

**QLDC Council  
30 June 2015****Report for Agenda Item: 7****Department: Infrastructure****Cardrona Wastewater and Water Supply Options****Purpose**

- 1 The purpose of this report is to agree the best way forward for providing wastewater and water supply infrastructure in Cardrona.

**Executive Summary**

- 2 Options for addressing the public health risks and development constraints in Cardrona have been investigated. The preferred solution is to purchase the Baxter2009 wastewater treatment plant and disposal field along with the village water supply as soon as possible and progress the development of the Cardrona Valley Pipeline ready for construction in 2019/20.
- 3 This ensures that immediate action is taken to address the public health risks and remove barriers to development, with around 15 to 17 dwellings being able to connect immediately. This will give council and the community further time to develop and assess the Cardrona Valley Pipeline before committing to this significant investment.

**Recommendation**

That Council:

1. Note the contents of this report and in particular:
  - a. Further work may be required to get Public Health South to accept the interim solution proposed.
2. Adopt Wastewater Option 5 (Cardrona Valley Pipeline, with purchase of Baxter2009 in the interim) as the preferred way forward for wastewater treatment and disposal for Cardrona.
3. Adopt Water Option 1 (Purchase of Village Water Supply) as the preferred way forward for managing the provision of potable water in Cardrona.
4. Authorise council staff to:
  - a. Enter into a sale and purchase agreement with Baxter2009.
  - b. Enter into a sale and purchase agreement with Cardrona Water Supply Limited.

- c. Begin negotiations with Mt Cardrona Station and Cardrona Alpine Resort to agree delivery options and funding arrangements in respect to the Cardrona Valley Pipeline.
  - d. Take the detailed business case to the community for consultation and indication of support.
5. Approve the following funding changes:
- a. Bring forward capex of \$580k into 2015/16.
  - b. Bring forward capex of \$858k into 2016/17.

Prepared by:



Ulrich Glasner  
Chief Engineer

11/06/2015

Reviewed and Authorised by:



Peter Hansby  
General Manager Infrastructure

11/06/2015

## Background

- 4 The Cardrona community has requested that Council investigate reticulated options for the treatment and disposal of wastewater. The community has indicated that it is seeking clear direction and certainty regarding the township's wastewater issues. This project offers the whole Cardrona Valley an opportunity to resolve recurring public health and environmental issues. To advance this project, Council needs to make a clear statement of its long term intentions by adopting a preferred solution.
- 5 At the 30 July 2013 Infrastructure Services Committee meeting on the motion of Councillors Battson and Tattersfield it was resolved:
  - i. That the Infrastructure Services Committee adopt the Cardrona Valley Pipeline (CVP) as the preferred solution to address wastewater treatment for the Cardrona Valley;
  - ii. That the residual funds of \$92,000 from the 2012/13 financial year be carried over to advance stake holder agreements, initiation of concept design work and to allow part construction of the Cardrona Township reticulation system for interim treatment options;
  - iii. That community and stakeholder consultation be initiated with the intention of proposing a project plan and costs for the 2014/15 Annual Plan and 2015 Long Term Plan

## Comment

- 6 The following key factors have made it necessary to reconsider whether or not a wastewater pipeline to Wanaka is the best solution for Cardrona.
  - a. Private schemes being offered to council for purchase.
  - b. Reduced flow projections being forecast for Cardrona.
  - c. Significant design risks around the Cardrona Valley Pipeline solution.
- 7 The project team has therefore held a number of internal workshops to review all practicable options (the long-list) to settle on a short-list of options for further investigation. This short-list of options was agreed with key stakeholders at a workshop on 23 April 2015.
- 8 The long-list of options were assessed against how well they will deliver the following investment objectives:
  - a. To have zero illness attributable to a communal water supply by 2016.
  - b. To have zero illness attributable to a communal wastewater scheme by 2017.
  - c. To ensure all properties have access to a complying wastewater treatment and disposal system by 2020.

- d. To ensure no development that is permitted under current zoning is inhibited by a lack of 3-water infrastructure from 2017.

### ***Options***

- 9 This report identifies and assesses the following reasonably practicable options as required by section 77 of the Local Government Act 2002:
- 10 The first step is to identify all "reasonably practicable" options. If an option is not reasonably practicable, then it will not require consultation. One option that should always be considered is the option of doing nothing – the status quo.
- 11 To assess the advantages and disadvantages the wastewater and water supply options have been discussed separately.

### ***Wastewater Options***

#### 12 Wastewater Option 0 Do Nothing - Status Quo

##### 13 Advantages:

- 14 No investment required from council.

##### 15 Disadvantages:

- 16 Council has little influence to ensure that the investment objectives are met.

#### 17 Wastewater Option 1 Do Minimum – Purchase Baxter2009 scheme to service the Rural Visitor Zone only.

- 18 All existing properties in the Rural Visitor Zone including the Hotel to be connected, via a mix of gravity and low pressure systems, to Baxter2009 except for Benbrae, which would operate as normal. This option is developed with a view that minimal investment is made by QLDC while servicing the community up to the design flows of the existing treatment plant.

##### 19 Advantages:

- 20 Lowest capital investment. Council control over wastewater management of Baxter treatment plant. Gives sufficient time to develop long term alternative solutions for Cardrona. Plant is simpler and easier to operate compared to conventional activated sludge or Biological Nutrient Removal (BNR) plants. Enough land available for expansion of disposal fields or trenches. Potentially suited to pipeline (CVP) option, as plant can be operated during low flow periods.

##### 21 Disadvantages:

- 22 Does not service whole of 'village'. Council buying old assets – will need refurbishment. Recent ORC audit results of the Baxter plant were not favourable. Increase in Council's O&M efforts and costs in both wastewater treatment plants (WWTPs) and onsite pump stations. Improvements or upgrade will need to be planned and timed based on development plans. Does not relocate existing wastewater disposal fields, which means existing water supply is still at risk.

23 Wastewater Option 2 Less Ambitious - Purchase existing wastewater schemes to service the Cardrona Village.

24 Under this option, the village is to be serviced for existing as well as future flows through a mix of gravity and low pressure systems. Future flows can be accommodated by surplus capacity at Benbrae in the short-term.

25 Advantages:

26 Services entire 'Village' and supports future development. Council control over wastewater management. Initial Phase 1 gives sufficient time to develop long term alternative solutions for Cardrona and opens up potential development opportunities. Spare capacity of Benbrae WWTP can be utilised for new developments in Phase 1. Both plants can be operated as long as possible, before a trigger for Phase 2 is reached. Existing plants are simpler and easier to operate compared to conventional activated sludge or BNR plants. If rapid infiltration (RI) disposal is technically approved by ORC, then QLDC does not have to explore new sites for 20 years or beyond. In the long term, this option removes the Benbrae disposal field, location of which has been a concern. Phasing of the project enables QLDC to plan infrastructure prudently.

27 Disadvantages:

28 Council buying old assets – may need refurbishment in the short term. If Phase 1 is longer than 5 years, there could be additional expenditure on renewals. Existing disposal fields will be in operation during Phase 1. For the next 3-4 years (Phase 1), the plants will operate on existing consents. A full AEE (assessment of environmental effects) will be needed for consent renewal. Development restricted to limits of wastewater infrastructure during each phase. No opportunity for ski fields to connect to the system. Relies on efficient performance of the ski field WWTPs. Increase in Council's O&M efforts and costs. Improvements or upgrade will need to be planned and timed based on development plans.

29 Wastewater Option 3 Intermediate – New WWTP to service the Cardrona Village and Mt Cardrona Station.

30 Under this option, the village, Mt Cardrona Station and the rural general land in between is to be serviced for existing as well as future flows via a gravity system. A variant of this option has also been explored where the flows from the Cardrona Alpine Resort are also included.

31 Advantages:

32 Services entire 'Village', Mount Cardrona Station (MCS) and Rural General land (between Rural Visitor Zone (RVZ) and MCS). Council control over wastewater management. Modular design allows flexibility for future expansion. Gives security to Council in terms of wastewater infrastructure for the next 20 years. Council doesn't need to buy existing WWTPs, hence avoiding associated risks. Opens up potential development opportunities. In the long term, this option removes the Benbrae disposal field, location of which has been a concern. A new WWTP will significantly improve the wastewater infrastructure at Cardrona. It avoids all the risks associated with a pipeline to Wanaka. Sequential Batch

Reactors (SBRs) can be optimised and operated for varying seasonal flows (e.g. operating one basin during the low season and bringing the second on line during the peak season). A nitrogen removal plant will be better received by ORC. QLDC have experience with and are familiar with SBR plants (Wanaka). Opportunity to utilise existing water supply bores.

### 33 Disadvantages:

34 Although the proposed site has existing consents, the AEE and application will need to be updated with ORC. No opportunity for ski fields to connect to the system. Relies on efficient performance of the ski field WWTPs. Increase in Council's O&M efforts and costs. Improvements or upgrade will need to be planned and timed based on development plans. High cost.

### 35 Wastewater Option 4 More Ambitious – Cardrona Valley Pipeline

36 Under this option, the village, Cardrona Alpine Resort, Mt Cardrona Station and the rural general land in between is to be serviced for existing as well as future flows via a gravity system.

### 37 Advantages:

38 Services entire 'Village', MCS, RG (between RVZ and MCS) and the Cardrona Alpine Resort (CAR). Council control over wastewater management. Gives security to Council in terms of wastewater infrastructure for the next 20 years. Council doesn't need to buy existing WWTPs, hence avoiding associated risks. Opens up potential development opportunities. No local wastewater issues of treatment and disposal. No indirect discharge to ground and river at Cardrona. This option removes the private treatment plants (including ski fields) and the risks associated with them. In the long term, this option removes the Benbrae disposal field, location of which has been a concern. Possibility of connecting communities between Cardona and Wanaka in future.

### 39 Disadvantages:

40 Low flow septicity issues. Lack of certainty around growth projections enhances the septicity risks. High capital cost. Staging is not possible. The whole pipeline will need to be built at the start. It may be possible to stage some of the storage. Although summer flows will be low, winter flows will be higher.

41 Wastewater Option 5 Hybrid – Cardrona Valley Pipeline, with purchase of Baxter2009 in the interim.

42 Phase 1 - Under this phase the Hotel is assumed to be connected to Baxter2009 and the remaining spare capacity would be available for development. Existing septic tanks would not be connected until the Cardrona Valley Pipeline was in place.

43 Phase 2 – The village would be fully reticulated via gravity down to Mt Cardrona Station. Flows from the village, Mt Cardrona Station and Cardrona Alpine Resort would then be conveyed to Wanaka via the Cardrona Valley Pipeline.

## 44 Advantages:

45 It gives QLDC control over the wastewater treatment in the village (except Benbrae, in the short term). It provides an opportunity to QLDC to connect an additional flow of 12.5 m<sup>3</sup>/day, which equates to 15 to 17 houses immediately. The option promotes development in the next 4-5 years with low initial investment. This period gives an opportunity to QLDC to observe and evaluate the effect of growth on infrastructure development. The growth and planning models can be revisited and recalibrated in the next few years based on the actual development. Based on this data, QLDC will be better equipped to plan and design Option 3 or 4. This option allows QLDC to have the flexibility of selecting the option of a new treatment plant or a pipeline to Wanaka WWTP in the next 5 years. It will be beneficial to revisit these options closer to the time of implementation.

## 46 Disadvantages:

47 The Baxter treatment plant is an ageing asset and will need some investment. This option does not allow extensive development at a rapid pace. It only serves part of the village and Hotel. The ski fields will need to have their own treatment scheme during the 5 year period. Benbrae disposal field will continue to operate as is. There will be a marginal increase (compared to status quo) in QLDC's operation and maintenance and associated costs.

48 This report recommends Wastewater Option 5 for addressing the matter.

### ***Waste Supply Options***

#### 49 Water Supply Option 0 Do Nothing - Status Quo

## 50 Advantages:

51 No investment required from council.

## 52 Disadvantages:

53 Council has little influence to ensure that the investment objectives are met.

#### 54 Water Supply Option 1 Do Minimum – Purchase the village supply.

55 Under this option the existing village supply would be purchased and upgraded to comply with drinking water standards. Benbrae's supply would continue to operate as normal.

## 56 Advantages:

57 Take-over by Council will ensure compliance. Will increase QLDC's control of overall management of public health in Cardrona. Low cost. Gives QLDC time to evaluate water and wastewater options recommended in this report in detail.

## 58 Disadvantages:

59 Council will inherit old assets. Pricing of existing assets maybe challenging. Will potentially be affected by the Benbrae disposal field. Future expansion of field may be difficult.

60 Water Supply Option 2 New Bore Supply

61 Under this option a new bore supply would be sought upstream of the village, with new treatment, storage and falling main to the existing network provided.

62 Advantages:

63 Can be designed to meet Drinking Water Standards NZ (DWSNZ). QLDC has control of assets. Reduced risk of contamination events. Can be sized for growth.

64 Disadvantages:

65 Purchase cost of the existing system is unknown at this stage and may be challenging to establish. Existing underground infrastructure condition unknown. It is not known if there is suitable bore water at the proposed site.

66 Water Supply Option 3 New Bore Supply and New Reticulation

67 This option is similar to Option 2 but includes a new reticulation main installed in the berm alongside the road.

68 Advantages:

69 Can be designed to meet DWSNZ. QLDC has control of assets. Reduced risk of contamination events. Can be sized for growth. Underground assets are of known condition (new). Avoids purchase costs for existing reticulation.

70 Disadvantages:

71 It is not known if there is suitable bore water at the proposed site. New trunk main adds to the capital costs of the option.

72 Water Supply Option 4 New River Source, Treatment Plant and Storage

73 Advantages:

74 Can be designed to meet DWSNZ. QLDC has control of assets. Reduced risk of contamination events. Can be sized for growth. Underground assets are of known condition (new). Guaranteed water supply.

75 Disadvantages:

76 Expensive treatment plant plus cost of purchase of the existing system plus depreciation allowance. Existing underground infrastructure condition unknown. Waste disposal may be an additional cost.

77 This report recommends Water Supply Option 1 for addressing the matter.



## Significance and Engagement

78 This matter is of [high] significance, as determined by reference to the [Council's Significance and Engagement Policy](#) because it involves the possible transfer of sewage treatment plants and water supply infrastructure to council, which are considered strategic assets.

## Risk

79 This matter relates to the strategic risk SR1 "Current and future development needs of the community (including environmental protection)", as documented in the Council's risk register.

80 A number of potential risks to the project and implementation of a Cardrona wastewater and water supply scheme have been identified. The key risks that relate specifically to the assessment of options and estimated residential dwelling/dwelling equivalent connection charges undertaken to date are: The use of wastewater flow allowances and the possibility that actual flows may be lesser or greater than these which would impact scheme cost; the possible implementation of flow based connection charges, particularly for commercial users, and the potential inability to recover additional connection charges from existing users due to the future increase in wastewater generation; the potential for cost escalation; consenting and approval risks for the existing wastewater treatment plant and obtaining consents from the ORC.

81 It is intended that the key risks above will be managed and mitigated during the next stages of this project through further assessment that will include: verification of flow allowances based on the results of the water meter trial that is currently underway; further assessment of commercial funding options based on feedback and discussions at the recent meetings; undertaking more detailed assessment and design work as recommended and continuing to engage with suppliers as appropriate; and continuing to work closely with key stakeholders, the Cardrona community and engage with landowners along the transfer pipeline to Wanaka while undertaking the Assessment of Environmental Effects and preparation of variations to the existing wastewater discharge consent.

82 In general terms the key risks to this project at this stage relate to insufficient funding and affordability for ratepayers and the commitment from Cardrona Alpine Resort and Mt Cardrona Station being part of the overall Cardrona wastewater scheme.

## Financial Implications

83 Budget of \$4.08m is available in the LTP 2015-25. The budget for the proposed solutions is currently insufficient and needs to be adjusted in the next Annual Plan/Long Term Plan review.

84 At this stage it is proposed to bring \$1.438m of the budget forward into 2015/16 and 2016/17 to enable the short-term solutions with the long-term budget requirements to be adjusted in the next LTP review.

## **Council Policies, Strategies and Bylaws**

85 The following Council policies, strategies and bylaws were considered:

- Cardrona 2020 (2003) - To provide for the cost-effective reticulation of water and sewerage as the population increases and this becomes more economically viable.
- Water and Sewerage Schemes – Small Communities (2004) - Sewerage and water need to be funded by the community that benefit.
- Growth Management Strategy (2007) - Infrastructure is provided in a way that supports high quality development located in the right places while adhering to the principles of sustainable development and ensuring that the environmental qualities of the district are protected.
- 3 Waters Strategy (2011) - We will manage risk and be able to adapt to a variety of future scenarios for climate change and population growth

86 This matter is included in the 10-Year Plan/Annual Plan

- The 2015 10-Year Plan includes budget for a new Cardrona Wastewater scheme with \$418k in 2016/17 and \$3.5m in 2017/18.
- The 2015 10-Year Plan includes budget for Cardrona water supply with \$165k in 2016/17.

## **Local Government Act 2002 Purpose Provisions**

87 The recommended option:

- Will help meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses by providing water and wastewater services for the Cardrona community;
- Will require additional funding in the 10-Year Plan and Annual Plan;
- Is consistent with the Council's plans and policies; and
- Will transfer the ownership or control of a strategic asset to the Council.

## **Consultation: Community Views and Preferences**

88 The persons who are affected by or interested in this matter are residents/ratepayers of the Cardrona community, the Otago Regional Council and Public Health South.

89 The Council held a workshop with key stakeholders on 23 April 2015 to take them through the long-list options assessment and to agree the short-listed options for further investigation. A second workshop on 14 May 2015 presented the short-listed options and assessed support for the preferred solution.

90 There was a desire from the key stakeholders to progress both an immediate solution and a longer term solution.

91 Due to the potential affordability of the long term solution it is recommended that the detailed business case is taken to the community for an indication of support.

## **Legal Considerations and Statutory Responsibilities**

92 It is the duty of every local authority to improve, promote, and protect public health within its district. To cause all proper steps to be taken to secure the abatement of any nuisance, or any conditions likely to be injurious to health. (Health Act 1956).

## **Attachments**

- A Cardrona Indicative Business Case - Wastewater and Water Supply Servicing Options
- B Cardrona Water and Wastewater Servicing Options (Referenced but not attached)