

FRIENDS of Banks Peninsula Inc.

Akaroa's Community Environment Society since 1990



Akaroa Reclaimed Water Beneficial Reuse, Treatment and Disposal Options Submission

Executive Summary DRAFT released for public comment

Water is a precious resource. Water restrictions are in force every summer in Akaroa. Its stream fed supply is under such stress that since 2014 the town has had to draw on the neighbouring Takamatua catchment to meet its water demand.

CCC has a problem it needs to address: disposal of Akaroa's wastewater.

What if solving this problem could reduce Akaroa's water shortage issue at the same time?

Data supplied by the Council shows there is more *demand* in Akaroa for external water use (garden watering) than all the wastewater it currently *generates*. With appropriate treatment this wastewater can be efficiently transformed to an almost drinkable standard, turning it from a problematic waste back into a valuable and much needed resource. The key to public acceptance is the highest standard of treatment. People must be convinced that the reclaimed water is 100% safe.

Akaroa's water shortage issues are only predicted to get worse. By taking a sensible step now, the Council can solve two problems at once - bring to an end the disposal of wastewater into the harbour and increase Akaroa's resilience by conserving its potable water supply.

Friends of Banks Peninsula Inc. was established in 1990 to protect and enhance the environmental heritage of Banks Peninsula and safe-guard the environment for future generations. The society has been involved with the Akaroa Wastewater issue over many years and participated in the Akaroa Area Water Services Working Party in 2008 and the recent Akaroa Treated Wastewater Reuse Options Working Party.

This second Working Party was established by the Banks Peninsula Community Board in response to the "**Community Strategy toward an Acceptable Solution to the disposal of Akaroa Wastewater**" presented to it by Friends of Banks Peninsula on January 30, 2017. We commend the Community Board for setting up this Working Party and for its choice of Penny Carnaby as the Chair. We believe that as a result of the Working Party deliberations, solutions potentially acceptable to the community have emerged.

The consultation booklet released by the Council offers options sweeping in their breadth and potential impacts, but limited on the detail of how they would be implemented. The plethora of potential sites for storage and disposal is confusing. This submission presents an environmentally sustainable solution based on combining the options to maximise the benefits, minimise the risks, decommission the existing treatment plant at Takapūneke as soon as possible and providing the most resilient for the long term.

1. The best solution is one that reclaims and beneficially re-uses the water, rather than wastes it.

- Under a *beneficial re-use* system the water is taken up by the receiving environment (be it a farm, garden watering) as it is best needed. The water is treated as a resource.
- Under a *disposal* system the water is distributed to the receiving environment to get rid of it, whether the environment needs it or not. The water is being dumped as unwanted waste.

- Beneficial use is maximised when the water is *used where it is needed most*.
2. **This submission presents two environmentally sustainable solutions that maximise benefits and minimise risks by combining options from the consultation document, and identifies those solutions that do not meet this aim.**
 - We signal to the Council that Friends of Banks Peninsula is likely to participate in the submission process to any future consent, and we hope this will be in support of a great solution.
 3. **Friends of Banks Peninsula strongly supports Option 4 – Non-potable re-use in Akaroa. This forms the basis of the best solution.**
 - Re-use in Akaroa puts the water where it is of most benefit to the environment and people
 - The water must be treated to the highest standard, safe for watering vegetables including salad crops.
 - By taking a lead with re-use in the public toilets and irrigating parks, the Council will demonstrate its confidence in the safety of the water, and it will serve as an incentive for the Council to maintain treatment levels at the highest standards. We recommend a public exemplar garden is developed.
 - The Council's lead will encourage other voluntary uses of the water.
 4. **Option 4 signals Council's intention to add a reticulated purple pipe (reclaimed water pipe) system through the town enabling more households and businesses to use it over time.**
 - We would expect this commitment to be reflected in the Council's Long Term Plan process prior to lodging its resource consent.
 - Data in the latest Beca report indicates that *100% of current wastewater flow* could be re-used in Akaroa on external uses (such as garden watering).
 - We recognise that it will take time to reticulate the whole town with a purple pipe system enabling non-potable re-use in Akaroa to absorb 100% of the water, so another method will be needed during the years of transition. Public education to discourage wasteful use of potable water use will assist with this.
 - We recommend full nitrogen removal, ultrafiltration and disinfection (e.g. chlorination) is adopted to produce water of a suitable quality for re-use without causing long-term environmental effects or limiting its suitability for re-use.
 - We signal the need for a back-up should a wet summer reduce the demand from Akaroa to the point that it doesn't use all of the supply.
 5. **Option 4 must be combined with another option to take all the water. We present two solutions for the remaining water during the transitional period:**

Transitional outfall to Akaroa harbour

 - A transitional harbour outfall frees up the most capital for investment in the Akaroa purple pipe system. Operational costs are also lowest.
 - We present two alternatives for implementing a transitional harbour outfall. Both piggyback onto the purple pipe re-use infrastructure to minimise additional costs. They are:
 - New mid-harbour outfall

- Use the existing Takapūneke outfall
- Both enable the Council to redirect budget toward installing more of the reticulated purple-pipe network, setting the Council on a path to achieve 100% re-use in the shortest timeframe
- Both enable the Takapūneke wastewater *plant* to be decommissioned as soon as the new plant is operational, but the less expensive of these alternatives retains its *outfall* pipe.
- Disadvantages of a transitional harbour outfall are that the water disposed of to the harbour during the transitional period is being wasted and Ngai Tahu are being asked to wait longer before disposal to the harbour ends.

Agricultural use at Pompeys Pillar

- Support for this option is predicated on the landowners reaching an agreement with Council that is satisfactory to them.
- Managed as part of the farm, all the water will be put to a beneficial purpose from the outset, however the capital cost is higher than harbour outfall, so less funding may be available for re-use in Akaroa where the environmental and community benefit is greater.
- We recommend that all land identified as geo-technically suitable at Pompeys Pillar is included in the irrigation areas regardless of whether it is overlaid with the Outstanding Natural Landscape zone. This increases the opportunity for beneficial re-use by giving the farm greater flexibility, lowers the risk of the irrigation area failing to absorb the hydraulic and nutrient loads and, we suggest, will actually be *less* visually intrusive.
- Pumping the water over the hill means higher operating costs. The trade-off is that this option is the most rapid land-based system to set-up, and the potential to include high-altitude fire ponds may be another benefit.
- The Takapūneke plant and harbour outfall would both cease as soon as Pompeys Pillar is operational.

6. We do not support the remaining options in the consultation document for the following reasons:

- *Disposal to Takamatua does not make beneficial use of the water.* It is impractical because of the fragmented nature of the identified areas. It has high opportunity cost because it converts high value lifestyle and residential land into a low value disposal area, and negatively impacts a large number of people. It is a high-risk solution because it is proposing disposal in a valley catchment, when the ability of the peninsula soils to take up the water and nutrients is not accurately known, and the sloping terrain and proximity to waterways increases both the probability and impact of failure. The proximity to residents exacerbates the collateral damage of such a failure.
- *Disposal to Robinsons Bay does not make beneficial use of the water either.* In the lower valley, it too has high opportunity cost and carries the same risks as Takamatua valley. Even in the upper valley, it is a high-risk solution because of unknowns in the ability of the peninsula soils and native trees to take up the water and nutrients, the sloping terrain and proximity to waterways, and the number of residents in the vicinity.

- Pompeys Pillar as a stand-alone option may be acceptable, but would not extract the maximum benefits from the water and does nothing to solve Akaroa’s water shortages.
- Permanent harbour outfall makes no beneficial use of the water, and does nothing to solve Akaroa’s water shortages. It fails to address the cultural concerns of Ngai Tahu, now or in the future.

7. We present a detailed consideration of the options

- We have reviewed the latest Beca report and all the earlier technical reports, and draw attention to the many and substantial knowledge gaps and other issues identified in these documents
- We have researched land-based *disposal* systems elsewhere and are aware of a significant number of failures, principally due to nitrogen saturation and leaching. Our submission identifies that additional nitrogen removal over that proposed for the treatment plant would be necessary, and factors in the associated additional cost.
- We have researched recycling wastewater for beneficial *re-use* and find it is increasingly used to successfully overcome water shortages
- We present re-evaluated cost estimates based on the combined solutions we have presented, including our proposed variations to the details and costings of the consultation options
- We believe the cost estimates and assumptions in the consultation document should be subject to an independent peer review

8. Environmentally sustainable solution summary and costings – Non-potable re-use in Akaroa with residual options

We believe that the following cost estimates would apply to the solutions we propose, based on the information disclosed by Council to date and therefore subject to the same + or – 30%.

Option	Estimated Cost	Combined Total
Non-potable re-use in Akaroa (includes full nitrogen removal)	\$3.5m	
Transitional mid-harbour outfall for residual	+\$4.2m	\$7.7m
Transitional Takapūneke outfall for residual	+\$1.5m	\$5.0m
Pompeys Pillar for residual	+\$12.7m	\$16.2m