

Robinsons Bay and Takamatua concerns with disposal of Akaroa wastewater in our communities

The communities of Robinsons Bay and Takamatua have been extremely concerned for the past 4 years about the ongoing proposals to dispose of Akaroa's wastewater in our communities and near our homes and oppose the Inner Harbour Irrigation Scheme.

The Akaroa Wastewater Working Party was set up by the Community Board in response to our community concerns in 2017, but these concerns are not addressed by the Inner Bays option that continues to be included and is favoured by the Council staff.

The proposed Inner Bays scheme includes:

- Construction of a storage pond, 2ha in size (equivalent to four football fields) with capacity to hold 19 million litres of treated wastewater on a sloping site with a 4m high dam face adjacent to the main Robinsons Valley stream. It is in the centre of the Robinsons Bay valley community surrounded by houses on three sides, and immediately above the fragile and significant historic Pavitt Cottage.
- Three irrigation fields planted with native trees within 5m of neighbouring properties in upper Robinsons Bay, at Hammond Point and on the Takamatua flats.
- Construction of an artificial wetland on the land between State Highway 75 and Old Coach Road to enable discharge of wastewater to Childrens Bay when the storage pond at Robinsons Bay is full.

We oppose this scheme because it is a complex, high cost and untried system, placed in the centre of our communities with little margin for error, and does not provide resilience against future climate extremes.

This scheme places our environment, lives and properties at direct risk of adverse effects now and in the long term future for the following reasons:

1. High cost unproven system placed in the centre of communities with little margin for error
2. The design of the Inner Bays option is so tightly constrained by availability of suitable land that the minimum setback distances from houses, property boundaries and streams have been used increasing impacts of negative effects on communities
3. Risk of flooding from dam burst and stream bank slip for downstream houses
4. Risk of nutrients and other contaminants leaching to streams and draining to shallow mudflats impacting aquatic life due to irrigating close to streams, year round, and in wet weather
5. Negative impact on significant archaeological site, related heritage cottage and surrounding heritage landscape from storage pond and irrigation field in Robinsons Bay
6. Wastewater will be released into Childrens Bay at Akaroa
7. Sewage reticulation is not being provided to the receiving communities
8. High value land in the Inner Harbour required and any future expansion likely to require acquisition of even more high value private land.

We now explain these reasons in more detail:

1. High cost unproven system placed in the centre of communities with little margin for error

- Irrigation of wastewater to planted native trees has never been tried before in New Zealand. This is an unproven and experimental system.
- The setback distances used by the Council to select suitable sites for wastewater infrastructure are based on engineering concerns and do not take into account the social impacts on the neighbouring residents

2. The design of the Inner Bays option is so tightly constrained by availability of suitable land that the minimum setback distances from houses, property boundaries and streams have been used

- Common adverse effects of storage ponds are odour, midges, mosquitoes, noise and visual effects
- The risk of these effects impacting people is greatly increased by the placement of this infrastructure so close to houses
- These risks are ongoing and likely to have a negative impact on the values of property in the immediate vicinity of the storage pond over the lifetime of the system, and the potential to devalue and hinder property sales for residents close to the irrigation fields in both Robinsons Bay and Takamatua.
- Trees within 5m of property boundaries will shade neighbouring properties and affect views.
- Residents of Robinsons Bay will be subjected to extreme disruption during the excavation of the storage pond and laying of pipes.

3. Risk of flooding from dam burst and stream bank slip for downstream houses

- There are several houses downstream from the storage pond and irrigation field in Robinsons Bay
- The storage pond will be constructed with the main Robinsons Valley stream below the northern dam face and is bounded by an ephemeral stream on the western side. The main stream appears to be closer than the minimum site selection parameter, which was intended to keep the dam out of the stream flood area.
- Dam burst analysis presented in the Beca Report shows an increased risk of flooding if a dam burst occurs during a major storm with properties being inundated around houses, and in some cases under the floor boards, including the Pavitt cottage and the lower part of Robinsons Bay, also endangering stock.
- The dam burst analysis does not take into account risks of debris blocking the stream where it passes under Sawmill road in a constricted space. The Beca report also identifies an elevated risk of stream bank slumps and slips which could lead to further flooding. Peninsula experience shows that flooding risks are heightened when debris constricts stream flow during storms leading to a build-up of water followed by a flash flood.
- The irrigation field at Robinsons Bay includes some areas that have downslopes steeper than the 15° site selection criteria advised by engineers, exacerbating the risks of slips. The irrigation field at Hammond Point is also sited above downslopes steeper than 15°.
- The irrigation field at Takamatua is on land that is close to sea level and already boggy in winter. The downstream settlement is flood-prone.
- The wetland is sited above State Highway 75 and the Akaroa Cottages residential area. It involves substantial earthworks and a constructed face up to 10m high on the western side facing the State Highway. A comprehensive dam burst analysis has yet to be done, but Beca have identified risks.

4. Risk of nutrients and other contaminants leaching to streams and draining to shallow mudflats impacting aquatic life due to irrigating close to streams, year round, and in wet weather

- Irrigation is to take place within 25m of the centre of continuous streams, and 10m from ephemeral streams (that run during times of rain only), again the minimum setback requirement.
- The treated wastewater will contain high levels of nutrients, including nitrogen and phosphorous. It is not yet known what contaminants (eg, micro-plastics) will not be removed by the treatment process.

- Irrigation of wastewater to planted native trees has never been tried before in New Zealand. A small tree trial has been running at Duvauchelle for several years, but the trees are not yet at maturity and no results have been released regarding their ability to absorb nitrogen. Nitrogen build-up in the soil has been problematic for other land based irrigation schemes such as Rotorua that discharge to mature pine forests.
- The size of the native tree irrigation fields and irrigation rates are based on modelling assumptions. These assume that the eventual tree canopy will intercept sufficient rain water to enable irrigation throughout winter, only ceasing after 50mm of rain. Both Robinsons Bay and Takamatua valleys experience severe ponding and stream burst during this level of rain.
- Irrigation during wet weather will increase run-off to the streams.
- The streams at Robinsons Bay and Takamatua drain to shallow coastal mudflats. If nitrogen builds up due to run-off, or if the trees do not absorb the amount of nitrogen envisaged, there is a risk of pollution and odours.
- The disposal of wastewater in an area that already receives adequate, and at times excessive rainfall, cannot be regarded as beneficial reuse.

5. Negative impact on significant archaeological site, related heritage cottage and surrounding heritage landscape from storage pond and irrigation field in Robinsons Bay

- The storage pond and irrigation field in Robinsons Bay would be located on a registered archaeological site, significant to Banks Peninsula and to Canterbury as the place of the first sawmill in Canterbury with a large waterwheel harnessing the power of the Robinsons Valley stream. The site includes the mill site and associated ponds, tramways and ancillary buildings, and a now abandoned 19th century cottage. These matters are confirmed in a recently commission archaeological assessment that has yet to be acknowledge by the Council.
- Adjacent to the Sawmill site is the Mill cottage, the oldest standing structure in the area. The cottage was subdivided from the main Sawmill site about 20 years ago when it was purchased by a member of the original Pavitt family who built the first mill, fully restored, and left in trust for the descendants of the early families to use and enjoy. It is now also rented as a holiday let to the public to assist with paying for its upkeep and maintenance.
- The Mill cottage is focal point for the archaeological landscape that stretches up to the abandoned cottage and is hugely valued by the residents of Robinsons Bay as the starting point for the European history of the bay. The existing property boundaries in Robinsons Bay still reflect their original ownership by mill workers, and there are many extant heritage features in the Bay, including the Schoolmasters house, farm buildings and trees planted by early settlers.
- The storage pond will now dominate that landscape as it is sited immediately above the Mill cottage and will be visible from Sawmill Road, Okains Bay Road and houses in the area.
- Access to the site during construction and on an ongoing basis will be from Sawmill Road over the location of the Sawmill site. This is likely to be irreversibly damaged during the construction.
- Trees will be planted over the other archaeological features, completely obscuring the abandoned cottage and to the boundary of the Mill cottage, separating it from its heritage context.
- The owners, the Pavitt Cottage Trust, is extremely concerned that about loss of income during the construction period and ongoing loss due to the destruction of the archaeological landscape and the potential for odour, noise and other nuisance from the close proximity of the ponds.

6. Wastewater will be released into Childrens Bay at Akaroa

- The Inner Harbour option includes a constructed wetland at the top of Old Coach Rd for further purification of the treated wastewater, including restoring the mauri of the water to make it culturally acceptable to Ngāi Tahu prior to entering the harbour
- During normal conditions treated wastewater will trickle into it at the rate at which it evaporates. When the storage ponds in Robinsons Bay become full (anticipated during times of prolonged wet weather) water will flow through the wetland to the Childrens Bay creek and out into Childrens Bay. The wetland is intended to remove significant amounts of nutrients, particularly nitrogen, from the treated wastewater. In very large wet weather events (estimated at once every ten years), the wetland will overflow and the treated wastewater will flow directly to Childrens Bay without passing through the wetland.
- There is considerable uncertainty around whether the wetland will perform as intended; the study used to inform its design of a significantly different system (with continuous flow), and there are numerous examples around New Zealand of the failure or poor performance of constructed wetlands at wastewater disposal sites , including those at Whakarewarewa and Ashburton.
- If the wetland fails to perform as intended, there is a risk of pollution of the Childrens Bay mudflats.
- The wetland requires significant construction and visual alterations to a prominent site at the gateway to Akaroa

7. Sewage reticulation is not being provided to the receiving communities

- It is unfair to impose the risks and impacts of disposing of Akaroa's wastewater on another community when that community does not benefit from the scheme.
- There are many residences in Takamatua and Robinsons Bay that dispose of their own sewage via septic tanks, at their own expense. They are now being asked to also dispose of Akaroa's wastewater.

8. High value land in the Inner Harbour required and any future expansion likely to require acquisition of even more high value private land.

- The proposed disposal sites include rolling country on a north-facing farm in Upper Robinsons Bay, a coastal headland at Hammond Point, and the flat field alongside SH75 in Takamatua.
- Using these sites for wastewater precludes their use for other purposes, including farming, horticulture, housing and recreation.
- The use of high value land for irrigation fields is being promoted by Council as beneficial reuse of the treated wastewater because they will be planted with native trees. Resources would be better directed towards larger areas of lower cost marginal land enabling greater biodiversity and carbon benefits at less cost, and harnessing natural regeneration of indigenous vegetation. This occurs readily on Banks Peninsula and is preferable to planted forest, both ecologically and in terms of cost.
- These three sites are needed to provide the minimum land required to reduce the storage ponds to a feasible size. If the volume of wastewater becomes greater than planned for (due to settlement growth or extended reticulation), or if irrigation rates have to be adjusted, then more high-value land will be needed, further encroaching upon these communities.
- The site at Takamatua is also flagged by the Duvauchelle wastewater irrigation scheme for relocation of the Duvauchelle Show highlighting the scarcity of inner harbour land.