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Wastewater
Activity Management Plan

Last updated 2021

Revision	Revision Date	Prepared By	Details
A	2 August 2019	Community Development	First draft 2019
B	22 February 2021	Infrastructure Services & Community Development	Final draft
C	17 March 2021	Infrastructure Services & Community Development	Final draft – version 2
D	23 March 2021	Infrastructure Services & Community Development	Final draft – version 3

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TABLE OF CONTENTS

1. Introduction 4
2. Activity Description 5
2.1 What we do 5
General Scheme Characteristics 6
2.2 Why we do it 8
2.3 Levels of service 8
2.4 Key stakeholders 9
2.5 Community outcomes 10
2.6 Effects on Community Wellbeing 10
2.7 Linkages 11
3. What The Future Looks Like 12
3.1 Three Waters Reform Programme 12
Service Delivery Reform 12
Regulatory Reform 13
Freshwater Reforms 14
What this means for Wastewater Management 14
3.2 Covid-19 15
3.3 Growth and demand 16
3.4 Tourism and visitor growth 24
3.5 Economic changes 25
3.6 Climate change 26
3.7 Natural Hazards 30
3.8 Key issues for the Wastewater Management Activity 32
Deferred Renewals 32
Runanga/Dunollie Network Replacement 35
4. The Journey 36
4.1 Plans for the Future and Key Projects 36
4.2 Lifecycle management 37
4.3 Maintenance and operation approach 40
4.4 Asset valuations 41
4.5 Sustainability 43
4.6 Environmental management issues 46
Resource Consents 46
Environmental Monitoring and Reporting 48
Designations, Zoning, Land Purchase and Works on Private Land 48
Potential Issues and Future Actions 51
5. Measuring Our Success 52
5.1 Performance measures 52

- DRAFT - AGENDA COPY ONLY

Reporting of Performance Measures 53
6. How It Will Be Funded 54
6.1 Funding policy, fees and charges 54
6.2 Operational funding requirements 54
6.3 Capital works plan 55
6.4 Disposal plan 55
6.5 Funding impact statement 56
7. What Could Stop Us 58
7.1 Activity risks and mitigation 58
7.2 Assumptions and uncertainties 63

- DRAFT -
AGENDA COPY ONLY

1. Introduction

Activity Management Plans are a key component of Council's planning process. They are prepared within the context and framework of the LTP, District Plan, Annual Plan and Funding Policy.

The purpose of this activity management plan (AMP) is to outline and summarise the council's long term asset management approach for the provision and intergenerational management of wastewater services.

The Council's wastewater activity includes the management of seven separate reticulated schemes in the Grey District for the collection, treatment and disposal of sewage (wastewater). They are:

- Wider Greymouth area (Greymouth, Cobden, Blaketown, Boddytown, Taylorville, and Dobson)
- Karoro including South Beach and Paroa
- Runanga/Dunollie
- Moana
- Blackball
- Iveagh Bay (Te Kinga)
- Kaiata Park

The Government is presently working through a programme of reform for three waters (water supply, wastewater and stormwater) service delivery arrangements. The reforms will be a significant area of focus for the Council in the initial period of the LTP. From 2022 onwards there is likely to be a new regional entity responsible for delivering water supply services in the Grey District and wider region. While the outcome of this reform is not yet known, indications are there will be an ongoing role for Council in collective ownership in relation to the regional entity but we will potentially no longer be involved in planning and delivery.

However, the form of any new arrangements is not known at present. Until this is further developed, for planning purposes the Council is assuming that it will deliver these services over the life of the LTP, acknowledging that this assumption has a high degree of uncertainty. We note that our community will need these services whether they are delivered by the Council or not, and continued planning for these services is therefore reflected in this AMP.

Acknowledging the upcoming changes and the context of the reform, the purpose of this plan is to outline:

- The services provided now and in the future;
- The linkages between agreed community outcomes and levels of service;
- Acquisition, operation, maintenance, renewal and disposal of assets;
- Assessment and mitigation of risk;
- Funding of services; and
- Proactive knowledge improvement.

The Council's vision for the District is: ***Thriving, Connected and Resilient Grey District***. This AMP outlines Council's strategic approach for the delivery of wastewater services as part of achieving this vision. It describes the strategies and work programmes for this activity, and outlines how Council intends to meet the objective of delivering the required level of service to existing and future users in an efficient and cost effective way.

This plan is intended to be read in conjunction with the Long Term Plan and fulfils requirements of the Local Government Act 2002 - schedule 10.

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2. Activity Description

2.1 What we do

Council manages wastewater collection, treatment and disposal services to communities in the Grey District. We have seven community-based wastewater schemes in the district:

Community	Number of Connections	Treated Discharge to
Blackball	200	Ford Creek
Blaketown	Included in Greymouth	Grey River
Cobden	Included in Greymouth	Grey River
Dobson/Taylorville	Included in Greymouth	Grey River
Greymouth	3,696	Grey River
Moana	334	Arnold River
Runanga	543	7 Mile Creek
Iveagh Bay	51	Ground
Karoro	402	Tasman Sea
South Beach/Paroa	286 (part of Karoro WWTP)	Tasman Sea
Kaiata Park*	64	Ground
Total:	**5,512**	

**Kaiata Park is in the process of being transferred to Council with all conditions expected to be complete by Year 1 of this Plan. Kaiata Park is not included in the overall connection total.*

Source: Rates Information – number of separately used or inhabitable parts of a rating unit.

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Council's wastewater services include the collection, treatment and disposal of domestic and industrial wastewater from these communities. Approximately 80% of the total district residential population receives the sewer service.

The Council is responsible for the operation and maintenance of these schemes. This work includes:

- Managing and maintaining the network so sewage is continually collected and transferred to the wastewater treatment plants.
- Responding promptly to fix all faults.
- Detecting and fixing leaks.
- Planning and carrying out renewals to replace assets in a timely manner.
- Monitoring treated effluent quality to ensure it meets the required consent standards and is not creating a public health risk or adverse effects on natural and physical resources.
- Planning to respond to emergency events that may damage the network, such as earthquakes. We often refer to this as Lifelines Planning, as lifelines are critical services that will be needed during an emergency event.
- Forward planning to ensure future demand can be met, taking into account anticipated growth and other factors such as climate change impacts.

The Council has in recent years invested heavily in wastewater infrastructure, with the installation of the new separated sewer reticulation and treatment facility for the Greymouth scheme ($38 million). Council also recently completed the Taylorville, Dobson and Kaiata Scheme ($7 million), which is using treatment capacity at the new Greymouth treatment plant. All treatment plants were designed and constructed to meet environmental requirements as set out within resource consents and respective standards.

In addition, Council has also progressively upgraded treatment facilities throughout the district in recent times. The Moana and Karoro scheme capacities were upgraded including enhancing effluent treatment. The Blackball scheme reticulation and treatment facility ($2 million) was constructed in 2008.

Each sewerage treatment plant is funded by a targeted rate charged to ratepayers able to connect to that scheme. The targeted rate funds the maintenance, renewal and development of wastewater storage, pipes, pumps, and treatment plant and processes. Additional capacity is normally funded through subdivision development.

Trade Wastes
The nature of the wastewater collected in the schemes is largely derived from domestic sewage, with only small quantities of industrial and commercial discharges. However, the commercial discharges, particularly food premises, can impact negatively on the performance of the network through poor performing fat and grease traps. Council has a Trade Waste Bylaw in place to manage discharges from industrial and commercial premises in to the network.

Other Wastewater Systems
Privately owned septic tanks are used in rural areas and in townships without reticulated schemes. This activity does not cover such on-site individual property waste disposal systems, or public schemes that are owned and operated by other individuals or businesses.

General Scheme Characteristics

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Greymouth Area Scheme
The Greymouth, Blaketown and Cobden scheme initially was a joint sewer/Wastewater system depositing raw sewage directly into the Grey River. In times of high rainfall, the combined system overflowed into Sawyers Creek, Range Creek, and a variety of other waterways and wetland areas. About 90% of these systems have been separated as at July 2020.

Council has since continued to separate the Wastewater and sewer pipes in the streets. The Stage 2 (final) full treatment plant for Cobden, Blaketown and Greymouth was completed and commissions in the 2014/15 financial year.

Council obtained a special grant of $2.5 million plus GST from the Government for this purpose and approval of a Government subsidy of $7.55 million (GST incl.) under the Sanitary Works Subsidy Scheme was also secured. The special purpose savings scheme for benefiting communities was also started by council in 1996. Council levies a targeted rate to finance the project, as well as a contribution of $3.15 million as the Greymouth, Blaketown, and Cobden share of the $7 million Community Infrastructure development fund.

While Council was constructing this scheme it also considered options for schemes for the urban areas of Dobson, Taylorville and Kaiata communities which where all serviced by septic tanks. After considering the options the Council decided after consultation with the communities to connect these communities to the Greymouth Scheme. Council obtained a Government subsidy of $3.5 million towards this scheme. These communities are now connected to the Greymouth scheme.

The current outstanding issues with this scheme are:

- Ensuring 100% hook-up of all properties within the scheme area. As at February 2021 approximately 40% of properties in the Greymouth, Cobden, Blaketown and Boddytown areas on the scheme have voluntarily connected and separated. A further 4% are connected but need to undertake further work to separate their sewer and stormwater discharges.

The Karoro Area Scheme
The Karoro scheme normally complies with effluent and operational standards. The treatment facility did receive an infringement notice from the consent authority in early 2021, following a small overflow of the

wetland. This was immediately resolved. The original Karoro Scheme was increased in capacity with enhance effluent treatment and extended to also include the communities of South Beach and Paroa in 2005/06.

The current outstanding issues with this scheme are:

- Ensuring 100% hook-up of all properties within the scheme area. As at February 2021 82% of properties have connected to this scheme.
- The performance of the scheme is being investigated as there is an outstanding issue with the source and amount of stormwater or groundwater infiltration.
- The scheme is located in a coastal area and the treated effluent after going through the wetland is discharged into the sea. In the longer term Council may be faced with the issues of climate change (coastal erosion) in this area and may need to consider connecting the scheme to the Greymouth Scheme.

The Runanga Scheme

The Runanga scheme normally complies with effluent and operational standards. Conditional deficiencies associated with the collection system however, become apparent when the pipes have deteriorated to a stage where they are no longer functional. These deficiencies tend to become apparent in high rainfall events. The age of the system also manifests in higher maintenance costs. These deficiencies are being managed and are dealt with as part of the maintenance and renewal programme.

The current outstanding issues with this scheme are:

- The source and amount of stormwater or groundwater infiltration which is undergoing ongoing investigation
- Poor installation and condition of original 1970's pipe network.
- Continuing with the replacement of deteriorated pipes.

The Moana Scheme

The Moana scheme normally complies with effluent and operational standards. As of February 2021, 90% of 334 serviced properties are deemed to be connected to the scheme. The remaining serviced properties are currently empty allotments. Enquiries from developers indicated that the area may be about to experience a new phase of growth. The capacity of the scheme will need to be reassessed to allow for any new urban development outside the currently zoned township area.

The current outstanding issues with this scheme are:

- The source and amount of stormwater or groundwater infiltration which is undergoing ongoing investigation.
- It was accepted practice and legally allowable to place sewer pipes through private property at the time. Even where sewers on private property have legal easements, there has been incidences where developments have occurred over or too close to the underground sewer pipes.

The Iveagh Bay Scheme

The Iveagh Bay scheme normally complies with effluent and operational standards. This scheme services 51 properties at Iveagh Bay. It was taken over by Council following its construction as part of a subdivision development, and a number of existing properties were also connected to it.

There no current outstanding issues with this scheme.

The Blackball Scheme

The Blackball scheme normally complies with effluent and operational standards The scheme was completed in 2007/08 and properties in the area which were previously on septic tanks are being progressively connected to the scheme by the property owners.

The current outstanding issue with this scheme are:

- Ensuring 100% hook-up of all properties within the scheme area.
- As at February 2021, 46% of properties have connected to the new scheme.
- Formalizing property access to the pipe network over 3 properties.

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Kaiata Developments
This was initially developed as a private scheme as part of a subdivision, but is in the process of being transferred to Council. There are no other outstanding issues with this scheme.

2.2 Why we do it

Council operates wastewater schemes to help protect the health and safety of the community and avoid, remedy or mitigate effects on the environment. Collective provision is the only realistic option to ensure our township and urban populations enjoy the benefits of these services. Provision of quality, affordable sewer systems is a core service expected by the community.

Avoidance, removal and mitigation of the adverse impacts of wastewater on the environment benefits current and future generations. It safeguards district waterways and the environment from direct discharges and helps protect their life-supporting capacity. Safe treatment and disposal of sewage are of vital importance to the protection of the quality of life and public health of district residents.

The provision of sewer services is a core service under the Local Government Act 2002. We also have a responsibility under the Health Act 1956 to improve, promote and protect public health within the district.

2.3 Levels of service

The current levels of service based on measured performance for the 2019/20 year unless stated otherwise is summarised on the following tables.

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Table 1: Current Scheme Performance

Measurement of achievement	Target	Overall Achievement	Wider Greymouth	Karoro South Beach and Paroa	Runanga and Dunollie	Moana	Blackball	Iveagh Bay
Wastewater overflows into houses due to faults in the public reticulation.	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Number of dry weather sewerage overflows (per 1,000 sewerage connections) Number of service connections: 5,512	9	1.8	Nil	Nil	?	Nil	Nil	Nil
% of residents satisfied with service. S	63%	63%	78	67	26	36	36	76
Number of complaints received, e.g. about odour, faults, blockages, response times (per 1,000 sewerage connections) Number of service connections: 5,512	65	11.8	9.1	0.7	1.6	0.2	0.2	0.0

Median response times to reported faults to get to site (timed from notification) (Minutes)	60	39	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Median response times to reported faults to resolve the problem (timed from notification) (Hours)	5	2.16	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Maximum number enforcement actions	3	NIL	Nil	Nil	Nil	Nil	Nil	Nil

The Kaiata Park scheme is not included as it is currently in the process of being transferred to Council.

Satisfaction information has been obtained from the 2020 Community Survey and only gives an indication for some areas as the areas surveyed do not in all cases match up with the location of community sewage treatment schemes. For instance there are no schemes presently in:

- Gladstone Camerons (under consideration for the 2021-31 LTP)
- Grey Valley (none proposed or requested by the community)
- Coast Road (none proposed or requested by the community)

For other areas where there is high dissatisfaction, this may signal further investigation is required. It may be that in some of these communities there is dissatisfaction with on-site septic tanks.

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2.4 Key stakeholders

There are a number of key stakeholders relevant to the activity. These include those below:

- Residents and ratepayers
- Adjacent landowners
- The community
- Department of Internal Affairs Te Tari Taiwhenua
- Te Rūnanga O Ngāti Waewae and Te Rūnanga O Ngāi Tahu
- Ministry of Health Manatu Hauora
- Taumata Arowai Establishment Unit
- Community and Public Health (WCDHB) Te Mana Ora
- Subdivision and land developers
- Community Associations, Groups and Clubs
- Consent Authorities (principally the West Coast Regional Council and Council's Environmental Services Department)
- Department of Conservation
- Industry and Business Associations (for instance the Greymouth Business and Promotions Association).
- Individual businesses and industries
- Land Information New Zealand
- Ministry for the Environment
- Neighbouring local authorities
- National Emergency Management Agency (Civil Defence) Te Rakua Whakamarumaru
- Private suppliers of water to the public

2.5 Community outcomes

In achieving its vision, the Council has identified a number of community outcomes. These reflect what the community wants to achieve now and in the future. Community Outcomes allow local communities to define what they think is good for their economic, social, cultural and environmental wellbeing and are an expression of what their values are.

Our Council's Community Outcomes are as follows:

ECONOMIC:	SOCIAL:	CULTURAL:	ENVIRONMENTAL:
Strong Diverse Sustainable Prosperous	Safe Inclusive Connected Enabled	Proud Unique Inter-connected Vibrant	Bold Practical Resilient Strategic

Our wastewater management activities contribute to following Community Outcomes:

	ECONOMIC: Strong Diverse Sustainable Prosperous	SOCIAL: Safe Inclusive Connected Enabled	CULTURAL: Proud Unique Inter-connected Vibrant	ENVIRONMENTAL: Bold Practical Resilient Strategic
Wastewater				
Wastewater management	✓	✓	✓	✓

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Council's wastewater management activities underpin the health of the community and the environment. Removal and mitigation of the adverse impacts of wastewater on the environment safeguards district waterways and the environment from direct discharges and helps protect their life-supporting capacity. Safe and appropriate treatment and disposal of sewage are also of vital importance to the quality of life and public health of district residents, and contributes to protection of cultural sites and values.

Wastewater services also contribute to maintaining district prosperity and promoting economic development. Well planned infrastructure facilitates the continued development of industry, and ongoing maintenance of wastewater systems ensures minimal impact on businesses and essential services.

2.6 Effects on Community Wellbeing

The wastewater management activity can have a range of effects on the social, economic, environmental, or cultural well-being of the community, some of which are positive, others which can be negative. The positive effects have been outlined in section 2.2 above. Potential negative effects are identified in the tables below.

Effect	Type of effect	How Council intends to mitigate effect

The capacity of sewerage systems may be exceeded in extreme weather events which may result in wastewater overflows.	Cultural Social Economic Environmental	Council will use systematic identification, prioritisation and implementation of network improvements to help address this issue.
Standard of the effluent being discharged to land and/or water can have negative effects on the environment and cultural values.	Cultural Environmental	Council monitors effluent quality and impacts on the receiving environment to minimise adverse effects and achieve compliance with resource consent conditions.
The cost of improving effluent treatment is very high, which can result in increased charges for domestic and industrial users and potential for wider economic effects.	Economic Social	Our costs are set according to Council policies and we consult with our community on the charges for the activity. Charges are monitored and set at a level that is affordable for the community.

2.7 Linkages

The most relevant legislation, planning documents and other significant documents relating to this activity include:

- Health Act 1956
- Local Government Act 2002
- Local Government Act 1974
- Public Works Act 1981
- Climate Change Response Act 2002
- Climate Change Response (Zero Carbon) Amendment Act 2019
- Taumata Arowai – Water Services Regulator Act 2020
- Water Services Bill
- Health and Safety at Work Act 2015
- Building Act 2004
- Civil Defence Emergency Management Act 2002
- Resource Management Act 1991
- National Policy Statement for Freshwater Management
- New Zealand Coastal Policy Statement
- National Environmental Standards for Freshwater
- National Environmental Standards for Sources of Human Drinking Water
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
- Grey District Council Long Term Plan and Annual Plans
- West Coast Regional Policy Statement
- West Coast Regional Council Plans
- Grey District Lifelines Utilities Plans
- West Coast Regional Council Lifelines Utilities Strategy
- Infrastructure Strategy
- Grey District Plan
- All relevant Grey District Council Bylaws

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3. What The Future Looks Like

This section provides an overview of relevant information about our District and identifiable trends and forecasts that we have considered in future planning for the wastewater management activity area.

Our plans for the future (section 4 of this plan) take in to account these matters, and the key assumptions on which our long term planning is based are noted in section 7.2 of this plan.

3.1 Three Waters Reform Programme

In 2017 the Government initiated a Three Waters Review process for drinking water, wastewater and stormwater, alongside the Havelock North Drinking Water Inquiry. This was a cross-agency initiative led by the Department of Internal Affairs (DIA), which looked into the challenges facing New Zealand's three waters systems and at system-wide performance improvements.

A number of changes are likely to occur to wastewater service delivery and regulation over the term of the LTP as a result of the review. The most significant of these are outlined below.

Service Delivery Reform

As a result of the Three Waters Review, the Government is proposing a programme for reforming three waters service delivery arrangements, which is to be delivered in parallel with an economic stimulus package of Crown investment in water infrastructure. This reform will be a significant area of focus for the Council in the initial period of the LTP.

From 2022 onwards, there is likely to be a new regional entity responsible for delivering wastewater and water supply services in the Grey District and wider region. There will potentially be an ongoing role for Council in collective ownership in relation to the regional entity but it is likely we will no longer be involved in planning and delivery. At the time of writing however, there is no specific proposal or format for any new entity around which community consultation can take place.

The objectives of the Government's reform include:

- Improving safety and quality of drinking water services and the environmental performance of wastewater and stormwater systems;
- Seeking to ensure all New Zealanders have equitable access to affordable three waters services;
- Increasing resilience of three waters service provision to both short and long term risks and events, particularly climate change and natural hazards; and
- Moving three waters services to a more financially sustainable footing and addressing affordability and capability challenges faced by small suppliers and councils.

There are three phases of reform, with three tranches of central government investment proposed. The indicative timeline for the review is as follows[1]:

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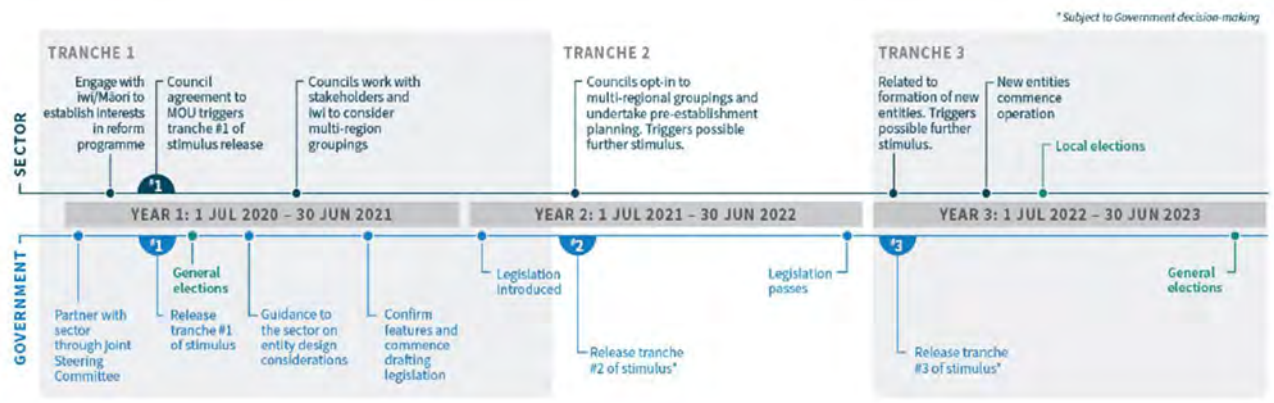
[1] Department of Internal Affairs website: *Slides from July/August 2020 Workshops*



The first phase of the programme involves central and local government working together to design and develop the proposed new service delivery arrangements and operating models. The initial focus of phase one is on drinking water and wastewater assets and services.

As noted above, the government has outlined its expectation that there will be new service delivery arrangements, such as multi regional entities that reflect neighbouring catchments and communities of interest. These new entities would be publicly owned, with government noting a preference for collective council ownership and the inclusion of mechanisms to protect against privatisation in the future. The entities would likely be governed by competency-based boards.

At a minimum, drinking water and wastewater would be included in the new water entities. Stormwater services may be included at a later date, where it is considered efficient and effective to do so.

In August 2020 Grey District Council signed a memorandum of understanding with the government, agreeing to participate in the initial stages of the three waters service delivery reform programme. It also entered into a funding agreement to accept a grant from the government to spend on operating and/or capital expenditure relating to three waters infrastructure and service delivery. The majority of this expenditure will occur in the water supply activity area, with some expenditure on improved network monitoring and information.

The Council is also currently assessing and collating detailed information about its three waters network assets to provide to the Department of Internal Affairs (DIA). All Councils are responding to this request for information regarding their network assets. This information is intended to enable DIA analysis and advice to Ministers on the relative merits of various options for the reform of water services delivery.

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Regulatory Reform

Water Services Bill

In 2019, following the Three Waters Review, the government began work on a framework for implementing a new drinking water regulatory system. The new framework involves the creation of a new Water Services Regulator known as *Taumata Arowai*. Work is being done to establish this entity and framework at present, through the Taumata Arowai Establishment Unit within the Department of Internal Affairs.

While the role of Taumata Arowai will be mainly to administer and enforce a new, expanded and strengthened drinking-water regulatory system, it will also provide national oversight of the regulation, management and environmental performance of wastewater and stormwater networks.

The *Taumata Arowai – Water Services Regulator Act*, passed in July 2020, establishes Taumata Arowai as a Crown Agent and provides for its objectives, functions, operating principles and governance arrangements.

A complementary Bill, the Water Services Bill, is now before Parliament. This Bill is anticipated to be introduced in the second half of 2021. At that time, Taumata Arowai will become Aotearoa's dedicated regulator of the three waters.

Other Reform

There is also potential for further changes to the regulation of wastewater activities as part of the Three Waters Review. In September 2019 the Government released a discussion document *Action for Healthy Waterways – A Discussion Document on National Direction for our Essential Freshwater*. The document contained high level proposals relating to wastewater and stormwater management practices (rather than service delivery outlined above), which arose from the Three Waters Review.

The proposals for wastewater included:

- A new National Environmental Standard for Wastewater Discharges and Overflows (Wastewater NES)
- An expectation that wastewater network operators would participate in nutrient allocation regimes that may be established in future
- Requiring wastewater network operators to follow good practice risk management and prepare mandatory risk management plans
- Introducing a new obligation for wastewater network operators, in a new Water Services Act, to report annually on a set of nationally prescribed environmental performance measures, to both the community and a central regulatory agency

Public submissions received on wastewater management indicated varying levels of support for these initiatives.

Detailed proposals relating to three waters are to be considered and consulted on at a later date, as part of reforms to the regulation of Three Waters infrastructure. The timing of this process is a yet unknown but may be within the term of this LTP.

The Three Waters Review is separate from but related to the Ministry for the Environment's Essential Freshwater programme, which is outlined below.

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Freshwater Reforms

In 2018 the Government announced a plan that aims to restore and protect New Zealand's freshwater, known as the Essential Freshwater programme. This is presently being delivered through national direction under the Resource Management Act 1991 (RMA), in the form of a new National Policy Statement for Freshwater Management (NPS-FM), National Environmental Standards (NES) for Freshwater, Sources of Drinking Water, and Wastewater, and Section 360 regulations.

The new National Environmental Standards for Freshwater and the NPS-FM came in to force in September 2020. The NPS-FM requires Regional Councils including the West Coast Regional Council to identify long term visions for freshwater in the region, and then to set goals and timeframes for achieving those goals. The West Coast Regional Council was initially required to have a freshwater management plan ready for public notification by 2025, but has successfully sought an extension to 2030. In relation to wastewater discharges, the new changes are likely to necessitate further review and, over the long term, further improvements, which will increase costs for Council. For example, upgrades may be required to existing treatment plants if they do not meet new standards.

What this means for Wastewater Management

Our Council will continue to work with neighbouring Councils and central government on new arrangements for the delivery of wastewater and water supply services and seek funding for and undertaking capital and operational works in the District as part of the economic stimulus package. At the same time, we will continue to operate and maintain our wastewater networks.

As noted above, from 2022 onwards the signals are that there will be a new regional entity responsible for delivering wastewater services in the Grey District and wider region. There will potentially be an ongoing role

for Council in collective ownership in relation to the regional entity but it is likely we will no longer be involved in planning and delivery.

The form of any new arrangements is not known at present. Until this is further developed, for planning purposes the Council has assumed that it will deliver these services over the life of the LTP, acknowledging that this assumption has a high degree of uncertainty. We note that our community will need these services, whether they are delivered by the Council or not, and this activity is therefore reflected in our Financial and Infrastructure Strategies and in this AMP.

Given the proposed timing of establishment of the new regional entity, it is likely that the proposed reforms to regulation of wastewater discharges and improvement of environmental standards will apply to that entity as service provider, rather than the Council. However, as with service delivery, we have included reference to these reforms in our planning given the present uncertainty around the timing of any outcomes.

3.2 Covid-19

The Covid-19 pandemic has caused major disruption to life and economic activity around the world. The pandemic has drastically altered the economic outlook here and abroad. Governments continue to respond with a range of health-related and economic support measures.

Treasury's main economic forecast in its *Pre-election Economic and Fiscal Update* (16 September 2020) noted that ..'*infection rates are still rising in many parts of the world and the timeline for the development of a vaccine or effective treatment is still very uncertain. Community transmission re-emerged in New Zealand in August following a 102-day period during which there was no evidence of transmission, and the country returned to higher alert levels. These developments highlight the continued uncertainty about New Zealand's economic outlook*'.

Since that Treasury report, there have been advances in the development of vaccines for the disease. In November 2020 the government announced that provided the first of these vaccines are approved for use in New Zealand, it is possible that some doses will be available in the first part of 2021[2]. A subsequent announcement indicated that 2 million doses of a second vaccine could be delivered from the third quarter of 2021, with the option to purchase up to 3 million additional doses to be delivered throughout 2022[3].

Considerable uncertainty remains around the global economic outlook, although Treasury has noted that optimism surrounding the promising vaccine news has boosted global risk sentiment[4].

While the development of effective vaccines is promising, at the time of writing many of our assumptions about the future will continue to be disrupted by the pandemic in the short to medium term. For many districts including ours, effects from Covid-19 will continue to be felt, particularly impacts to economic vitality and tourism. Sectors reliant on international travel and tourism were the hardest hit, and continue to be affected by current border controls.

The long-term effects of the pandemic are also uncertain. Many countries including New Zealand continue to restrict traveller entry and movements and impose quarantine regulations. World financial markets have become unstable and the tourism, student, fishing, timber, export and manufacturing markets to and from China have reduced.

The current major impact for the Grey District at the time of writing is reduced tourism as international tourists are restricted in movement. The rate of unemployment throughout the Grey District is expected to rise as we continue to see effects from Covid-19 particularly on the tourism and hospitality sector, which is a significant contributor to our economy.

Maintaining capacity and capability, consumption activity and protecting jobs is largely dependent on the

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[2] '*COVID-19 vaccine progress encouraging*' Beehive press release, 10 November 2020
[3] '*Agreement advanced to purchase up to 5 million COVID-19 vaccines*' Beehive press release, 19 November 2020
[4] Treasury *Te Tai Ōhanga Weekly Economic Update* 13 November 2020

actions of central government and financial institutions. Central government has implemented fiscal policies that maintained levels of employment and incomes for many in the short term during the lockdown period when many businesses were unable to generate revenue. The long-term effects of these policies are yet to be known. Along with carefully constructed fiscal policy, monetary policy will need to be responsive to a downturn in consumption and the major changes to the tourism industry to support jobs and disposable incomes in the domestic economy.

At present there is ongoing uncertainty around the management of Covid and its long term effects, but there are also some factors that may help our district to be resilient as we look to recover. These include projects that Council will be proceeding with, such as the new slipway and wharf replacements at the port. As many of the future impacts are unknown at this stage, Council will look to monitor and review its objectives and delivery as needed over the period of the Long Term Plan (LTP).

What this means for Wastewater Management Activities

Other than potential slowing of growth in the District, impacts on the wastewater management activity are expected to be minor. A number of our activities in this area provide services directly to our community, are required asset maintenance or management activities, or are statutory requirements.

3.3 Growth and demand

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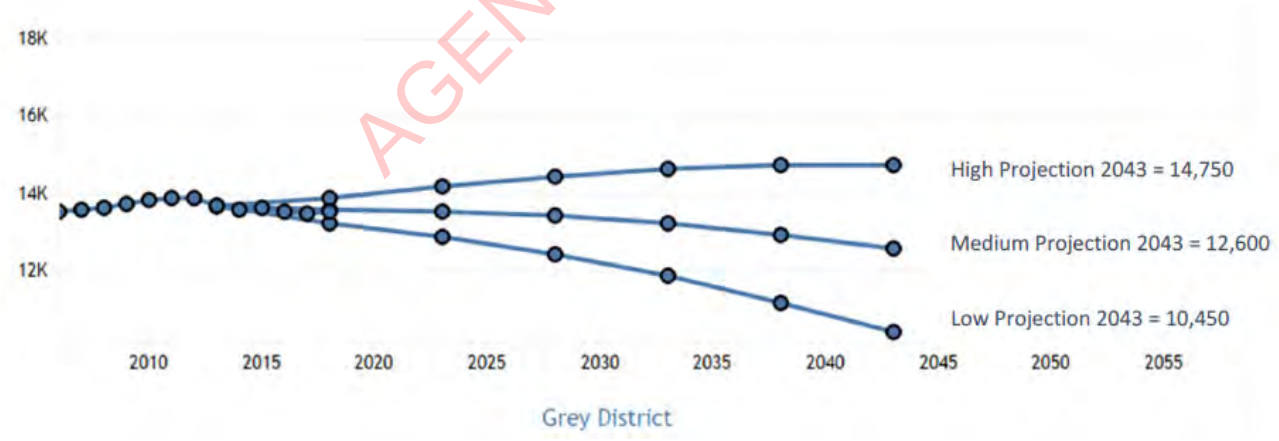
Population

The population of the Grey District in 2019 according to Infometrics data[5] was 13,750 people.

The overall population projections released by Statistics New Zealand show that expectations are that the Grey District and the West Coast region through to 2043 will experience a decline in population.

Between 2014 and 2019 the Grey District experienced a 0% population growth rate. The expectation is that this 0% population growth rate will continue through to 2028 (according to medium projections). By 2043, Grey District is projected (according to medium projections) to see its population decrease by 7% to 12,600.



Population by Age Group

[5] Note: the data provided is sourced from Infometrics population figures. These figures use the Statistics New Zealand's Estimated Resident Population (ERP), as opposed to the Census Data. The ERP data is provided and has been adjusted for the following: net census undercount (based on the 2013 Post-enumeration Survey), residents temporarily overseas.

In 2018, the population distribution of the Grey District shows that 19% of the population was in the age group 0-14 years (2,550 people), 27% in 15-39 years (3,650 people), 35% in 40-64 years (4,800 people), while 19% population was in the age group of 65+ years (2,550 people).

In 2023 (based on high projections), the population distribution of the Grey District shows that 20% of the population will be in 0-14 years (2850 people), 25% in 15-39 years (3600 people), 33% 40-64 years (4650 people), while 22% will be in the 65+ years (3100).

The data shows the trend towards a continuation of an aging population in the Grey District.

Projection data on births in the Grey District also shows that the birth rate is expected to decline gradually between 2020 and 2041.

Population by Area

Census data from the Stats NZ website showing the normally resident population of each of the sub-areas in the district is set out below. Increases and decreases in population within each area unit are shown.

	Total people		
Year	2006	2013	2018
Area			
Grey District	**14049**	**13947**	**13770**
Barrytown	1014	978	939
Runanga	1233	1221	1146
Cobden	1707	1635	1515
Blaketown	846	837	798
Greymouth Central	1809	1440	1368
King Park	1254	1161	1074
Marsden	1152	1221	1200
Karoro	963	1095	1077
Rutherglen-Camerons	1167	1242	1389
Greymouth Rural	549	651	717
Dobson	819	810	810
Nelson Creek	729	714	669
Lake Brunner	804	942	1059

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This shows an increase in resident populations in three areas (Rutherglen/Camerons, Greymouth Rural, and Lake Brunner), but a decline in all other sub-areas between the 2013 and 2018 census.

Industry/commercial factors have been assumed to follow general increases and/or decreases in population for each community area.

Growth and Demand

Prior to 2018 the District had been undergoing significant growth through subdivision and other forms of development. However, there were indications that this level of growth was slowing down. The table below shows that the number of new dwellings under construction has reduced significantly in most areas.

The table below also shows the number of occupied and unoccupied dwellings taken from the 2006, 2013 and 2018 censuses. The highest levels of unoccupied dwellings occur in community areas where there are a high proportion of holiday homes, such as the Lake Brunner area.

	Occupied dwellings			Unoccupied dwellings			Dwellings under construction		
Year	2006	2013	**2018**	2006	2013	**2018**	2006	2013	**2018**
Area									
Grey District	5187	5397	**5391**	849	972	**1149**	57	39	**15**
Barrytown	387	408	**417**	132	114	**135**	9	0	**0**
Runanga	540	537	**522**	66	63	**87**	3	0	**3**
Cobden	690	693	**666**	57	63	**87**	0	3	**3**
Blaketown	357	372	**372**	27	30	**36**	0	0	**0**
Greymouth Central	465	420	**402**	42	42	**63**	0	3	**0**
King Park	519	498	**489**	42	36	**66**	3	3	**0**
Marsden	456	498	**498**	33	39	**42**	3	0	**0**
Karoro	369	411	**414**	27	27	**45**	9	6	**3**
Rutherglen-Camerons	405	474	**516**	18	36	**48**	3	12	**6**
Greymouth Rural	225	267	**285**	36	66	**63**	6	6	**0**
Dobson	324	342	**342**	36	60	**48**	6	3	**0**
Nelson Creek	276	294	**279**	36	45	**78**	0	3	**0**
Lake Brunner	174	186	**189**	303	348	**354**	18	3	**3**

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Analysis the above Statistics NZ information shows the following trends.

Statistics Area	Includes communities	Total Occupied / Unoccupied / Under Construction			Percentage Change			Average (Years)
Year	Urban / Residential	2006	2013	2018	2013 / 2006	2013 / 2018	Overall	12
Grey District		**6093**	**6408**	**6555**	5.2%	2.3%	7.6%	0.6%
Barrytown	Barrytown, Blackball, Razor Back (Punakaiki)	**528**	**522**	**552**	-1.1%	5.7%	4.5%	0.4%
Runanga	Runanga, Rapahoe	**609**	**600**	**612**	-1.5%	2.0%	0.5%	0.0%
Cobden	Cobden	**747**	**759**	**756**	1.6%	-0.4%	1.2%	0.1%
Blaketown	Blaketown	**384**	**402**	**408**	4.7%	1.5%	6.3%	0.5%
Greymouth Central	Greymouth	**507**	**465**	**465**	-8.3%	0.0%	-8.3%	-0.7%

Statistics Area	Includes communities	Total Occupied / Unoccupied / Under Construction			Percentage Change			Average (Years)
Year	Urban / Residential	2006	2013	2018	2013 / 2006	2013 / 2018	Overall	12
King Park	Greymouth (East-Shakespeare Street)	564	537	555	-4.8%	3.4%	-1.6%	-0.1%
Marsden	Greymouth (East - Marsden Road)	492	537	540	9.1%	0.6%	9.8%	0.8%
Karoro	Karoro	405	444	462	9.6%	4.1%	14.1%	1.2%
Rutherglen-Camerons	South Beach, Paroa, Gladstone, Camerons	426	522	570	22.5%	9.2%	33.8%	2.8%
Greymouth Rural	Kaiata, Marsden, Rutherglen	267	339	348	27.0%	2.7%	30.3%	2.5%
Dobson	Dobson, Taylorville, Stillwater	366	405	390	10.7%	-3.7%	6.6%	0.5%
Nelson Creek	Nelson Creek, Ahaura, Totara Flat	312	342	357	9.6%	4.4%	14.4%	1.2%
Lake Brunner	Moana, Beechwater, Te Kinga, Mitchells	495	537	546	8.5%	1.7%	10.3%	0.9%

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Assuming a change of over 2% per year is significant it can be inferred from the above table where growth and decline has occurred the District. The highest growth areas considering averages of the 12 years of data have been in the following areas:

- Rutherglen – Camerons
- Greymouth Rural

The Infrastructure Services Department keeps a record of resource consents it is requested to process with respect to effects. An assessment of the data from 1 July 2009 to 30 June 2020 (ten full years) is presented in the following table using the same statistical areas as Statistics NZ. The average percentage change in the number of houses from the Census data has been included from the previous table to allow a comparison.

Statistics Area	Includes communities	Average % Change per year (Years)	Subdivision Consents				
Year	Urban / Residential	12	Urban / Rural	Pro-cessed	% Total	Number New Lots	% Total
Grey District		0.6%	Mix	226	100%	472	
Barrytown	Barrytown, Blackball, Razor Back (Punakaiki)	0.4%	Mix	20	8.8%	53	11.2%
Runanga	Runanga, Rapahoe	0.0%	Urban	8	3.5%	13	2.8%

Statistics Area	Includes communities	Average % Change per year (Years)	Subdivision Consents				
Year	Urban/Residential	12	Urban/Rural	Pro-cessed	% Total	Number New Lots	% Total
Cobden	Cobden	0.1%	Urban	12	5.3%	17	3.6%
Blaketown	Blaketown	0.5%	Urban	12	5.3%	23	4.9%
Greymouth Central	Greymouth	-0.7%	Urban	28	12.4%	58	12.3%
King Park	Greymouth (East-Shakespeare Street)	-0.1%	Urban	13	5.8%	19	4.0%
Marsden	Greymouth (East - Marsden Road)	0.8%	Rural	2	0.9%	2	0.4%
Karoro	Karoro	1.2%	Urban	14	6.2%	34	7.2%
Rutherglen-Camerons	South Beach, Paroa, Gladstone, Camerons	2.8%	Mix	34	15.0%	117	24.8%
Greymouth Rural	Kaiata, Marsden, Rutherglen	2.5%	Rural	26	11.5%	38	8.1%
Dobson	Dobson, Taylorville, Stillwater	0.5%	Mix	20	8.8%	30	6.4%
Nelson Creek	Nelson Creek, Ahaura, Totara Flat	1.2%	Rural	13	5.8%	22	4.7%
Lake Brunner	Moana, Beechwater, Te Kinga, Mitchells	0.9%	Mix	24	10.6%	46	9.7%

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Based on the number of subdivisions in each area and assuming over 5% in an area is significant, as well as Rutherglen-Camerons and Greymouth Rural, some growth is also predicted to occur the Barrytown area (which includes Blackball), Greymouth Central (infill development), Karoro, Dobson and Lake Brunner.

The following table also confirms in what District Plan Environmental Zone the subdivisions are occurring.

Main District Plan Zone	Land Use	% Type	Other	% Type	Subdivision	% Type	Grand Total
Commercial	24	7%	2	7%	7	3%	33
Industrial	14	4%	2	7%	14	6%	30
Residential	142	41%	8	27%	71	31%	221
Residential	1	0%		0%		0%	1
Rural	119	35%	17	57%	115	51%	251
Rural	1	0%		0%		0%	1
Rural - Residential	23	7%	1	3%	15	7%	39
Township	20	6%		0%	4	2%	24
Grand Total	344	100%	30	100%	226	100%	600

Notes on Table:

1. In some cases, subdivisions also include land use consents. These have not been counted as the focus

is to identify the number of new lots created that could have an effect on this activity.

2. Only new lots are counted as for instance where an existing area of land is subdivided into two lots, only the new lot could have an effect on this activity.
3. The category "Other" includes Plan Changes, Outline Plans, boundary adjustments etc.

Demands for new or upgrade of existing infrastructure is predicted to be as follows for each Census Statistical Area. Community Areas have also been identified for each Statistical Area as this at an infrastructure level helps identify where new services are needed for this activity. The change in the percentage of households over the last three census periods and the total number of subdivision consents over the last 10 years has been retained from the previous tables to support the predictions of where increased demand is likely to occur.

Statistics Area	Includes communities	Average % Change per year in number of households (12 - Years)	Subdivision Consents – Last 10 years	Demand	Need for new / extended services for this activity
Year		12	% Total	Council Water Supplies	Council Water Supplies
Grey District		0.6%			See below, demand is in certain areas of the District
Barrytown	Barrytown, Blackball, Razor Back (Punakaiki)	0.4%	11.2%	Medium	To date, mostly rural subdivision with low impact on services. While not funded in the LTP, potentially Blackball Township may need to increase the capacity of services for this area to cater for tourism growth
Runanga	Runanga, Rapahoe	0.0%	2.8%	Low	Low growth, may be infill development between Runanga and Rapahoe
Cobden	Cobden	0.1%	3.6%	Low	Low growth - if occurs likely to be rural-residential with low impact of services
Blaketown	Blaketown	0.5%	4.9%	Low	Low growth, limited land, general infill with low impact on services
Greymouth Central	Greymouth	-0.7%	12.3%	Low	Generally infill subdivision, e.g. large urban sections being subdivided down to smaller units, low impact on this activity as services in place
King Park	Greymouth (East-Shakespeare Street)	-0.1%	4.0%	Low	Low growth, limited land, low impact on this activity, services in place
Marsden	Greymouth (East - Marsden Road)	0.8%	0.4%	Low	Low growth, limited land, low impact on this activity, services in place
Karoro	Karoro	1.2%	7.2%	Low	Desirable growth area but limited by available land, low impact on services
Rutherglen-Camerons	South Beach, Paroa, Gladstone, Camerons	2.8%	24.8%	High	Other than Paroa where there has been a District Plan change from rural to residential, other subdivisions have all been rural-residential with low impact on services for this activity. Potentially could change to high impact if currently zoned rural land is zoned residential in the future. Activity includes a feasibility study to extend wastewater collection to Gladstone which is a residential area with septic tanks.
Greymouth Rural	Kaiata, Marsden, Rutherglen	2.5%	8.1%	Medium	Subdivisions have been rural - residential with low impact on services for this activity. Potentially could change to high impact if currently zoned rural land is zoned residential in the future. Includes Kaiata Park Development area which was a District Plan change from rural to residential-commercial.
Dobson	Dobson, Taylorville, Stillwater	0.5%	6.4%	Low	Low growth, limited land, generally infill with low impact on services

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Statistics Area	Includes communities	Average % Change per year in number of households (12 - Years)	Subdivision Consents – Last 10 years	Demand	Need for new / extended services for this activity
Year		12	% Total	Council Water Supplies	Council Water Supplies
Nelson Creek	Nelson Creek, Ahaura, Totara Flat	1.2%	4.7%	Low	Low overall growth, tending to be subdivision of rural lots with no impact on this activity.
Lake Brunner	Moana, Beechwater, Te Kinga, Mitchells	0.9%	9.7%	High	Previous growth which slowed down but current trends indicate future increase in demand. While not funded in the LTP an expansion of the waste water collection system and enhanced treatment may be needed for Moana to cater for domestic tourism.

Capacity Information

From the following table it can be inferred that overall the schemes current have sufficient capacity.

Scheme	Number of Connections	Number of People	Usually Resident Population (URP)	Design Capacity - Population Equivalents	Comment
Blackball Scheme	200	649	288	600	Currently low occupancy rates but predicted to change once domestic an international tourism is established in the area. Situation to be monitored but current capacity indicates increased capacity is needed over life of LTP.
Runanga Scheme	543	1,352	1,245	1,670	Current and future demand likely to remain within capacity.
Karoro Scheme	402	1,227	2,127	3,300	Based on full development of wetlands. Allowing for a current subdivision scheme will reach design capacity.
Moana Scheme	334	551	270	3,300	Allowing for as of right subdivision in the township area scheme predicted to reach capacity.
Iveagh Bay Scheme	51	69	?	218	Current and future demand likely to remain with capacity of scheme.
Greymouth Scheme	3,696	6,965	6,963	14,000	Current and future demand likely to remain with design capacity. All connections within the Karoro Scheme may connect to the Greymouth Scheme withing life of LTP.
Grand Total	**5,512**	**10,814**	**10,893**	**19,788**	

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Notes:
Design capacity information sourced from various design reports held by Council. Plan changes and subdivision may change capacity assumptions.

Additional Notes:

1. URP means Usually Resident Population
2. Number of people based on assuming 2.56 people per residence (Total URP for district divided by number of occupied dwellings – 2018 Statistics NZ Census).
3. Number of available connections from AssetFinda
4. Actual number of current properties connected not shown at this stage.
5. Greymouth Scheme includes Greymouth, Blaketown, Cobden, Dobson, Taylorville and Kaiata

6. Karoro scheme includes Karoro, South Beach and Paroa

What this means for Wastewater Management Activities

While there will be no significant increase in demand based on population growth projections there are increases in community areas. To date, other than infill development, most changes are in rural and rural-residential areas where there is a lower demand for services. However this could change with future zone changes to the *Te Tai o Poutini* Combined District Plan (see discussion below) or privately initiated plan changes. Changes are identified in the previous section and have been signalled for future LTPs.

There will be financial implications for the management of wastewater infrastructure such as renewals and upgrades from any projected decline in population in the long term. Council will continue to monitor the affordability of services where there is a reduced ratepayer base and/or an increase in the number of ratepayers on fixed incomes.

Inferences from the growth and demand tables above are that growth is low and in areas where growth is occurring, there is a lower need for new public infrastructure as the areas tend to be rural or rural-residential. Fifty eight percent (58%) of subdivision in the last 10 years has occurred in rural and rural – residential areas. Exceptions are likely to be:

- Moana, if future urban subdivision of rural land occurs beyond currently residentially zoned land.
- Gladstone where a joint investigation is signalled to assess the feasibility of the provision of water supply and a wastewater collection systems for Gladstone
- Blackball, where potential future increases in tourism demand may mean the existing wastewater treatment capacity would need to be increased.

Council does not provide wastewater collection and treatment services in rural and rural-residential areas.

New subdivision and other types of development (supermarkets and industrial parks) may necessitate the upgrading of existing systems to cope with increased use. Any new developments or subdivisions will be covered by resource consent requirements.

With respect to subdivision development, requirements are in place to recover the costs of any required increase in capacity. Contributions from developers are likely to be required through the resource consent process. Council may also need to contribute to the works, as major infrastructure is not upgraded on an incremental basis for practical, economic and efficiency reasons.

Compared to the total length and extent of existing assets Council is responsible for owning and maintaining, increased infrastructure through development in the District is only likely to contribute to very small incremental increases in for instance length of networks.

No allowance has been made for increased demand for these reasons.

Council is presently engaged in a collaborative process with the West Coast Regional Council and Buller and Westland District Councils to develop a combined District Plan for the region. Following extensive public consultation the Plan will identify new zones for growth and development, as well as identifying areas where growth should not occur (such as areas subject to natural hazards). This planning is likely to take a number of years, with changes not likely to take effect until late in the LTP period. Council will remain actively involved as the process develops, given its significance for the community and for future strategic and infrastructure planning, including wastewater.

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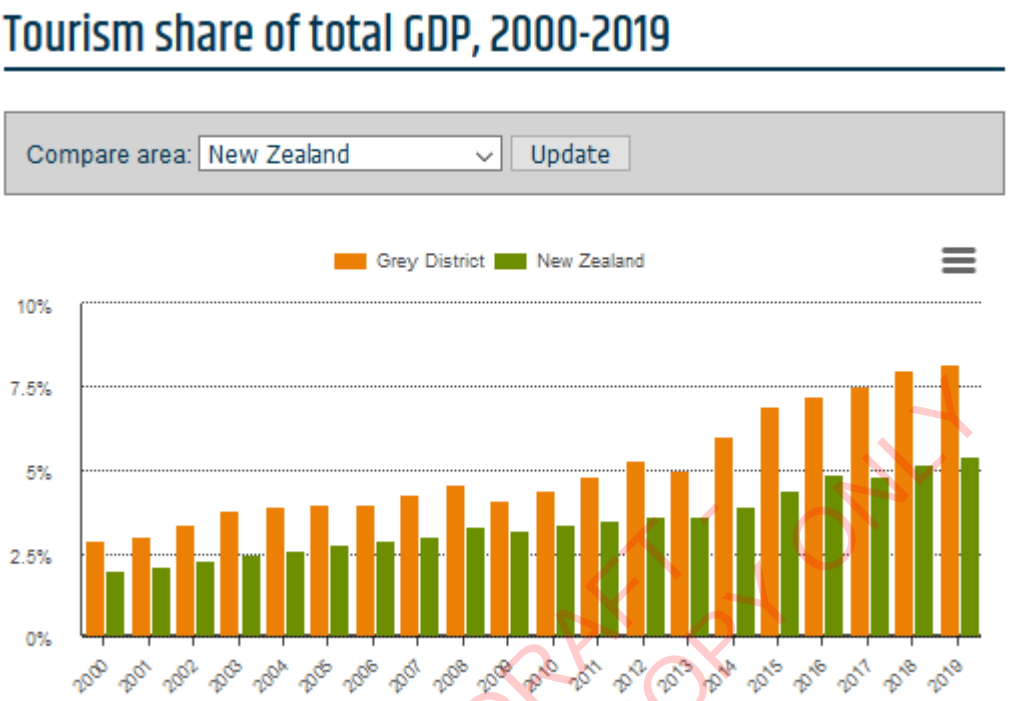
3.4 Tourism and visitor growth

As well as population and demographics being key drivers for our asset management activities, other factors such as growth associated with tourism activity can be significant. Sectors such as tourism may create demand through development in some areas and pressure on existing systems or the need for new systems.

Tourism has long been a significant contributor to the economy of the Grey District[6]:



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As described above, the impact of the global pandemic Covid-19 is expected to be significant on tourism and visitor growth in the District over the initial period of the Long Term Plan. The exact extent of these impacts are largely unknown at this stage.

Treasury's main economic forecast in its *Pre-election Economic and Fiscal Update* (16 September 2020) assumes that border restrictions will remain in place until 1 January 2022, thereby preventing short term recovery in the international tourism sector. Border restrictions are assumed to begin easing from the September 2021 quarter onwards, allowing for a partial resumption of some services exports, possibly as a result of safe travel zones.

Treasury's assumption is that overseas tourism will likely take some time to recover, reflecting negative income effects, changed travel preferences and lingering airline capacity effects. Some of the reduced international tourism activity will be offset by an increase in domestic tourism activity. However the magnitude of the increase is also unlikely to fully offset the reduction in international spending.

What this means for Wastewater Management Activities

There is potential for the slowing of growth in the District from the reduction in tourism activity in the short to medium term, however impacts on the wastewater activity will be minor. When tourism recovers, it may influence demand further in areas such as Moana - Lake Brunner and Blackball. However this is likely to be

[6] Infometrics - *Grey District Economic Profile*

in the long term and timeframes and outcomes are as yet uncertain.

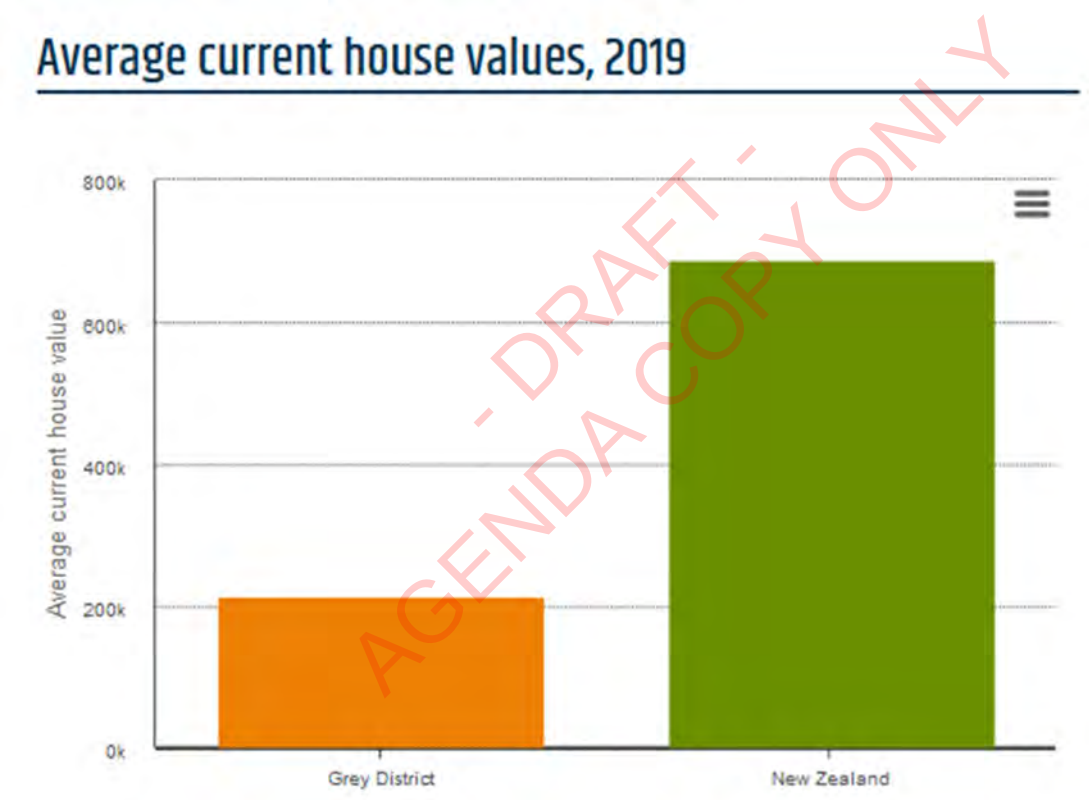
Many of the other activities in this area provide services directly to our community, are required asset maintenance or management activities, or are statutory requirements and are unaffected by visitor levels.

3.5 Economic changes

In 2019, the Grey District had mean (average) annual earnings of $57,521 and the West Coast region had mean (average) earnings of $56,758. New Zealand (excluding Auckland) by comparison had mean annual earnings of $59,615.

Mean annual earnings in the District had increased by 4.6% since 2018, a slightly higher rate than the rest of New Zealand (excluding Auckland) which showed an increase of 3.9%.

For June 2019, the average house price in Grey District was $219,620, compared with $196,518 in Buller District and $254,041 in Westland District. In the same period the average weekly house rent in Grey District was $290, compared with $248 in Buller District and $310 in Westland District.



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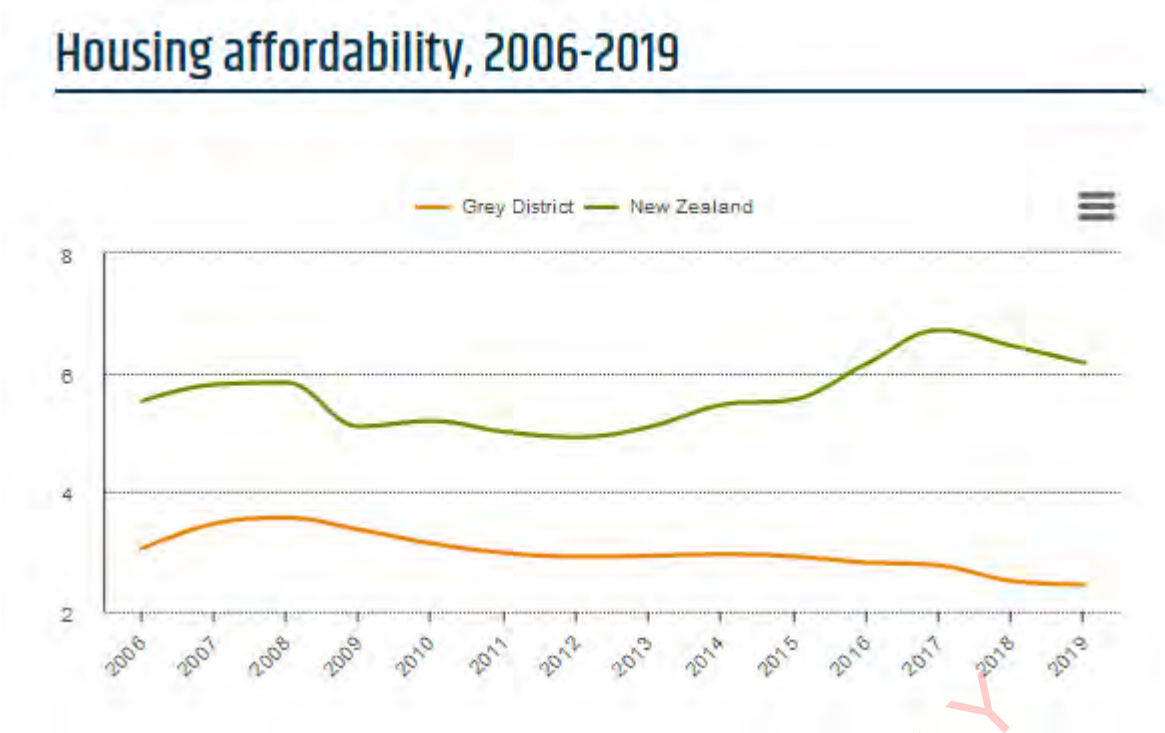
The housing affordability index is the ratio of the average current house value to average household income. A higher ratio suggests that median houses cost a greater multiple of typical incomes, which indicates lower housing affordability.



The graph[7] above shows that the District's housing when compared to the rest of New Zealand (excluding Auckland) is more affordable.

The Grey District in 2019 had an unemployment rate of 5.1%, compared to the West Coast region's rate of 4.8%. Figures for New Zealand (excluding Auckland) in 2019 show an unemployment rate of 4.3%. The Grey District's unemployment rate has increased from a low of 2.6% in 2007 to 5.1% in 2019.

As described elsewhere in this Plan, the extent of the impacts of the current global pandemic on the District and the national economy are highly uncertain at this stage. It is likely that unemployment will increase, and given the District's reliance on tourism as a significant contributor to our economy, our District may be more impacted than others.

What this means for Wastewater Management Activities

Impacts on the management of wastewater are likely to be minor. There is an ongoing need for wastewater management in our community for the reasons outlined in section 2 above. Our systems are designed to a certain capacity, and management or improvement is based on the community's ability to pay. The programmes outlined in this AMP for renewals and upgrades are planned with regard to this.

3.6 Climate change

Like many Councils, we are assessing available information and planning for the effects of climate change. This is because New Zealand's climate is warming, sea levels are rising, and extreme weather events are becoming more frequent and severe. The Ministry for the Environment's *National Climate Change Risk Assessment Main Report* released in August 2020 includes the following trends identified by the National Institute of Water and Atmospheric Research (NIWA):

- In the last 100 years, our climate has warmed by 1°C. If global emissions remain high, temperatures will increase by a further 1.0°C by 2040 and 3.0°C by 2090.

[7] Infometrics, 2019

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- In the last 60 years, sea levels have risen by 2.44 mm per year. If global emissions remain high, sea levels will increase by a further 0.21 m by 2040 and 0.67 m by 2090.
- Extreme weather events such as storms, heatwaves and heavy rainfall are likely to be more frequent and intense. Large increases in extreme rainfall are expected everywhere in the country, particularly in Northland due to a projected increase in ex-tropical cyclones.
- The number of frost and snow days are projected to decrease, and dry days to increase for much of the North Island and for some parts of the South Island.
- Drought is predicted to increase in frequency and severity, particularly along the eastern side of the Southern Alps.
- Increased north-easterly airflows are projected in summer and stronger westerlies in winter, the latter particularly in the south of the South Island.
- Wildfire risk is predicted to increase in many areas towards the end of the century, due to higher temperatures and wind speeds, and decreased rainfall and relative humidity.

The report notes that although there is inherent uncertainty associated with these projections, particularly towards the end of the century, they provide plausible futures resulting from climate change.

Climate Change Projections

The Ministry for the Environment's climate change projections for the West Coast are outlined in the following table. The projected changes are calculated for 2031–2050 (referred to as 2040) and 2081–2100 (2090) compared to the climate of 1986–2005 (1995).

Temperature	Compared to 1995, temperatures are likely to be 0.7°C to 1.0°C warmer by 2040 and 0.6°C to 3.0°C warmer by 2090. By 2090, the West Coast is projected to have up to 30 extra days per year where maximum temperatures exceed 25°C. The number of frosts could decrease by around 7 to 18 days per year.
Rainfall	Rainfall will vary locally within the region. The largest changes will be for particular seasons rather than annually. The West Coast is expected to become wetter, particularly in winter and spring. According to the most recent projections, extreme rainy days are likely to become more frequent throughout the West Coast region by 2090 under the highest emissions scenario.
Wind	The frequency of extremely windy days in the West Coast by 2090 is likely to increase by between 2 and 5 per cent. Changes in wind direction may lead to an increase in the frequency of westerly winds over the South Island, particularly in winter and spring.
Storms	Future changes in the frequency of storms are likely to be small compared to natural inter-annual variability. Some increase in storm intensity, local wind extremes and thunderstorms is likely to occur.
Snowfall	The West Coast region is likely to experience significant decreases in seasonal snow. By the end of the century, the number of snow days experienced annually could decrease by as much as 30-40 days in some parts of the region. The duration of snow cover is also likely to decrease, particularly at lower elevations. Less winter snowfall and an earlier spring melt may cause marked changes in the annual cycle of river flow in the region. Places that currently receive snow are likely to see a shift towards increasing rainfall instead of snowfall as snowlines rise to higher elevations due to rising temperatures. So for rivers where the winter precipitation

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	currently falls mainly as snow and is stored until the snowmelt season, there is the possibility for larger winter floods.
Glaciers	Overall glacier ice mass has decreased by 25 per cent over the last 60 years in New Zealand, and is expected to continue to do so into the future. Some of our most iconic glaciers (such as Franz Josef) have advanced in recent times. This is a result of more precipitation falling at their glacier heads. Whether these glaciers continue to advance into the future will depend on the balance between increased melting due to warmer temperatures and increased precipitation in the mountains. For example, one climate modelling study suggests the Franz Josef glacier may retreat approximately 5 km and lose around 38 per cent of its mass by 2100.
Sea level rise	New Zealand tide records show an average rise in relative mean sea level of 1.7 mm per year over the 20th century. Globally, the rate of rise has increased, and further rise is expected in the future. The Ministry for the Environment provides guidance on coastal hazards and climate change, including recommendations for sea level rise.

By 2090, seasonally the region could expect[8]:

Spring	• 0.6°C to 2.5°C temperature rise • 4 to 9 per cent more rainfall in Hokitika
Summer	• 0.6°C to 3.2°C temperature rise • 2 to 4 per cent more rainfall in Hokitika
Autumn	• 0.7°C to 3.1°C temperature rise • 2 to 5 per cent more rainfall in Hokitika
Winter	• 0.7°C to 3.1°C temperature rise • 8 to 29 per cent more rainfall in Hokitika

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Risk Assessment and Next Steps

The Ministry for the Environment's *National Climate Change Risk Assessment Main Report* (August 2020) identifies New Zealand's 10 most significant climate change risks, based on urgency. These are set out below. This first national climate change risk assessment helps the Government identify where it needs to prioritise action.

The next step is the development of a national adaptation plan which will outline what is needed to respond to the risks. The Government will work with iwi/Māori, local government and others to develop the plan, which will be published by August 2022.

Some of the risks identified below clearly involve local government, and all would impact our community. The Council will continue to monitor developments in this area and work with other agencies as appropriate.

The report identifies New Zealand's 10 most significant climate change risks as follows:

[8] Projected changes are relative to 1995 levels. The values provided capture the range across all scenarios. They are based on scenario estimates and should not be taken as definitive.

DOMAIN	RISK	RATING	
		Consequence	Urgency (44-94)
Natural Environment	Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events.	Major	78
	Risks to indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species due to climate change.	Major	73
Human	Risks to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change impacts.	Extreme	88
	Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts.	Extreme	85
Economy	Risks to governments from economic costs associated with lost productivity, disaster relief expenditure and unfunded contingent liabilities due to extreme events and ongoing, gradual changes.	Extreme	90
	Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes.	Major	83
Built Environment	Risk to potable water supplies (availability and quality) due to changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise.	Extreme	93
	Risks to buildings due to extreme weather events, drought, increased fire weather and ongoing sea-level rise.	Extreme	90
Governance	Risk of maladaptation* across all domains due to practices, processes and tools that do not account for uncertainty and change over long timeframes.	Extreme	83
	Risk that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for adaptation. Institutional arrangements include legislative and decision-making frameworks, coordination within and across levels of government, and funding mechanisms.	Extreme	80

* *Maladaptation* refers to actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence (IPCC, 2018).

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What this means for Wastewater Management Activities

Wastewater systems can be particularly vulnerable to climate change. More intense rainfall (extreme events) will cause more inflow and infiltration into the wastewater network. Wet weather overflow events will increase in frequency and volume. In low-lying areas where groundwater is linked to the sea, sea level rise can affect the performance of wastewater systems. The possible consequences include surface flooding, sewer overflows of untreated wastewater to inland and coastal waters and failure of drainage infrastructure.

Impacts on our wastewater management may include:

- The projected increased frequency of extreme rainfall events or the increase in rainfall intensities will impact on our existing systems, which become overwhelmed in extreme events. This will result in a lower level of service with existing wastewater services.
- Potential risks to infrastructure in coastal hazard areas. The Karoro area scheme is located in a coastal area, and the treated effluent after going through a wetland, is discharged to the sea.

The potential for coastal erosion in future would impact on this scheme. Council is required to assess whether the Karoro Scheme should be connected to the Greymouth Scheme within the life of the LTP.

As described elsewhere in this AMP, some of our wastewater systems that are exposed to climate change hazards are aging. Funding replacement is already challenging. However, as systems are replaced there is an opportunity to redesign for resilience. Review of the capacity of wastewater systems and possible network enhancements will be undertaken as appropriate.

There will be an ongoing need to monitor and consider solutions to actual or potential coastal erosion in built up areas or where Council infrastructure is at risk. Consideration of managed retreat for parts of the district that lie on or just above sea-level may be the most sustainable long-term approach. Processes such as the *Te Tai o Poutini* combined District Plan will work through issues and options across the West Coast region, including any controls on land use and development. In the long term, further growth and any associated increase in infrastructure may happen in areas that are already urbanised, which may see smaller townships in the district struggle to maintain services due to restrictions on land use due to natural hazards and climate change.

3.7 Natural Hazards

A natural hazard is defined in the Resource Management Act as:

"*…any* ***atmospheric or earth or water-related occurrence (including earthquake, tsunami, erosion,*** *volcanic and geothermal activity****, landslip, subsidence, sedimentation, wind, drought, fire, or flooding****) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment*." (emphasis added)

The Grey District, being close to the sea and the Alpine Fault and in a high rainfall zone, is susceptible to natural hazards such as flooding, earthquakes, tornados and more. The impacts of natural disasters can be significant and impose substantial unbudgeted costs on the Council. Some communities are very vulnerable to extreme weather events, and to potential damage when the Alpine Fault ruptures.

Climate change (refer section 3.5 above) will likely increase the risk from natural hazards, increasing the frequency and intensity of extreme weather events.

More heavy rainfall will increase the risk of flooding, erosion and landslides, which is already high in many parts of the region. Many West Coast communities are located along narrow coastal and river strips beneath mountain ranges, leaving them exposed to increased risks of storms, flooding and landslides.

Some recent weather events which have caused significant damage to infrastructure and affected the district's economy are outlined below. The costs to the insurance industry are also included.

Event	Dates	Cost
Flooding and storm, North and South Islands	6-7 March 2015	$1.3m nationally
Flooding and storm, West Coast, South Island	19-22 June 2015	$8.6m (inflation adjusted)
Flooding	23-24 March 2016	$30.9m nationally (inflation adjusted)
Cyclone Fehi	28-30 January 2018	$45.9m nationally
Ex-tropical cyclone Gita	3-19 February 2018	$35.6m nationally
Wind and flooding, West Coast	26 March 2019	$4.09m
Extreme rainfall	6-7 December 2019	Not yet available

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This demonstrates that extreme weather events have become more frequent and more severe over the past few years, with increasing costs to both households and businesses.

The Alpine fault, which has a high probability (estimated 30 percent) of rupturing in the next 50 years, is predicted to cause extensive damage throughout the Grey District. An earthquake scenario developed by Otago University Department of Geology suggests that a 400km rupture along the West Coast would break the earth's surface and cause avalanches, rockfalls and landslides. Strong ground shaking would affect properties and destroy bridges.

With these severe consequences the Grey District could become isolated for a long period of time with roads and communications networks cut off and disruption to power and water services.

Some implications for the District in relation to natural hazards are set out below.

Assumption	Implications
Coastal Hazards	Consideration of managed retreat for parts of the district that lie on or just above sea-level may be the most sustainable long-term approach. However, these communities are likely to prefer new or enhanced coastal protection works to protect both public and private property. Funding of these works will be up to the ratepayer unless central government steps in.
Flood Management	Increases in storm intensity and frequency of storms with increased rainfall will reduce the effectiveness of current flood protection infrastructure and require increased works to maintain levels of service. Managed retreat in these areas may also need to be considered.
Emergency Management	Emergency management plans must be robust with a strong base of knowledgeable staff and volunteers able to ensure the district keeps running in the event of increasing severe weather events and the potential alpine fault rupture. Townships should be equipped to deal with long periods of isolation.
Stormwater/Drainage Infrastructure	Increases in frequency of storms with increased intensity and higher intense rain will reduce the effectiveness of current storm / drainage infrastructure.
Climate Change Implications	Some of the implications are discussed above. Other implications include: • Increasing frequency and intensity of flooding / sea level rise puts community safety at risk. • Increasing frequency and intensity of flooding / sea level rise reduces the effectiveness of infrastructure around closed landfills. • Impact on tourism which relies on the natural environment that is being affected by climate change.
Growth Limited to Urban Areas	Further growth of the district will happen in areas that are already urbanised and may see smaller townships in the district struggle to maintain services and their economy due to restrictions on land use due to natural hazards and climate change.

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We note that RMA reforms signalled by the government will have a greater focus on hazards, climate change, land use management and mechanisms for managed retreat. These reforms are likely to take a number of years to develop and implement.

As part of the development of its Activity Management Plans and lifeline plans, the Council has undertaken work to prioritise efforts to prepare for a major disaster. The priority for getting Grey District infrastructure assets functioning and/or made safe after a natural disaster (specifically for earthquake) is as follows:

Lifeline:	Priority
Airport	1
Roads	2
Supplies (Food/Water/Materials)	3
Urban Drainage (Flooding/Sewage Overflows)	4
Water Supplies	5
High Integrity Buildings	6
Sewerage (Pipes/Plant)	7
Greymouth Port	8

Increasing the resilience of our assets in relation to natural hazard risk is an ongoing area of work.

What this means for Wastewater Management Activities

Overall, impacts on the wastewater management activity area may include:

- As outlined above, increases in frequency of storms with increased intensity and higher intense rain will reduce the effectiveness of our current wastewater infrastructure where increased infiltration occurs.
- Vulnerability of wastewater infrastructure such as buried pipes in soft ground, to natural hazards such as earthquakes and liquefaction.
- Damage to wastewater network components such as pumps and treatment stations from natural hazards such as earthquakes.

Council will carry out upgrade works on its networks, based on priorities established from condition assessments. We will improve the resilience of schemes as budgets allow, such as:

- Using flexible pipelines in replacements
- Bolting down all equipment and pumps
- Undertaking longer term assessments on buildings and pump stations.

The Council recognises the need to continue to monitor and consider solutions to actual or potential coastal erosion in built up areas or where Council infrastructure is at risk. For example, the Council will assess the possibility of connecting the Karoro scheme to Greymouth. As outlined above, consideration of managed retreat for parts of the district that lie on or just above sea-level or in high natural hazard risk areas may be the most sustainable long-term approach.

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3.8 Key issues for the Wastewater Management Activity

This section provides information on topics that may affect the Council's wastewater management activities now and into the future, or are otherwise areas for change or development over the period of the LTP. As well as issues relating to our physical networks, there are changes in legislative and policy frameworks driven by central government that are likely to impact on the Council's wastewater management activity over the term of this AMP.

Deferred Renewals

Many of the original wastewater schemes were constructed in the last 50 years with around 90% of the pipe network built since 1970. The figure below indicates the approximate date of construction and age profile of the wastewater pipe network in ten-year increments.

Figure: Wastewater pipe network age profile

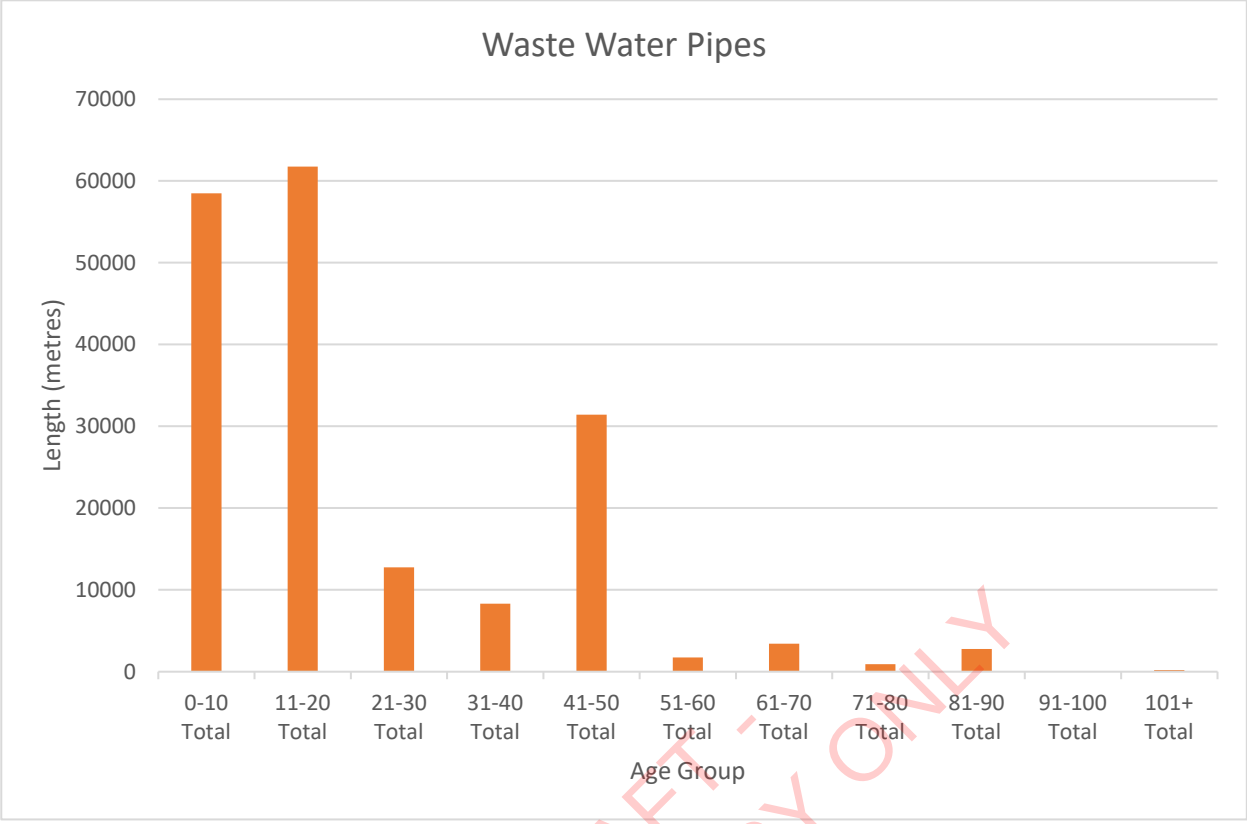

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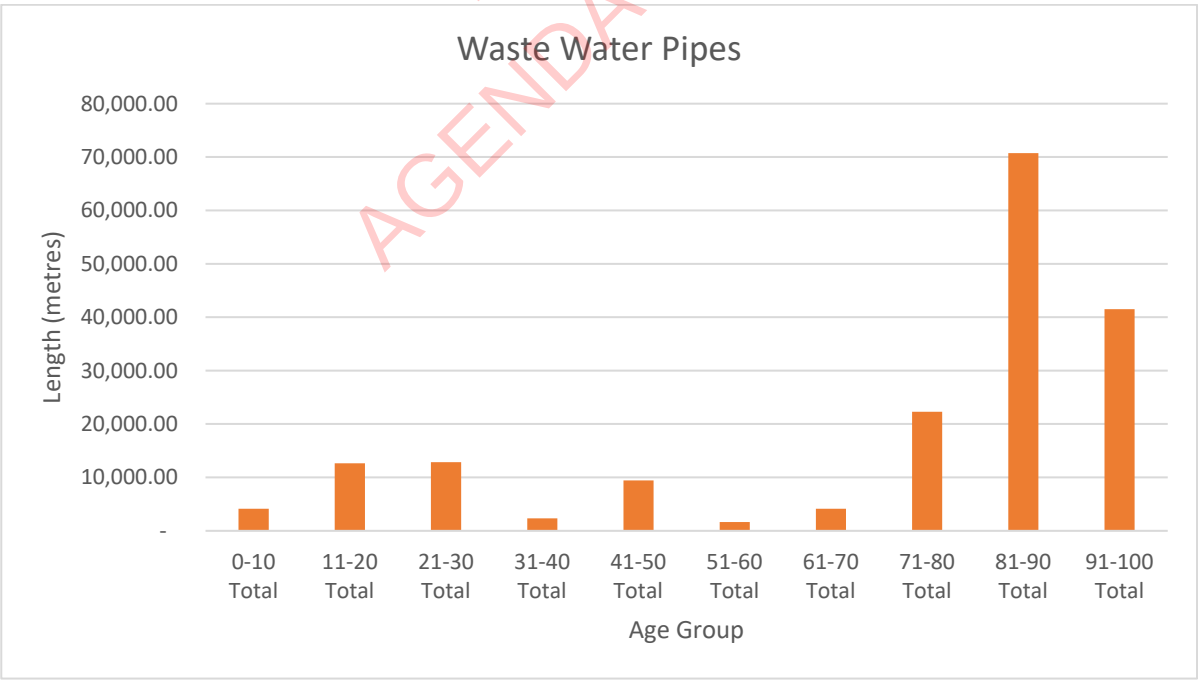
Figure: Remaining useful life profile of Wastewater pipes



Within the last ten years, the Greymouth wastewater treatment plant has been constructed and is operational. Over the last 20 years, the existing combined stormwater and sewer pipes have been progressively replaced with new sewer only pipes. However other parts of Council's original 1970's sewerage schemes are nearing the end of their useful life, and need replacing.

The following table shows the total length of pipes in each community and the average age of the pipes.

Wastewater Pipes	Scheme	Total Length (kms)	Subtotal	% Total Length	Average Age	% Scheme Length
Blackball	Blackball	9.81	9.81	5%	11.94	11.94
Blaketown	Greymouth	12.82			13.55	
Cobden	Greymouth	25.66			11.94	
Dobson/Taylorville	Greymouth	11.55	115.14	63%	13.55	13.54
Greymouth	Greymouth	55.83			23.68	
Rural	Greymouth	9.28			4.95	
Iveagh_Bay	Iveagh Bay	3.17	3.16	2%	17.97	17.97
Karoro	Karoro	11.96			38.01	
South_Beach/Paroa	Karoro	13.58	25.54	14%	17.86	27.94
Moana	Moana	8.77	8.76	5%	38.51	38.51
RAPAHOE	Not applicable	0.05	0.05	0%	1.00	1.00
Runanga	Runanga	19.20	19.20	11%	42.72	42.72
Grand Total		**181.69**	**181.69**	**100%**	**22.40**	**22.40**

Note:
There is no scheme in Rapahoe. A short length of wastewater pipe is recorded as a connection between a public toilet and septic tank owned by Council. It can be inferred from the previous two graphs and the above table that a substantial part of the wastewater network is relatively young. The level of deferred renewals for wastewater is much less than for stormwater and water supply networks. Areas where older pipes exist are:

- Karoro
- Moana
- Runanga – oldest pipes where pipe failures are occurring. Discussed further below.

Renewal expenditure is major work that does not increase the asset's design capacity or increase its planned level of service, but restores, rehabilitates, replaces or renews an existing asset to its original capacity or service level. Work over and above restoring an asset to original capacity involves new works expenditure.

Council is aware of the following potential consequences of underfunding renewals:

- Potential for critical failure if assets are not renewed/replaced in time
- Increased cost of maintaining assets that are past their use-by date.
- Failures will mean a reduction in the level of service currently provided by Council, or even loss of service (outage)
- Leakage of untreated discharges to properties and the environment could occur
- Higher cost if renewing/replacing before the end of the asset's useful life
- Funding required for future works
- Lower resilience of older infrastructure in event of a natural disaster, e.g. earthquake
- Public health/safety issues
- Emergency works may be expensive and Council may have to loan fund this expenditure – this will impact on Council's debt levels and ability to borrow for other unforeseen events.

The purpose of Council's renewal strategy is to ensure that:

- Replacement of assets is carried out at the most appropriate time
- The most effective benefit is received from any asset renewal
- Renewals assist with compliance with wastewater levels of service

While there are some deferred renewals in the wastewater activity, Council is choosing to focus on addressing the more significant needs in the water supply, stormwater and land transport activities. We have focussed on our wastewater assets over the last 10-20 years and overall as outlined above the age profile means most of the wastewater assets do not require attention at this stage. With the exception of Runanga we will continue

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to address prioritised deferred renewals within our existing budgets. After seven years, the plan is to start applying more funding to wastewater renewals, noting that the appropriateness of this strategy will be reviewed as part of each subsequent LTP.

Over the period of this LTP, the Council will use information from condition assessments to carry out renewal works on a prioritisation basis within existing budgets, in order to maintain levels of service and avoid potential critical failures.

Runanga/Dunollie Network Replacement

Typical of many of the earlier wastewater schemes, substandard pipe material and harsh ground conditions can have adverse effects on the networks to varying degrees. In particular this affects the Runanga scheme where a combination of poor pipe material and high water levels has meant the pipes have failed earlier than expected. Major parts of the network require replacement - Council is addressing this at the moment and will continue to do so during this plan.

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4. The Journey

4.1 Plans for the Future and Key Projects

Over the next ten years, management of wastewater services will continue to involve the following:

- Completion of outstanding separation works for the Greymouth Scheme and education/enforcement for individual properties to connect to the scheme in the areas of Greymouth, Blaketown, Cobden, Taylorville, Dobson and Kaiata
- On-going maintenance of the network (i.e. pipes) and plant (pumps etc.)
- Sewer renewals and replacement
- Pumping station annual maintenance
- Wastewater network cyclical replacement
- Management of systems as Lifelines

The Council also plans to undertake a number of key projects. These are set out below.

Project/programme	Key Drivers	Details	Indicative Cost	When
Replacement of UV treatment station, Greymouth	Renewal	Replace the 20-year old Johnson Street UV treatment station with a new station at Preston Road, Greymouth.	$100,000 Y2 $1,400,000 Y3	Years 2-3
Karoro Scheme review	Compliance and Climate Change	Assess possibility of connecting Karoro Scheme to Greymouth, with possible works to connect in Year 5.	$75,000 Y3 $2,000,000 Y5[9]	Years 3 and 5
Resize Blaketown Sewer Rising Main	Operational efficiency	Replace current oversized sewer main with appropriate size once sewer/stormwater separation completed.	$400,000 Y4	Year 4
Extension of wastewater services to Gladstone and Camerons *Costs cover water supply and waste water collection.*	Community Demand	Undertake feasibility study, and subsequent works if required, to extend sewer and water supply services south of Saltwater Creek to Gladstone and Camerons. Capital works to be included in next LTP is decision is to proceed.	$100,000 Y1 $3,500,000 Y4	Years 1 and 4

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[9] This will be subject to consultation at the 2024 LTP if Council proposes to proceed

Project/programme	Key Drivers	Details	Indicative Cost	When
Extension of wastewater services to Rapahoe (TBC)	Community Demand	Extend sewer services to Rapahoe from Runanga. Works to be included in the next LTP if demand is confirmed over the next 3 years.	$1,500,000 Year 4[10]	
Disposal of collected septic tank waste to treatment plants	Compliance	Review capacity of treatment plants to receive commercially collected septic tank waste, and to add additional infrastructure as necessary to cater for this. Funded by cost recovery from users.	$60,000 Y1 $30,000 ongoing	Year 1 onwards
SCADA telemetry for the Three Waters networks	Compliance	Initial equipment renewal and upgrade programme, with ongoing operational costs thereafter (licences, resources) associated with the Surveillance Control and Data Acquisition system (SCADA)[11] to provide monitoring information on our three waters (water supply, wastewater and stormwater).	$100,000	Year 1 onwards

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New capital works and upgrades to the capacity of existing systems will also be considered by Council where there is a demonstrated technical need.

Further details on the operation and funding of these activities are outlined in the sections below.

4.2 Lifecycle management

Council manages the life cycle of its wastewater assets through operation and maintenance planning for optimal asset utilization, and the identification and programming of capital works (i.e. asset development, renewals, upgrades, disposal) that will sustainably deliver the required level of service. This involves anticipating and managing risks and optimising decision making throughout the life of the assets. The lifecycle of an asset follows the progression shown below.

Planning	The process of anticipating a need for new asset driven by growth, a need to meet a higher standard of service, or to replace an existing failing asset. The planning process involves engineering evaluation and community engagement to size, locate, programme and consider the design options, whole of life costs, non-asset alternatives and risks.

[10] This will be subject to consultation at the 2024 LTP if Council proposes to proceed

[11] SCADA systems provide surveillance of plants, reservoirs and pumping stations in three waters systems, and provide alarms when equipment fails or when operating parameters are exceeded. The SCADA system also records operational data.

Creation	The purchase, construction or vesting of an asset to the Council. The management of the design and construction to ensure the required quality is delivered on time and at the agreed cost.
Operation & Maintenance	The day to day running of the infrastructure to ensure continual and cost effective service. The process involves proactive and reactive repair and servicing of the assets, taking into account the 'criticality' of the assets to the overall service.
Condition & Performance Monitoring	Regular, ad hoc and opportunistic assessment of the condition and performance of assets in relation to manufacturers' specifications. Projection of assessments using local and national experience to estimate life expectancy of assets.
Rehabilitation	Proactive restoration of existing assets to extend the serviceability and life expectancy in a cost effective manner.
Renewal	The replacement of assets that have reached the end of their useful lives.
Disposal	The removal of redundant assets by decommissioning, physical removal, sale or re-utilisation for different purpose/activity.

Effectively this activity management plan in total encompasses the approach to how Council manages the lifecycle of the activity and assets associated with the activity in order to continue to provide the service.

The approach taken to developing our AMPs is life cycle asset management. This approach... *'Encompasses all asset management (AM) strategies and practices associated with an asset or group of assets that results in the lowest lifecycle costs. And lifecycle cost is the total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal.* [12]

The approach is portrayed in the figure below and includes looking at the lowest long-term costs (rather than short-term savings) when making asset management decisions.

Whilst this is the desired approach, Council is also constrained by affordability as is discussed in the Infrastructure Strategy and Financial Strategy sections of the LTP. Council has to consider all its desired objectives across all its activities when it prepares its budgets. Realistically, for instance, optimal levels of funding for renewals cannot always be achieved.

Over the long term, Council's aim is to achieve lowest long-term costs. However it has to, as a trade-off across all its activities, accept higher risks and, for instance, increase operational and maintenance costs while it works towards achieving lowest long-term costs.

- DRAFT - AGENDA COPY ONLY

[12] International Infrastructure Management Manual 2015

Useful life

The Council has made a number of assumptions about the useful lives of its assets by assessing condition using the age, material, industry and local knowledge. The detail for each asset category is reflected in the statement of accounting policies in the LTP. We have also incorporated factual data obtained from detailed condition assessments the Council has carried out.

The useful lives (also known as Base Life) are consistent with the assumptions applied to valuing each asset category. Further details are provided in the recently completed valuation for this activity to the 30 June 2020.

Useful lives are shown in the table below:

Asset Class and Asset Type	Min of BaseLife	Average of BaseLife2	Max of BaseLife3
ww_line			
Gravity Main	60	93	100
Rising Main	60	93	100
Service	60	96	100
ww_plant			
Aeration Equipment	20	20	20
Aeration Pond	10	53	100
Band Screen	20	20	20
Building Structure	40	79	90
Clarifier Equipment	30	30	30
Clarifier Structure	90	90	90
Controls	10	10	10
Disinfection Equipment	15	33	80
Earthworks/Foundation	80	80	80
Electrics & Controls	10	28	30
External Field Cabinet	10	12	25
Fan	25	25	25
Fences	40	43	50

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Asset Class and Asset Type	Min of BaseLife	Average of BaseLife2	Max of BaseLife3
Flow Meter	20	20	20
Generator	30	34	40
Geodesic Dome Roof	50	50	50
Inlet Structure	50	50	50
Land	500	500	500
Landscaping	80	80	80
Maturation Pond	10	53	100
Media and Distributor Arm	35	35	35
N/A	20	63	80
Pipework	50	50	50
Pumps	20	25	30
SCADA and Communications	25	25	25
Screening Equipment	30	30	30
Screenings sluice	50	50	50
Screenings wash press	20	20	20
Sludge Tank	90	90	90
Standby Generator	25	25	25
Storage Pond Structure	90	90	90
Storage Well	60	87	90
Tank	50	65	80
Tanker Trailer	20	20	20
Valve Chamber	80	80	80
Valves & Pipework	30	41	80
Ventilation Pipework	80	80	80
Wetland Plants	20	20	20
Wetland Structure	90	90	90
ww_point			
Air Release Valve	25	28	30
Floodgate	60	60	60
Inlet	60	68	70
Maintenance Shaft	80	90	90
Manhole	80	89	100
Outlet	60	68	70
Pond	100	100	100
Pump Station	60	69	90
Rodding Eye	80	87	90
Treatment Station	60	67	70
Valve	25	28	30

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4.3 Maintenance and operation approach

The Council is responsible for the operation and maintenance of these schemes, which includes:

- Managing and maintaining the network so sewage is continually collected and transferred to the wastewater treatment plants.
- Responding promptly to fix all faults.

- Detecting and fixing leaks.
- Planning and carrying out renewals to replace assets in a timely manner.
- Monitoring treated effluent quality to ensure it meets the required consent standards and is not creating a public health risk or adverse effects on natural and physical resources.
- Planning to respond to emergency events that may damage the network, such as earthquakes. We often refer to this as Lifelines Planning, as lifelines are critical services that will be needed during an emergency event.
- Forward planning to ensure future demand can be met, taking into account anticipated growth and other factors such as climate change impacts.

As described earlier, given the high level of uncertainty around the Three Waters Reforms, the Council is proceeding on the assumption that it will continue to own, control and manage all of the public systems over the period of the LTP. The work of operating and maintaining the physical systems is contracted out, typically for 5 year contracts.

The contractor is required to operate and maintain the assets to achieve specified outcomes and ensure they provide the required levels of service. This is currently a negotiated contract.

The contract is performance based with a focus on forward programming, preventative maintenance and reporting, however, there are certain minimum standards. Contract works must be carried out to an acceptable standard, at the least cost, with minimum disruption to the community and the environment.

Major renewals or new capital works are also contracted out via tender.

Details of Councils current service providers and the terms of any contracts are detailed in the following table:

Service Type	Service Area	Further Details	Service Provider	Contract commenced	Contract expires	Contract Features
General Maintenance and Operations	All water supply schemes outlined in this AMP	Utilities Contract	Paul Smith Earthmoving 2002 Ltd	1 October 2018	30 June 2022 with 1 Year plus 1 Year	Maximum Term 5 years and 9 months

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4.4 Asset valuations

Refer to Council's Accounting Policies in the Long Term Plan.

This section presents information on the valuation of assets for the Activity. Council uses a geographical information system with specifically developed assets management software developed and supported by AssetFinda to collate asset information on the location, age, condition and material of assets. Other important information such as additions, disposals and costs of assets are also collated in this system. The system also is able to provide valuation information and predictive analysis.

Overview

Asset Component	Replacement Cost ($M)	Percentage Total Cost	Current Value ($M)	Annual Depreciation ($M)	Accumulated Depreciation ($M)
Pipes	61.21	66%	45.26	0.67	15.96
Treatment Plans	23.31	25%	18.05	0.57	5.26
Points - Service Chambers, etc.	8.81	9%	6.18	0.11	2.63
Total Value	**93.33**	**100%**	**69.48**	**1.34**	**23.85**

Peer reviewed and Audited Valuation to 30 June 2020.

Key

Plant includes pump stations, treatment equipment and facilities, control panels and buildings.
Pipes include the main collection lines generally running along and under roads and the short pipes from the main collection lines running along and under the roads to property boundaries. Council's pipes can also exist through private property.
Points etc., are essentially the connections between the pipes typically where pipes change direction and are seen at ground level as service chambers.
"Replacement Cost" means optimized replacement value.
"Current Value" means optimized depreciated replacement value (that is the current Book Value)
"Annual Depreciation" means the annual depreciated applied to the asset which is the replacement value divided by the useful life of the asset and is the amount the amount of value the asset loses each year.

Pipes

This section provides information on the pipe component asset values for each community:

Community	Replacement Cost ($M)	Percentage of Total Cost	Current Value ($M)	Annual Depreciation ($M)	Accumulated Depreciation
Blackball	4.13	4%	3.51	0.05	0.62
Blaketown	5.30	6%	4.16	0.06	1.15
Cobden	11.33	12%	8.23	0.14	3.10
Dobson/Taylorville	4.63	5%	4.36	0.05	0.27
Greymouth	38.78	42%	30.96	0.65	7.82
Iveagh_Bay	1.49	2%	1.19	0.02	0.29
Karoro	5.96	6%	3.05	0.09	2.91
Moana	3.91	4%	2.05	0.05	1.86
RAPAHOE	0.03	0%	0.03	0.00	0.00
Runanga	7.94	9%	3.51	0.11	4.43
Rural	4.08	4%	3.82	0.05	0.26
South Beach/ Paroa	5.75	6%	4.61	0.06	1.15
Grand Total	93.33	100%	69.48	1.34	23.85

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The following table provides information on the average age of the assets in each community. The average useful life of the assets in each community is determined by dividing the replacement value by the annual depreciation. The remaining useful life is determined by dividing the current value (depreciated replacement value) by the annual depreciation. The age of the assets in each community is therefore the useful life minus the remaining useful life. The replacement cost in each community is included in this table as it gives an indication of the total value assets provided and how old on average the assets are in each community.

Community	Replacement Cost ($M)	Average Useful Life	Remaining Useful Life	Age
Blackball	4.13	79	67	12
Blaketown	5.30	86	67	19
Cobden	11.33	79	58	22
Dobson/Taylorville	4.63	85	80	5
Greymouth	38.78	60	48	12
Iveagh_Bay	1.49	88	71	17
Karoro	5.96	66	34	32
Moana	3.91	80	42	38

RAPAHOE	0.03	85	85	0
Runanga	7.94	70	31	39
Rural	4.08	75	70	5
South_Beach/Paroa	5.75	91	73	18
Grand Total	93.33	69	52	18

4.5 Sustainability

Sustainability means that we effectively balance the needs of present and future communities. From an asset management perspective, sustainability is critical, as many assets have a long lifespan and must be 'future-proofed'. Council has a responsibility to manage this activity in way that supports the environmental, social, cultural and economic well-being of current and future generations. This section focuses on social, cultural and environmental sustainability.

Environmental sustainability is considered with respect to Council's District Plan, and other statutory planning instruments such as the Regional Policy Statement and Regional Plans. Communities and stakeholders have the opportunity to influence these policies and plans through initial preparation of the plans and policies and subsequent reviews. Individuals, groups and organisations also have the opportunity to initiate changes to these planning documents.

The governing legislation relating to development in New Zealand is the Resource Management Act 1991 (RMA). Individuals, groups and organisations are able to pursue initiatives that meet the purpose and principles of this Act. As well as enabling opportunities for development initiatives, land and facilities can be designated for the public good, such as sites for essential services such as wastewater collection and disposal.

From a purely infrastructure servicing perspective, developments that are grouped in and around existing built-up areas are more effective and efficient than creating less dense and/or isolated developments. Conversely where people are prepared to pay the higher capital costs for onsite services or small collective schemes, these options can also be provided for less dense and/or isolated developments, provided they meet the purpose and principles of the RMA.

Encouraging infill development and "urban" renewal rather than consuming land that is in or potentially available for economically viable agricultural production is also likely to contribute to the sustainability of development. Conversely, utilising land for residential development with appropriate safeguards where the land does not have any other potential use may reduce pressures on economically viable agricultural land.

That said, it needs to be noted that approximately 65 to 70% of the District land area is in some form of Crown ownership. This does mean that there are pressures on the remaining 30 to 35%. However the density of development is not high given the low population base, which means that at least within the term of this Plan (10 years) pressures on the land available for development are not likely to be high.

Another sustainable development issue, albeit one now more likely to be long rather than short term, is that hand in hand with the traditional economic bases of the district such as mining, farming, forestry and fishing, tourism (following recovery from the global pandemic) may continue to increase as per its pre-Covid trajectory.

One of the reasons for this is that so much of the District has been retained in its natural state and beauty. Council is conscious of the need for balance between development pressures and the need to ensure the District remains into the future an attractive place to live, work, visit and play.

In relation to wastewater management and planning, the focus of Council is on long-term sustainability. Specific focus areas are:

- Ensuring minimum disruption to whitebait and other freshwater life as a result of quality of treated discharges or maintenance and operations.
- Minimising contaminants and respecting Māori relationships with water.

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- Continuing to improve the robustness and accuracy of Council data, processes and systems in order to provide for better decision-making.
- Continuous planning of improved service delivery and also new services in outlying areas.
- Competitively tendering works to ensure value for money.
- Ensuring adequate maintenance to networks and treatment plants.
- Continuing to monitor and consider solutions to actual or potential coastal erosion where Council infrastructure is at risk.
- Continuing to monitor and consider solutions to actual or potential other climate change effects which may increase the frequency and intensity of storm events affecting wastewater systems and property.

Section	Simply Sustainable business model (Ministry for Environment)	Grey District Sewer schemes ("Business")
A	The Simply Sustainable business model illustrates an evolution in the business cycle. To begin with natural resources are used by Suppliers and turned into products. As part of this manufacturing process waste is generated and put into the Environment.	Water is taken from watercourses or below ground. Water permits and discharge permits from the regional council for resource take and discharges confirms water take and discharges are sustainable or if there are any issues. Human waste and grey water (raw effluent) is collected by gravity system or pressurized mains and transferred to wastewater treatment plants where it is treated and discharged back into the environment. Energy is used to pump and treat water and effluent is optimized to use energy efficiently. For instance for water supplies pump at night and store water in reservoir. Reservoir gravity feeds townships avoiding extra pumping costs. Where water supply schemes exist (see Water Supply AMP) water that is used by the community is discharged into a Council supplied sewerage scheme, with the exception of: ▪ Nelson Creek – community owned water supply – effluent discharged to septic tanks ▪ Ahaura – community owned water supply – effluent discharged to septic tanks ▪ Taylorville – collected and transferred for treatment at the Greymouth waste water treatment plant. ▪ Dobson and Kaiata Township – collected and transferred for treatment at the Greymouth waste water treatment plant. ▪ Stillwater – discharged to on property site septic tanks ▪ Rapahoe – discharged to on property site septic tanks ▪ Greymouth (including Blaketown and Cobden) – 90% of combined sewage and stormwater pipes in streets separated, 45% properties separated. Council policy to carryout separation works on properties and recover costs if property owners do not voluntarily separate. Separated sewage pipes for township allows sewage to be collected and pumped Greymouth ▪ ▪

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Section	Simply Sustainable business model (Ministry for Environment)	Grey District Sewer schemes ("Business")
A - continued	The Simply Sustainable business model illustrates an evolution in the business cycle. To begin with natural resources are used by Suppliers and turned into products. As part of this manufacturing process waste is generated and put into the Environment.	To complete the sustainability cycle sewerage schemes in place to treat effluent prior to discharge back onto the environment located at: ▪ Karoro (includes South Beach and Paroa areas) ▪ Runanga ▪ Moana (no reticulated water supply) ▪ Blackball ▪ Cobden ▪ Greymouth ▪ Te Kinga (no reticulated water supply) ▪ Kaiata Township and Kaiata Park (pending) Resource consent in place for sewerage scheme approved by District and regional council confirms discharge is sustainable. Water loss – programs in place to monitor water loss, repair, replace pipes when water loss excessive.
B	These products are purchased as Resources by Businesses who use them to create Goods and Services, which are then sold to Customers. Businesses generate waste in their processes and customers to put their waste into the environment.	Domestic and commercial fees are charged for sewage collection. Domestic consumers charged a targeted rate as consumption is considered by Council to be low compared with commercial users. Additional rates apply to some commercial users. Extra volume charges are applied to hotels, motels and schools. This provides an economic incentive to optimize their water use. Trade Waste Bylaw adopted by Council and any commercial/industrial premises deemed to be a trade waste producer charged trade waste levies. The Trade Waste levee is used to create an incentive to reduce water and water trade waste usage.
C	At this point the model changes. It now shows the customer completing the cycle back to the supplier. By sending Recyclables back to suppliers, material is reused to make new products - meaning the supplier takes fewer natural resources.	See response to Section A. Effluent including water is treated and recycled back into the environment.
D	Suppliers and businesses then take further steps towards becoming sustainable by examining their Strategy, Processes, People and Capital. Developing sustainable and efficient business practices improves efficiency even further.	See response to Section A. All these aspects are required to be considered through Council's Long Term Plan, Annual Plans, Activity Management Plans, Funding Policies, and Water Service Reviews.
E	Businesses can become more sustainable by choosing more sustainable suppliers, and also by looking at their Strategy, Processes, People and Capital. Their waste going into the environment will also reduce.	See response to previous sections. Council competitively re-tenders operations and maintenance contracts every 3 to 5 years. Renewal and capital works competitively tendered. Council has determined that competitively tender works and services ensures efficiency and thereby reduces waste. Increasing emphasis on sustainable business practices as contracts are reviewed and retendered.

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Section	Simply Sustainable business model (Ministry for Environment)	Grey District Sewer schemes ("Business")
F	The model then places this business cycle in the wider context of Society. In this broader context, businesses interact with Shareholders, the Community and Government to further develop sustainability.	See response to Section D. Strong links to Society, Businesses and Shareholders (Waste Water Users), Community and Government through legislation requirements including but not limited to need to consult with all stakeholders on the preparation and adoption of long term plans for this "business".

The above environmental sustainability model establishes a model for good practice. However in order for any business to survive it must continue to have a customer base. Economic sustainability is addressed elsewhere in this AMP and in the LTP.

4.6 Environmental management issues

Impacts on the natural environment of managing the wastewater activity are dealt with under the Resource Management Act 1991 (RMA). Ensuring that all necessary resource consents are applied for and granted in a timely fashion is a critical part of this activity. Where required by resource consent conditions, Council is required to monitor the environmental impacts of its activities.

There are a number of activities that may have potential and/or actual effects on the environment. The most significant in terms of requiring resource consent or permits are:

- Discharge of treated effluent to land and/or water.
- Discharge of odour to air.
- Land disturbance.

Other factors may also need to be considered such as the siting of new wastewater treatment plants and other plant (for example, visual and noise effects).

There are a number of resource management plans that cover the Grey District and impact on this activity:

- The West Coast Regional Council's Plans are concerned with the discharge of contaminants onto and into land, water and air; water permits, coastal permits, and land use consents.
- The Grey District Plan is concerned with land use and development, including residential and development zoning.

It is noted that Council by law is a requiring authority and is also a network utility operator. If necessary it can designate and acquire land for a public good purpose. The RMA recognises that this activity has a public good purpose.

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Resource Consents

A very important aspect of the wastewater schemes is to ensure that they comply with conditions relating to discharge permits to meet the purpose and principles of the RMA.

Discharge consents are in place for all treatment facilities. Council expects to be able to continue to comply with consent conditions imposed and does not foresee any undue issues in renewing consents under current standards.

Council's significant resource consents held in relation to wastewater are as follows

Table: Resource Consents Held

consent no.	Community	type of consent	general location	Expiry Date	status	required to be renewed next 10 years?	status	date granted
RC06054 (1208)	Moana	Emergency Discharge	Lake Brunner, Moana	1/09/2006	expired	yes	reapplied	Outstanding
RC06055 (1209)	Moana	Discharge Permit	Moana Ponds, Arnold River	1/09/2006	expired	yes	reapplied	Outstanding
RC06052 (1206)	Karoro	Emergency Discharge	Watsons Creek, Karoro	1/09/2006	expired	yes	reapplied	Outstanding
RC06056 (1210)	Runanga	Discharge Permit	Seven Mile Creek, Dunollie	18/02/2007	expired	yes	reapplied	Outstanding
RC06057 (1211)	Runanga	Emergency Discharge	Raleigh Creek, Dunollie	18/02/2007	expired	yes	reapplied	Outstanding
RC98037/15	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/16	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/17	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/7	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/1	Cobden	Coastal Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/12	Cobden	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/14	Blaketown	Discharge Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC98037/5	Blaketown	Coastal Permit	Greymouth Sewerage Scheme	4/07/2013	expired	yes	reapplied	Outstanding
RC01369	Karoro	Discharge to Sea (RC01369/3) and Discharge to Land (RC0139/4)	Karoro Scheme	1/02/2028	current	yes	granted	1/02/2018
RC5127/1	Blackball	Discharge Permit	Ford Creek, Blackball	23/01/2030	current	yes	granted	23/01/2006
RC5127/2	Blackball	Discharge Permit	Ford Creek, Blackball	23/01/2030	current	yes	granted	23/01/2006
RC5127/3	Blackball	Discharge Permit	Ford Creek, Blackball	23/01/2030	current	yes	granted	23/01/2006
RC01363	Moana	Discharge Permit to Land	Moana Sewage Treatment Plant	21/03/2038	current	no	granted	21/03/2003
RC98037/11	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2038	current	no	granted	4/07/2003
RC98037/13	Greymouth	Discharge Permit	Greymouth Sewerage Scheme	4/07/2038	current	no	granted	4/07/2003
RC98037/8	Greymouth	Land Use Consent	Greymouth Sewerage Scheme	4/07/2038	current	no	granted	4/07/2003
RC98037/4	Cobden	Discharge Permit	Greymouth Sewerage Scheme	4/07/2038	current	no	granted	4/07/2003
RC06092	Iveagh Bay	Discharge Permit	Iveagh Bay Sewerage Scheme	27/07/2041	current	no	granted	27/07/2006

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Council's existing wastewater activities are covered by designations (see section below) and current resource consents. There are a number of resource consents outstanding, where applications have been lodged to renew consents or vary conditions. Normally while the consents are being processed, the existing resource consents remain in place. under the RMA. There may be resource consents required for works associated with any new extensions of wastewater schemes and other proposed projects during the term of this AMP. The requirement for consents will be assessed in detail as part of the initial review and planning for any project.

Should there be any new privately developed subdivision infrastructure developed over the life of this AMP, it is likely that Council would inherit a number of consents if/when that new infrastructure is transferred to Council. This is why it is important that Council agrees to conditions imposed on discharge consents obtained by developers for assets to be vested in Council, as Council accepts the long term responsibility for compliance with these permits.

Environmental Monitoring and Reporting

Environmental monitoring is carried out in accordance with the requirements of Council's resource consents. The extent to which the Council has been able to meet the conditions of each permit is reported in its Annual Report each year.

There are no known resource consent issues with respect to monitor.

Anticipated Environmental Results	Monitoring and Review Data
• Refer conditions of resource consents.	• No issues identified at this stage.

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Designations, Zoning, Land Purchase and Works on Private Land

Designations

Designations enable central and local government to get planning authorisation for public works and to protect land for future public works. A designation is a form of 'spot zoning' over a site, area or route identified in the District Plan. The 'spot zoning' authorises the requiring authority's (in this case, the Council's) work and activity on the designated area without the need for a land use consent under the RMA.

There are seven designations under the current Grey District Plan associated with our wastewater activity, as listed below:

Activity	MAP REF.&	PLANNING MAP	AUTHORITY RESPONSIBLE	GENERAL LOCATION	PURPOSE SITE/LEGAL DESCRIPTION AND CONDITIONS LIFETIME OF	LIFETIME OF DESIGNATION	UNDERLYING ENVIRONMENTAL AREA (ZONE)
Sewage Disposal	40	Map 36	Grey District Council	KARORO	KARORO SEWAGE TREATMENT PONDS	Has been given effect to	RU
Sewage Disposal	41	Map 48	Grey District Council	MOANA	MOANA SEWAGE TREATMENT PONDS SEC 4968, PT 5346, SO 5814, SO 4968	Has been given effect to	RU
Sewage Disposal	42	Map 25	Grey District Council	RUNANGA	RUNANGA SEWAGE	Has been given effect to	RU

Activity	MAP REF.&	PLANNING MAP	AUTHORITY RESPONSIBLE	GENERAL LOCATION	PURPOSE SITE/LEGAL DESCRIPTION AND CONDITIONS LIFETIME OF	LIFETIME OF DESIGNATION	UNDERLYING ENVIRONMENTAL AREA (ZONE)
					TREATMENT PONDS		
Sewage Disposal	53 (AMENDED 2017)	Map 30	Grey District Council	PRESTON ROAD	GREYMOUTH SEWAGE TREATMENT PLANT & WETLANDS PT RES 91 GREYMOUTH	Has been given effect to	IND
Sewage Disposal	54	Map 28	Grey District Council	NELSON QUAY	COBDEN SEWAGE TREATMENT PLANT & WETLANDS NELSON QUAY RES 1327 BLK IV COBDEN	Has been given effect to	RU
Sewage Disposal	NEW-2017	NEW-2017	Grey District Council	JOHNSTON STREET	JOHNSTON STREET SEWAGE TREATMENT PLANT AND OUTFALL	Has been given effect to	IND

Many components of this activity exist over, through and under roads which are designated. All existing formed and unformed roads within the District are designated in accordance with the District Plan. This is important as network utilities which include water services, telecommunications and power have access rights that enable installation of these utilities on roads subject to reasonable conditions by the road controlling authority.

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Future Designations

No new designations have been identified at this stage. Council intends to review existing designations and assess if new ones are needed where they currently do not exist for various components of this activity that are not indirectly covered by road designations such as:

- Discharge areas including wetlands.
- Treatment plants and other plant.
- Pipe networks from the above facilities that are not indirectly protected by road designations.

Any new designations may be incorporated at the time Council reviews its District Plan as part of the combined *Te Tai O Poutini* District Plan process. The legislation allows this approach to be taken by Council as the Requiring Authority.

Zoning

Zones, known as Environmental Areas, are detailed in the Council's District Plan and their extent and location is shown on the District Plan maps. These zones are important as they can change over time through subdivision.

The following zones are included in Section 2.5 of the District Plan:

Environmental Area (Zone)	Community Areas	Comment
Residential:	Greymouth, Karoro, Paroa, Runanga, Cobden, Blackball, Kaiata, Mitchells, Iveagh Bay, Moana, Dobson, Punakaiki, Boddytown, Sumner Road, and Blaketown.	With the exceptions of Mitchells, Punakaiki and Sumner Road all other areas have

		sewer infrastructure in place.
Township:	Camerons, Nelson Creek, Ahaura, Ngahere, Stillwater, Taylorville, Gladstone, Rapahoe, Barrytown, Totara Flat, and Blackball.	Other than Taylorville and Blackball all other areas do not have sewer infrastructure in place.
Rural-Residential:	Golden Sands, parts of Dobson, Blackball and Paroa, Rutherglen and Marsden areas.	No sewer infrastructure in these areas
Commercial/Industrial:	Stillwater, Greymouth, Cobden, Runanga, Rapahoe, Blaketown, Karoro, Paroa, Gladstone, Kaiata, Dobson, Ngahere, Moana, and Mitchells.	No sewer infrastructure in Stillwater, Rapahoe, Gladstone, Ngahere and Mitchells.
Rural:	All that area not previously mentioned.	No sewer infrastructure in these areas

As noted above, these Environmental Areas are presently being reviewed as part of the combined *Te Tai O Poutini* District Plan process. The review will likely result in changes to some of the zones over the latter period of the LTP.

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Purchase of Additional Land

Land may be purchased if the wastewater collection and water supply is extended to the Gladstone-Camerons area. Investigations in relation to this proposal form part of this LTP. Any consultation and decisions around whether to proceed will be undertaken as part of the next LTP. Land purchase may also need to be considered if wastewater collection is extended from Runanga to Rapahoe.

It is not anticipated that Council will need to purchase additional land for the Moana Scheme, however new reticulated areas may be developed and added through subdivision.

Construction of Works on Private Land

See previous section.

Property Easements

In recent times property easements (Rights to Convey Sewage through Private Property) have been put in place where pipelines cross private land.

Previous legislation allowed Councils to establish pipelines on private property without easements. However nowadays the approach is to ensure the rights of property owners and Council are protected by way of a legal easement.

Potential Issues and Future Actions

Issues

Given the public desire for improved water quality and the development of a stronger regulatory approach at national and regional level, treatment standards for discharges to waterbodies will become increasingly important. This is likely to become more of an issue for the District.

Future Action and Improvements

In relation to increasing expectations around water quality improvements and standards, the Council will continue to monitor regulatory changes and plan for any required improvements.

Future actions and improvements for our environmental management are as follows:

What needs to be done	By Who	By When
Check annually for any other consents, e.g. transferred as part of subdivisions	Utilities Team Leader	End of January each year
Review annually in detail environmental performance of all consented sites as per consent condition requirements and report on any immediate and future actions that Council may need to take	Utilities Team Leader	End of January each year or by due date specified in the resource consents.
Update annually list of consents designations and easements held by Council	Utilities Team Leader	End of January each year
Complete feasibility assessment of the advantages and disadvantages of connection of Karoro Scheme to the Greymouth Scheme	Utilities Team Leader	February 2025
Apply for renewal or variation to the consents relating to wastewater and resolve any outstanding issues to gain new consents	Utilities Team Leader	Refer resource consents table above.

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5. Measuring Our Success

5.1 Performance measures

What we're measuring	How we'll measure	Target				
		Current Performance (2019/2020)	Year 1 (2021/2022)	Years 2 – 3 (2022/2023 & 2023/2024)	Years 4 – 10 (2024/2025 to 2030/2031)	Target Trend (years 1-10)
Customer satisfaction	% of residents are satisfied with wastewater service (where the service is available)	63%	63%	65%	65%	Improving
	Number of complaints received, e.g. about odour, faults, blockages, response times (per 1,000 sewerage connections) Number of service connections: 5,512	Total complaints: 65 Per 1,000 properties: 12.9	Total complaints: 55	Total complaints: 50	Total complaints: 50	Improving *(decreasing complaints)*
The reliability and efficiency of the wastewater system	Number of wastewater overflows into houses due to faults in the public reticulation	Nil	Nil	Nil	Nil	No change
	Number of dry weather sewerage overflows (per 1,000 sewerage connections) Number of service connections: 5,512	Total overflows: 9 Per 1,000 properties: 1.8	Total overflows: 9	Total overflows: 9	Total overflows: 8	Improving *(decreasing complaints)*
	Median response times to reported faults • to get to site (timed from notification) • to resolve the problem (timed from notification) (Where contaminated sites are discovered or identified through site investigations, response times will be longer if consents are required to remove and dispose of material)	• 39 minutes • 2.16 hours	• 1 hour • 5 hours	• 1 hour • 5 hours	• 1 hour • 4 hours	Improving *(decreasing time to resolve problems)*

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What we're measuring	How we'll measure	Target				
		Current Performance (2019/2020)	Year 1 (2021/2022)	Years 2 – 3 (2022/2023 & 2023/2024)	Years 4 – 10 (2024/2025 to 2030/2031)	Target Trend (years 1-10)
Treated waste water discharges are managed without adversely affecting the receiving environment	Number of abatement notices	0	2	2	2	No change
	Number of infringement notices	0	1	1	1	No change
	Number of enforcement orders	0	Nil	Nil	Nil	No change
	Number of successful prosecutions	0	Nil	Nil	Nil	No change
	Total for all enforcement actions	*0*	*3*	*3*	*3*	

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Reporting of Performance Measures

Council monitors its performance to ensure levels of service are maintained and to improve service delivery. Reporting performance information is a key element of performance management. Interpreting results and communicating them to Council, management and the community provides a picture of service performance across Council. Performance measures for wastewater are reported through the Annual Report and reports to Council.

6. How It Will Be Funded

6.1 Funding policy, fees and charges

The Council's funding and financial policies set out details of how this activity is funded. In summary, new capital expenditure is funded largely through borrowing and/or subsidies. Other sources are special funds, or from developers where there is growth-based demand. Operational expenditure is largely funded from targeted rates, with some user charges. Please refer to the Council's Revenue and Financing Policy for more details.

6.2 Operational funding requirements

	2021 Annual Plan $000	2022 LTP Year 1 $000	2023 LTP Year 2 $000	2024 LTP Year 3 $000	2025 LTP Year 4 $000	2026 LTP Year 5 $000	2027 LTP Year 6 $000	2028 LTP Year 7 $000	2029 LTP Year 8 $000	2030 LTP Year 9 $000	2031 LTP Year 10 $000
INCOME											
General rates, uniform annual general charges, rates penalties	-	-	-	-	-	-	-	-	-	-	-
Targeted rates (including targeted rates for water supply)	2,570	2,698	2,777	3,109	3,091	2,940	2,998	3,327	3,409	3,216	3,289
Subsidies and grants (operating and capital)	-	50	-	-	-	-	-	-	-	-	-
User charges and regulatory income (consent fees, infringements etc…)	71	91	92	94	96	98	99	101	103	105	106
Internal charges and overheads recovered	-	-	-	-	-	-	-	-	-	-	-
Other income	-	-	-	-	-	-	-	-	-	-	-
Total income	2,641	2,839	2,869	3,203	3,187	3,038	3,097	3,428	3,512	3,321	3,395
EXPENDITURE											
Staff costs	-	-	-	-	-	-	-	-	-	-	-
Operating & maintenance costs	1,240	1,406	1,382	1,411	1,441	1,471	1,500	1,535	1,575	1,615	1,649
Finance costs	352	443	437	473	463	449	433	416	398	378	358
Internal charges and overheads applied	226	260	266	270	275	281	287	294	301	308	317
Other operating expenditure	-	-	-	-	-	-	-	-	-	-	-
Depreciation	1,052	1,506	1,052	1,088	1,088	1,088	1,166	1,166	1,166	1,269	1,269
Total expenditure	2,870	3,616	3,137	3,243	3,267	3,289	3,386	3,411	3,438	3,570	3,593

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Surplus (deficit) of activities	(229)	(777)	(268)	(40)	(80)	(251)	(289)	17	74	(249)	(198)

6.3 Capital works plan

	2021 Annual Plan $000	2022 LTP Year 1 $000	2023 LTP Year 2 $000	2024 LTP Year 3 $000	2025 LTP Year 4 $000	2026 LTP Year 5 $000	2027 LTP Year 6 $000	2028 LTP Year 7 $000	2029 LTP Year 8 $000	2030 LTP Year 9 $000	2031 LTP Year 10 $000
CAPITAL EXPENDITURE - TO IMPROVE THE LEVEL OF SERVICE											
Greymouth wastewater upgrade	1,367	1,367	-	-	400	-	-	-	-	-	-
Pond Effluent Upgrade	1,367	99	99	99	-	-	-	-	-	-	-
Miscellaneous new capital	186	109	69	(0)	-	-	-	-	-	-	-
	2,920	1,575	168	99	400	-	-	-	-	-	-

	2021 Annual Plan $000	2022 LTP Year 1 $000	2023 LTP Year 2 $000	2024 LTP Year 3 $000	2025 LTP Year 4 $000	2026 LTP Year 5 $000	2027 LTP Year 6 $000	2028 LTP Year 7 $000	2029 LTP Year 8 $000	2030 LTP Year 9 $000	2031 LTP Year 10 $000
CAPITAL EXPENDITURE - TO REPLACE EXISTING ASSETS											
Renewals of the wastewater network - Runanga/Dunollie	466	70	73	311	318	78	79	344	355	87	90
UV Replacement Greymouth	466	-	100	1,400	-	-	-	-	-	-	-
General renewals of the wastewater network	123	267	275	356	288	294	302	310	320	331	339
	1,055	337	448	2,067	606	372	381	654	675	418	429

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6.4 Disposal plan

6.5 Funding impact statement

		2021 Annual Plan $000	2022 LTP Year 1 $000	2023 LTP Year 2 $000	2024 LTP Year 3 $000	2025 LTP Year 4 $000	2026 LTP Year 5 $000	2027 LTP Year 6 $000	2028 LTP Year 7 $000	2029 LTP Year 8 $000	2030 LTP Year 9 $000	2031 LTP Year 10 $000
[A]	SOURCES OF OPERATING FUNDING											
	General rates, uniform annual general charges, rates penalties	-	-	-	-	-	-	-	-	-	-	-
	Targeted rates	2,570	2,698	2,777	3,109	3,091	2,940	2,998	3,327	3,409	3,216	3,289
	Subsidies and grants for operating purposes	-	50	-	-	-	-	-	-	-	-	-
	Fees and charges	71	91	92	94	96	98	99	101	103	105	106
	Internal charges and overheads recovered	-	-	-	-	-	-	-	-	-	-	-
	Local authorities fuel tax, fines, infringement fees, & other receipts	-	-	-	-	-	-	-	-	-	-	-
	Total operating funding [A]	2,641	2,839	2,869	3,203	3,187	3,038	3,097	3,428	3,512	3,321	3,395
[B]	APPLICATIONS OF OPERATING FUNDING											
	Payments to staff and suppliers	1,240	1,406	1,382	1,411	1,441	1,471	1,500	1,535	1,575	1,615	1,649
	Finance costs	352	443	437	473	463	449	433	416	398	378	358
	Internal charges and overheads applied	226	260	266	270	275	281	287	294	301	308	317
	Other operating funding applications	-	-	-	-	-	-	-	-	-	-	-
	Total applications of operating funding [B]	1,818	2,110	2,085	2,155	2,179	2,201	2,220	2,245	2,273	2,301	2,324
	Surplus (deficit) of operating funding [A - B]	823	729	784	1,048	1,008	837	877	1,183	1,239	1,020	1,071
[C]	SOURCES OF CAPITAL FUNDING											
	Subsidies and grants for capital expenditure	-	-	-	-	-	-	-	-	-	-	-
	Development and financial contributions	-	-	-	-	-	-	-	-	-	-	-
	Increase (decrease) in debt	1,047	1,142	(168)	1,118	(2)	(465)	(496)	(529)	(564)	(602)	(642)
	Gross proceeds from sale of assets	-	-	-	-	-	-	-	-	-	-	-
	Lump sum contributions	-	-	-	-	-	-	-	-	-	-	-
	Other dedicated capital funding	-	-	-	-	-	-	-	-	-	-	-
	Total sources of capital funding [C]	1,047	1,142	(168)	1,118	(2)	(465)	(496)	(529)	(564)	(602)	(642)
[D]	APPLICATIONS OF CAPITAL FUNDING											
	Capital expenditure											
	—to meet additional demand	-	-	-	-	-	-	-	-	-	-	-
	—to improve the level of service	1,553	1,575	168	99	400	-	-	-	-	-	-
	—to replace existing assets	589	337	448	2,067	606	372	381	654	675	418	429
	Increase (decrease) in reserves	(273)	(40)	-	-	-	-	-	-	-	-	-
	Increase (decrease) of investments	-	-	-	-	-	-	-	-	-	-	-

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Total applications of capital funding [D]	1,870	1,871	616	2,166	1,006	372	381	654	675	418	429
Surplus (deficit) of capital funding [C – D]	(823)	(729)	(784)	(1,048)	(1,008)	(837)	(877)	(1,183)	(1,239)	(1,020)	(1,071)
Funding balance: [A – B] + [C – D]	-	-	-	-	-	-	-	-	-	-	-

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7. What Could Stop Us

7.1 Activity risks and mitigation

Activity risks and our plans to mitigate these risks are outlined in the following table for this activity.

ISSUE/RISK	Risk No	OUR PLAN (MITIGATION)	BENEFITS	COST (2021 $)	Risk over LTP	TIMELINE
Deferred renewals. The outcome from condition assessments carried out to date confirm we have significant deferred renewals which need to be addressed in order to maintain levels of service and avoid potential critical failures.	High	• Utilise information from the condition assessments to identify priority areas for renewals based on the importance of the infrastructure to consumers and other critical factors, e.g. effect on the environment if failure occurs. • Increase rate funding to this activity after Year 72 by 25,000 per year. • Increase rate funding to this activity after Year 17 by a further $25,000 per year until the backlog is removed. • Utilize other sources of funding when available such as Department of Internal Affairs. • Improve efficiencies. • More cost effective materials, operations and construction methods, (e.g. concrete lining of existing pipes if assessed as best practical long term solution).	Maintain existing levels of service. Help prevent critical failure of assets.	Continue with current funding levels until Year 7 after which increase funding per year by $25,000 and then by a further $25,000 after year 17.	Medium	Renewal backlog reduced to $4M Likely to be achieved between Year 30 and Year 40.

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ISSUE/RISK	Risk No	OUR PLAN (MITIGATION)	BENEFITS	COST (2021 $)	Risk over LTP	TIMELINE
Ownership of Community Infrastructure Assets. A direct issue as who owns and who will fund the this infrastructure asset affects who will make decisions and who will be able to plan for future investment.	High	• Status Quo • Potentially not an option if the Government enacts new legislation for change however for this activity it is assumed stormwater will remain under the stewardship and governance of Council.	Provides some certainty	NIL over and above business as usual costs	Medium	Over life of LTP
	High	• External Organisational Structure • Monitor developments in this area and if status quo is not an option, then ensure the communities that own the infrastructure continue to have a voice in future decision making.	To be determined	Total costs to property owners to be determined	Medium	Assume outside LTP
Climate Change Existing residential and other developments at risk from coastal erosion and other climate change effects. Communities at Rapahoe and southern end of lower Cobden currently at risk.	High*	• Retreat of residential and other developments. • May mean abandonment/removal and/or relocation of infrastructure including protection works at new locations	Avoids damage and costs	Cost specific to affected areas with costs likely to be incurred by properties owners, Central Government and Local Government, plus others e.g. Earthquake Commission No costs specifically allocated for this issue/risk in this AMP. Assumes new infrastructure for relocated areas would be part funded by those who benefit.	Low	Over life of LTP

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ISSUE/RISK	Risk No	OUR PLAN (MITIGATION)	BENEFITS	COST (2021 $)	Risk over LTP	TIMELINE
	High*	• Protect existing residential and other developments. • Will mean provision of or upgrade of existing infrastructure to protect communities and other infrastructure.	Protects from damage	Cost specific to affected areas with costs likely to be incurred by properties owners, Central Government and Local Government, plus others e.g. Earthquake Commission No costs specifically allocated for this issue/risk in this AMP. Assumes costs would be part funded by those who benefit.	Medium	Over life of LTP
	High	• Other strategies instead of, or as well as above options such as: • Reduce carbon heat emissions to slow down, halt and reverse global warning.	Slows down or halts global warming	No direct costs. To be taken into account in re-purchasing decisions, e.g. vehicle fleet, heating options for buildings.	Medium	Over life of LTP
Te Tai o Poutini Plan (One Plan) – – Management of risks from natural hazards and climate change The TTP Plan will identify areas subject to hazards, undergo community consultation and develop appropriate planning zones.	High*	• Work collaboratively with other Councils during the process of identifying and responding to hazard and climate change risks. See also options above for Climate Change.	See above	See above	Medium	Over life of LTP

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ISSUE/RISK	Risk No	OUR PLAN (MITIGATION)	BENEFITS	COST (2021 $)	Risk over LTP	TIMELINE
Te Tai o Poutini Plan (One Plan) – Consultation documents being released in Year 1, submissions and hearings Years 2 and 3, Decisions released Year 4 which are subject to appeal to Environment Court. Not able to plan with any certainty for impacts of Plan changes on infrastructure until Year 3 and still likely to be subject to change in Year 4 of latter.	High	• Monitor progress, assess and recommend infrastructure strategies for activities in the next LTP.	Avoids unnecessary investment until such time as there is some certainty with respect to any proposed changes that will affect infrastructure.	No costs specifically allocated for this issue/risk in this AMP. Costs to be considered for next LTP.	Medium	Over life of LTP
	High	• Monitor progress on consultation and adoption of the One District Plan and promote funding of infrastructure for urban expansion through private sector investment (subdivision) development and financial contributions.	Costs will be covered by this who benefit from the new developed areas.	No costs specifically allocated for this issue/risk in this AMP.	Medium	Over life of LTP
Fund Wastewater Scheme upgrades.	High*	• Fund these works through the LTP	Reduced flooding and effects of flooding in specific areas.	Refer details in Section 4 above	Low	Over life of LTP
Vulnerability of buried pipes and other infrastructure in soft ground to natural hazards such earthquakes and liquefaction. **Also includes Climate Change**	High*	• Carry out upgrade works based on priorities established from condition assessments, and ensure use of modern design techniques to mitigate the effects of liquefaction of infrastructure where not practical to relocate	Increased resilience of the asset.	Funded as part of the renewals programme, see Section 6.	Medium	Over Life of LTP - ongoing
	High	• Managed retreat where other options are not economically feasible.	Avoid areas of higher risk.	No costs specifically allocated for this issue/risk in this AMP.	Medium	

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ISSUE/RISK	Risk No	OUR PLAN (MITIGATION)	BENEFITS	COST (2021 $)	Risk over LTP	TIMELINE
Council has adopted a Master Plan for the CBD Renewal Project.		• Provide funds to relocate or protect existing underground infrastructure. • Review CBD Renewal designs to accommodate existing underground infrastructure once information in known as to location and extent of proposed next stages of development. Experience with the first two stages is that it is crucially important to initially locate existing underground services in order to as much as possibly avoid delays and increased costs. Issues identified to date include: • Proposed requirement for new or upgraded infrastructure (to compensate for lowered road levels). Infrastructure may need to be lowered or protected. • Consequential issues relating to excavation to install new underground infrastructure such as the presence of coal tar (requiring resource consents) and unknown old underground infrastructure (power and communications)	Ensures all effects of development are addressed.	To be determined. It is noted Council's expectation is that development will be initiated by property developers.	Medium	Over life of the LTP

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7.2 Assumptions and uncertainties

In order to help the Council in its long-term decision-making, a number of assumptions have been made about the future. Refer PART F:2: of the Long Term Plan for the significant forecasting assumptions applied in the preparation of the Plan.

The following risks and mitigations are specific to this activity and supplement the information and assessments included in the LTP.

The forecasts in this AMP are based on the following assumptions:

- Any increased environmental standards in relation to freshwater management are unknown and associated investment (such as to upgrade treatment standards) has not been budgeted.
- Levels of service will remain unchanged other than where capital works are proposed to meet demands of other upgrade responses listed above;
- Provision for replacement of assets will be as forecast by the renewal model set out in this AMP and is aligned to the Financial Strategy which has been formulated to ensure that our services remain affordable to our community;
- The financial forecasts for the wastewater activity are adjusted for projected inflation based on the BERL indices with the exception of Year 1, as per the assumptions outlined in our Long Term Plan. In Year 1, we have used indices based on our knowledge of the market and our local expertise.

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