Questions and Answers
Te Kaunihera o Pōneke | Council
30 June 2022

Sludge Minimisation Facility Business Case

Have we got a B plan in place if there are delays and we can't get the sludge project finished by 2026?

In the potential event that the sludge project was not completed by mid-2026, there are two "plan B" options under consideration. These are: (a) to get a temporary extension to the current consent to discharge untreated sludge to Southern Landfill, or (b) truck it to the nearest available commercial landfill (likely to be Bonny Glenn, Rangitikei). Option (a) would be preferred because of the economic and carbon costs of trucking the sludge long distances, and the likely impacts on the community.

How will this also work with the piggyback option timing?

The Wellington Sludge Minimisation Facility is expected to come online at the same time as the Southern Landfill extension, such that the landfill can take the treated biosolids immediately. The Wellington Sludge Minimisation Project team and the Landfill Extension Project team are working together to co-ordinate their activities.

Will sludge in its new form need to be consented to go into the Piggyback option?

Generally, Grade A biosolids (like those being produced from the new Wellington Sludge Minimisation Facility) can be disposed of without consent. Notwithstanding this, the Wellington Sludge Minimisation Project team and the Landfill Extension Project team are working together to incorporate any treated sludge / biosolids disposal requirements into the consenting documentation for the landfill extension.

What are the risks of all this not lining up time-wise, as it feels like there is a lot converging around this time, ie new landfill design, resource consent finishing and new sludge minimisation project?

There is a risk of this, however, both the landfill extension and the SMF projects are working to a programme which has built delay risk in and the project teams are working as hard as practical to meet all requisite timeframes.

Will a resource consent be needed for the sludge-dried product to go to the Landfill?

Generally, Grade A biosolids (like those being produced from the new Wellington Sludge Minimisation Facility) can be disposed of without consent (however, this is considered on a region-by-region basis). Notwithstanding this, the Wellington Sludge Minimisation Project team and the Landfill Extension Project team are working together to incorporate any treated sludge / biosolids disposal requirements into the consenting documentation for the landfill extension.

How many years is it anticipated the new sludge drying technology and facilities will last?

The design horizon of the plant is 50 years, noting that civil / structural assets are expected to last longer than this. Typically speaking, mechanical and electrical assets are renewed approximately every 25 years, but this is highly dependent on the type of asset and the way it is used. Provisions have been made into the design to enable the renewal of mechanical and electrical assets without significantly affecting the resilience of plant during upgrades.

What is the maximum capacity of people this system will be able to cope with in the future- ie will the capacity align with the spatial and district plan population predictions?

The capacity of the Sludge Minimisation Facility has been designed to take sludge from the two existing wastewater treatment plants in the Wellington City catchment – Moa Point and Western (Karori) WWTPs. Detailed modelling and analysis of sludge production from these wastewater treatment plants was undertaken to determine current and future sludge production, as follows:

- For Moa Point WWTP, the ultimate design capacity of the plant when it is fully expanded has been used so that the new sludge plant matches the ultimate capacity of Moa Point. Moa Point WWTP was designed to be expanded by a further 33% in the future. Based on 50th percentile population projections prepared for WCC by Sense Partners, the ultimate capacity of Moa Point WWTP is expected to be reached between 2045 and 2055.
- For Karori (Western) WWTP, it was assumed that the plant could continue to expand or simply take more of the wastewater going to it as population increases, noting that it takes approximately 5% of the total flow from the Wellington City sewerage catchments. 75th percentile population projections from Sense Partners were used to project the sludge production in 50 years' time, and the Sludge Minimisation Facility has been sized on that basis.

Based on adjusted populations in each catchment, the estimated total additional population (over and above the present) that could be supported by the new Sludge Minimisation Facility is 65,000 – 75,000 additional people.

Note also that sludge volumes vary on a weekly basis. Detailed analysis has been undertaken and peak weekly sludge flows have been used to size the plant.

What suburbs of Wellington city's sludge will continue to use the Porirua Waste Treatment Plant?

The catchments of Johnsonville and north of this go to Porirua Wastewater Treatment Plant, and will continue to do so.

Does the new price of $247 million take on price increases and other cost risks?

The $247 million represents the discounted net present value of the option. It includes some risk allowances.

What is the Critical review of the assets of the current system? How and when will this be reported to us? What are the risks with this?

A specialist technical team are currently assessing the performance and asset condition of the Moa Point Wastewater Treatment Plant, and considering a range of options to upgrade these assets,

should it be required, including looking at ways to defer capacity upgrades should this be required or there be ways to do so.

This work is due in August, for report back in September.

What processes will we use to assess and maintain the new SMF asset?

Asset information and management systems have been established from the start of this project, supported by an information management plan. Building Information Modelling (BIM), which uses a digital model to capture all asset information in one place, is being used to manage the design and construction, and will enable direct transfer of this information into an asset management system / database. The type of system / database used depends on who will operate the plant, but the BIM system being used now is compatible with a wide range of industry standard asset management systems.

An operational readiness plan is also being prepared to support the transition of the built assets to the operator.

When will officers report back on the biosolid and biogas re-use opportunities?

Could the final dried sludge product be Vermicasted?

Re-use of treated biosolids in a sustainable way requires iwi and community-led engagement and decision-making. To support this, WCC are currently preparing a charter with iwi to investigate biosolids re-use options and propose to form a Community Reference Group to work with WCC to explore and make final decisions on biosolids re-use. This is in line with national best practice. The timing of this is being done to coincide with commissioning of the new Sludge Minimisation Facility. The product from the Sludge Minimisation Facility could be vermicomposted, and this will be considered within the range of beneficial biosolids re-use options.

Furthermore, technical assessments of the biogas re-use options are being undertaken at present.

In terms of key risks, how specialised do the team need to be to manage and maintain this facility?

The team who operate the plant will require specialist skills in thermal processes including steam production and management, but these are skill sets commonly found in the NZ industrial sector. The team will also need specialist knowledge of thermal hydrolysis, anaerobic digestion and thermal drying processes. We have been working with counterparts in the USA, where thermal hydrolysis has been established for the last 8 years, to understand how they readily managed the shift to this more advanced technology. This has been used to develop an Operational Readiness Plan that will include the recruitment of specialist operators / maintainers early to maximise understanding of the plant before they are required to operate it in 2026.

How have risks like earthquakes been factored into this?

A natural hazards assessment has been undertaken as part of the design and consenting process, and this has informed decisions such as structural design requirements. Natural hazard risks have been factored into the design to date.

Are there any risks with WIAL relationships land acquisition?

The Wellington Sludge Minimisation Project team has fostered a good working relationship with WIAL and are advancing land acquisition activities well. We consider this to be a low risk at this stage.

Why is the sludge disposal double in the 10m Option (page 57)

The Sludge disposal costs in line 9 of Table 14 (page 57), which are $16.6M for the base case and $25.2M for the preferred option, relate purely to sludge / biosolids disposal at Southern Landfill. Under the base case, sludge would be transported and disposed of at Bonny Glen Landfill from mid-2026 at a further cost of $115.8M. This makes the total transport and disposal cost for the base case to be $132.4M over the 50 year economic modelling period, which is over five times the cost of sludge disposal for the preferred Option 10M over the same period.

How will the risks between different interfaces and stages be managed and reported?

A project staging framework has already been developed, including understanding what tie-ins could be undertaken early so that the number of interfaces is reduced.

One of the key interfaces is the adjacent airport operations. To manage this risk, the project team are actively consulting with WIAL and Airways New Zealand on an ongoing basis.

Reporting will be via the Priority Investment Reporting to the Pūroro Waihanga | Infrastructure Committee.

Page 61- Says there are risks of not being able to be processed because of uniqueness- how are we mitigating this risk?

The best way to manage this risk is to undertake a sludge characterisation programme before final technology selections are made, by undertaking comprehensive sampling and testing of the sludge to understand its characteristics. A sludge characterisation programme has been undertaken, and a second will also be undertaken soon to inform plant technology selection. Furthermore, we are working with Watercare who have a pilot trial plant for thermal hydrolysis and anaerobic digestion. We plan to test Wellington's sludge on this pilot plant in the next quarter, to inform operating parameters for final technology selection.

Is the report saying there will still be $35 million per annum to transport the new sludge product to the landfill? Why is this?

This query appears to relate to the cost input tables on pages 129 onwards of the business case. The cost of sludge transport is $35.10 per m3 of sludge, not $35m per annum.

What are the proposed operation costs per annum?

A rough order estimate of $6 million per annum was used in the economic analysis. This is a very high level estimate that was developed for comparative purposes (ie to compare options) rather than representing an accurate estimate. A more detailed operating estimate will emerge as we progress through detailed design and we gain more of an understanding as to the operational requirements of the plant.

Actions Tracking

Number 4, page 107: Report back to Council on venues - can we have an update on how this is tracking, please?

This covers a number of initiatives including creative spaces brokering, the Hannah Playhouse and the venues policy review. Work is proceeding, with some timelines affected by impact of COVID on staffing levels. WellingtonNZ, Creative Capital and City Growth are undertaking some of this work as a shared initiative.