Cardrona Indicative Business Case

Wastewater and Water Supply Servicing Options





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Cardrona Indicative Business Case

Prepared for:

QUEENSTOWN LAKES DISTRICT COUNCIL

Quality Assurance Statement

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Executive Summary

Need to Invest

- There was an outbreak of acute gastroenteritis at Cardrona late in Aug/Sep 2012 involving 53 recognised cases.
- Two water supplies were found to contain the same *Norovirus* strain as that detected in faecal specimens from cases.
- Environmental sampling found evidence of *Norovirus* in the surface discharge from at least one wastewater system and also the Cardrona River downstream of the village.
- There is evidence that the contamination from sewerage has been occurring for some time.
- There was a large outbreak in 2006 at the Cardrona Alpine Resort, also caused by *Norovirus* contamination of the water supply.

Strategic Context

Health Act 1956 - 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.

LGA 2002 - assess, from a public health perspective, the adequacy of water and other sanitary services available to communities. 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. Cardrona 2020 (2003) - To provide

cost-effective reticulation of water

and sewerage as the population

increases and this becomes more

Strategic Case:

Investment Objectives and Case for Change

Objective 1	To have zero illness attributable to a communal water supply by 2016.				
Existing	Two private bores located in the centre of village. Main community				
arrangements	supply has a new chlorine dosing pump and UV unit installed. The U\				
	unit is not an accredited system with the NZDWS.				
Business Needs	A secure water supply source and treatment solution that				
	significantly reduces the risk of future outbreaks.				
Scope	A core requirement is to improve the existing treatment and				
	management to comply with NZDWS. A more desirable solution				
	would also include finding a more secure water supply source.				

Objective 2:	To have zero illness attributable to a communal wastewater scheme b
Existing	Three private treatment plants and disposal fields located in and
arrangements	around the village. Baxter2009 is acting as a community supply. The
	remainder of the village are operating on septic tanks. Cardrona
	Alpine Resort is keen to get their wastewater off the mountain.
Business Needs	Wastewater disposal that does not pose a significant risk to public h
Scope	A core requirement is to improve the existing treatment and
	disposal systems. A more desirable solution would include
	consolidating the number of plants and disposal fields and locating
	these away from any potable water takes.

	Objective 3.	To ensure an properties have access to a regar waste water treatment				
		and disposal system by 2020.				
	Existing	The Hotel's consent expires in 2016 and Baxter2009's consent				
	arrangements	expires in 2019. The remainder of the village are operating on septic				
		tanks. Cardrona Alpine Resort currently have a 5 year consent for				
		wastewater disposal.				
Business Needs Consented wastewater dispo		Consented wastewater disposal systems for existing/future				
		communities				
	Scope	A core requirement is to service the existing community. A more				
		desirable solution would include consolidating the number of plants				
		and disposal fields and incorporating the wider Cardrona Valley				

	Objective 4:	To ensure no development, that is permitted under current zoning, is inhibited by a lack of 3-water infrastructure from 2017.
е	Existing arrangements	Under current Rural Visitor Zone rules there is no minimum lot size but lack of access to a community wastewater scheme means developments are limited through having to provide wastewater treatment and disposal solutions.
-	Business needs	Access to suitable 3-waters infrastructure for all residential and visitor zoned land that enables the zone to be fully developed.
	Scope	A core requirement is to service the existing Rural Visitor Zone. A more desirable solution would include both the Mt Cardrona Special Zone and the Cardrona Alpine Resort.

Cardrona Wastewater and Water Supply Servicing Options

Economic Case.							
Determine Potential Value for Money							
Wastewater Options 0 1 2 3a 3b 4 5							
Description	Do Nothing	Baxter2009	SBR	SBR at MCS	SBR at MCS	CVP	Baxter/CVP
Appraisal period (years)	30	30	30	30	30	30	30
Capital costs (\$m)	12.0	1.0	7.1	8.5	10.6	9.8	10.8
Whole of Life Costs (\$m)	27.8	2.6	7.7	18.1	23.0	12.4	13.4
Cost-Benefit Analysis of (monetary be	nefits and costs	at the Public Se	ctor Discount R	ate)			
Net Present Value of Benefits (\$m)	0.0	0.9	12.5	11.5	16.2	17.3	17.0
Net Present Costs (\$m)	14.7	1.6	7.5	11.0	13.8	10.2	9.5
Benefit Cost Ratio	0.0	0.6	1.7	1.0	1.2	1.7	1.8
Net Present Value (NPV, \$m)	-14.7	-0.6	5.0	0.5	2.5	7.0	7.5
Multi-criteria Analysis (ranking of non	-monetary bene	fits and costs, if	fany)				
Objective 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Objective 2	Partial	Partial	Yes	Yes	Yes	Yes	Yes
Objective 3	No	Partial	Partial	Yes	Yes	Yes	Yes
Objective 4	No	Partial	Partial	Yes	Yes	Yes	Yes
Costs per DE (Capex+Opex, \$k/DE)		21.8	25.1	16.3	11.3	9.8	10.7
Preferred Option:							Preferred

The Preferred Option: (Wastewater Option 5 - Baxter/CVP) + (Water Supply Option 1 - Purchase Village Supply)

Is to purchase the Baxter2009 WWTP as soon as possible and progress the development of the Cardrona Valley Pipeline ready for construction in 2019/20. It delivers on all objectives and satisfies those that wish to have immediate action but avoids the costly upgrades for as long as possible. Value for money is confirmed as it has the highest NPV and the second lowest costs per dwelling equivalent.

Purchasing the village water supply will help deliver on all objectives over time (once wastewater disposal is removed from the village), satisfies those that wish to have immediate action and avoids the costly upgrades of finding a new water source.

Wa	ater Supply Options	0	1	2	3
	Description		Purchase	New Bore	Supply +
	2000	Do Nothing	Village Supply	Supply	Reticulation
Whole o	of Life Costs (\$m)	10.0	1.1	2.6	3.0
Net Pre	sent Value (NPV, \$m)	-3.8	0.6	0.3	0.0
					1

Commercial Case:

The procurement strategy is to negotiate sale and purchase agreements with Baxter2009 and Cardrona Water Supply Limited, engage QLDC's 3-waters operations and maintenance contractor to run these schemes and use professional services providers to further develop the preferred solution.

Financial Case: Financial Costing

5000)	20	16/17	To	otal 10yrs
apital «penses	\$	1,438	\$	11,231
perating openses	\$	106	\$	1,135
otal evenue	\$	-	\$	4,600
apital unding equired	\$	1,438	\$	6,631
perating unding equired	\$	284	\$	5,905
perating (/DE)	\$	1,978	\$	16,262

Affordability and Funding:

The financial analysis of the preferred option demonstrates that it is affordable but is very close to the assumed limits of affordability. It will therefore be necessary to take the final funding proposal to the community for an indication of support

Management Case:

economically viable.



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1 Introduction

This business case seeks formal approval to invest:

- up to \$10.8m in the years 2015/16 to 2019/20 to address wastewater issues in Cardrona.
- up to \$407k in the years 2015/16 to 2016/17 to address water supply issues in Cardrona.

This business case follows the Treasury Better Business Cases guidance and is organised around the five case model. It has been co-ordinated by Rationale Limited, and builds on the Cardrona Water and Wastewater Servicing Options report provided by Harrison Grierson and engagement at the following stakeholder workshops:

Table 1: Stakeholder Workshops

Date	Workshop
24 February 2015	Objectives and options workshop (internal stakeholders)
18 March 2015	Long-list options workshop (internal stakeholders)
23 April 2015	Long-list options workshop (external stakeholders)
14 May 2015	Short-listed options workshop (external stakeholders)

The key stakeholders involved in the workshops are listed below.

Table 2: Key Stakeholders

Internal Stakeholders	External Stakeholders
Lyal Cocks (Councillor)	Lyal Cocks, Ulrich Glasner, Rob Darby (QLDC)
Ulrich Glasner (Chief Engineer)	Blyth Adams (CVVRS)
Rob Darby (Asset Performance Team Leader)	Derek Bell, Janine Kruger (Public Health South)
Peter Hansby (GM Infrastructure)	Andrew Spencer, Chris Morton (MCS).
Ash Deshpande (H&G)	Cade Thornton (Cardrona Hotel)
Tom Lucas (Rationale)	Simon Beardmore, Duane Calvert (ORC)
	Grant Railton (Baxter2009)
	Kathy Lynn (Brooklynn)
	Jamie Young, Leanne Young (Benbrae)
	Erik Barnes (CAR)

2 Strategic Case

2.1 Strategic Context

The key aims of the organisation are to have high performing infrastructure and services that:

- meet current and future user needs, and are fit for purpose
- are cost effectively and efficiently managed on a full life-cycle basis
- are affordable for the district.

The core responsibilities of the organisation are:

• To improve, promote, and protect public health within its district (Health Act 1956).



- 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).
- To assess, from a public health perspective, the adequacy of water and other sanitary services available to communities (LGA 2002).

Analysis of the current and anticipated operating environments has identified the following key issues for the organisation:

- 1. The current ad-hoc nature of development has caused significant risk to public health;
- 2. There is the potential for significant growth in Cardrona;
- 3. Addressing these factors poses a significant affordability issue for the Cardrona community.

Relevant organisational policies, strategies and goals are:

- 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.
- 2015 2045 Infrastructure Strategy (2015) To rationalise the number of wastewater treatment plants in the district to achieve better environmental and economic outcomes.

The investment proposal aligns to the above direction by enabling development, protecting public health and the environment and at the same time optimising value for money.

2.2 The Need for Investment

A workshop was held on 24 February 2015 with key internal stakeholders to gain a better understanding of investment drivers and the need to invest in change. The internal stakeholders identified and agreed the following key problems that need to be addressed:

- Water contamination (Norovirus outbreak).
- Wastewater treatment plants (WWTP's) failing (Benbrae) and requiring resource consent renewal (Cardrona Alpine Resort (CAR) + Hotel + Baxter2009).
- Growth is restricted.

There was an outbreak of acute gastroenteritis at Cardrona late in Aug/Sep 2012 involving 53 recognised cases. Two water supplies were found to contain the same Norovirus strain as that detected in faecal specimens from cases. Environmental sampling found evidence of Norovirus in the surface discharge from at least one wastewater system and also the Cardrona River downstream of the village. There is evidence that the contamination from sewerage has been occurring for some time. There was also a large outbreak in 2006 at the Cardrona Alpine Resort, also caused by Norovirus contamination of the water supply.

There are numerous issues with existing wastewater treatment and disposal systems in Cardrona.

- Benbrae: Good treatment system, but issues exist with waterlogging in the discharge field.
- Hotel: Poor system and poor disposal system.
- Baxter2009: Suitable system and disposal area however this system has not been loaded to its design specifications so its performance under load conditions is unproven.

The lack of 3-waters infrastructure in Cardrona is considered to be holding back development of the community. In particular the reliance on individual septic tanks (with their associated space requirements),



or the financial hurdle of installing private wastewater treatment systems is restricting development in the Rural Visitor Zone (RVZ).

The following levels of potential development have been assumed for this project. With greater densities allowed in the two zones there is the chance that development could be much greater than this.

Table 3: Future Development Assumptions

Zone	Current Rating Units (SUIPs)	Future Dwellings
Rural Visitor Zone (RVZ)	65 (plus 35 vacant)	192
Mt Cardrona Station Special Zone (MCS)	8	500

2.3 The Case for Change

Internal stakeholders identified four investment objectives for this investment proposal at a workshop on 24 February 2015. The case for change is summarised below for each of these investment objectives.

Objective 1	To have zero illness attributable to a communal water supply by 2016.
Existing arrangements	Two private bores located in the centre of the village. The main community supply has a new chlorine dosing pump and UV unit installed. The UV unit is not an accredited system with the NZDWS.
Business Needs	A secure water supply source and treatment solution that significantly reduces the risk of future outbreaks.
Scope	A core requirement is to improve the existing treatment and management to comply with NZDWS. A more desirable solution would include finding a more secure water supply source.
Benefits	Residents, visitors and businesses will benefit from reduced illness meaning less days off sick and less loss of revenue. Reputation as a tourist destination will be maintained.
Risks	Not reaching agreement on the management of the water supply schemes. Ongoing contamination from the disposal of wastewater in the village. Not being able to transfer an existing water take to a new location and/or entity. Not finding a new secure water supply source.
Constraints & dependencies	Existing water takes are currently over-allocated in the Cardrona Valley. Success is greatly improved if wastewater disposal ceases in and around the village.



Objective 2	To have zero illness attributable to a communal wastewater scheme by 2017.
Existing arrangements	Three private treatment plants and disposal fields located in and around the village. Baxter2009 is acting as a community supply. The remainder of the village are operating on septic tanks. Cardrona Alpine Resort is keen to get their wastewater off the mountain.
Business Needs	Wastewater disposal that does not pose a significant risk to public health.
Scope	A core requirement is to improve the existing treatment and disposal systems. A more desirable solution would include consolidating the number of plants and disposal fields and locating these away from any potable water takes.
Benefits	Residents, visitors and businesses will benefit from reduced illness meaning less days off sick and less loss of revenue. Reputation as a tourist destination will be maintained.
Risks	Not reaching agreement on the management of the wastewater schemes. ORC may impose stringent discharge standards. Community objection to location of treatment plants. Not finding acceptable funding arrangements.
Constraints & dependencies	Success is greatly improved if potable water takes are moved upstream of any wastewater disposal fields.

Objective 3	To ensure all properties have access to a legal wastewater treatment and disposal system by 2020.
Existing arrangements	The Hotel's wastewater disposal consent expires in 2016 and Baxter2009's consent expires in 2019. The remainder of the village are operating on septic tanks. Cardrona Alpine Resort currently have a 5 year consent for wastewater disposal.
Business Needs	Consented wastewater disposal system/s for the existing and future communities.
Scope	A core requirement is to service the existing community. A more desirable solution would include consolidating the number of plants and disposal fields and incorporating the wider Cardrona Valley community.
Benefits	Ratepayers will benefit by avoiding any enforcement costs imposed on them by the ORC for not complying with the ORC Water Plan. Residents, visitors, businesses and wildlife will benefit from the improved management of water quality in the Cardrona River catchment.
Risks	Not reaching agreement on the management of the wastewater schemes.
	ORC may impose stringent discharge standards.
	Community objection to location of treatment plants.
	Not finding acceptable funding arrangements.
Constraints & dependencies	The Hotel's consent expires in 2016 and Baxter2009's consent expires in 2019. Cardrona Alpine Resort currently have a 5 year consent for wastewater disposal.



Objective 4	To ensure no development, that is permitted under current zoning, is inhibited by a lack of 3-waters infrastructure from 2017.
Existing arrangements	Under current Rural Visitor Zone rules there is no minimum lot size but lack of access to a community wastewater scheme means developments are limited through having to provide wastewater treatment and disposal solutions.
Business Needs	Access to suitable 3-waters infrastructure for all residential and visitor zoned land that enables the zone to be fully developed.
Scope	A core requirement is to service the existing Rural Visitor Zone. A more desirable solution would include both the Mt Cardrona Special Zone and the Cardrona Alpine Resort.
Benefits	Ratepayers will benefit by being able to fully realise the value of their property investment.
Risks	Not reaching agreement on the management of the wastewater schemes. ORC may impose stringent discharge standards. Community objection to location of treatment plants. Not finding acceptable funding arrangements.
Constraints & dependencies	

3 Economic Case

3.1 Critical Success Factors

In addition to the investment objectives, the following assessment criteria will be used for screening the options.

Generic Critical Success Factors	Broad Description	Proposal-Specific Critical Success Factors
Strategic fit and business needs	How well the option meets the agreed investment objectives, related business needs and service requirements, and integrates with other strategies, programmes and projects.	Alignment with District Plan, 30yr Infrastructure Strategy & Regional Plans.
Potential value for money	How well the option optimises value for money (i.e. the optimal mix of potential benefits, costs and risks).	Right solution, right time at the right price.
Supplier capacity and capability	How well the option matches the ability of potential suppliers to deliver the required services, and is likely to result in a sustainable arrangement that optimises value for money.	Is it a sustainable arrangement (external).
Potential affordability	How well the option can be met from likely available funding, and matches other funding constraints.	Are there no funding constraints.
Potential achievability	How well the option is likely to be delivered given the organisations ability to respond to the changes required, and matches the level of available skills required for successful delivery.	Ability and skills to deliver (internal).



3.2 Identify Short-listed Options

Within the potential scope of this proposal, the following long-list options for providing the identified services were identified by key stakeholders:

Dimension	Description	Options within each Dimension
Scale, scope and location	In relation to the proposal, what levels of service (supply) and coverage (user) are possible? For example, by levels of functionality, geographic coverage, population/user base, etc.	 status quoDo nothing Wastewater only Water supply only Wastewater and water supply
	Scale and location	 status quoExisting communal schemes only Rural Visitor Zone only Current "Village" Village + Mt Cardrona Stn (MCS) Village + Cardrona Alpine Resort (CAR) Village + MCS + CAR
Service solution	How can services be provided? For example, alternative processes, mixes of enablers, etc.	 status quoDo nothing Assist in management of existing schemes Purchase existing schemes Build new local infrastructure Send wastewater to Wanaka
Service delivery	Who can help us to deliver the services? Eg in-house or out-sourced or alternative partnering arrangements.	In-house designOut-sourced designAlliancing / partnership design
Implementation	When can services be delivered? Including choices about the pace of change. Eg big bang, phased, modular.	DeferredJust in time (just too late)PhasedNow, big bang
Funding	How can it be funded? Including choices of funders and possible arrangements. For example, capital or operating, privately or Crown funded, user charging.	 Targeted Ward based 3rd Party

The full long-list options assessment is shown in Appendix A.

On the basis of the initial assessment of the long-list options (by dimension), the following short-listed options were selected for further economic analysis:

• Option 0: Status quo or do nothing (retained as a baseline comparator).



- Option 1: Do minimum Purchase an existing wastewater scheme to service the Rural Visitor Zone only.
- Option 2: Less Ambitious Purchase existing wastewater and water supply schemes to service the Cardrona Village.
- Option 3: Intermediate New WWTP and water supply source and treatment to service the Cardrona Village and Mt Cardrona Station.
- Option 4: More Ambitious Cardrona Valley Pipeline and new water supply source and treatment to service the Cardrona Village, Mt Cardrona Station and Cardrona Alpine Resort.

At the key stakeholder workshops on 23 April 2015 and 14 May 2015 it was evident that there was the desire for an immediate solution as well as a longer term solution. This resulted in a number of hybrid options being investigated with the following option being considered for inclusion.

Option 5: Hybrid – Cardrona Valley Pipeline, with purchase of existing schemes in the interim.

3.3 Economic Analysis

For the purposes of the analysis the following assumptions have been made:

- In the status quo or do nothing option growth will happen but will incur significant costs for connecting to existing infrastructure or building new infrastructure (i.e. capital costs of \$12m are assumed in the do nothing option to enable development).
- Each option is assessed in relation to the status quo or do nothing option.
- Avoiding or replacing the status quo or do nothing costs is considered as a benefit in the analysis
 (i.e. option 1 has capital costs of \$1.0m different to the do nothing option but only provides
 benefits, such as avoiding do nothing costs, of \$0.9m).
- The uplift in property values once the infrastructure barriers to development are removed is included as a key benefit in the analysis. This is estimated at \$25/m².
- The lost revenue from sick days is considered in the analysis.
- The residual value of long life assets is considered as a benefit in the analysis.

The wastewater flows used in the analysis are shown in Appendix B.

To make the analysis easier to follow the wastewater and water supply options have been separated out in the economic analysis. These are summarised in the following tables.



Table 4: Wastewater Options Cost Benefit Analysis

Wastewater Options	0	1	2	3a	3b	4	5
Description	Do Nothing	Baxter2009	SBR	SBR at MCS	SBR at MCS	CVP	Baxter/CVP
Appraisal period (years)	30	30	30	30	30	30	30
Capital costs (\$m)	12.0	1.0	7.1	8.5	10.6	9.8	10.8
Whole of Life Costs (\$m)	27.8	2.6	7.7	18.1	23.0	12.4	13.4
Cost-Benefit Analysis of (monetary bene	efits and costs a	t the Public Sect	or Discoun	t Rate)			
Net Present Value of Benefits (\$m)	0.0	0.9	12.5	11.5	16.2	17.3	17.0
Net Present Costs (\$m)	14.7	1.6	7.5	11.0	13.8	10.2	9.5
Benefit Cost Ratio	0.0	0.6	1.7	1.0	1.2	1.7	1.8
Net Present Value (NPV, \$m)	-14.7	-0.6	5.0	0.5	2.5	7.0	7.5
Multi-criteria Analysis (ranking of non-n	nonetary benefi	ts and costs, if a	ny)				
Objective 1	Partial	Partial	Partial	Yes	Yes	Yes	Partial
Objective 2	Partial	Partial	Yes	Yes	Yes	Yes	Yes
Objective 3	No	Partial	Partial	Yes	Yes	Yes	Yes
Objective 4	No	Partial	Partial	Yes	Yes	Yes	Yes
Costs per DE (Capex+Opex, \$k/DE)		21.8	25.1	16.3	11.3	9.8	10.7
Preferred Option:							Preferred

Table 5: Water Supply Options Cost Benefit Analysis

Water Supply Options	0	1	2	3					
Description	Do Nothing	Purchase Village Supply	New Headworks	Headworks + Trunkmain					
Appraisal period (years)	30	30	30	30					
Capital costs (\$m)	1.6	0.4	1.1	1.5					
Whole of Life Costs (\$m)	10.0	1.1	2.6	3.0					
Cost-Benefit Analysis of (monetary benefits and costs at the Public Sector Discount Rate)									
Net Present Value of Benefits (\$m)	0.0	1.7	2.0	2.0					
Net Present Costs (\$m)	3.8	1.0	1.7	2.0					
Benefit Cost Ratio	0.0	1.6	1.2	1.0					
Net Present Value (NPV, \$m)	-3.8	0.6	0.3	0.0					
Multi-criteria Analysis (ranking of non-m	onetary benefits	s and costs, if any)							
Objective 1	Partial	Partial	Yes	Yes					
Objective 2	Partial	Partial	Partial	Partial					
Objective 3	N/A	N/A	N/A	N/A					
Objective 4		Partial	Partial	Partial					
Costs per DE (Capex+Opex, \$k/DE)		0.8	2.0	2.6					
Preferred Option:		Preferred							



The preferred wastewater option is option 5 because it delivers on all objectives and satisfies those that wish to have immediate action but avoids the costly upgrades for as long as possible. Value for money is confirmed as it has the highest NPV and the second lowest costs per dwelling equivalent (DE).

The other wastewater short-listed options were rejected because they either did not deliver all the benefits sought or the costs were considered too high.

The preferred water supply option is option 1 because it will help deliver on all objectives over time (once wastewater disposal is removed from the village), satisfies those that wish to have immediate action and avoids the costly upgrades of finding new water source. Value for money is confirmed as it has the highest NPV and the lowest costs per dwelling equivalent (DE).

The other short-listed options were rejected because they did not deliver good value for money.

3.4 The Preferred Option

Wastewater Option 5 - Baxter/CVP + Water Supply Option 1 - Purchase Village Supply.

Phase 1 - 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.

It is assumed that the schemes will need minor upgrades to comply with the drinking water standards and their consent conditions. It has also been assumed that the Hotel would be connected to Baxter2009 but the existing septic tanks would not be connected until the village is fully reticulated for the Cardrona Valley Pipeline.

Phase 2 – fully reticulate the village by gravity down to Mt Cardrona Station and build the Cardrona Valley Pipeline to Wanaka.

It 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.

4 Commercial Case

The procurement strategy is to negotiate sale and purchase agreements with Baxter2009 and Cardrona Water Supply Limited, engage QLDC's 3-waters operations and maintenance contractor to run these schemes and use professional services providers to further develop the preferred solution. This should facilitate immediate improvements while the longer term solution is further developed.

The required services are:

- 1. Establish investment requirements to bring existing schemes up to Council standards. Could be done by QLDC's operations and maintenance contractor.
- 2. Concept design for the preferred solution. This includes both reticulation of the village and the Cardrona Valley Pipeline.
- 3. Legal agreements for land access issues.
- 4. Private developer agreements with Mt Cardrona Station and the Cardrona Alpine Resort need to be drawn up to agree funding and delivery options for the preferred solution.
- 5. Detailed design of the final solution.

There are significant risks around delivering the preferred solution and further work should be completed to assess how best these risks could be apportioned between the parties involved.



5 Financial Case

The proposed funding arrangements are to offer residents/ratepayers the choice between a lump sum contribution and a targeted rate for their contribution to the new scheme. Annual rates would also be payable to cover the operating, interest, depreciation and overhead costs. There may be opportunities to share costs with the wider Wanaka ward and/or defer the funding of depreciation until the initial scheme loans are repaid to help with affordability. It is noted that this would be contrary to the direction received from LTP submissions.

The financial analysis model and the associated methodology is very preliminary and is only intended to indicate the potential funding implications. It has not allowed for any lump sum contributions or future development contributions to help offset the interest costs, other than an initial contribution from Cardrona Alpine Resort.

The financial analysis of the preferred option demonstrates that it is affordable but is very close to the assumed limits of affordability. A capital contribution of less than \$10k per dwelling equivalent is considered affordable. The estimated annual costs though are high at nearly \$2800 per dwelling equivalent, assuming 100% debt funding. It will therefore be necessary to take the final funding proposal to the community for an indication of support.

Table 6: Wastewater and Water Supply Financial Analysis

(\$000)	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23	2023/ 24	2024/ 25	Total 10 yr
Capital expenditure	580	858	0	750	9,043	0	0	0	0	0	11,231
Operating expenditure	0	106	106	106	106	142	142	142	142	142	1,135
Interest	38	93	93	142	431	431	431	431	431	431	2,953
Depreciation	10	24	24	36	187	187	187	187	187	187	1,217
Overheads	60	60	60	60	60	60	60	60	60	60	600
Total expenditure	687	1,142	284	1,095	9,827	820	820	820	820	820	17,136
Revenue	0	0	0	0	4,600	0	0	0	0	0	4,600
Capital required	580	858	0	750	4,442	0	0	0	0	0	6,631
Operating required	107	284	284	345	785	820	820	820	820	820	5,905
Operating required (\$/DE)	883	1,978	1,813	1,834	2,756	2,642	2,466	2,312	2,177	2,056	16,262

The following table highlights the capital expenditure changes required to the current long term plan (LTP) to progress this project further.

Table 7: 10-Year Plan Capital Expenditure

Current LTP	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23	2023/ 24	2024/ 25	Total 10 yr
Wastewater (\$000)		418	3,496								3,914
Water Supply (\$000)		165									165
Current LTP Total	0	583	3,496	0	0	0	0	0	0	0	4,079
Required											
Wastewater (\$000)	339	692	0	750	9,043	0	0	0	0	0	10,824



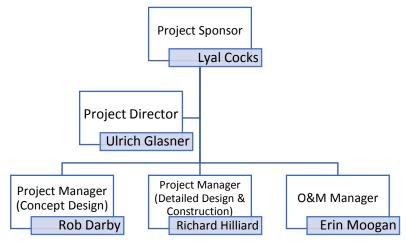
Water Supply (\$000)	241	166	0	0	0	0	0	0	0	0	407
Required Total	580	858	0	750	9,043	0	0	0	0	0	11,231

6 Management Case

In the event that this investment proposal receives formal approval, a project will be established to deliver the required services and will be managed using the QLDC project management methodology.

The relevant project management and governance arrangements are proposed to be as follows:

Figure 1: Project Roles and Responsibilities



With the uncertainty of growth and the risk of not reaching agreement with key funding contributors, it is proposed to follow a structured gateway process to ensure the decision to proceed is carefully considered at each gateway.

The following timeline is proposed to progress this project forward.

Table 8: Key Milestones

Key Date	Milestone
30-Jun-15	Indicative Business Case completed
	Gateway 1
Aug-15	Sale & Purchase Agreements completed
Dec-15	Detailed Business Case completed
	Gateway 2
Jan-16	RFP for Phase 1 Detailed Design
May-16	RFT for Phase 1 Implementation
	Gateway 3
Jul-16	Contract signed for Phase 1 Implementation
Jul to Nov-16	Phase 1 Implementation
May-17	Vote for indication of support
	Gateway 4
Jul-18	RFP for Phase 2 Detailed Design



Jan-19	RFT for Phase 2 Implementation
	Gateway 5
Jul-19	Contract signed for Phase 2 Implementation
Jul-19 to Jun 20	Phase 2 Implementation

Next Steps

This business case seeks formal approval from Council to progress the implementation of the preferred option through:

- 1. Entering into a sale and purchase agreement with Baxter2009.
- 2. Entering into a sale and purchase agreement with Cardrona Water Supply Limited.
- 3. Begin negotiations with Mt Cardrona Station and Cardrona Alpine Resort to agree delivery options and funding arrangements.
- 4. Continue to develop the detailed business case and concept design for the Cardrona Valley Pipeline.
- 5. Take the detailed business case to the community for consultation and indication of support.



Appendix A – Long list options assessment

Investment Objectives To have zero illness attributable to a communal water supply by 2016. To have zero illness attributable to a communal waster supply by 2016. To have zero illness attributable to a communal waster supply by 2017. To ensure all properfies have access to a legal wastewater scheme by 2017. To ensure all properfies have access to a legal wastewater reatment and disposal system by 2020. To ensure no development, that is permitted under current zoning, sinhibite by a lack of 3-water infrastructure from 2017. Critical Success Factors (as these CSFs are crucial (not desirable) any options that score a 'no' are automatically discounted from further analysis Strategic fit and business needs - Alignment with District Plan, 30/s Infrastructure Stratey & Regional Plans Potential value for money - right solution, right time at the right price Supplier capacity and capability - is it a sustainable arrangement (exaternal) Potential affordability - are there no funding constraints Potential achievability - ability and skills to deliver (internal) Summary of Advantages and Disadvantages: Continued for VFM Discount Possible Preferred Water 2009 Baxter 2009 services more than one development. Council is best placed to confuse of Cardrona Valley Pipeline 1. Baxter 2009 services more than one development. Council is best placed to confuse of Cardrona Valley Pipeline 1. Baxter 2009 services more than one development. Council is best placed to confuse of Cardrona Valley Pipeline is being restricted by a lack of 3-water infrastructure (p. 5. Since development is currently restricted in the RVZ by a lack of 3-water infrastructure (p. 5. Since development is being restricted by a lack of 3-water infrastructure (p. 5. Since development is currently restricted in the RVZ by a lack of 3-water infrastructure fig. 5. Since development is currently restricted in the RVZ by a lack of 3-water infrastructure fig. 5. Since development is currently restricted by a lack of 3-water infrastructure fig. 5. Since	Scope Options (What) Scale / location	Purchase Naumatanash Assist in Bushase Naumatanash	ley In-house Design Out-sourced Design Alliancing / partnership Design Yes Yes Yes Pa Yes Yes Pa	Implementation Options (When) IM-1	Runding Options RU-2 Ward based 3rd party Yes Partial Yes Partial Yes Partial Yes Partial No"				
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6. At this stage it is difficult to separate these options due to the strategic advantages			6. At this	s stage it is difficult to separate these options due to the strategic advantages of the CVP bein	ing off-set by its design risk.				
7. There is a real risk that designers will be reluctant to take on the design risk associated	i influence to ensure that it is achieved. I influence to ensure that it is achieved. Especially with regard to enabling the M Cardrona Station zone.	6. At this stage it is difficult to separate these options due to the strategic advantages of the CVP being off-set by its design risk.		e is a real risk that designers will be reluctant to take on the design risk associated with this o					
8. By purchasing the schemes council can ensure spare capacity is made available	Influence to ensure that it is achieved. Influence to ensure that it is achieved. Especially with regard to enabling the Mt Cardrona Station zone. s of the CVP being off-set by its design risk. ciated with this option.	7. There is a real risk that designers will be reluctant to take on the design risk associated with this option.		urchasing the schemes council can ensure spare capacity is made available to enable develo					
Big bang does not align with the current 3-waters strategy regarding flexibility and a By not having complete control council can not quarantee objectives will be met.	influence to ensure that it is achieved. Influence to ensure that it is achieved. Especially with regard to enabling the M Cardrona Station zone. s of the CVP being off-set by its design risk. Dicitated with this option. to enable development. The quantum of spare capacity however is unknown.	7. There is a real risk that designers will be reluctant to take on the design risk associated with this option. 8. By purchasing the schemes council can ensure spare capacity is made available to enable development. The quantum of spare capacity however is unkn	own. 8. By pure	ang does not align with the current 3-waters strategy regarding flexibility and ability to adapt to	to future scenarios, i.e. no growth.				
11. Due to several different parties potentially being involved it would be against curre	Influence to ensure that it is achieved. If influence to ensure that it is achieved. Especially with regard to enabling the Mt Cardrona Station zone. If the CVP being off-set by its design risk. Collected with this option. Its enables development. The quantum of spare capacity however is unknown. It is enabled to the true scenarios, i.e. no growth.	7. There is a real risk that designers will be reluctant to take on the design risk associated with this option.	own. 8. By pure 9. Big bar	10. By not having complete control council can not guarantee objectives will be met. 11. Due to several different parties potentially being involved it would be against current funding policy to leave this to a 3rd Party.					

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Cardrona Wastewat	er Options, Flow Assumptions																					
CURRENT				Total - RVZ+	RG	Rural Visitor	Zone (RVZ)	Rural General	(RG)													
			Est. Pop	PDWF	Flow/capita	Est. Pop	PDWF	Est. Pop	PDWF		PDWF	Pop.	Dw.									
				m3/d	l/c/d		m3/d		m3/d		m3/d	Equiv.	Equiv.									
	Cardrona Village	Baxter	53	13.1	248		10.5				34	170	49									
		Benbrae	75	13.9	185		13.0															
		Hotel	60	10.8	180		10.8															
		Other	66	13.4	202		12.5															
			254	51.2	201	236	47.0	18	4													
		Flow/capita	1		200	I/c/d																
		Occupancy r				persons/dwe	elling															
FUTURE		New phase																				
			4	6 d	wellings/year																	
		2015		2017	2018				2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Option 1	Dwelling equivalents	67		80	86				111	117	124	130	136	143	149	155	161	168	174	180	187	193
Village (RVZ only)	Population equivalents	235		279	301				389	411	433	455	477	499	521	543	565	587	609	631	653	675
	PDWF, m³/d	47	51	56	60	65	69	73	78	82	87	91	95	100	104	109	113	117	122	126	131	135
			-	7 d	lwellings/year			7 dwellings/year			ar				7 dwellings/year							
Option 2	Dwelling equivalents	73	80	87	94		107	114	121	129	136	143	150	157	164	171	179	186	193	200	207	214
Village (RVZ +RG)	Population equivalents	256		304	327	351			425	450	475	500	525	550	575	600	625	650	675	700	725	750
	PDWF, m³/d	51	56	61	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
Option 3a				25 d	lwellings/year											24 d	wellings/y	ear				
Village + MCS + RG			•											→ •								
	Dwelling equivalents	96		146	171				272	297	322	347	372	397	421	446	470	494	519	543	567	591
	Population equivalents	335		511	599				950	1038	1126	1214	1302	1390	1475	1560	1645	1730	1815	1900	1985	2070
	PDWF, m³/d	67	85	102	120	137	155	173	190	208	225	243	260	278	295	312	329	346	363	380	397	414
Option 3b & 4	Cardrona Alpine Resort (CAR)				6	m³/d/year										13 n	n³/d/year					
Village + MCS + CAR			•											→								
	Dwelling equivalents	187		204	213			238	246	255	263	272	280	289	307	326	344	363	381	400	419	437
	Population equivalents	655		714	744				862	892	921	951	980	1010	1075	1140	1205	1270	1335	1400	1465	1530
	PDWF, m³/d	131		143	149	155	161	167	172	178	184	190	196	202	215	228	241	254	267	280	293	306
	Dwelling equivalents	283			384				518	551	585	619	652	686	729	771	814	857	900	943	986	1029
	Population equivalents	990		1225	1343				1813	1930	2048	2165	2283	2400	2550	2700	2850	3000	3150	3300	3450	3600
	PDWF, m³/d	198	222	245	269	292	316	339	363	386	410	433	457	480	510	540	570	600	630	660	690	720

Appendix B – Flow Projections

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