REPORT

Tonkin+Taylor

Draft Construction Traffic Management Plan

Herne Bay Tunnel

Prepared for
Watercare Services Limited
Prepared by
Tonkin & Taylor Ltd
Date
October 2023
Job Number
1090120.7000P v1

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Document control

Title: Draft Construction Traffic Management Plan – Herne Bay Tunnel project					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
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Distribution:

Watercare Services Limited	1 PDF copy
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Definitions

Table 0.1: Definitions and abbreviations

Abbreviation	Detail
AADT	Average Annual Daily traffic
AEE	Assessment of Effects on the Environment
AT	Auckland Transport
ATOC	Auckland Transport Operations Centre
CAR	Corridor Access Request
CMP	Construction Management Plan
CLP	Community Liaison Person
CMO	Compliance Monitoring Officer
CoPTTM	Code of Practice for Temporary Traffic Management[1]
CTMP	Construction Traffic Management Plan
ITA	Integrated Transport Assessment
LoS	Level of Service
NZGTTM	New Zealand Guide To Traffic Management
RC	Resource Consent
RCA	Road Controlling Authority
SSTMP	Site Specific Traffic Management Plan
STMS	Site Traffic Management Supervisor
TBM	Tunnel Boring Machine
TMC	Traffic Management Controller
TMD	Traffic Management Diagram
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency
WAP	Work Access Permit

[1] Waka Kotahi is developing a new approach to how temporary traffic management will be delivered on Aotearoa New Zealand's state highways and roads. The new guidance (NZGTTM) aligns with WorkSafe's Road Good Practice Guidelines (2022) and will be implemented from 2023 in stages to eventually replace CoPTTM.

1 Background

1.1 Introduction

As part of the Western Isthmus Water Quality Improvement Programme, Watercare Services Limited (Watercare) proposes to construct the Herne Bay Tunnel (or the Project). Western Isthmus Water Quality Improvement Programme is a joint programme between Watercare and Auckland Council aiming to deliver a programme of infrastructure improvement works for reduced wastewater overflows and improved water quality at local beaches. To build a resilient wastewater system and ensure reliability of service and reduced overflows, Watercare is proposing to construct a new wastewater trunk sewer for the Herne Bay catchment, to connect into the proposed Central Interceptor (CI) tunnel extension to Point Erin Park.

The primary purpose of the Project is to reduce engineered overflow spill frequencies resulting from the aging combined sewer network in the area and to ensure ongoing compliance with Watercare's Network Discharge Consent (NDC). This is expected to lead to improvements in bathing water quality conditions at the beaches, reduction of odour from stormwater catchpits and improved overall amenity.

This Draft Construction Traffic Management Plan (CTMP) has been prepared by Tonkin & Taylor Ltd (T+T) for Watercare. The CTMP is required in response to item 38 in the section 92 request for further information in relation to resource consent application ref: BUN60420393. The section 92 request requested a draft CTMP to be developed to address "*the usual construction traffic management requirements, and the following concerns in particular:*

- *Assessment of the additional traffic volumes on diversion routes and the impact on these routes during existing peak hours, and in particular, the cumulative traffic effects on Jervois Road.*
- *Assessment on whether the diverted traffic volumes will exacerbate crash risks along Jervois Road.*
- *Any necessary mitigation to address safety concerns such as the higher likelihood of any unsafe right turns out of existing intersections to Jervois Road as a consequence of the construction of Shaft 2 and the estimated partial road closure for up to 251 days.*
- *The safety of school children and any necessary mitigation measures given the proposed diversion route along Curran Street with schools nearby".*

The above bullet point items are addressed in Section 6. The draft CTMP will be updated and developed into a final CTMP following necessary approvals and, therefore, may not contain information that is yet available at the time of preparation prior to the grant of the resource consent.

The draft CTMP has been based on the best available information from Fletcher Construction and WSP. It is noted however that resource consent has not yet been granted, construction methodology has not been finalised and a traffic management company has not yet been engaged. All traffic management measures included in the following CTMP have yet to be approved by Auckland Transport / Waka Kotahi. As such, it cannot be guaranteed that the methodology and management of effects described herein will be that employed verbatim at the time of construction.

1.2 Purpose

The purpose of the draft CTMP is to outline the standards and agreed approach and measures that will be taken to avoid, remedy, mitigate, minimise or manage the traffic effects associated with construction works for the duration of this Project. However, some information was not available at the time this CTMP was drafted as the resource consent application is being assessed. The purpose of this CTMP is to

- Provide a fundamental structure and demonstrate the initial findings for the CTMP which will be developed prior to the commencement of any construction activities. The CTMP shall be implemented throughout the entire construction period and is intended to be the primary tool to inform the project's management of construction traffic effects.
- The CTMP will also establish a framework that can be used to support the development of the Site-Specific Traffic Management Plans ('SSTMP'), which will enable physical works in the road corridor once approved by Auckland Transport ('AT') and Waka Kotahi.

The draft CTMP is generally consistent with the Integrated Transport Assessment (ITA) prepared by T+T in June 2023, as part of the resource consent application **(Appendix A).**

This draft CTMP is consistent with the Waka Kotahi New Zealand Guide to Traffic Management (NZGTTM) and Code of Practice for Temporary Traffic Management (CoPTTM). Where applicable, works within transport corridors will be undertaken in accordance with the National Code of Practice for Utility Operators Access to Transport Corridors (November 2011), unless otherwise agreed between the consent holder and the Corridor Manager.

In addition to addressing the specific queries contained within the section 92 request, the CTMP describes the general measures required to reduce the impacts of construction and maintain the safety of road users, active road users such as pedestrians, residents and businesses that may result from potential road closures, temporary restrictions, detours or diversions for general traffic and buses. This will entail the implementation of strategies to maintain, or minimise the impact on, traffic capacity during weekdays and weekends, while managing the effects on project delivery.

This CTMP does not enable physical works to take place. Approved Corridor Access Requests (CAR) and SSTMPs will be required for each activity to enable live works on the road corridor.

1.3 Scope

The scope of this draft CTMP relates to proposed construction activities of the Herne Bay Tunnel located in the project area as highlighted in Figure 1.1 below. The Project is located within Herne Bay, a predominantly residential suburb on the western fringe of the Auckland City Centre. The Project area is bound by Point Erin Park in the east, the edge of the Waitematā Harbour to the north and Marine Parade and Jervois Road to the south.

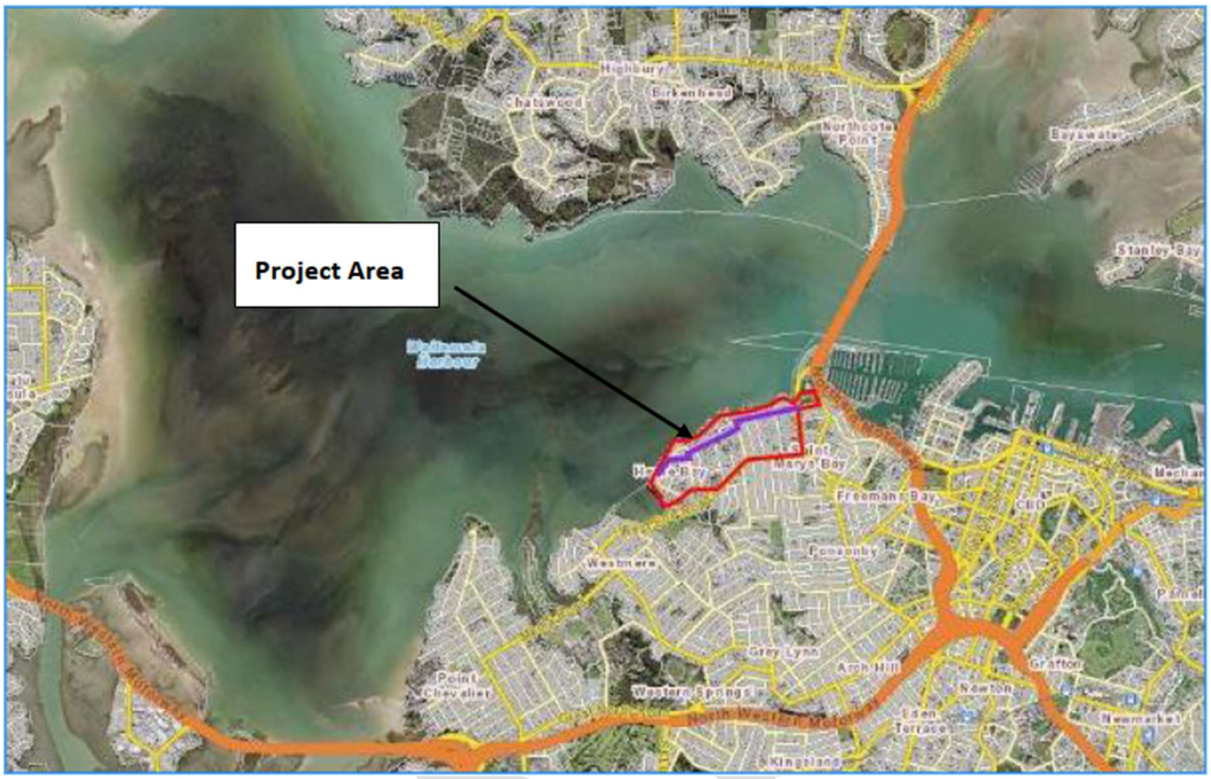

Figure 1.1: Location of the project area (Herne Bay) within the context of Auckland

The draft CTMP specifically addresses the effects caused by the traffic activities arising from the construction methodology of the Herne Bay Tunnel. This includes the permanent works (if any) and construction works at each site.

1.4 Philosophy

This draft CTMP has been developed in general accordance with the traffic management recommendations put forward in the ITA report prepared for the resource consent application. Updates will be made in the CTMP should the construction methodology change in the future and/or where alternative measures have been identified.

Concurrent public and private developments being undertaken in the vicinity of the Project may impact overall traffic conditions especially as developments continue to evolve. A practical approach involves assuming that the true cumulative effects of the Project may not be fully realised at the time of completion for the draft CTMP and final CTMP.

Monitoring will be an important aspect of the CTMP and will enable the evaluation of construction effects as the Project evolves. Given the duration of the project and the potential for changing conditions and environment, the CTMP will remain a live document to be updated when necessary.

The following objectives have been set as a summary of the philosophy for the CTMP:

- Maximise safety of the travelling public and site staff;
- Enable construction efficiencies;
- Minimise delays to the public and road users;
- Minimise disruption to property access;
- Ensure appropriate access for emergency vehicles;
- Inform the public about potential impacts of Project construction on the road network; and

- Remediate and maintain the current condition of road assets where damage has been directly caused by construction activity.

This will be achieved by a high standard of:

- Planning construction traffic movement;
- Design of site access points and temporary traffic management;
- Maintenance of roads, signs, and work sites; and
- Communication internally within the Project, and with road users.

1.5 Relationship to other plans

This draft CTMP forms part of a comprehensive suite of environmental controls within the Construction Management Plan (CMP) for the construction phase of the Project. The CTMP addresses the potential traffic effects associated with construction activities at the Herne Bay Tunnel construction sites.

1.6 Sequence of traffic management documents

Figure 1.2 shows the relationship between the sequence of documents relating to traffic management activities. As mentioned above, the CTMP does not enable physical works to take place on the road corridor but rather sets the philosophy as to how traffic will be managed for this project.

SSTMPs and CAR approved by Auckland Transport enable physical works to take place within the road corridor. These will be developed in accordance with the philosophy documented in this CTMP.

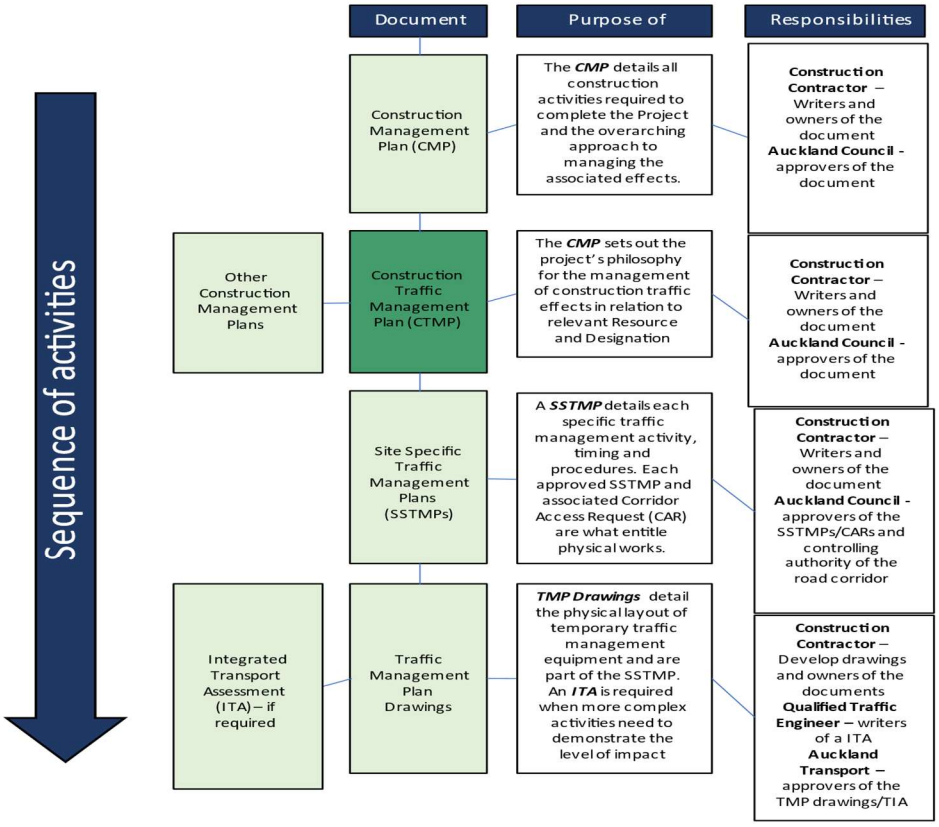

Figure 1.2: Sequence of activities for traffic management related documents

1.7 SSTMP planning

Traffic Management Plans (TMPs) are required for all activities that vary the normal operating conditions of a road, irrespective of whether the activity is on a carriageway, on a footpath or on a road shoulder. Site Specific Temporary Traffic Management Plan's (SSTMPs) are a document describing the nature and extent of TTM at a work site and how road users (including pedestrians and cyclists) will be managed by the use of TTM. These documents outline the TTM procedures to be implemented, to ensure the safety of both the public and contractors is maintained throughout the duration of each construction activity.

Following programming of construction tasks, associated TTM requirements will be identified and SSTMPs prepared to ensure construction activity is conducted using an approved methodology, with agreed mitigation measures in place. There need not be a unique SSTMP for every construction activity, where appropriate generic SSTMPs can be used.

A Contractor required to undertake work within the road corridor will need a Works Access Permit (WAP) from either Waka Kotahi or Auckland Transport (AT), depending on the Road Controlling Authority (RCA) for the road works are to be undertaken on. To obtain this WAP, the Contractor will apply for a CAR through the beforeudig website http://www.beforeudig.co.nz/#, with a SSTMP uploaded to this CAR along with any supporting information required.

1.8 Performance standards

The following standards and guidelines shall be adhered to in planning and implementing TTM during construction of the project:

- Waka Kotahi New Zealand Guide To Traffic Management (NZGTTM);
- Waka Kotahi Traffic Controls Devices Manual (TCD);
- Waka Kotahi Code of Practice for Temporary Traffic Management (COPTTM);
- Waka Kotahi Manual of Traffic Signs and Markings (MOTSAM);
- Austroads "Road Design" and "Traffic Management" guides; and
- Auckland Council and Auckland Transport specific requirements.

The CTMP and the subsequent SSTMP's shall be consistent with the applicable version of the NZGTTM/COPTTM. Where it is not possible to adhere to this standard, the COPTTM prescribed Engineering Exception Decision (EED) process will be followed, which will include appropriate mitigation measures agreed with Waka Kotahi and Auckland Transport Road Asset Manager. The TMC has authority to approve SSTMPs and consider any associated EEDs. EEDs will then be forwarded onto the Waka Kotahi National Office for approval.

TMPs must be prepared by a qualified Site Traffic Management Supervisor (STMS). The TMP is then included in a CAR and submitted to AT/Waka Kotahi by the STMS for approval. The Contractor shall allow up to 5 working days for approval of a SSTMP.

1.9 CTMP related consent requirements

This section will be updated once the resource consent application is approved. The final CTMP will address the requirements in the resource consent.

1.10 Draft CTMP structure

The remainder of this document is structured as follows:

- Section 2 defines the roles and responsibilities that will apply for the Project site;

- Section 3 outlines the Project works and summary of construction activities;
- Section 4 details the existing conditions relevant to the Project site such as current traffic conditions, road characteristics and active road user concerns;
- Section 5 discusses any other proposed developments that may generate additional construction traffic near the Project site during the same time period as the Project;
- Section 6 outlines the key traffic activities associated with construction works at the Project site and addresses the matters in the section 92 request;
- Section 7 details the management activities required to mitigate the anticipated impacts of construction activity;
- Section 8 details the procedures that will apply for the operation and management, governance, development of SSTMPs, approvals and monitoring of the traffic management throughout the life of the Project;
- Section 9 details key stakeholders for the Project site, communications and engagement forums; and
- Section 10 details the key review monitoring and update mechanisms of the CTMP.

2 Roles and responsibilities

2.1 Defined roles and delegated level of responsibility

Specific roles and responsibilities relating to the implementation of this CTMP are detailed in Table 2.1 below:

Table 2.1: CTMP Roles and responsibilities

Role	Responsibility
AT/Waka Kotahi	• Approval of SSTMPs. • Auditing of TTM during site operations. • Advising network considerations such as other scheduled road works which could impact project works and TTM.
Auckland Council – Regulatory Consents	• Certification of the CTMP. • Monitoring of compliance with the Consent Conditions during site operations.
Temporary traffic management working group	• A Temporary Traffic Management Working Group (TTMWG) could be formed consisting of technical and communications representatives from Auckland Transport and Waka Kotahi including the Auckland System Management (ASM), Road Corridor Access Team, Auckland Traffic Operations Centre (ATOC), and the Auckland Transport (AT) Metro Service Delivery Team.
Consent Holder	• Overall responsibility to ensure resource consent conditions and TMP requirements are complied with.
Construction Manager	• Confirming site works are being undertaken in accordance with the construction methodologies and relevant management plans. • Responsible for delivering resources to ensure TTM is managed and maintained.
Construction Traffic Manager (CTM)	• Responsible for establishing and maintaining safe processes for all traffic management activities. • To ensure the Site is operated in accordance with the CTMP. • Responsible for coordinating all temporary traffic management activities for the Project. • Responsible for preparation, submission, and coordination of all traffic management plans for the Project. • Responsible for arranging any Traffic Impact Assessments (TIA) that are required for the SSTMP. • Responsible for the management of all temporary traffic site crew and operations. • Liaise with Auckland Transport and Waka Kotahi throughout the process (in each of the preparation, submission and coordination phases) to ensure the best possible traffic management result for each party (principals, RCA and contractors). • Provide the approved SSTMPs to the site traffic management supervisor (STMS) to implement on site. • Arrange for pre-construction surveys. • Arrange regular meetings with the CMO regarding upcoming works and permissions/approvals required. • Ensure that staff parking is appropriately managed.

Role	Responsibility
	• To facilitate coordination meetings with HCC. • To respond to complaints and incidents. • To provide inductions and training for staff. • Ensure complaints and incidents register and write reports. • Manage the SSTMP process.
Site Traffic Management Supervisor (STMS)	• Responsible for onsite implementation, maintenance and removal of the approved SSTMPs in accordance with the requirements of NZGTTM/ CoPTTM. • Be onsite during attended periods and monitor traffic flows. • Provide feedback to the traffic manager regarding how the SSTMP is operating to the traffic manager who can propose any amendments to improve traffic flows or safety. • Monitor the site at regular intervals (minimum of every 12 hours) to ensure that safety is maintained. • Prepare and submit SSTMPs to AT/Waka Kotahi for approval.
Traffic controllers (TC)	• Traffic Controllers are responsible for assisting the STMS with their responsibilities and in accordance with the requirements of NZGTTM/ CoPTTM.
Construction staff	• To create a safe working environment. • To operate the Site traffic and pedestrian management according to the CTMP.
Community Liaison Person (CLP)/Project Ambassador	• Lead and coordinate community and stakeholder engagement and communication processes. • Arrange for letter drops to neighbours as required.
External traffic engineers and planners	• The Project may draw on a wider group of experts to undertake TIAs and assist with planning and review of SSTMPs and planned Temporary Traffic Management ('TTM').

2.1.1 Contact details

The final CTMP will include contact details for key staff (Role, name, phone number and email), along with the Project hotline, for general queries or complaints. Project contact details will be provided in the final CTMP and any further contact details will be provided in the Construction Management Plan.

2.2 Approvals

An internal approvals procedure will be implemented by the Contractor to address all relevant issues and provide necessary notice and consultation prior to application for the SSTMPs.

The SSTMP shall be prepared and reviewed for compliance with NZGTTM/CoPTTM and issued to the approvals team of Auckland Council. For TTM exclusively on Waka Kotahi State Highways, the SSTMP will go to the Waka Kotahi Journey Manager for approval by the TMC (Traffic Management Co-ordinator). For TTM on AT roads, the SSTMP will go AT Road Protection Team for approval.

All TTM applications will go to the following contact as appropriate (to be completed in Final CTMP):

Waka Kotahi	**AT**
Phone:	Phone:
Email:	Email:

3 Project description

3.1 Project location

As detailed in the ITA prepared for the resource consent, key land uses surrounding the site are residential dwellings and several reserves. Zoning in the immediate vicinity of the site comprises residential, road, strategic road network and open space zones as shown in Figure 3.1 below.

Figure 3.1: Alignment of the trunk sewer line (red line) with the underlying zoning

Further from the construction works, Jervois Road lies to the south of the proposed works and features a shopping and commercial area. Three early childcare centres are located in the neighbourhood, as well as two primary schools (Bayfield School and Ponsonby Primary School).

3.2 Summary of works

The resource consent application was prepared for the following scope of the works:

- Installation of approximately 1.5 km of 2.1 m internal diameter trunk sewer line, constructed via a tunnel-boring machine (TBM).
- Installation of approximately 150 m of 600 mm diameter trunk sewer within Marine Parade, constructed via open-cut trenching.
- Construction of 8x primary tunnel shafts, ranging in diameter from 3.5 m to 11 m, along with 4 x 3.5 m diameter intercepting shafts.
- Installation of 4 x interception pipes and 11 x connections to existing engineered overflow points (EOPs).
- Establishment of two construction support areas (CSAs) in public reserves.
- Relocation and reinstatement of utilities as required.

3.2.1 Proposed works and construction hours

A wastewater trunk sewer pipeline is proposed for the Herne Bay catchment, to connect into the proposed CI tunnel extension to Point Erin Park. The primary purpose of the Project is to reduce engineered overflow spill frequencies to enable ongoing compliance with Watercare's NDC. This is expected to lead to improvements in bathing water quality conditions in the beaches within this catchment. It should be noted that not all of the works will be carried out at the same time and hence any impacts will be localised for a temporary period and not sustained across the whole project area for the full duration of the project.

General construction works are proposed to occur between 7 am and 6 pm, Monday to Friday and 8 am – 6 pm on Saturdays. No works are proposed on Sundays or public holidays. Site mobilisation and pack down works are proposed to occur 30 minutes before and after these windows.

There may be occasions where it is necessary to undertake construction activities outside of usual hours, such as for:

- Site setup and pack up.
- Large plant delivery early in the morning or later in the evening to avoid peak traffic volumes.
- Service relocations and their connections to reduce service disruptions.

It is understood that works outside of standard hours will be limited as far as is practicable and that based on experience at other Watercare sites, should this occur then it will take place intermittently and for a limited period of time. From a transport effects perspective, movements outside of peak times will have less effect on traffic movements on the surrounding roads, and as such, this assessment has not further considered out of hours traffic movements.

Any works outside the usual hours will be detailed in the updated CTMP or Construction Management Plan which will identify appropriate management and mitigation measures to be implemented and, if required, will be coordinated and programmed with AT/Waka Kotahi.

The construction methodology and drawings were provided in attached in Appendix C of the ITA (attached as Appendix A of this draft CTMP). These drawings show the details of example locations of site offices, compounds and parking.

Subsequent to preparation of the ITA, drawings of CSA 1 and 2 have been updated in response to the Council's S92 RFI and are shown Figure 3.1and Figure 3.3 below:

Figure 3.2: CSA1 draft layout

Figure 3.3: CSA2 draft layout

The tracking shown in Figure 3.2 and Figure 3.3 is for the largest vehicle using CSA1 (11.5 m rigid truck) and CSA2 (17.8 m artic truck). Storage areas at CSA1 are most likely to contain the following:

- Drainage materials – fixtures and fittings and sections of pipe.
- Trench shields etc.
- Traffic management materials – stockpile of cones, signage etc.
- Tunnelling materials.
- Timber – for formwork etc.
- Pile casings and tools, guide wall materials.

3.3 Construction programme

To be provided in final version of CTMP

4 Existing transport network conditions

Please refer to Sections 2.3 to 2.6 of the ITA (Appendix A) for a detailed description of the existing transport network conditions. The following are detailed in each section of the ITA:

- Section 2.3: roads layout on the Project route and adjacent to the Construction Support Areas (CSA), traffic flows on the existing roads, key intersections on the Project route, and typical peak traffic conditions.
- Section 2.4: public transport services.
- Section 2.5: walking and cycling facilities and amenities adjacent to the Project route.
- Section 2.6: road safety including a crash analysis study in the Project area.

5 Concurrent projects

As detailed in section 4.2 of the ITA (Appendix A) it is anticipated that there will be an overlap of the HBT works with the Watercare Point Erin Central Interceptor project. Watercare will seek to avoid any overlaps between the two projects (in particular on Sarsfield Street) and where this is not possible will ensure the impacts on the projects are minimal. Notwithstanding this, to ensure a robust, worst-case assessment, the ITA included a cumulative assessment of traffic effects to assess the impact of the closure of Sarsfield Street, as detailed in Section 6 of the ITA (Appendix A).

Watercare will co-ordinate between contractors (if different for each project) on the temporary traffic management to reduce the impact where possible.

6 Key traffic activities

6.1 Introduction

Sections 5 and 6 of the ITA (Appendix A) provided a detailed assessment of the construction traffic volumes and distribution and an assessment of the effects of the additional construction vehicles on the surrounding road network (at the location of the construction works and on potential diversion routes) in terms of:

- Road safety.
- Compliance with AUP transport rules.
- Access to residential properties.
- Pedestrians and cyclists.
- Pedestrian access to reserves/parks.
- Public Transport (PT).
- On street parking.
- Refuse/delivery access.
- Traffic impact of additional diverted traffic.

This draft CTMP has been prepared in response to item 38 in the section 92 request for further information in relation to resource consent application ref: BUN60420393. Since submission of the ITA, there have been minor updates to the anticipated number of construction vehicles and section 7.2 below provides a summary of these changes. Based on these revised construction vehicle numbers, section 7.3 below assesses whether this alters the findings of the assessment of effects as detailed in section 6 of the ITA.

The section 92 request requested a draft CTMP be developed to address "*the usual construction traffic management requirements, and the following concerns in particular:*

- *Assessment of the additional traffic volumes on diversion routes and the impact on these routes during existing peak hours, and in particular, the cumulative traffic effects on Jervois Road.*
- *Assessment on whether the diverted traffic volumes will exacerbate crash risks along Jervois Road.*
- *Any necessary mitigation to address safety concerns such as the higher likelihood of any unsafe right turns out of existing intersections to Jervois Road as a consequence of the construction of Shaft 2 and the estimated partial road closure for up to 251 days.*
- *The safety of school children and any necessary mitigation measures given the proposed diversion route along Curran Street with schools nearby".*

Section 7.4 below provides a response to these four concerns.

6.2 Updated construction traffic volumes and distribution

6.2.1 Construction vehicle trip generation - update of section 5.2 of the ITA

Section 5.2 of the ITA (attached in Appendix A) provided details of expected construction traffic vehicles and their distribution. Since submission of the ITA a number of minor changes to these estimates has been made and are reported on below:

Worker and servicing vehicle movements Salisbury Reserve CSA1

Unchanged from ITA assumption at 50 two way vehicles movements/day.

Vehicle movements to and from the Salisbury Reserve CSA1 and the Satellite sites

The number of construction vehicles has increased from the ITA assumption of 22 to 68 two way vehicle movements/day as summarised below:

- Maximum of four staff cars (Superintendent and Site Engineer anticipated to make several trips per day from CSA1 site office to work front at satellite sites) making 3 trips per day out to satellite sites from site office at CSA1.
- 12 construction worker trips to satellite sites.
- 1 x car trailer carrying 500 kg compactor (or may deliver in 6-Wheeler when practical) = 1 trip/day.
- 1 x 2 T Digger – to/from the CSA and Satellite sites = one trip/day.
- 1 x 5 T Digger– to/from the CSA and Satellite sites - may be stored over night at a Satellite site, but to ensure a conservative assessment assume one trip a day.
- 1 x 6 wheeler concrete truck – from satellite sites to CSA1 = one trip/day during piling works.
- 1 x 4 Ttip truck– six trips to/from the CSA and Satellite sites (bringing sand/stone from small stockpiles located at CSA1 out to satellite site when required and bring piling tools from small storage area at CSA1 to satellite site) = six trips/day.
- Due to its size, the 14 t Digger will be stored at each Satellite site and won't be moved each day.

Therefore, typical daily movements between the Salisbury Reserve CSA1 and the Satellite sites = 10 trucks/ day and 24 cars/utes per day (i.e., 68 two way vehicles movements/day).

These movements would take place between the Salisbury Reserve CSA1 to each of the Satellite sites where work is being carried out via Argyle Street/Sarsfield Street.

For the majority of the time, the 6 wheeler trucks will be the largest vehicle used but occasionally an 11.5 m rigid transporter would be required to deliver and move cranes, diggers and bore machine from one Satellite site to the next. It is anticipated that mobbing/demobbing of plant would take place at the satellite sites rather than arrive at CSA1 and then transfer to the satellite site.

Vehicle movements between concrete/reinforcing steel suppliers and satellite sites

The number of trucks has increased from the ITA assumption of four to seven trucks a day, as detailed below.

Concrete trucks will go to the Satellite sites directly from the supplier. It is anticipated this involves six trucks a day (six wheel truck carrying 5.5 m^3 of concrete) while drilling and filling the pile holes which create the circumference wall of the shaft and will only be for short durations of up to 20 days per shaft. This accounts for any part loads when finishing piles. To ensure a conservative assessment, these have been assumed to occur every day. Also an allowance has been made for 1 x 11.5 m trailer delivering pile cages to satellite sites = one trip/day during piling works.

Therefore, typical daily movements between the concrete/reinforcing steel suppliers and the Satellite sites = seven trucks a day (i.e., 14 two way vehicles movements/day).

It can be expected that these trips will access the Satellite sites using Curran Street and Curran Street on ramp or Shelly Beach Road off ramp and Sarsfield Street (east of Curran Street). The Salisbury

Reserve CSA1 will be used as a marshalling yard if there is no capacity on street for waiting concrete trucks.

Vehicle movements between the CSA1/satellite sites and CSA2

The number of trucks has increased from the ITA assumption of six to ten trucks a day, as detailed below.

- Two trucks per day primarily for deliveries of hard fill from CSA2 94A and 94B Shelly Beach Road to the Salisbury Reserve CSA1 in 6-wheeler trucks (average truck length = 7.7 m).
- Up to eight trucks/ day moving spoil from the Satellite sites to CSA2 94A and 94B Shelly Beach Road (only when removing spoil as part of drilling the piles and shafts) in 6-wheeler trucks. This is based on 6 concrete trucks per day and, assuming a material bulking factor, then 8 spoil trucks are anticipated.

Therefore, typical daily movements between the Salisbury Reserve CSA1/Satellite sites and CSA2 94A and 94B Shelly Beach Road = 10 trucks a day (i.e., 20 two way vehicles movements/day).

It can be expected that these trips will access Salisbury Reserve CSA1/Satellite sites either to/from Curran Street on ramp or Sarsfield Street (east of Curran Street).

Vehicle movements to/from CSA2 94A and 94B Shelly Beach Road

The number of construction vehicles has increased from the ITA assumption of nine to eleven vehicles a day, as detailed below.

This CSA would be the receiving CSA of spoil from the Satellite sites (via the 6-wheeler trucks as described above) which would then be taken by truck and trailer units from the CSA to transport to landfill. Truck and trailer units would also deliver hardfill to the stockpile area, which would then be collected by the 6 wheelers to deliver to the Salisbury Reserve CSA1 and Satellite sites when required. As well as the construction vehicle generation from the 6 wheelers (accounted for above) there would also be the following vehicle movements per day at the 94A and 94B Shelly Beach Road CSA2:

- Worker and service movements to/from CSA2 94A and 94B Shelly Beach Road.
- Construction, management and supervision staff = two.
- Servicing trucks = one every three days (assume as worst case one per day).
- Deliveries to/from CSA2 94A and 94B Shelly Beach Road.
- Truck and trailer removal of spoil to landfill site = six trucks per day.
- Truck and trailer delivery of hardfill = up to two trucks/day.

Therefore, daily worker and servicing movements to/from CSA2 94A and 94B Shelly Beach Road = two cars and nine trucks a day (i.e. 22 two way vehicles movements/day).

At this stage, exact origin and destinations for predicted vehicle movements associated with the construction of the project are not confirmed, but it can be expected that these trips will access CSA2 by ingress from Curran Street, egress north via SH1 Auckland Harbour bridge and egress South via SH1 and then U-turn at Onewa interchange.

6.2.2 Updated construction traffic summary

Table 6.1 below updates Table 5.1 of the ITA anticipated daily maximum construction vehicles within the Project area and the key routes to/from the CSA1 and CSA2.

Table 6.1: Updated daily anticipated maximum number of construction vehicles

	Salisbury Reserve CSA1 – staff/ servicing	Between Salisbury Reserve CSA1 and Satellite Sites and between concrete /reinforcing steel suppliers and Satellite sites	Between Salisbury Reserve CSA1 /Satellite Sites and 94A and 94B Shelly Beach Road CSA2	CSA2 94A and 94B Shelly Beach Road– staff/ deliveries	Total Vehicles (two way trips)
East of Salisbury Reserve (Argyle Street Wallace Street and Sarsfield Street)	25	10 +24 +7 (41)	10	0	76 (152)
West of Salisbury Reserve (Herne Bay Road/Upton Street/Marine Parade)	0	10 +24 +7 (41)	10	0	51 (102)
Curran Street SH1 on ramp	6.25	3.5	10	11	31
SH1 (AHB)	12.5	3.5	10	11	37 (74)
SH1/Shelly Beach Road off ramp/Sarsfield Street (between Shelly Beach Road and Curran Street)	6.25	3.5	10	11	31 (62)
Curran Street (between Jervois Road and Sarsfield Street)	12.5	3.5	0	11	27 (54)
SH1 on/off (south facing) ramps Onewa interchange	0	0	10	11	21 (42)
SH1 on/off (north facing) ramps Onewa interchange	0	0	0	0	0

Key changes to note from the summary of construction vehicles provided in the ITA are:

- East of Salisbury Reserve (Argyle Street Wallace Street and Sarsfield Street) - increase in construction vehicles per day from 46 to 76.
- West of Salisbury Reserve (Herne Bay Road/Upton Street/Marine Parade) - increase in construction vehicles per day from 21 to 51.
- Curran Street (SH1 on ramp) - increase in construction vehicles per day from 27 to 31.
- SH1 (AHB) - increase in construction vehicles per day from 33.5 to 37.
- SH1/Shelly Beach Road off ramp/Sarsfield Street (between Shelly Beach Road and Curran Street) - increase in construction vehicles per day from 27 to 31.
- Curran Street (between Jervois Road and Sarsfield Street)- increase in construction vehicles per day from 23.5 to 27.
- SH1 on/off (south facing) ramps Onewa interchange- increase in construction vehicles per day from 15 to 21.

As detailed in Table 6.1 it is anticipated that on a typical day:

- On the residential streets on the Project, east of Salisbury Reserve there will be an increase of up to 76 vehicles/day with the construction traffic. Over a 12 hour working day this represents just over 6 vehicles per hour (noting the ITA assessment of effects used 4 vehicles per hour) or 1 vehicle approximately every 10 minutes.
- On the residential streets on the Project, west of Salisbury Reserve there will be an increase of up to 51 vehicles/day with the construction traffic. Over a 12 hour working day this represents just over 4 vehicles per hour (noting the ITA assessment of effects used 2 vehicles per hour) or 1 vehicle approximately every 15 minutes.
- On key arterials and collectors such as Curran Street, Sarsfield Street and Shelly Beach Road, there will be an increase of up to 27 vehicles/day with the construction traffic. Over a 12 hour working day this represents just over 2vehicles per hour (noting the ITA assessment of effects used just under 2 vehicles per hour).
- On SH1 and on/off ramps at Onewa interchange, there will be an increase of up to 21 vehicles/day with the construction traffic. Over a 12 hour working day this represents just under 2 vehicles per hour (noting the ITA assessment of effects used just over 1 vehicle per hour).

6.3 Review of ITA assessment of effects

Overall, the revised construction vehicle numbers outlined in section 6.2 above, result in a very similar level of additional vehicles per hour as reported in section 5.3 of the ITA and, as such, the assessment of effects is considered to remain unchanged to that reported in the ITA.

6.4 Section 92request for further information

6.4.1 Introduction

This draft CTMP has been prepared in response to item 38 in the section 92 request for further information in relation to resource consent application ref: BUN60420393. The section 92 request also requested that the draft CTMP addresses the concerns detailed in sections 6.4.2 to 6.4.5 below.

6.4.2 Assessment of the additional traffic volumes on on Jervois Road

A detailed assessment of the effects of the additional traffic volumes on diversion routes was provided in the ITA for each work activity and is summarised below (with the conclusions unchanged as a result of the minor changes in construction vehicle trip generation, as reported in sections 6.2 and 6.3 above):

- Shaft 1 - full closure of Sarsfield Street (section 6.5.5.1 of ITA) impact on Emmett Street and Curran Street considered to be a temporary significant traffic impact and the ITA provided recommendations to mitigate this impact. Eastbound closure of Sarsfield Street (section 6.5.5.2 of ITA) impact on Emmett Street considered to be a temporary more than minor traffic impact and recommendations in the ITA to mitigate this impact. The impact on Curran Street considered to be a less than minor impact.
- SEO1 interception shaft (section 6.5.5.6 of ITA) impact on likely diversion routes of Sentinel Road, Jervois Road and Curran Street considered to be a less than minor impact.
- SEO2 interception shaft (section 6.5.5.7 of ITA) impact on likely diversion routes of Lawrence Street, Jervois Road and Hamilton Road considered to be a less than minor impact.
- SEO3 interception shaft (section 6.5.5.8 of ITA) impact on likely diversion routes of Sentinel Road, Jervois Road and Wallace Street considered to be a less than minor impact.
- Shaft 2 (section 6.5.5.9 of ITA) impact on likely diversion routes of Cremorne Street, Argyle Street, Wallace Street and Lawrence Street was considered to be a temporary more than minor impact. The traffic impact on Jervois Road was also considered to be a temporary more than minor impact but noting this was for a short section of Jervois Road (between Wallace Road and Lawrence Street) and largely during the off peak periods when there is no congestion.
- Shaft 3 (section 6.5.5.10 of ITA) impact on likely diversion routes of Cremorne Street, Stack Street, Clifton Road and Lawrence Street was considered to be a temporary more than minor impact. The traffic impact on Jervois Road was also considered to be a temporary more than minor impact but noting this was for a short section of Jervois Road (between Clifton Road and Lawrence Street) and largely during the off peak periods when there is no congestion.
- SEO4 interception shaft (section 6.5.5.11 of ITA) impact on likely diversion routes of Masons Avenue, Clifton Road and Jervois Road considered to be a less than minor impact.
- Shaft 4 (section 6.5.5.12 of ITA) impact on likely diversion routes of Galatea Terrace, Masons Avenue, Bella Vista Road and Jervois Road considered to be a temporary more than minor impact but noting this was for a short section of Jervois Road (between Herne Bay Road and Masons Avenue) and largely during the off peak periods when there is no congestion.
- Shaft 5 (section 6.5.5.13 of ITA) impact on likely diversion routes of Galatea Terrace, Marine Parade and Bella Vista Road considered to be a less than minor impact.
- Shaft 6 (section 6.5.5.14 of ITA) impact on likely diversion routes of Marine Parade, Annan Street and Upton Street considered to be a less than minor impact.
- Shaft 7 (section 6.5.5.15 of ITA) impact on likely diversion routes of Bella Vista Road and Annan Street considered to be a less than minor impact.
- Shaft 8 (section 6.5.5.16 of ITA) impact on likely diversion routes of Bella Vista Road, Wolseley Road and Annan Street considered to be a less than minor impact.

6.4.3 Assessment on whether the diverted traffic volumes will exacerbate crash risks along Jervois Road

As detailed in section 6.4.2 above, the assessment of effects reported in the ITA indicated a less than minor effect on Jervois Road, except in relation to Shafts 2, 3 and 4 where a temporary more than minor effect was identified.

For Shaft 2, the section of Jervois Road affected is for a short section between Wallace Road and Lawrence Street for a period of up to 120 days full closure and 131 days partial closure. Potential maximum diverted traffic flows are in the order of 1,079 to 3,940 vehicles day compared to the daily traffic volumes of 19,168 on Jervois Road (representing a temporary 6% to 20% increase in daily traffic volumes).

For Shaft 3, the section of Jervois Road affected is for a short section between Clifton Road and Lawrence Street for a period of up to 340 days. Potential maximum diverted traffic flows are in the order of 1,181 to 1,828 vehicles day compared to the daily traffic volumes of 19,168 on Jervois Road (representing a temporary 6% to 10% increase in daily traffic volumes).

For Shaft 4, the section of Jervois Road affected is for a short section between Herne Bay Road and Masons Avenue for period of up to 201 days. Potential maximum diverted traffic flows are in the order of 314 to 1,181 vehicles day compared to the daily traffic volumes of 19,168 on Jervois Road (representing a temporary 2% to 6% increase in daily traffic volumes).

The level of temporary increases in traffic flows are considered to be largely within typical day to day variations in traffic flow and hence is not considered to be a significant issue.

Further review of the crash data in section 2.6 of the ITA indicates there have been:

- Two crashes on Jervois Road between Herne Bay Road and Masons Avenue in the 5 year period (i.e. 0.4 crashes per annum) of which one was of a minor severity, and one was non-injury.
- Six crashes on Jervois Road between Clifton Road and Lawrence Street (i.e. 1.2 crashes per annum) of which four were non injury and two were of minor severity.

The number and severity of crashes on the above sections of Jervois Road are considered relatively (for an Arterial Road) low. Table 2.11 of the ITA also indicates a low number of crashes on Jervois Road involve vulnerable road users. Given that the increase in traffic on these sections of Jervois Road is low and is for a temporary period and given the low number and severity of existing crashes, it is not considered that the additional traffic from diversion routes resulting from the HBT construction works will exacerbate the crash risk on Jervois Road.

6.4.4 Any necessary mitigation to address safety concerns

As detailed in 6.4.3 above, it is not considered that the additional traffic from diversion routes resulting from the HBT construction works will exacerbate the crash risk on Jervois Road.

6.4.5 The safety of school children and any necessary mitigation measures given the proposed diversion route along Curran Street with schools nearby.

Section 6.5.5.1 of the ITA details the suggested measures to be incorporated into the CTPM in relation to Ponsonby Primary School, which are summarised below:

- Temporary 30 km/h speed limit is implemented to reduce vehicle speeds and hence injury severity in the event of an accident.
- Work with the school to establish whether any temporary crossing patrols are required to assist pedestrians crossing Curran Street.
- Provisions for restricting movements of the Project construction traffic during peak school drop-off and pick-up times (as subsequently advised by MoE this period would be 0805-0850 and 1500 and 1530).
- Continuous communications with residents on Curran Street and the Primary School will be essential to rapidly address any traffic issues should they arise.
- Clear signing of the diversion routes.

It should though be noted that:

- This is a temporary impact only.
- The diverted traffic flow is a maximum, worst case traffic flow since it has been assumed that all of the existing Sarsfield Street traffic will use the diversion route. In reality with Sarsfield Street closed and depending on the end destination and trip purpose, drivers may reroute to an alternative choice of SH1 interchange e.g., Wellington Street on ramp/Cook Street off ramp.
- There would not be an increase in traffic through the existing pedestrian controlled crossing for the school, thus reducing any potential impact on school children walking to school.
- The traffic survey used in the ITA reported very few school children walking to school on Sarsfield Street and Curran Street, thus reducing any potential impact on school children walking to school.
- Ponsonby Primary School operates a Walking Bus from Clarence Street and Jervois Road to the school, which would not be impacted by the additional traffic.

7 Traffic management strategies

This section sets out the general traffic management strategies applicable to the HBT project sites including:

- Applied standards.
- Site specific management activities.
- Temporary traffic management elements.

7.1 Applied standards

Temporary Traffic Management is governed by New Zealand legislation, in particular, the Land Transport Act 1998. Land Transport Rules made pursuant to that act, which relate to Temporary Traffic Management, including:

- Land Transport (Road User) Rule 2004
- Land Transport Rule: Traffic Control Devices 2004

The project shall adopt the following standards and guidelines insofar as they are relevant:

- Waka Kotahi NZ Transport Agency Traffic Control Devices Manual
- NZGTTM/CoPTTM
- National Code of Practice for Utility Operators Access to Transport Corridors (November 2011)

This document and the SSTMPs shall be consistent with the applicable version of the NZGTTM/ CoPTTM. Where it is not possible to adhere to this standard, the CoPTTM's prescribed Engineering Exception Decision process will be followed. This will include appropriate mitigation measures that shall be agreed with the Auckland Transport Asset Manager.

Traffic and temporary warning signage shall conform to the standards specified in NZGTTM/COPTTM. All such specific signage will be clearly shown on plans to the approval of Waka Kotahi and AT, as an integral part of the CTMP and any subsequent TTMP's.

7.2 Site specific activities

This section summarises the general management strategies that are applicable to all sites to mitigate the traffic effects of construction activities. The approach and measures will be discussed and agreed on and be used to inform the construction site set-up, operations and development of SSTMPs.

The ITA recommended that a condition is imposed on any resource consent for a CTMP to be submitted for certification prior to any works commencing. The objectives of the CTMP are to:

- Ensure construction traffic movements on the transport network are appropriately managed.
- Provide for the safety of everyone at all times.
- Minimise disruption and maintain pedestrian and vehicle access to/from surrounding residential properties.
- Minimise disruption from construction traffic on the travelling public and road users along the identified sections of the construction routes.
- Seek to avoid full road closures and minimise any partial or managed closures.
- Manage integration with other construction projects and Auckland Transport/Waka Kotahi projects.

Table 7.1 below provides the general management strategies that are applicable to all sites to mitigate the traffic effects of construction activities.

Table 7.1: General management strategies for the Project sites

Traffic management activity	General management strategies
Partial and/or full road closures	• Partial and/or full road closures will be avoided where possible. The ITA has assessed the impact of proposed partial or full road closures. • SSTMPs will be developed to manage and mitigate the effects of partial and/or full road closures.
Site access and egress	• Construction driver education programmes will be implemented, particularly in relation to access and egress of sites adjacent to significant pedestrian generators, such as Ponsonby Primary School. • Traffic marshals are required for all sites near significant pedestrian generators. • Any damage to the road corridor directly caused by heavy vehicles entering or exiting construction sites shall be repaired within two weeks or within an alternative timeframe to be agreed with Auckland Transport. • Stop/Go traffic management is recommended to assist with the transport of large loads to the sites. • Left-In-Left-Out of site access points is proposed to mitigate uncontrolled right turns, as far as reasonably practicable.
Construction vehicle movements, routes and hours of operation	• Truck routes will generally follow arterial/collector roads closest to the site with right turns occurring at either signalised intersections or roundabouts when available. • Where possible, truck layover areas will be provided within the site. • Temporary removal of parking on surrounding streets will occur if a truck layover area is unable to be provided on site. • All over dimension vehicle routes to be agreed with Auckland Transport/Waka Kotahi. • Procedures shall be developed to ensure any spill of materials being transported to or from the site are contained. • Major construction activities that generate peaks of traffic, such as significant concrete pours will, as far as practicable, be scheduled to avoid the morning and peak evening periods. • Any works that may need to take place outside of the specified days or hours (as indicated in Section 3.2.1) shall provide a report to Council, within five working days prior to the commencement of such work, detailing how the work was authorised.
Traffic signals and roads and intersections performance	Monitor the performance of the key roads and intersection performances identified in the ITA with Auckland Transport /Waka Kotahi and review signal phasing and timing if required.
Parking	• There will be minor temporary loss of on-street parking at all sites to accommodate heavy vehicle entry and exit to CSA1 and at the Satellite Sites. • Contractors will provide staff and visitor parking within CSA 1 and CSA 2. • If required, site staff overflow parking will be on residential streets near the construction sites. • Should any street parking need to be occupied, these parking spaces need to be coned off a minimum of 24 to 48 hours prior to these works commencing by displaying the appropriate 'No Parking' signage at least every 6m along the road. A

Traffic management activity	General management strategies
	notice will also be placed under the windscreen wipers of cars in the affected work site area. • Full reinstatement of any car park spaces that have been impacted during construction activities.
Emergency vehicle access	• Emergency vehicle access will include provisions for Fire and Emergency Services New Zealand and other specialised emergency services. • If requested by the emergency services, any vehicles within the sites will be removed to provide for emergency vehicle access. Vehicles will not be moved unless load is secured and safe to move. • Emergency vehicles will have unrestricted access to the site for any emergencies that occur at ground level and when the site is attended. • The emergency services (notably the Fire Service and Emergency NZ) will be notified of the appropriate contact for 24hr site access prior to the works through the Construction Management Plan and individual Traffic Management Plan application processes.
Active user requirements	• SSTMPs will be developed to manage this effect with alternative access arrangements to be implemented. • Temporary access in accordance with NZGTTM/CoPTTM. • Temporary detours that are as short as possible and as convenient as practicable, having regard to safety of all users. • Full reinstatement of any footpaths, shared paths or cycle paths that have been impacted during construction.
Parks and reserves	Access to parks and reserves shall be maintained at all times.
Public transport	There are no public transport services on the Project route, AT Metro to be advised of diversion routes which may increase traffic flows on the bus routes on Jervoise Road and Curran Street.
CSA1 and 2 and satellite site access	The following requirements will be met as part of the Project site access works: • SSTMPs will cater for safe and effective site access point use. • If vehicles are required to stop or reverse in a live lane to gain access to site, Manual Traffic Control (MTC) will be implemented using an approved SSTMP during off peak hours. • Vehicle-mounted flashing beacons must be switched on prior to a work vehicle entering or leaving a closure. • Construction and delivery drivers will call ahead to the STMS by radio or mobile phone when approaching the worksite access to ensure that the gate is clear of obstructions and they can enter the site without blocking flowing traffic. • Traffic Control (TC) will be in place at each site access to remove cones and allow vehicle into site. • TTM must be designed to allow the safe and efficient movement to and from the closure of visitors or workers either in work vehicles or on foot. • Maintaining the safety of the site access is the responsibility of all and will be managed by the STMS.
Kerbside refuse collections	To be managed by the TTM team. Residents will be advised to leave bins outside their properties as usual and Traffic Controllers onsite will move bins to the nearest accessible location for collection. Collectors to be advised where these locations are via the Contractor Stakeholder Manager and Newsletters as per the Communication Plan.

Traffic management activity	General management strategies
Wait areas	Any trucks waiting to enter the sites will need to park on adjacent roads in accordance with NZ laws and Council regulations and be called to the site if there is insufficient room to accommodate multiple trucks on-site.
Materials storage	Materials are to be stored at CSA1, CSA2 and at Satellite sites.
Workers and sub-contractors vehicles	There will be enough room within CSA2 for contractors and visitors to park. There will be space in CSA1 for some contractors to park and, where required, Contractors will be advised to park within the road regulations on-street. It is recommended that a secure lock up facility for contractors tools is provided on-the sites so that workers do not have to drive to the site in the morning and evening to drop off/ pick up tools. This would allow contractors to make use of the public transport provisions that include regular bus services in the area.
Utility services	Some limited disruption to utility services may occur but it is not foreseen that outside of these works there will be a need to restrict access to utility services.
Pedestrian safety	• At all times, pedestrians will be managed in accordance with NZGTTM/CoPTTM. Where possible, footpaths will remain open. • For some works (vehicle crossing works, etc) pedestrians will be managed in accordance with NZGTTM/CoPTTM and footpaths temporarily closed (if required) with appropriate signage and ramps provided to direct pedestrians. It is considered prudent that a fence is put in place around the perimeter of the sites to prevent inadvertent / unauthorised access into the site by pedestrians. • At the interface of the construction areas with the existing network there are many places where pedestrian and/or cyclist facilities exist. These will be safely managed using a hierarchy of measures as follows: – Carry out construction whilst maintaining access to existing footpath with no impact to pedestrians. – Realign or redirect the facility onto temporary surfacing on the same side of the road. – Close the facility, with an alternative facility provided on the opposite side of the road. Safe crossing points will be provided and signage. – Temporarily close the facility, with an alternative route signposted and communicated to the public.
Delay	Under COPTTM, delays caused by the TTM are generally not permitted to be greater than 5 minutes in typical traffic conditions. All practical steps shall be undertaken to minimise traffic effects caused by construction activities or TTM measures. The impact of TTM shall be considered in each SSTMP, including the calculation of the expected level of delay in order to satisfy that the impacts are understood. Where delays are deemed to be unacceptable, construction staging methodologies will be revised to reduce the duration or impact of the activity
Vehicle Environmental Controls	Dust suppression and detritus control is to be provided by the Contractor. If earth worked materials are carried onto the surrounding road network (dropped from vehicles carting materials to and from site), the Contractor shall be responsible for cleaning and repairing the road back to its original condition each evening during the earthworks period. In doing this, the Contractor shall ensure that approved TTM measures are in place to undertake this work safely and that no materials are washed or swept into any stormwater drains or natural drainage systems. The Contractor shall take all practicable measures to minimise the discharge of dust and detritus from the site. These measures shall include, but not be limited to:

Traffic management activity	General management strategies
	• Training staff and contractors on practices relating to minimising dust emissions, dust control and procedures for reporting and dealing with dust emissions if they arise; • Minimising the areas of exposed ground; • Mulching, re-grassing and/or planting of bare areas such as topsoil piles and completed batters as soon as reasonably practicable; • Using water and/or dust suppressants on all disturbed surfaces including roads when required; • Applying a speed restriction on all internal roads and not exceeding 30 km/hr at all times and erecting a sign at the entrance to the site advising of this; and • Provision of wheel cleaning facilities including hoses, brooms and shovels or maintaining a contingency of sweeper equipment on call at all times to clean up material which may have been accidently spilt onto public roads. The Contractor is to adhere to any further guidance given by the Traffic Management Co-ordinator and/or AT/Waka Kotahi in relation to dust suppression and removal of detritus material.
Private properties	Pedestrian and vehicle access will be maintained to all private properties for residents and/or stakeholders at all times, by way of using steel plates to cover any excavations, building footpaths/driveways in two halves, or by constructing a temporary route. In the situation where vehicle access is not possible suitable notice will be provided and pedestrian access will be maintained and an alternative parking location provided. There are very few properties that will have specific requirements for their current access to be blocked, however if this is required, communications will be undertaken in accordance with the Communication and Consultation Plan. Below are the key areas where a specific method is required. If changes to access are required, access plans for properties for residents and/or stakeholders are to be developed and agreed upon by the TTMWG prior to closure implementation. The process is: • Sensitive receptor plan development – Stakeholder Manager to speak with all residents affected by upcoming works to determine if special access is required (i.e. – frequent Ambulance visits, mobility access needs) • Plan developed to maintain access to properties • Plan discussed with construction team and distributed to TTM team and emergency services. • Residents/businesses advised where and how to access site safely – this is during attended and unattended hours. Specific property details are indicated in Table 7.2. Discussions with the occupants of the affected properties will take place at least 48 hours in advance to identify: • Any times of day that are better than others for the work; • Any alternative routes that can be established; and • Any need for shuttles etc. to or from transport on either side of the work area. These processes will avoid any unreasonable inconvenience to landowners and minimise disruption to private property access.
Site Staff	All staff involved in the Project will attend a Project induction prior to the commencement of work to ensure a common basis for approaching their work. The induction will include environmental, health and safety and hazard management in relation to the Project area, along with temporary traffic control.

Traffic management activity	General management strategies
	Training will include the following: • Specific training will be provided to those involved in temporary traffic management as appropriate to their role and responsibilities. • Regular toolbox talks will provide a forum to reinforce and educate Project staff around specific temporary traffic control issues and actions during the Project. • The STMS will also conduct briefings on-site prior to every TTM operation to identify hazards pertaining to the work site and controls to be implemented to protect the safety of Project staff and public.
Driver induction	The STMS is responsible to undertake a site induction with all transport operators contracted to transport materials to the site. The induction is to cover (but not be limited to): • The routes of travel to and from site; • Permissible times of deliveries; • Requirement for and use of possible communication systems; • Requirements to abide by local speed restrictions for dust and detritus management; • Requirement for courteous driving; and • Requirements to report hazards on the transport route.
Personal Protective Equipment	As a minimum, all personnel working on site must wear a day or night compliant high visibility garment. Construction workers will therefore be clearly visible, and will set a consistent high level of Personal Protective Equipment and appearance across the site.
Other permits or approvals	• Over-dimension and over-weight permits if applicable. • Approvals from road controlling authority, such as approved CAR application.

Table 7.2 below details site specific management strategies where the general strategies are not sufficient. In case of a conflict between general and site-specific management strategies, the site specific management strategies always take precedence.

Table 7.2: Site specific management strategies for the Project sites

Site specific activity	Description of impact	Mitigation measures
CSAs 1 and 2	• Construction traffic routing	• Traffic to and from the Sarsfield Reserve CSA1 will be from Argyle Street (east of the CSA and Sarsfield Street). • Ingress to CSA2 94A and 94B Shelly Beach Road will be from the Curran Street on ramp. Egress will be onto the Curran Street on ramp and should vehicles need to travel south, then they will need to turn around at the Onewa Road interchange.
	• Site access	• All temporary accesses into the CSAs will be designed in accordance with relevant AT and Waka Kotahi design standards (including sight lines, accessway widths and gradients). • CSA2 94A and 94B Shelly Beach Road - the design of the access shall ensure it does not impact on the effective, efficient and safe operation of the Curran Street SH1 on ramp.
	• Operation	• All CSAs will be securely fenced to prevent public access. • Existing east footpath at Salisbury Reserve to be fenced off to prevent public access. Once the works are complete, the footpath will be reinstated. • Salisbury Reserve CSA1 - Traffic Management (TM) supervisor to ensure safe movement of truck ingress and egress at Argyle Street. • 94A and 94B Shelly Beach Road CSA2 - TM supervisor to ensure ingress/egress does not impact on the effective, efficient and safe operation of the Curran Street SH1 on ramp. This could involve temporary traffic management to make drivers aware of the CSA ingress and egress (e.g., through warning signs, lane narrowing and potentially a temporary reduction in the existing 80 km/h speed limit). To minimise impacts of the CSA vehicle movements in the peak periods, it is proposed that ingress and egress to the site will only be permitted outside of the weekday AM peak (0700-0900) and PM peak (1600-1800) periods. Construction vehicles will exit the site to the north on to SH1 beyond the existing on ramp signals. To ensure trucks and other vehicles are exiting the site safely, the Site Traffic Management Supervisor (STMS) will ensure a vehicle can leave safely and is not conflicting with general traffic. • Wheel wash facilities to be set up at the exit points of the CSA 1 and 2.
Satellite Sites	• Construction traffic routing	• Traffic to and from the Satellite Sites will be from Sarsfield Street, Argyle Street, Herne Bay Road, Upton Street or Marine Parade only.
	• Pedestrians and cyclists	• For all satellite sites where works impact on existing footpaths, temporary footpaths shall be provided that meet mobility impaired standards, where practicable. Where footpaths are closed, fencing will be used to prevent access to any closed off sections of the footpath and diversion signs will be provided. These temporary measures should be safe, clearly identifiable and seek to minimise significant detour.

Site specific activity	Description of impact	Mitigation measures
		• Signage should be provided on the section of Argyle Street and Sarsfield Street (from the Salisbury Reserve to the Curran Street shared path) to advise cyclists using this AT designated quiet road cycle route, of alternative routes when there are road closures.
	• Residents access	• Where required, design and provide temporary accessways and vehicle crossings to residential properties (for instance on road berms/footpaths) and site fencing to ensure residents have 24 hour access to their homes.
	• Management of construction traffic	• Site Traffic Management Supervisor will safely manage the movements of construction traffic to and from the road network to ensure the safety of all road users is maintained and that construction vehicles can negotiate access and egress to avoid any additional queueing on the adjacent road network in the peak periods on Collectors, Arterials and SH1. • Site Traffic Management Supervisor will co-ordinate (for example via radio control) trucks accessing the Satellite sites to ensure that construction vehicles arriving and departing the sites can do safely and that a suitable truck layover area is provided within the Salisbury Reserve CSA1 where required, for example for delivery trucks. • At each Satellite site, as activities change and the type of plant is replaced, the traffic management will be revised accordingly to ensure traffic disruptions are minimised and to allow the safe movement of vehicles and people. When the works are complete traffic management and site fencing will be removed. • The CTMP will implement a construction driver education programme given the close proximity to residential properties and pedestrians. • Where raised platforms are removed they will be reinstated to a design standard agreed with AT. • For raised platforms not removed, but where construction traffic passes over these, should any damage occur as a result of the construction vehicles, then remedial works will be carried out by the Contractor. • All final reinstatement and remedial works will be carried out at the completion of the project to ensure no damage to any of the reinstated works occurs. • Movements of specialised machinery or large components (e.g., cranes and the TBM removal) will not occur on a day to day basis. Separate to the Resource Consent application, bespoke SSTMPs and CARs will be developed once exact details of the machinery and vehicles required is known, as they have successfully been carried out for other key waste water projects. Agreement with Auckland Transport and (where relevant) Waka Kotahi will be required and over-dimension rules and associated permitting processes will need to be complied with.
	• Communications	• Communication campaigns should be undertaken in relation to traffic management activities throughout construction activities (including letter drops to affected residents, flier drops, project signage, web based resources, etc.). • Appropriate temporary traffic management measures should be incorporated by AT to advise other road users of the construction traffic.

Site specific activity	Description of impact	Mitigation measures
Emmett Street for Shaft 1 Sarsfield Street temporary closure	• Temporary closure	• Vehicle tracking of the Project and Point Erin CI construction vehicles will need to be carried out and any temporary physical works improvements at the Emmett Street intersections with Shelly Beach Road and Curran Street will need to be identified and implemented prior to the temporary closure taking effect. This could include temporary removal of on street parking on Curran Street and Shelly Beach Road to assist vehicles turning at the intersections and to provide improved sight lines. • Given the narrow width of Emmett Street, to accommodate this level of traffic, temporary removal of on street parking is recommended along the whole length of Emmett Street. • Temporary 30 km/h speed limit is implemented to reduce vehicle speeds and hence injury severity in the event of an accident. • Continuous communications with residents on Emmett Street will be essential to rapidly address any traffic issues should they arise. • Clear signing of the diversion routes and in particular, of the existing right turn ban from Emmett Street to Shelly Beach Road and the need to use Tweed Street for this manoeuvre.
Curran Street (between Emmett Street and Sarsfield Street) for Shaft 1 Sarsfield Street temporary closure	• Temporary closure	• Vehicle tracking of the Project and Point Erin CI construction vehicles will need to be carried out and any temporary physical works improvements at the Sarsfield Street/Curran Street intersection will need to be identified and implemented prior to the temporary closure taking effect. • To accommodate this level of traffic, temporary removal of on street parking is recommended along the whole length of Curran Street between Emmett Street and Sarsfield Street. • Temporary 30 km/h speed limit is implemented to reduce vehicle speeds and hence injury severity in the event of an accident. • Work with the school to establish whether any temporary crossing patrols are required to assist pedestrians crossing Curran Street. • Provisions for restricting movements of construction traffic during peak school drop-off and pick-up times (as subsequently advised by MoE this period would be 0805-0850 and 1500 and 1530). • Continuous communications with residents on Curran Street and the Primary School will be essential to rapidly address any traffic issues should they arise. • Clear signing of the diversion routes.
Standard TTM design criteria	• Design criteria for Local Roads	• Minimum Speed limit = 30 km/h • Minimum lane width = 3 m • Temporary barrier systems in place where possible • Minimum footpath width = 1.2m

8 Temporary traffic management operating framework

This section sets out the general operational procedures for temporary traffic management activities for the Project discussed in this draft CTMP.

8.1 Site specific traffic management plan development

SSTMPs will be required (under the Local Government (Auckland Council) Act 2009) for all work or physical controls that occur within the road corridor at the Project sites.

The SSTMPs will be prepared for discrete stages of work within the road corridor and will follow the format set in NZGTTM/CoPTTM. They will describe the measures to be implemented to manage the temporary traffic effects associated with the movement of construction traffic, or particular works.

SSTMPs will be submitted to, and approved by, AT and Waka Kotahi. The SSTMPs will be assessed by the Traffic Management Coordinator for compliance with NZGTTM/CoPTTM and the ability to avoid adverse effects on the travelling public.

During the development of each SSTMP, the Project personnel will liaise directly with Auckland Transport/Waka Kotahi to ensure that the overall concept of the TTM is acceptable to all parties. This will, in turn, assist with timely approvals of SSTMPs.

The general framework for the submission of a SSTMP is as follows:

- Initial liaison with internal Project personnel to determine scope of SSTMP.
- Depending on the projected disruption to traffic, consultation with AT/Waka Kotahi may be required immediately, otherwise the development of initial draft Traffic Management Diagrams ('TMD') shall begin. Should a TIA be required, the development of TIA would start immediately.
- Liaison between internal Project personnel to confirm work areas shown on draft TMDs are correct and allow for the construction works to proceed.
- Consultation with AT/Waka Kotahi utilising the agreed draft TMDs. This stage will allow AT/Waka Kotahi to determine if a TIA is required, as well as notification from AT/Waka Kotahi of any other additional specific requirements. If a TIA has been requested at this stage, this is when development of the TIA would commence.
- Finalising of the SSTMP (and TIA if required) as well as any other AT/Waka Kotahi requirements and then submission to AT/Waka Kotahi for official approval.
- Any further liaison with AT/Waka Kotahi as required.
- Receiving the approved SSTMP from AT/Waka Kotahi and dissemination to the wider Project team in preparation of implementation.

8.2 Site specific traffic management plan structure

The following four elements summarise the structure of a typical SSTMP:

- SSTMP Pro-forma

This is the text of the document, which outlines the requirements, methodologies and standards required in observing the SSTMP. Details included in each SSTMP Pro-forma will vary depending on the activity requiring traffic control.

- Engineering Exception Decisions

All Engineering Exception Decisions applicable will be appended to the SSTMP.

- CAD drawings

CAD drawings will be employed for illustrating the closures defined by the pro-forma and will include all relevant road features that require consideration in managing the impacts of construction.

- Communications strategy

The communications strategy will outline the proposed strategy for informing the public of the works. This may include public notifications in local newspapers, advertisements, radio communications, flyer or posters, variable message signs strategies, or driver information signage installed.

A template of the SSTMP will be provided in the final CTMP.

8.3 Review and approvals

SSTMPs once fully developed and ready for final approval, will be submitted to AT/Waka Kotahi. MyWorksites, an online TMP submission system, will be used to submit and manage SSTMPs relevant to the Project.

Following submission of the SSTMPs to AT/Waka Kotahi, we will work with them to resolve any remaining issues prior to final approval. Most of these items should be covered off during the initial liaison period with AT/Waka Kotahi while developing the SSTMP.

Any SSTMPs or CARs obtained from AT/Waka Kotahi will be forwarded to Auckland Council's compliance monitoring officer for record.

8.4 Monitoring and audits

The STMS will continuously monitor the site they are responsible for while works are ongoing. This will be recorded in the form of two hourly checks each day and will include any issues, and actions taken to rectify them.

The Traffic Manager will conduct official audits, in compliance with NZGTTM/CoPTTM, specifically Section A8, on a weekly basis of all Project work sites. The Traffic Manager will then discuss the results of these audits with the relevant Site Traffic Management Supervisor and ensure any issues are understood and rectified.

Copies of the audits will be kept by the Project and made available to Watercare (or their representative) on request.

8.5 Training

Training in relation to temporary traffic management is outlined in Table 8.1 below:

Table 8.1: TM training

Qualification/Training	Description	Who
Project Induction	Initial induction	All site staff
Appropriate Site Safe accreditation	Demonstrate proficiency on site	All site staff
Toolbox talks	Regular meetings to highlight key messages or issues and receive feedback	All site staff
STMS Level 1	NZQA qualification to oversee site in live road environment	Person responsible for traffic management associated with the project
Traffic Controller (TC)	NZQA qualification to assist with traffic management	All staff undertaking traffic management associated with the project

9 Stakeholders

The following section outlines the key stakeholders affected by the traffic related activities for the proposed work. The Communication Plan will include more details on the consultation and engagement process for key stakeholders where required.

9.1 Key stakeholders

This CTMP has been developed in consultation with the following parties in relation to specific components of this CTMP. Table 9.1 below identifies the key stakeholders and specific issues that will be engaged with prior to and during construction.

Table 9.1: Key stakeholders and issues to be discussed during the development of the Project

Key Stakeholder	Site(s) affected	Specific issues to be discussed
Auckland Transport	• All	• ITA and assessment of effects of construction activities.
Waka Kotahi	• All (but in particular CSA2)	• ITA and assessment of effects of construction activities.
Owners and occupiers of neighbouring properties	• All	• Timing and duration of construction.
Local boards	• All	• Timing and duration of construction.
Auckland Council – Parks, Sports and Recreation	• All	• Impact on reserves.
Ponsonby Primary School	• Shaft 1 Sarsfield Street - Curran Street (between Emmett Street and Sarsfield Street)	• Work with the school to establish whether any temporary crossing patrols are required to assist pedestrians crossing Curran Street. • Provisions for restricting movements of the Project construction traffic during peak school drop-off and pick-up times (for example 0815-0900 and 1445 and 1515). • Continuous communications with the Primary School will be essential to rapidly address any traffic issues should they arise.

This will be updated in the development of the final CTMP.

Key themes and topics of relevance for the key stakeholders relating to traffic related construction activities include:

- Where construction related vehicle movements may impact normal operations of the key stakeholders.
- Any impacts upon access or parking due to traffic management measures on roads adjacent to the site.
- Any construction related activities that may impact upon the safety of key stakeholders at any time during the construction period of the Project.
- Communication of significant construction works and vehicle movements that may impact key stakeholders to ensure safety is maintained.

9.2 Special considerations

9.2.1 Special events

Special events are defined as construction activities that generate a major peak in construction traffic or a change in vehicle access that may require a further level of planning for traffic impacts. These are generally non-typical and occur very infrequently over the course of the construction programme. Special events could include the following events:

- Major delivery and pick up of large plant including piling rigs, cranes, pre-cast panels, GRP liner sections and the TBM; and
- Large concrete pours that require a greater volume of truck movements.

9.2.2 Neighbour notifications – letter drop

Letter drops to residents along the construction areas will be undertaken to inform neighbours of information relating to the Project. This may include:

- Working hours;
- Estimated arrival/departure times of site personnels (separate to working hours);
- Periods of heavy vehicle activity;
- Night works if applicable;
- Changes to on-street parking; and
- Significant changes in project activities.

As a minimum the letter will include:

- Auckland Council and Watercare logos;
- Project description and work programme and progress;
- Location of the changes;
- Reason for the changes;
- Expected duration (dates); and
- Project contact details and communication channel.

The community liaison person shall arrange for letter drops to the neighbours as required throughout the project. In addition to the physical letter drop, an electronic copy of the letter should also be provided to the compliance monitoring officer for their reference and information.

9.2.3 Incident response

Typically, an incidents register is detailed in the CEMP and the CTM will be responsible for updating this register. Actions to be undertaken in the event of an incident are described below:

Scope

The contractor will have necessary resources available to respond promptly in the event of a traffic incident or other emergency situation. The top priority will be the safety and wellbeing of everyone involved and then take any actions, working in conjunction with AT/Waka Kotahi, NZ Police and Emergency Services to minimise disruption or inconvenience, whilst keeping the incident or area isolated from members of the general public.

Extent

In the event of a traffic incident, the nominated site STMS and available crew will attend in the first instance and report to the Traffic Management Site Lead. The project will make available any mobile plant which can assist in the case of a serious incident which is likely to include water trucks, excavators etc. Any TTM resource on site not immediately involved in critical works will be made available to assist as appropriate.

Emergencies and incident communications

An emergency action plan will be produced prior to implementation of any TTM activities. The Plan will outline procedures, requirements and responsibilities in the case of an emergency. In addition to this plan, each SSTMP will address specific requirements in the case of an emergency. Events that may require implementation of the emergency action plan include:

- Traffic accidents;
- Emergency services requiring access to or through the site;
- Natural disasters;
- Flooding;
- Unplanned construction events;
- Emergency works;
- Significant traffic congestion; and/or
- Inclement weather.

In the event of a crash or significant incident, the Contractor will provide immediate assistance and where necessary, contact the emergency services. Full support to those organisations will be provided to manage traffic whilst the incident is being bought under control. An incident report will be completed for each incident or near-miss.

In an emergency event the STMS must ensure the traffic management staff protect their personal safety, the safety for continuing public access through the site then notify the necessary authority and then attend to the situation.

In the event that a representative of the NZ Police requests a copy of implemented TMP for safety or emergency reasons, the contractor will immediately comply with this request. In the event of an emergency or breakdown on site, the contractor will endeavour to provide a clear passage for emergency vehicles or tow trucks to ensure that the disruption and delay to other motorists through the site is minimised.

The following steps will be implemented in regard to incident communications:

- Auckland Transport/Waka Kotahi CAR/Compliance team to be advised of incident in the worksite via email and/or phone call (extremities of TTM signage)
- Incident report sent to AT Compliance Team (TTM.crash@aucklandtransport.govt.nz), AT CAR Manager, Project Manager and any other appropriate parties within 48 hours of incident.

9.2.4 Complaints register

Typically, a complaints register is detailed in the CEMP and the CTM will be responsible for updating this register.

10 Review, monitoring and update

This CTMP should be considered as a live document. It will be developed to become a final CTMP following the resource consent approvals. The final CTMP will also be updated throughout the course of the project to reflect material changes to construction methods, site conditions or the natural environment. **Table 10.1** outlines the temporary traffic monitoring to be undertaken during construction of the Project:

Table 10.1: CTMP monitoring programme

Monitoring activity	Frequency	Responsibility
Check method statement reflects requirements and requisite TMP has been approved	Prior to approving work packs	Construction Manager
Inspect temporary traffic management layout	2 hourly when site is live	STMS
Documented check of all temporary traffic management	Daily and as layouts change	STMS
TTM audit in accordance with NZGTTM/CoPTTM	Monthly	Traffic Engineer

Waka Kotahi and AT may from time to time undertake random audits of the TTM installations on SH and local roads respectively. The STMS will be notified of this audit at the time it is undertaken and the site condition rating form resulting from the RCA inspection will be made available to the Project Team in accordance with NZGTTM/COPTTM.

Approved CMTPs and SSTMPs will be reviewed by the Project Manager and STMS on a regular basis, to ensure that the documents remain relevant for use. Any changes to these plans will be recorded.

11 Applicability

This report has been prepared for the exclusive use of our client Watercare Services Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application for resource consent and that Auckland Council as the consenting authority will use this report for the purpose of assessing the resource consent application BUN60420393.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

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.....	.....
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COSH
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Appendix A Herne Bay Tunnel – Integrated Transport Assessment June 2023 v6

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