

BIOSOLIDS: PLANNING NOW FOR 2035

Every time you flush or shower, your wastewater begins an important journey. It travels through a network of pipes to a treatment plant, where it's carefully cleaned before being returned to nature. During this treatment process, soil-like material called biosolids are produced. By 2035, we'll need a new way of managing biosolids in Auckland – so planning is getting underway now.

What are biosolids?

Biosolids are the soil-like 'leftovers' from the wastewater treatment process. Part of it comes from treated human waste (poo), but it's also made up of the microorganisms (or good bugs) that help clean our wastewater. These bugs break down carbon, nitrogen, and phosphorus. After treatment, the remaining material is digested (like composting), producing methane for energy. What's left is called biosolids.

In Auckland, we create 175,000 tonnes of biosolids every year.

Biosolids have special characteristics that mean careful consideration must be taken in their disposal or reuse:

- they can contain pathogens
- they can contain very low concentrations of contaminants, including heavy metals, microplastics and forever chemicals like PFAS
- they can be smelly
- about 75 to 80 percent of biosolids is water (like most foods)
- they have the potential to be reused as fuel or fertiliser, but the preparation takes energy and resources.

How are we managing biosolids today?



Biosolids operation on Te Motu a Hiaroa (Puketutu Island).

All of Tāmaki Makaurau's wastewater treatment plants produce biosolids. We have a range of options available for their disposal, which include trucking them to certified commercial landfills or turning them into compost for use as a fertiliser. While these have been serving us well, we need to explore other options for managing biosolids in the long term, to ensure we have reliable and resilient

servicing solutions in place for our growing city. At our largest wastewater treatment plant in Māngere, where three quarters of Tāmaki Makaurau Auckland's wastewater is treated, we are using biosolids to rehabilitate an area on Te Motu a Hiaroa (Puketutu Island) that was quarried from the 1950s until the early 2000s.

Each day, we truck more than 400 tonnes of biosolids to the island. The biosolids are tipped into pre-constructed cells in the former quarry and covered over with earth at the end of each day.

What is the challenge ahead?

Right now, we have a successful system in place; but it won't last forever. By 2035, the rehabilitation project on the island will be complete; and Auckland will need a reliable solution in place that is capable of handling more than 175,000 tonnes of biosolids each year.

Over the next year, we'll be assessing our options for managing biosolids and we want you to help shape our plan.

Each approach has benefits and trade-offs. That's why your feedback matters – because it will help us to understand what Aucklanders value most as we decide on a solution.

What are the options for the future?

Biosolids can be used and disposed of in several ways. While there are some beneficial re-uses, most cannot be carried out at the scale we will need to handle Auckland's biosolids.

We need the solution to be:

- capable of handling more than 175,000 tonnes of biosolids each year
- already proven as reliable at a similar scale for at least five years
- able to be consented and operational by 2035.

We also need to consider:

- mana whenua feedback on our options
- public feedback on our options
- emissions
- transportation
- location
- impact on the environment
- cost.

What are our primary options?

The two primary options capable of handling the volume of Auckland's biosolids, and that can be developed in the next 10 years, are a new landfill and incineration. We may select one option, both options, or combine one of them with a supplementary solution.

New biosolids landfill

We would need to find a new location for a bespoke landfill capable of handling the quantities we produce at Māngere. This would likely be similar to our current operations at Puketutu Island.

Incineration

While incineration is commonly used around the world – particularly in Europe, but also the United States and the United Kingdom – it is not commonly used in New Zealand. A new facility would need to be built.

What are our other options?

Land application

Another option we're exploring is land application, which involves spreading a thin layer on the surface of soil, or injecting it into the soil. However, this would need to be in addition to the primary solution of either landfill or incineration due to the volume of biosolids Auckland produces.

Key considerations around land application:

- it makes good use of the nutrients in biosolids by fertilising soil and therefore meets circular economy principles
- it relies on market demand and would have significant seasonal fluctuations
- it's a complex approach that's relatively new in New Zealand.

Biosolids contain contaminants such as PFAS and microplastics at very low concentrations. It's worth noting that conventional compost and fertilisers can also contain these.

Emerging technologies

There are other ways to reuse biosolids, but these are either experimental or suitable only for smaller-scale applications. Examples include:

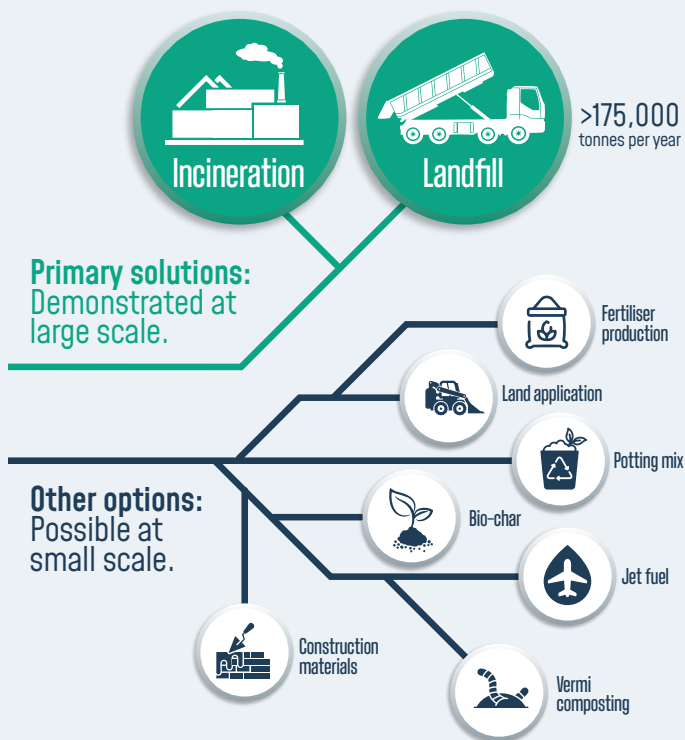
- Bricks or construction materials made from treated biosolids.
- Biochar production, which can improve soil and capture carbon.
- Future applications, including advanced soil treatments and industrial uses.

While these approaches cannot currently handle all of Auckland's biosolids, we continue to explore them as solutions for our smaller wastewater treatments.

What's the timeline?

This shows the key steps from:

- 2025-26: **Exploring options:** We'll narrow down the broad options to specific areas.
- 2027-28: **Refining the path:** We'll have decided what the solution is and where it will be.
- 2029-30: **Formal steps:** Statutory approval and final design.
- 2031-34: **Bringing solutions to life:** Design and construction begin to deliver the agreed solution.
- 2035: **Commissioning:** The solution is ready to serve future generations.



We want your feedback to guide our decision-making

Biosolids are, quite literally, everyone's business. We need to decide how we will handle our future biosolids relatively soon, but before we do that, we want to know what matters most to our communities. Understanding what you value – and what you're concerned about – will guide us as we evaluate potential solutions. Please complete the 60-second survey on our website.