
DRAINAGE BOARD.

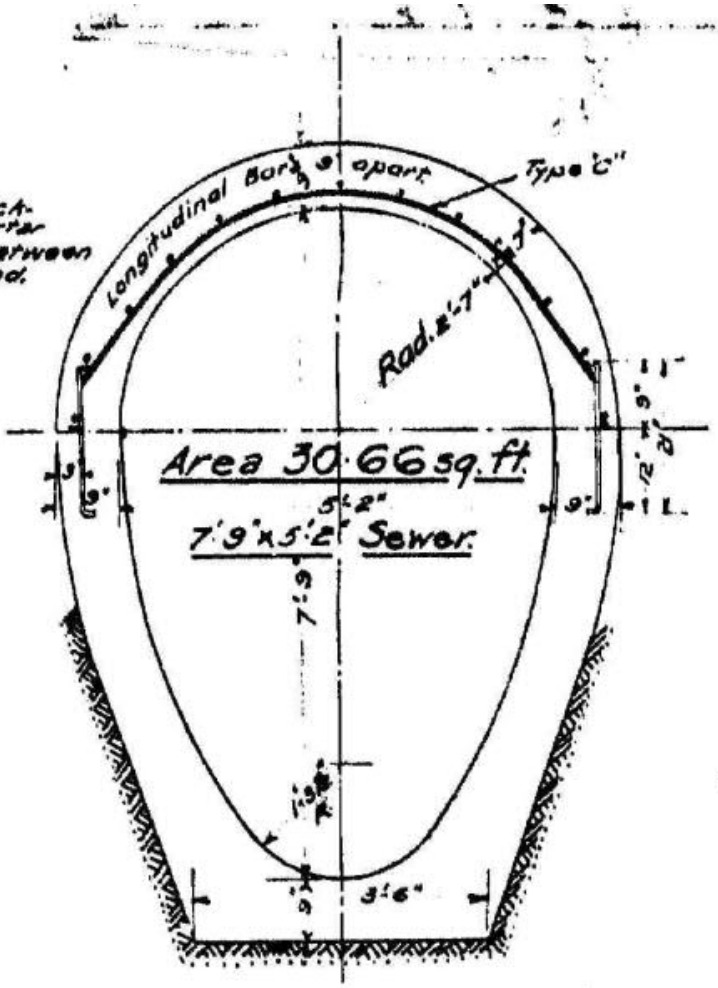
306/2

Drainage Engineer.
Drawn by HJP
Checked by W.K.L.



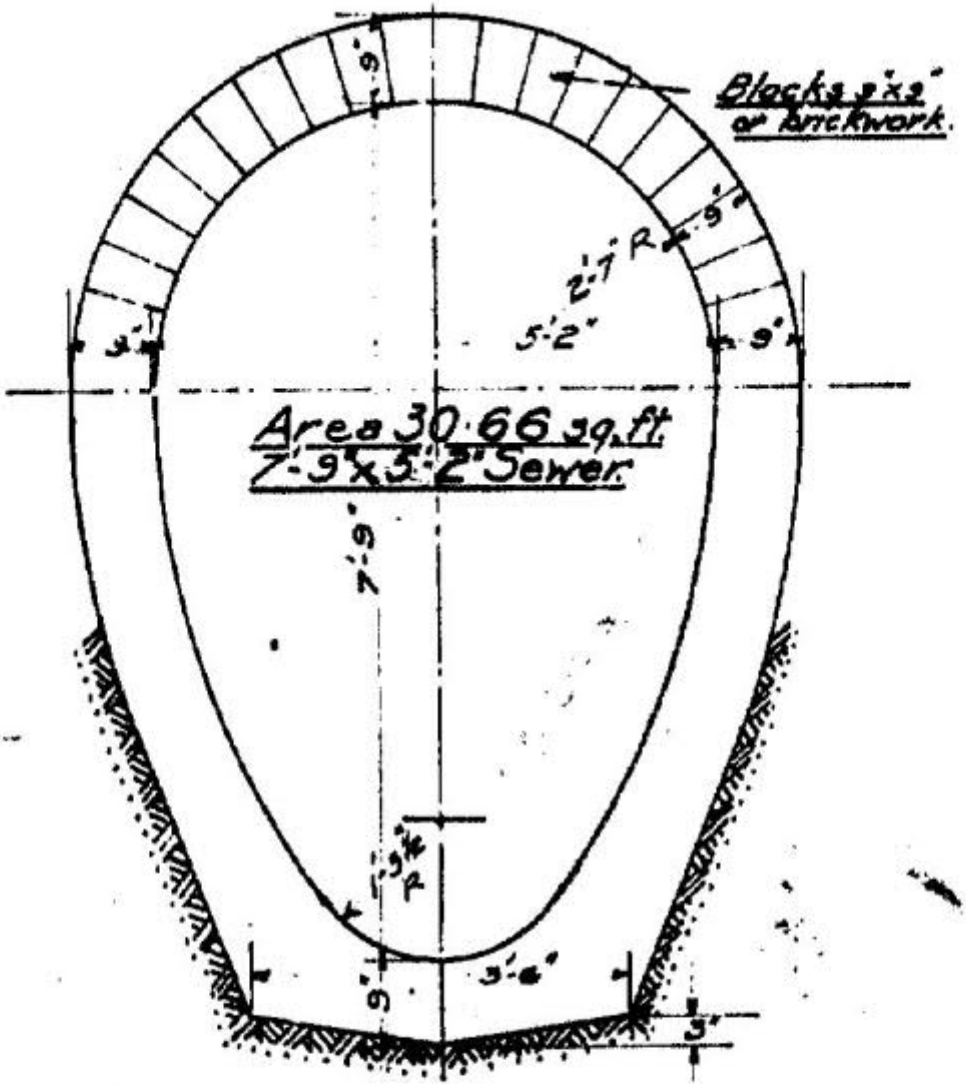
Cub Yds.	per foot run
·4	6 to 1 concrete
·26	brickwork
1·82	Tunnel Excavation

SECT. № 3.



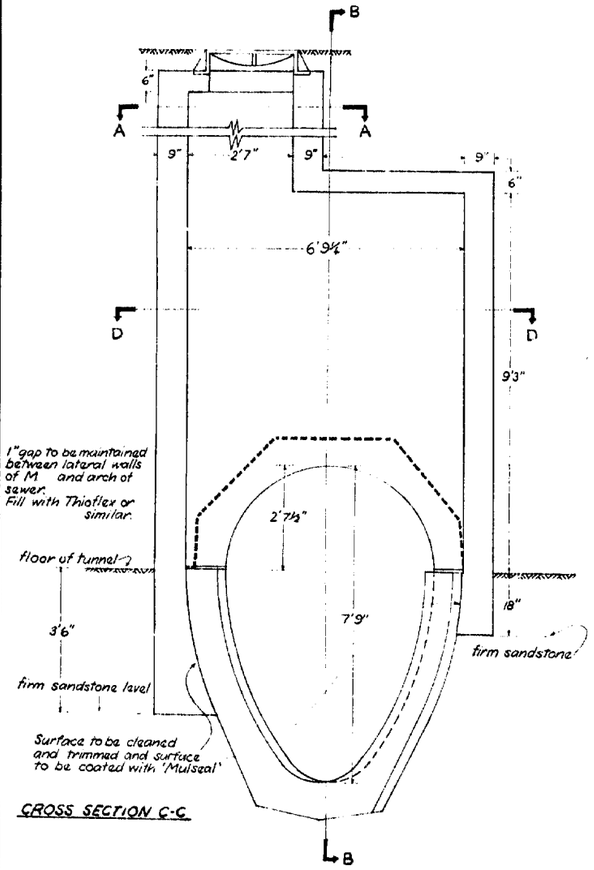
Cub Yds	per foot run
·69	6 to 1 concrete
171	reinforcement
1·87	Tunnel Excavation.

SECT. №3.

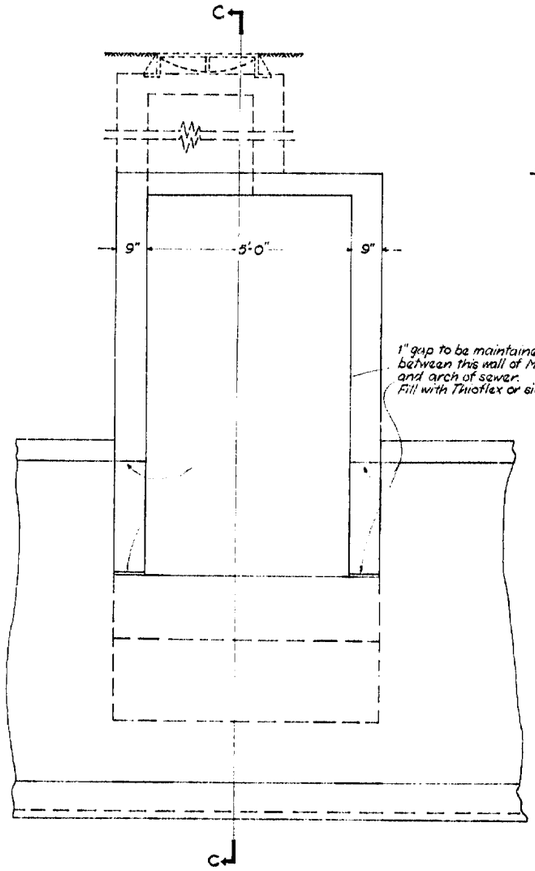


Cub. Yds.	per foot run.
·4	6 to 1 concrete.
26	brickwork.
1·8	Tun. & Excavation.

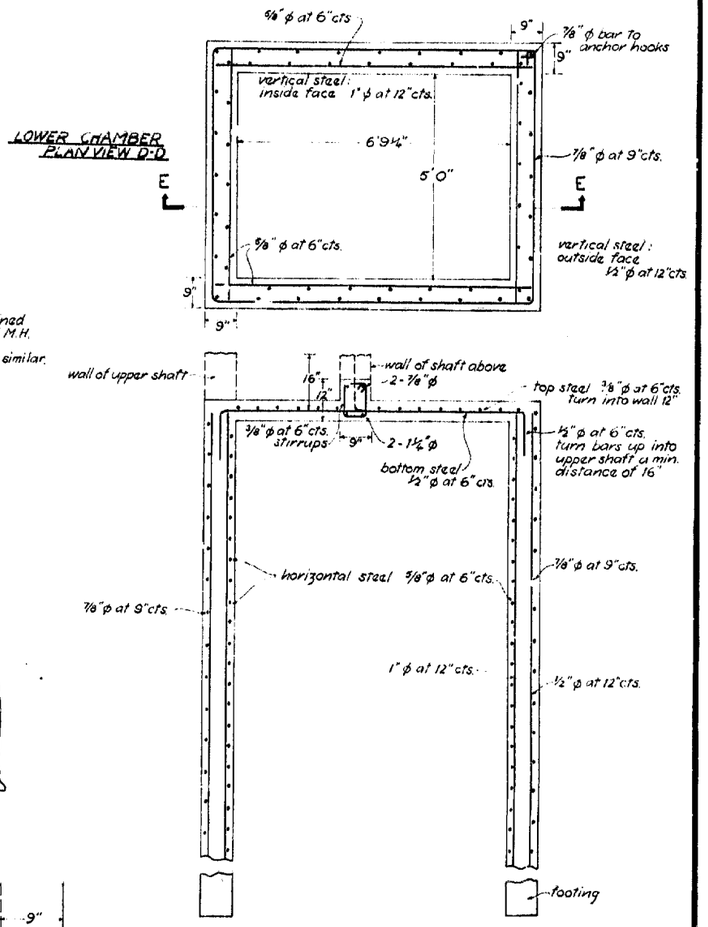
SECT. Nº 4 (1st Portion)



CROSS SECTION C-C

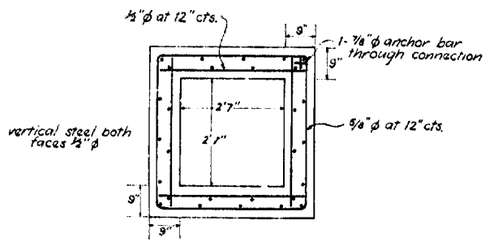


LONGITUDINAL SECTION B-B

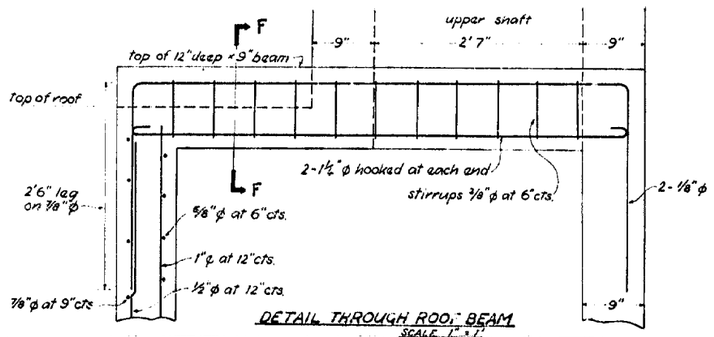


LOWER CHAMBER PLAN VIEW D-D

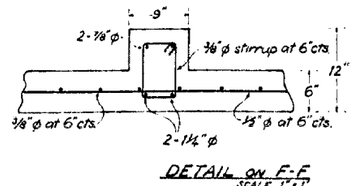
LOWER CHAMBER ELEVATION ON E-E



UPPER SHAFT A-A
(use deformed steel)



DETAIL THROUGH ROOF BEAM
SCALE 1" = 1'



DETAIL ON F-F
SCALE 1" = 1'

THIS PLAN HAS BEEN REDUCED TO HALF SCALE.

Issue	Date	AMENDMENTS	Initials

Surveyed
Field Book No.
Drawn
Checked
Designed G.B.N
Drawn A.P.C 7.1.70
Checked
Dist. Checked

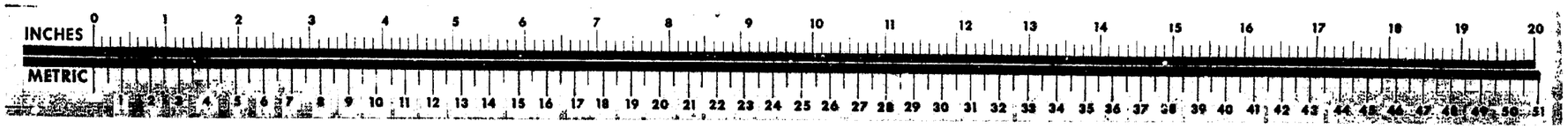
AUCKLAND REGIONAL AUTHORITY – WORKS DIVISION

Approved ENGINEER Date 7.11.1970 CHIEF ENGINEER DIRECTOR OF WORKS

MAIN SEWER REPAIRS

RECONSTRUCTION OF MANHOLE 16-St GEORGES BAY Rd

CONTRACT No.
SHEET 13
SCALE ½" TO 1' UNLESS OTHERWISE STATED
MICROFILM NUMBER 134418



APPENDIX D: GEOTECHNICAL MEMO

Orakei Sewer –Failure Mechanism

Geotechnical Memo

Background

Following development of a sinkhole adjacent to 79A Saint Georges Bay Road, Parnell, which was subsequently found to be related to the collapse of a section of the crown of a block/brick lined 2.1m diameter wastewater main (Orakei Main), WSP have been engaged by Watercare to provide a desktop assessment of likely failure mechanism that led to the collapse.

This memo introduces the engineering geological setting and geotechnical conditions and discusses the potential impact the ground conditions have on the mechanism of tunnel failure.

The site is a sealed carpark in an urban commercial and residential area

Geological setting

The site has been mapped on published geological maps[1] as Miocene aged East Coast Bays Formation (ECBF), which is comprised of predominantly alternating sandstone and mudstone with variable volcanic content and interbedded grits.

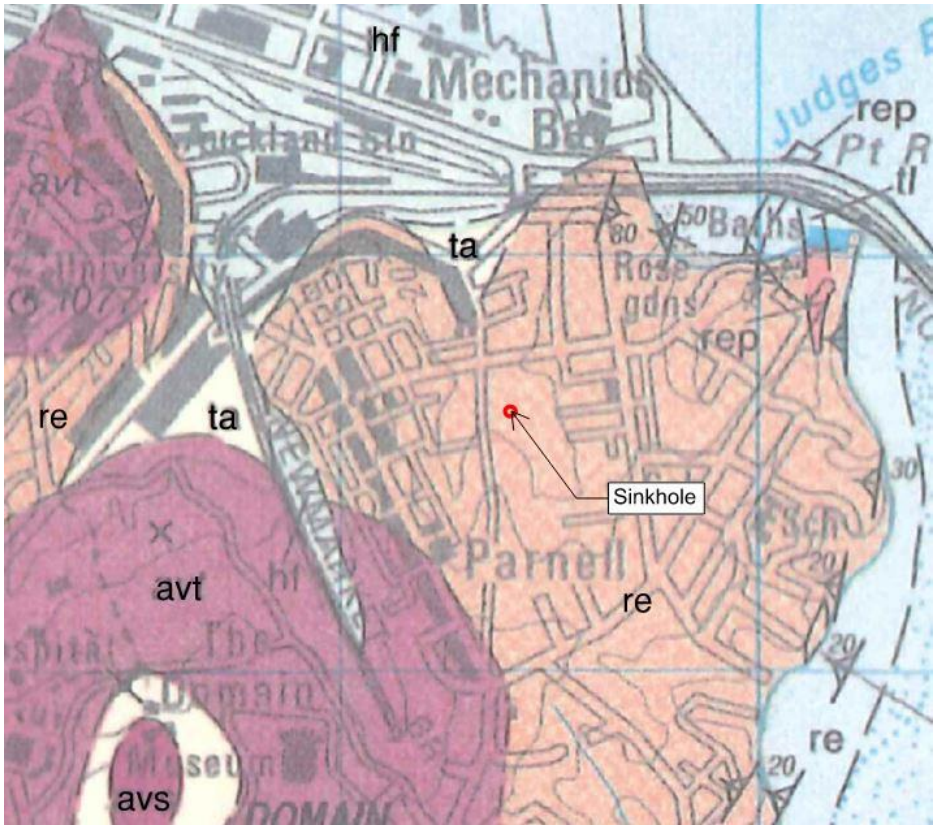


Figure 1: Geological map after Kermode 1:50 000[1]. ta - Tauranga Group, avt - Lithic Tuff, re - East Coast bays formation (ECBF), hf - Construction Fill

The near surface layers of these very weak to weak alternating sandstones and mudstones tend to progressively weather in situ to form firm to hard clays and silts.

[1] Kermode, L.O. 1992: Geology of the Auckland urban area. Scale 1:50,000. Institute of Geological and Nuclear Sciences geological map 2. 1 sheet + 63 p. Institute of Geological & Nuclear Sciences Ltd., Lower Hutt, New Zealand.

The base of an infilled stream gully is inferred to run through the site. As such the top portion of the ground profile is comprised of fill, see Figure 2 and Figure 3.

Figure 2: Contours showing the presence of an infilled gully leading from Alberon Reserve through The Strand leading from an RL of 15m to 5m.

Figure 3: Historic stream overlaid across the site and position of the sewer and sinkhole.

Geomaterials and Ground Profile

East Coast Bays Formation (ECBF) – Forming the basal unit, the strength of the ECBF rock is generally very weak to weak. The ECBF weathers residually into various states, SW-to MW rock which is often described as a transitional rock zone is characterised by a loss of cementation forming a brittle extremely weak rock mass that can also be described as a dense sandy and silty soil. As weathering continues the rock mass develops further soil properties through the highly weathered to completely weathered state where although some of the rock fabric is preserved the material is a soil.

Tauranga Group – There is a possibility that there are localized areas of old stream sediments that would form part of the Tauranga Group in the vicinity of the sinkhole. Whilst it is most likely that any sediments associated with temporary works during the construction of the Orakei Sewer pipeline were undercut before being subsequently infilled, the presence of remnant lenses of soft Tauranga Group soils cannot be ruled out.

Fill – The old gully feature has been infilled and fill materials are likely to be comprised of a variety of materials emplaced to form the carpark level and to backfill excavations that may have associated with the Orakei Sewer construction.

Site observations[2] made by Baseline Geotechnical Ltd have confirmed the ground profile above the pipeline collapse and provide a good assessment of the ground profile conditions.

A summary of the ground profile is presented in Table 1.

Table 1: Summary of ground profile above the crown hole collapse

Depth (mbgl)	Geology Unit	Material Description
0-3.5m	Fill	Gravel and silt, brown and friable
3.5-5.3m	Fill	Clays and silts, mottled orange, light brown and brown
5.3-5.6m	Buried Topsoil	Clayey silt with organics, dark brown to black
5.6-8.8m	Weathered ECBF	Clayey silt with some sand, brown

Historic geotechnical investigation work undertaken for the development at 96 St Georges Road[3] and CPT testing undertaken by the Contractor for the repair works have also been used to help develop the ground model in particular to confirm the depths to rockhead – see Figure 4 and Figure 5.

[2] Memo: St Georges Bay Road Sinkhole Ref. BGL000180 Adjacent to 79A St Georges Bay Road for ACH (Brett Chick) dated 28 September 2023

[3] Tonkin and Taylor ltd ref. 30507/Rev A 96 St Georges Bay Road, Parnell Geotechnical investigation Report for Mansons TCLM Ltd dated April 2015

Figure 4: Plan of site showing sinkhole, historic streams, recent CPT's and section lines.

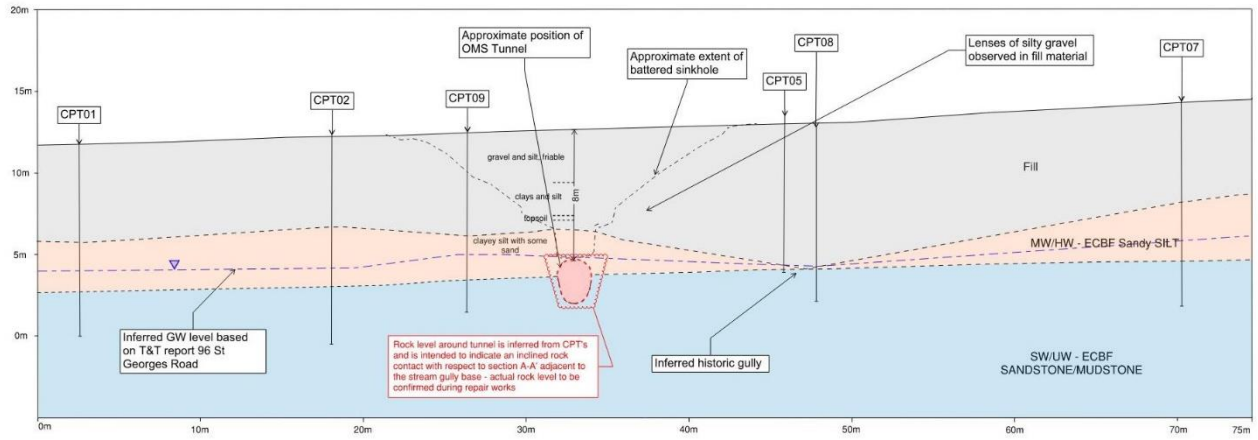


Figure 5: Cross-section showing the profile of the historic infilled gully in relation to the sinkhole and pipeline.

During the Baseline Ltd site inspections several observations were noted:

- it was noted that there were no signs of groundwater seepage from the soil profile above the tunnel
- At the time of their visit late on Tuesday 26 September whilst a large void had developed above the sewer, "The sewer line was exposed at this time and wastewater flows could be observed through the hole in the crown of the tunnel".
- By midday 27 September the void sidewalls had collapsed blocking the wastewater line.

These site observations indicate that the crown hole collapse did not initially result in blockage of the sewer, and it we infer that debris had been entering the sewer and flushing away over time in the lead up to the sinkhole daylighting the surface.

Groundwater setting

The groundwater setting reflects the topography and geology of the site. Historic geotechnical investigation work undertaken for the development at 96 St Georges Road[4] includes a discussion on the groundwater setting that is relevant to the sinkhole site.

The base of the former gully falls from south to north and is located near to where the sinkhole has formed see Figure 4. The site is approximately 350m from the inferred natural coastline and 800m from the current coastline, comprising the Auckland Port.

The natural groundwater flows within the upper portion of the site within the fill are inferred to comprise surface infiltration and groundwater seepage from east and west of the old gully axis. Within the lower portion of the historic gully near where the OSM tunnel is located natural groundwater flows are inferred to comprise south to north seepage below the valley floor towards the coastline. In the base of the gully the measured groundwater levels from historic piezometers are near the interface of the fill and natural soils[5].

It is anticipated that during extended periods of rainfall then antecedent groundwater levels would be higher within the fill for example at the end of winter, whilst in summer these groundwater levels would drop down towards the base of the old gully. Intense rainfall events such as 2023 Auckland anniversary and Cyclone Gabrielle (see Figure 6)following a period of dry weather, would likely result in a temporary perched slug of water in the fill that would pass down through the fill before merging with the natural groundwater level. This can result in temporary hydraulic gradients that can cause subsurface erosion if soils are susceptible to erosion and there is a pathway for soils to be eroded out through and away such as a pipeline or tunnel.

[4] Tonkin and Taylor ltd ref. 30507/Rev A 96 St Georges Bay Road, Parnell Geotechnical investigation Report for Mansons TCLM Ltd dated April 2015

[5] Tonkin and Taylor ltd ref. 30507/Rev A 96 St Georges Bay Road, Parnell Geotechnical investigation Report for Mansons TCLM Ltd dated April 2015

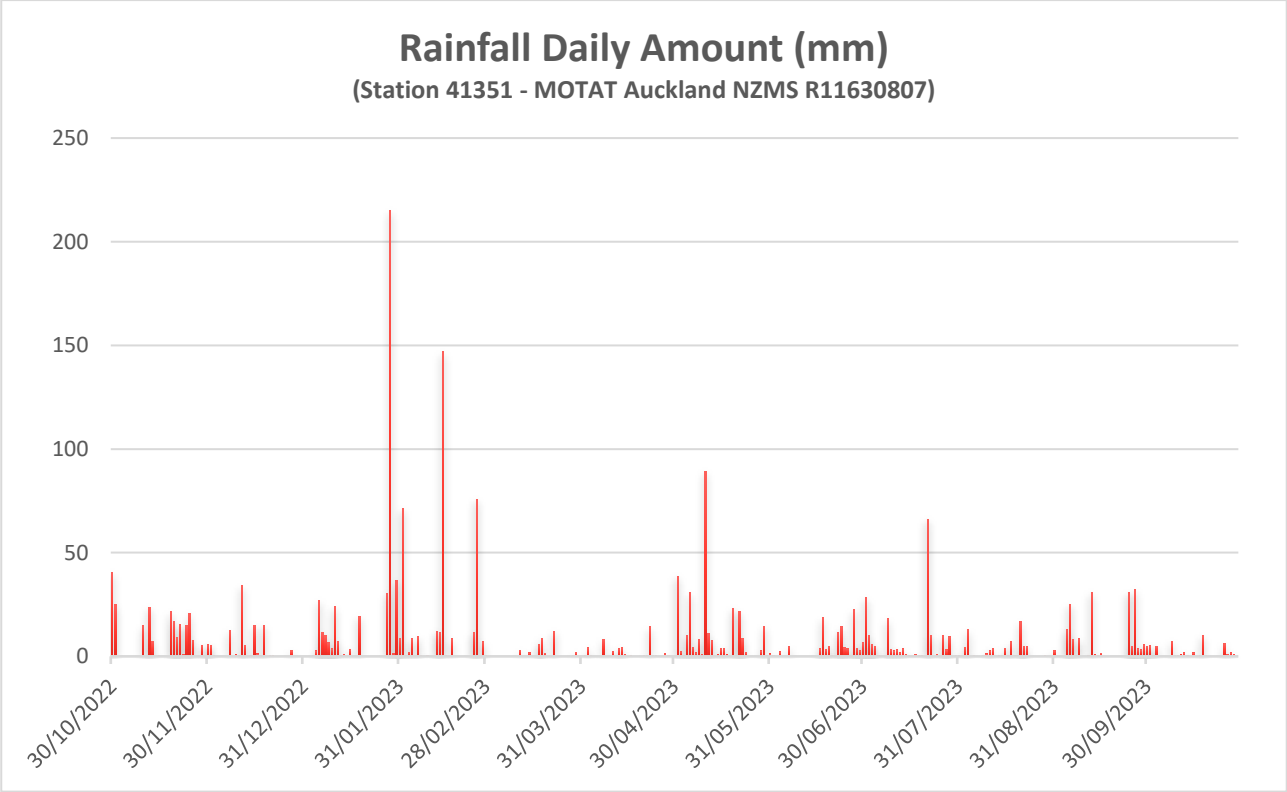


Figure 6: Daily rainfall for Auckland from the period 30 Oct 2022 to 30 October 2023

APPENDIX E: STORMWATER MEMO

Memorandum

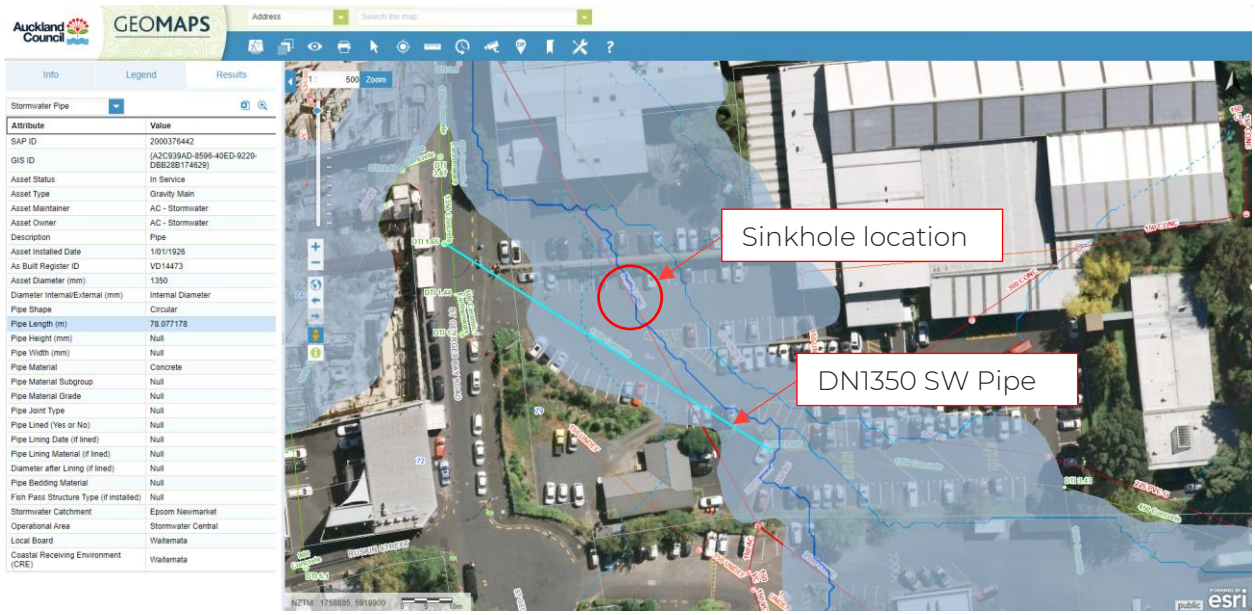
To	Philip McFarlane
Copy	
From	Zeb Worth
Office	Auckland
Date	4 December 2023
File/Ref	W-SL021.02
Subject	Ōrākei Sewer Main Failure – Stormwater Observations

1 Background

This memorandum summarises the findings of an assessment into potential contributions by stormwater and overland flow/flooding to the September 2023 failure of the Ōrākei Sewer Main at 79 St Georges Bay Rd, Parnell.

This assessment is based on a desktop review of available information relating to the existing infrastructure and events leading up to the failure, and observations taken on site following the collapse of the sewer main.

2 Existing Stormwater Network



There is an existing DN1350 stormwater pipe which crosses the OMS immediately south of the location of the sinkhole/collapse. GIS records show that his pipe was installed in 1926 and is a

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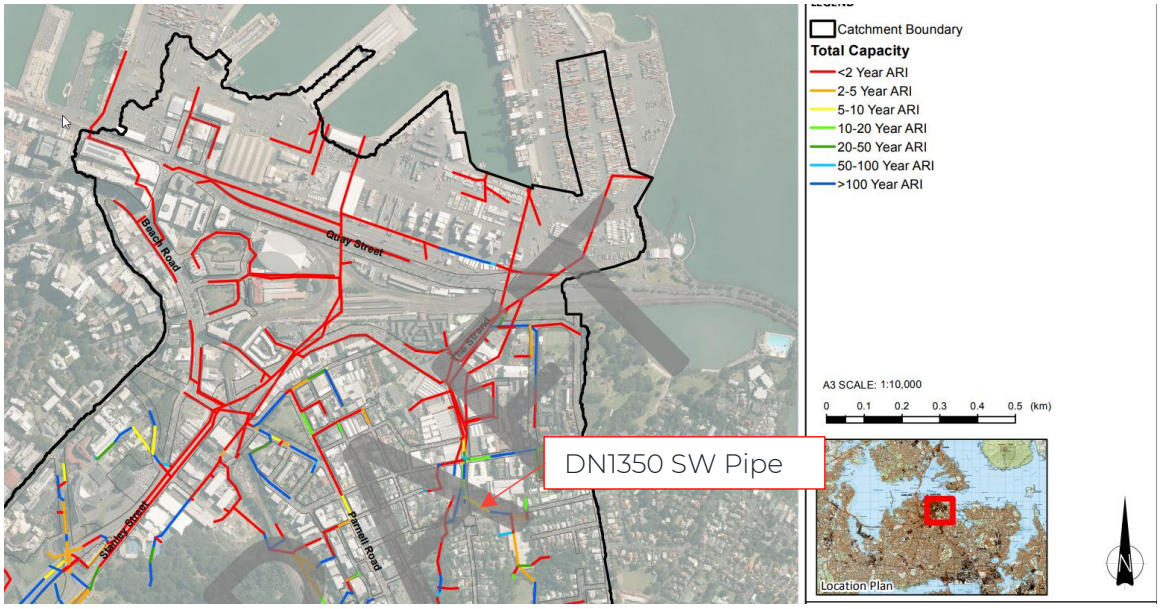
Auckland
Level 3 The Westhaven
100 Beaumont St
Auckland 1010, New Zealand
+64 9 355 9500
wsp.com/nz

concrete pipe approximately 3.5m depth to invert. The structural and hydraulic condition of this pipe is currently unknown. However, given its age it is possible that there is some deterioration of the pipe joints and seals which may allow water to exfiltrate into the surrounding trench material, particularly when the system is under surcharge pressure. This could result in subsurface flows following the trench and locally contributing to groundwater flows.

Auckland Council's Stanley Stormwater Model Build Report (DRAFT) indicates that the total capacity of this section of pipe and much of the upstream pipe network is between the 2yr and 10yrARI event under Maximum Probable Development (MPD) conditions[1]. It is therefore likely that the stormwater network in and around 79 St Georges Bay Road was surcharged and the overland flow paths active in at least the January and February 2023 events. This may have also been the case during the May 2023 event, although this would have been dependent on antecedent conditions and downstream tailwater levels at the time.



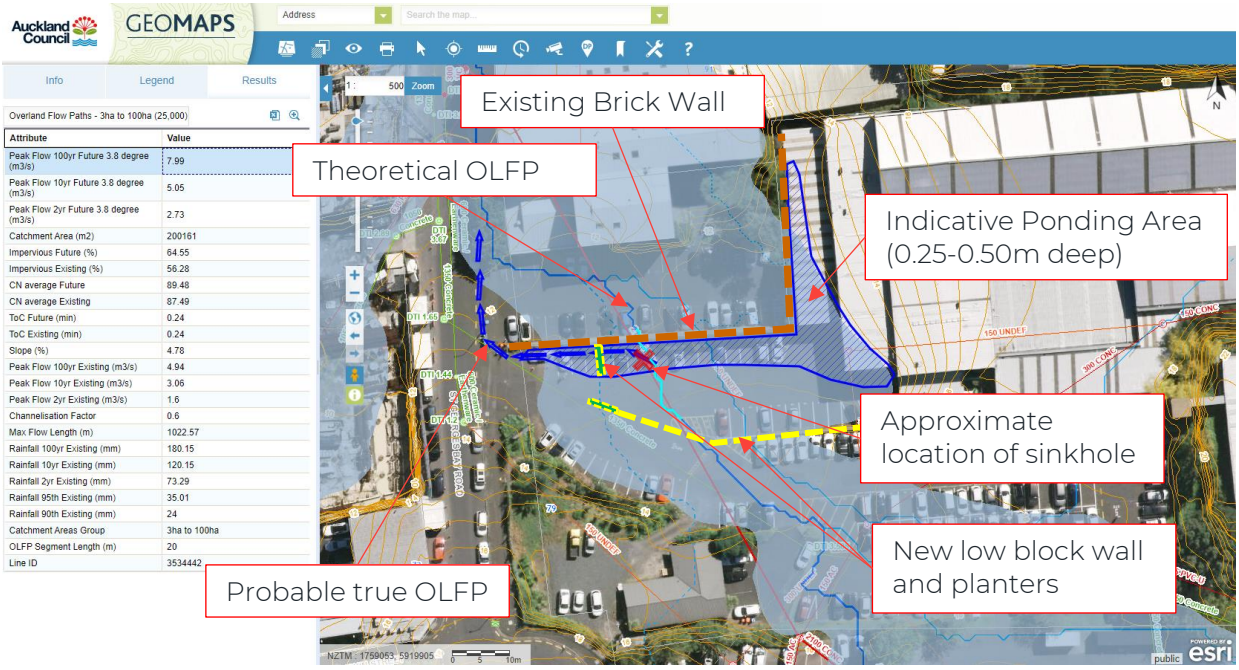
3 Overland Flow Paths

GeoMaps shows an overland flow path (OLFP) that runs from south to north through the carpark area at 79 St Georges Bay Road. Based on the GeoMaps data, this OLFP has a theoretical peak flow of 4.94m^3/s in a 100yr ARI event under existing climate and development conditions and a time of concentration of ~14mins.

However, based on site observations and existing contours, the true OLFP is likely to be diverted west by an existing brick wall (this had been partially demolished at the time of the site visit for safety reasons. The existing brick wall runs almost perpendicular to the flow path line shown in GeoMaps. There is a low point located midway along the brick wall roughly where the theoretical flow line is shown in GeoMaps. This low point is almost directly above the OMS near the location of the collapse. During extreme rainfall events when the capacity of the primary stormwater pipe system is exceeded, overland flow intercepted by the wall would need to pond to a depth of around 0.25m-0.50m before it was able to overtop the high point at the western boundary of the site with St Georges Bay Road as shown below. It is considered likely that this occurred during the extreme weather events of January and February 2023. Any defects in the asphaltic concrete, or pervious surfaces within the ponding area would allow this water to infiltrate into the underlying soils and trench backfill, contributing to subsurface groundwater flows.

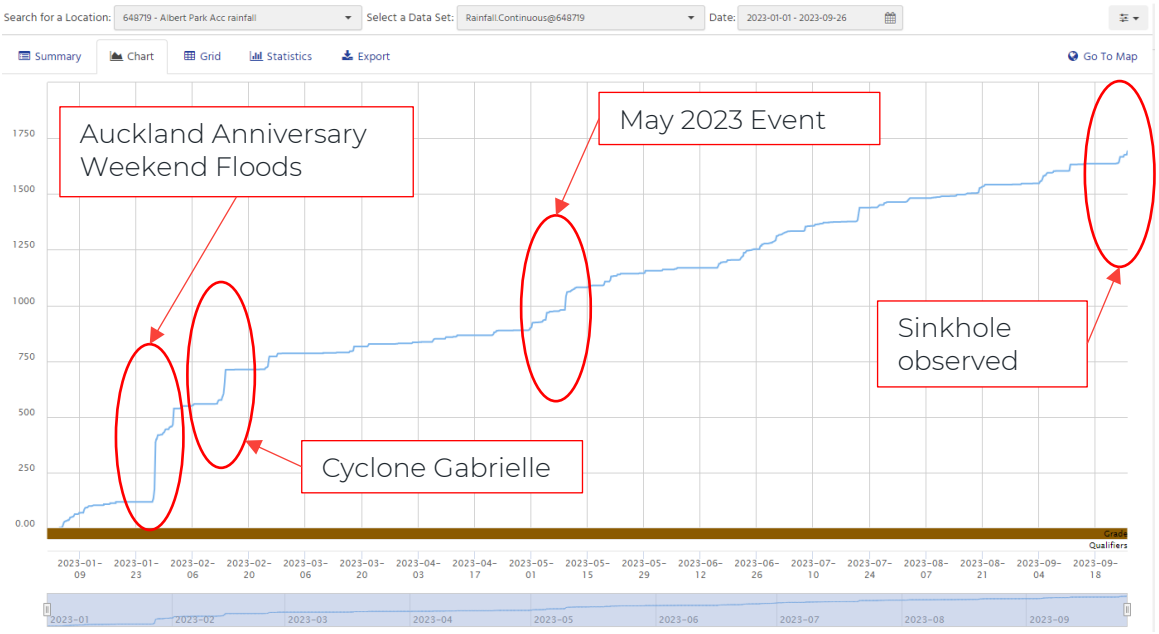
[1] ID_130 Part 2 Stanley MODELBUILD-DRAFT ISSUE 2015.pdf (aucklandcity.govt.nz)

At some point following the Auckland Anniversary event a new low concrete block wall and planter boxes were installed across the OLFP, south (upstream) of the low point. It is unclear what the intended purpose of this wall is, but it may have been intended to reduce divert the OLFP away from the low point. However, given the extent of the wall and the existing surface contours, it is unlikely that it would have successfully diverted all the overland flow and may in fact have forced water to pond deeper because of the planter box return from the existing block wall.



4 Significant Weather Events and Rainfall

There were several significant rainfall events during the first half of 2023. In total 1690mm[2] of rainfall fell between 1st January 2023 and 26th September, when WaterCare were first notified of the formation of the development of a sinkhole at 79 St Georges Bay Road.

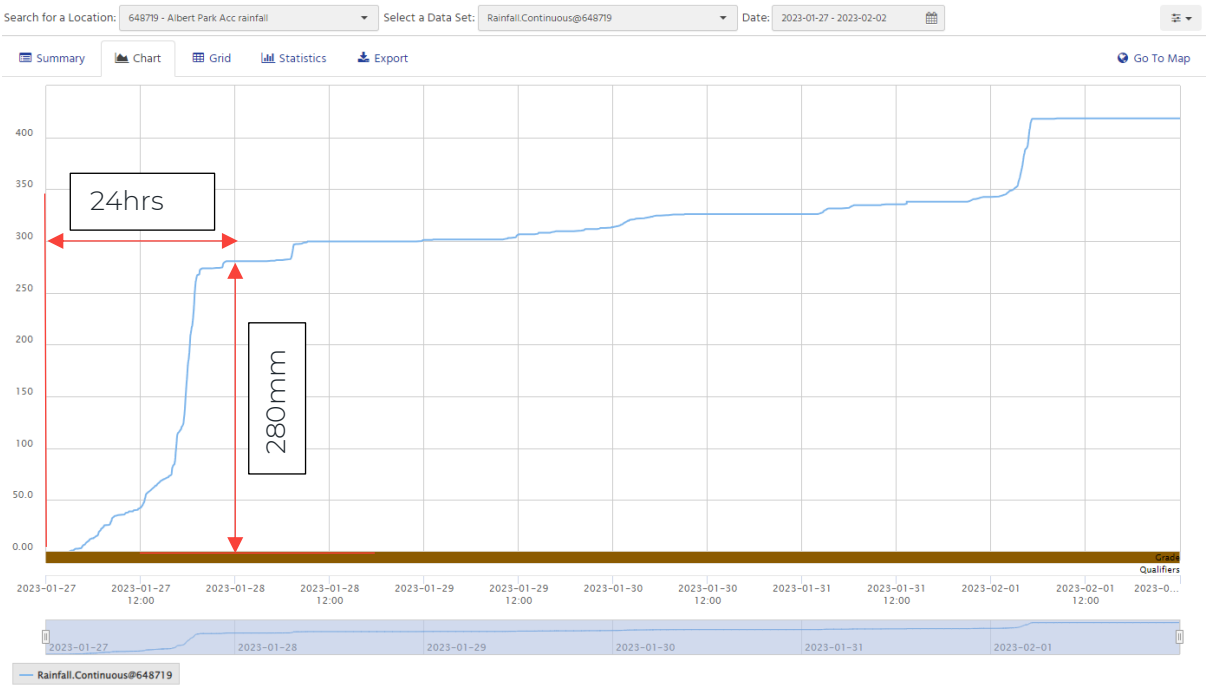


[2] https://environmentauckland.org.nz/

This compares to an average annual rainfall in Auckland of 1137mm[3]. This indicates in general that the rainfall during the first nine months of 2023 was well above the 'normal' annual rainfall for the area. As a result, the capacity of local depressions and pervious areas within the contributing catchment to store and hold back runoff is likely to have been limited, resulting in an increase in surface flows during even relatively minor rainfall events. Much of the excess rainfall in the first nine months of 2023 fell during the following significant weather events.

4.1 Auckland Anniversary Weekend Floods (27th January – 1st February 2023)

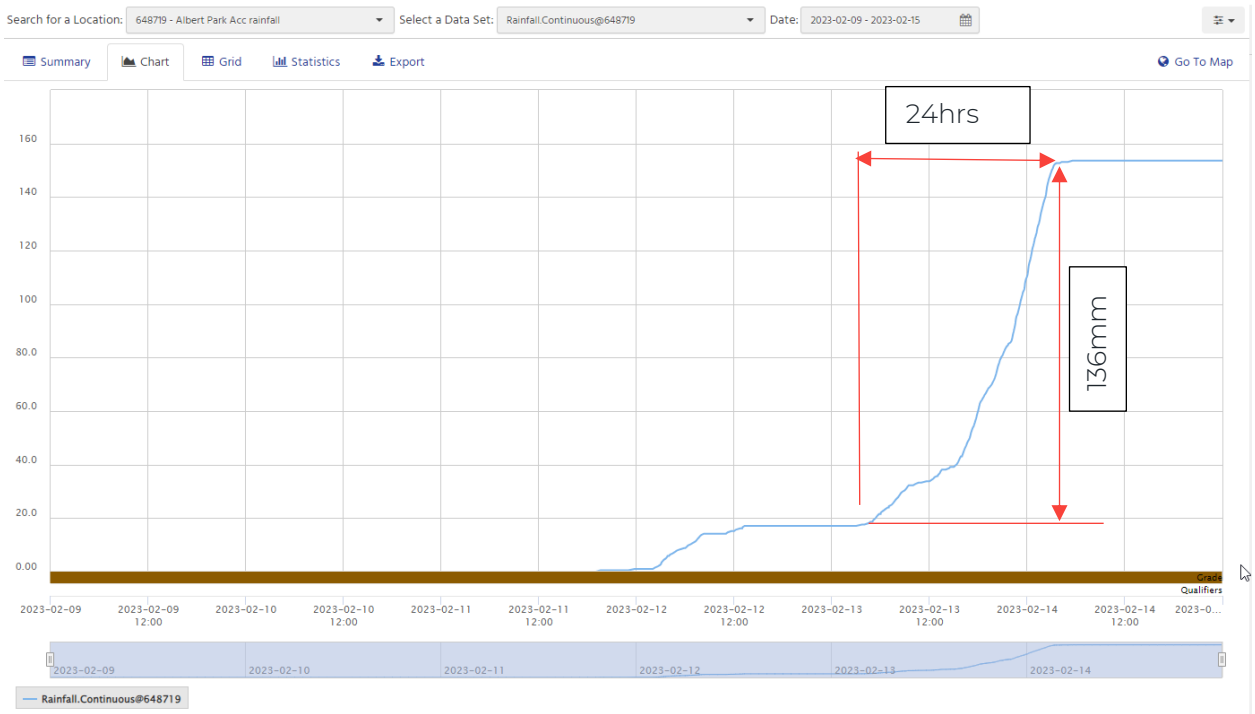
Albert Park Rain gauge shows 280mm of rainfall (24hrs 00:00 27/01/23 to 00:00 28/01/23) – cf. TP108 24hr rainfall maps 100yr ARI 180mm. This was followed by a further 138mm (102hrs 00:00 28/01/23 to 06:00 01/02/23). The peak 14min rainfall intensity coinciding with the critical time of concentration of the upstream catchment was ~115mm/hr which is greater than the theoretical TP108 100yr ARI peak rainfall intensity of ~103mm/hr for the same critical duration.



4.2 Cyclone Gabrielle (12-14 February 2023)

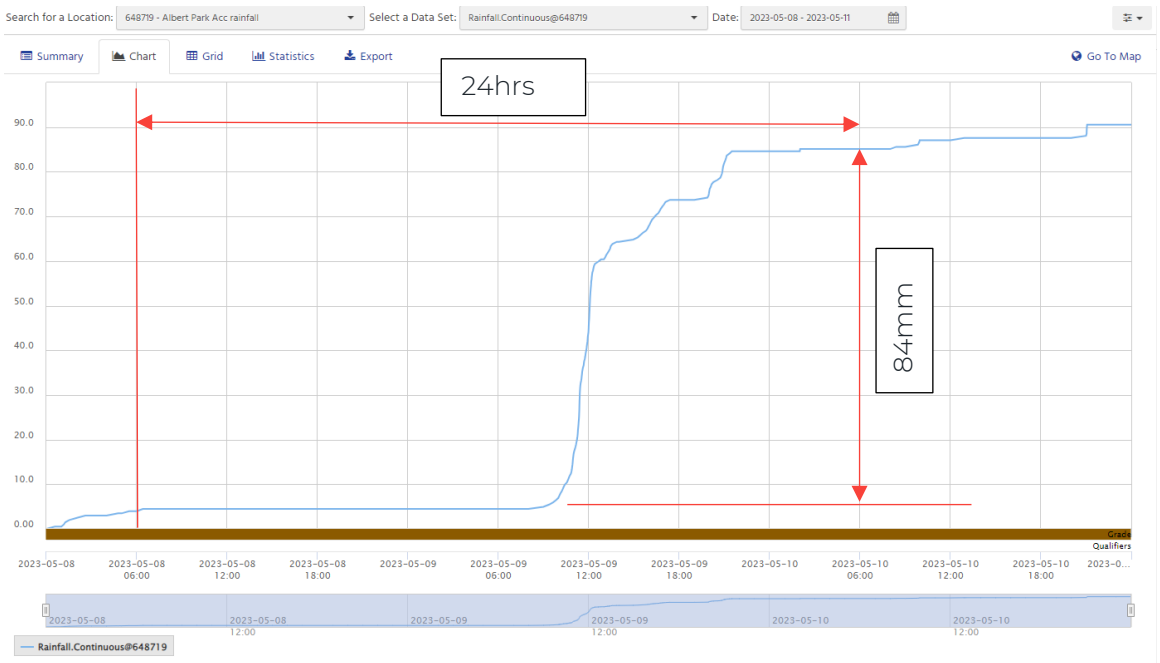
153mm in 55hrs between 00:00 12/02/23 and 07:00 14/12/23, including 136mm in 24hrs between 04:00 13/02/23 and 04:00 14/02/23 (cf. TP108 24 hr Rainfall maps 20yr ARI 140mm). The peak 14min rainfall intensity was ~19mm/hr. While this is not considered a significant peak intensity (<2y ARI for the same critical duration), the duration of the peak lasted for more than 2hrs. Combined with the antecedent conditions relating to the Auckland Anniversary Weekend floods less than two weeks earlier, this could have caused heavily saturated ground and pervious areas unable to absorb the rainfall, resulting in significant runoff.

[3] Auckland ClimateWEB.pdf (niwa.co.nz)



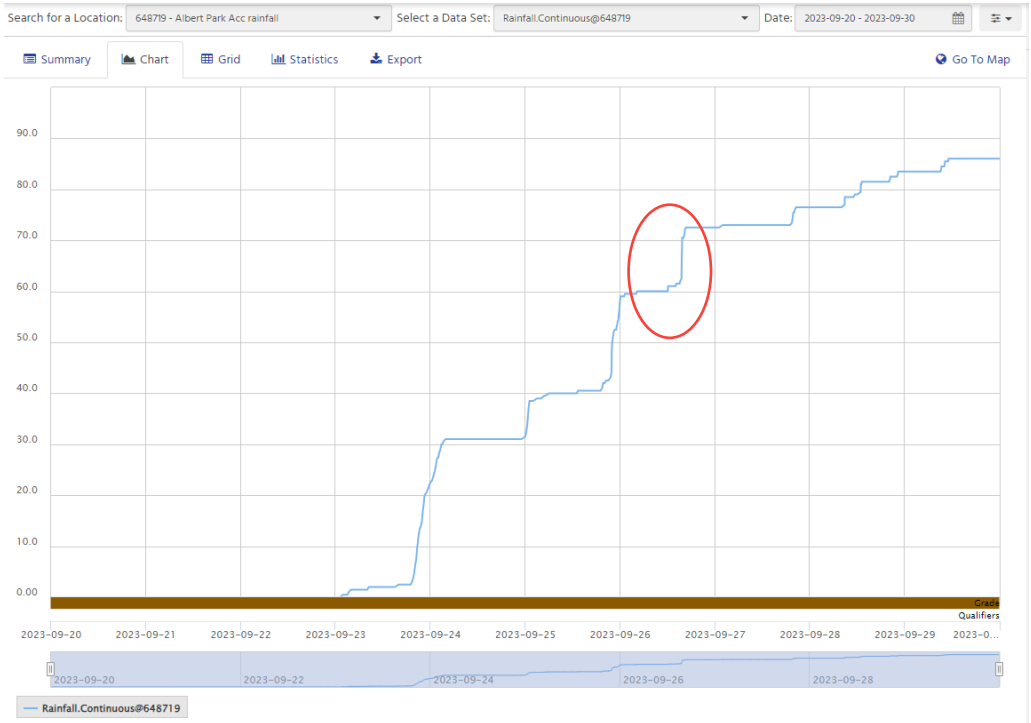
4.3 May 2023 Event

84mm in 24hrs between 06:00 09/05/23 and 06:00 10/05/23 cf. TP108 24hr rainfall depth for 5yr ARI of 100mm. The peak 14min rainfall intensity during this event was ~54mm/hr, similar to the theoretical TP108 5yr ARI peak rainfall intensity of ~57mm/hr for the same critical duration.



4.4 Rainfall leading up to first observation of Sinkhole

Approximately 70mm of rain fell in the three days leading up to the first observation of the sinkhole above the OMS at 79 St Georges Bay Road on 26th September 2023. While this rainfall was not likely to have activated overland flow paths, it would likely have further contributed to subsurface groundwater flows in already saturated ground. Based on photographs provided from the initial site visits immediately following the first observation of the sinkhole, there were several areas of open gravel where the carpark asphaltic concrete had been removed for trenching of the ducts leading to the future transformer. This would have provided an additional route for ponded water to infiltrate into the ground.



5 Summary and Conclusions

Based on the above, it is considered that stormwater may have contributed to the formation of the sinkhole in the following ways:

- There were at least three rainfall events in the first half of 2023 that are likely to have led to the activation of overland flow paths through 79 St Georges Bay Road. These events occurred in January (>100yr ARI), February (~20yr ARI) and May (2-5yr ARI).
- The high total rainfall during the nine months leading up to the formation of the sinkhole is likely to have resulted in saturated ground conditions and more frequent activation of secondary/overland flow paths.
- The existing overland flow paths are obstructed by a solid brick wall near the location of the sinkhole, creating a trapped low point. This would cause water to pond above the location of the sinkhole to depth of ~0.25-0.50m before being able to continue flowing downslope.
- The ponding depth at the trapped low point may have been exacerbated by the construction of a low block wall and planter boxes upslope of the sinkhole location.
- Ponded water at the trapped low point would seep into the ground through weak points in the seal or other pervious areas (e.g. garden beds, gravel areas).
- The existing stormwater network within 79 St Georges Bay Rd and upstream has an approximate capacity to accommodate between a 2yr and 10yr ARI event.
- The existing stormwater network was likely to have been under surcharge pressure during the significant rainfall events in January, February and May 2023. If there were any weak points or defects in the existing DN1350 stormwater pipe that crosses above the OMS upslope of the sinkhole location, water may have exfiltrated from the pipe into the surrounding trench material adding to subsurface groundwater flows.
- The combination of the above would have likely led to significantly elevated local groundwater flows/levels in the vicinity of the OMS.

It is important to note that the stormwater factors above in and of themselves are considered potential contributory factors only and are unlikely to have been the primary cause of the sinkhole formation. While it would have led to elevated subsurface flows there would need to have been a preferential flow path in the soils above the OMS for this to have influenced the formation of the sinkhole. Therefore the above advice needs to be read in conjunction with the

other SME assessments (Geotechnical, Tunnels/Structures, and Hydrogeology) to form a complete picture of the likely failure mechanism.

APPENDIX F: 2012 AND 2019 CONDITION ASSESSMENT MEMO

MEMO

TO:	Philip McFarlane
FROM:	Kiran Gokal
ACTIONED:	Amulya Prakash
REVIEWED:	Kiran Gokal
SUBJECT:	Orakei Sewer – CCTV and Laser Footage Review
OUR REF:	W-SL021.02
DATE:	13/02/2024

1. BACKGROUND

WSP has been requested to undertake a condition assessment review of the Orakei trunk sewer. The Orakei main sewer (OMS) is a part of combined network, collecting both wastewater and stormwater. It serves a large part of central Auckland.

On Tuesday 26 September 2023, a contractor who was excavating a trench for a power cable in St Georges Bay Rd noticed a hole in the ground above the OMS and alerted Watercare. The sinkhole grew over the next 24 hours. On 27 September the sewer collapsed, and the OMS became fully blocked.

The location of the trunk sewer assessed is shown in the figure below.

Figure 1-1: Location and alignment of the subject trunk sewer

2. OBJECTIVE

The purpose of this desktop review is to:

- provide an analysis of 2012 and 2019 (pre-failure) CCTV and laser footage of the Orakei sewer to better understand failure modes that may be visible from these records.

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3. SCOPE

The scope of work involves:

- A review of CCTV footage
- A review of the laser scan data
- Assess the defects in accordance with the *Inspection Reporting Code of Australia – WSA 05.*
- Record key observations.

The Assets within the scope are listed in Table 4.1.

The CCTV and laser records provided for the analysis is listed in Table 3.1.

ASSET NO.	INSPECTION YEAR 2019		INSPECTION YEAR 2012	
	CCTV	Laser	CCTV	Laser
10099260 (ORM013J-ORM013)	Yes	Not available	No	Not available
10007049 (ORM014-ORM013J)	Yes	Not available	Yes	Yes
10007050 (ORM014J-ORM014)	Yes	Yes	Yes	Yes
10007051 (ORM015-ORM014J)	Yes	Yes	Yes	Yes
10007052 (ORM016-ORM015	Yes	Yes	Yes	Yes
10007053 (ORM017-ORM016	Yes	Yes	Yes	Yes
10007054 (ORM017-OMR018)	Yes	Yes	Yes	Yes

Table 3.1: Records received for review

4. BUILT CHARECTERISTICS

As-constructed drawing indicate that the subject trunk sewer main:

- was constructed in 1910 & 11.
- was constructed as oviform (egg-shaped)
- mostly constructed from a single skin block at the obvert (upper half) in most sections and precast (assumed reinforced) concrete panels for some sections, and a concrete base (lower half). There were no specific material details of the blocks.
- has cover depths between 5 and 30 m.

— with a concrete lower half that may be mass concrete with some connecting rebar at the upper sections.

A typical excerpt from the drawings is shown below showing a typical cross section of the oviform with the block obvert and a precast obvert. A longitudinal section of the trunk sewer is also shown below.

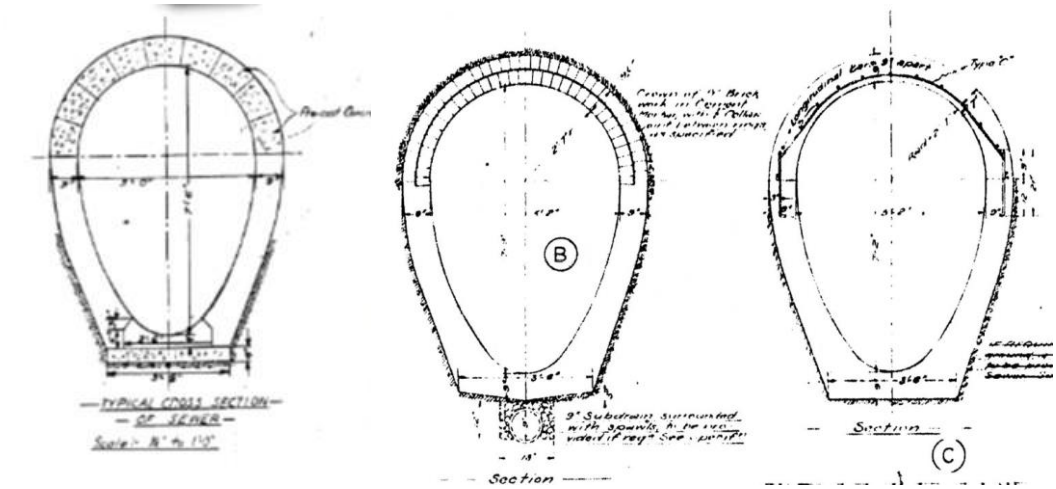


Figure 4-1: Typical block obvert shown on cross section of oviform

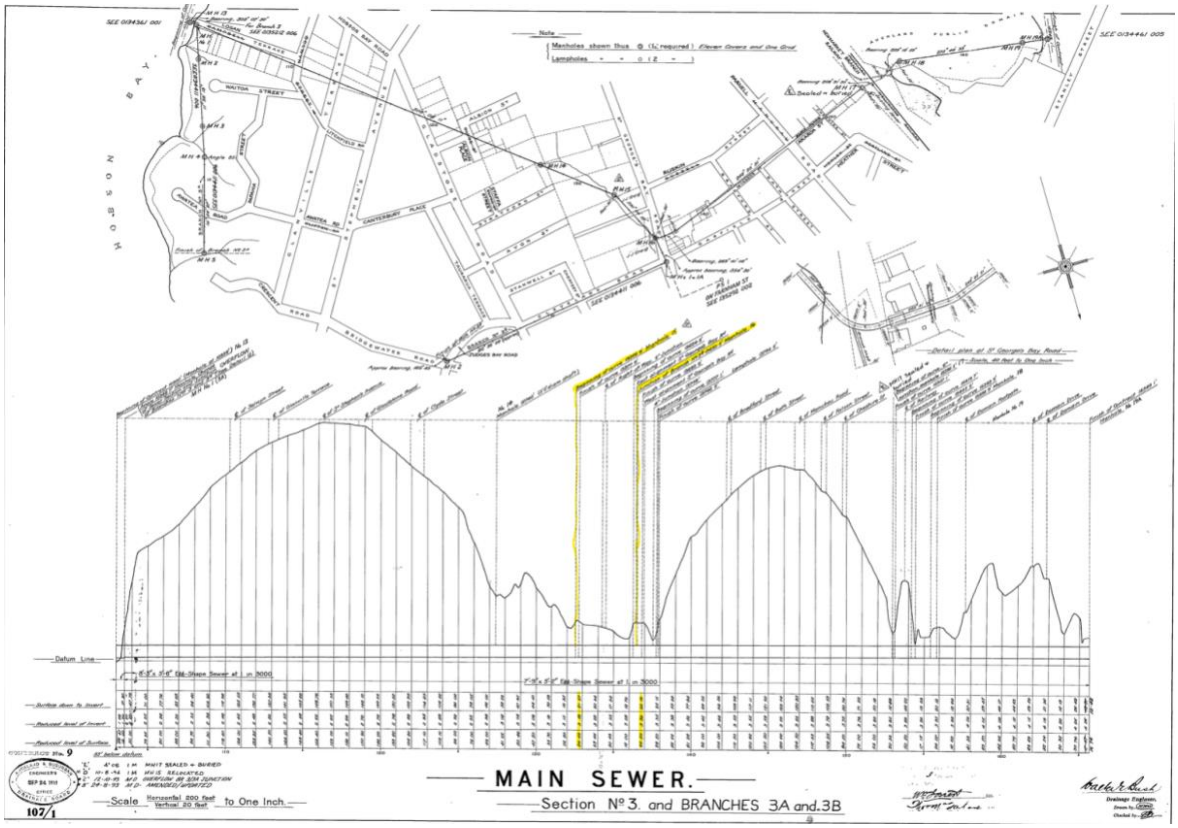


Figure 4-2 Longitudinal section of the sewer main, with failure section between the yellow highlights

Table 4.1 List of Section IDs and details of the Oviform trunk sewer

LINE SEGMENT NUMBER	VINTAGE	MATERIAL	US MH (ASSET ID)	DS MH (ASSET ID)	LENGTH (M)[1]
10099260	1910	Precast concrete panel obvert, mass concrete invert	ORM013J	ORM013	17.60
10007049	1910	Block obvert, mass concrete invert	ORM014	ORM013J	720.17
10007050	1910	Block obvert, mass concrete invert	ORM014J	ORM014	109.99
10007051	1910	Block obvert, mass concrete invert	ORM015	ORM014J	62.56
10007052	1910	Precast concrete arch and mass concrete invert up to 46.62 m from MH 16, then block arch, mass concrete invert	ORM016	ORM015	117.95
10007053	1910	Block and precast concrete panel obvert, mass concrete invert	ORM017	ORM016	501.56
10007054	1910	Precast concrete panel obvert, mass concrete invert	ORM018	ORM017	105.13

[1] This measurement is taken from document “8050_DSORM_Summary Sheet”

5. APPROACH TO CCTV REVIEW

5.1 APPROACH

Conduit condition is commonly assessed in 2 significant areas:

- Structural - the ability of the conduit to maintain its structural integrity (handling internal/external forces and corrosion factors, etc.)
- Service – the ability of the conduit to convey material (sewage flows, water, sludge, air).

Condition assessments are used to analyse defects and score them based on their severity, occurrence, and ability to impact the performance of the conduit. Listed defects are scored according to detailed criteria in the Conduit Inspection Reporting Code of Australia. Peak scores and mean scores are then used independently to nominate a condition grading (from 1 to 5, with 1 being excellent and 5 being very poor) for both service, and structural factors.

The following review of the CCTV and Laser/SONAR data has been completed utilising the criteria set out in the Conduit Inspection Reporting Code of Australia – WSA 05 by the Water Services Association of Australia (WSAA).

5.2 COMMENTS ON FOOTAGE PROVIDED

It should be noted that:

- The resolution of the CCTV footage was very poor, and no camera rotations (panning) were done by the CCTV operator due to the apparent fixed/non-articulated camera system. These quality assurance issues limited the identification and defect severity assessment. It appears that the footage was not obtained to WSAA requirements.
- The CCTV camera system records travelled length. The starting position of the camera may not coincide with the asset connection to the maintenance hole. Therefore, a maintenance hole to maintenance hole camera travel may not provide the exact length of the main or exact location of defects.

- Due to the constant flow of sewerage, the serviceability condition of the invert was identified using Sonar equipped with floating inspection device. The device also included a laser for determining ovality changes along the length of the trunk main.

5.3 OBSERVATIONS

CCTV inspections provide a visual condition assessment of a pipeline's internal surfaces, features, and connections. This process can return adequate service level and structural grading; however, the reader should be aware of the process's limitations. It should be noted that condition scoring is based on the interpretation of the condition assessment engineer. Thus, the reviewer must maintain awareness and make balanced and informed judgements when identifying defects and conducting the assessment.

CCTV inspections provide baseline visual condition assessment of the pipe internals. The true structural integrity of the pipe wall cannot be accurately determined through a visual process alone. Further, the quality of the video and laser footage provided poor quality data that presented challenges in analysing critical elements of the structure. The following observations have been made based on the footage and data provided:

- External defects could not be identified, and it is likely that blocks could externally corrode and erode making them more pervious, increasing the likelihood of infiltration and increased self-weight.
- Structural integrity of the block walls can be compromised due to the corrosion and erosion of the cement mortar that binds the blocks together. The block material itself was not determined from the footage, however it can be borne in mind that blocks tend the be more pervious than bricks which are more compacted material. Consequently, blocks are more susceptible to corrosion and erosion, internally and externally. This failure mode is not easily detected visually, let alone from poor video footage.
- From the vintage drawings, it is unclear if the shape of the blocks is rectangular or trapezoidal like a keystone block used for vintage arch construction. For this assessment, it is assumed that the blocks are rectangular and rely on the binder to maintain its position along the arch.
- Complete loss of the binder, because of corrosion, lead to an initial displacement of the block and ultimately loss of the block from the wall matrix. The available CCTV footage did not provide sufficient evidence of the extent of cement mortar loss. Therefore, observations were made of infiltration/ingress and displaced blocks that suggest loss of the binder.
- Where connecting block surfaces have been displaced, it was assumed that the crack would have occurred between the blocks where the mortar binder has weakened. The cause of the deformation may be surcharge above the obvert of the oviform. The surcharge can result from various factors including groundwater, soil cover, other network infrastructure and foundation of buildings and roads. The estimated number of block displacements are listed in the tables below.
- Where the appearance of mass infiltration or ingress was evident and no clear appearance of missing blocks, it was assumed that mortar was used to fill a non-standard block space. The ingress material would have led to accumulation of slime at those isolated locations. The ingress locations were mostly detected at the horizontal joint between the blocks and the lower concrete base.
- The structural integrity of concrete base walls can be compromised due to the leaching of the cement binder and loss of aggregate material. The leaching of the binder is of particular interest. Once the binder loses its integrity after the corrosion front has passed, the aggregate is exposed. Initially, the aggregate becomes visible on its surface and then progressively projects/protrudes from the remaining surface. The corrosion front would be behind the exposed aggregate, progressing towards the reinforcing (if present) and ultimately the total wall thickness. This was clearly evident on the pre-cast obverts. The initial loss of concrete sections resulting from the loss of binder and aggregate, results in spalled sections. This is particularly prevalent in pre-cast concrete sections of Asset 10007052 and Asset 10007054.
- Lasers were used to assess deviations from the reference shape above the sewage line. This is helpful when reviewing inwards/outwards displacement of blocks or severe spalling of concrete. Where blocks may be corroded and eroded, a loss of thickness occurs, appearing as an outward displacement. The data obtained does not have sufficient resolution to detect the extent of lost cement mortar between the blocks. Without high resolution laser and video footage, only rough visual estimations could be done of these critical structural elements.

6. STRUCTURAL AND SERVICE GRADING (2019 DATA)

The structural and service scores have been calculated and a list of defects and accompanying photos can be found in the Appendix B. These defects were identified through an analysis of the CCTV inspection footage. It is noted that the determination of the defect location and type is impacted by CCTV footage quality, CCTV operator control and reviewer interpretation.

The scoring and grading system, in accordance with WSA 05, is shown in Table 6.1 for the subject assets. Appendix B provides images of the defects.

Table 6.1 Structural and Serviceability grading scores

ASSET ID	PEAK STRUCTURAL SCORE	MEAN STRUCTURAL SCORE	WSAA STRUCTURAL GRADE	PEAK SERVICE SCORE	MEAN SERVICE SCORE	WSAA SERVICE GRADE
10099260	20	19	**5**	5	5	**3**
10007049	80	3	**5**	10	0	**3**
10007050	55	10	**5**	5	0	**1**
10007051	15	8	**5**	10	2	**3**
10007052	25	21	**5**	5	1	**2**
10007053	80	10	**5**	30	0	**3**
10007054	20	21	**5**	5	0	**1**

Common key defects that contributed to the condition grade 5 and increase the risk of failure, are:

- Visible aggregate on the obvert and base concrete panels, suggesting that the corrosion front is deeper than that visible.
- Spalling on the obvert concrete panels resulting from the leaching of the cement and loss of aggregate.
- Isolated locations of reinforcing exposure at the obvert of the pre-cast concrete panels
- Deformation of the blocks along the length of the sewer, found at Asset 10007049, suggesting weakened bond between the mortar and the blocks accompanied by external surcharge.
- Mortar missing predominantly near the horizontal joint between the blocks and the concrete base, resulting in infiltration and ingress of (soil) material.

  The future trend of cement mortar degradation is unlikely to be linear as corrosive moisture accumulates in the pores of the cement mortar (and block). The risk of failure also increases when groundwater accumulates in the pores of the pervious blocks, increasing its weight and circumferential stress on the adjacent mortar and blocks. This can result in an inward displacement of blocks.

  *Note that the deviations could also represent thinned blocks resulting from corrosion and erosion. As mentioned above, outward displacement as reported in the laser report, can represent eroded or thinned blocks resulting from its erosion. Apart from the above measurements, the laser profiling report also shows general ‘outward displacement’ across the trunk sewer (see Figure 6-1).

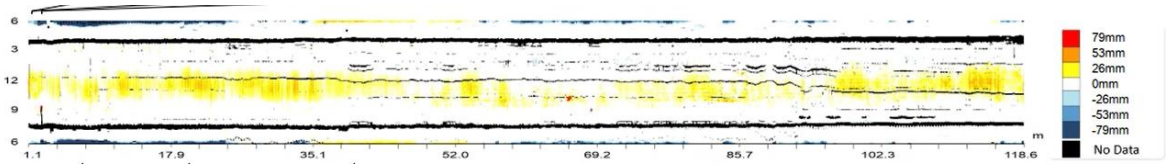


Figure 6-1: General 'outward' displacement/erosion shown by yellow colour across the full length of Asset 10007052

This suggests that block erosion is more likely the failure mode, although block displacements can also occur. This failure mode coincides with the earlier observations and comments made about the pervious construction of blocks as compared to bricks. It is expected that the corrosion and erosion of the blocks would continue at an indeterminable rate, progressing to a point where its structural integrity would be compromised to withstand external loading and internal pressure surcharges. To quantify the structural integrity of the existing blocks, finite element analysis is recommended. Assumptions would be needed to be made about block strength, backfill materials etc.

— The number of locations where the mortar was observed to be either missing totally or moderately is listed below.

ASSET ID	10007049	10007050	10007051	10007052	10007053	10007054
Mortar Missing at no. of Locations	15	42	40	58	39	10
Number of location missing mortar per m	0.02	0.38	0.64	0.49	0.08	0.14

Asset 10007052 has the greatest number of observable mortar loss at the block and concrete interface. The WSAA code increases the weighting score of mortar losses from the conduit obvert to the conduit invert. This is because of the increased physical bearing weight with depth. The weak bond at the conduit spring line (3 and 9 o'clock) can result in instability of the block section constructed above it.

7. STRUCTURAL AND SERVICE GRADING (2012 DATA)

The structural and service scores have been calculated and a list of defects and accompanying photos can be found in the Appendix B. The scoring and grading system, in accordance with WSA 05, is shown in Table 6.1 for the subject assets.

ASSET ID	PEAK STRUCTURAL SCORE	MEAN STRUCTURAL SCORE	WSAA STRUCTURAL GRADE	PEAK SERVICE SCORE	MEAN SERVICE SCORE	WSAA SERVICE GRADE
10099260	No inspection data provided					
10007049	80	2	**5**	10	0	**3**
10007050	6	2	**4**	5	1	**1**
10007051	6	3	**4**	5	1	**1**
10007052	25	6	**5**	5	1	**1**
10007053	80	1	**5**	5	0	**1**
10007054	100	3	**5**	5	1	**1**

Table 7.1 Structural and serviceability grading according to 2012 CCTV analysis

Common key defects that contributed to the condition grades and increasing risk of failure, are:

— Loss and leaching of cement mortar resulting in infiltration at locations, particularly at Asset 10007052 CH61-68m

- An appearance of a spall/crack and/or reinforcing exposure along the concrete base of Asset 10007049 and Asset 10007053
- Roughened concrete base suggesting corrosion and loss of cement binder for the length of the mains
- A longitudinal crack at 1 o'clock (CH 712-717m) of Asset 10007049
- The surface appearance of the blocks did not clearly show that erosion has significantly occurred
- Surface corrosion of the pre-cast obverts
- Hole/partial/full loss of a block at the obvert at CH83m of Asset 10007054.
- The number of locations where the mortar was observed to be either missing totally or moderately is listed below.

ASSET ID	**10007049**	**10007050**	**10007051**	**10007052**	**10007053**	**10007054**
Mortar Missing at no. of Locations	52	24	30	25	18	15
Number of location missing mortar per m	0.07	0.22	0.48	0.21	0.04	0.14

8. KEY COMPARISON BETWEEN THE 2012 AND 2019 INSPECTIONS

A comparison was initially made between the WSAA-based structural condition grade scores between the 2012 and 2019 inspections, as tabulated below.

ASSET ID	2012			2019		
	Peak structural score	Mean structural score	WSAA Structural Grade	Peak structural score	Mean structural score	WSAA Structural Grade
10099260	No records	No records	No records	20	19	**5**
10007049	80	2	**5**	80	3	**5**
10007050	6	2	**4**	55	10	**5**
10007051	6	3	**4**	15	8	**5**
10007052	25	6	**5**	25	21	**5**
10007053	80	1	**5**	80	10	**5**
10007054	100	3	**5**	20	21	**5**

It is clear that the peak and mean scores (and condition grades) have increased from 2012 to 2019. This suggests that defects have deteriorated more, and the extent has increased across the length of the assets.

Of significance, a review was conducted of the general inwards/outwards laser-based measurements across the full length of the assets inspected in 2012 and 2019. Table 8.2 shows a comparison the extent of outward deviations between the 2012 & 2019 inspections i.e. the extent of erosion. Key observations are:

- The extent of corrosion observed in the 2012 laser profiling reports varied across the pipes inspected. No corrosion was identified on pipes 100007050 & 10007051. Isolated erosion to a maximum depth of 29mm was observed on pipes 10007049 & 10007052. More extensive erosion was observed at the obvert of pipes 10007053 & 10007054 to a maximum depth of 81mm.
- The depth and extent of erosion increased markedly between 2012 & 2019. The maximum depth of corrosion on pipes 100007050 & 10007051 was 54mm and extended across the length of the obvert (whereas no erosion was observed in 2012). 20mm of additional erosion was observed on pipes 10007053 & 10007054 to a maximum of 101mm.
- More extensive erosion was observed on pipe 10007052 i.e., the pipeline that failed in 2023. 125mm of erosion was observed over a short section (less than 1m) near the location of the collapse. Up to 61mm of erosion was observed across the obvert whereas in 2012 only isolated sections of erosion were observed.

Table 8.1 Comparison of Corrosion Identified from 2012 & 2019 Laser Profiling Inspections

ASSET NO. (MANHOLE NOS)	INSPECTION YEAR 2012	INSPECTION YEAR 2019
10099260 (ORM013J-ORM013)	Not available	Not available
10007049 (ORM014-ORM013J)	Max 29mm Only isolated erosion observed	Not available
10007050 (ORM014J-ORM014)	No erosion identified	Max 41mm

		24mm to 35mm recorded across obvert (not as extensive as other sewer sections)
10007051 (ORM015-ORM014J)	No erosion identified	Max 54mm 12mm to 37mm recorded extensively across obvert
10007052 (ORM016-ORM015	Max 24mm Only isolated erosion observed	Max 125mm 27mm to 62mm recorded extensively across obvert
10007053 (ORM017-ORM016	Max 51mm 20mm to 51mm recorded extensively across obvert	Maximum 71mm Similar extent of erosion to 2012
10007054 (ORM017-OMR018)	Max 81mm 29mm to 81mm recorded extensively in obvert of upstream half of pipe	Max 101mm Similar extent of erosion to 2012

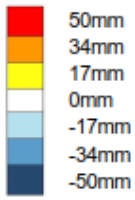
Table 8.2 shows a summary of the flat graphs provided in the laser reports along with a colour coded scale represented by positive numbers (outward measurements from original ovality), and negative numbers (inwards measurements from original ovality).

Although the scales are different between the two reports, the colour coding can be used to infer the general condition of the assets.

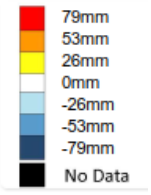
It was observed that there are more outward measurements from the reference shape, more yellows and reds, in 2019 than 2012. This suggests that more outwards displacement/erosion of the inside surface and along the asset's length, has been measured in 2019 when compared to the data obtained in 2012.

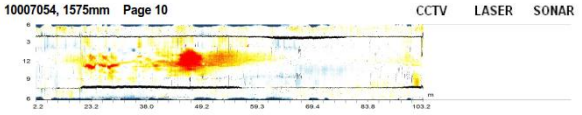
Table 8.2 Inspection summary of general inwards/outwards measurements

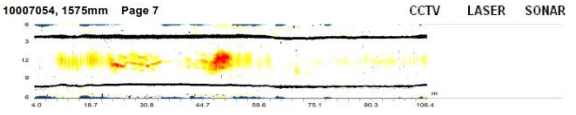
2012 Inspection summary flat graph



2019 Inspection summary flat graph




10007054, 1575mm Page 10
CCTV LASER SONAR


10007054, 1575mm Page 7
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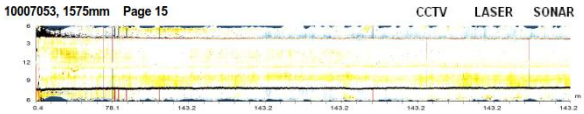
10007053, 1575mm Page 15
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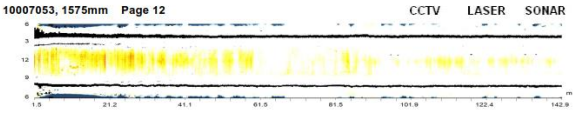
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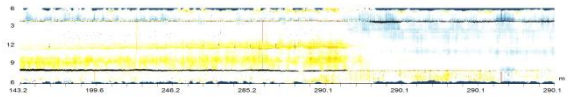
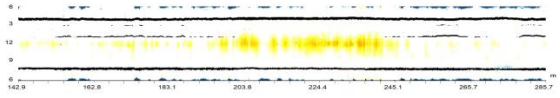
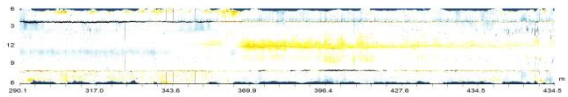
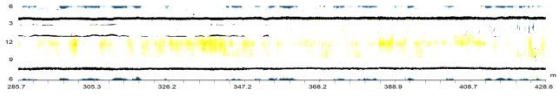
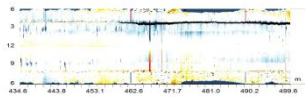
CCTV LASER SONAR

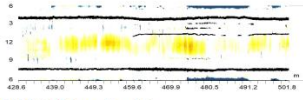


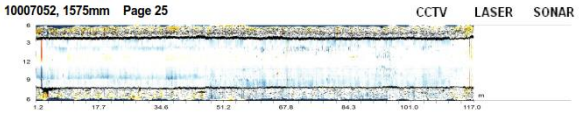


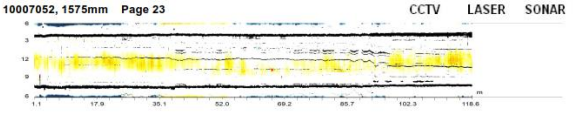


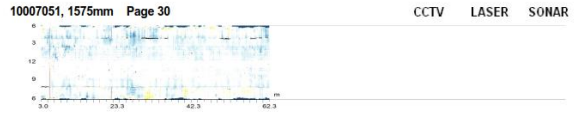


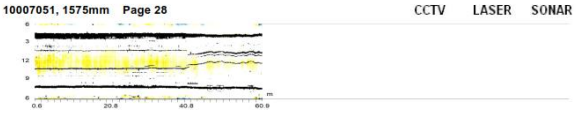


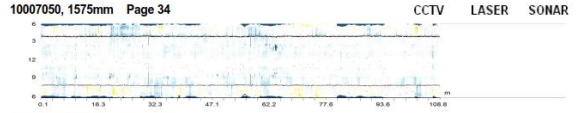


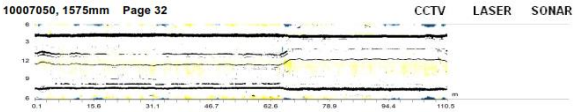

10007052, 1575mm Page 25
CCTV LASER SONAR

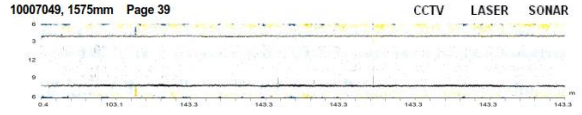

10007052, 1575mm Page 23
CCTV LASER SONAR


10007051, 1575mm Page 30
CCTV LASER SONAR


10007051, 1575mm Page 28
CCTV LASER SONAR


10007050, 1575mm Page 34
CCTV LASER SONAR


10007050, 1575mm Page 32
CCTV LASER SONAR


10007049, 1575mm Page 39
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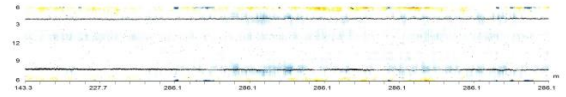

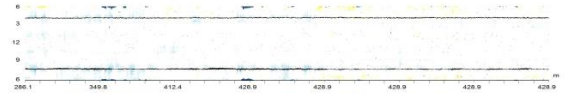

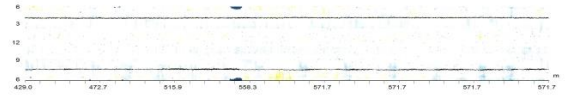

9. CONCLUSION

The following conclusions were drawn:

- Common key defects that were observed and which contribute the increased risk of future failure are:
  - Visible aggregate on the obvert and base concrete panels
  - Spalling on the obvert concrete panels and visible corroded reinforcing
  - Mortar missing predominantly near the horizontal joint between the blocks and the concrete base
  - Erosion of the blocks along the length of the sewer
  - The risk of trunk sewer failure increases when external groundwater accumulates in the pores of the pervious blocks, increasing its weight and circumferential stress on the adjacent mortar and blocks.
  - There is observable mortar loss at the block and concrete interface increase stability concerns of the blocks constructed above it.
  - A non-linear future trend of cement mortar and block thickness degradation is likely as internal corrosive moisture and gases accumulate in the pores of the cement mortar and blocks,
- The structural condition grades based on the WSAA conduit inspection code is 5.
  - The WSAA code suggest that this grade relates to a failure that has occurred or imminent.
  - Apart from the 2023 failure, there were no other reported failures.
  - Given that the visual-based inspection is considered a screening assessment, the WSAA code suggests that an immediate risk assessment and further investigation be undertaken including rehabilitation/renewal.
- The depth and extent of corrosion increased markedly between 2012 & 2019. From the 2019 inspection:
  - 125mm of corrosion was observed over a short section (less than 1m) of pipe 10007052 near the location of the collapse.
  - corrosion to a maximum of 101mm was observed on pipes 10007053 & 10007054.

10. RECOMMENDATIONS

The following actions are recommended:

- Undertake a technical analysis of the oviform structure using finite element analysis (FEA) to confirm structural integrity.
- Factor the findings from the FEA to update likelihood of failure
- Update the risk assessment of the trunk sewer considering the criticality of the main and determine risk appetite for future failure/s
- Undertake an economic options analysis of renewal and replacement methods.
- Depending on the outcomes of the above actions, renew or replace Assets 10007049 to 10007054.

APPENDIX A WSA-05 GRADING THRESHOLDS AND RECOMMENDATIONS

TABLE C5

STRUCTURAL GRADING OF SEWERS

Grading	Description	Appropriate response in normal circumstances [1]	Peak score [2]	Mean score
1	Insignificant deterioration of the sewer has occurred. Appears to be in good condition	No immediate action required—Standard programmed condition assessment	<5	0 – 1.0
2	Minor deterioration of the sewer has occurred. Minor defects are present	No immediate action required—Standard programmed condition assessment	5 – 9	>1 – 3.0
3	Moderate deterioration of the sewer has occurred. Developed defects are present but not affecting short term structural integrity	Monitor with programmed condition assessment for rehabilitation and/or renewal in medium term	10 – 39	>3 – 5.0
4	Serious deterioration of the sewer has occurred. Significant defects are present affecting structural integrity	Take immediate action as appropriate to the defects e.g. temporary supports Immediately undertake risk assessment and further investigate as required. As appropriate to outcomes of above, schedule appropriate action which may include rehabilitation and/or renewal in the short term	40 – 59	>5 – 10.0
5	Failure of the sewer has occurred or is imminent	Take immediate action as appropriate Immediately undertake risk assessment and further investigation, and, as necessary, take appropriate action which may include immediate rehabilitation and/or renewal	≥60	>10

NOTES:

1. The actual action to be taken for any sewer system will depend on the asset management policies and procedures of the asset owner/operator.
2. Rounded to the nearest whole number.

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TABLE C6

SERVICE GRADING OF SEWERS

Grading	Description	Appropriate response in normal circumstances[1]	Peak score[2]	Mean score
1	No or insignificant loss of hydraulic performance has occurred. Appears to be in good condition and there is little likelihood of sewage pollution[3]	No immediate action required—Standard programmed condition assessment	<5	0 – 1.0
2	Minor defects are present causing minor loss of hydraulic performance and/or minor likelihood of sewage pollution	No immediate action required—Standard programmed condition assessment	5 – 9	>1.0 – 3.0
3	Developed defects are present causing moderate loss of hydraulic performance and/or moderate likelihood of sewage pollution	Take immediate action as appropriate to the defect e.g. cleaning, root cutting, point repair Monitor with programmed condition assessment for rehabilitation and/or renewal in medium term	10 – 39	>3 – 5.0
4	Significant defects are present causing serious loss of hydraulic performance and/or significant likelihood of sewage pollution	Take immediate action as appropriate to the defect e.g. root cutting, point repair, vermin treatment Immediately undertake risk assessment and further investigate as required As appropriate to outcomes of above, schedule appropriate action which may include rehabilitation and/or renewal in the short term	40 – 59	>5 – 10.0
5	Failure of the sewer or pollution of the environment has occurred or is imminent	Take immediate action as appropriate e.g. temporary support Immediately undertake risk assessment and further investigation, and, as necessary, take appropriate action which may include immediate rehabilitation and/or renewal	≥60	>10

NOTES:

1. The actual action to be taken for any sewer system will depend on the asset management policies and procedures of the asset owner/operator.
2. Rounded to the nearest whole number.
3. Pollution may occur through a sewage spill (overflow), exfiltration through a defect or cross-connection between the sewerage and stormwater systems.

APPENDIX B EXAMPLES OF DEFECT APPEARANCES

Segment: 10099260	**Date of Inspection: 12/02/2019**
Surface damage, spalling (only at obvert) and aggregates visible, full circumference above sewage, for the full length of main, from CH:2.85m to 17.6m	Longitudinal joint at 2o'clock of CH: 5.97m
Roughening seen throughout the length of the pipe	Grease deposition at 2 o'clock and at the spring line of CH: 8.99m

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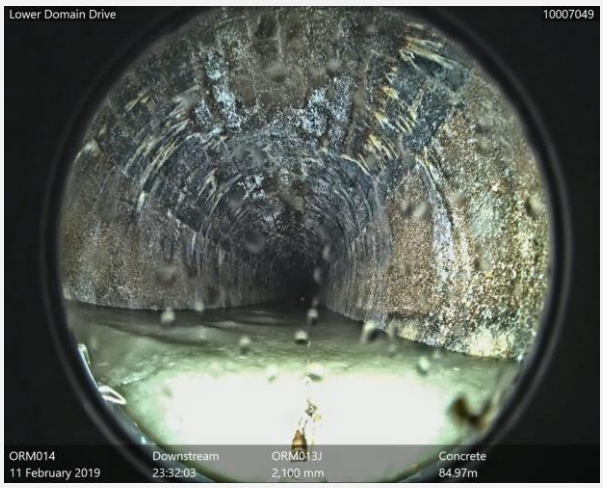
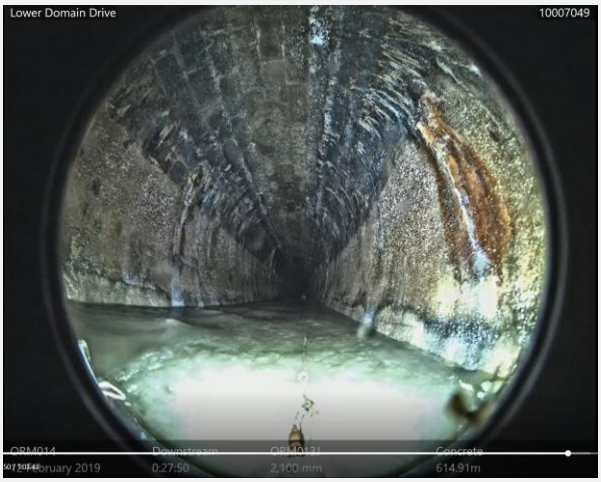
Segment: 10007049	Date of Inspection: 11/02/2019
Infiltration seen at 11 o'clock of CH: 1.39m	Infiltration at 1 o'clock of CH:5.13m
Infiltration staining at 9 o'clock of CH: 8.14m	Calcification encrustation observed at the obvert of CH: 15.17m

Longitudinal loss of mortar found at 1 o'clock from CH: 17.15m to 20.38m, allowing ingress	Longitudinal loss of mortar, deformation, and brick separation and found at 12 o'clock from CH: 21.92m to 25.06m
Longitudinal loss of mortar seen at 2 o'clock of CH: 25.06m, allowing ingress	Hole/opening in blocks resulting in mass infiltration/ingress at 3 o'clock of CH: 54.19m
Hole/opening in blocks resulting in mass infiltration/ ingress at 3 o'clock of CH: 52.35m	Hole/opening in blocks resulting in mass infiltration/ ingress at 3 o'clock of CH: 61.95m
	

Hole/opening in blocks resulting in mass infiltration/ ingress at 3 o'clock of CH: 62.86m	Calcification and infiltration staining is seen at the obvert of CH: 84.97m
Mortar missing at 3 and 9 o'clock at CH:132.19m	Possible reinforcement is visible at 4 o'clock at CH: 139.42m
Encrustation at the obvert at CH:143.02m	Mortar missing at 3 and 9 o'clock (interface between the concrete and blocks) at CH: 160.79m
Mortar is missing at 3 and 9 o'clock of CH: 166m	Mortar missing at 9 o'clock of CH: 169.93m

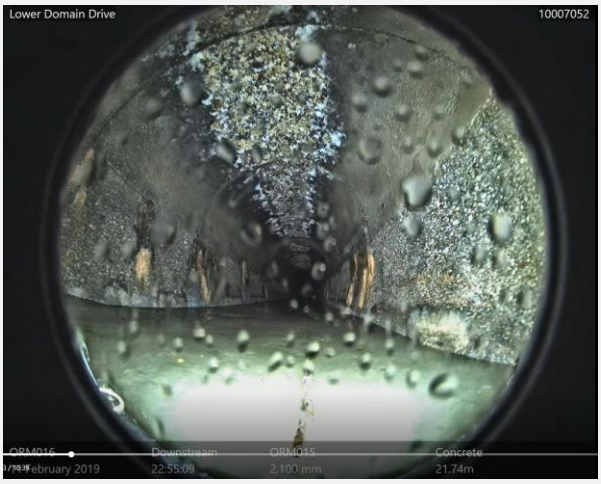
Mortar missing at 3 and 9 o'clock of CH: 222.94m	Mortar missing at 3 o'clock of CH: 243.15m
Mortar missing at 3 o'clock of CH:256.11m	Mortar missing at 3 o'clock of CH: 312.28m
Hole/opening in blocks resulting in mass infiltration/ ingress at 2 o'clock of CH: 382.57m	Mortar missing at 10 o'clock of CH: 488.53m

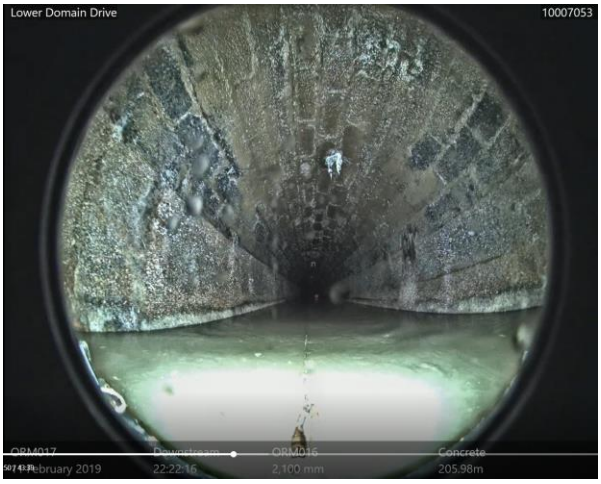
Mortar missing at at 4 o'clock of CH: 511.92m	Dripping infiltration seen at the obvert of the pipe at CH: 596.13m and 598.23m
	
Hole/opening in blocks resulting in mass infiltration/ ingress at 3 o'clock of CH: 614.91m	Tap root intrusion from 10 to 3 o'clock of CH: 709.85m

Segment: 10007050	Date of Inspection: 11/02/2019
Mass ingress at block/concrete joint at 9 o'clock of CH: 20.90m	Mass ingress at block/concrete joint at 9 o'clock of CH: 36.20m
Loss of mortar at 3 o'clock of CH: 44.78m	Mass ingress at block/concrete joint at 9 o'clock of CH: 48.18m
Loss of mortar at at 3 o'clock from CH: 51.62m to 55.42m	Mass ingress at block/concrete joint at 9 o'clock of CH: 58.02m

Mass ingress at block/concrete joint at 3 and 9 o'clock of CH: 64.42m	Mass ingress at block/concrete joint at 3 o'clock of CH: 102.45m

Segment: 10007051	Date of Inspection: 11/02/2019
Fine root intrusion from 10 to 2 o'clock of CH: 5.42m	Infiltration/ingress, loss of mortar and staining at 9 o'clock of CH: 25.80m
Infiltration/ingress, loss of mortar and staining at 9 o'clock of CH: 50.87m	Fine root intrusion from CH: 50 to 61.73m

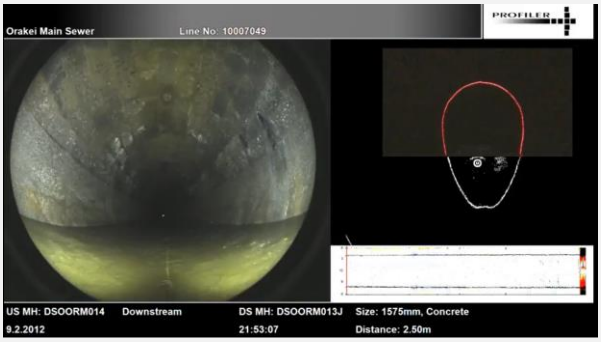
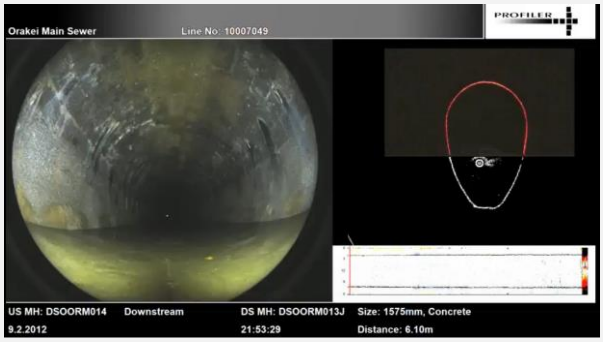
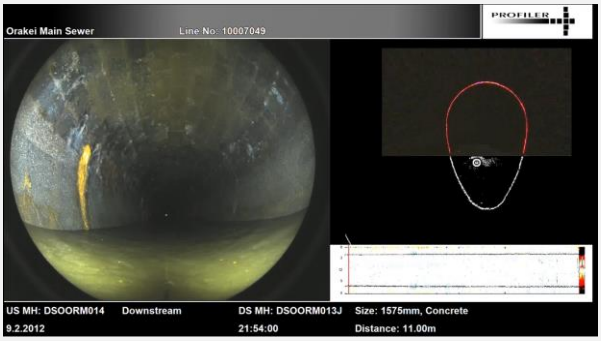
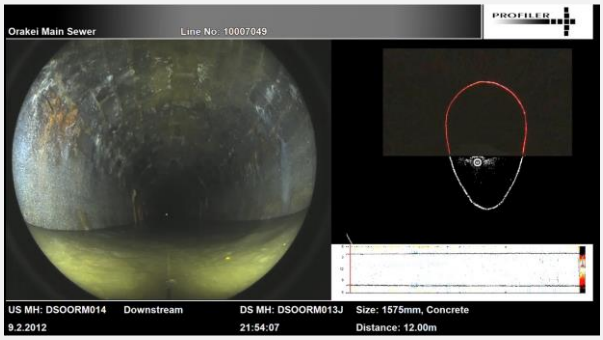
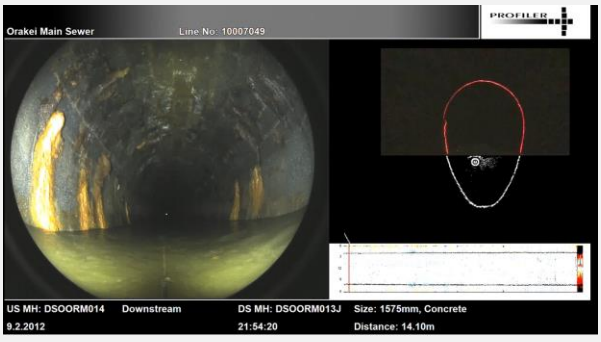
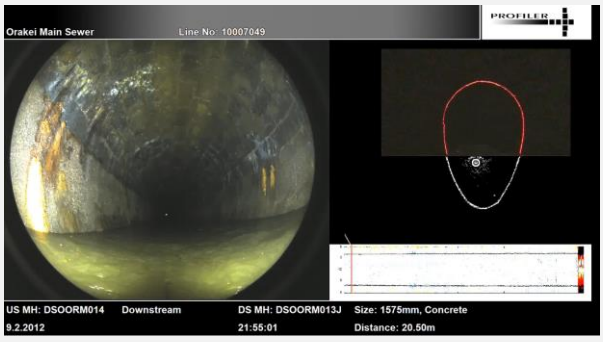
Segment: 10007052	Date of Inspection: 11/02/2019
	
Aggregate visible throughout the length of the pipe with exposed aggregates and spalling at the concrete obvert	Infiltration/ingress, loss of mortar and ingress staining at 3 o'clock of CH: 23.09m
Fine root intrusion with loss of mortar at 11 and 1 o'clock, ingress at 3 and 9 o'clock at CH: 55.30m	Fine root intrusion with loss of mortar at 11 and 1 o'clock, ingress at 3 and 9 o'clock from CH: 55.30m to 98.36m
Fine root intrusion, ingress with loss of mortar at 9 and 1 o'clock of CH: 107.76m	

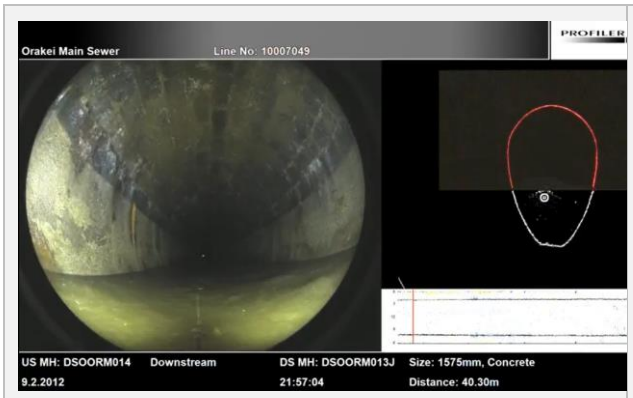
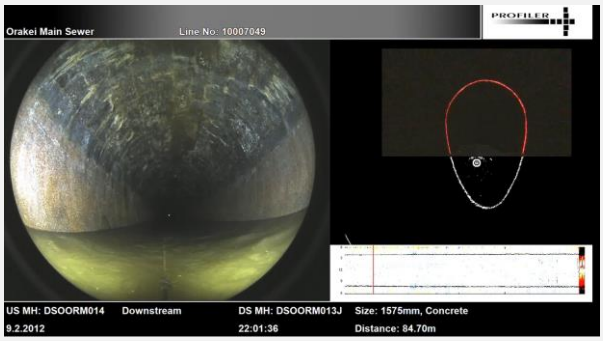
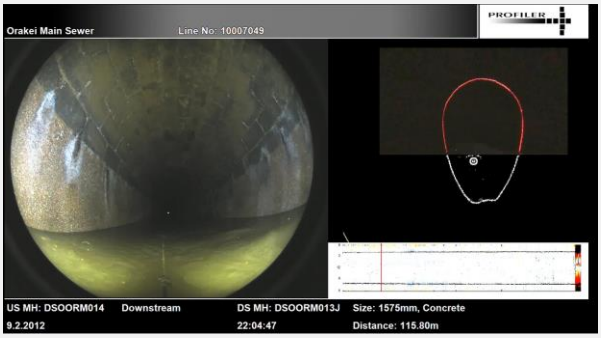
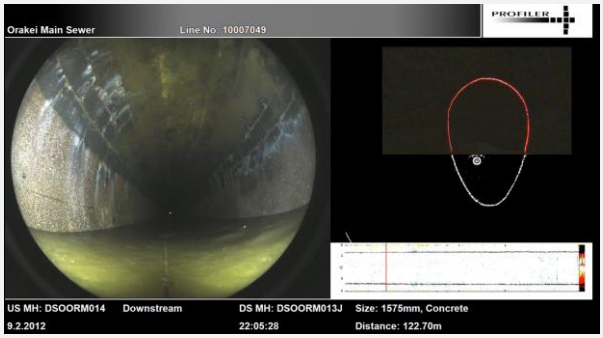
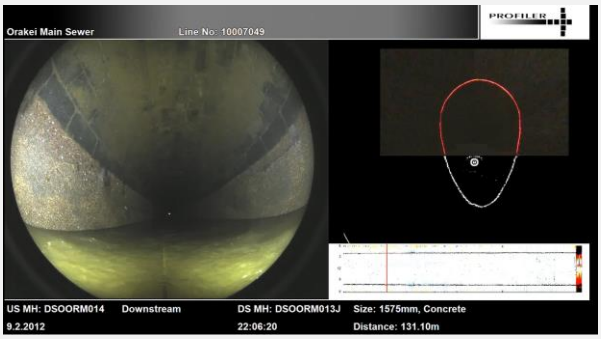
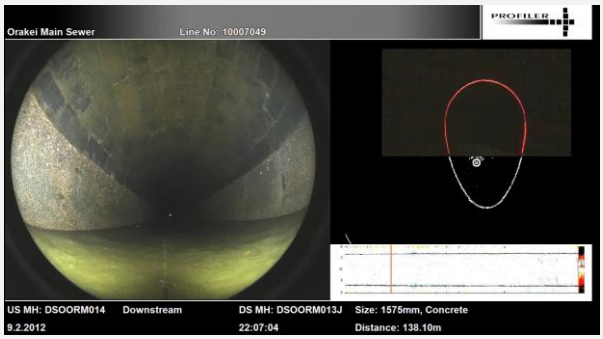
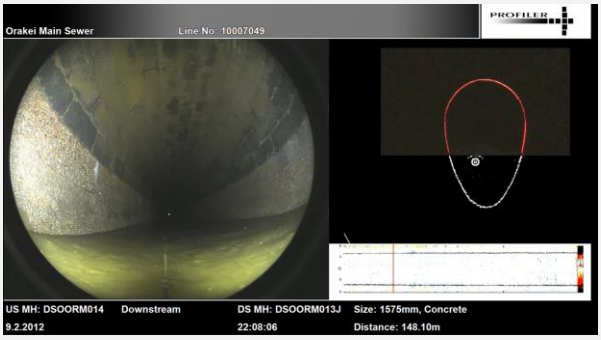
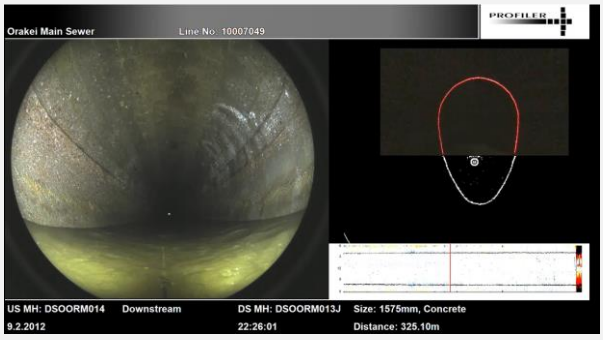
Segement: 10007053	Date of Inspection: 11/02/2019
Infiltration and loss of mortar at the obvert at CH: 102.48m, visible aggregate across full length of concrete base	Root intrusion at the obvert of CH:151.75m
	
Root intrusion at the obvert of CH: 205.98m	Infiltration staining, loss of mortar at 3 o'clock of CH: 305.10m
Mortar missing at 9 o'clock of CH:315.73m	Root intrusions with infiltrations at missing mortar between blocks at 3 o'clock of CH: 428.11m

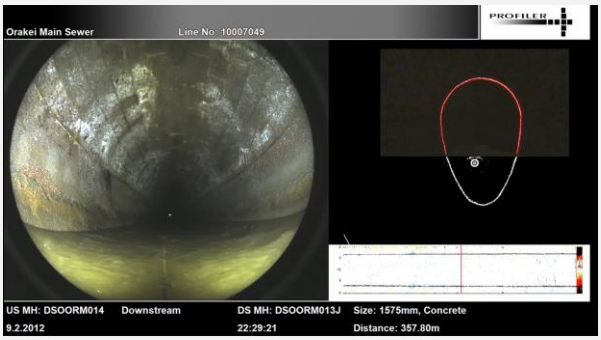
Dripping infiltration at 1 o'clock of CH: 432.03m	Spalling and rebars exposed at the obvert from CH:444.48m to 487.68m

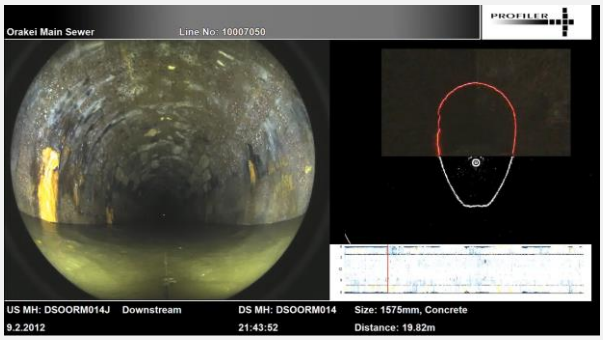
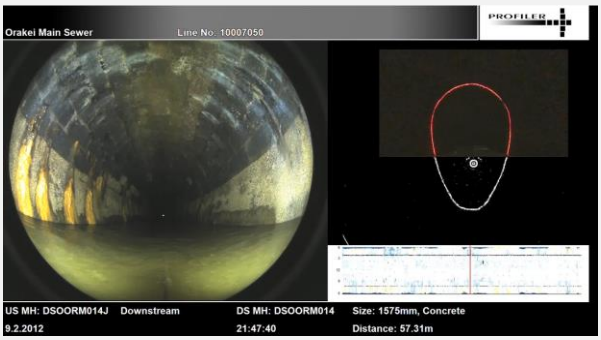
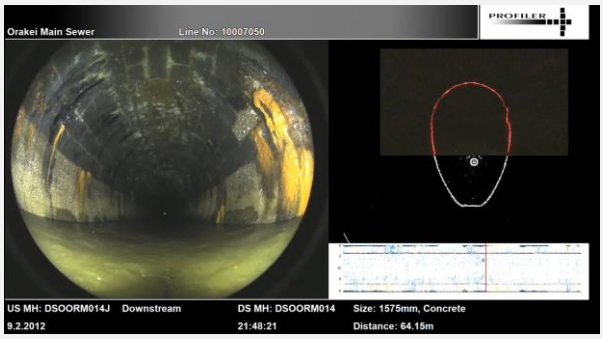
Segement: 10007054	Date of Inspection: 11/02/2019
Spalling at the obvert throughout the length of the pipe	

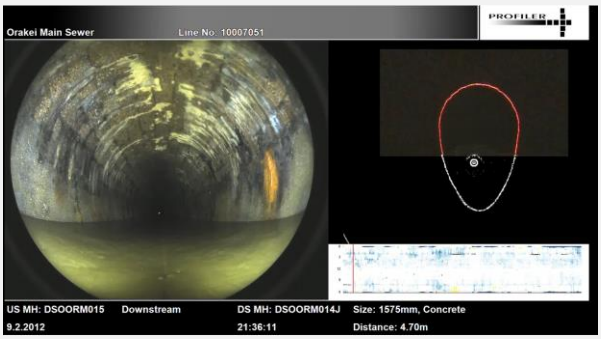
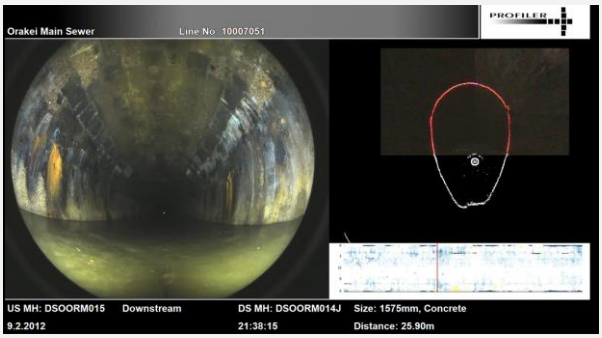
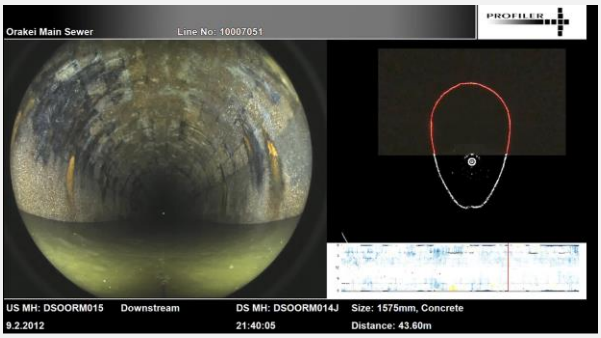
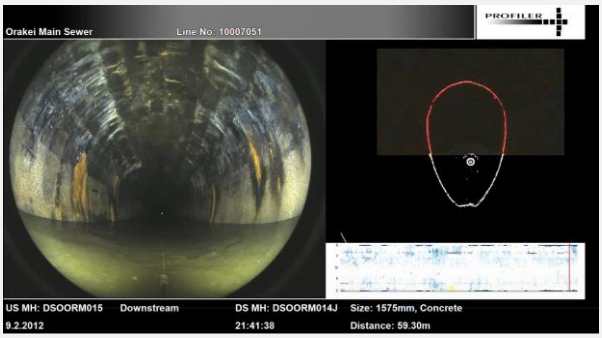
APPENDIX C EXAMPLES OF DEFECT APPEARANCES (2012)

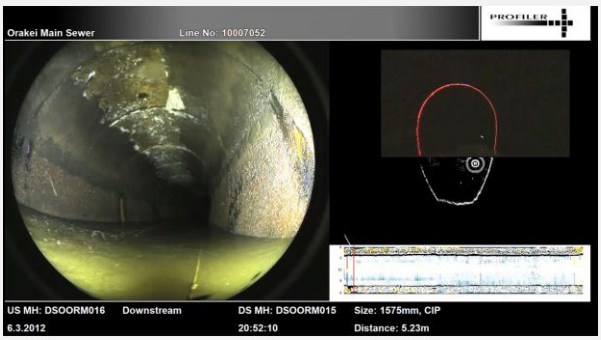
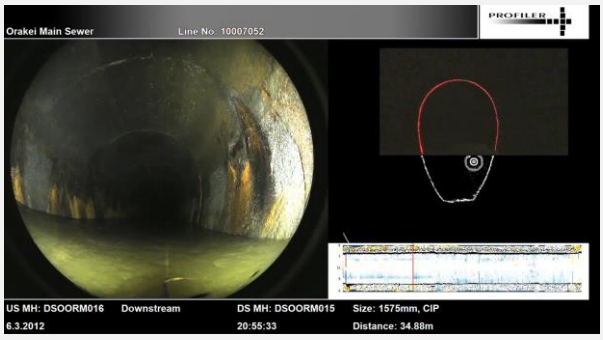
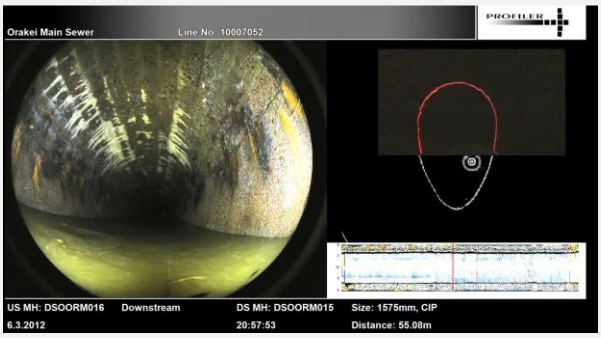
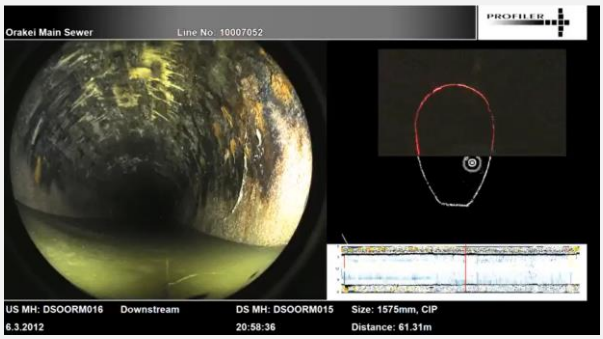
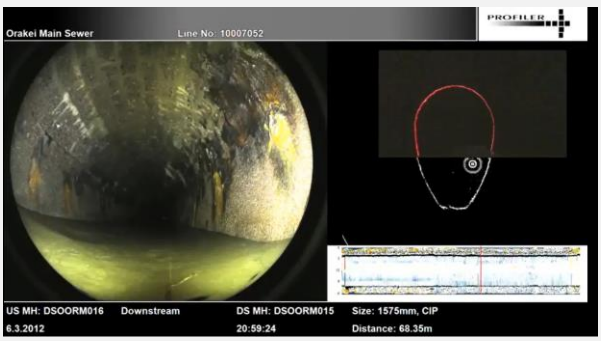
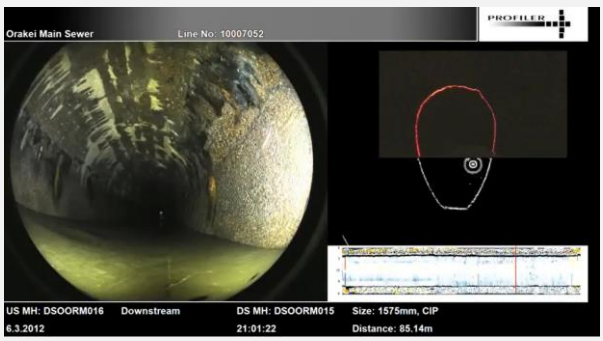
Segement: 10007049	**Date of Inspection: 09/02/2012**
	
Infiltration at 3 o'clock of CH: 2.5m	Infiltration (evident lime leaching) at 3 o'clock of CH: 6.1m
	
Infiltration and loss of mortar at 9 o'clock of CH: 11m	Infiltration at 9 o'clock of CH: 12m, resulting from loss of mortar
	
Infiltration and loss of mortar at 9 and 3 o'clock of CH: 14.1m. Encrustation seen at the obvert of the conduit, however no erosion of the block is seen.	Infiltration at 9 o'clock of CH: 20.5m, resulting from loss of mortar

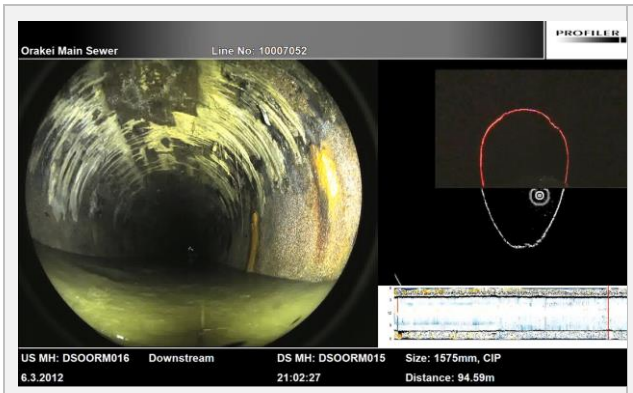
	
Encrustation seen at the obvert of the conduit, however no erosion of the block is seen	Infiltration and loss of mortar from 9 to 3 o'clock of CH: 84.7m.
	
Roughening seen from visual spectrum of 3 to 9 o'clock, throughout the conduit, (evident lime leaching)	Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock
	
Minor spalling seen at 3 o'clock of CH: 131.10m	Spalling/reinforcing at 3 o'clock of CH:138.1m
	
Spalling/reinforcing appears exposed through corroded concrete at 3 and 9 o'clock of CH:148.1m	Lime leaching through the mortar is evident throughout the conduit at 3 o'clock

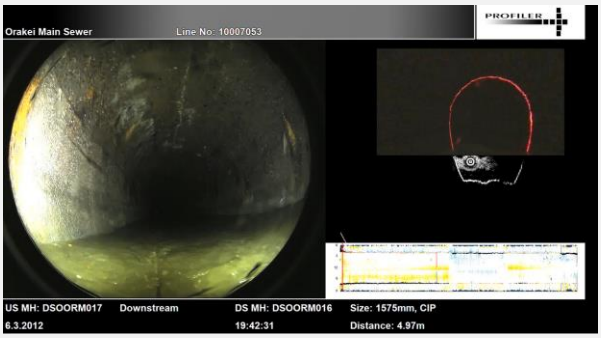
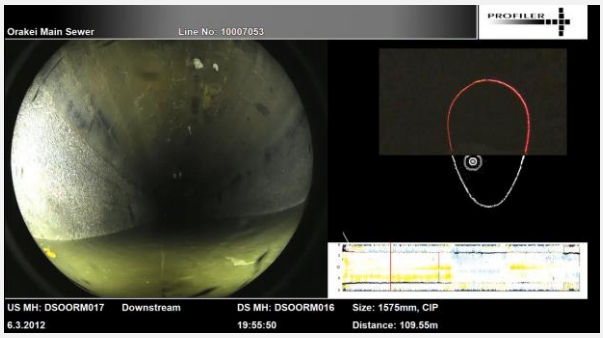
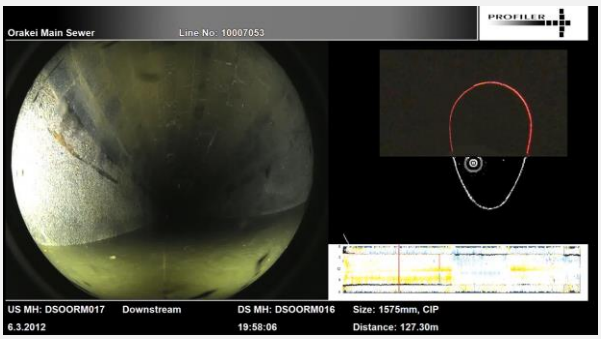
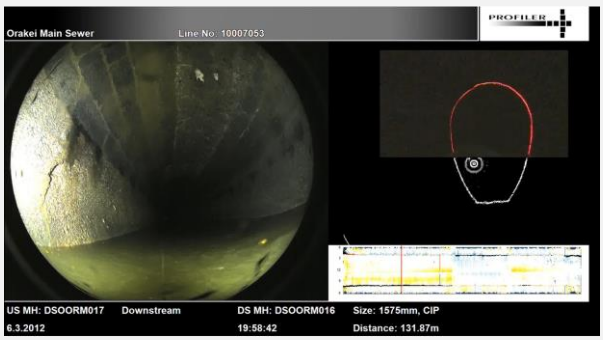
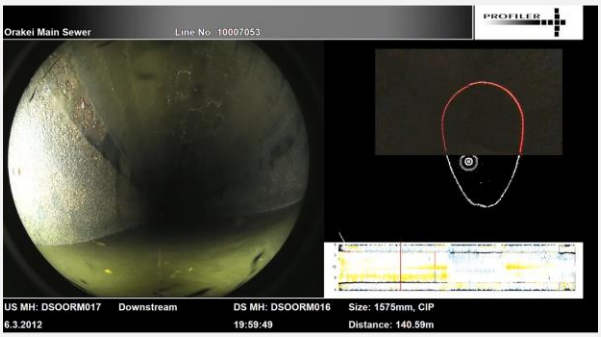
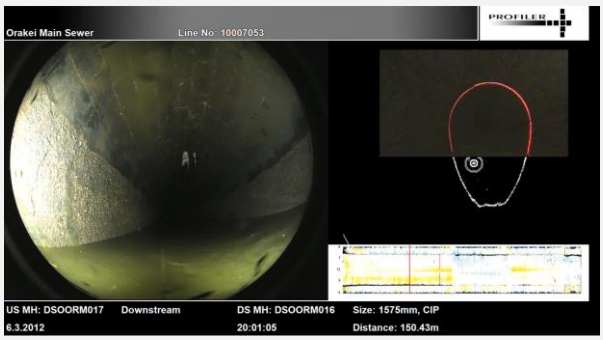
	
Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock	Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock
Root intrusion from 9 to 3 o'clock from CH: 704.6m to 705.6m	Longitudinal crack, assumed at mortar joint, observed at 1 o'clock from CH: 712m to 717.6m

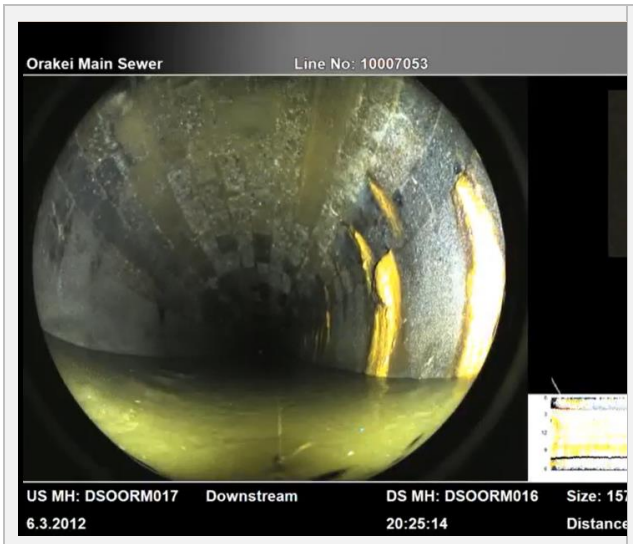
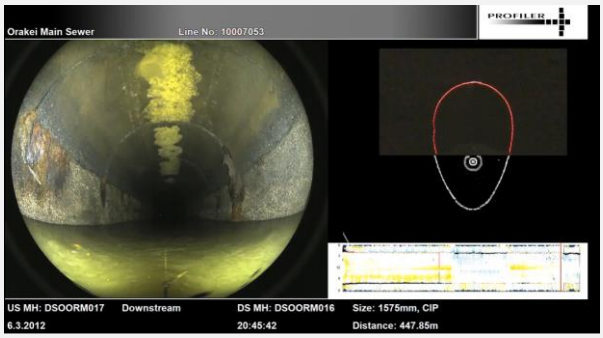
Segement: 10007050	Date of Inspection: 09/02/2012
	
Infiltration and loss of mortar seen at 9 o'clock of CH:9.6m	Infiltration and loss of mortar at 9 and 3 o'clock of CH: 19.82m. Encrustation seen at the obvert of the conduit, however no erosion of the block is observed.
Infiltration and loss of mortar seen at 9 o'clock of CH:35.14m	Infiltration and loss of mortar at 9 and 3 o'clock of CH: 48.73m. Encrustation seen at the obvert of the conduit, however no erosion of the block is seen.
	
Infiltration and loss of mortar seen at 9 o'clock of CH:57.31m	Infiltration and loss of mortar seen at 3 o'clock of CH:64.15m

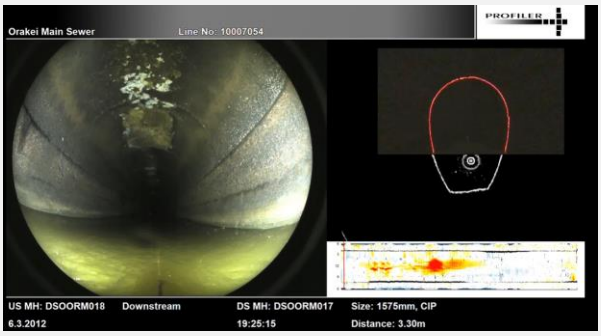
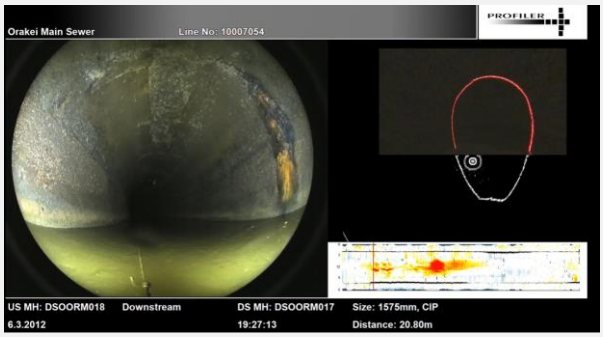
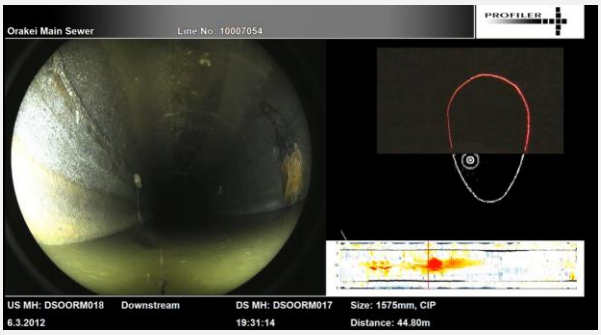
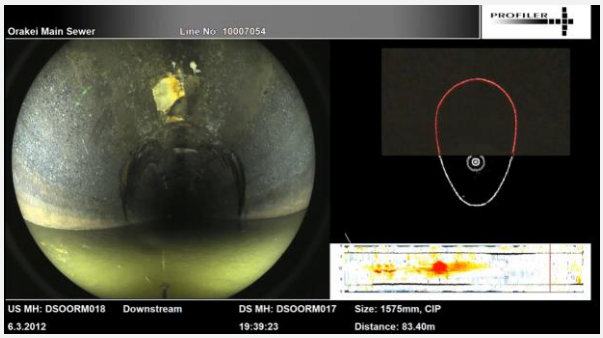
Segement: 10007051	Date of Inspection: 09/02/2012
	
Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock	Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock
	
Efflourecence observed at 9 o'clock of CH: 43.60m	Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock

Segement: 10007052	Date of Inspection: 09/02/2012
	
Surface damage at the obvert is seen throughout the precast section. However, the surface has not breached until the visibility of aggregates. Hence this defect can be considered as roughening (CH:0 to CH:46.34m)	Infiltration between blocks at 3 o'clock of CH: 34.88m
	
Lime leaching through the mortar is evident throughout the conduit form 9 to 1 o'clock	Mortar loss observed at 3 o'clock of CH: 61.31m
	
Mortar loss observed at 3 o'clock of CH: 68.35m	Lime leaching through the mortar is evident throughout the conduit form 9 to 12 o'clock

	
Lime leaching through the mortar is evident throughout the conduit form 9 to 3 o'clock	

Segement: 10007053	Date of Inspection: 06/02/2012
	
Longitudinal crack (between blocks) observed at the obvert from CH: 4.97m to CH:7.51m	Encrustation seen at the obvert of CH: 109.55 m
	
Minor spalling/reinforcing expsoure at 9 o'clock of CH: 127.3 m	Spalling observed at 9 o'clock of CH: 131.87m
	
Blocks roughening at 9 o'clock of CH: 140.59m	Circumferential cracks from 7 to 9 o'clock of CH: 150.43m

	
Infiltration and loss of mortar seen at 3 o'clock of CH:303.4m	Surface damage at the obvert is seen throughout the precast section. However, the surface has not breached until the visibility of aggregates. Hence this defect can be considered as roughening (From CH:447.85m to 455m)

Segement: 10007054	Date of Inspection: 06/03/2012
	
Surface damage at the obvert is seen throughout the precast section. However, the surface has not breached until the visibility of aggregates. Hence this defect can be considered as roughening (From CH:0m to CH:20m)	Localised aggregates and mortar missing with infiltration observed from 11 to 4 o'clock of CH: 20.8m
	
Localised aggregates and mortar missing from 2 to 4 o'clock of CH:44.8m	Hole or partial or full loss of block at the obvert at CH: 83.4m

APPENDIX G: POST-COLLAPSE DRONE FOOTAGE MEMO

Memorandum

To	Appendix to Main Report
Copy	
From	Philip McFarlane
Office	Auckland
Date	9 January 2024
File/Ref	W-SL021.02
Subject	Orakei Main Sewer - Observations from Drone Inspection

1 Background

WSP has been requested to undertake a review to identify the likely cause of the failure of the Ōrākei Main Sewer (OMS) that occurred in the vicinity of 79 St Georges Bay Road in September 2023.

A drone was flown through the pipe on 9 October 2023 entering at manhole 15 proceeding up to the collapsed section and then downstream to manhole 14.

This memo describes observations from that inspection.

2 Observations

The section between manhole 15 and the collapse was in noticeably worse condition that observed in from the 2019 CCTV inspection.

Blocks were missing adjacent to manhole 15, refer Figure 1. There was also a block missing part way between manhole 15 and the collapsed section, refer Figure 2. These were not observed during the 2019 CCTV.

Exposed aggregate is clearly visible in the block arch and the concrete base, refer Figure 3.

There appears that two different types of blocks have been used, refer Figure 4. Most are brown with exposed aggregate, but others are grey. The grey blocks appear to have sustained less erosion.

The pipe between manhole 15 & 14 appears to be in better condition. The condition appears to be broadly similar to that observed in the 2019 CCTV.

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Figure 1 – Missing blocks adjacent to Manhole 15 (view is looking upstream)

Figure 2 – Missing block between Manhole 15 and collapse (view is looking upstream, missing block is at 10 o'clock)

Figure 3 – View of Exposed Aggregate observed between Manhole 15 and the Collapsed Section

Figure 4 – View showing different blocks i.e., grey and brown blocks

Figure 5 – General Condition of Sewer Between Manhole 15 & Manhole 14

APPENDIX H: POST-COLLAPSE VISUAL OBSERVATION MEMO

Memorandum

To	Appendix to Main Report
Copy	
From	Philip McFarlane
Office	Auckland
Date	9 January 2024
File/Ref	W-SL021.02
Subject	Ōrākei Main Sewer - Observations from Inspection of the OMS

1 Background

WSP has been requested to undertake a review to identify the likely cause of the failure of the Ōrākei Main Sewer (OMS) that occurred in the vicinity of 79 St Georges Bay Road in September 2023.

This memo describes observations of the collapsed section of the OMS undertaken in November and December 2023.

2 Exposure of the OMS

The collapsed section of the OMS was exposed during November 2023, and it was made safe for personnel to undertake inspection and repair works.

This involved placing a large trench shield over the hole that had formed above the OMS, refer Figure 1. The material under the shield was then progressively excavated so that the shield settled down to the level of the OMS.

Reinforced concrete corbels were constructed to support the edges of the collapsed section and the block arch within the corbels was removed to provide a rectangular opening, refer Figure 2.

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Figure 1 Trench Shield Installed over Collapsed Section of OMS

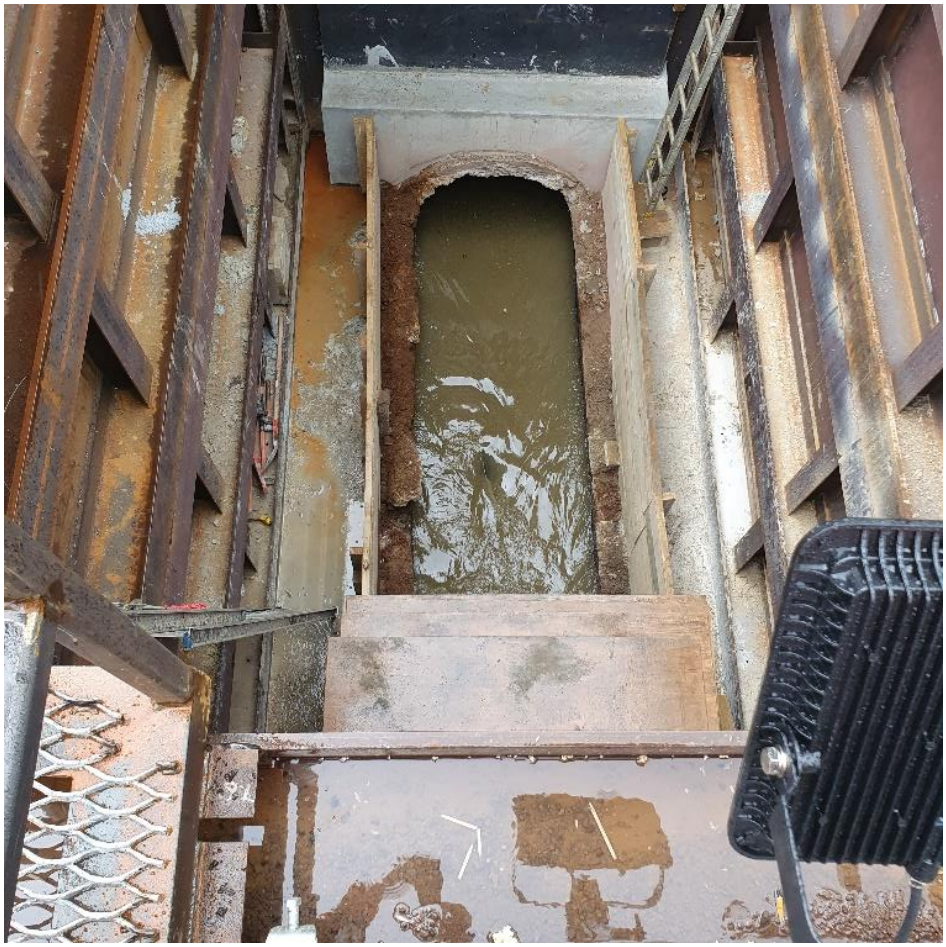

Figure 2 Looking down at OMS after installation of corbels and removal of block arch

3 Observations

3.1 General

It was confirmed that the OMS was constructed from two parts, i.e., a cast in place concrete base and a single layer block arch.

The block arch had collapsed between 9 o'clock and 1 o'clock over a length of 3.5m, refer Figure 3.

Figure 3 Collapse section looking upstream

3.2 Concrete Layer

The block arch was covered by a layer of concrete which was not shown on the as-builts. It was not possible to confirm how far this layer extended along the OMS. It was assumed however that the concrete was localised and did not extend over the full length of the OMS.

The concrete layer was between 50mm and 120mm thick at the centre of the arch, refer Figure 4, Figure 5 and Figure 8. But at the edges where the arch joined onto the cast in-situ concrete base, the concrete layer was less than 30mm thick, refer Figure 6.

3.3 Blocks

Two types of blocks were observed.

Many of the blocks appeared to have been constructed from competent concrete, albeit the concrete is likely to be weaker than what would be used for modern blockwork. The blockwork appeared to be more competent than that reported in the Preliminary Design Report for the Stanley St rehabilitation, which was undertaken in 2014, e.g. there were less voids.

These blocks were approximately 130mm thick, refer Figure 4 & Figure 5. This is approximately 100mm less than the 9inch thick blocks shown on the as-built drawing.

There was a layer of weak corroded concrete on the inside of the blocks about 30mm thick. The brown line that can be seen on Figure 5 indicates the extent of corrosion.

However, in other cases, as shown in Figure 7 and Figure 8, the blocks were very weak and crumbled easily when disturbed. It wasn't possible to determine the extent of these weak blocks.

Figure 4 Typical block arch section in-situ

Figure 5 Typical block arch section after removal. Note the brown line indicating the extent of corrosion on the inside face (see red arrow).

Figure 6 Measurement of concrete layer at edge of block arch

Figure 7 Weak blockwork in-situ

Figure 8 Weak blockwork after removal

4 Commentary

It is unclear why some of the blockwork was constructed from very weak concrete.

One explanation is that when the OMS was constructed this location was used an access point for building the tunnel. When construction was completed, equipment was brought out through the opening and the arch formed from the outside. The weak section might have been a make-up piece constructed onsite to enable the arch to be closed.

This has not been able to be confirmed, but it is plausible given that at the time the OMS was constructed the area was a natural low point.

APPENDIX I: GROUNDWATER MEMO

Memorandum

To	Philip McFarlane
Copy	Eric van Nieuwkerk
From	Louise Soltau
Office	Auckland
Date	14 December 2023
File/Ref	W-SL021.02
Subject	Groundwater Perspective on the Collapse of the Ōrākei Sewer

1 Introduction.

This memorandum discusses the likely influence of groundwater on the collapse of the Ōrākei Mains Sewer (OMS) at 79 St Georges Bay Rd, Parnell on 26 September 2023 (Figure 2). It is likely that the infiltration of rainwater causing erosion of soil above the OMS sewer played a role in the collapse of the sewer. The assessment includes a review of available groundwater information for the area and relevant information obtained from other nearby projects, as well as a review on the formation of sinkholes due to soil erosion around pipe defects.

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2 Erosion Processes and Sinkhole Formation

The key process responsible for formation of sinkholes is the localised erosion and collapse of soils. Soil erosion can occur where there are defective pipes, with soil material caving into an opening into a corroded pipe. This is called 'soil erosion due to defective pipes' (SEDP) and several studies have been conducted on SEDP. Dastpak, Sousa and Dias (2023) provided a comprehensive review of available research on the subject.

Initial studies on SEDP originated from studies on internal erosion of dam embankments, which requires two criteria to be satisfied:

1 the eroded soil must have the ability to flow downstream and,
2 there must be sufficient flow (driving force) to initiate and progress the erosion.

These two factors are integral to SEDP, but additional factors affecting the mechanics of SEDP are the hydraulic condition (Section 2.1), the soil type (particularly soil gradation) (Section 2.2) and the pipe defect characteristics (Section 2.3). It is noteworthy that the driving force in SEDP is gravity which is not necessarily so for embankment dams.

Hydraulic loading mainly and cohesion of soils to a lesser extent affect the process of SEDP and are defined as follows:

Hydraulic loading

Hydraulic head is the pressure that water exerts above a datum (for e.g., above the buried sewer pipe). This hydraulic head can change, which is called hydraulic loading. In natural groundwater processes, hydraulic loading is caused when rainfall infiltration and raises the groundwater level, which will then cause increased pressure on the buried pipe. The groundwater subsequently flows downgradient as the rainwater dissipates laterally and the water level lowers, which reduces the pressure on the buried pipe. A defect in a pipe affects the hydraulic loading as follows:

- Water pressure in the pipe (full pipe) can result in water flowing from the pipe into the surrounding soils (called exfiltration).
- The water in the pipe recedes, leaving an airgap between the water in the pipe and the water in the formation above the pipe defect. The groundwater will now seep into the pipe (called infiltration) through the defect because of the hydraulic loading from the increased groundwater level above the pipe.
- Groundwater flow will reduce the groundwater level over time, which in turn reduces the hydraulic loading on the pipe.

Cohesive soils

Cohesive soils are comprised of fine-grained particles that stick together, like clay and silt. The effects of hydraulic loading and cohesive soils on SEDP formation are explained in more detail in Sections 2.1 and 2.2.

A simplified schematic of the formation of SEDP and subsequent formation of a sinkhole are shown in Figure 1 and summarised as follows:

1 The hydraulic loading around the sewer pipe is caused by rainfall events introducing a higher groundwater head. In some cases, water pressure in the pipe also increases (when the pipe is full) and may cause water leakage through the pipe defect into the formation, resulting in softening of the soils around the defect. When the water in the pipe recedes the increased hydraulic loading around the pipe will cause infiltration of the groundwater and some of the surrounding soils into the pipe through the defect. This erosion of soil around the defect in the pipe causes the development of a cavity.

2 When the groundwater level recedes when the groundwater drains away after rainfall, the hydraulic loading above the pipe reduces, and the cavity stabilises, partly due to the cohesiveness of the soil.

3 Subsequent increases in groundwater level due to rainfall infiltration increases the hydraulic loading again, resulting in an increase in the cavity size through the same process as 1.

4 As the cavity expands, the cohesion of the soil surrounding the cavity is compromised and the soil above the cavity collapses.

5 The repeat of this cycle eventually results in a sinkhole forming.

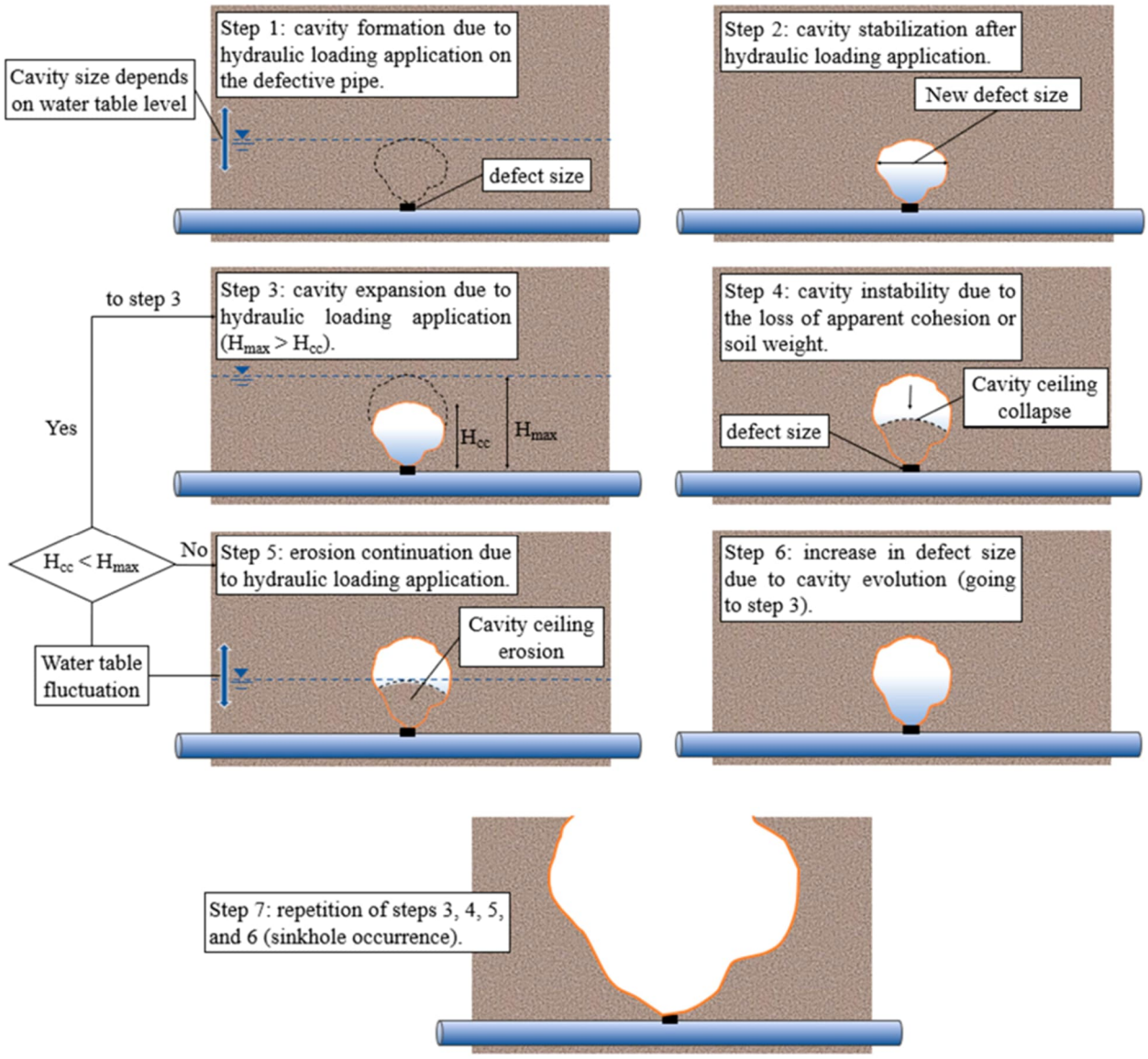

Figure 1. SEDP progression to sinkhole formation from Dastpak et al. (2023)

2.1 Hydraulic Loading

Hydraulic loading is considered the most influential factor in the rate and volume of soil erosion because the particle movement starts when water seepage occurs through a defect as a result of the water pressure difference between the outside and inside of the pipe. Hydraulic loading is only of concern near a defect in the pipe. Where there is no defect in the pipe, the hydraulic pressure is balanced by the pipe and no seepage into the pipe occurs. Higher head differences will result in increased volume of flow and associated soil erosion,

because the erosion time is longer, even though the sand and water discharge rate changes little.

Cyclic infiltration/exfiltration tests were conducted by Mukunoki et al. (referenced by Dastpak, et al. 2023) to study the cavity expansion due to cyclic loading. They found that the void ceiling would collapse if the groundwater table rose above the ceiling height of the void. This finding highlights the likely adverse effects of climate change on SEDP, because flooding frequency will increase cyclic loading, which may lead to the unexpected occurrence of catastrophic sinkhole formation.

A similar experiment by Kwak et al. (referenced by Dastpak, et al. 2023) considered the impact of rainfall intensity and found that subsidence only occurred after extremely high rainfall intensity and that there may be a threshold rainfall intensity associated with subsidence. After the rainfall stopped, the soil erosion occurred resulting in the cavity development.

2.2 Soil Properties

The following information and findings from experiments on the effects of particle size distribution, and the ratio between the defect size and the maximum grain size on the SEDP are considered applicable to this study:

- An increased ratio of defect size in the pipe to maximum grain size increases the cavity size – i.e., with a bigger defect size and smaller grain size, the cavity is bigger. The bigger cavity size allows for sediment to erode unhindered into the pipe.
- The particle size distribution (PSD) of the soils used for backfilling around the pipe affects the cavity size. Soils with greater uniformity (i.e., less variation in grain size) have a higher susceptibility to SEDP than well-graded soils with a good distribution of grain sizes. This is because graded soils have larger particles that can form bridging behind the defect and reduce the erosion into the pipe.
- Experiments comparing the SEDP potential of uniform sand with three different particle sizes (Guo et al. from Dastpak et al) found that the finer sand had a lower discharge flow rate, but the eroded zone was almost equal for the different sands, i.e., eroded volume is similar. The cavity formation for a coarser sand will be quicker than for a finer sand.
- Kwak et al. (from Dastpak et al, 2023) investigated the effect of compaction of backfill material on the formation of SEDP. They found that the use of loosely compacted backfill material can lead to sinkhole formation much sooner during infiltration-exfiltration cycles.
- Indiketiya et al. (from Dastpak et al., 2023) also examined the effect of the PSD to defect width ratio. They found that the risk of SEDP for grain sizes smaller than 0.3 mm is significant, but significantly lower than when the grain sizes are larger than 1.18 mm.
- Kwak et al (from Dastpak et al., 2023) found the amount of fine particles in the soil also impacted SEDP, with cohesive soils like clay showing large settlements, but small eroded mass, whereas the eroded mass for sandy soil was much higher.

2.3 Pipe Defect Characteristics

The most critical parameter of the defect characteristic in SEDP is the defect size, in particular in relation to the soil particle size, as mentioned above. The defect size in particular was important during cyclic infiltration-exfiltration loadings, where a large slot size resulted in subsidence during the early cycles. Defect location on the top of a pipe resulted in higher SEDP rates.

The pipe depth is directly proportional to the eroded zone volume, because if the backfill height above the pipe is higher, the eroded zone will be bigger and when the eroded void collapses, the sinkhole diameter will be larger.

2.4 Other Factors

The location of other nearby existing pipes changes the position and orientation of the cavity due to the localised change in hydraulic gradient near the defect.

Fluidization occurs when the granular soils transfer into a fluid-like state after being pressurised by water, e.g., when a pressurised buried pipe leaks into the granular backfill.

3 Hydrogeological Site Description in Terms of Erosion and Sinkhole Formation

The site conditions and hydrogeological information for the site around the Ōrākei Sewer are described and defined in terms of the SEDP factors mentioned in Section 2.

3.1 The Construction and Condition of the Ōrākei Sewer

The OMS was either constructed within a hand dug tunnel or a trench depending on the depth of the pipeline. It is uncertain which method was used for construction of the section in St George Bay Rd that collapsed. The typical construction sequence would be:

1 Dig tunnel or trench.
2 Cast concrete base in place.
3 Install block arch.
4 Backfill tunnel or trench above arch.

It is likely that both the hand dug tunnel or trench construction may have imperfect backfill condition. In the case of tunnel construction, it is possible that a void remained between the top of the arch and the tunnel, or the void was filled with poorly compacted material. Alternatively, in the case of a trench, poor quality backfill may have been used and or this may not have been compacted properly. As indicated under soil properties above, the use of loosely compacted backfill material can lead to sinkhole formation much sooner during infiltration-exfiltration cycles.

The OMS sewer has shown signs of degradation along other sections of the sewer (2023 drone condition survey), mainly comprising the degradation of the mortar between the concrete blocks, but also showing isolated missing concrete blocks, which would have resulted from the loss of the mortar between the blocks. It is considered likely that similar degradation (both missing mortar and missing blocks) has occurred at the collapsed section of the OMS, however this has not been confirmed to date. Furthermore, groundwater seepage has been observed through the degraded mortar joints, which was likely to further degrade the mortar. A missing block or two is considered to be the defect in the pipe.

3.2 Regional Geology

The published geological map information (GNS, 1992) indicates the sinkhole area is underlain by the East Coast Bays Formation (ECBF), comprising alternating sandstone and mudstone with variable volcanic content and interbedded volcaniclastic grits. The residual (in-situ) weathered ECBF typically comprises extremely weak rock that is often described as sandy and silty soil. Puketoka Formation, Tauranga Group alluvium outcrops to the east of the site, comprising mostly pumiceous mud, sand and gravel. The volcanic sediments were sourced from the eruption of the Pukekawa Volcano at Auckland Domain. It is also highly likely that the historic gully that ran across the area has been infilled with fill. The fill material can vary from poorly sorted construction debris with boulders, gravel and fines or well sorted and well compacted silty and clayey material.

3.3 Site Specific Geology

Limited lithological and groundwater data were obtained from two hand auger logs drilled at 96 St Georges Bay Road (indicated on the map in Figure 2). The logs indicate fill comprising mostly clayey silt, silty clay and silt, underlain by residual soils East Coast Bays Formation (ECBF) comprising clayey silt, sandy silt and silt, grading into highly to moderately weathered ECBF. The information from the different lithological units is summarised in Table 1

Table 1. Available lithological information around OMS site – NZGD

Lithology unit	Thickness (m)	Description
Fill	1.2-2.5	Clayey silt, sandy silt, silt and some inclusions of scoria gravel
Residual soils ECBF	3.4-3.5	Clayey silt, sandy silt and silt
Highly to moderately weathered ECBF	-	Sandy silt, silt and clayey silt

The regional and site-specific geology indicate that the material overlying the Ōrākei Sewer is likely to be fine grained and cohesive. The ratio of the fine-grained nature of the overlying material with a cement brick size defect in the sewer pipe is likely to provide a large ratio of defect size in the pipe to maximum grain size, hence increasing the potential for SEDP.

3.4 Groundwater Levels

The groundwater levels measured in the two hand augers near the OMS sinkhole indicated deep water levels (5.3 and 4.7 m bgl for HA_117371 and HA_117372 respectively), measured in March 2015. This is considered representative of low water levels for the summer.

Groundwater level varied considerably as a result of the big storm events in late January and early February 2023. This fluctuation is very relevant to consider to better understand how groundwater contributed to the OMS collapse. Groundwater levels are monitored for several sites around the Auckland area. Typically, groundwater levels vary 0.5-1 m seasonally, however sharp increases of at least 0.5 m were observed over a very short period of time after the Auckland Anniversary Weekend storm (28 January 2023). This can be seen in the plot of groundwater level variations for a monitoring piezometer PZ07_D in the Auckland CBD on Queen Street, 1.6 km east of the Ōrākei Sewer sinkhole (Figure 3). This monitoring piezometer was screened at a depth of 6-9 m bgl in the Puketoka Formation, comprising silty clay and clayey silt at this location. The formation is considered similar to that of the Ōrākei Sewer site. A similar increase in groundwater level can be seen after the storm event associated with cyclone Gabrielle on the weekend of 3 February 2023. This trend of significant increases in groundwater level over a short time period as a result of the storm events were observed in other monitoring piezometers further afield in the Auckland area – Drury, Takanini, Wiri and Māngere areas.

ATTRIBUTION

Aerial imagery and roads sourced from Land Information New Zealand (LINZ) data service and licensed by LINZ for re-use under the Creative Commons Attribution 4.0 International.

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SCALE

0 20 40 m

PROJECT

Watercare Services Limited
Auckland
Orakei Mains Sewer Failure

FIGURE

Figure 2. Overview map of the OMS failure site and surrounds.

PROJECT NUMBER	REVISION DATE	REVISION
W-SL021.02	5 Dec 2023	R0

Appendix G OMS Independent Reports

Original Sheet Size: A4 [W = 210, H = 297] Plot Date: 2024-01-10 07:54:55 by Soltau, Louise (NZLS30680)

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The significant change in groundwater level is likely to have resulted in hydraulic loading that would have caused the start of a cavity above the Ōrākei Sewer:

- The increased water pressure in the sewer pipe after the first storm event (28 January) could possibly have caused some water flowing from the pipe into the surrounding soils (exfiltration) through the defect in the sewer pipe.
- After the water in the pipe receded, the increased hydraulic head above the pipe and saturated soils, would have allowed seepage (infiltration) of the groundwater loaded with fine sediment into the sewer.
- The groundwater level will likely have reduced somewhat before the next storm event in February, which may have allowed the cavity to stabilise.
- The next storm event would have increased the cyclic hydraulic loading again, resulting in an increase and subsequent stabilisation of the cavity above the sewer.
- There were other higher rainfall events after the two big storm events mentioned above that would likely have had a similar cyclic loading effect, though on a smaller scale,
- It is considered likely that increased rainfall on 24 and 26 September may have constituted the final cyclic loading that resulted in the collapse of the surface to create the sinkhole.

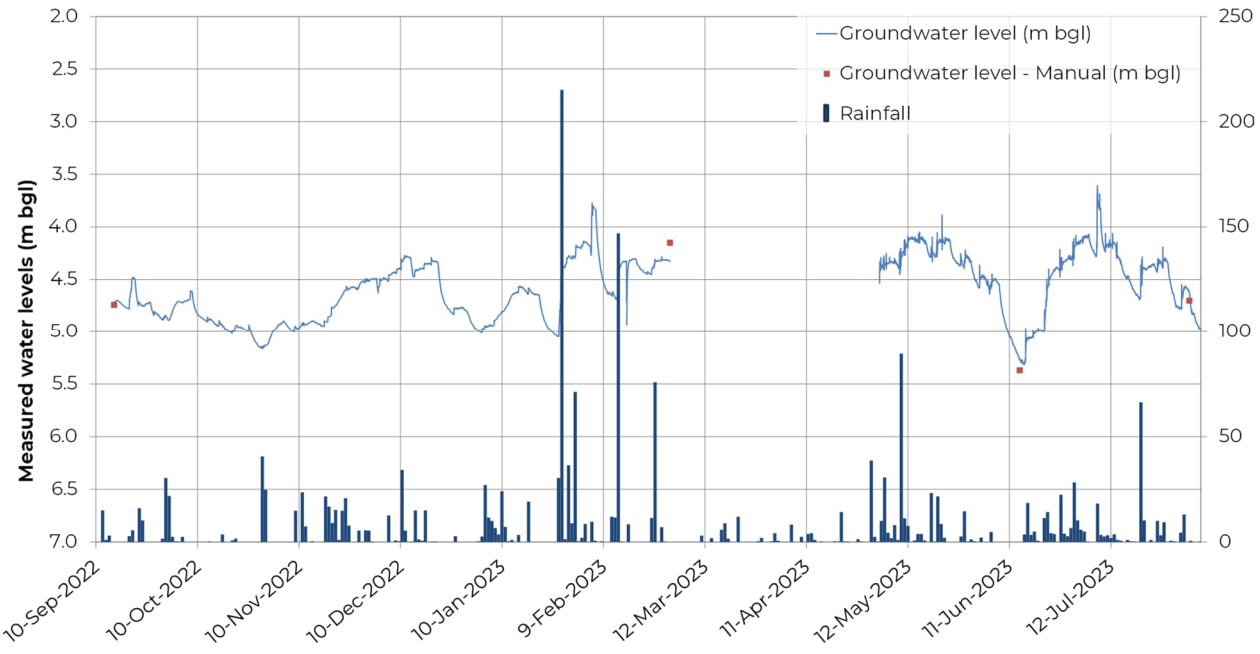

Figure 3. Groundwater level variation – Auckland CBD.

3.5 Hydraulic Conductivity Data

PDP (2016) summarised available hydraulic parameters from several studies for the City Rail Link, Aotea station site investigations. These hydraulic parameters are considered applicable for the OMS sinkhole site, because of the proximity and general similarity in geology of the two sites. The hydraulic conductivity ranges for the different lithological units are summarised in Table 2.

Table 2: Summary of Hydraulic Conductivity ranges for the relevant hydrogeologic units (from PDP, 2016)

Hydrogeology unit	Hydraulic conductivity		
	Minimum in m/day [m/s]	Maximum in m/day [m/s]	Kh:Kv
Fill	0.015 [1.7×10^{-7}]	8,640 [1.0×10^{-1}]	0.01-1
Tauranga Group alluvium and residual soil East Coast Bays Formation (ECBF)	0.0005 [6.3×10^{-9}]	0.6 [7.2×10^{-6}]	0.001-0.1
Weathered and unweathered ECBF	0.00039 [4.5×10^{-9}]	0.5 [6.0×10^{-6}]	0.001-0.1

The hydraulic conductivities are typically low, and the groundwater level would increase substantially during rainfall events because the water drains away slowly, resulting in significantly increased hydraulic loading. It is also important to note that the hydraulic conductivity of the fill material varies significantly due to differing sources and hence variable composition of the fill. Should there be zones within the fill material that comprises coarser sediments, these would form preferential groundwater flow paths. If these coincide with a defect in the sewer, the formation of the sinkhole would be accelerated.

4 Discussion and Conclusions

It is considered likely that soil erosion due to increased groundwater levels near a pipe defect in the OMS sewer resulted in the formation of the OMS sewer sinkhole. This can be explained as follows:

- The OMS sewer has shown signs of degradation along other sections of the sewer (2023 CCTV condition survey), mainly comprising the degradation of the mortar between the concrete blocks, but also showing isolated missing concrete blocks, which would have resulted from the loss of the mortar between the blocks. It is considered likely that similar degradation (both missing mortar and missing blocks) has occurred at the collapsed section of the OMS, however this has not been confirmed to date. Furthermore, groundwater seepage has been observed through the degraded mortar joints, which was likely to further degrade the mortar. A missing block or two is considered to be the defect in the pipe.

- The soils surrounding the sewer likely comprises fill material, which is considered to be mostly fine grained. The fine-grained soils would be much smaller than the defect size of a concrete block and would have easily eroded into the sewer pipe.

- The storm events on the weekends of 27 January and 3 February will have resulted in varying groundwater pressures as follows:

  The sewer pipe would have been full and may have resulted in water seeping out of the sewer into the surrounding soils (exfiltration), which would have been saturated already from the high rainfall, through the existing defect in the sewer pipe. This would have resulted in an initial physical scouring of the formation. The drop in water level within the pipe after the flood waters receded would have resulted in an increase in head difference between the ambient groundwater level (which will have risen notably in response to the heavy rainfall) and the water level in the pipe. This likely led to increased seepage of groundwater (infiltration) laden with fine sediment into the pipe through the defect. This would have constituted the start of the cavity. The groundwater level may have lowered after the first storm to below the top of this cavity, which would have allowed the stabilisation of the cavity. However, the process would have repeated during the second storm, increasing the size of the cavity.

  There were other higher rainfall events after the two big storm events mentioned above that may have had a similar cyclic loading effect, though on a smaller scale. It is considered likely that increased rainfall on 24 and 26 September may have constituted the final cyclic loading that resulted in the collapse of the surface to create the sinkhole.

It should also be noted that arches are compressive, self-supporting structures that are stabilised by the force of gravity pushing the blocks together. This makes them very stable, and they can support relatively large loads. However, arches can fail if overlying loads are not evenly balanced. The formation and subsequent enlargement of the cavity above the arch, may have resulted in an uneven load that eventually led to the catastrophic collapse of the arch.

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APPENDIX J: CONDITION ASSESSMENT TECHNIQUES

Table J:2 summaries some common techniques categories by what part of the pipe it assesses. This information was derived from the 'Guidelines for Condition Assessment and Rehabilitation of Large Sewers' (Zhao, McDonald, & Kleiner, 2001) and 'New Zealand Gravity Pipe Inspection Manual 4th edition' (Water NZ, 2021).Table J:2 summaries some common techniques categories by what part of the pipe it assesses. This information was derived from the 'Guidelines for Condition Assessment and Rehabilitation of Large Sewers' (Zhao, McDonald, & Kleiner, 2001) and 'New Zealand Gravity Pipe Inspection Manual 4th edition' (Water NZ, 2021).

Table J:2 Outputs and limitations of different condition assessment techniques

Type	Technique	Output	Limitations
Internal Condition	Person-entry	Qualitative and quantitative (direct and manual measurements) observation of pipe interior	Health and safety risks, pipes greater than 900mm diameter, above flow line only
	CCTV	Video footage of interior of pipe above flow line. Can be a tractor unit or a floating unit	Dependent on camera/ footage quality, low quality, difficult to quantify defect size
	Laser	3D profile and accurate dimensions of the internal pipe wall surface. Usually combined with sonar	Above flow line only
	Sonar	Pipe surface profile in submerged sections. Usually combined with laser profiling	Below water line only, low accuracy
	LiDAR (3D laser scan)	Similar to Laser scanning but usually from a fixed location	Sensitive to splashes of water, good for manholes but not for pipes
	ROV (remotely operated vehicle) e.g. drone	Video footage. Often combined with LiDAR	Varies largely depending on type of ROV.
Pipe Wall	Impact echo	Physical test to indicate the presences of void or defects in the pipe wall	Requires person-entry
	GPR	Locate voids and presence of any reinforcement	Requires person-entry [1]

Type	Technique	Output	Limitations
	Coring	Taking a sample of the pipe wall to assess the condition	Invasive. Requires either entry of pipe or excavation to expose outside of pipe.
	Insitu strength testing	Using a hand-held instrument (e.g. Schmidt hammer)to determine strength	Influenced by aggregate size and skill of user. Only works on surface layer.
Ground surrounding the pipe	Infrared thermography	Drone or fixed camera uses heat signatures to detect thermal anomalies in the ground (e.g. due to water movement or to voids).	Limited sensitivity subject to time of day of assessment. Low accuracy for estimating size or depth of thermal anomaly Needs skilled interpretation to determine cause of the anomaly
	Surface inspection	Dips and settlement of surface above pipe indicate the presence of voids or pipe deformation	Low accuracy. Cannot detect deeper sub-surface features.
	Ground penetrating radar (GPR)	Detects voids in the soil surrounding the pipe	Effectiveness dependant on soil type and depth.
	Other geophysical techniques	A family of techniques used to detect variations in properties below the surface.	Not widely available, limited sensitivity to this application.

Appendix H. TMP Documentation

Targeted Monitoring Programme Pilot Study – Draft

Targeted Monitoring Programme (TMP) Pilot Study-Draft

Pilot 2024

Watercare
An Auckland Council Organisation

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DRAFT

1 Introduction

1.1 Background

The **Targeted Monitoring Programme (TMP)** evolution reflects several stages of development, including initial approvals and subsequent revisions. The foundational document, prepared by NIWA in June 2015, laid out the original framework for monitoring, and it received its initial approval in June 2015. Recognizing the need for a more cost-effective approach, Watercare revised this programme in August 2016, which was approved by Auckland Council in November 2016.

Following inconclusive results from the first stage of monitoring—focused on water quality and ecological sampling across three catchments—Watercare trailed continuous water quality monitoring approach with online probes. These probes have been deployed to gather more comprehensive data. Independent ecological assessments are now being conducted by AECOM and Tonkin & Taylor (T+T) to enhance the TMP.

1.2 Approach

This document outlines the **TMP** developed as part of the wastewater overflow discharge assessment in accordance with resource consent **R/REG/2013/3743** and **R/REG/2013/3755**. The TMP seeks to assess the ecological impacts of wastewater overflows on surrounding environments, focusing on high-risk areas. The plan follows a two-phase approach:

- **Phase 1:** Development of a Pilot Monitoring Plan based on ecological risk and site selection criteria
- **Phase 2:** Implementation of the Pilot Monitoring Programme to validate the Phase 1 approach and refine the plan for full-scale monitoring.

This TMP is designed to assess ecological changes over time in response to overflow discharges, with monitoring required for a minimum of three years and a maximum of five years.

1.3 Scope

The TMP aims to evaluate the ecological impacts of Watercare's wastewater overflow discharges on receiving environments by implementing routine, targeted monitoring. The monitoring will assess whether ecological effects are consistent with the risk categories assigned to each site, as outlined in **Attachment 5**[1].

Key assumptions used in developing the pilot monitoring plan include:

- **Focus on high-risk overflows**: High and very high-risk overflows are most likely to show measurable ecological effects. The monitoring plan focuses on these areas to prioritize resources and ensure that the most impactful sites are observed
- **Routine vs. event-based monitoring**: Routine monitoring is proposed as opposed to event-based monitoring, to better understand long-term changes and trends over time rather than focusing on isolated incidents

[1] Auckland Council (2016) Attachment 5: Methodology for the Assessment of Effects on Wet Weather Wastewater Overflows.

- **Pilot study duration**: The pilot study is designed to run for one year. This allows for comprehensive data collection across different seasons and environmental conditions, providing a clearer picture of the overall impacts
- **Comprehensive biological indices**: The pilot study will include as many biological indices as possible. These will be analysed to statistically determine which indices show responses to wastewater overflows. The selected indices will then be used to develop a full monitoring plan for the wider project (Phase 2)
- **Parameter and method selection**: The pilot study will allow for the selection of the most effective monitoring parameters and methods, ensuring that future monitoring efforts are targeted and efficient

Seven receiving environment types were identified for monitoring[2], including **Basins, Beaches, Estuaries, Harbours, Large Waterways, Small Waterways, and Freshwater Wetlands**.

DRAFT

[2] NIWA (2015) Targeted Monitoring Programme for Auckland Wastewater Network Comprehensive Discharge Consent (NDC) Prepared for Watercare.

2 Methodology

2.1 Site selection

The selection of monitoring sites was based on ecological risk data derived from the **Simple EOP Database (6 June 2024)**, which includes metadata such as ecological risk and environment type. The following criteria guided site selection:

- Target "High" and "Very High" Ecological Risk sites
- A mix of low, moderate, and high overflow volumes triggering significant ecological risk
- Sites with existing Water quality monitoring (including continuous monitoring data or State of the Environment) where possible
- Accessibility for monitoring, ensuring safe and efficient data collection
- Representative samples of different ecological classes, including streambed substrates (hard and soft bottom)

Watercare has confirmed that **Central Interceptor sites** are part of the TMP. Final site selections will be confirmed based on ecological risk assessments and improvements identified in the latest data.

Final site selection and comparison to the number of receiving environment sites can be found in Appendix A (Table 1 and 2).

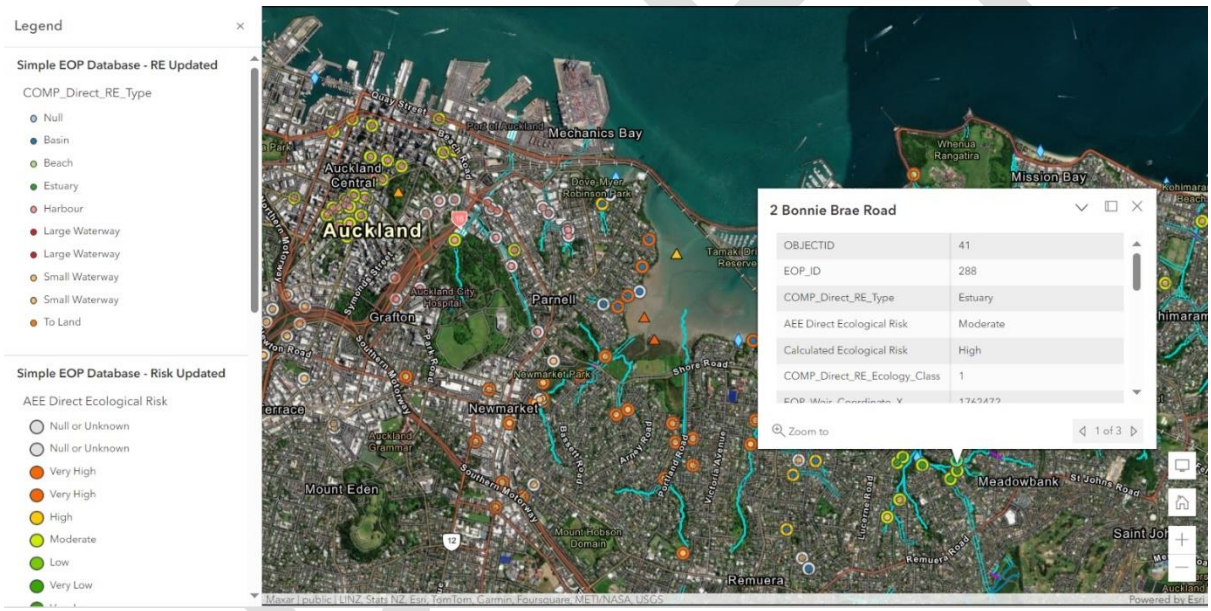

Figure 1- Screenshot of EOP database uploaded to T+T WebMaps to aid site selection

2.2 Monitoring parameters

The following parameters and methodologies were identified for Small Waterways, Estuaries, Basins, and Beaches.

2.2.1 Small waterways

Key drivers: Water quality, habitat availability, and geomorphic processes.

Parameters and metrics for Pilot Monitoring of small waterways

- **Rapid Habitat Assessment (RHA) (Clapcott, 2015):** A rapid assessment tool for evaluating physical habitat conditions at the site. Results from this assessment help interpret macroinvertebrate findings and detect physical habitat changes.
- **Macroinvertebrates**: These are well-established bioindicators of ecological health, widely used to assess environmental conditions. For this pilot, quantitative sampling is preferred, as it provides a more precise measure of impacts, particularly when comparing upstream and downstream sites. To accurately attribute any observed effects to wastewater overflows, it is essential that the habitat characteristics at these sites are similar. The key metrics to be measured include taxonomic richness, abundance, and community indices, following established protocols that depend on the type of substrate present, as outlined in Stark et al. (2001).
- **Periphyton and Algae (Nutrient Response):** These primary producers, which respond directly to nutrient inputs, will be monitored visually and through chlorophyll analysis, following the methodology of Biggs and Kilroy (2000). In addition, the use of artificial tiles is proposed, as they allow for replicate sampling—three tiles per site—to assess colonisation rates and community structure over time. These tiles would be left in place for at least two weeks, providing a more consistent measure of algal growth and nutrient response in the waterways.
- **Diatoms:** known for their sensitivity to changes in water quality and often serve as early indicators of environmental stress, such as eutrophication and organic pollution (Besse-Lototskaya et al., 2011). The pilot will measure metrics such as the Percentage Pollution Tolerant Value (%PTV), which is effective in assessing organic pollution. This approach has recently been extended to include saline environments. Sampling is proposed 1-2 weeks following wet weather overflow events, a method currently being applied at Wellsford WWTP. Diatoms offer a rapid, reliable indication of changes in water quality conditions.
- **Water quality parameters:** Include pH, temperature, electrical conductivity, dissolved oxygen, clarity, total suspended solids, biochemical oxygen demand, ammoniacal-nitrogen, nitrate, nitrite, total nitrogen, dissolved reactive phosphorus and *Escherichia coli*.
- **Real-time water quality monitoring:** The pilot phase includes a provision for continuous monitoring technologies that provide real-time data. AquaWatch devices (such as Waka or similar) continuously track key parameters such as dissolved oxygen, turbidity, temperature, pH, and electrical conductivity. These devices can be installed above and below discharge points, then data is transmitted to a user-friendly dashboard and stored long-term, making it accessible for trend analysis and regulatory reporting. The pilot phase will be used to test the predictive capacity of the continues monitoring parameters to indicate ecological health.
- **Excluded parameters:** Fish assessments are excluded from this pilot study, primarily due to the labour-intensive nature of the methods involved and the difficulty in linking fish population changes directly to wastewater overflow effects. Although eDNA testing offers a less labour-intensive alternative, it would only provide information on the presence or absence of fish species, making it challenging to detect community differences between upstream and

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downstream sites. NIWA has similarly excluded fish surveys from their Targeted Monitoring Plan (TMP), further supporting this decision.

2.2.2 Estuaries, basins and beaches

Key drivers: water quality, habitat suitability, and organic enrichment

The focus of this monitoring plan is on high-risk Ecological Overflow Points (EOPs) located in estuaries, basins, and beaches. The T+T WebMaps tool highlights that most of these EOPs are adjacent to environments suited for estuarine monitoring, aligning with protocols adopted by Auckland Council for State of Environment (SOE) monitoring. This alignment allows for comparison between EOP sites and control sites monitored under the SOE program, enabling a comprehensive evaluation of ecological impacts.

Monitoring will focus on intertidal mud and sandflats, utilising a standardized 12-sector grid system over an area of 6,000 to 9,000 square meters. Sites will be selected to avoid mangroves where possible. Seasonal monitoring will occur twice annually (summer and winter) to capture any changes in ecological health, particularly with respect to nuisance plant growth.

Drivers and Response Variables

This monitoring plan assesses key drivers and their ecological responses, focusing on:

- **Drivers**: Water quality (including organic enrichment and metal contaminants) and benthic habitat suitability.
- **Response Variables**: Benthic health indices, including species diversity, abundance, sediment size distribution, contaminant levels, and macroalgal coverage.

The following parameters will be applied across estuarine, basin, and beach sites:

- **Benthic macrofauna:** Macrofaunal communities are critical indicators of estuarine health. Sampling will involve collecting one macrofaunal core (13 cm diameter to 15 cm depth) from a random location within each of the 12 grid sectors per site. Cores will be sieved using a 0.5 mm mesh and preserved with 99% isopropyl alcohol. The samples will be sent for sorting and identification by qualified taxonomists, following Auckland Council's SOE methodologies. Common bivalve species, where applicable, will also be measured and categorised into size classes. Macrofaunal cores will be spaced at least 5 meters apart to prevent localised population disturbance from previous sampling events.
- **Sediment quality and contaminants:** Sampling for contaminants will follow protocols outlined in the Regional Sediment Chemistry Monitoring Programme (RSCMP) (Mills et al., 2012). Grain size analysis will also be conducted using wet sieving techniques. Sediment quality will be analysed for the following parameters:
    - **Metal contaminants**: Essential for tracking pollution from urban runoff and industrial sources
    - **Chlorophyll a**: Indicative of primary productivity and potential eutrophication
    - **Total organic carbon, total nitrogen, and total phosphorus**: Provide insight into nutrient loading and organic enrichment
    - **Pharmaceutical and personal care products and fluorescent whitening agents**: These are wastewater-specific tracers that will help identify the extent of contamination linked to overflow events. Sampling methods will align with those used in Stewart et al. (2009), with

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potential collaboration with teams currently studying emerging organic contaminants in the Whau River catchment.

- **Visual assessments:** Will be carried out to identify the presence and extent of nuisance plant growth (e.g., diatom mats, macroalgae). This will provide additional context for understanding shifts in benthic habitat quality. The presence of *Beggiatoa spp* (a bacteria group associated with nutrient pollution) will also be recorded, although its occurrence is expected closer to the EOP discharge points rather than within the monitored areas
- **Seasonal and site-specific considerations:** Seasonal monitoring during summer and winter will allow the detection of any temporal fluctuations in benthic health and plant growth. All proposed monitoring sites will be verified during Phase 2 of the project to ensure they have suitable intertidal habitats for establishing the 12-sector grid system. Site accessibility will also be confirmed, with boat access considered where necessary.

The methodology employed in this monitoring plan is designed to be consistent with Auckland Council's SOE protocols. This consistency ensures that data collected through the TMP pilot study can be compared to control sites monitored under the SOE program. Such comparisons will help test assumptions regarding the ecological effects of wet weather overflows, as outlined in the "Attachment 5 Methodology for the Assessment of Effects of Wet Weather Overflows"[3].

This approach is designed to establish a reliable baseline for assessing the ecological impacts of wastewater overflows in estuarine, basin, and beach environments. Through this Pilot study, the most effective parameters and methods will be identified for use in future, long-term monitoring efforts.

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[3] Auckland Council (2016) Attachment 5: Methodology for the Assessment of Effects on Wet Weather Wastewater Overflows.

3 Monitoring Approach and Data Analysis

Monitoring will take place quarterly for streams and biannually (in summer and winter) for estuaries, basins, and beaches over the course of one year for the Pilot Study. The aim is to capture both environmental and biological changes, with a focus on identifying the biological indices that best reflect ecological responses to overflow events.

3.1 Small waterways

The Pilot study propose quarterly monitoring over the course of one year. The focus will be on investigating effects on both environmental and biological variables, including changes in water quality and shifts in macroinvertebrate and diatom community composition. Statistical analysis, both univariate and multivariate, will be used to compare upstream and downstream sites, with the aim of identifying which biological indices and parameters best show measurable effects from wastewater overflows. In addition, the Pilot study will aim to test the use of continues monitoring of *in situ* parameters to predict ecological health.

3.2 Estuaries, basins and beaches

For estuarine and marine sites, seasonal monitoring (summer and winter) will capture potential changes in nuisance plant growth and sediment conditions. Monitoring will align with Auckland Council State of Environment (SOE) monitoring protocols where applicable to ensure comparability.

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4 Reporting

At the conclusion of the Pilot study, an **Annual Monitoring Report** will be prepared. The report will provide an overview of the monitoring outcomes of the Pilot study. The key elements of the report will include:

- Evaluation of water quality biological parameters across sites: The evaluation will compare how well the biological indices worked across different environments (small waterways vs. estuaries, basins, and beaches) and at upstream vs. downstream locations. This will help to determine whether certain indices are better suited for environments or overflow scenarios.
- Effectiveness of continuous water quality monitoring: the report will discuss the effectiveness of real-time data collection in predicting ecological health and whether it could be integrated into the full-scale TMP.
- Recommendations for full-scale monitoring: Based on the findings of the Pilot Study, this section will provide detailed recommendations for implementing full-scale monitoring under the TMP. Recommendation will include:
    - Refinement of monitoring methods: Recommendations on improving monitoring methods will be made based on the Pilot Study results. This may involve suggesting adjustments to the frequency of monitoring, the selection of biological indices, or the inclusion of additional parameters (e.g., sediment quality, water temperature) to better capture the effects of overflows
    - Site Selection for full-scale monitoring: The report will recommend which sites should continue to be monitored and whether additional sites should be included in the full-scale TMP. This will be based on which environments were most affected by overflows and where further data is needed
    - Long-term monitoring strategies: Recommendations will address the need for long-term monitoring to detect gradual or cumulative effects of overflows. The report will outline strategies for tracking changes over multiple years (three to five years), ensuring the TMP can identify both immediate and long-term ecological impact
    - Integration with other monitoring programmes: The report will suggest how the TMP can align with existing monitoring programmes, such as SOE monitoring
    - Management and mitigation: Based on the findings, the report may provide preliminary recommendation for managing and mitigating the effects of overflows. This may include suggestions for improving overflow controls, habitat restoration, or adaptive management practices.

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5 Document usage and restrictions

This plan has been prepared exclusively for **Watercare Services Ltd** as part of their compliance with resource consent requirements. The document and the data collected during the Pilot Study should only be used for the purposes outlined in this project.

Any reproduction or dissemination of this document must be done in its entirety and with prior written consent from **Tonkin & Taylor Ltd (T+T)** and **AECOM**.

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6 Appendices

Table 1: Breakdown of the number of EOP across different receiving environments and corresponding ecological risks as provided by Watercare. The number of sites included in the proposed (Pilot) Monitoring Plan is provided in the second to last row.

Ecological risk	Small Waterways	Large Waterways	Estuary	Harbour	Beach	Basin
Very low	17	5	19	0	1	0
Low	0	7	7	0	0	0
Moderate	16	0	9	40	1	0
High	6	0	1	0	1	5
Very High	51	0	10	0	18	7
Unknown	79	35	14	20	6	5
Number of EOP monitoring sites selected	7	0	2	0	2	2
Percentage of total high/very high sites	12 %	N/A	18 %	N/A	11 %	16 %

Table 2: Sites selected for inclusion within (Pilot) Monitoring Plan

EOP ID	Location	Stream	Receiving Environment	Ecological Class	Eco Risk (AEE)	Eco Risk (Calculated)	Additional comments	Frequency
501	23a Portland Road	Waitaramoa Stream	Small waterway	1	Very High	High	Potentially no upstream catchment. KB: may need permission from Kings School	Quarterly
503	68 Portland Road	Waitaramoa Stream	Small waterway	1	Very High	High	Niwa site KB: We have motts sensor here already which goes off regularly. However, EOP 505 on Scherff overflows as regularly & closer to stream –both discharge into same watercourse, so are we testing/measuring effect of multiple EOPs here? EOP 502 discharges just a few m d/s but no sensor in this EOP.	Quarterly
588	24 Mahoe Avenue	Remuera Stream	Small waterway	1	Very High	Very High	Allows for upstream and downstream sites (potential for 3x sites) KD: agreed good option for up & downstream sites, no other EOPs discharging here.	Quarterly

EOP ID	Location	Stream	Receiving Environment	Ecological Class	Eco Risk (AEE)	Eco Risk (Calculated)	Additional comments	Frequency
506	20 Hapua Street	Unnamed stream in Thomas Bloodworth Park	Small waterway	2	Very High	Very High	Accessibility potentially an issue. Niwa site KB: similar to 503, travels through length of sw first, and overflows in heavy rain only. DPSHO/ EOP704 discharges to same location, but rarely overflows. No upstream site.	Quarterly
264	25 Savage Street	Motions Creek	Small waterway	2	Very High	High	Combined with estuary site. KB: EOP 260 is upstream but not expected to OF – perhaps temp sensor to confirm? Good option.	Quarterly
734	Edendale Branch MH1	Meola Creek (Lyon Avenue)	Small waterway	1	Unknown	Very high	KB: good option with up & downstream sites. Might need access permission from Mt Albert sch.	Quarterly
588	24 Mahoe Avenue	Remuera Stream	Small waterway	1	Very High	Very High	KB: repeat, already in table above.	Quarterly
493, 495	Hobson Bay (32 Takutai St)	-	Basin	1	Very High	Low, Moderate	KB: motts sensor in 495 – OFs regularly, should we also include EOP 1645 as discharges to same point?	Summer, winter

EOP ID	Location	Stream	Receiving Environment	Ecological Class	Eco Risk (AEE)	Eco Risk (Calculated)	Additional comments	Frequency
730	Judges Bay (11 Judges Bay Rd)	-	Basin	1	High	Very High	KB: have ongoing OF issues here due to broken line, suggest not to use this site for a while.	Summer, winter
714	Cox's Bay (318 Jervois Rd)	-	Beach	2	Very High	High	KB: good option, DPEDC across bay hasn't overflowed this yr.	Summer, winter
194, 196	Adjacent to Curran Street	-	Beach	2	Very High	Very High	KB: good option	Summer, winter
261, 262, 263, 268, 269 270	Motions Creek (estuarine)	-	Estuary	2	Very High	Low, Moderate, High, Very High	KB: good option for measuring effect of multiple EOPs – multiple sensors would be needed to confirm which are overflowing.	Summer, winter
36, 1514, 1548, 567, 566, 565, 568	Waterview	-	Estuary	1	Unknown	Very Low, High, Very High	KB: site visit needed to determine if accessible around mangroves etc.	Summer, winter