



## FUTURE MANAGEMENT OF AKAROA HARBOUR WASTEWATER

|                                    |  |
|------------------------------------|--|
| <b>General Manager responsible</b> | General Manager City Environment, DDI 941 8608 |
| <b>Officer responsible</b>         | City Water and Waste Manager                   |
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### PURPOSE OF REPORT

1. The purpose of this report is for the Akaroa-Wairewa Community Board to consider options and make a recommendation to the Council with regard to a preferred option for the future management of Akaroa's wastewater. This will enable the Christchurch City Council to then seek a variation to the current resource consent to align the current consent timeframes with the construction timeframe for the preferred option as programmed in the current Long Term Plan (LTP).

### EXECUTIVE SUMMARY

2. The Akaroa wastewater treatment plant discharges treated wastewater into the Akaroa Harbour, and is operating well in terms of meeting its resource consent conditions. The current consent is a short term one. It was granted by Environment Canterbury (Ecan) with the aim that the Council consult with the community to decide on the future long term management of Akaroa wastewater. Apart from the standard monitoring conditions, the consent (which expires in July 2013) required that a community working party be established in 2008 to make a recommendation to the Council with regard to a long term wastewater treatment option for the Akaroa area. This would allow the Council to then apply for a new long term consent for wastewater discharges from the preferred option, prior to the expiry of the current discharge consent in July 2013. The consent requires the Council to select a preferred option for the long term management of Akaroa's wastewater and advise Ecan of that option by December 2011. Discharge could continue under the current consent if a new application for that activity is lodged six months before expiry of the current consent. Capital and operating cost provisions have been made for this project in the 2009-19 LTP.
3. The Akaroa Wastewater Working Party (the Working Party) - (see **Attachment 1** for participants) has worked for the past three years on the formulation and evaluation of a number of different options for the future management of Akaroa's wastewater. At the request of the Ōnuku Rūnanga, it was consulted separately. This process included some representatives attending some Working Party meetings as well as a formal hui at Ōnuku Marae.
4. In summary, the options for future wastewater management considered by the Working Party included:
  - (a) Whether or not the wastewater treatment plant should remain at the existing site (Takapuneke Reserve) which is an historic and culturally sensitive site.
  - (b) Discharge treated wastewater into mid-harbour, having been treated to a "near drinking water standard".
  - (c) No discharge of treated wastewater into the harbour, with all treated wastewater being applied to land.
  - (d) A combination of a harbour discharge during winter months, and land application during summer months.
  - (e) Beneficial reuse options e.g. third pipe reticulation for Akaroa.
  - (f) An ocean outfall discharge outside the Akaroa Heads.
5. The Working Party's report with recommendations is attached (**Attachment 2**).
6. Ōnuku Rūnanga is opposed to the treatment plant remaining on Takapuneke Reserve, and therefore supports locating a new treatment plant off the reserve. The Rūnanga furthermore strongly opposes any discharge of treated wastewater into the harbour, supporting land irrigation to the north of Akaroa, and not to the south, closer to Ōnuku Marae (**Attachment 3**).

7. During the review of issues and options professional advice confirmed that, because of the poorly draining soils, land irrigation alone with no harbour discharge component, is not feasible for Akaroa. A harbour discharge would therefore be the minimum requirement for Akaroa's wastewater in the medium term due to lack of suitable land, and that could act as the sole discharge feature (i.e. with no land irrigation), or in conjunction with a land irrigation option.
8. Having met 15 times over a three year period, the Working Party reached the following conclusions and recommends:
- A new plant be located at a different site to the current Takapuneke Reserve site.
  - A new wastewater treatment plant be designed to produce wastewater that achieves the best quality wastewater available at the time of construction.
  - The plants' outfall pipeline discharge into the mid harbour region of Akaroa Harbour.
  - The outfall design should allow for extension to a location outside the harbour if required in the future.
  - Future wastewater management options, including the design of the plant, must allow for the beneficial re-use of the treated wastewater (e.g. potential irrigation uses in parks and on private property).
  - Land irrigation of Banks Peninsula soils and topography be trialled to determine the parameters that will enable better decision making in the future about reuse of wastewater.
  - If wastewater is to be discharged into the harbour, then the wastewater must first pass over, or through, land before it is discharged into the harbour, in order to help address cultural concerns of Ōnuku Rūnanga and Ngāi Tahu. This can be accommodated through the design of the outfall structures.
9. The working party could not reach agreement on a preferred location for a new plant and support infrastructure (e.g. a storage pond). The majority of the members favoured a mid-harbour discharge from a site to the south of Akaroa, with others favouring the Takamatua hill area to the north of Akaroa. Land acquisition would be a requirement for moving the treatment plant off Takapuneke Reserve. A number of technically feasible sites have been identified in areas both north and south of Akaroa. Sites have been assessed on the basis of elevation, distance from final pumping point, site vehicular access, power supply availability and reliability and access for pipelines to and from the sites, distance to neighbours, potential visual impact and consent ability. Final site selection will be subject to negotiation with current owners and in-depth geotechnical studies.
10. Two public information sessions were held in June 2010, one in Akaroa and one in the city. Email responses were invited and received. Feedback was mixed and wide ranging, from support for retaining the plant at the current site with improved levels of wastewater treatment, to an ocean outfall past the heads. All the feedback was considered by the Working Party at a subsequent meeting.
11. The Council's 2009-19 LTP made the following provision for capital funds for this project (in 2011 dollars):

| Financial year                       | 2013<br>(\$000's) | 2014<br>(\$000's) | 2015<br>(\$000's) | 2016<br>(\$000's) | 2017<br>(\$000's) | Total<br>(\$000's) |
|--------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| Akaroa WWTP Upgrade<br>(WBS 522/773) | \$ 239.8          | \$ 232.8          | \$ 4,959          | \$ 8,769          | \$ 8,903          | \$ 23,104          |

12. The currently technically feasible options are listed below.

| Treatment Plant Location –<br>discharge to mid harbour | Capital Cost<br>(\$m) | Opex Cost p.a.<br>(\$m) | NPV (\$m) |
|--|-----------------------|-------------------------|-----------|
| <i>Existing site (upgraded plant)</i>                  | 8.2                   | 0.371                   | 13.6      |
| <i>Southern Site (new plant)</i>                       | 21.5                  | 0.433                   | 27.8      |
| <i>Northern site (new plant)</i>                       | 26.5                  | 0.433                   | 32.8      |

13. Comparative costs for the full list of different technical solutions for treating Akaroa's wastewater considered by the Working Party are provided in **Attachment 4**. It indicates that the existing budget provisions cover, or nearly cover, some of the options but not the option to build an ocean outfall to discharge beyond the heads at the mouth of the harbour. The estimated costs of the other options range from \$8.2 million for retaining the existing site with upgraded treatment and a mid harbour discharge, to \$26.5 million for a new northern plant with land application in summer and harbour discharge in winter. Note that these estimates have an estimating error of minus 10 per cent to plus 40 per cent, and are in 2011 dollars.

## BACKGROUND

14. In reaching a recommendation, the following key considerations are relevant:
  - (a) The current plant, which is located on Takapuneke Reserve, discharges treated water into the harbour near the shore and operates well in terms of the current resource consent conditions which expire in July 2013. A short term extension of the consent in order to construct a new plant will be necessary. Any consent for a new plant will include conditions for a higher level of wastewater treatment for harbour discharge, in particular in the reduction of nutrients.
  - (b) Over the past years the Council has worked with the Rūnanga towards a conservation plan for Takapuneke Reserve that will recognise the cultural significance and heritage values of the site. Other stakeholders have also been involved in this process, and a report to Council on the conservation plan is planned for 2012. The Rūnanga is strongly opposed to the wastewater treatment plant remaining on the Reserve, and to any discharge of treated wastewater into the harbour.
  - (c) A harbour discharge will however continue to be required in the medium to long term due to steep topography, problematic soil types, and the lack of suitable land available for land application. Funding for improved wastewater management options for Akaroa is provided in the 2009-19 LTP.
  - (d) There is no suitable Council owned land available for a new treatment plant site and storage pond. This land will have to be purchased as part of the project. This could either be on the Takamatua hill area, or to the south of Akaroa township but sufficiently distant from Ōnuku Marae, and dependant on further discussions with the Ōnuku Rūnanga and other interested parties.
  - (e) In preserving options for future water sources to meet non-potable water demand, the beneficial use of treated wastewater should not be ruled out by any selected option.
15. The Working Party's recommendations can therefore be supported, except for the proposal to consider a future extension of the harbour discharge outside the Akaroa Heads. The costs of extending a mid-harbour discharge to a location outside the harbour would be prohibitive, and based on effects on the natural environment could not be justified. It would however address cultural concerns.
16. The Working Party could not agree on the actual location of a new plant and storage pond away from Takapuneke Reserve (should it be the selected option). The actual location will largely be affected by negotiation between the Council, community and landowners and the land that is available to accommodate the facility required.
17. Taking the above points into consideration the options available for consideration are reduced to:
  - (a) Upgrade the existing plant, or
  - (b) Support moving the treatment facility off Takapuneke Reserve to a new site, either north or south of Akaroa. The site would need to be selected by July 2012.
18. In both cases water will be treated to a higher level than the present plant achieves, including nutrient reduction (nitrogen and phosphorus reduction). The treated water will be discharged into the harbour via a mid-harbour outfall.

19. As detailed in **Attachments 2 and 3**, both the Working Party and the Rūnanga favour moving off Takapuneke. A harbour discharge is supported by the Working Party and opposed by the Rūnanga (which supports land irrigation for all treated wastewater and no discharge to the harbour).
20. As an alternative site the Rūnanga favours a location north of Akaroa, while within the Working Party there was support for either a northern or southern site, with the majority favouring a southern site.
21. As detailed in **Attachment 4** the costs of these options are

| <b>Akaroa Harbour Treatment Option</b>   | <b>Capital Costs (\$ million). Range -10% to +40%</b>         | <b>Operational cost (\$'000)</b> |
|--|---|----------------------------------|
| Upgraded plant on existing site, with nutrient reduction and mid harbour discharge | Estimate \$ 8.2 m<br>(Possible Range \$ 7.40 m to \$ 11.5 m)  | \$ 371 per annum                 |
| New plant with nutrient reduction and mid harbour discharge – south of Akaroa      | Estimate \$ 21.5 m<br>(Possible Range \$19.3 m to \$ 30.1 m)  | \$ 433 per annum                 |
| New plant with nutrient reduction and mid harbour discharge – north of Akaroa      | Estimate \$ 26.5 m<br>(Possible Range \$ 23.8 m to \$ 37.1 m) | \$ 433 per annum                 |

#### **FINANCIAL IMPLICATIONS**

22. Funding of \$23.1 million is available in the 2009-19 LTP for this project as above in paragraph 11. If a northern site is chosen additional funding may be required in the next LTP to cover the shortfall, which will be subject to refined cost estimates that will be required when a site is clearly identified and a treatment process defined.

#### **Do the Recommendations of this Report Align with 2009-19 LTP budgets?**

23. Yes. The range of options available are generally achievable within the funding envelopes currently forecast in the 2009-19 LTP as described above.

#### **LEGAL CONSIDERATIONS**

24. *Current consent compliance:* There are no major consent compliance issues for the operation of the wastewater treatment plant. The consent requires the Council to select a preferred option for the long term management of Akaroa's wastewater, and advise Environment Canterbury by December 2011.
25. *Land issues:* Land acquisition will be required for a new treatment plant and ancillary supports such as storage ponds if the option of remaining on Takapuneke is not selected. If land irrigation was required then additional land would be required for this option. Depending on the final site selection it is likely that separate arrangements, such as a right of way and easements, will need to be acquired across private land to accommodate pipes discharging treated wastewater to the harbour.
26. *Consents:* Whichever long term option is decided upon, the current discharge consent expires in July 2013 and a notified consent application to extend the current operation will be required, possibly up to 2018 if the plant is to be shifted away from Takapuneke.
27. *Silent file:* There will be silent file issues to resolve with the Rūnanga should Takamatua Hill be used to locate a plant and storage ponds.

#### **Have you considered the legal implications of the issue under consideration?**

28. Yes, as above.

## **ALIGNMENT WITH LTP AND ACTIVITY MANAGEMENT PLANS**

29. This report supports the wastewater treatment and collection activity management plan recommended level of service; that is, that no major or persistent breaches of resource consents for treatment plants and associated discharges occur.

### **Do the recommendations of this report support a level of service or project in the 2009-19 LTP?**

30. Yes.

## **ALIGNMENT WITH STRATEGIES**

31. There is no current wastewater strategy. A draft strategy is to be commenced this financial year, to be completed during 2013.

## **CONSULTATION FULFILMENT**

32. The resource consent conditions prescribed specific parties which were to be invited to participate in the community working party, as well as possible volunteers. A number of Non Government Organisations, individuals and elected members joined the Working Party. Numbers attending meetings reduced over the three years with a core of five members (excluding CCC, Ecan and Department of Conservation attendees) completing the working party work in 2011.
33. At Ōnuku Rūnanga's request it was consulted separately. This process included some representatives attending some Working Party meetings, as well as a formal hui at Ōnuku Marae.
34. Upon completion of the technical reports for future options, two public information sessions were held, one in Akaroa and one in the city. Feedback on options was sought and considered by the Working Party.
35. A special consultative procedure is not considered necessary at this stage. The community that will be affected by the decision will have an opportunity to provide further views through the Annual Plan, and LTP processes and future resource consent processes.

## **STAFF RECOMMENDATION**

It is recommended 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 located in 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 irrigation.
- (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.