Consultation July/August 2020

Akaroa Treated Wastewater Options

Questions and Answers

Q: Why can't Akaroa's wastewater be disposed of in Akaroa?
A: There's not enough suitable land for a disposal system in Akaroa so we have to had to look further afield.

Q: Haven't you consulted the community about this before?
A: Yes, in 2016 and again in 2017.
In 2016 we sought feedback on six options for disposing of treated wastewater from Akaroa within 2 kilometres of the treatment plant. Slope instability was found in some of the proposed areas, which meant there wasn't enough land for the proposed scheme in the vicinity of the treatment plant. So we expanded the area we were considering.
In 2017 we sought public feedback on five disposal options. Subsequently, a flow meter that measures the volume of wastewater being processed at the wastewater treatment plant at Takapūneke-Red House Bay was found to be giving false readings. This meant the data used to calculate the size, scope and cost of the options was inaccurate and significantly underestimated the volume of wastewater to be disposed of. We installed new flow meters, analysed the new data and reconsidered our options.

Q: You're considering four options – why so many?
A: Under the Local Government Act we must consider all reasonably practicable options. We considered other ideas but they have all been discounted for various reasons, including not being able to dispose of the volume of treated wastewater from Akaroa; unsuitable soils or rock types; too far away; too expensive; and other reasons.

Q: The Inner Bays Irrigation Scheme is given a lot more space in the consultation booklet than the other options. Why is that?
A: The Inner Bays Irrigation Scheme is more complex than the other options. It is spread over four sites and includes three storage ponds and the creation of three native bush areas and a new wetland. We have presented each scheme in the same way, with maps, photos, artist impressions, and used the same type of wording to explain what is involved and the advantages and disadvantages.

Q: Why have Council staff stated an option preference? Doesn't that show bias?
A: No, we are simply being transparent. We often state a preference when consulting on a project. The staff who determine these preferences are experts in their fields of work and work with outside consultants to provide additional expertise. If one option looks more favourable to staff than another option, it would be disingenuous to consult without indicating that.

Q: Why do all the options outlined cost more than the amount budgeted for in the 2018-28 Long Term Plan?
A: Costs have risen since the budget was set aside in the Long Term Plan. At that time we were also scoping and costing the new wastewater disposal system based on false readings from flow meters that measure the volume of wastewater. We are also considering some options that came to light after the budget was set. We will need to update the budget in the next Long Term Plan for whichever option is chosen.

Q: Did you consider combining the Akaroa and Duvauchelle wastewater schemes?
A: We looked into this idea but it would be too expensive.

Q: When will the old treatment plant be decommissioned?
A: When the new scheme is fully operational. This may be eight years away, depending on the time it takes to get the consents for and build the new scheme.

Q: Is decommissioning the old plant part of the costings for this project?
A: No it's not included in the project cost. The actual cost will depend on what decision is made about how best to remove it.

Q: How long will it take to decommission the old plant?
A: Once the new wastewater treatment plant and disposal scheme is fully commissioned we would then remove the old plant. Due to the cultural sensitiveness of this site we will work closely with Ōnuku Rūnanga to agree on the best way to do this.

Q: Could you indicate which land you would need to compulsorily acquire?
A: This won't be known until the final option is chosen and we begin negotiating with landowners. Our preference is to avoid compulsory acquisition wherever possible.

Q: What is the setback requirement from private wells?
A: There is no setback from private wells. If a land-based option is chosen, consideration of alternative water supplies for any potentially affected properties would be undertaken.

Q: What other projects in New Zealand have been successful in irrigating treated wastewater to trees?
A: Waikouaiti/Karitane, Warrington, Levin all involve irrigation of treated wastewater to native trees. We already irrigate treated wastewater to pine trees at Wainui and Tikao Bay.

Q: Did you consider piping the treated wastewater out to the heads? Why isn't that an option? Was it opposed by Ngāi Tahu, or was it because of the marine reserve out there?
A: We considered an ocean outfall in 2008 but it was prohibitively expensive and would be very technically challenging due to the deep water and very mobile seabed.

Q: Do the cost estimates include land purchases?
A: Yes.

Q: How will you manage weeds and pests such as possums, rats and hares?
A: Pest and weed control would be included in the maintenance contract for the irrigation area if a land-based option is chosen.

Q: Why should people in Christchurch care about this?
A: Many Christchurch people have strong connections to Banks Peninsula and all ratepayers will be funding the new wastewater system for Akaroa.

Q: Will there be a technical person on the hearings panel?
A: The make-up of the hearings panel has now been confirmed as Crs Cotter, Keown, Davidson, Templeton and Banks Peninsula Community Board member Nigel Harrison. However, independent technical advice will be available to the panel.

Q: Who will be on the hearings panel and make the final decision?
A: A hearings panel made up of elected Councillors and Community Board members will consider all written and oral submissions and then make a recommendation to the Councillors and Mayor. The Councillors and Mayor will then consider the recommendation from the hearings panel and make a decision.

Q: How much time is allocated to speak to the hearings panel if I decide to do this?
A: Time allotment is a decision made by the hearings panel. The panel will want to ensure that everyone who has asked to speak gets adequate time and that it is fairly allocated to everyone within the meeting timeframe.

Q: Why was reverse osmosis ruled out as an option?
A: Reverse osmosis would significantly increase the capital and operational cost of the scheme. Reverse osmosis plants have very high energy costs, and would treat wastewater to a much higher standard than is needed for the receiving environment. It would also leave us with a highly concentrated waste stream (about 20% - 40% of the flow) that we would have to dispose of somewhere. Reverse osmosis plants are only used in places where they need to treat sea water, stormwater or wastewater to produce drinking water; we're not aware of anywhere where they are used to treat wastewater for disposal to land or water. Those places that use it to produce drinking water all discharge the concentrated waste stream to the sea, which due to the concentrated nature of the waste stream, introduces new issues.

Wastewater and treatment

Q: Why aren't you consulting about the new wastewater treatment plant?
A: The design and location of the new wastewater treatment plant have already been confirmed and we already have consents for the new plant.

Q: What do you mean by 'highly treated wastewater'?
A: Wastewater (sewage) can be treated to various levels. The new treatment plant we will build for Akaroa will be more sophisticated than the existing plant and will be able to treat the wastewater to a much higher level. Health, environment and cultural expectations of wastewater disposal systems have increased significantly since the 1960s and there is a higher bar for gaining resource consent. This higher level of treatment also enables us to explore other ideas, such as reusing the highly treated wastewater for irrigation.

Q: What treatment will the wastewater receive at the new plant?
A: A network of pumps and pipes will carry wastewater from Akaroa properties to the new terminal pump station at the boat park in Childrens Bay.
There it will be screened. Solids and grit will be separated from the liquid for removal to Christchurch by truck.
The liquid will be pumped to the new wastewater treatment plant on Old Coach Road, where it will be received into a covered buffer pond, which will smooth out the peak flows to the treatment plant.
The first treatment stage is in an anoxic and aerobic reactor tank where microbes break down nutrients and contaminants. The next process is fine membrane filtration to remove suspended solids, bacteria, protozoa and viruses.
The leftover sludge (bio solids) will be sent by tanker to the Christchurch Wastewater Treatment Plant at Bromley. There they are processed for 100% beneficial reuse in land remediation, landscaping and composting.
Once these processes have occurred, the remaining liquid is highly treated wastewater and will be ready for disposal using whichever of the four options is chosen.
If a purple pipe (non-potable reuse) system is added in future, there would be an additional ultraviolet treatment.

Q: What remains in the highly treated wastewater that makes it unsuitable for drinking?
A: The wastewater treatment plant will be designed to remove almost all the organic material, suspended solids and pathogens (bacteria, viruses and protozoa), and some of the nitrogen. However there are other contaminants in wastewater that treatment plants are not designed to remove, although they may be removed during the treatment process. These include chemicals from cleaning products and pharmaceuticals, caffeine, and naturally excreted hormones such as oestrogen.

Q: What is the volume of wastewater collected from Akaroa?
A: The volume of wastewater from Akaroa varies from 208,000 cubic metres to 237,000 cubic metres per year. This is an average of 6.6 litres per second to 7.5 litres per second, or about 520 litres per day per household. For comparison, the Grehan and Aylmers streams each typically flow at 6 litres per second to 50 litres per second, depending on the time of year. The volume of wastewater varies because it increases with rainfall and high groundwater levels. Peak flows are generally in winter, especially when multiple wet weather systems pass through in a short period. This causes higher than usual flows of groundwater and stormwater to enter the wastewater system – a problem known as inflow and infiltration (I&I). We know this is a significant issue in Akaroa because of the age of the pipes in the wastewater network, and it is something we have been working on and which we intend to address, before the wastewater scheme is designed and built.

Q: Some people are saying that 70% of what is in the wastewater pipes is groundwater and stormwater. Is this true?
A: No. We estimate that in an average year the stormwater is about 18%, the groundwater about 43% (61% combined) and true wastewater about 39%.
Stormwater and groundwater get into the wastewater system in several ways – old or damaged pipes, manholes and lateral connections (including on private property); surface run off into private gully traps; and downpipes that have been illegally connected to sewer gully traps (down pipes are supposed to be connected to the stormwater system or roadside kerbs).

Q: What are you doing about groundwater and stormwater in the system?
A: This work is all part of the wider Akaroa wastewater project and is well under way.
From 2017 to 2019 we used highly sensitive temperature sensing technology to identify where cold water (i.e. groundwater and stormwater) is entering the wastewater network.
Most of the stormwater and some of the groundwater is coming from private properties, which we can't fix as these pipes and connections are the responsibility of the property owners. We will need the cooperation of residential and commercial property owners in Akaroa to reduce these inflows. The discharge of groundwater and stormwater from private property to our wastewater network is not allowed under our Water Supply, Wastewater and Stormwater Bylaw 2014.
In 2019 we began replacing parts of the network that have reached the end of their useful life and we will soon be accessing 72 manholes in Akaroa to carry out repairs (some of these will need to be fully replaced). We will also be repairing or replacing approximately 1.5 km of wastewater pipes.
We have allocated $3 million, and expect to achieve a reduction in the inflow of groundwater and stormwater of at least 20%, but it may be higher than that.

Q: If you fix the problem of groundwater and stormwater in the system, couldn't the wastewater scheme be smaller?
A: We will measure the flows once the inflow and infiltration reduction work is complete and use this to design the new scheme, which may result in a smaller scheme overall. However, we need to make sure that the scheme can cope with extended periods of wet weather and will cope with expected growth in Akaroa to at least 2052.

Q: How many properties are connected to the wastewater system in Akaroa?
A: There are 1200 wastewater connections in Akaroa, to residential and commercial properties.

Q: I've heard that Covid-19 was detected in wastewater overseas. Could the highly treated wastewater from Akaroa contain Covid-19?
A: No. The treatment process will remove coronavirus, as it will other viruses, bacteria and protozoa.

Q: Will more land be needed to extend the scheme in future?
A: We have taken population growth in Akaroa into account and designed the scheme to cope with that through to 2052.

Irrigating native trees

Q: I've heard that you plan to spray wastewater around Banks Peninsula. Is this true?
A: No. We will be using highly treated wastewater effluent, not raw wastewater, to irrigate new areas of native trees. The irrigation method will be hoses on the ground with drippers, not sprayers.

Q: What do the hoses and drippers look like?
A: Drip irrigation is very common and often used in home gardens and orchards. The hoses have small holes for the water to drip out of and will lie on the ground. They will be visible on the ground until the native trees have grown and the leaf litter covers them. The photo (below) is irrigated using this method in Wainui.

Storage ponds and pipelines

Q: What are storage ponds and why are they needed?
A: At times, the volume of wastewater from Akaroa is more than can be treated or disposed of all at once, so we need to store it. There are two types of storage ponds – covered ponds for untreated wastewater and uncovered for treated wastewater. Untreated wastewater is stored until there is capacity at the plant for it to be treated. Treated wastewater is stored because flows vary and because irrigation will stop during, and for a time after, heavy rainfall. We will manage the rate of irrigation to ensure that the ground is able to receive the water and the plants will thrive.

Q: What are storage ponds constructed of?
A: They would be dug into the land, lined with dense polyethylene and surrounded by earthen bunds extending above the ponds. The bunds will be grassed and surrounded with landscape planting. They will be visible from nearby during construction and while the plants are young. If the Inner Bays Irrigation Scheme is chosen, the storage pond will be visible from higher areas, such as Okains Bay Road.

Q: Do the storage ponds have any other uses?
A: Yes. The uncovered treated wastewater ponds could be used, if they have water in them at the time, for firefighting supplies.

Q: Will the storage ponds smell?
A: No. The pond for the untreated wastewater will be covered and the air will be extracted and put through an odour treatment device. The ponds holding treated wastewater will not smell and won't need to be covered.

Q: How obvious will the pipeline be in the landscape?
A: The pipeline will be buried and will not be visible in the landscape except during construction.

Q: How many months of wastewater (treated and untreated) can you store over a heavy rainfall season in winter?
A: The new wastewater treatment plant has been sized to process about 1200 cubic metres of wastewater per day which meets the needs of any given day in a wet winter. Should the treatment plant have to stop processing the wastewater, the untreated wastewater storage pond has a capacity of 6000 cubic metres, so there would be five days of storage available. This is the same for all options.

The treated storage volume for the various schemes are 19,000 cubic metres for Inner Bays, 30,000 cubic metres for Goughs Bay and 36,000 cubic metres for Pompeys Pillar. Our irrigation areas and pond volumes are based on 37 years of rainfall and soil moisture data for Akaroa. We found 1978 to be the wettest year and the modelling showed that it took four weeks for the Inner Bays treated wastewater storage ponds to fill in the winter of that year. The rainfall in that four week period was 474 mm.

Recycling wastewater for non-potable uses (purple pipe scheme)

Q: What does 'non-potable' mean? Why a 'purple pipe'?
A: Water that is not suitable for drinking or using for bathing, showering or tooth brushing – not for human consumption. Potable means 'drinkable' or 'safe to drink'. It's often referred to as a purple pipe scheme as the pipes are conventionally coloured purple to indicate they contain non-potable water.

Q: If treated wastewater is used for irrigation, will it smell or be hazardous for people or animals that come into contact with it?
A: No. The wastewater would be so highly treated that it would not smell or be harmful to people, pets or the environment. It will have received among the highest treatment currently possible in New Zealand.

Q: I expected to see a purple pipe option. Why is that not included?
A: Government agencies have not yet set the public health and other standards that would need to be met to ensure the treated wastewater is safe to be reticulated to residential properties for such use. At this stage it would be very difficult to get approval for such a system.

Q: What additional treatment would be needed to get the treated wastewater to the quality needed for purple pipe reuse?
A: We would add ultraviolet treatment.

Q: What additional treatments would be needed to get the treated wastewater to the drinking water quality?
A: This would require reverse osmosis and possibly additional treatment steps to remove contaminants smaller than a water molecule.

Inner Bays option

Q: Why is there only one disadvantage for the Inner Bays option?
A: From a Council perspective, we see only one disadvantage but we accept that others may have a different perspective and may see other disadvantages.

Q: What land does the Council already own in Robinsons Bay?
A: None.

Q: Why was the treatment plant site in Old Coach Road chosen? Was it because you always wanted the Inner Bays option?
A: No, this site was chosen because it offered better future reuse of the treated wastewater than the other site to the south of Akaroa that was identified at the time, both for non-potable reuse in the town and for irrigation. This was ten years' ago and irrigation to land in the Inner Bays wasn't considered as an option until 2016.

Wetland

Q: Why is there a wetland in the Inner Bays Irrigation Scheme but not in any of the others?
A: The wetland reduces the storage pond volume at the Robinsons Bay irrigation site. It allows us to store excess water when the Robinsons Bay ponds are full. It also provides additional natural treatment. Normally there would be no discharge from the wetland, but in extreme wet weather it would discharge to Childrens Bay Creek (about once every five years). It is not needed with any of the other schemes as there is more room for the ponds at Goughs Bay and Pompeys Pillar and the Harbour Outfall does not need a storage pond unless a purple pipe scheme is included.

Q: Will the wetland smell?
A: No. The wastewater going into the wetland will be highly treated.

Q: Will the wetland attract midges?
A: Possibly. However, we have shown in other parts of the Christchurch district that we can safely and effectively manage midges.

Q: Will the wetland and the storage ponds be like ones at the Bromley Wastewater Treatment Plant in Christchurch?
A: No. They will contain highly treated wastewater and are for storage after the treatment process. They will be much smaller and will have native plants around them to help them blend into the landscape.

Q: If the Inner Bays option is chosen, will Takamātua and Robinsons Bay also be upgraded to a fully reticulated wastewater system?
A: No. This is not part of this project.

Historic sites

Q: Part of the Inner Bays option is close to the historic Pavitt Cottage. Is the cottage at risk from the project?
A: No. Our consultants have assessed whether works relating to the scheme would affect the cottage and concluded there is no risk to the cottage or its setting.

Q: Next to Pavitt Cottage is the site of a sawmill established by European settlers to provide native timber for building construction and for ship building down in the bay. Will the sawmill area be disturbed?
A: The old sawmill site is one of the areas that would be planted with native trees and irrigated with highly treated wastewater if the Inner Bays scheme is the chosen option. Any proposed disturbance of an archaeological site would require an archaeological approval.

(This document will be added to online at ccc.govt.nz/haveyoursay during the consultation period as questions arise.)