Banks Peninsula Community Board
Akaroa Treated Wastewater Reuse Options Working Party
Joint Statement
25th June 2020

Executive Summary

The working party is now in a position to offer its Joint Statement to the Council on the working party's views on the Akaroa wastewater options that were presented to it for consideration.

The Council will be aware that finding a wastewater solution for Akaroa has been a long and protracted process spanning a period of over eight years. The unconducive landscape and geology of the Akaroa Harbour has made this an especially technically difficult issue to resolve. However, it has been the social and cultural wellbeing of the communities who live in Robinsons Bay, Takamātua, Hickory and Goughs Bays and Pompeys Pillar who have been most negatively impacted by this protracted process. Many residents in these communities have significant concerns and worries about the potential negative impact on their homes and surrounding environment which is so special to them. It will be important that as the Council makes its decision the~~se~~ impacts on these communities are considered and recognised.

The working party is also mindful of the cultural significance of the Akaroa Harbour basin and surrounding bays to Ngāi Tahu, particularly the local rūnanga of Ōnuku and Koukourarata.

While the working party has looked to offer innovative and leading-edge wastewater reuse solutions to consider, it is fair to say the working party is disappointed with the final options, especially as an increasing impact of climate change will be scarcity of water. Many options were considered but were unable to be progressed further largely because ground conditions were considered unsuitable.

The option initially thought to be the most promising was managed aquifer recharge. However, the Council's Head of Three Waters & Waste advised the working party that this could not be progressed as an option because of the risk of contamination of drinking water in Akaroa. The Council further advised that the ground conditions were unlikely to be suitable. For these reasons, managed aquifer recharge has not been presented as an option for consultation by the Council.

There are future opportunities for the Council to consider which could involve and educate the community about the environmental and economic benefits of reusing water more effectively. The working party recommends in the first instance purple pipe reuse of treated wastewater in public spaces.

Pond Site 10 (opposite the proposed treatment plant) and the natural cleansing of water through the wetland could provide an exemplar for the community to engage with. While most of the working party is generally supportive of the Council's use of Pond Site 10 for a wastewater storage pond and wetland, it advises that there are potential risks which will need to be mitigated, including around discharging to

coastal waters (see section 5.5). It is recognised by the working party that both elements of Pond Site 10 are presently or potentially visible from a substantial portion of the Akaroa Township so care needs to be taken in relation to its development for future wastewater uses.

Regardless of the final decision made by Council, as an integral part of the wastewater project, the working party urges the Council to reduce stormwater inflow and groundwater infiltration into the wastewater network before the project commences. While the Council has indicated that the amount of reduction that can be achieved is difficult to assess, those reductions would reduce the size and cost of the entire scheme (including the treatment plant), potentially paying for the work itself. The cost of doing this should be included in all options.

For all potential irrigation sites, the working party agrees that the Council should make best efforts to find a willing vendor before compulsory land acquisition is considered. This includes working with unwilling landowners to try to produce a solution that is acceptable to them.

Advice on options

The working party's advice on the options presented must be seen in the context of these challenging social, cultural, and environmental conditions that have underpinned each option considered. The working party's advice is as follows. For full comments on these options see sections 5.6 to 5.8 of this joint statement.

It should be noted that Koukourarata acknowledges that all options discussed in the joint statement contain culturally offensive aspects in terms of the proposed locations. In acknowledging this the Runaka supports the pragmatic decision taken by Ōnuku Runaka to recommend the Robinsons Bay option and also concurs with Ōnuku Runaka that the wastewater should no longer be pumped into the Akaroa Harbour.

Inner Bays irrigation scheme

There are mixed views from the working party on the Inner Bays irrigation scheme option.

The Inner Bays irrigation option is opposed by some members of the working party, who are concerned that the scheme proposed is unacceptably risky, and it will impact negatively on environmental, social and cultural values and quality of life for residents of the affected communities. In their view it places a complex and untried native tree irrigation system in the centre of communities, close to houses and streams and with little margin for error or expansion capability.

While acknowledging community concerns, other members of the working party, including rūnanga appointees, support this option and see considerable environmental and ecological benefits. These members favour the Inner Bays option over the outer bays options, as while they acknowledge it has some problems, they view it as more sustainable, resilient, and practical, as well as being cheaper than the outer bays options.

If the Inner Bays scheme was to be selected, some members of the working party suggest that both the Takamātua and Robinsons Bay coastal communities and any houses within 100 metres of the reticulation pipeline should be fully reticulated for wastewater before the scheme is made operational. The cost for that reticulation should be included in the budget for the Inner Bays solution.

Goughs Bay irrigation scheme

There are mixed views from the working party on the Goughs Bay irrigation scheme option. However, this option has more support than the other options, with most of the working party having it as their first or second preferred option

Some members of the working party support this option and see it as having less negative impact than the Inner Bays irrigation option because of its relative remoteness.

Other members of the working party see this as their second favoured option, and two members oppose this option. There are concerns regarding the lack of detailed design and research, about the high-pressure pipeline, costs and the potential impacts on the environment and the community.

Koukourarata has no opinion relating to the Goughs Bay and Pompeys Pillar options. However the Runaka acknowledges that should the Council decide to utilise one of these options they will reengage in dialogue as responsible Treaty partners, before such an option is confirmed.

Pompeys Pillar irrigation scheme

The working party agree that there is no benefit in continuing to include the Pompeys Pillar option for consideration and recommended to the Council it be withdrawn as an option for consideration.

The site has been in the family ownership for seven generations. It is more distant than the Goughs Bay option and would require the ruination of a long-term successful farming operation for it to proceed. The Pompeys Pillar site could only be secured using compulsory acquisition.

Concluding comments

The consultation document says that in making the final decision 'all options will be assessed on the four well-beings in the Local Government Act - social, cultural, environmental and economic'.

When the Working Party sought to use Council's criteria for assessing the four well-beings it was advised that there are no set criteria for assessing these. While the Working Party, in preparing advice for its joint statement, has loosely used the four well-beings as a guide, it recommends that a more robust well-beings assessment is used by the Council in making its decision.

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1 Introduction

The Akaroa Treated Wastewater Reuse Options Working Party (working party) is now in a position to present a joint statement on the options for the reuse of Akaroa's treated wastewater to the Christchurch City Council (Council) staff, the Banks Peninsula Community Board (Board) and the Council for consideration.

The working party has based its joint statement on the technical information available at this time, while acknowledging that there are still technical questions outstanding and that further information still needs to be provided.

Working party members acknowledge with gratitude the opportunity offered by the Banks Peninsula Community Board to establish a working party to give comment on the various land-based disposal options for Akaroa's treated wastewater. Working party members also acknowledge with thanks the diligence and effort demonstrated by Council staff in facilitating the working party meetings.

2 Objectives of the Working Party

The objectives of the Working Party have been completed. There are specific comments on Objectives 2, 3, 4 and 5, which form part of the Joint Statement. The objectives are:

1. To assist the Council in investigating and consulting on the options for the beneficial reuse of Akaroa's treated wastewater, through the steps in objectives 2-5 below, acknowledging that the option of discharge to the Akaroa Harbour will remain part of the wider community consultation.

2. To consider the advantages, disadvantages, efficiency, effectiveness, appropriateness, cost-effectiveness and effects of the short-listed reuse of treated wastewater options for Akaroa, as presented by Council staff.

3. To consider the joint statement(s) of the independent technical experts on the feasibility and effects of irrigation of treated wastewater to land and to assess what, if any, further technical investigation or other information may be useful for consideration of options, given the time constraints imposed by the Council's need to obtain consent for a reuse or disposal option prior to the expiry of consents for the current plant and disposal method.

4. To identify for the Council's consideration any other options that may meet the Council's project objective – to find a solution for the sustainable reuse or disposal of all of Akaroa's treated wastewater which is consistent with the Council's duties under the Local Government Act and is sustainable management under the Resource Management Act - within the feasibility constraints being established by the technical experts. The consented Treatment Plant must be able to be configured to meet all aspects of the final wastewater reuse/disposal option.

5. To provide suggested input and comment on the content of the draft consultation information.

6. To keep the community informed by releasing the notes from Working Party meetings and through regular public communications.

3 Background

The original Akaroa Wastewater Working Party was set up in October 2008 and made recommendations to the Akaroa/Wairewa Community Board in September 2011, which were passed onto the Council. The working party recommended that:

1. A new plant be located away from Takapuneke Reserve, on the paper road south of the present plant together with a small portion of adjacent private land if this can be obtained. This would allow Ōnuku Marae to be linked to the treatment plant at some time in the future. (Further discussions with the Runanga are recommended in light of their concerns noted below).

2. The plant is to be designed to produce wastewater that achieves the best quality wastewater at the time. The membrane plant at Turangi is the minimum performance level to be achieved.

3. The outfall is to be located in the mid harbour. The exact location is to be decided at a future meeting in consultation with Council staff. The location is to be chosen to ensure effective mixing of the wastewater.

4. The outfall design should allow for extension to a location outside the harbour if required in the future.

5. Future wastewater management options, including the design of the plant, must allow for the beneficial re-use of treated wastewater.

6. Land irrigation of Banks Peninsula soils and topography is to be trialed to determine the parameters that will enable better decision making in the future about reuse of wastewater for irrigation.

7. The wastewater is to pass over or through land before it is discharged into the harbour. This is to be done in a way that respects the cultural concerns of Ngāi Tahu.

In response to these recommendations, at its meeting on 8 December 2011 the Christchurch City Council resolved that:

(a) The Akaroa Wastewater Working Party be thanked for its valuable work over the last three years.
(b) A replacement wastewater treatment plant for Akaroa be located away from Takapuneke Reserve, and that staff discuss siting options with the Ōnuku Rūnanga and community, and report back to the Council within six months on suitable potential sites.

(c) The outfall for the treatment plant be re-located to the middle of the Akaroa Harbour and that consideration be given to measures to address cultural concerns, in consultation with Ngāi Tahu.
(d) The new treatment plant be designed to produce wastewater that achieves the best quality wastewater available at the time, and that the design of the plant enable the potential future beneficial re-use of treated wastewater for domestic, commercial or agricultural purposes.
(e) Should suitable land become available, a land irrigation trial be costed and presented to the Council for consideration.
(f) Environment Canterbury be advised of the working party outcomes adopted by the Christchurch City Council.

The Council applied for and obtained consents for a new wastewater treatment plant and upgrades to the wastewater reticulation network, but consents for the harbour outfall and the discharge to the harbour were declined on the grounds that the Commissioners considered that the discharge was inconsistent with relevant planning documents, it was offensive to Ngāi Tahu and because the Hearing Commissioners considered that alternatives to the discharge to the harbour had not been adequately investigated.

The Council is reconsidering options for the disposal or reuse of treated wastewater from Akaroa. The overall project aim is to find a solution for the sustainable reuse or disposal of all of Akaroa's treated wastewater which is consistent with the Council's duties under the Local Government Act (LGA) and is sustainable management under the Resource Management Act (RMA). Ōnuku Rūnanga and other Ngāi Tahu parties (Wairewa Rūnanga, the Akaroa Taiāpure Committee and Te Rūnanga o Ngāi Tahu) have been involved in that reconsideration by the Council, given the centrality of cultural values to the decision to decline consent, and the fact that those parties joined the Council's appeal to the Environment Court in relation to that decision.

The Council will be making a decision under the LGA on which treated wastewater disposal or reuse option to pursue. The Council's decision-making under the LGA includes a requirement to consider all reasonably practicable options to achieve the objectives of the decision, and the advantages and disadvantages of those options. The chosen option should take into account the social, economic and cultural well-being of people and communities, the need to maintain and enhance the quality of the environment and the reasonably foreseeable needs of future generations. The option must also be consentable as sustainable management under the RMA. A harbour outfall may not be sustainable management under the RMA, or a reasonably practicable option under the LGA, that give effect to the social, economic and cultural wellbeing of people and communities, and the need to maintain and enhance the quality of the environment and the reasonably foreseeable needs of future generations.

Extensive work by Council staff and their consultants has assessed a long list of discharge, disposal and reuse options and has narrowed this down to a short list. The short list comprises either discharge to the mid-harbour or disposal/reuse on land in three possible locations. Council will be consulting on those options in July/August and will then be making a decision on its preferred option.

A community strategy was received from the Robinsons Bay and Takamātua communities on 16 January 2017 (see Appendix 2 for a copy), which suggests the Council takes a collaborative approach with the

community to find a reuse solution that has broad acceptance. This strategy was subsequently presented by the Friends of Banks Peninsula Inc. to the Community Board on January 30th, 2017 where it was received and acknowledged.

Technical experts engaged by the Council, Ngāi Tahu parties and the Friends of Banks Peninsula Inc were engaged in expert conferencing on terms that were agreed between those parties. Those parties and experts agreed to adhere to the Environment Court Code of Conduct for parties and experts. Those experts independently produced three joint statements on matters within their areas of expertise on the feasibility and effects of irrigation of treated wastewater to land at Pompeys Pillar, Robinsons Bay and Takamatua Valley between November 2016 and April 2017. Those joint statements record all technical matters on which they are agreed and all technical matters that remain at issue.

The Banks Peninsula Community Board decided to respond to the community concerns expressed in the community strategy by setting up a working party that builds on the assessment by the independent technical experts in relation to the reuse on land options. The harbour outfall option will still be part of the wider community consultation but has not been a topic for this working party because Council staff considered it outside the Terms of Reference.

Members of the Working Party are from the Board, local Runanga and local areas potentially affected by the land disposal of wastewater. The original members in 2017 were:

Name	Role
Christine Wilson	Banks Peninsula Community Board Chairperson
Pam Richardson	Banks Peninsula Community Board Deputy Chairperson
Janis Haley	Banks Peninsula Community Board Member
Andrew Turner	Banks Peninsula Ward Councillor
Kevin Simcock	Community Member, Takamātua
Mark Wren	Community Member, Takamātua
Suky Thompson	Community Member, Robinsons Bay
Brent Martin	Community Member, Robinsons Bay
Murray Johns	Landowner from Pompeys Pillar
Declined	Landowner 11 Sawmill Road, Robinsons Bay
Andrew Dalglish	Community Member, Akaroa
John Davey	Community Member, Akaroa
Rik Tainui	Representative Ōnuku Rūnanga
Debbie Tikao	Representative Ōnuku Rūnanga
Manaia Cunningham	Representative Te Rūnanga o Koukourarata
Vacant	Representative Te Rūnanga o Koukourarata
Penny Carnaby	Independent Chair
Kit Grigg	Alternate Community Member, Akaroa
Kathleen Reid	Alternate Community Member, Robinsons Bay
Trevor Bedford	Alternate Community Member, Takamātua
Will Johns	Alternate Landowner from Pompeys Pillar

The working party met on seven occasions from 8 February 2017 to 19 March 2017 and considered several reports and commentary from the Independent Technical Experts Group, Council staff and the community, and prepared a joint statement on 8 April 2017.

Following the consultation period in April – May 2017, it was found that the wastewater flow data on which the design was based was incorrect. As this could have a significant impact on the size and cost of the options considered, Council staff decided not to proceed with the hearing of submissions. The land-based options were reconsidered and a new option of irrigating a farm at Goughs Bay was added to the short list of options.

The current members in 2020 are as follows:

Name	Role
Tori Peden	Banks Peninsula Community Board Chairperson
Jamie Stewart	Banks Peninsula Community Board Member, Akaroa Ward
Nigel Harrison	Banks Peninsula Community Board Member, Akaroa Ward
Andrew Turner	Banks Peninsula Ward Councillor
Kevin Simcock	Community Member, Takamātua
Mark Wren	Community Member, Takamātua
Suky Thompson	Community Member, Robinsons Bay
Brent Martin	Community Member, Robinsons Bay
Murray Johns	Landowner from Pompeys Pillar
Declined	Landowner 11 Sawmill Road, Robinsons Bay
Ivor McChesney	Community Member, Akaroa (resigned 22/06/20)
Harry Stronach	Community Member, Akaroa
Declined	Landowner from Goughs Bay/Hickory Bay
Pam Richardson	Community Member, Banks Peninsula
Janis Haley	Community Member, Goughs Bay
Rik Tainui	Representative Ōnuku Rūnanga
Debbie Tikao	Representative Ōnuku Rūnanga
Graeme Page	Representative Te Rūnanga o Koukourarata
Matiu Payne	Representative Te Rūnanga o Koukourarata
Penny Carnaby	Independent Chair
Vacant	Alternate Community Member, Akaroa
Kathleen Reid	Landowner from Robinsons Bay and Alternate Community Member, Robinsons Bay
Trevor Bedford	Alternate Community Member, Takamātua
Declined	Alternate Landowner from Pompeys Pillar

Other members who have served on the working party are John Baker and Kevin Scally, both as Community Members for Akaroa, and Keith Townshend as the Landowner from Goughs Bay.

The Council withdrew its appeal against the decline of the harbour outfall consents in May 2019.

The working party was reconvened and met a further 19 times between November 2017 and June 2020. The working party received further information from Council staff and its consultants, along with information from other people and organisations (refer Appendix 1 for bibliography of reports received and notes of Working Party meetings).

4 A Challenging Problem to Solve

While the Working Party members appreciate the opportunity to discuss the options in front of them, and note the quality and extent of the investigations undertaken in the attempt to find an acceptable outcome, there is no one option that is ideal in all respects. While options meet the technical requirements established by engineers on behalf of the Council, all of the options presented are perceived to be potentially challenging either from community, environmental, or cultural perspectives (refer Appendix 2: *Community Strategy Toward an Acceptable Solution to the disposal of Akaroa Wastewater*).

The challenging topography of Banks Peninsula also means that there are very few feasible options for the working party to consider. Flat or gently sloping land needed for storage dams and irrigation sites are either in areas already populated with rural settlements, or on the most productive farm land. Furthermore, the extent of stormwater and groundwater infiltration into the Akaroa wastewater network further compounds the challenge by greatly increasing the volume of wastewater the system must be designed to handle during times of heavy rainfall.

The Working Party recognises that, once established, the new wastewater system will be in place for many years, and that the option of wastewater irrigation to planted native trees is a first for New Zealand. If problems were to develop, or capacity became an issue, resource consent conditions may not be met, and it could take years to find another solution. It is therefore imperative that the right solution is put in place now, and that the solution has capacity to expand, should this be needed.

The Working Party was asked only to consider options outlined in Objectives 2 and 4 during discussions. However, it was agreed that in order to gain wider acceptance from interest groups, further thought needed to be given to both perceived and actual adverse and beneficial impacts, particularly for communities or landowners directly affected as well as Akaroa residents (refer to Appendix 3 for principles sought by Friends of Banks Peninsula, Robinsons Bay community and Takamātua Ratepayers Association that initiated the working party).

This includes consideration and resolution of some or all of the following:

- Environmental impact – Avoid negative impacts on the environment, including on water quality, while also realising the potential for greater biodiversity values such as improving wetland habitat and planting native trees. Later in the process following the Council's declaration of a climate

emergency, the working party gave some consideration to the carbon footprint, climate change impacts and climate resilience.

- Reuse of reclaimed water in Akaroa – Safe non-potable reuse of reclaimed water for projects in Akaroa such as irrigating public parks and flushing public toilets, and in the long term, reticulation to residences. This would reduce the quantity of reticulated potable water used, demonstrate the safety of water for beneficial reuse and show the Council's commitment to a sustainable solution for Akaroa's wastewater, all of which would build a more resilient community. Whilst the regulatory framework in New Zealand does not currently facilitate this, facilitating re-use in the future should remain a goal.

- Community impact – Respect for historical and cultural concerns, recognition of potential negative impacts on landowners and residents and investigation of options that balance negative impacts with positive developments desired by the community.

There is potential for the Akaroa Wastewater solution to be an exemplar for other wastewater solutions in the future, through genuine re-use of the wastewater to alleviate water shortages and reduce the impact of Akaroa's water take, or to facilitate natural native forest regeneration. To achieve this end the working party agrees that the Council is asked to consider additional funding to support more socially and environmentally compelling outcomes for the Akaroa wastewater solution, the benefits of which could be leveraged by other communities in the future. The working party acknowledges the financial constraints that the Council faces with Covid-19 and that it may take longer to achieve these aspirations.

The working party acknowledges that all options have risks, including if assumptions underpinning the solutions turn out to be incorrect.

The working party notes the population growth model that has been used as a basis for the disposal options but consider that demographic changes in the Akaroa township over the life of the project could be affected by as yet unknown post-Covid-19 lifestyle changes.

5 Objective 2 – Evaluation of Options

Consider the advantages, disadvantages, efficiency, effectiveness, appropriateness, cost-effectiveness and effects of the short-listed reuse of treated wastewater options for Akaroa, as presented by Council staff.

Working party members could not agree whether irrigating treated wastewater to planted native trees in the manner proposed would be beneficial reuse or disposal. This is therefore referred to as reuse/disposal.

For all potential sites, the working party agrees that the following conditions need to be included in the design and consents of the Council's chosen option:

- The treatment plant provides a minimum of ultrafiltration for all wastewater flows.
- The treatment standard is reviewed every 5 years and is updated to the standards of that time.
- The treated water is sent to an outflow buffer pond at the treatment plant and returned back to the plant for reprocessing if it fails to meet the consented standard. We note that this does not form part of the current Council proposals. This presents further risk to the downstream environment should the treatment plant fail to meet consent standards as such water will be released to the environment as it emerges from the plant. Water should be tested daily to ensure that it meets the consented standard.
- Monitoring of the streams and ecology starts immediately so there is an established and recorded baseline.
- The community is notified of what is monitored, the frequency of the monitoring and is informed regularly of monitoring results. Actions to correct non-compliance or negative trends are provided as part of the public record.
- There is public access to any irrigation, wetland and pond sites on publicly owned land, providing public health and safety criteria are met.
- Any landowners with areas identified in the consultation document as irrigation or pond sites, and neighbouring landowners, are familiar with the Council's consultation and consenting process and timing prior to release of public documents.
- Stormwater inflow and groundwater infiltration into the wastewater network is reduced as far as possible through repairs and replacements to the pipe network, and by implementing a communication plan for Akaroa property owners notifying them of their obligation to avoid cross contamination and to fix issues on their property.
- The Council should make best efforts to find a willing vendor before compulsory land acquisition is considered. This includes working actively and strenuously with landowners to try to arrive at a solution that satisfies both parties.

5.1 Non-Potable Reuse of Reclaimed Water in Akaroa

The Working Party supports the Council's aspirations for the safe non-potable reuse of treated wastewater in Akaroa as part of all wastewater options under consideration, to assist in countering annual summer water shortages, and to reduce the impact on Akaroa's streams during summer.

The working party agrees that if and when a non-potable reuse of reclaimed water is introduced in Akaroa it should be used to demonstrate its safety, firstly in public places such as public parks (for example, Sports Ground, Jubilee Park, the parks in the vicinity of Daly's Wharf, the Britomart Reserve and the main beach). It could also be used to flush public toilets with a longer term view of servicing private residences (for example, garden watering and/or toilets). Public confidence could be gained by observing its use in a public vegetable gardening setting and sustained monitoring of the wastewater to demonstrate its safety for this purpose.

Non-potable reuse would reduce the quantity of reticulated potable water used, demonstrate the safety of water for beneficial reuse, and show the Council's commitment to a more sustainable solution for Akaroa's wastewater, all of which would build a more resilient community. It is with some regret that

the working party accepts that due to current legislative constraints, the opportunity for establishing non-portable re-use will have to be deferred.

The working party agrees that the future opportunity to reuse treated wastewater in Akaroa should be included in the Consultation Document, while being clear that New Zealand standards for such re-use are not yet in place and may be some years away. This means that under the present circumstances, non-potable re-use is not integral to any of the options for consultation, though it remains aspirational for all options.

The working party agrees that planning regulations should require installation of a third pipe to all new residences and alterations to existing residences. It also agrees that a third pipe reticulation system should be installed at the same time as other pipes are being installed in streets, and that the design is undertaken now.

5.2 Existing Wastewater Consents

The working party accepts that several elements of the proposed wastewater treatment process have already been consented and are no longer the subject for working party discussions. These include a new pumping station in the current boat park on the Akaroa foreshore which also provides a primary screening function for the new wastewater treatment plant on Old Coach Road. The working party anticipates that all suitable planting and mitigation measures will be employed in association with the new pumping station in Akaroa to ensure public amenity is not adversely affected.

5.3 Wastewater Overflows

The three existing pumping stations (Recreation Ground, Fire Station and Glen Bay), and the wastewater network at the Rue Jolie bridge across Grehan Stream, will retain a necessary ability to discharge untreated wastewater into the harbour for reasons of public safety in times of emergency, along with screened wastewater the new terminal pump station. Given that the objective of land disposal is to cease discharge of wastewater to Akaroa Harbour, any overflows of untreated wastewater into the coastal environment is a concern and the frequency of these overflows or how they can be prevented is not a topic that has been discussed by the working party in any depth.

5.4 Consideration of the Land-Based Options to be Presented to the Public

The working party held regular minuted meetings, which included review of technical information and lively debate. All meeting notes are on the Akaroa wastewater project website, which also includes the technical reports:
https://ccc.govt.nz/services/water-and-drainage/wastewater/wastewater-projects/akaroa-wastewater-scheme

Three land-based options were presented to the working party for consideration:

- Option 1 Inner Bays irrigation to native trees

- Option 2 Goughs Bay irrigation to native trees
- Option 3 Pompeys Pillar irrigation to native trees.

The working party agrees that all of these options have both potential benefits and potential risks to the environment and the community which will need to be carefully considered by the Council in making its decision and addressed in the design and consenting processes for the option chosen.

The fourth option of a harbour outfall was not discussed in any depth by the working party, as it was initially considered that it was outside the scope of its terms of reference.

In addition, the working party has also considered the following supplementary aspects of the solutions:

- Additional storage at Pond Site 10
- A wetland system for additional filtration and cleansing at Pond Site 10.

5.5 Pond Site 10 and Wetland

5.5.1 Pond Site 10

In the working party's first joint statement it was conditionally agreed that a treated wastewater storage pond at Pond Site 10 (over the road from the treatment plant site) was the best of the ten potential pond sites presented. This is because it was near the treatment plant, had the lowest overall impact, was in the best position to provide reclaimed water for non-potable reuse in Akaroa, and could provide storage of water for irrigation at any of the locations being considered.

In agreement with the working party's view, the Council purchased the land for Pond Site 10 in June 2019. The purchased site includes a relatively flat area near the top and a section of steeper land that borders State Highway 75 down into Akaroa township.

The site has more recently opened the possibility of developing a constructed wetland area to reduce the volume and cost of the treated wastewater storage pond in Robinsons Bay. It also provides an opportunity as a source pond for a series of interlinked wetlands across the lower portions of Pond Site 10. These wetlands would provide a system for additional filtration and cleansing of wastewater through natural chemical and biological processes. This arrangement also has potential to add a covered treated wastewater feed pond for a future purple pipe re-use of treated wastewater within Akaroa.

The area at the top of the site would need significant earthworks to level out sufficient area for the storage ponds and wetland. The Working Party recognises that Pond 10 site is potentially visible from a substantial portion of the Akaroa Township, harbour and approach roads including Long Bay Road, the scenic route into Akaroa. They are also aware of the increased reliance on this site for the operational efficiency and effectiveness of all treatment options. Care needs to be taken in the design and development of this ridge-top location and a number of issues need to be addressed and outcomes assured through the development, design and consenting process.

It was agreed Pond Site 10 is the best site provided the following issues are considered:

- Extent of visibility-Akaroa town, harbour, public highways, and adjacent properties
- Effective mitigation of adverse effects of all development on the site
- Protection of the visual skyline from inappropriate change
- Potential odour and adverse visual appearance from untreated wastewater ponds
- Design integration with existing consented treatment works
- Appearance of all ponds when full or empty, and all above-ground structures
- Extent of ancillary structures including, fencing, amenity, security lighting
- Public access arrangements and crossing of the State Highway
- Further site design, geotechnical inputs, and full engineering dam break analysis
- Potential for rodent / insect infestation and contamination from stagnant waters
- Protection of principal town access and exit roads during civil emergency.

Desirable development outcomes at Pond Site 10 include:

- Comprehensive control and absence of odour release or infestation at any time
- No impression to road users of the presence of a wastewater treatment facility
- No threat to the safety of residents below or to access roads into Akaroa
- Comprehensive landscape-led mitigation strategy in association with engineers
- Minimisation of above ground structures, fences and hard surfaces
- All supporting bunds to be irregular to soften the appearance of ponds
- Design of all hard and soft materials to be to an ultimate standard.

5.5.2 Wetland at Pond Site 10

It is agreed by some members of the working party that this site could accommodate overland flows down to Childrens Bay in extreme rainfall events (estimated to be a one in five year event), and cleanse these flows before they enter the harbour. Additional amenity wetlands could also form part of a comprehensive landscape design. Those members envisage the principal use of the lower portion of Pond Site 10 will be retained wholly for community and recreational use.

These members consider that the upper and lower area wetland system provides a potentially appealing solution which could have environmental, cultural and educational benefits for the community in addition to its primary function of cleansing the wastewater and reducing nitrates and other contaminants. Those working party members agree that the wetland system should be included in all options considered, not just Option 1 Inner Bays Irrigation, and that it should include a series of interlinked wetlands on the lower part of the site and become a publicly accessible recreation area.
Members who are supportive of the constructed wetlands see potential benefits including:

- Assisting in restoring the water to a natural state by cleansing/contaminant removal. This process is also culturally appropriate as it restores the mauri of the water
- Environmental and ecological benefits

- Educational opportunities
- Recreational, walkways
- Carbon sequestration (from accompanying planting)
- Locally sourced native plants.

Some members do not support the proposed wetland at Pond Site 10. The opinion of these members is that it facilitates an occasional wastewater discharge directly to Akaroa Harbour, in the coastal environment of shallow Childrens Bay, and that it takes up space on the site that could be better used for both untreated wastewater buffering to reduce the frequency of untreated wastewater overflows, and to provide outflow buffering of treated wastewater, allowing it to be tested prior to release into the main storage pond. They are concerned that the constructed wetland may fail to function as intended, including nutrient removal and during extreme weather events.

5.6 Option 1 Inner Bays Irrigation to Native Trees

There are mixed views from the working party on this option.

The Inner Bays irrigation option is opposed by some members of the working party, who are concerned that the scheme proposed is unacceptably risky, and will impact negatively on environmental, social and cultural values and quality of life for residents of the affected communities. In their view it places a complex and untried native tree irrigation system in the centre of communities, close to houses and streams and with little margin for error or expansion capability.

Some members of the working party, including Ōnuku Rūnanga, are supportive of Option 1 and see considerable environmental and ecological benefits. These members favour the Inner Bays option over the outer bays options, as while they acknowledge it has some problems, they view it as more sustainable, resilient, and practical, as well as cheaper than the outer bays options.

It should be noted that Koukourarata acknowledges that all options discussed in the joint statement contain culturally offensive aspects in terms of the proposed locations. In acknowledging this the Runaka supports the pragmatic decision taken by Ōnuku Runaka to recommend the Robinsons Bay option and also concurs with Ōnuku Runaka that the wastewater should no longer be pumped into the Akaroa Harbour.

Some of the community's concerns are outlined in a paper, *Robinsons Bay and Takamatua concerns with disposal of Akaroa wastewater in our communities*, signed by 227 residents from Robinsons Bay and Takamatua (see Appendix 4). Their concerns are summarised below alongside some of the potential benefits of the scheme.

Potential benefits include:

- Showcasing what can be done with wastewater in a manner not developed previously in New Zealand

- Akaroa's treated wastewater would be used to create a new wetland and three new native bush areas with public access for recreation
- Returns landscape to a forested state
- Pipe on State Highway would be less vulnerable to damage as the State Highway is built to a higher standard than rural roads
- Installing the pipe along the State Highway would be significantly shorter than the outer bays options with a pipeline length of 5.6 km, and it can be built in the verge
- Increased biodiversity, native bush, birds, ecological corridors, carbon sequestration
- Proposed planting areas are less exposed than those in other options, with greater probability of establishing successfully
- Storage ponds would be gravity-fed from the new wastewater treatment plant
- Landowners appear willing to negotiate
- Least expensive land-based option with lower capital and running costs.

Concerns include:

- High cost unproven system placed in the centre of communities with little margin for error
- Minimum setback distances from houses, property boundaries and streams impacts negatively on the on communities and the environment
- Risk of odour, midges, mosquitoes, noise, shading, loss of value, as well as severe disruption during construction to nearby residents
- Risk of flooding from dam burst and stream bank slip for downstream houses
- Risk of nutrients and other contaminants leaching to waterways because irrigation would be close to streams, year round, and in wet weather
- Negative impact on archaeological site, related heritage cottage and surrounding heritage landscape from the storage pond and irrigation field in Robinsons Bay
- Wastewater would be released into Childrens Bay on rare occasions after passing through the wetland
- Wastewater reticulation is not being provided to the receiving communities
- High value land in the Inner Harbour is required and any future expansion would likely require acquiring even more high value private land.

With these differing points of view acknowledged, the working party agrees that if the Council chooses the Inner Bays option, the following conditions would need to be met:

- State acceptance of liability for damage to private property affected in the event of a system failure
- Requirements for no odour, midges, mosquitos, or pump noise are included in consent conditions
- Construct bunding to divert flood water from all downstream properties assessed with any elevated risk of flooding due to dam burst.

Some members of the working party suggest that reticulation should be provided to all residential properties with septic tanks on small sections in Takamatua and Robinsons Bay close to the coast and rural properties on the pipeline and adjacent to the pond site to the wastewater network.

5.7 Option 2 Goughs Bay Irrigation to Native Trees

A potentially suitable site was identified on a farm on the headland between Hickory Bay and Goughs Bay. Initially the owner saw benefit in irrigating nominated sites to improve pasture growth and drought resilience during the summer months, but later withdrew support because the withholding periods for dairy stock advised to him by Fonterra and the Ministry for Primary Industries would make it difficult to farm, and because of concerned neighbours.

This option has now been amended from irrigation to pasture to irrigation to planted native trees. This option appears to be technically feasible, but as with all of the options presented there are concerns and risks that would need to be mitigated.

There are mixed views from the working party on this option, however this option had more support than the other options, with most of the working party having it as their first or second option.

While members of the local community in Goughs Bay and Hickory Bay have voiced concerns about the negative impacts of Option 2, some members of the working party hold the view that the social and environmental impact is less at this site compared with Option 1 because the few houses in the area are much further away from the storage ponds and irrigation sites.

However, some members of the working party are concerned about the high costs and risks with Option 2, including the vulnerability of the high pressure pipeline and the potential impacts on the environment and the community. They see this as a higher-risk option, due to the limited research that has been undertaken on the local climate, the potential for poor vegetation growth rates at this exposed location, and the lack of detailed engineering design and planning.

Some of the community's concerns are outlined in a paper, Wildside Wastewater Proposals - Goughs and Pompeys Pillar signed by 34 residents from Goughs and Hickory Bays (see Appendix 5). Their concerns are summarised below alongside some of the potential benefits of the scheme.

The working party notes that the proposal to irrigate to native trees at Goughs Bay and Pompeys Pillar has only been introduced at a very late stage in the process and has not had significant discussions. The working party is disappointed that the Council has not attempted to work with affected neighbours and Wildside stakeholders to design a solution that enhances the Wildside concept, such as irrigating areas that are already regenerating rather than planting. The solution proposed has been poorly received by the community as a result.

Koukourarata has no opinion related to the Goughs Bay option. However the Runaka acknowledges that should the Council decide to utilise this option they will reengage in dialogue as responsible Treaty partners, before such an option is confirmed.

Potential benefits include:

- The site is relatively remote
- Enhance fire-fighting potential for the catchment area
- The opportunity to develop a new native tree reserve with potential for public recreation
- There would be no discharge to sea, except in an extreme emergency
- All Akaroa's treated wastewater would be used to create a new native bush area
- Highly treated wastewater would be available for farm irrigation and stock water along the pipeline route
- Ecological benefits over time - increased biodiversity, native bush, birds, ecological corridors, carbon sequestration
- Large distance from any houses and the absence of any downstream infrastructure reduces the impact of odour, insects, noise and flood damage
- Storage ponds would not be readily visible from any houses or public places.

Concerns include:

- Disruption and risks associated with creating the site access road
- Significant disruption, including road closures, in laying the main pipeline
- Risks of rockfalls, landslips, and poor winter access
- Lifetime risks and costs of operating the high pressure pipeline
- Unwilling landowner
- Risk of irrigation run off affecting neighbouring properties
- Negative impact on the local community and the Wildside ecological vision
- High cost compared with Inner Bays option
- Risk that planted trees will neither establish nor thrive in the harsh conditions
- Visual impact of unnatural tree plantings on the skyline

With these differing points of view acknowledged, the working party agrees that if the Council chooses the Goughs Bay option, the following conditions would need to be met:

- Provision of fire-fighting ponds near the Cabstand to be mandatory
- Wildside principles to be incorporated in the planting arrangement
- Risks of contamination to neighbouring farms to be fully investigated and mitigated.

5.8 Option 3 Pompeys Pillar - Irrigation to Native Trees

A suitable site has been identified on a farm at Pompeys Pillar. Without investigation the landowners when first approached by Council on the proposal were only potentially positive. They researched the implications of this with Council and external advisors before concluding that it was not a workable solution.

Given that at that time there was a willing landowner at a suitable site at Goughs Bay, the working party saw no benefit in continuing to include the Pompeys Pillar option for consideration and recommended to the Council it be withdrawn as an option for consideration. The Council sought legal advice as to whether they were permitted to exclude Pompeys Pillar as a viable solution from the options mix. Legal advice directed that this option should remain as it had been identified as a technically feasible site. It had also not been discounted on the basis of price.

Subsequently the Gough's Bay landowner has also withdrawn their support for irrigation to pasture. Both the Pompeys Pillar and the Goughs Bay options have since be re-worked by Council for irrigation to native trees rather than irrigation to pasture.

In spite of the change to irrigate to native trees rather than pasture, working party members continue to question the value of retaining the Pompeys Pillar option as it appears to offer no actual or perceived benefits over the Goughs Bay option. They also question the viability of establishing a new native forest, via planting, on such an exposed headland.

Potential benefits include:

- All Akaroa's treated wastewater would be beneficially reused to create a new area of native bush
- Ecological benefits from new native bush - increased biodiversity, native bush, birds, ecological corridors, carbon sequestration
- Highly treated wastewater available for other landowners along the pipeline route for farm irrigation and stock water
- Distance of storage pond and irrigation sites from the nearest residences reduces the risk of possible odour, insects and noise
- No requirement for additional storage at Pond Site 10 or releasing of treated wastewater into the Akaroa coastal environment
- Enhance future firefighting potential for the catchment

Concerns include:

- Most expensive option, with the highest capital and operating costs
- Concern that trees may not survive in harsh climatic conditions typical of this environment.
- Pipeline along remote rural roads may be more vulnerable to damage
- Large areas of planted native trees in this position violates Wildside landscapes
- Landowner not willing to sell their land or use treated wastewater on it

- Risk and cost of piping water over the hill on secondary roads
- Local owners who have farmed this property for generations
- Loss of high-value farm land: this farm does not have the potential to use marginal land for reforestation
- Cultural significance of the site

The site has been in the family ownership for seven generations. It is more distant than the Goughs Bay option and would require the ruination of a long-term successful farming operation for it to proceed. The Pompeys Pillar site could only be secured using compulsory acquisition.

Koukourarata has no opinion related to the Pompeys Pillar option. However the Runaka acknowledges that should the Council decide to utilise this option they will reengage in dialogue as responsible Treaty partners, before such an option is confirmed.

The working party agrees that there is no benefit in continuing to include the Pompeys Pillar option for consideration and recommends to the Council that it is withdrawn as an option for consideration.

The working party agrees that if the Council chooses the Pompeys Pillar option, the following conditions would need to be met:

- Provision of fire-fighting ponds near the Cabstand to be mandatory
- Wildside principles to be incorporated in the planting arrangement.

5.9 Decision Framework Based on the Four Well-beings

The consultation document says that in making the final decision 'all options will be assessed on the four well-beings in the Local Government Act - social, cultural, environmental and economic'.

When the Working Party sought to use Council's criteria for assessing the four well-beings it was advised that there are no set criteria for assessing these. While the Working Party, in preparing advice for its joint statement, has loosely used the four well-beings as a guide, it recommends that a more robust well-beings assessment is used by the Council in making its decision.

Further role for the Working Party?

Once the Council has chosen which option to proceed with, working party members relevant to the option chosen would like to participate in the next stages of the project.

6 Objective 3 – Joint Statements of Technical Experts

Consider the joint statement(s) of the independent technical experts on the feasibility and effects of irrigation of treated wastewater to land and to assess what, if any, further technical investigation or other information may be useful for consideration of options, given the time constraints imposed by the Council's need to obtain consent for a reuse or disposal option prior to the expiry of consents for the current plant and disposal method.

No further joint statements by technical experts have been prepared since the previous working party's joint statement. As stated in previous joint statement, the Working Party agreed that the Independent Technical Experts had added considerable value to discussion and that the helpful way in which the Technical Experts engaged with the Working Party was significant and both respected and appreciated.

7 Objective 4 – Identify Other Options

To identify for the Council's consideration any other options that may meet the Council's project objective – to find a solution for the sustainable reuse or disposal of all of Akaroa's treated wastewater which is consistent with the Council's duties under the Local Government Act and is sustainable management under the Resource Management Act - within the feasibility constraints being established by the technical experts. The consented Treatment Plant must be able to be configured to meet all aspects of the final wastewater reuse/disposal option.

Whilst the working party accept that the Council has been in receipt of independent technical advice, some working party members remain unconvinced that all viable alternatives for land-based wastewater disposal may have been adequately considered or investigated, particularly in respect of wastewater treatment standards and irrigating steeper slopes at a lower application rate.

Wastewater Treatment Standards

Generally, the higher the standard of treatment and the less contaminated the water is, the more acceptable it will be to the community for re-use, even to the extent of harbour discharge, purple-pipes or supplementary drinking water. This is simply because the degree of treatment determines the point at which wastewater becomes an asset rather than an issue. Suggestions to increase treatment levels (e.g. reverse osmosis) were investigated by the Council but were not developed further due to potential cost and technical issues.

Irrigation Across Steeper Slopes

The potential to discharge treated wastewater at much lower rates, across steeper slopes over larger areas, particularly in the outer bays, could have seen potential alternative discharge areas higher up the valleys in areas of existing bush and trees, rather on the lower, flatter more populated areas. Further investigation into this was prevented by adherence to technical advice to the Council that considered it unacceptably risky.

7.1 Town Initiative and Misty Peaks

The working party considered a further option presented by the Robinsons Bay members to create a distributed system in Akaroa with much smaller ponds and reuse of the water in the town. The Technical Experts Group assessed the land suitability of the areas suggested and reported that the sites investigated presented a greater risk than the short-listed options.

Some members also suggested that irrigation be directed to steeper but much larger land areas and irrigated at a lower rate such as at Misty Peaks or the Hamilton Farm where there is a willing seller. A further investigation of the Misty Peaks area was conducted. Both Beca and the Technical Experts Group concluded that irrigation of trees at slopes greater than 19 degrees would increase the risk of instability, and recommended against this option.

7.2 Deep Bore Injection

Deep bore injection, a means of disposal beneath the ground at a depth well beyond any subterranean aquifer, was tested with two trial deep bores near the top of Old French Road. It was discounted as an option because the investigations found that the permeability of the rock at the investigated sites was much lower than expected and much lower than required for this option to be feasible.

7.3 Managed Aquifer Recharge

Managed aquifer recharge is a system successfully used elsewhere in the world in locations where fresh water supplies are limited and demand is high. It uses depleted rock and other aquifers as a natural reservoir for injected wastewater treated to standards equivalent to the host groundwater. This reinstates subterranean water pressure, particularly useful in preventing seawater entering depleted aquifers in coastal townships, but also in supplying re-used for potable water. The working party suggested that the Council should investigate managed aquifer recharge.

The Council initially accepted this recommendation and began to investigate its feasibility. However, the Council's Head of Three Waters then advised the working party that managed aquifer recharge could not be progressed as an option because of the risk of contamination of drinking water in Akaroa. The Council further advised that the ground conditions were unlikely to be suitable. For these reasons, managed aquifer recharge has not been presented as an option for consultation by the Council.

7.4 Native Forest Regeneration

Both of the Outer Bays options involve planting and irrigating high-value farmland, rather than trying to enhance existing regenerating areas on marginal land. As a result, instead of enhancing the Wildside concept of natural regeneration, they are in conflict with it.

7.5 Hinewai Reserve

A member of the working party requested that irrigation of Hinewai Reserve be considered as an option by the Council. This had been initially discounted in the site screening process, but the Council agreed to reconsider it and further investigations and geotechnical assessment were carried out. This found that there was insufficient land for it to be a standalone option, and adding it to another option would

increase the cost without any benefit. All but one member of the working party agreed with this conclusion.

7.6 Fire Fighting Ponds

The ability to pump wastewater up to the Summit Road offers the potential for permanent fire pond locations for use by helicopters fighting fires above Akaroa and the outer bays. The working party encourages the Council to include fire-fighting ponds if one of the outer bays schemes is chosen.

7.7 Further Possibilities

Further possibilities include extracting maximum ecological benefit from the wastewater through native reforestation by:

- Using low-value marginal land rather than high-value farm land
- Favouring sites that already have native regeneration underway or likely to happen naturally if stock is removed and watering applied, rather than planting new forests on bare land
- Favouring sites that adjoin and extend existing native forests
- Working with Banks Peninsula conservation groups, including those with an interest in the Wildside, to produce the best ecological outcomes
- Use of alternative energy sources to reduce operational costs.

There are also educational opportunities for the community, involving wiser use of water on their own properties (e.g. water storage tanks for garden watering and composting toilets).

7.8 Duvauchelle Golf Club

An additional option of irrigating on the Council owned land currently used by the Akaroa golf club was suggested by a member of the working party. The Council advised that there is insufficient land at the golf club to take all of the wastewater from Akaroa and Duvauchelle.

8 Objective 5 – Comment on consultation document

Provide suggested input and comment on the content of the draft consultation document.

The working party provided extensive commentary on the consultation document and much of this was incorporated by the Council into the consultation document. However, some members of the working party still have concerns. These (based on the draft provided on June 8, 2020) are:

- The concerns of the communities are not described
- More effort has been put into investigating the Inner Bays option than the outer bays options
- Artist's impressions and maps need improving to be more realistic and representative to enable the public to discern between options
- Option 1 does not include proximity to communities and houses and downstream infrastructure in the lists of disadvantages, does not comment on the heritage and archaeological sites at Robinsons Bay

- Option descriptions and lists of advantages and disadvantages focus on the potential benefits while minimizing and omitting risks
- The cost estimates should be for the reuse/disposal system only, and not include the costs common to all four options (i.e. the wastewater treatment plant and network upgrades)
- Pond Site 10 is identified and presented as a separate site, with all its potential uses and effects.

9 Objective 6 – Keeping the Community Informed

To keep the community informed by releasing the notes from Working Party meetings and through regular public communications.

Working party members have kept their respective communities informed about the work of the working party within the limits permitted by the confidentiality requirements. Notes of meetings have been published on the Council website once approved by the working party. In addition, the Chairperson has written letters to the editor of the Akaroa Mail informing the community of progress.

10 Concluding Commentary

The working party has done the best it can to provide input to the Council's process of developing options for reuse/disposal of Akaroa's wastewater, but the goal of arriving at a solution that is seen as acceptable and beneficial to all has been elusive, with substantial concerns remaining over the options being presented. We conclude with some consideration of the main issues.

10.1 Non-Potable Treated Wastewater Re-use and Community Benefit

The working party sought a balance between the technical feasibility, environmental, community and cultural interests for each of the options. Ultimately the working party wants the solution to deliver tangible community, environmental and biodiversity benefits through sustainable wastewater reuse practices and aspires for it to provide an exemplar for other wastewater solutions in the future.

The working party had great enthusiasm from the start of this process, to use the disposal of treated wastewater as a resource for community benefit. This generated inclusion of the word 're-use' in the title of the working party. Looking back with hindsight, it is clear that this has been much harder to achieve than first anticipated. Opportunities for re-use for non-potable water via a purple pipe is presently difficult due to the lack of standards that give a clear direction for certification of its use. All the working party can do at present is lay the foundations for its future adoption in anticipation that its potential will be realised in the near future.

There is potential for co-operative community involvement in providing and managing newly planted native forest and wetland areas, along with the use of alternative energy sources to reduce pumping costs.

10.2 Treated Wastewater Standard

The working party readily accepted the revised Council proposal to remove the by-pass option previously forming part of the wastewater treatment plant function. The by-pass was essentially an engineering design safety valve that allowed for part of the untreated flow into the treatment plant to achieve swifter passage by being treated to a lower standard, but UV treated (disinfected) before discharge to harbour or elsewhere in times of higher inflow that exceeded the ability of the WWTP to handle the inflow.

The consequence of this is that all wastewater will be treated to the same standard, but an untreated wastewater pond is now required on Pond Site 10 to allow for adequate buffering provision to the inflow into the treatment plant. This will place demand on the area of Pond Site 10 and introduces an element of risk that needs to be mitigated. Current proposals suggest that such a pond could be substantially undergrounded.

The working party was informed that the Council intends to treat the wastewater using ultrafiltration. This is apparently among the highest achieved by any other treatment plant in New Zealand (aside from nutrient removal); but is not the very highest standard currently possible. Furthermore, the proposed treatment level will still retain a significant quantity of nutrients (particularly nitrogen). Lessons have been learnt from older systems, such as at Rotorua, whose land disposal ultimately failed because of nutrient build up in the soil. The working party recognises that with increased treatment levels come increasing costs. There are also physical constraints to the size of the treatment plant now consented. The working party accepts the Council's assurances that the standard of treatment proposed, including for the wetland, will be safe for the purposes of land irrigation and storage in open ponds, but this will need to be confirmed through the design and consenting process.

Due to potential issues relating to accidental use of treated wastewater, the Council had proposed to UV treat (disinfect) all wastewater intended for re-use via purple pipes. As this part of the project is allowed for, but on hold, it seems unlikely that UV treatment would be provided at this stage. The working party encourages the Council to consider including UV to ensure the microbial safety of the treated wastewater and notes that the cost of this reassurance would be relatively marginal.

10.3 Site Selection

The identification of locations for land based wastewater disposal (by irrigation) has been extensively driven by criteria established by engineers on the basis of expert advice. There are extensive reports, which establish the various limiting parameters of disposal based on distance to treatment plant, slope, soil, and flow rates. These have established an apparently logical and plausible methodology for excluding substantial areas of land within the peninsula as unsuitable for disposal by irrigation. A further issue is the necessity to accommodate storage ponds, ideally at the disposal sites, to buffer the periods in winter when irrigation becomes problematic on saturated ground. The significant size of these ponds not only have visual and safety issues, but also engineering stability constraints of their own, which will need to be considered in the design and consenting processes. The working party has, for the most part, accepted this engineering-led approach and has duly considered the sites offered as potential locations.

With these search constraints considerably restricting the potential for additional sites around the inner bays, and with Council accepting the technical feasibility of pumping treated wastewater up to the Summit Road and beyond, increasing attention has been brought to the possibility of locating suitable alternative sites in the Outer Bays. This has encouraged the Working Party to seek Council consideration of other sites, which, for other reasons, seemed feasible as options by the working party. These included Misty Peaks and Hinewai Reserve. Aside from Goughs Bay, these sites were all considered problematic by the Council in respect of slope or land stability.

It has become very apparent during the course of the working party deliberations, that one of the basic issues with disposal to land is that few owners embrace the idea of treated wastewater on their land. The view that compulsory purchase could somehow be avoided, or that opportunity for leases might be available, now seems unlikely. Some farmers did consider its potential for pasture improvement, but then withdrew their support, in part because the risk associated with loss of farming income would fall to them and not to the Council, and because of local community concerns.

APPENDIX A - Bibliography of information provided to the Akaroa Treated Wastewater Reuse Options Working Party

Akaroa wastewater scheme webpage, including notes of Working Party meetings and some of the attached papers can be found at: https://ccc.govt.nz/services/wastewater/wastewater-projects/akaroa-wastewater-scheme/

Report on Thacker Property Inspection, letter report by CH2M Beca (7 February 2017)

Finding an acceptable solution Akaroa Wastewater disposal, Friends of Banks Peninsula on behalf of Robinsons Bay residents - presented by Suky Thompson and Brent Martin (8 February 2017)

Presentation on responses to community concerns, given by Bridget O'Brien (19 February 2017)
Interim report on the lysimeter and wastewater irrigation of native tree species trials from Brent Robinson (Lincoln University)

Copy of the presentation on the interim results of the lysimeter and wastewater irrigation of native tree species trials, given by Brent Robinson (Lincoln University) to the community consultation meeting on 9 November 2016

Report on the work Council has done to reduce inflow and infiltration into Akaroa's wastewater network, by Mike Bourke

Akaroa Wastewater Investigation of Alternative Sites for Land Irrigation, draft report by CH2M Beca (17 February 2017) – confidential

Legal advice provided to Andrew Turner by Brent Pizzey (26 February 2017) - confidential

Alternative Solutions, Friends of Banks Peninsula on behalf of Robinsons Bay residents - presented by Suky Thompson and Brent Martin

Presentation on alternative solution, given by Kit Grigg

Presentation on CH2M Beca report, Akaroa Wastewater Investigation of Alternative Sites for Land Irrigation, given by Greg Offer (26 February 2017)

Assessment of Robinson's Bay Sawmill Road option, Robinsons Bay community perspective, tabled by Robinsons Bay representatives (26 February 2017)

Review of engineering report: Akaroa Wastewater Investigation of Alternative Sites for Land Irrigation (CH2M Beca 17th February 2017), tabled by Brent Martin and Suky Thompson, Robinsons Bay representatives (26 February 2017)

Purpose and issues for conferencing of experts on Akaroa wastewater – irrigation of treated wastewater to land (6 December 2016)

Suggested content for the GENERAL sections of the Akaroa wastewater consultation document, memo to Bridget O'Brien dated 6 March, 2017, from Robinsons Bay representatives (tabled 8 March 2017)

Joint statement of Akaroa wastewater technical experts #1 (30 November 2016)

Joint statement of Akaroa wastewater technical experts #2 (16 February 2017)

Presentation on Akaroa wastewater project land disposal – Option 4 – preliminary geotechnical assessment (1 March 2017)

2016 Akaroa wastewater consultation booklet
Figure showing removal of different contaminants by different wastewater treatment processes

Akaroa Wastewater Disposal Alternatives - Thacker Site Robinsons Bay - Geotechnical Report (CH2M Beca, February 2017)

Infiltration Testing Results for Akaroa Treated Wastewater Disposal via Irrigation - Thacker Land (PDP, February 2017)

Akaroa wastewater consultation booklet - suggested content from Robinsons Bay working party members (6 March 2017)

Critique of Akaroa wastewater consultation draft document as supplied on 8 March, 2017, memo to Penny Carnaby from Robinsons Bay representatives (tabled 15 March, 2017)

2017 Akaroa wastewater consultation booklet draft content (6 and 17 March 2017)

Artist's impressions of storage ponds at Pond Sites 5 and 10

Presentation on Akaroa wastewater project land disposal land disposal alternatives and visual assessment, given by Greg Offer (8 March 2017)

Stock withholding periods following treated municipal wastewater application (Lowe Environmental Impact, 8 March 2017)

Presentation on Misty Peaks option, given by Andrew Bough and Richard Young (15 March 2017)

Akaroa non-potable re-use graphic (17 March 2017)

Planning summary (17 March 2017)

Pompeys Pillar scheme concept designs (17 March 2017)

Comments on Akaroa Treated Wastewater Beneficial Reuse and Disposal Options Consultation 3 Beneficial spo, memo to Penny Carnaby from Robinsons Bay representatives (tabled 19 March, 2017)

Suggested Option 5 for Consultation document: Beneficial re-use in Akaroa, memo to Penny Carnaby from Robinsons Bay representatives, (tabled 19 March 2017)

Akaroa Treated Wastewater Reuse Options Working Party Joint Statement (8 April 2017)
https://ccc.govt.nz/assets/Documents/Services/Wastewater/Akaroa-Treated-Wastewater-Reuse-Options-Working-Party-Joint-Statement-8-April-2017.pdf

Papers for working party meeting 20 November 2017
Akaroa wastewater project land disposal alternatives – update on wastewater flows and land disposal options - presentation (CCC, 20 November 2017)

Papers for working party meeting 22 February 2018
Akaroa wastewater project land disposal alternatives – update on wastewater flows and land disposal options - presentation (CCC, 22 February 2018)

Papers for working party meeting 16 March 2018
Akaroa wastewater project land disposal alternatives – update on option locations and costs - presentation (CCC, 16 March 2018)
Letter to the editor of the Akaroa Mail from the Chairperson
Information on Ocean Farm wastewater irrigation scheme in Ashburton (Keith Townshend, 16 March 2018)

Papers for working party meeting 27 April 2018
Map of the local bores and springs in Robinsons Bay (Suky Thompson, 27 April 2018)
Akaroa wastewater project land disposal alternatives – updated on deep bore injection option locations and costs - presentation (CCC, 27 April 2018)
Letter to the waste management committee (Ivan Craw, 11 April 2018)

Papers for working party meeting 31 October 2018
Akaroa treated wastewater working party update – presentation (CCC, 31 October 2018)

Papers for working party meeting 12 December 2018
Presentation by Kathleen Reid for Akaroa wastewater working party meeting (12 December 2018)
Presentation by John Baker for Akaroa wastewater working party meeting (12 December 2018)
Soap box suggestion wastewater working party by Suky Thompson and Brent Martin (12 December 2018)
Presentation by Bridget O'Brien for Akaroa wastewater working party meeting (12 December 2018)
Investigative drilling process - a brief summary (CCC, 12 December 2018)
Akaroa WWTP deep bore – preliminary program review (Jacobs, 19 September 2018)

Factual report – site investigation to assess feasibility of deep bore injection - draft report (Beca, 2 November 2018)
Akaroa wastewater scheme trial borehole – request for quote (CCC)
Cost estimates for scheme options (CCC, 4 December 2018)

Papers for working party meeting 8 March 2019
Misty Peaks large area irrigation for Akaroa wastewater scheme (Beca, 28 February 2019)
Akaroa wastewater scheme inner harbour reuse option presentation (CCC, 8 March 2019)
Wetland reserve concept design (Ōnuku Rūnanga, 8 March 2019)

Papers for working party meeting 21 March 2019
Map of water sources for Akaroa (CCC, 20 March 2019)
Information about and images of similar wetlands (Debbie Tikao, 20 March 2019)
Robinsons Bay wetland concept plan (Beca, 21 March 2019)
Robinsons Bay additional slope and discharge analysis map (Beca, 19 March 2019)
Minute of the Environment Court (14 March 2019)
Note to the chair - inner harbour reuse scheme (Ivor McChesney, 20 March 2019)

Papers for working party meeting 11 April 2019
Note to the chair - support for MAR investigation proposal (Ivor McChesney, 24 March 2019)
Akaroa wastewater utilisation through managed aquifer recharge – draft letter (WGA, 3 April 2019)
Discussion on the viability of managed aquifer recharge scheme for Akaroa (CCC, 4 April 2019)
Development of conceptual design for wastewater irrigation in Robinsons Bay (Beca, 4 April 2019)
Assessment of the viability of a non-potable reuse and harbour outfall scheme (CCC, 4 April 2019)
Next steps for Akaroa wastewater consent (CCC, 4 April 2019)
Cost estimate summary for the different schemes (CCC, 4 April 2019)
Outline of PDP Akaroa wastewater irrigation model (PDP, 5 April 2019)
Akaroa wastewater utilisation through managed aquifer recharge – final letter (WGA, 5 April 2019)
Map of Goughs Bay irrigable area (Beca, 26 July 2018)
An integrated approach for soil water balance modelling of land treatment systems (J Scouller, Land Treatment Collective Conference, 4 April 2019)
Akaroa treated wastewater use for managed aquifer recharge – presentation (WGA, 11 April 2019)
Drip irrigation to trees - soil moisture water balance model used to design the irrigation scheme – presentation (PDP, 11 April 2019)
Questions with regard to options presented (Brent Martin and Suky Thompson, 11 April 2019)
Cultural impact assessment: wastewater irrigation Pompeys Pillar (Mahaanui Kuataiao Ltd, 27 June 2017) (confidential)
Pompeys Pillar Addendum (Mahaanui Kuataiao Ltd, 2018) (confidential)

Papers for working party meeting 29 April 2019
Working party feedback on managed aquifer recharge (April 2019)
Akaroa Wastewater Options Working Party Meeting 8th March 2019 commentary on Inner Harbour presentation (Ivor McChesney, 20 March 2019)
Response to Ivor McChesney's memo dated 20 March 2019 (CCC, 19 April 2019)

Questions with regard to options presented (Brent Martin and Suky Thompson, 11 April 2019)
Response to memo by Brent Martin and Suky Thompson dated 11 April 2019 (CCC, 19 April 2019)

Papers for working party meeting 30 August 2019
Preliminary community feedback on the options (May 2019)
Update to working party, including dam burst analysis for Robinsons Bay and Pond Site 10 contours (CCC, 16 August 2019)
Akaroa wastewater – effects of managed aquifer recharge on Akaroa's drinking water supply
Irrigation model results for land disposal of treated wastewater at Goughs Bay (PDP, 26 June 2019)

Papers for working party meeting 30 October 2019
Impacts of nitrogen application to pasture and native plantings on Banks Peninsula (A Meister, L Furon, H Bowmand and B Robinson, October 2019)
Email exchange between Harry Stronach and Bridget O'Brien on wastewater treatment standard (3 and 4 September 2019)
Decision on the consents for the wastewater treatment plant, terminal pump station in the boat ramp car park and pipe upgrades
Working Party terms of reference (19 February 2017)
Presentation on storage design and dam break analysis (Beca, 30 October 2019)
Presentation on irrigation areas, storage pond volumes and overflow frequency (CCC, 30 October 2019)
Review of Pavitt Cottage consenting requirements (Beca 18 October 2019)
Review of climate data and irrigation parameters at Goughs Bay (PDP, 18 October 2019)
Native plant species suitable for irrigation (Hugh Wilson, 26 September 2019)
Akaroa wastewater scheme - response to working party on irrigation application rates (Beca, 23 October 2019)
Dam Break Analysis (Beca, 23 October 2019)
Note to the chair - comments on the most recent alternative options following the meeting of the working party on 30 August (Ivor McChesney, 23 October 2019)

Papers for working party meeting 28 November 2019
Letter from Marie Haley to Penny Carnaby summarising concerns of Goughs Bay residents (1 November 2019)
Wastewater Reuse in Agriculture: A Review About Its Limitations and Benefits (MF Jaramillo and I Restrepo, Sustainability 2017, 9, 1734)
Email response from Bridget O'Brien to Marie Haley (19 November 2019)
Draft consultation document (CCC, 21 November 2020)
Akaroa Wastewater Updated Investigation into Alternative Land Disposal Options – draft report (Beca, November 2019)

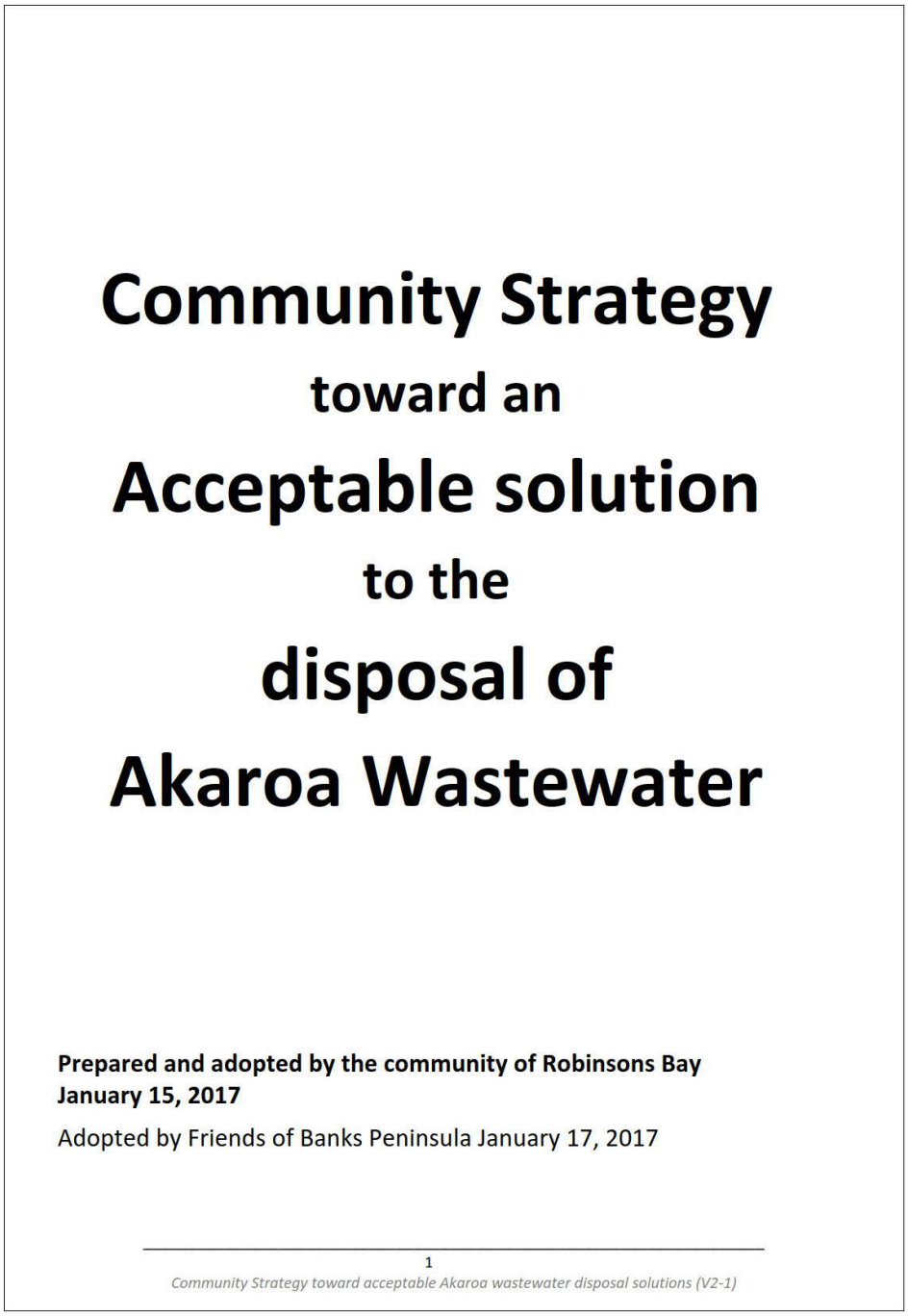
Papers for working party meeting 12 December 2019
Response to questions from Brent Martin and Suky Thompson (CCC, 5 December 2020)
Link to the Wildside website for all the Wildside documents and the Wildside story:
https://theseventhgeneration.org/wildside/
Draft consultation document (CCC, 5 December 2020)

Papers for working party meeting 23 January 2020
Email from Keith Townshend to CCC staff advising that he has withdrawn his support for wastewater irrigation on his farm at Goughs Bay (15 January 2020)
Draft consultation document (CCC, 16 January 2020)
Note to the chair - site investigation and the Eastern Bays (Ivor McChesney, 13 January 2020)

Papers for working party meeting 23 March 2020
Irrigation model results for land disposal of treated wastewater – Inglewood scenario (PDP, 20 January 2020)
Irrigation model results for land disposal of treated wastewater to trees at Goughs Bay and Pompeys Pillar (PDP, 10 February 2020)
Map of possible irrigation area and storage pond site near Hinewai (CCC, March 2020)
Updated review of Hinewai land irrigation (Beca, 13 March 2020)
Akaroa wastewater project land disposal alternatives – update presentation (CCC, 23 March 2020)
Maps of irrigation areas at Goughs Bay and Pompeys Pillar (Beca, 19 February 2020)

Papers for working party meeting 15 May 2020
Draft consultation document (CCC, 8 May 2020)
Stream ecology site visits (CCC, 8 May 2020)
Akaroa wastewater summary of disposal and reuse options draft report (Beca, 8 May 2020)
Note to the chair - site investigation and the Eastern Bays (Ivor McChesney, 14 May 2020)

APPENDIX 2
Community Strategy toward an Acceptable Solution to the Disposal of Akaroa Wastewater



Community Strategy
toward an
Acceptable solution
to the
disposal of
Akaroa Wastewater

Prepared and adopted by the community of Robinsons Bay
January 15, 2017

Adopted by Friends of Banks Peninsula January 17, 2017

1
Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

I. Executive Summary

This document presents a community proposal to assist Christchurch City Council in finding a solution to the disposal of Akaroa's wastewater that has broad acceptance. The community acknowledges that this is not an easy problem to solve and understands that land-based disposal must be thoroughly investigated by the Council with significant progress made before it reports back to the Environment Court on June 30th.

This proposal:

- establishes principles to govern selection of wastewater disposal sites;
- proposes working collaboratively with Council to find acceptable alternatives meeting these principles;
- delays consultation until Easter to give time to:
  - develop widely acceptable options to replace the current Takamatua and Robinsons Bay valley options,
  - present each option with sufficient detail on infrastructure and placement, risk analysis, and costings to enable robust and meaningful consultation.
  - facilitate consultation that constructively furthers the path toward a resource consent application;
- puts finding a culturally, socially and environmentally acceptable solution first and budget-setting second.

This strategy has been produced by the community of Robinsons Bay, in conjunction with some residents of Takamatua, after nearly 10 months of formal and informal consultation on the issue. It has been endorsed by a well-attended meeting of the Robinsons Bay community held on January 15th 2017, and is being released to the Council wastewater staff, copied to Cr Turner, to alert staff to the suggested way forward.

We are also sharing it with the Takamatua Ratepayers association and our Community Board. We support Ngāi Tahu cultural values and signal our intent to work with our rūnanga toward a solution we all consider acceptable and that benefits this area in the long term.

We anticipate incorporating feedback into our strategy and then presenting it to a full Council meeting as soon as possible.

II. Background

The Akaroa sewage treatment plant is currently situated south of Akaroa on the waterfront of the Takapuneke valley. Treated waste water is discharged to the harbour about 100m out from the plant. Takapuneke is an historic site of great significance to local tangata whenua, and hence the Council has determined to move the treatment plant before its current consent expires in 2020. It has purchased a new site at the top of Old Coach Road and obtained resource consent to build a new treatment plant there. However, its application to discharge the treated water from the new plant back to the harbour was declined by Ecan with a directive to investigate land based alternatives more thoroughly. Ngai Tahu opposed harbour discharge on cultural grounds. The Council has appealed this decision to the Environment Court and is now investigating alternatives. It must report back to the court with significant progress by July.

In April/May 2016 the Council ran an initial consultation exercise proposing several options including a land based disposal in the Takamatua headland and valley. The headland area was subsequently withdrawn on geotechnical grounds. In October Council staff contacted residents of Robinsons Bay indicating new options were soon to be put out for consultation. These included irrigation in Robinsons Bay with water to be absorbed by either a cut-and-carry pasture system or trees, irrigation on the Takamatua Valley floor with water to be absorbed by trees or a more expensive option to use a remote site at the Pompey's pillar headland above Otanerito. Little information has been provided about the location of key infrastructural facilities such as the large effluent ponds needed to store water prior to irrigation or the health, safety and environmental risks associated with land disposal. There has been no recognition of the adverse effects on the adjoining properties and residents or the impact on property values.

The residents of Robinsons Bay and Takamatua have vigorously objected to proposals to dispose of the wastewater in their valleys identifying risks around human and environmental health, flooding, reduced amenity of the valleys, a consequent reduction in the value of their properties and a host of other concerns. They are not part of the Akaroa sewage scheme, but instead already take responsibility for, and bear the cost of, installing and managing their own septic systems on their own properties and see no reason why they should bear the further costs and risks of absorbing Akaroa's wastewater. However, they recongnise that finding a land based solution is not an easy task and have signal to the Council a willingness to work constructively with other parties, including Ngāi Tahu and the Akaroa community, to find an acceptable solution to the problem of Akaroa's wastewater. To this end the residents have developed an understanding of land based disposal of wastewater, participated in meetings with the Council and more recently engaged expert advice with a view to progressing acceptable solutions.

A critical issue is that the Council staff have been constrained in their search for alternative solutions by the original budget with its straightforward harbour discharge. Finding an acceptable land based solution on the steep and slip prone terrain of Banks Peninsula without affecting resident populations is proving much more complex and the budget is likely to need increasing if an acceptable solution is to be found.

III. Path forward

In an attempt to assist the Council to move forward constructively this document sets out:

- principles residents consider land based wastewater disposal needs to meet to be acceptable;
- community partnership strategy to assist the Council to complete a thorough investigation of alternatives to harbour discharge with a view to finding and costing a solution acceptable to all parties within the timeframe dictated by the court

IV. Principles

We identify the following principles to underpin the search for an acceptable solution to the disposal of Akaroa waste water:

A. Wastewater treatment must be consistent and to the highest standard

- *Under the current proposals, sewage will bypass the treatment plant during times of heavy rain and only be subject to basic filtering and minimal UV treatment before passing out of the plant to the effluent storage ponds. If the ponds are full, then the sewage will not be sent to the treatment plant but instead be discharged raw to the Grehan Stream. Neither are acceptable. The storage facility at the plant needs to be sufficient to hold all foreseeable water arriving, even in storm conditions, so that it can be treated to a consistent standard. This means catering for all but the most extreme and unexpected weather events such as a 1 in 100 year event.*
- *The community appreciates that the treatment plant will not remove all viruses, hormones, pharmaceuticals or heavy metals, but stipulates that it must be treated to the highest standard possible and that any further treatment using natural processes to neutralise these (such as passing through soil) must not expose humans, livestock, other animals or the environment to increased health risks.*

B. Disposal must be in the right area, not one that externalises risks and costs onto adjoining residents, or destroys the amenity or health of the environment

- *Current proposals for land disposal would put the health, safety and environment of the receiving area at risk and lower the amenity and value of surrounding and nearby properties*
- *Property setbacks from infrastructure and irrigation must ensure that effects such as spray drift, infiltration run-off and shading are not imposed on neighbouring properties and residences*
- *Ideally remote areas should be prioritised for consideration*

C. Solution must be sustainable in the long term and robust in the event of natural disasters

- *If land disposal is used, it must not build up nutrients or pollutants over time that nullify the continued use of that land*
- *Water that is still contaminated must not make its way to waterways. If land disposal is the only option used there must be a mechanism to cope if storage ponds are full.*
- *Infrastructure must be robust enough to respond to storms, earthquakes, tsunamis and rising sea levels without creating floods, slips or environmental disasters*
- *A comprehensive risk monitoring and management program needs to be in place*

D. Solution must meet Ngai Tahu cultural values

- *Alternative solutions must meet Ngai Tahu cultural values and Ngai Tahu representatives must be engaged in the process*
- *Recognise that many other cultures also find wastewater offensive*

E. Akaroa must be actively involved in the solution

- *Actions taken at the top of the pipe can have large downstream effects, both positive and negative.*
- *Solution must include plans to minimise the volume of water and maximise the quality of water arriving at the treatment plant*
- *Reducing inflow reduces the size of the outflow disposal problem*

- *The current outflow volume dictates the need for effluent storage ponds occupying up to 3 hectares. Finding a suitable and safe location for these huge ponds on the steep Peninsula topography is one of the most challenging aspects of a land based solution. A reduction in volume, particularly over winter, would ease this.*
- *A large percentage of the water arriving at the treatment plant is stormwater that has infiltrated the sewer pipes.*
- *Currently there are no incentives for existing Akaroa properties or developers of new property to install water recycling systems on site*
- *There is little to prevent harmful material entering the system or public education to minimise this risk.*

F. Managed process and infrastructure

- *The proposed infrastructure and its ongoing management and whole of life cost of management must be identified and in place at the outset, and subject to public and expert scrutiny to ensure that it is fit for purpose, sustainable and includes rapid and effective response to community concerns.*

G. Ideally find a solution that makes beneficial use of the water

- *Search for beneficial solutions needs to be realistic about the quality and consistency of the effluent. Under the treatment regime currently proposed the uses of treated water are limited to those which do not give rise to inhalation or ingestion by humans. It is unclear what applies when the effluent is contaminated by wet weather bypass flows*
- *Solution should not facilitate the private financial benefit of some parties while externalising costs and risks onto others*
- *Solution would include a start on re-use in suitable applications in Akaroa and a commitment to install a lavender pipe system to return water to Akaroa.*

H. Obviate the need for compulsory purchase

- *An acceptable solution that does not harm the receiving community, and for which adequate compensation is paid to landowners and any other affected parties should obviate the need for compulsory purchase*

I. Options put out for public consultation must be sufficiently detailed for the public to make an informed choice

- *Clear information must be given about the quality of the water and how it can be used.*
- *Where water is to be used for any kind of farming, the with-holding periods need to be identified.*
- *Options must indicate the locations of key infrastructure such as effluent storage ponds, pumping stations and pipes and their proximity to neighbouring properties and residences.*
- *Options must include a risk analysis across the full set of risks identified by the community*
- *There needs to be clear information on costings, including how they have been arrived at, and providing the overall land purchase budget for each option.*

V. Community Partnership Strategy

Under the following strategy the community will work collaboratively and constructively with the Council to ensure that alternatives to harbour discharge are thoroughly investigated and reported back to the Environment Court by July. The aim is to find a solution meeting the principles outlined above and acceptable to all parties.

A. Community to develop and share Risk Analysis Framework

Regardless of how sophisticated a treatment system is put in place, there is an undeniable risk attached to being on the receiving end or downstream, downhill or downwind of a wastewater disposal system. Problems may occur due to unexpected contaminants entering the system, failures of the treatment plant, failure of the soil to absorb the water, power outages, and natural events such as earthquakes. When that disposal system is on a large scale, coping with the water from a much larger community including a transient population of visitors and tourists, the risks are greater. To date the Council has singularly failed to acknowledge these risks, and hence has come up with options that include the disposal of wastewater into populated areas.

We consider that any land based wastewater disposal system should not compromise the health, amenity or property values of any residents in the receiving environment and should be environmentally sustainable long term and robust in the face of natural events such as storms, earthquakes or tsunamis.

Based on our local knowledge, the understanding we have gained of reticulated wastewater land disposal and an analysis of the Council's current proposals, the communities of Robinsons Bay and Takamatua have identified a series of risks that need to be further investigated and taken into account in the design of any acceptable solution.

The community is now funding high-level, professional analysis of these risks from three different perspectives.

- Wastewater engineer Andrew Dakers has been engaged to review the current models from a geotechnical and soil moisture perspective and to advise the community on the science supporting land based disposal. Work is already under way with the Council technical experts, including a review of the current parameters around slope stability and water application rates to see whether steeper land can be included.
- Valuer Phil Wilkinson has been approached to produce a desktop exercise of the effect on property values expected in Takamatua and Robinsons Bay based on the Council's latest set of proposals. The purpose is to assess the economic cost externalised onto residents so that this can be included in cost comparisons of options.
- Environmental and social risk analysis is also being commissioned to assess the risks identified by the community to health of nearby residents, their properties and the environment in general. This will include system responses in the event of a natural disaster such as storms, earthquakes and tsunami.

The community undertakes to share this analysis with the Council to provide a risk analysis framework against which potential solutions can be meaningfully measured and assessed.

B. Council to withdraw current options and develop options acceptable to the community

The Community will expect the Council to withdraw its currently unacceptable proposals for intensive disposal into Robinsons Bay, Takamatua or any other populated areas, delay the consultation until Easter and use the intervening time to develop and cost alternative options that meet the principles outlined in this document and are fully analysed against the risk analysis framework produced by the community.

The community undertakes to work with the Council staff in a timely manner to identify such alternatives.

Based on work to date, the community suggests that potential options may include:

- Looking for suitable land for a disposal area where there are not affected residents or neighbours. The Pompey's Pillar land has already been identified by Council staff, there is a potentially willing landowner, and Council needs to work with the landowner to thoroughly investigate options for agricultural or other use of the land. Depending on the technical group work, if steeper land is a possibility for irrigation at a lower level of application then more suitable remote land options may become available;
- Dispersal over a wider area using a network of much smaller ponds screened by native planting in biodiversity reserves to benefit the environment and improve slope stability;
- A remotely sited artificial wetland area with subsequent disposal of treated water to harbour;
- An ocean outfall with overland piping to ocean;
- Staging of any or all of the above.

We also recommend that the Council appoint an interdisciplinary team as finding a solution will require a broader knowledge base than purely engineering.

C. Proposed timeframe and steps

The timeframe below outlines a series of steps to achieve this:

- **January/February** – community develops its risk analysis framework and works with its experts to identify any potentially acceptable solutions. Community presents its case to Council through the Long Term Plan submission process to set an expectation for budget increase over harbour discharge on the basis that the acceptable solution should determine the budget, not the other way around.
- **March** – Council prepare a consultation document with acceptable solutions meeting the principles, and assesses each against the risk analysis framework
- **April** – consultation document released including the location of infrastructure and risk analysis for each option. The public response period includes Easter and the school holidays
- **May** – Council staff analyse the consultation results and prepare final costings for selected solutions
- **June** – Council considers the options and allocates any further budget necessary and produces its report to the Environment Court

Schedule 1 Draft Risk Analysis Framework

The community has identified that land based disposal of waste water will create risks around:

- Health, amenity and property
- Long term sustainability
- Robustness in the event of natural disasters

The following pages present a table for each of these risk areas, listing out the acceptability requirements we have identified in our position as potentially affected parties, our reasoning, the progress made to date on researching these risks, and the further work needed to properly assess them. We note that our current view of the acceptability requirements may later be refined in light of a more thorough risk analysis.

These tables will form the basis of the work we commission to produce a risk analysis framework.

Table 1 – Risks around the Health, Amenity and Property in populated areas

Requirement	Reason	Progress to date	Further work needed to assess
No health risk to population in receiving area	A land based solution should not increase the health risk to anyone	No health risk assessment has been done by Council. Corners appear to be being cut around setbacks which are less than land based disposal elsewhere and have been arbitrarily reduced over time.	Health and Safety assessment detailing what the water contains, what it can be used for and identifying setbacks and other safeguards used elsewhere in New Zealand.
No spray irrigation/cut and carry system in valleys populated areas	2016 consultation rejected spray irrigation and cut and carry for valley sites. Council has indicated (Akaroa Wastewater Concept Design Report for Alternatives to Harbour Outfall, Section 4.2.3 12 May 2016) that $2million on the treatment plant capital costs and reductions in running costs would be achieved with a lower quality of treatment than other disposal methods by	Amenity affects identified include the large storage pond required for this method, potential land contouring and deep ripping, industrialisation of rural areas with noise and traffic movements) Health risks from spray drift or contact with contaminated poorly treated water and exacerbated by high winds in valley.	As above Wind monitoring in Robinsons Bay and Takamatua

Requirement	Reason	Progress to date	Further work needed to assess
	relying on cut grass to absorb the nutrients and bacteria . 15% of water to be lost to spray drift and volatisation		
No large ponds to be sited near houses or visible from houses or public viewing areas	Visual impact on landscape Negative impact on local residents and amenity	Established that cut-and-carry pasture requires much larger ponds than tree irrigation.	Siting of ponds needs to be included in any meaningful consultation
No Bypass flows	No expectation of seasonal bypass flows built into a land based disposal as it undermines any health or environmental assessment and increases health risks.		Need to push back on Council to provide a bigger balance tank prior to treatment plant. Andrew Dakers to pursue with technical group. Needs to be modelled to determine tank size and placement.
No contamination of water supplies	Rural residents use springs and bores for their water supplies	No recognition or analysis done	Include in Health and Safety risk assessment
No shading of properties	Residents should not suffer having their properties shaded by trees	No acknowledgement of shading and setbacks from properties and dwellings patently inadequate to protect sun to properties as trees grow. Minimum setback for trees from any property boundary is that the property will not suffer additional shading at any time of year.	
Compensation paid for any externalised costs	Affected parties should not absorb externalised costs for a problem not of their making. We anticipate huge drops in	Valuer has been approached to do a desk top assessment of the depreciation in property values from affected valleys.	Initial feedback from valuer expected in mid Jan and we will then need to develop a brief and let a contract. Apply to FOBP

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Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

Requirement	Reason	Progress to date	Further work needed to assess
	the value of properties in affected valleys.		for funding, determine whether exercise covers both Robinsons Bay and Takamatua
Liability.	If something goes wrong the Council must be responsible, not adjoining property owners and any increased risk to health or property must be covered by the Council's insurance to the satisfaction of potentially affected parties	Issue has not been acknowledged	A statement or contract with potentially affected parties stating the Council would wear the risk
Insurability	Residents and landowners must be able to obtain insurance for their properties	Topic has not been addressed	Would insurance companies have any comment on the risk of flooding, ponds etc? How would it affect insurance premiums

Table 2 – Risks around Long term sustainability

Requirement	Reason	Where are we at now with this	Further work needed to assess
Any solution implemented lasts a long time	We don't want to repeat this exercise Its difficult, costly and a negative exercise to conduct and even more costly if it goes wrong and has to be done again.	Rushed!	Determine what needs to be done to satisfy the Court that significant progress has been made and present it with options
No degradation of waterways in receiving environment	Ensure that land based disposal is actually working. Risks to health and environment from contact with water	Andrew Dakers doing some work on run-off	Environmental risk assessment needed
No residue build up in receiving environment	Long term pollution of environment needs to be considered	No information on residues of pharmaceuticals, microbeads, hormones.	Environmental risk assessment needed
System	Land disposal system will need careful	No information provided about how	All solutions proposed in consultation need

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Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

Requirement	Reason	Where are we at now with this	Further work needed to assess
management detailed	monitoring and management to ensure water applied only when soil moisture levels permit and all plant is operating correctly.	various solutions would be managed. Concerns about poor CCC management of area currently. (ie all drains to sea currently blocked in Robinsons Bay, French Farm toilets debacle – residents ignored, poor state of maintenance of many Council assets in the area, constant staff changes).	to include the detail of how they will be managed.
Options for phased introduction explored	All or nothing cut over is a high risk. Any land based disposal should be gradually introduced so that the effects in practice on Peninsula soils is measured and assessed.	No information on timeframes and phasing	Any land based disposal option should explain how the receiving environment will be prepared (ie length of time for trees to establish, what is planned in terms of shelter belts) and what sort of back up or phasing is available if the irrigation is not working or causing problems.
Commitment to stormwater infiltration reduction	Biggest gains on capacity by controlling infiltration – particularly winter which causes the storage issues	Research shows infiltration could be as much as 80% of the water flowing through the system. There is currently much less difference between winter and summer flows than the population alterations in Akaroa alone would cause.	
Commitment to directly incentivise Akaroa households and businesses to reduce and re-use	Capacity control and addressing Akaroa water shortage issues	Nothing being done	

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Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

Table 3 – Risk around the system robustness in the face of natural events

Requirement	Reason	Where are we at now with this	Further work needed to assess
No increase in land slip risk in receiving environment	Slips devalue land, pollute waterways, can cause flooding and compromise the land based disposal receiving environment.	Slope and application rates being reconsidered by technical group	Environmental risk assessment needed
No increase in flooding risk in receiving environment	Particularly important where residences are downstream, and for storage ponds stability and containment of water.	Flooding risk has not been addressed	Environmental risk assessment needed
Plant will withstand tsunami	Tsunami could destroy infrastructure including ponds leading to contamination of waterways and surrounding area through pond destruction and large scale system failure	Tsunami risk has not been addressed	Environmental risk assessment needed
Plant will withstand earthquake	Earthquakes could lead to pond failure, pipe breakages	Earthquake risk has not been addressed	Environmental risk assessment needed
Plant will withstand sea level rise of at least 1 metre	Council documents anticipate 1m sea level rise	Sea level rise has not been addressed	Environmental risk assessment needed
Plant will withstand storms with high winds, rain and tidal surges	Climate change predictions are for increased storms	Storms effects and their predicted increase in frequency and strength has not been addressed	Environmental risk assessment needed
System will cope with power outages of	Land based systems will require pumping stations. Major power lines are above ground.	Power outages have not been addressed Impact of other infrastructural issues has	Environmental risk assessment needed

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Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

Requirement	Reason	Where are we at now with this	Further work needed to assess
indeterminate length	Storms, earthquakes and tsunamis are all likely to cause power outages and may take several weeks to repair. They may impact transport routes	not been addressed	

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Community Strategy toward acceptable Akaroa wastewater disposal solutions (V2-1)

APPENDIX 3

Principles Agreed by the Friends of Banks Peninsula, Robinsons Bay Community and Takamātua Ratepayers Association

At its meeting on 8 February 2017, the Working Party noted the following principles agreed by the Friends of Banks Peninsula, Robinsons Bay community and Takamātua Ratepayers Association:

Principles – the Community Strategy sets out a number of principles agreed by the Friends of Banks Peninsula and the Robinsons Bay community, which are seeking:

Principle A Wastewater treatment must be consistent and to the highest standard.

Principle B Disposal must be in the right area, not one that externalises risks and costs onto adjoining residents, or destroys the amenity or health of the environment.

Principle C Solution must be sustainable in the long term and robust in the event of natural disasters.

Principle D Solution must meet Ngai Tahu cultural values.

Principle E Akaroa must be actively involved in the solution.

Principle F Managed process and infrastructure.

Principle G Ideally find a solution that makes beneficial use of the water.

Principle H Obviate the need for compulsory purchase.

Principle I Options put out for public consultation must be sufficiently detailed for the public to make an informed choice.

3.4 Principles (Takamātua) – similarly the principles agreed by the Takamātua Ratepayers Association are:

a. The wastewater is treated as an asset. It is reused where it will add value to the environment in which it is placed.

b. The wastewater is treated to the highest levels to ensure that the reuse is sustainable forever. Ultrafiltration may not satisfy this standard. Reverse Osmosis must be considered.

c. There are "just in case" provisions for the extreme events that occur in our world. Those provisions must cover earthquakes, winds, global warming effects, rainfall events and fire.

d. The management and maintenance processes for the system ensure that the standards established at its opening are continued and improved through its working life.

APPENDIX 4 - Robinsons Bay and Takamatua community concerns with disposal of Akaroa wastewater in our communities

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^{o} 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^{o}.
    - 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.

Signed by the following residents and landowners of Robinsons Bay and Takamatua:

Name	Community	Contact
Peter G Steel	Robinsons Bay	Contact details redacted for website version
Karen Watson	Robinsons Bay	
Susan Bruce	Takamatua	
Ray Bruce	Takamatua	
Elizabeth Foley	Robinsons Bay	
Garry and Tanya Moore	Robinsons Bay	
Bryan and Nancy Tichborne	Trustees, Pavitt Family Trust	
William and Joan Adair	Robinsons Bay	
Mark and Anna Pitts	Robinsons Bay	
G.D.Shanks & N.A Shanks	Takamatua	
Doig and Andrea Smith	Robinsons Bay	
John Thom	Ngaio Point, Robinsons Bay	
Julie Wagner	Ngaio Point, Robinsons Bay	
Paul and Pip McFarlane	Robinsons Bay	
John Thacker	Takamatua/Robinsons Bay	
Tim and Nadine Adair	Robinsons Bay	
Brent Schulz and Christine Shearer	Takamatua	
Kathleen Liberty	Robinsons Bay	
Doug Neil	Robinsons Bay	
Cynthia, Tony and Hannah Muir	Takamatua	
Brendan and Marion Glover	Robinsons Bay	
Eric Ryder and Judy Jeffrey	Robinsons Bay	
David and Sue Thurston	Takamatua	
Harry Thurston	Takamatua	
Mary & Michael Browne	Trustees, Pavitt Family Trust	
Helen Leach	Trustee, Pavitt Family Trust	
James and Michelle Adair	Robinsons Bay	
Mark & Denise Wren	Takamatua	
Fiona Turner	Robinsons Bay	
Craig & Leanne Hastie	Ngaio Point, Robinsons Bay	
Kevin and Averil Parthonnaud	Robinsons Bay	
Liz and Hayden Cleaver	Robinsons Bay	
Graham & Lorraine Raxworthy	, Robinsons Bay	
Jacqui & Brent George	Trustees ,Pavitt Family Trust	
Andreas Lageder & Anabel Barino	Robinsons Bay	
Chris and Annette Moore	Robinsons Bay	
Ross and Julianne Blanks	Archdalls Rd, Robinsons Bay	
Craig and Suzanne Church	Robinsons Bay	
David & Christine Kelly	Robinsons Bay	
Bill and Jaynie Abbott	Robinsons Bay	
Richard and Pam Florance	Takamatua	
Ross and Brigitte Shepherd	Robinsons Bay	
Lyndsey Rhodes	Robinsons Bay	

Lee and Marian Robinson	Robinsons Bay
Todd and Louisa Raxworthy	Archdalls Rd, Robinsons Bay
Chris and Tracey Pottinger	Robinsons Bay
John and Rosalyn Curry	Robinsons Bay
Michael and Barbara Harrington	Takamatua
Brian and Anne Eves	Robinsons Bay
Craig and Sarah Raxworthy	Robinsons Bay
Dick and Shirley Fernyhough	Trustees ,Pavitt Family Trust
Sara Parks	Takamatua
Graeme Curry	Robinsons Bay
Toby and Annabell Smith	Robinsons Bay
Suky Thompson	Robinsons Bay
Brent Martin	Robinsons Bay
Joyce and Murray Walker	Takamatua
Johannah & Michael Curwood	Trustees , Pavitt Family Trust
Dianne Carson	Robinsons Bay
Julian and Katrina Calcutt	Robinsons Bay
Elizabeth Lawson	Takamatua
Alistair and Nerolie Davidson	Robinsons Bay
Trevor and Gill Bedford	Takamatua
Peter and Stephanie Ganly	Takamatua
Stuart Jeffrey	Takamatua
Amanda & Callum Wilson	
Andrew & Mandy Bax	
Viola Kasikova	Robinsons Bay
Craig & Julie Swan	Takamatua
Richard and Sue Lovett	Robinsons Bay
Hugh Martin	Robinsons Bay
Pamela and Tony Fisher	Robinsons Bay
Ken and Yvonne Marshall	Robinsons Bay
Garth and Robin Tiffen	Takamatua
Jamie Palmer	Robinsons Bay
Norman Bayne	Robinsons Bay
Neil and Rebecca Barnett	Takamatua
Tom and Lynne Brennan	Robinsons Bay and Takamatua
Gary & Ruth Fail	Takamatua
Monique Connell	Takamatua
Stephanie Connell	Takamatua
Prunella Downes	Takamatua
Maria Browne	Trustee, Pavitt Family Trust
Wayne Best	Robinsons Bay
Fran Anderson & Grant Robertson	Robinsons Bay
David & Claire Williams	Trustees , Pavitt Family Trust
Peter Zwart	Robinsons Bay
Anne Zwart	Robinsons Bay
Steve and Annette Lelievre	Takamatua
Steve Parker	Trustee, Pavitt Family Trust
Peter Roberts	Takamatua
Glenys Roberts	Takamatua
Pat Lyons and Wayne Sceats	Robinsons Bay
Robyn Walker	Takamatua
Geoff Harris	Robinsons Bay
Laurice Bradford	Takamatua
Hannah and Paul LeLievre	Takamatua

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Christine Aylesworth and Richard Evans	Takamatua
Benoit Navarron and Flore Mas	Ngaio Point
Janey & Roger Thomas	
Ben Tichborne	
Kevin and Heather Sibley	Takamatua
David and Wendy Flemming	Robinsons Bay
Janice and Rodney Innes	Tamakatua
Kim and Barbara Avery	Robinsons Bay
Anne and John Bowden	Takamatua
Noel & Sue Strez	Takamatua
Nancy Kennedy	Robinsons Bay
Tony & Pip Mason	Robinsons Bay
Tim and Jacquie Johnson	Takamatua
Geoff Beaver	Takamatua
Gavin and Sonia Shepherd	Robinsons Bay
Hugo Tichborne	
Guy Tichborne	
Niall Holland & Jan Whyte	Takamatua
Elizabeth and Brian Bain	Robinsons Bay
Mark Milligan	Takamatua
Murray and Linda Smith	Robinsons Bay
Graeme and Karen Bryant	Takamatua
Ken and Carol Reese	Takamatua
Carolyn Browne	
Chris & Sharyn Reid	Takamatua
Simon Hadfield	Robinsons Bay
Darryl and Martine Swann	Takamatua
Amy and Amber Swann	Takamatua
Jill Lockett	Robinsons Bay
Richard and Lorraine Troughton	Takamatua
Mike and Rose Ryan	Robinsons Bay
Brett Lea	Takamatua
Kathrine and Hugh Fraser	Takamatua
Gordon Boxall	Ngaio Point
Evelyn and John Oliver	Robinsons Bay-Duvauchelle
Derek & Sue Marr	Takamatua
Jenny and Tony Hay	Takamatua
John Thomson and Joanna Hase	Robinsons Bay
Shaun Huddleston	Robinsons Bay
Frank and Maryline Shaw	Takamatua
Lizi Reese	Takamatua

Contact details redacted for website version

APPENDIX 5 – Wildside wastewater proposals - Goughs and Pompeys Pillar

Wildside Wastewater Proposal's – Goughs and Pompey's Pillar

This document presents the concerns and opinions of the undersigned local community on the Wildside and in particular those in Goughs and Hickory Bays who will be affected by the proposal to create a wastewater disposal system on the adjacent headland.

The Wildside

- The proposed area is part of the Wildside, which extends over the group of bays to the east of the crater rim on Banks Peninsula. The Wildside is an area of nationally recognised biodiversity values, and has few introduced flora species, relatively few weeds, and high rates of endemism. Much of the Wildside is in areas of Outstanding Natural Landscape, Ecological Significance and protected in reserves or covenants in perpetuity.
- The Wildside is a community project that does not belong to any one agency or group. It is a collaboration over more than thirty years of passionate hard-working landowners and contributing government agencies and groups. It has been nationally recognised due to its unique community driven aspect, and that individually landowners have made costly and long-term investments into conservation outcomes on their own land.
- This speaks volumes for the rugged, remote, ingenious and very unique community that may not see each other for years at a time but each contribute to a better and more beautiful environment. The significance of the Wildside should not be taken lightly.

Tree Planting Proposal – Goughs Headland

The proposal to plant a native forest on 33 Ha at the location identified on the planning map raises a number of concerns:

- The Wildside is predisposed to natural regeneration with a range of protected natural areas in the immediate vicinity providing rich seed source. The exemplar of this is Hinewai Reserve, which is internationally renowned for its hands-off natural regeneration, this is possible particularly on the Wildside due to the high rainfall, high native seed bank, low weed species and in some areas by using nitrogen fixing gorse as a nursery crop.
- Natural regeneration from natural seed source is preferable ecologically to planted forest for a number of reasons, these are quite practical issues; the cost, the sourcing of enough seed source from the ecological area, the use of weed and pest guards, and getting the right plant mix to grow in the particular environment. To be successful, planting native forest is a high input job that needs regular visits to ensure weeds are controlled, plant guards are not damaged or blown away in storms, and that pests are under control.
- Thus, planting on either the Goughs/Hickory or Pompeys Pillar headlands would be an intensive undertaking, with regular site visits to maintain the plants. The high wind environment would be a risk for wind guards blowing out to sea to simply become a marine pollutant.
- Plant growth would be severely reduced on the Goughs or Pompeys headlands due to the harsh environment, with frequent cold winds accompanied by hail, sleet and snow at times. Plant growth will be considerably stunted compared to expectations based on the plant trials that have been carried out in Pipers Valley, and the speed of plant growth and water uptake needs to be studied in this particular environment before any sound conclusions can be drawn.
- The suitability of this site for wastewater disposal will be especially influenced by the high rainfall that occurs on the Goughs headland. The plants will be in an already moist

environment with regular high rainfall events and cannot be expected to be able to absorb or hold as much wastewater as would be possible on a more favourable site.

- New trials would need to be undertaken over many years to ensure that the plantings could withstand this environment, take up the wastewater at an appropriate rate, and that the appropriate planting area has been set aside.
- The Goughs site is exposed to all wind directions with the North-East wind being especially frequent and harsh. Pompeys is also exposed to most winds and with especial exposure to the Southerly winds. There are almost no days without wind on either site.
- Adjacent landowners have planted native shelterbelts that have not grown well due to the extreme weather conditions on these exposed headlands, as is evident in many places along the Wildside coast, the native forest in the area is stunted and twisted due to the persistent wind.
- Rainfall is highly changeable across the Wildside with flood events being experienced that are not forecast. It is not at all uncommon to have 100mm rainfall events happening within a few hours at higher altitudes. The Wildside is also much cloudier than the inner harbour, with sea fogs and easterly drizzle that can cause long term dampness underfoot and reduce the growing conditions and wastewater uptake capability of plants in this environment.
- There would be almost no recreational advantage of a planted forest in an inaccessible place such as Goughs headland because almost nobody would visit, especially when they can visit a natural and inspiring place such as Hinewai.

Infrastructure Concerns - Roading

- The only current access to the proposed Goughs site is a grass track, and an adequate access road would have to be formed. This proposed road is mapped as going through an Outstanding Natural Landscape (ONL). This would have a significant impact on the Outstanding Natural Landscape and on the immediate neighbours who would be in sight and hearing of the road cutting through the ONL and the subsequent traffic on it. Both building the road, and ongoing traffic, would increase the noise levels in an environment that is of significant natural quiet.
- The road would need to pass along the top of a BPCT covenant, and it is likely that this would have an impact on the ecology of that covenant area.
- There has been no consultation or planning on the type of road required for the access and pipeline, the creation and maintenance of the ponds, or for the regular visits that would be required to establish and then maintain the plantings. However, it is clear that this would have to be an all-weather formed road. Thus, a formed road would be created through a ONL and through neighbouring land including a block that is in the process of becoming a QEII covenant. This would have a significant impact upon the neighbouring properties and on the significant natural environment of the Wildside.
- While the wetland of Goughs Bay has been mapped as being of Ecological Significance and is thought to be the best wetland in the Peninsula's outer bays, there are many other sites of ecological significance within the Goughs and Hickory Bays, but these are not yet mapped as they have not been through the process of being surveyed and signed off by the landowners. The BPCT Goughs Multi covenant will fit these criteria, as will the Top Bush BPCT Covenant, both of which are alongside the proposed road.
- The proposed road is in a high rockfall area, and in the Canterbury earthquakes of 2010 several large rockfalls happened along the BPCT covenant, breaking the fence in many places. One very large rock fell across the track and fence and had to be blasted out of the

way after weeks of planning and involving a team of people. If such an event happened in the future the road access would be cut to the ponds and planting site.

- The site access road is intended to be formed along the route of the existing legal road corridor, and therefore there will be public access. The terrain is such that this may create significant safety risks when oncoming vehicles meet, exacerbated by the share drop on the southern side.
- The entire construction process, including the movement of heavy machinery and maintenance vehicles, would pose a considerable risk of introducing new weed species to the Wildside, an area that currently has very few agricultural or ecological weeds.
- The grass track that exists would need to be widened to be suitable for heavy machinery, and to include suitable passing areas. This would create issues with rockfalls, and risk potential cost blowout if areas of hard rock are encountered. The road forming process would be an ecological threat to the rare and endemic plant and animal life, as well as having a negative impact upon the covenant that is adjacent to the road corridor. It would of course also impact upon the Outstanding Natural Landscape and sites of Ecological Significance which are yet to be designated.
- The proposed road will have relatively high usage by local standards, and with the nearby power lines and associated structures, would have a significant impact on the visual aesthetics of the Goughs Bay valley. In particular it would impact upon the land values in Goughs Bay, and most significantly affect 235 Goughs Rd, the Haley Hussain residence, and Vicky and Burt Turner on Hickory Bay Road. There would be a need to mitigate the land value impact through compensation to the landowners.
- We believe that the only way to lay a pipeline along Hickory Bay Rd would be to close the road for extended periods, causing significant additional disruption to residents, essential farming services, and access for emergency vehicles.
- In comparison, the Inner Harbour and Pompey's Pillar options already have formed roads, and there are no additional obstacles regarding Outstanding Natural Landscapes, ecological significance, or rockfall issues.

Infrastructure Concerns - Pipes and Ponds

- A pipe to pump wastewater up and over the summit of Banks Peninsula will have to be engineered to a high standard, with considerable risks if the pipe or pumping system fails.
- As there would be no intermediate pump station any small issue with the pump such as a power cut could reduce the effectiveness of the operation, any significant issue could cause longer term delays and spill over of wastewater through Children's Bay more directly into the Harbour. This issue would not be likely to Robinsons Bay as the wastewater does not need pumping and can be gravity feed to the site.
- There are climate change issues arising from the proposed pumping over the summit rim, given that the annual power cost is in excess of $100,000. Even though planting native forest (at even more expense) can offset some of the climate issues, it would be a far more sensible option for that power not to have been used, and in effect wasted, in the first place when there are acceptable disposal options closer to the source.
- The budgeted cost of approximately $8 million dollars to install the high-pressure pumping station and pipe along the Long Bay Road, is a significant cost to the ratepayers that would be an unacceptable burden in the post-Covid economic environment.

- There appears to have been no study on where the material from excavating the pond sites will go. If it is moved offsite there will significant disruption and added cost. If it is used as fill in the area of the Crown Island stream catchment this will threaten the local ecology.

Farming Impacts

- The Goughs Headland site is directly upstream of two intakes for household water, one an easement to Hickory Bay and the other the house supply to the bottom house in Goughs.
- The proposed Goughs planting site is directly upstream of farmland. Any leaching of trace contaminants such as antibiotics into the neighbouring farm, stock water or ground water, will be likely to cause the loss of value of the livestock when sold. We do not believe that there has been any specific study in this environment and soil type, regarding leaching downhill or into groundwater.
- Both the Goughs and Pompeys sites are at present good clear productive farmland. In both situations it would cause a significant loss to the landowners if all or part of their farms were taken by any compulsory process for the wastewater project, and in both locations the landowner is unwilling to sell. In Goughs Bay a forced sale would also likely mean the eviction of the land manager and family from their house and disruption to their children at the local school.
- The wastewater scheme would have a significant impact upon the values of the blocks of land being proposed. This would have an impact upon the neighbouring land values as well. We would seek compensation as a community for the loss of land value.
- Although post-Covid we are yet unsure of the future of tourism it is likely that planting at Pompeys, if not managed well, and the access road at Goughs, could have an impact upon the potential tourism value on the Wildside. Much of the additional income from farming operations have come from on-farm tourism based upon the wild remote and 'untouched' aspects of this unique community and environment.

Issues of Fairness and Consultation

The project for the disposal of Akaroa wastewater has been ongoing for about 10 years, but the Goughs Bay version has only appeared within the last 6 months. A meeting between CCC personnel and residents was held in December 2019, but since then there has been no further consultation even though the project concept has been fundamentally changed.

In contrast, the Inner Harbour option has been well researched, and representatives of the local community have been heavily involved in the process from the beginning.

It seems that both options are about to be presented in a public consultation process as they are valid alternatives and have had equal levels of applied research and community involvement. This could not be further from the truth. It is obvious that this is a fundamentally unfair process lacking in natural justice.

In Summary

The Goughs Bay proposal is <u>not</u> a well-researched or practical option. Rather it is an idea that looks like it might be feasible on paper, but which runs a high risk of failing, or of a cost blow-out, when the idea impacts with the realities of this site.

The Wildside in winter is often a bleak, cold, and windswept, even when there is no rain or sleet. To suggest that it is realistic to establish a <u>planted</u> native forest there, within any reasonable timeframe

and without a huge effort, shows outstanding optimism that will ultimately be shown to be misplaced.

Local knowledge indicates that plant growth rates in the Goughs headland can be less than half what could be expected at the Inner Harbour locations and we believe that the proposed planting area has not been trialled appropriately.

The size of the proposed storage ponds implies around two months capacity, provided they are empty at the start of a rain period. Experienced locals can recall that in some years the site has been continuously saturated for significantly longer periods. This implies either the need for either much larger ponds, or alternatively more robust proposals for emergency discharges from the wastewater plant.

Taken together, the above points suggest that the Goughs Bay proposal will need a significantly larger budget than that currently estimated, and the likelihood of a budget blowout is significant.

In contrast to the poorly researched Goughs Bay proposal, the Inner Harbour option has been researched and designed in detail. There are few significant risks, while there are some potential benefits, if well managed.

We believe that there are many similar points raised about the Goughs headland that also apply to the Pompey's Pillar headland, particularly the issues around planting on an exposed headland, being within the special Wildside conservation area and pumping wastewater over the crater rim. We do not support either proposal.

Signed by the following residents and landowners of Goughs, Hickory and the Wildside:

Marie Haley and Asif Hussain, Goughs Bay,
John and Carol Masefield, Goughs Bay,
Hugh Wilson, Hinewai Reserve, Otanerito,
Hannah and Will Johns, Paua Bay,
Sue and Murry Johns, Paua Bay,
Robin and Jo Burleigh, Le Bons Bay,
Janis and Richard Haley, Paua Bay,
Alex Urquhart, Hickory Bay,
Grant Jamieson and Jane Westwood, Hickory Bay,
Harry and Diana Stronach, Hickory Bay,
Jill and Richard Simpson, Fishermans Bay,
Damien Begley, Hickory Bay,
John, Oliver, Giles and Hilary Hancock,
Warren Begley, Otanerito,
Paige Begley, Otanerito,
Eleanor Begley, Otanerito,
Vicky and Burt Turner, Hickory/Goughs Bay,
Emma and Gorge Masefield,
Christo Trought and Rebecca Nicholls, Goughs Bay,

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