WESTLAND
DISTRICT COUNCIL

Wastewater

Activity Management Plan
2021-2031

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Cover image is of the new Franz Josef Wastewater Oxidation Ponds under construction as at 19 September 2019 (Source: Google Earth)

Document Control

Version	4.0, May 2021
Prepared By	Asset Management Planner
Peer Reviewed By	Morrison Low Consultants (June 2020)
Authorised By	Group Manager – District Assets
Date Authorised	
Date of Next Review	July 2022

Image is one of the new aerators installed at the Hokitika Wastewater Oxidation Ponds during 2018 (Photo credit: M. Ross).

Update (April 2020): COVID-19

The recent international COVID-19 virus pandemic and lockdown of New Zealand's borders will undoubtedly have a huge impact on tourism. The full impacts cannot be predicted due to the huge level of uncertainty.

However, it is reasonable to expect that this may significantly impact the resident population in Franz Josef and Fox Glacier (the majority of whom are employed either directly or indirectly via the tourism sector).

As many small businesses may be unable to remain financially viable if the lockdown continues for an extended period of time, the availability of contractors may also change.

Central government is currently offering Territorial Authorities the opportunity to put together funding applications for "shovel-ready" projects to kick start the economy once these restrictions lift.

Westland District Council is submitting several applications across a variety of infrastructure areas. These have been based on known projects already listed in this document, however, it is worth noting that the timings and costings of projects listed in this Plan could change as a result of COVID-19, due to supply chain shortages and cost increases.

Glossary of Terms

Term	Definition
Asset Management	The process applied to manage assets over each stage of their service life including asset needs analysis, creation, operation, maintenance, renewal and disposal. The objective of asset management is to ensure the assets deliver the required level of service in the most effective and efficient manner now and into the future.
Asset / Activity Management Plan (AMP)	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the life cycle of the asset in the most cost effective manner to provide a specific level of service.
ADWF	Average Dry Weather Flow is the combined average daily sanitary flow into a sewer from domestic, commercial and industrial sources.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component to determine the need for some preventive or remedial action.
Critical Asset	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Depreciation Austerity	A policy to significantly reduce the level to which depreciation is funded. Usually introduced during difficult economic conditions as a means of reducing public expenditure to minimise costs to ratepayers. The risk of depreciation austerity is that it may create a funding shortfall for renewal of assets in future years.
Economic Life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
IIMM	International Infrastructure Management Manual is a global how to guide in terms of applying the standards for infrastructure asset management.
Infiltration and Inflow (I&I)	Inflow and infiltration (or "I and I") are two leading causes of environmental risk stemming from urban wastewater networks. Inflow refers to stormwater entering the wastewater network (and vice versa). Where stormwater enters the wastewater network this can overload the system. Infiltration describes the entry of ground-water, including sea-water, into the networks, mainly through faults such as cracked and broken pipes. Both infiltration and inflow can contribute to overloading pipe capacities and improper discharges into the receiving environment.
IPWEA	Institute of Public Works Engineering Australasia is a professional association for persons who deliver public works and engineering services to communities in Australia and New Zealand. IPWEA provides professional development, technical publications and promotes knowledge sharing among its member base. It also lobbies for policy change and for grants to undertake projects that benefit the public works industry.
Kaitiakitanga	Kaitiaki is a New Zealand Māori term used for the concept of guardianship, for the sky, the sea, and the land. A kaitiaki is a guardian, and the process and practices of protecting and looking after the environment are referred to as kaitiakitanga.

Term	Definition
KPI	Key Performance Indicator: a measurable target against which Council can evaluate the success of its delivery of levels of service standards.
Level of Service (LOS)	The defined service standard particular to an activity or service area (i.e. interior) against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, regulatory and environmental acceptability and cost.
Lifecycle Management	A process of managing an asset from initial construction through to disposal. Lifecycle cost is the Total expenditure required throughout the life of an asset in order to fund the creation, design, construction, operation, maintenance, renewal and disposal so that the asset can deliver the desired service level over its life.
Long Term Plan (LTP)	Council's main strategic planning document. Documents projects and budgets over a 10-year period to ensure consistency and coordination in both making policies and decisions concerning the use of Council resources. This document is reviewed every three years and in non-LTP years, an Annual Plan is produced to cover the strategic direction and any amendments to the Long Term Plan for the upcoming financial year.
Maintenance Standards	The standards set for the maintenance service, usually contained in preventive maintenance schedules, operation and maintenance manuals, codes of practice, estimating criteria, statutory regulations and mandatory requirements, in accordance with maintenance quality objectives.
Papatipu Rūnanga	Traditional Māori settlements for the hapu (sub-tribe) of a particular iwi are Papatipu Runanga. Westland's Papatipu Runanga are Bruce Bay (home to Makaawhio) and Arahura (home to Ngāti Waewae).
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
Rehabilitation	Works to rebuild or replace parts of components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally involves repairing the asset to deliver its original level of service without resorting to significant upgrading or renewal, using available techniques and standards.
Renewal	Works to replace existing facilities with facilities of equivalent capacity or performance capability (re-instating existing asset).
Risk Management	The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
SCADA	An acronym for supervisory control and data acquisition; essentially a computer system for gathering and analysing real time data. SCADA systems are used to monitor and control a plant or equipment, e.g. water and waste control.
Sewage	Used interchangeably with the term wastewater to refer to the effluent produced by community of people characterised by its volume, flow rate and chemical and bacteriological characteristics.
Sewerage	Refers to the sewage infrastructure, i.e. the network of pipes that carry wastewater to the treatment plant for its treatment and disposal.
Sustainability	The process of meeting the needs of the present community without compromising the ability of future generations to meet their own needs.
Upgrade	The replacement of an asset or addition/replacement of an asset component, which materially improves the original service potential of the asset.

Term	Definition
Valuation	Estimated asset value that may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels or market value for life cycle costing.
Wahi tapu	Places sacred to Māori in the traditional, spiritual, religious, ritual or mythological sense. Wahi tapu areas may be defined nationally or at local iwi level. The concept of wahi tapu also applies generally to any water body that wastewater is discharged directly to (considered unclean, offensive).
WCRC	Abbreviation for West Coast Regional Council, the regional authority for the West Coast region with key roles in environmental management, hazard management, biosecurity and regional economic development.
WWTP	Abbreviation for Wastewater Treatment Plant. This includes oxidation ponds.

Section 1 Executive Summary

1.1 Introduction

Westland District Council (WDC/Council) provides and manages wastewater collection, treatment and disposal services for residents and businesses whose properties are connected to the four public wastewater networks within Westland District. These are located in the townships of Hokitika, Franz Josef, Fox Glacier and Haast.

This Wastewater Activity Management Plan (AMP) has undergone significant change since the previous combined Three Waters AMP (2014 edition). There has been changes and improvements in the knowledge base of information as well as upgrades at wastewater treatment plant sites.

Environmental and resource consent compliance matters have been a primary focus for Council in recent times with one situation reaching the level of prosecution by the regulators. The Franz Josef wastewater upgrade was completed in early 2020 to meet compliance with an Environment Court Order and further treatment and discharge options are being considered for the Hokitika site in the 2020/21 Annual Plan process due to the forthcoming resource consent expiry date in 2026.

Council looks to further promote sustainable and responsible stewardship of the land and environment at each of the four treatment plants and with respect to potential impacts on the environment, for example, cross contamination following heavy rainfall events and overflows into the stormwater network. There are currently four Council-owned community reticulation and treatment schemes. Council has no intention to develop any new schemes in the foreseeable future.

The key issues for managing the wastewater assets identified in this plan are:

- implications of the Government's three waters reforms including strengthening the stewardship of wastewater and stormwater with regional councils remaining primary regulators, and changes to Water Services Delivery Model
- longstanding and unconsented discharges into waterways (Kaniere and Hokitika sewer pump stations) that are not acceptable to community, iwi, stakeholders and regional council
- poor quality of asset information available for asset management planning and decision-making
- potential inflow and infiltration (I&I) issues in some catchments that may resulting in non-compliance against consent requirements
- the effects of trade waste impacting network capacity needs to be monitored and better understood
- limited inflow and outflow data to inform future demand.

Meeting the challenges of the pending three waters reforms, Freshwater Management Reforms and Climate Change (Zero Carbon) Amendment Act will be significant issues for Council to address in the 2021 Long Term Plan. The pending water reforms will impact the way we deliver three waters to our communities and the cost of providing these services. The Government's latest Three Waters Reform Programme is strongly encouraging councils to aggregate at regional/sub-regional level to be considered for the funding package. Regional approaches will be favoured for the funding with conditions attached.

Council is growing in its understanding of the role of kaitiakitanga held by tangata whenua who take an active interest in the management of human wastewater and its impacts on natural resources. It is acknowledged that in developing community wastewater solutions, consenting decisions need to provide for the traditional relationship that tangata whenua have with their ancestral lands, waters, sacred places and other "taonga" or things important to them. Cultural and heritage matters important to tangata whenua should be identified and considered as part of any development proposal. Tangata whenua retain a kaitiakitanga/guardianship role over natural resources and national legislation require that this role be provided for.

The Franz Josef wastewater scheme faces multiple significant issues including high tourist demand pre-COVID, high rainfall, significant natural hazard risks (including storms, flooding and earthquakes). The treatment plant and oxidation ponds are adjacent the flood-prone Waiho River (which has breached its banks previously). Additionally, the township is located in the Alpine Fault Avoidance Zone and road access to the town can frequently be cut off during high rainfall events due to slips on State Highway 6 to the north and south that result in road closures. No bypass roads exist that offer alternative access during these events.

This AMP also addresses the risk of increased future renewal costs brought about by reduced levels of depreciation funding some years ago (under the former Depreciation Austerity Policy).

Ageing Asbestos Cement (AC) pipework in three out of the four wastewater schemes represents a significant renewal expenditure challenge for Council over the next ten years. Over 50% (and as high as 77%) of all reticulation (excluding service connections) in Hokitika, Franz Josef and Fox Glacier is AC pipework.

1.2 What we do

Council provides and manages wastewater collection, treatment and disposal services for residents and businesses whose properties are connected to the four public wastewater networks within Westland District. The assets used in the wastewater activity are owned by Council and these include treatment plants and reticulation systems and campervan and stock truck effluent dump stations. The maintenance of these treatment plants and reticulation systems is managed through the three waters maintenance contract.

The following table summarises the key components of the wastewater activity.

Table 1 Key components of wastewater activity

Township Wastewater Schemes
• Hokitika
• Franz Josef
• Fox Glacier
• Haast
Treatment Method
• Oxidation Ponds
Reticulation Infrastructure
• 78km of pipelines (including service lines)
• 629 manholes
• 10 Pump stations

Other Wastewater Infrastructure
• Freedom camping campervan effluent disposal station in Haast
• Stock truck and campervan effluent disposal points adjacent to Hokitika Oxidation Ponds
Population
• Over 2,000 properties served
Major Industrial/Commercial Users*
• Silver Fern Farms
• Septage Removal Contractors
• Ngai Tahu Franz Josef Hot Pools

**Major commercial or industrial users included in this table are defined either in terms of a high volume of discharge to the wastewater system or the quality of the type of discharge.*

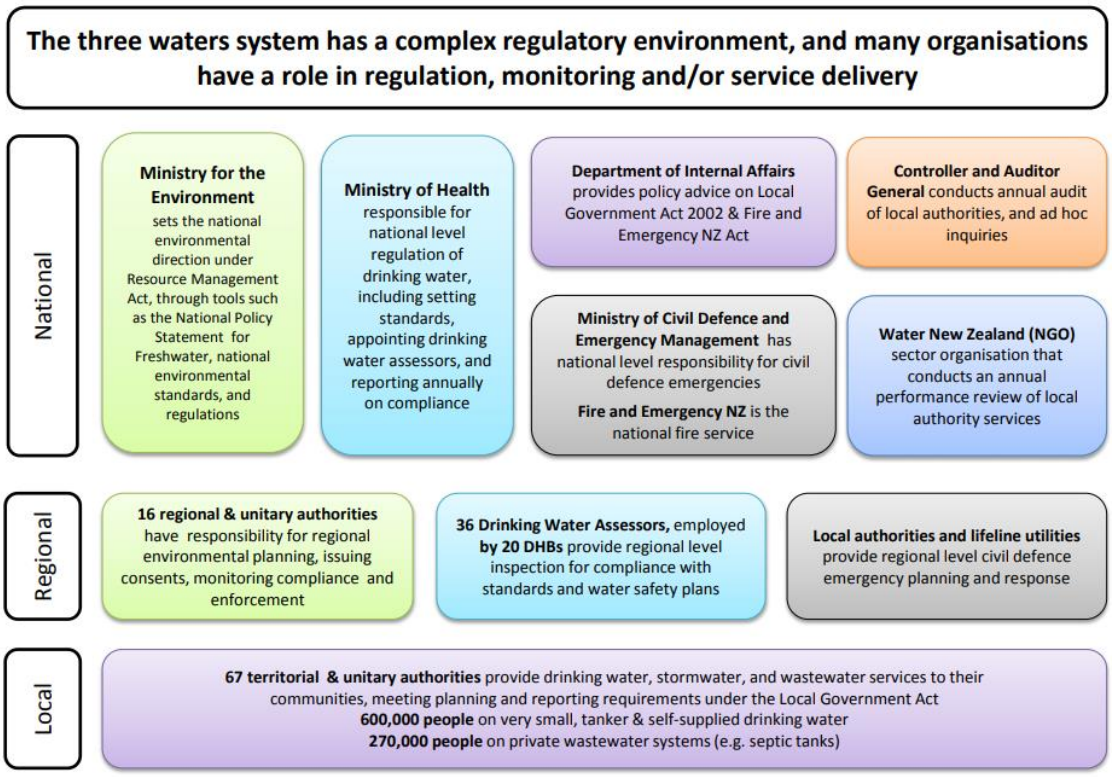
1.3 Why we do it

Provision of wastewater services is a core public and environmental health function of local government. The Health Act 1956 charges Council with improving, promoting and protecting public health in the district and the provision of wastewater services is part of achieving this goal. It also enables properties within the catchment zone boundaries to have access to cost-effective and sustainable wastewater systems.

This plan summarises Council's management of, and strategic long-term approach to, the provision, maintenance, renewal and upgrading of the wastewater services throughout Westland District. The plan excludes discussion on household septic tanks.

Figure 1 below shows the complexity of three waters delivery (including wastewater) in New Zealand, with various national, regional and local authorities involved across service delivery, environmental compliance and health regulation.

Figure 1 Three waters complexity



A new agency has been established: Taumata Arowai, a Crown agent that will act as a Water Services Regulator.

1.4 Levels of service

Council last formally reviewed its current Level of Service (LOS) statements and performance measures during the 2018 Long Term Plan (LTP) process. Statements and performance measures align with the mandatory reporting required by the Department of Internal Affairs (DIA) for this activity. In addition, Council staff have reviewed levels of service in preparation for the upcoming LTP 2021-2031. No additional levels of service were identified for inclusion at that time.

The current statements are included in Section 5 of this document and are linked to the Community Outcomes.

The major service level gaps from the 2019/20 Annual Report are not meeting resource consent compliance, due to one infringement notice at Haast and one enforcement order for the Franz Josef Wastewater Treatment Plant (WWTP). The latter issue is now resolved with a newly commissioned plant at Franz Josef which has met the requirements of the Environment Court.

1.5 Key issues

The most important issues for this activity and how Council is planning to respond are summarised below.

Table 2 Key wastewater issues

Key Issue	Council Response
Implications of the Government's three waters reforms including strengthening the stewardship of wastewater and stormwater with regional councils remaining primary regulators, and changes to Water Services Delivery Model.	Continue to work with other West Coast councils on regional aggregation model.
Longstanding and unconsented discharges into waterways (Kaniere and Hokitika sewer pump stations) that are not acceptable to community, iwi, stakeholders and regional council.	Develop mitigation measures and associated budget to address problems (including storage volume upgrades, reducing inflow and infiltration the network).
Poor quality of asset information available for asset management planning and decision-making.	Introduce an asset management (AM) team that will include a dedicated Asset Manager.
Potential I&I issues in some catchments that may resulting in non-compliance against consent requirements.	Smoke and dye testing and CCTV to be programmed. High level and overflow monitors to be installed in key manholes to identify catchments that require remediation. Reduction in inflow at times of peak wet weather flow will ensure consent compliance and public health security.
The effects of trade waste impacting network capacity needs to be monitored and better understood.	Review Trade Waste Charges Policy and introduce Trade Waste Bylaw in conjunction with Wastewater Bylaw review.
Limited inflow and outflow data to inform future demand.	Ensuring ability to obtain accurate inflow and outflow data for the purposes of demand management and resource consent compliance.

1.6 Financial summary

The total projected expenditure for operations, maintenance and capital for the wastewater activity over the next ten years is $37.9 million. Approximately 47% of this projected expenditure is capital expenditure, which equates to $17.9 million. Renewals make up most of the capital expenditure followed by LOS projects.

The operational expenditure is approximately $2 million per annum. This has increased since the 2018 LTP due to various upgrades at the WWTPs (refer to Section 8.6.5 for details). Table 3 provides a summary of the projected expenditure.

Table 3 Financial summary – wastewater (uninflated)

Description	Projected Expenditure				
	Year 1	Year 2	Year 3	Year 4-10	Ten-year total
	2021/22	2022/23	2023/24	2024-31	
Operational expenditure	$1,562,587	$1,736,631	$1,851,748	$14,811,474	$19,962,440
Capital expenditure					
Renewals	$527,831	$2,232,831	$2,212,830	$7,211,900	$12,185,392
LOS	$637,500	$600,000	$600,000	$1,662,500	$3,500,000
Growth	$824,584	$310,000	$310,000	$762,500	$2,207,084
Total	**$3,552,502**	**$4,879,462**	**$4,974,578**	**$24,448,374**	**$37,854,916**

Source: Council's draft LTP budget (as at May 2021)

1.7 Key changes

Due to staff resourcing issues, no new three waters AMP was created in 2018. Therefore, there are significant changes between the 2015 AMP and this version. For this LTP cycle, the decision was made to have separate AMPs for each of the three waters areas.

The tables below show the key changes to the wastewater capital and operations and maintenance Programmes and the rationale for these changes.

Table 4 Summary of changes to capital and operations programmes

Key Change	Capex / Opex	Reason for Change
New wastewater treatment and discharge options for Hokitika	Capex	Current resource consent has limited ten year life, expiring in 2026. Issues and options for both the treatment process and discharge is required in conjunction with a new resource consent. This may result in a change in treatment and/or discharge options from what is currently provided. As this is a critical core asset and project cost will be significant, the options will need to be consulted on through the LTP process.
Upgrade to Fox Glacier Oxidation Ponds	Capex	To make process improvements including aeration of ponds to improve effluent discharge quality and minimise potential discharge to air (odour) issues. The minor improvements would also increase capacity for number of connections onto the network. This project is currently on hold while access agreements are formalised with the landowner. Should this not be able to be achieved by negotiation, Council may need to initiate a Public Works Act process.

Key Change	Capex / Opex	Reason for Change
Upgrade to Haast Oxidation Ponds	Capex	To make process improvements including creation of a secondary pond to improve effluent discharge quality and minimise potential discharge to air (odour) issues. The minor improvements would also increase capacity for number of connections onto the network and minimise impacts of septage disposal at the site especially if the catchment boundary was extended in the future to Haast Junction.
Updated asset renewal calculations and amended renewal budgets	Capex	Increase future renewal budget to rectify the historical low level of investment that is not sustainable. Council now wishes to accelerate the renewal programme as internal AM resources gradually increase.
Updated Preventative Maintenance Schedule	Opex	New equipment installation in all schemes require this to be updated.

1.8 Key improvement identified

Improvement opportunities have been identified throughout the development of this AMP. The focus for the next three years is to bed in the new dedicated internal AM resources for asset management then set up the basic building blocks needed for managing the wastewater activity.

The main improvement objectives to be achieved in the next three years due to their priority and importance for achieving core AM maturity status for the wastewater activity include the following:

- Performance management – Develop a co-governance framework with iwi for handling waterways related issues.
- Forecasting demand – Develop a programme to undertake pump tests so variance between pump's duty rates and actual performance can be identified.
- Asset condition – Verify the asset condition of the critical wastewater assets (above ground). Consider developing a CCTV programme for below ground wastewater assets to better understand network condition.
- Decision making – Start to use asset criticality in operations as well as asset planning for renewals and new work decision making as internal and external capability is built.
- Operational planning – Review the Service Request process and system to ensure it can report on the mandatory performance measures. Develop mitigation measures and associated budgets to address unconsented discharges.
- Quality management – Undertake the various quality management improvements to strengthen the underlying processes for the activity.

Section 2 Introduction

2.1 Wastewater activity

Council is responsible for providing infrastructure services to the district, and this includes the collection, treatment and disposal of wastewater. Council owns and manages four wastewater schemes within the district. These systems treat the wastewater by means of oxidation ponds before final discharge to approved receiving waters or land. The rest of the district is self-sufficient in terms of the waste disposal, i.e. have on-site disposal systems such as septic tanks, which are managed by individual property owners. Septic tank contents are also disposed in one of the four wastewater treatment plants by septage contractors.

2.2 Purpose

The purpose of developing this AMP is to ensure that the creation, operation, maintenance, repairs and replacement of Council's wastewater assets are managed in a cost-effective manner and provide an appropriate level of service to meet the needs of present and future customers. The AMP also clearly states the direction and approach that Council intends to follow to achieve the strategic goals and statutory responsibilities for the wastewater activity.

The reliable provision of sustainable and safe wastewater is essential to the wellbeing of Westland's communities and is a core public health function of local government that councils have always provided.

The AMP provides a means through which the Council can demonstrate its responsible management of wastewater by including the following aspects:

- Consistency with Council's governing strategic plans, objectives and policies
- Consistency with Council's other tactical plans
- Compliance with legislative requirements
- Environmental responsibility
- Translating the needs of the community into agreed levels of service
- Providing a sound basis to justify funding requirements, now and in future years
- Providing a basis for the development of operational plans and contracts

This plan provides the information required for good asset management (AM) planning as set out in:

- LGA 2002 Schedule 10 and amendments
- Office of the Auditor General (OAG) industry advice notes and reports
- International Infrastructure Management Manual (IIMM) published by the New Zealand Asset Management Support (NAMS).

This Wastewater AMP covers all activities associated with the provision of wastewater services. It is a tactical, infrastructural plan that gives effect to a range of other strategic and tactical planning documents including Council's strategic direction set out in the LTP.

2.3 Asset description

Each wastewater scheme comprises a number of asset components and types including pump stations, treatment facilities, reticulation pipelines and property connections.

The management of these schemes also involves applications for, and compliance with, resource consents with various conditions incorporated. These are covered in Section 8.3.

Table 5 Key components of wastewater activity

Township Wastewater Schemes
• Hokitika
• Franz Josef
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Major Industrial/Commercial Users*
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• Ngāi Tahu Franz Josef Hot Pools

* *Major commercial or industrial users included in this table are defined either in terms of a high volume of discharge to the wastewater system or the quality of the type of discharge.*

The table below provides an overview of the wastewater assets and valuation data (as at 30 June 2019).

Table 6 Summary of 2019 wastewater valuation

Wastewater	Optimised Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Points	$3,204,559	$1,716,275	$40,439
Lines	$18,900,470	$7,075,979	$303,821
Plant	$7,454,634	$5,232,665	$105,617
Stopbank	$1,332,544	$1,332,544	$0
Total Assets	**$30,892,207**	**$15,357,462**	**$449,876**

Source: Council's AssetFinda (as at 30 June 2019)

2.4 Key issues

The key issues relating to the wastewater activity are identified below along with Council's management response.

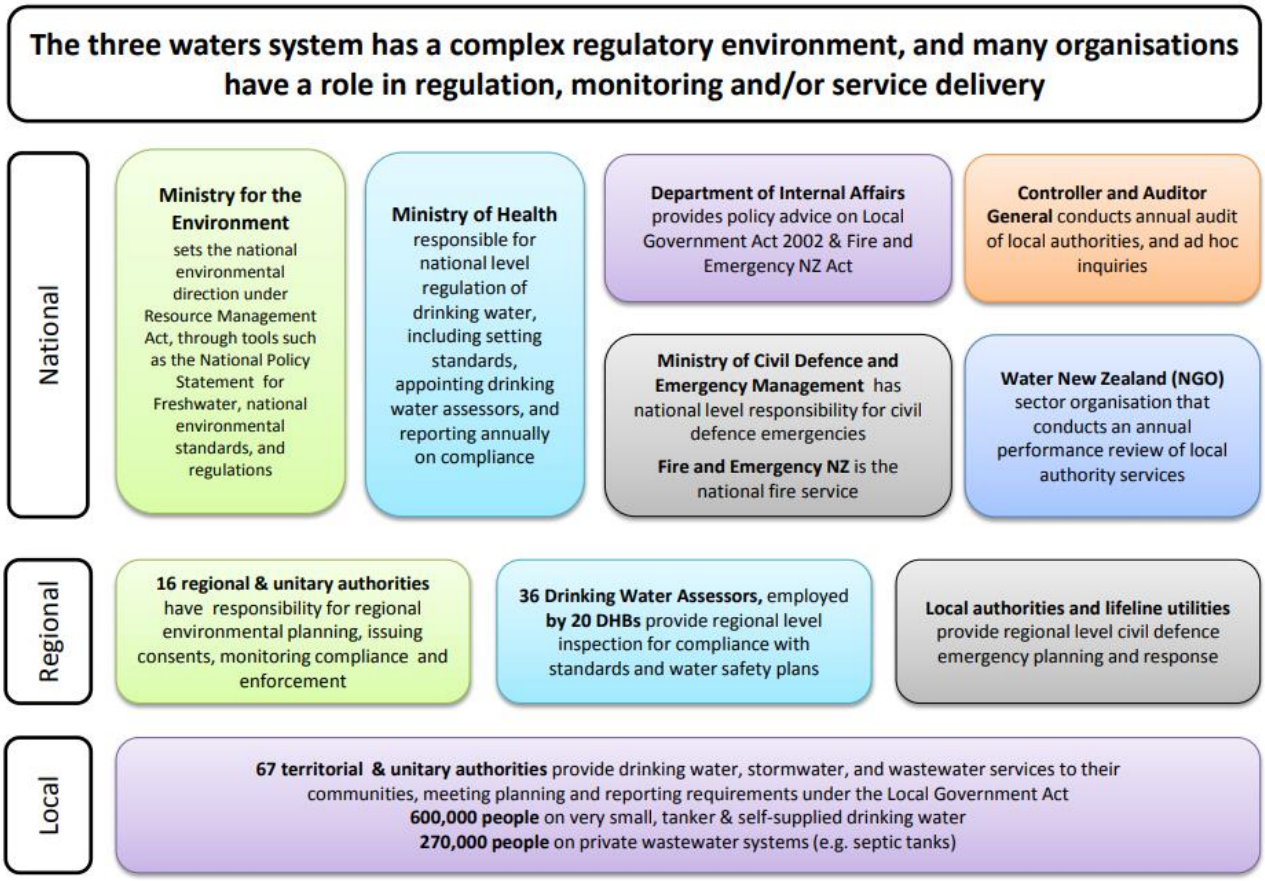
Table 7 Discussion and response to key issues

Key Issue	Discussion	Our Response	Refer to AMP section
Implications of the Government's three waters reforms including strengthening the stewardship of wastewater and stormwater with regional councils remaining primary regulators, and changes to Water Services Delivery Model	The most significant emerging issue is the recently released three waters reforms. We will maintain a watching brief on the Government's Three Waters Reform Programme and evaluate other options as information becomes available.	• Continue to work with other West Coast councils on regional aggregation model	Section 4.2 Legislation framework
Longstanding and unconsented discharges into waterways (Kaniere and Hokitika sewer pump stations) that are not acceptable to community, iwi, stakeholders and regional council	There is an unconsented discharge that occurs on occasion from a pump station during high rainfall events. This is not an accepted practice and may lead to prosecution.	• Develop mitigation measures and associated budget to address problems (including storage volume upgrades, reducing inflow and infiltration the network)	Section 8.5 Asset performance
Poor quality of asset information available for asset management planning and decision-making	Internal resourcing focused on day to day operational activities. Difficult to attract and retain suitable candidates in a remote District.	• Introduce an Asset Management team that will include a dedicated Asset Manager	Section 12 AM Practices
Potential I&I issues in some catchments that may resulting in non-compliance against consent requirements	Problems are known to exist with I/I in a number of catchments that cause overflows and stormwater cross-contamination as a result of low lying gully traps, poor pipe condition and manhole lids too low.	• Smoke and dye testing and CCTV to be programmed. High level and overflow monitors to be installed in key manholes to identify catchments that require remediation. Reduction in inflow at times of peak wet weather flow will ensure consent compliance and public health security.	Section 8.5 Asset performance
The effects of trade waste impacting network capacity needs to be monitored and better understood	This has been poorly understood until recently. The impacts of septage receival at WWTPs needs better control. The actual effect from all major trade waste parties needs to be actioned with relevant financial impact return. There is currently a shortfall between effect/consequence and risk to council for non-compliance, reputational damage and financial loss.	• Review Trade Waste charges policy and introduce Trade Waste Bylaw in conjunction with Wastewater Bylaw review.	Section 8.5 Asset performance

Key Issue	Discussion	Our Response	Refer to AMP section
Limited inflow and outflow data to inform future demand	Flow data from pump stations, catchments and treatment plant discharge is not currently well known or reported. Instrumentation is required to enable this.	• Ensuring ability to obtain accurate inflow and outflow data for the purposes of demand management and resource consent compliance.	Section 7.2 Assessing demand

The figure below shows the complexity of three waters delivery (including wastewater) in New Zealand, with various national, regional and local authorities involved across service delivery, environmental compliance and health regulation.

Figure 2 Three waters complexity



Section 3 Strategic Direction

Strategic direction provides overall guidance to Council and involves specifying the organisation's objectives, developing policies and plans designed to achieve these objectives and then allocating resources to implement the plans. Although there is no formal WDC Wastewater Strategy, the strategic direction for Council's AM function is set by the AM Policy and the 30-year Infrastructure Strategy. Refer to Section 4 (Key Linkages) for other documents and policies that guide the wastewater activity.

3.1 Vision and community outcomes

Council's vision statement is:

We work with the people of Westland to grow and protect our communities, our economy and our unique natural environment.

Council undertook an extensive engagement process with the local Westland communities in 2020 to define Community Outcomes, indicators and descriptors for each of the four wellbeings: economic, environmental, social and cultural. Following on from this work, Council adopted the following definitions and measures of success.

Diverse Economy	Sustainably Managed Environment	Resilient Communities
This means…	***This means…***	***This means…***
• **We work to find sustainable, diverse and resilient options for encouraging economic growth.** • **Innovation supports diversity from traditional district industries and sustainable economic growth.** • **We collaborate with other stakeholders to achieve common outcomes.** • **Economic growth has a minor/ reduced impact on the natural environment.**	• The district is involved in sustainable waste management practices. • We support sustainable environmental practices. • We support strategies to enhance and protect the district's ecosystems. • Development is sustainable, meeting the needs of the present without compromising the ability of future generations to meet their own needs.	• All areas of the district have access to quality recreational and cultural facilities. • A community that cares for all members at all life stages to reduce isolation and promote inclusion. • Communities less vulnerable to natural hazards and climate change. • All voices are enabled and heard, power is more evenly distributed, and the community can share its strengths.
This is measured by…	***This is measured by…***	***This is measured by…***
• **Retention of residents in the district** • **Housing and employment for all life stages** • **Growth in small businesses** • **Growth in businesses outside of traditional Westland industries, i.e. technology based.** • **Fewer tourists who stay longer for high value activities.**	• Recycling increases and waste to landfill decreases. • Council meets central government environmental targets including three waters and carbon. • Zero tolerance for unsustainable and polluting practices. • Proactive planning around climate change. • Communities prepared for severe weather events and natural disasters.	• More opportunities for walking and cycling, connecting our communities safely and healthy. • Community participates in engagement and consultation opportunities. • Reduced social isolation. • Reduced crime and harm. • Community sees definitive action from local and central government after participating in engagement and consultation opportunities.

The wastewater activity has a direct correlation with the description and measures for the "Sustainably Managed Environment" and "Resilient Communities" Community Outcomes.

3.2 Infrastructure and financial strategies

Council's 30 Year Infrastructure Strategy covers the core infrastructure activities including drinking water, wastewater, stormwater, flood control and land transport. It also covers to a lesser extent of parks, reserves, cemeteries, solid waste, the West Coast Wilderness Trail, buildings and pensioner housing.

The Infrastructure Strategy identifies significant challenges and scenarios that Council faces. This is where Council's strategy for managing these assets is outlined including how we intend to:

- sustainably and responsibly manage the replacement of existing assets over their lifetime
- financially plan for increases in levels of service or growth activities
- manage and/or improve public health and environmental health responsibilities, natural hazard risks and infrastructure resilience.

The Financial Strategy outlines Council's financial goals and trade-offs for the next ten years and the impacts on rates, debt, levels of service and investments. It will guide Council's future funding decisions and, along with the Infrastructure Strategy, inform Council's capital and operational spending for the period covered by the LTP 2021-2031. The Financial Strategy should demonstrate that the Council's proposed approach is financially prudent.

The Infrastructure and Financial Strategies need to be consistent and integrated and be informed by the AMPs.

3.3 Prioritisation

It is not pragmatic or financially prudent for Council to undertake works on all identified needs and address every priority at once. Council has to balance a number of considerations when allocating priority ratings for planned programmes of work. Generally, mandatory requirements such as statutory compliance take priority over discretionary activities. Similarly, public health issues or safety risks take precedence over optional wastewater activities. Other factors that affect the priority level of different works include the following:

- Public health risks
- Planning for future demand, e.g. population growth
- Readiness of contractors, employees, machinery, resource consents etc to implement works
- Co-funding opportunities
- Benefits versus risks
- District distribution
- Strategic fit for the organisation.

Where co-funding opportunities are available and there is a strategic fit for the organisation, Council generally gives these priorities. This enables Council to undertake activities for community benefit (increasing existing levels of service), or to meet future demand (growth) while minimising the cost to the ratepayer. As external funding sources available to Council change quite quickly, Council's has proactively sought external funding for relevant projects while such avenues of financial support are available, especially given the small number of rateable units within our geographically large rating district.

In some cases, these external funding sources enable us to create new infrastructure in other areas of our district, enabling us to expand services in ways that otherwise would not be financially possible.

3.4 Strategic aspirations for each wastewater network

The table below details the issues and strategic approach affecting each wastewater network.

Table 8 Strategic approach for each wastewater network

Network	The issues facing this scheme include:	The strategic approach to this scheme is to:
Hokitika	• Inflow and infiltration • Decreased treatment capacity due to sludge build up • Aged pipework, e.g. AC within reticulation	• Network investigation to quantify extent of I&I issues • A new WWTP feasibility study is currently underway to determine options for location and type of treatment plant • Replace AC pipe with PVC
Franz Josef	• Inflow and infiltration • Aged pipework, e.g. AC within reticulation	• Replace AC pipe with PVC
Fox Glacier	• Decreased treatment capacity due to sludge build up • Access issues to Fox Glacier Wastewater Oxidation Ponds • Aged pipework, e.g. AC within reticulation	• Ponds to be desludged • Consultation with landowner to formalise access agreement • Replace AC pipe with PVC
Haast	• Decreased treatment capacity due to sludge build up • Aged pipework, e.g. AC within reticulation • Increase capacity	• Ponds to be desludged • Replace AC pipe with PVC • Install septage receiving area • Construct a second pond

Section 4 Key Linkages

4.1 Overview

AMPs are key inputs into the LTP which is Council's major planning document, mandated under the Local Government Act (LGA) 2002. The LTPs are prepared every three years to cover a period of ten years. The diagram below shows Council's planning cycle, including how the Community Outcomes feed into the LTP.

The AMPs are used as the reference point to inform the LTP and 30 Year Infrastructure Strategy. In addition, the AMP demonstrates to our stakeholders, including our regulators and customers, the effectiveness of our AM decision-making processes.

The plan covers a period from 1 July 2021 to 30 June 2031, with a particular focus on the work programmes planned for the next three to five years. It reflects Council's focus on achieving an optimal balance between the key elements of AM, which are service levels, cost and risk. As it is a working document, the AMP also describes the areas where we believe our AM processes, systems and data can be improved.

Figure 3 Strategic planning framework

There is a need to ensure that the AMP is consistent with all other relevant plans and policies, and that it complies with external legal constraints and obligations Council has to meet in undertaking this activity. Some of these aspects are listed in the following sections.

4.2 Legislation framework

The key legislation affecting the wastewater activity are summarised in the following table.

Table 9 Legislative requirements

Key Legislation	Implications for the Activity
Health Act 1956	Council has responsibilities under the Health Act 1956 to improve, promote and protect public health within the District. Certain provisions in the Health Act can be used as a legal basis for issuing defect notices to property owners in respect of Inflow/Infiltration issues causing sewer overflows.
Utilities Access Act 2010	Outlines the processes and rules for coordinating infrastructure work being undertaken within road corridors by utility operators or where the works will affect the assets of utility operators.
Civil Defence Emergency Management Act 2002	Sets the expectation that Council services must continue to function at the fullest extent possible, during and after an emergency, while noting that this may represent a reduced level of service for a period of time.
Climate Change Response (Zero Carbon) Amendment Act	This Act allows the Minister to require specific central and local government organisations and 'lifeline utility providers' to produce an adaptation report covering climate change responses for essential services to the community, such as water, wastewater, transport, energy and telecommunications. The Climate Change Response (Zero Carbon) Amendment Act includes a target of reducing methane emissions by 24 to 74% below 2017 levels by 2050, and an interim target of 10% by 2030. It also has a target of reducing net emissions of all other greenhouse gases to zero by 2050.
Health and Safety at Work Act 2015	Health and Safety legislation and associated regulations requires that the PCBU has an obligation to ensure that staff and contractors are kept safe at work. Also notes that this responsibility is shared as staff and contractors also have a duty of care. Ongoing changes to this act and associated new regulations means that health and safety measures will need continual improvement and monitoring.
Local Government Act (LGA) 2002	LGA requires Council to prepare a ten year LTP and 30 year infrastructure strategy which are reviewed in full every three years. The Act requires Council to identify all relevant practicable options for dealing with infrastructure issues (including wastewater) and assessing those options in terms of benefits and costs to current and future community wellbeing.
Taumata Arowai Water Services Regulator Act (2020) and Water Services Bill	The Taumata Arowai Water Services Regulator Act has been passed and the complementary Water Services Bill is expected to be passed later in August 2021. The standalone Crown entity Taumata Arowai has been created to regulate drinking water. The objectives of Taumata Arowai are to: • Protect and promote drinking water safety and related public health outcomes • Effectively administer the drinking water regulatory system • Build and maintain capability among drinking water suppliers and across the wider industry

Key Legislation	Implications for the Activity
	• Give effect to Te Mana o te Wai, to the extent that Te Mana o te Wai applies to the functions and duties of Taumata Arowai • Provide oversight of, and advice on, the regulation, management, and environmental performance of wastewater and stormwater networks • Promote public understanding of the environmental performance of wastewater and stormwater networks. A Water Service Bill will provide the regulatory system that Taumata Arowai will administer. Taumata Arowai will have a national oversight / transparency role for stormwater and wastewater. It will publish an annual report on environmental performance of wastewater and stormwater systems owned by territorial authorities and the Crown, and their compliance with requirements like resource consents. It will also highlight poor practice and recommend action. Regional councils will continue to regulate wastewater and stormwater systems under the Resource Management Act – Taumata Arowai will be the watchdog. The Ministry for the Environment is developing a National Environmental Standard on Wastewater – setting new requirements for wastewater systems and discharge.
Public Works Act 1981	Gives Council the statutory mandate to acquire necessary land for public infrastructure.
Resource Management Act (RMA) 1991	Delineates obligations to protect the natural resources of Aotearoa New Zealand including land, air, water, plants, ecology and stream health. Resource consents draw their legal mandate from the RMA.
National Policy Statement for Freshwater Management 2020	The Action for Healthy Waterways package sets higher standards around the cleanliness of swimming spots, includes a new bottom line for nitrogen toxicity, sets controls for farming practices like winter grazing and how much synthetic fertiliser is used, and requires mandatory and enforceable farm environment plans. The Government is proposing amendments to the RMA, an updated NPS for Freshwater Management, an updated National Environmental Standard (NES) for Sources of Human Drinking Water, and new NES for Freshwater and Wastewater. There are new requirements with the National Policy Statement (NPS) for Freshwater Management 2020 including giving effect to Te Mana o to Wai, improving degraded water bodies, and maintaining or improving all others using bottom lines, and an expanded national objectives framework.
Te Tiriti o Waitangi – Treaty of Waitangi	Agreement between Māori and Crown signed in 1840. Section 4 of the Local Government Act 2002 requires local authorities to 'recognise and respect…the principles of the Treaty of Waitangi and to maintain and improve opportunities for Māori to contribute to local government decision-making processes.' Sections 77 and 81 outline in more detail the expectations in terms of seeking contribution and involvement from Māori in consultation and decision-making processes.

4.3 Key standards and guidelines

The primary documents that guide service standards for the wastewater activity are summarised in the following table.

Table 10 Key wastewater standards and guidelines

Key standards / guidelines	Implications for the Activity
Asset Management Policy 2019	Outlines the approach to be taken by WDC when preparing or developing Asset or Activity Management Plans.
Risk Management Policy 2011	Policy about how to appropriately address and manage organisational risks.
Engineering standards	Council uses the NZS 4404 as its engineering standard. This document has not been formally adopted as Council's formal engineering standard rather than the existing Council engineering standard (1999).
New Zealand Pipe Inspection Manual 3rd ed. (2006)	A guide to completing wastewater and stormwater pipe inspections using CCTV.
Water New Zealand's Infiltration and Inflow Control Manual	Provides information on I&I including associated issues and strategies for reducing and managing I&I issues and complexities.
Department of Internal Affairs publication: Supporting guidance for sewerage and the treatment and disposal of sewage (2014)	Guidelines for setting levels of services and targets related to the mandatory performance measures.
WDC Wastewater Bylaw 2018	Wastewater bylaw sets out requirements around connections and discharges to the wastewater system.
West Coast Regional Council Operative Land and Water Plan	Applies rules and conditions to various activities concerning the Region's lakes, rivers, groundwater, wetlands, geothermal water and river and lake beds.
Water New Zealand Best Practice Guidelines and Technical Documents	Water New Zealand is a national not-for-profit sector organisation that provides best practice guidelines for wastewater. The guidelines include (but are not limited to) modelling, standards for treatment plants, guides for occupational health and safety and underground utilities-seismic assessment and design guidelines. They also coordinate national performance benchmarking on an annual basis. Council may consider participating in the annual benchmarking to allow it to compare its performance with other small District Councils in its peer group.

4.4 Strategic studies

Relevant strategic studies that have been used to understand the current state of the network and to develop work programmes are summarised in the following table.

Table 11 Relevant strategic studies

Study Name	Network/Area	Brief description	Conducted by	Date of study
Sludge Survey Report	Hokitika, Franz Josef, Fox Glacier and Haast	Provide estimates of volume of sludge, average solids content and total tonnes dry solids (tDS) contained within the ponds	Conhur	February 2019
Health and Safety Assessments and Review	Hokitika, Franz Josef and Haast	Audit of health and safety risks at existing facilities and recommendations for modifications to mitigate or remove risks	Council's Health and Safety Officer	October 2019
Hokitika Inflow and Infiltration: Monitoring and Source Detection Report (DRAFT)	Hokitika	I&I study for the Hokitika catchment	Tonkin & Taylor	March 2018
Hokitika Wastewater Ponds: Technical Report	Hokitika	Options assessment for upgrades to the Hokitika Wastewater Treatment Plant to improve underperformance issues in treated water quality, odour and wastewater effluent appearance.	Prepared for Tonkin & Taylor by Lutra	February 2019
Hokitika WWTP: Resource Consents application	Hokitika	Wastewater ponds operation, treatment characteristics, Assessment of Environmental Effects and proposed monitoring.	Opus	2015
Fox Glacier WWTP: Performance Review and Upgrade Assessment	Fox Glacier	Performance and investment study for WWTP	SKM	2010
Franz Josef Wastewater Treatment Plant Hydrogeological Investigation	Franz Josef	Hydrogeological study including disposal area requirements	Stantec	2019

Section 5 Levels of Service

5.1 Our levels of service review

A key objective of this plan is to match the levels of service provided by this activity and the associated assets with the realistic expectation of our customers and their willingness to pay for that level of service. These levels of service underpin the lifecycle management strategies identified in Section 8 and the forward works programme outlined in this AMP.

Levels of service can be strategic, technical or operational and in alignment with current industry standards. Levels of service may be based on:

- customer/stakeholder research and expectations regarding quality of service or types of services
- the mandatory non-financial performance measures provided by the Department of Internal Affairs (DIA) and technical performance measure to ensure meeting good industry practice
- corporate goals also guide the direction for the scope of current and future services and how they are delivered
- best practice and industry standards specify design and construction requirements and help to meet levels of service and quality benchmarks that customers need.

Levels of service were provisionally reviewed by Council's Engineering staff in 2020.

Levels of service and any changes to performance measures are consulted on as part of the LTP process. At this point in time, Council is only providing LOS to meet the DIA mandatory performance measures. Council wishes to focus on achieving the mandatory performance measures. Meeting some of these is a challenge as a small and remote district council.

The LOS and performance measures for the wastewater activity are summarised in the following table. A full description of LOS targets, measures and metadata over the next ten years is included in Appendix 14.1.

Table 12 Service level summary

Community Outcome	Customer Outcomes	LOS Statement	Performance Measure	Baseline Results 2019/20 Actuals	Current Year 2020/21 Target	2021/22 Target (Year 1)
Resilient Communities	Safety-public health	Council wastewater systems are managed without risk to public health.	System adequacy ***(public safety)***: The number of dry weather service overflows from Council's sewerage system per 1,000 connections.	Target 10 overflows per 1,000 connections. Performance – Achieved 1.8 overflows per 1,000 connections (including both dry and wet weather overflows: refer to note 1 below)	10 overflows per 1,000 connections.	10 overflows per 1,000 connections.
Sustainably-Managed Environment	Environmental sustainability	Council wastewater systems are safe and compliant	***Environmental performance:*** All necessary consents are in place, monitored accordingly and compliant.	Target 100% compliance i.e. zero abatement or infringement notices, enforcement orders or convictions received. Performance – Not Achieved One enforcement order (carried forward from 2017/18 year for Franz Josef wastewater treatment plant, refer to note 2 below)	100% compliance	100% compliance
Resilient Communities	Responsiveness	Customers are generally satisfied with the Council wastewater system	Fault response times ***(responsiveness):*** (a) Service personnel attend the site within 2 hours of issue being reported to WDC (b) Block or fault resolved within 4 hours of issue being reported to WDC	Target 100% compliance with Department of Internal Affairs guideline times for odours, faults, blockages and response to complaints. Performance – Not achieved (a) No data for attendance times (b) 17% resolved within required timeframe (refer to note 3 below)	(a) 95% compliance (b) 90% compliance	(a) 95% compliance (b) 90% compliance

Community Outcome	Customer Outcomes	LOS Statement	Performance Measure	Baseline Results 2019/20 Actuals	Current Year 2020/21 Target	2021/22 Target (Year 1)
	Safety-public health		***Customer satisfaction:*** Measured conversely through number of reported incidents of dissatisfaction relating to: (a) Odour (b) Faults (c) Blockages (d) Responsiveness to dealing with complaints (Expressed per 1,000 connections to sewerage system)	Target Upper limit of 25 complaints per 1000 connections. Performance – Achieved (a) 4 (b) 7 (c) 13 (d) 2 Total number of complaints = 26 11.8 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.

Notes:

1. Reported overflows includes all dry weather overflows as well as overflows where the amount of rainfall is unknown. An overflow is considered to be 'dry weather' in the absence of information to the contrary. This is because due to the variation in weather across the district on any given day, an overflow event is considered to be in fine weather unless specifically noted. It is considered good practice to record all wastewater overflow to indicate if there are ongoing issues with a particular line or if there is excessive stormwater infiltration in a particular part of the wastewater reticulation.
2. In March 2020 the Franz Josef WWTP met all the conditions outlined in the court enforcement order. The enforcement order for Franz Josef Wastewater Treatment Plant was carried forward from the 2017/18 year.
3. Council staff have reviewed the Service Request process and implemented a procedure where the request will require attendance times completed before the request be signed off as complete. This will be reported on in the 2020/2021 year.

5.2 LOS performance and analysis

This section discusses the performance measures that Council is currently not meeting. As well as levels of service reported on in each year's Annual Report. Performance with existing wastewater levels of service has been consistent over the last three years. The number of reported incidents (complaints) and system adequacy (overflow) targets are consistently achieved each year.

Council has not met all of the targets for discharge compliance over the last three years. However, in March 2020, the new Franz Josef Wastewater Treatment Plant was commissioned to meet the Environment Court enforcement order. Performance against the discharge compliance criteria is therefore expected to improve in coming years.

Meeting the fault attendance and resolution times has been consistently challenging due to the geographical issues associated with this (as noted in the performance measure table) and the ability of the IT systems Council and its contractor uses to log this data. This process is ongoing but improvements in both the technology, staff and contractor training and overall fault resolution times are encouraging.

Two new technical levels of service have been developed in the last twelve months: these being the resilience of pump stations and health and safety audits of wastewater sites. Council staff have not decided to add these to the formal levels of service measures reported on above, however, commentary on these improvements is noted below.

The LOS performance of Council's wastewater network is assessed as follows:

5.2.1 Inflow and infiltration

We know operationally that some of our catchments are leaky. This is the term used to describe groundwater and stormwater entering into a dedicated wastewater system resulting in the system becoming overloaded and overflows occurring. We have been successful in securing external government funding to undertake an I&I study in Hokitika and Franz Josef townships. We will target the older areas where I&I will likely be higher. We have also made provision for I&I and overflow investigations for the Kaniere Road Catchment (part of Hokitika).

5.2.2 Dry and wet weather overflows

A dry weather overflow is an uncontrolled wastewater discharge that is not associated with a rain event. Most of our pump stations are connected to a monitoring system so we can monitor and report failures. This helps us to effectively mitigate dry weather overflows from entering the environment and for reporting to the Regional Council.

Dry weather overflows are reported on as a mandatory performance measure and to the Regional Council. Blockage incidences occur from time to time but our asset performance for dry weather overflow events are relatively low (five in 2019/20 and twelve in 2018/19) and meet the industry-accepted benchmarks.

Wet weather overflows occur periodically, mainly during significant rainfall events at weak points in the system such as pump stations and low lying areas where gully traps are inundated with floodwaters. We have known overflow issues at Kaniere and Hokitika pump stations where an unconsented discharge can occur occasionally during high rainfall events. Table 13 outlines our current responses in addressing overflow at these pump stations.

Table 13 Responses to address overflow issues

Pump station	Current proposed response to address overflow
Kaniere pump station	There is limited capacity to accommodate wet weather overflows in Kaniere due to wet well capacity and pump blockages. Budget has been allocated for I&I investigations in the area and provision for overflows.
Hokitika pump station	The number of incidents is unknown as is the volume of overflow. Overflow monitoring and data logging equipment is required to better understand and then manage the issue to either remedy or mitigate the effect. This includes possible storage volume increase and a reduction in network and private property I&I via inspections.

5.2.3 Capacity constraints

The capacity of the existing wastewater network is considered satisfactory except for the Franz Josef township. Discharge of trade waste from the hot pools, combined with WTP backwash and significant increase in pan numbers from Kea Holdings, means more frequent overflows than previously experienced. Growth capacity is an issue with this situation. Council intends to increase storage volume for Cron Street pump station and improve alarm system as well as logging each time an incident occurs and the volume of overflow that occurred. An alternative pipeline to the new wastewater treatment plant has also been considered to increase the capacity.

Section 6 Our Customers and Stakeholders

6.1 Customers and stakeholders

There are many individuals and organisations that have an interest in the management and operation of Council's wastewater assets and the provision of these services.

Council's Significance and Engagement Policy lists the wastewater treatment and reticulation as strategic assets. Council's consultation policy document further outlines when, why and how we consult, what decisions we consult on and whom we consult with.

Some of the key customers and stakeholders Council consults or (more informally) liaises with for wastewater activity are:

- **Elected members and the following Council committees**: Tenders and Operations Committees
- **Council's iwi partners**: Te Rūnanga o Ngāti Waewae and Te Rūnanga o Makaawhio
- **Regulatory authorities** West Coast Regional Council, Taumata Arowai, DIA and Audit New Zealand
- **Environmental agencies:** Department of Conservation, and Fish and Game New Zealand
- **Funding Agencies:** Ministry of Business, Innovation and Employment (e.g. for Tourism Infrastructure Funding), DIA, CIP (Crown Infrastructure Partners)
- **Community groups and Incorporated Societies** and special interest or working groups in townships that have a Council-run wastewater, including:
  - Destination Hokitika
  - Hokitika CBD Masterplan Working Group
  - Franz Josef Community Council Inc.
  - Franz Josef/Waiau Community Forum
  - Franz Josef Governance Group: "Future Franz"
  - Fox Glacier Community Development Society
  - Glacier Country Tourism Group
  - Haast Promotions Group
- **Service providers and suppliers** (including Westroads that currently hold the Utilities Maintenance Contract)
- Mahitahi Roopu meetings.

Due to the small population of Westland, there are relatively open channels of communication between community groups and Council, thus enabling Councillors and staff to stay attuned to customer expectations.

As noted below, no specific research has been undertaken on customer expectations other than customer feedback. WDC's LTPs go through a full consultation process, which allows for public input on specific proposed wastewater projects.

6.2 Consultation

Community expectations vary geographically and over time. As Council's biennial residents' surveys do not typically poll residents regarding three waters activities, little data is available regarding the community's expectations for wastewater. It is recommended that this be improved moving forward.

The one public expectation regarding wastewater that Council is aware of is a desire for there to be less odour from the Hokitika wastewater oxidation ponds. Historically, this has affected property owners in the immediate vicinity. Since aerators were installed on the Hokitika Wastewater Oxidation Ponds in mid-2018 the frequency of complaints has decreased.

The proposed Hokitika WWTP upgrade will likely minimise odour issues and meet this community expectation. The upgrade will likely include upgraded headworks, biological process improvement and changes to where septage deliveries enter the oxidation ponds.

In addition, the Hokitika ponds are scheduled for desludging within the next two years which will increase the ponds' hydraulic residence time and biological treatment performance. This is currently a deferred maintenance item.

6.2.1 Māori cultural values

Increasingly, legislation is requiring that iwi have a greater role in the governance or decision making for key assets such as water. Major infrastructure projects require significant input from iwi to ensure cultural considerations are understood and provided for, alongside other factors.

For three waters, all persons and functions under the Water Services Bill must give effect to Te Mana o te Wai, this includes suppliers, territorial authorities, and regional councils. Taumata Arowai (the new water regulator) is also required to give effect to Te Mana o te Wai.

A partnership agreement has been established between Te Rūnanga o Ngāti Waewae, Te Rūnanaga o Makaawhio and Council. The agreement allows for the mechanism to enable participation in Council decision making. Two chairs have been appointed to attend and participate in Council meetings.

The goals for the partnership are listed below:

- To provide a framework for the parties to work together toward improving Westland.
- To provide mechanisms and resources that assist Poutini Ngāi Tahu Papatipu Rūnanga to participate in Council policy, planning, and other decision making processes.
- To facilitate the sharing of information to build a better understanding that enhances collaboration and strategic thinking about Westland's future.
- Identify strategic opportunities to work closely together for the betterment of Westland District.
- Build iwi capacity and capability to partner with local government.

Section 7 Current and Future Demand

7.1 Demand drivers

The future demand for wastewater in Westland may change over time in response to a number of factors including:

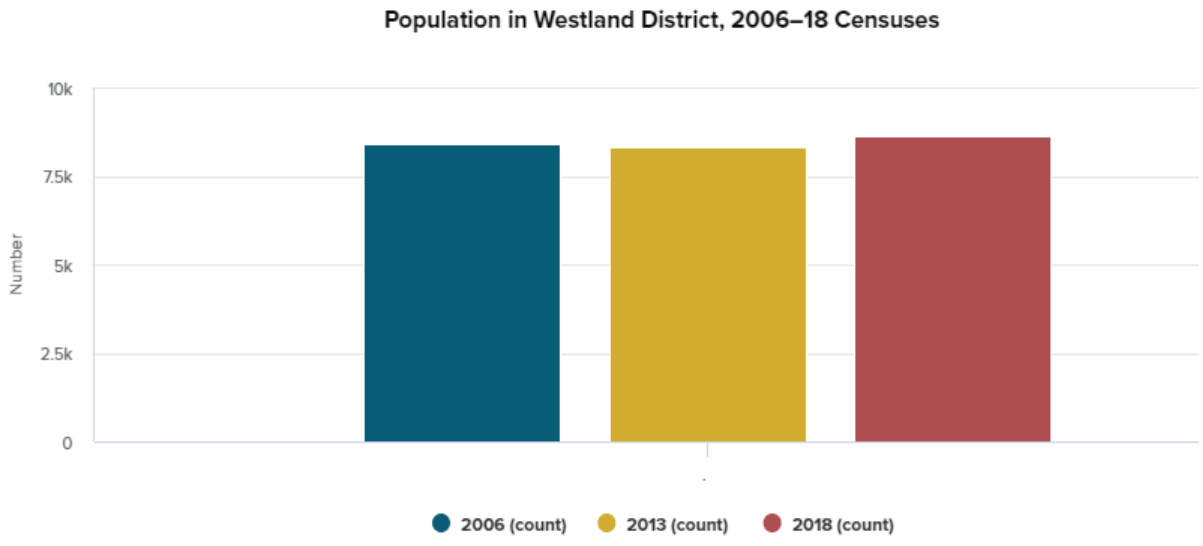
- legislative requirements and compliance
- population growth
- township growth
- industrial/commercial usage patterns and effect on trade waste
- tourism trends and seasonal peaks in wastewater demand and impact of COVID-19
- climate change, weather patterns and effect on I&I
- changing public expectations.

7.1.1 Residential usage and population

Demographic changes such as an increase in population impacts the demand for wastewater services. More people create a higher volume of wastewater to treat. The geographic spread of population and residential growth can also necessitate wastewater boundary extensions to minimise the environmental impacts of too many septic tank systems in a concentrated area.

The usual resident population in the district has remained relatively constant but is expected to decline in future years. Statistics New Zealand's 2018 Census showed 8,640 people as usually resident in the district when the data was released in September 2019, compared to 8,304 in 2013. This is a 4.05% increase in resident population since the 2013 census. The graph below shows the change in population numbers between the 2006, 2013 and 2018 census.

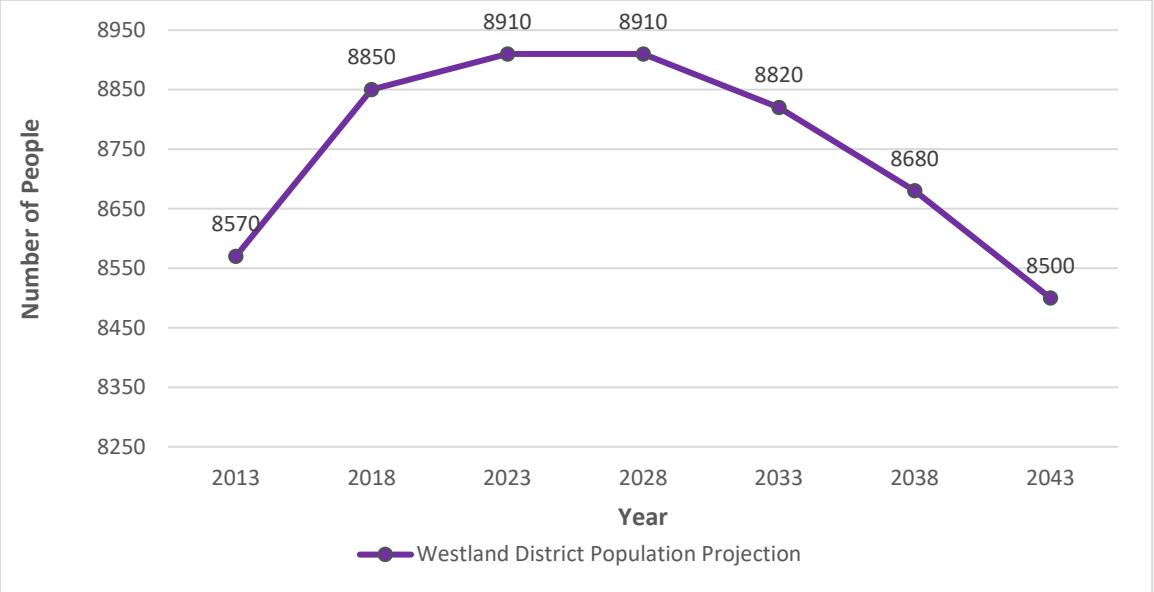
Figure 4 Population in Westland District – 2006, 2013 and 2018 census



Source: Statistics New Zealand

Figure 5 predicts population growth of approximately 0.7% for the ten years between 2018 and 2028, followed by a decline of approximately 4.6% by 2043, reducing the population below the 2013 level.

Figure 5 Westland medium growth projected population 30 June 2013 – 30 June 2043



Source: Statistics New Zealand

7.1.2 Industrial/commercial usage patterns and effects on trade waste

At this stage, industrial demand within the district is minimal. Major economic contributors are tourism and farming. While there may be changes in the local industrial sector in the future, it is not expected that these will have a significant impact on the wastewater schemes, as most are adequately sized to absorb additional wastewater from small to medium sized industrial activities.

Franz Josef is the main area with industrial and commercial growth signals. However, the actualisation of these plans is very much in a holding pattern as outcomes of the Future Franz project (potential relocation of township) become clear. The recent prevalence of serious storm, rainfall and flooding events, which have cut off road access to both Franz Josef and Fox Glacier for weeks at a time, is also temporarily pausing developers' plans for new commercial ventures. As the majority of these ventures are tourism-related, year-round access into and out of the Glacier Region is important to ensure viable tourist numbers to support the new ventures.

However, Franz Josef is now the only township with viewing access to a glacier from the road, after the Fox Glacier Access Road was lost in the storm event of March 2019 and will not be re-established. Thus, it is likely that future tourism businesses will be set up in Franz Josef (once/if weather patterns stabilise and Future Franz outcomes become clear). Staff accommodation needs may affect nearby Fox Glacier (only 30 minutes away) but it is unlikely that many new businesses such as hotels, retail, adventure tourism and food outlets will be set up in Fox Glacier. These are likely to be centred in Franz Josef itself.

The industry type determines the composition and amount of trade waste that enters the network. For example, trade waste associated with meat processing at the Silver Ferns Farms factory on the northern entranceway of Hokitika has a significant effect on the biological loading of the Hokitika Wastewater Oxidation Ponds. Waste associated with the discharge from pools, e.g. the Hokitika Swimming Pool and the Franz Josef Ngai Tahu Hot Pools increases wastewater inflow. Council currently only has a Trade Waste agreement with Silver Fern Farms.

However, all industries connected to the Council's network are subject to the Wastewater Bylaw which came into effect on the 23 July 2018. However, Council's intention is to introduce a Trade Waste bylaw in the near future and to significantly increase charges to cover actual financial impacts associated with consent compliance.

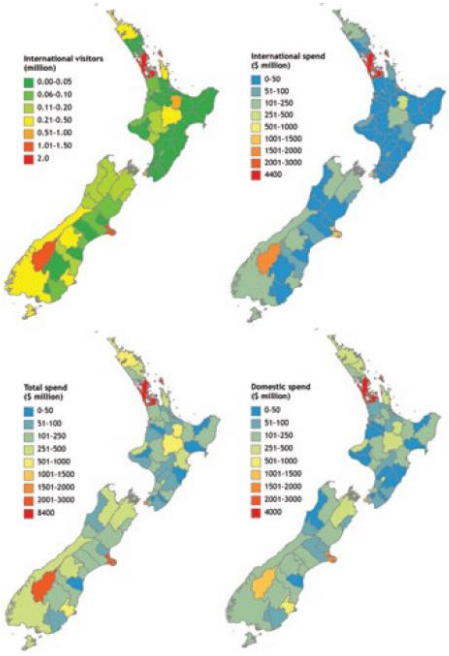
One of the major industries in the district (Westland Milk Products) is currently serviced by its own on-site Dissolved Air Flotation (DAF) plant. This currently discharges into the Hokitika River. However, their intention is to construct an ocean outfall. As the outfall on Hokitika Wastewater Oxidation Ponds will need replacement in a future upgrade, Council is currently investigating costs to consider whether it would be more cost-effective to work with Westland Milk Products on their ocean outfall project and share costs or remain independent.

7.1.3 Tourism and seasonal peaks in wastewater demand

Westland District is a popular tourist destination and numbers have been increasing over time pre COVID-19. As a result, there is increased seasonal demand for our wastewater schemes, most prominently Franz Josef and Fox Glacier followed by Hokitika. The seasonal impact on Haast is potentially less than the other schemes due to the fact that some of the major accommodation providers in Haast area are outside of the catchment scheme area. International visitors to Westland District for year ended March 2019 was between 210,000 and 500,000 visitors based on the MBIE's International Visitor Survey 2019.

The annual spend of international visitors is between $101 - $250 million. The annual spend of domestic visitors is in the same bracket, making the combined annual spend of all visitors in our district for year ended March 2019 between $251 - $500 million. The geographic distribution of domestic and international tourists is shown below.

Figure 6 Geographic distribution of tourists



Source: International Visitor Survey and Monthly Regional Tourism Estimates, MBIE

Figure 3.1: Geographic distribution of international visitors, international tourism expenditure and domestic tourism expenditure for the year ended March 2019 by territorial authority. Distribution of domestic visitors is unavailable. Expenditure data is grouped by magnitude, except for Auckland (red in all maps), which is actual expenditure.

Although the international tourist numbers have dramatically stopped with the border closure due to the global pandemic, there has been relatively strong domestic tourist market in the district. It is expected that the tourist numbers will be moderate for the next two to three years until the international borders open again. The opening of the trans-Tasman border is expected earlier and will boost tourist numbers to the district. Some tourist operators and businesses (such as accommodation and businesses related to the Wilderness Trail) have not been impacted by the global pandemic and other have closed (such as souvenir shops).

The global pandemic event has disrupted the national and local economies with the national lockdown and closing of international borders. The economic impact is expected to be smaller on Westland District than others. To date, the Westland District has thrived in the national lockdowns in 2020 with an increase in the domestic tourism market due to the closure of the international borders. The Wilderness Trail and associated support network has experienced strong demand even during the 2020 winter months, with a 10.5% increase for 2019/20. However, some tourist towns have suffered, particularly Franz Josef.

7.1.4 Climate change, weather patterns and inflow and infiltration

Inflow and infiltration increases the demand for wastewater services and consumes network capacity and is currently overloading the network during very heavy rainfall events. This is a known issue in a number of locations where overflow discharges at times of heavy rainfall and high river levels. This can also impact on resource consents' compliance.

Figure 7 shows the mean annual rainfall of Westland locations compared with other New Zealand centres, and Figure 8 shows the median annual rainfall in Westland District over a 30 year period.

Climate change is likely to exacerbate the impact of inflow and infiltration as a consequence of predicted increase in frequency and intensity of rainfall events. Figure 9 illustrates the impact of rainfall on daily influent flow at Franz Josef WWTP for 2018/19. Sea level and groundwater level rise are also likely to impact on inflow and infiltration, especially when combined with infrastructure that will be aged and possibly in poor condition.

Refer to Section 10.4 for full climate change predictions sourced from the Ministry for the Environment.

Figure 7 Mean annual rainfall of Westland locations compared with other New Zealand centres

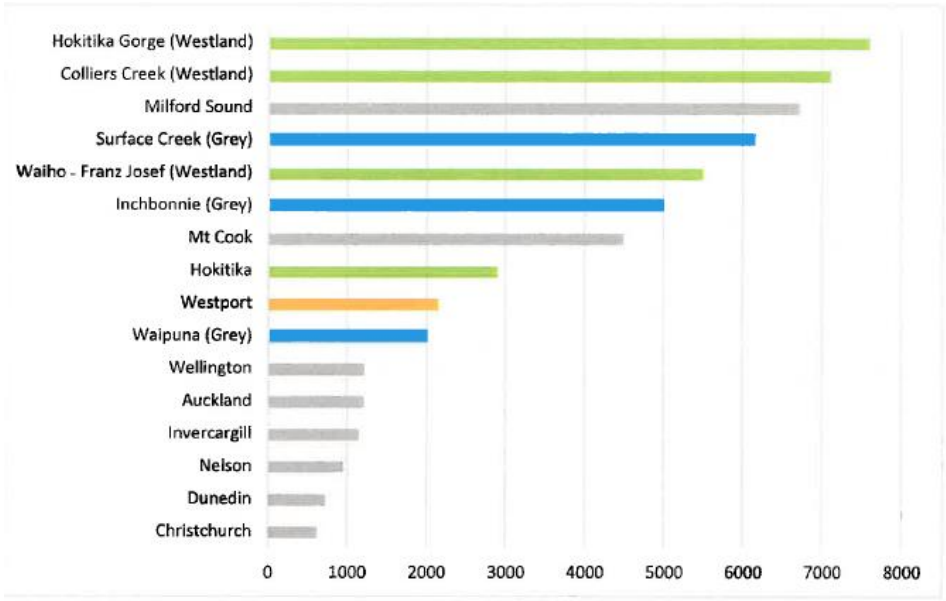


Figure 8 Westland median annual rainfall (over 30 year period)

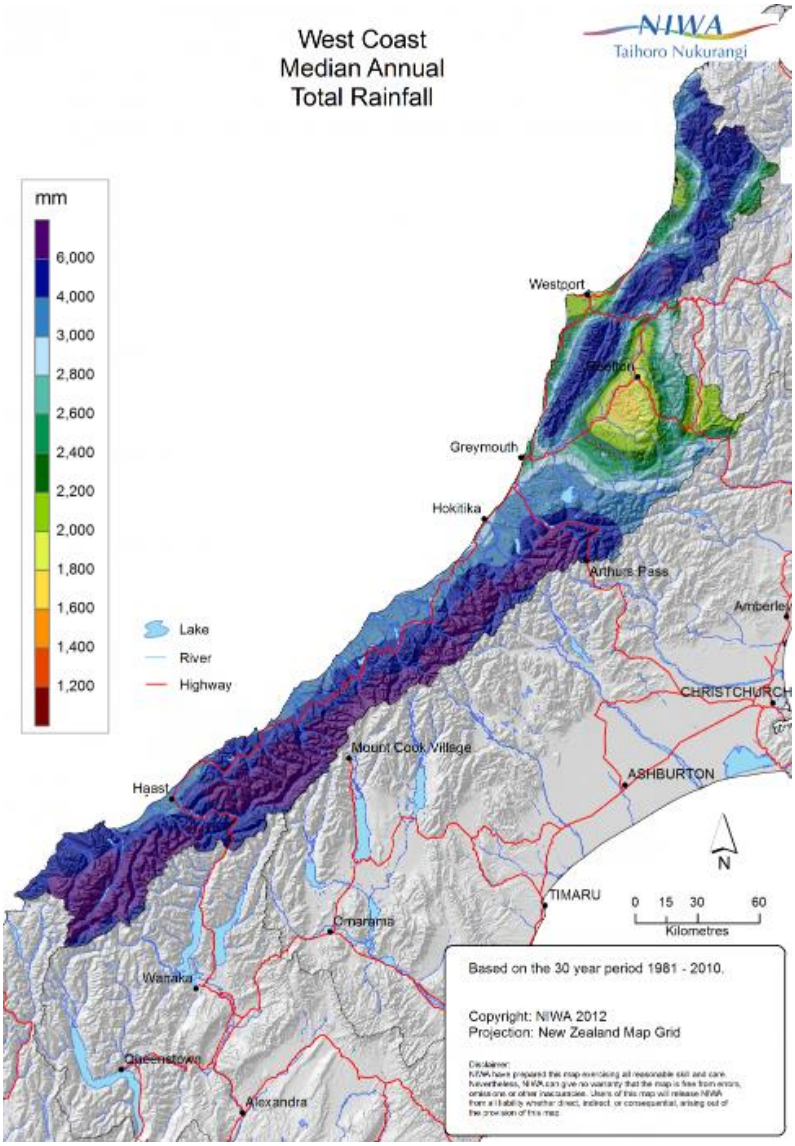
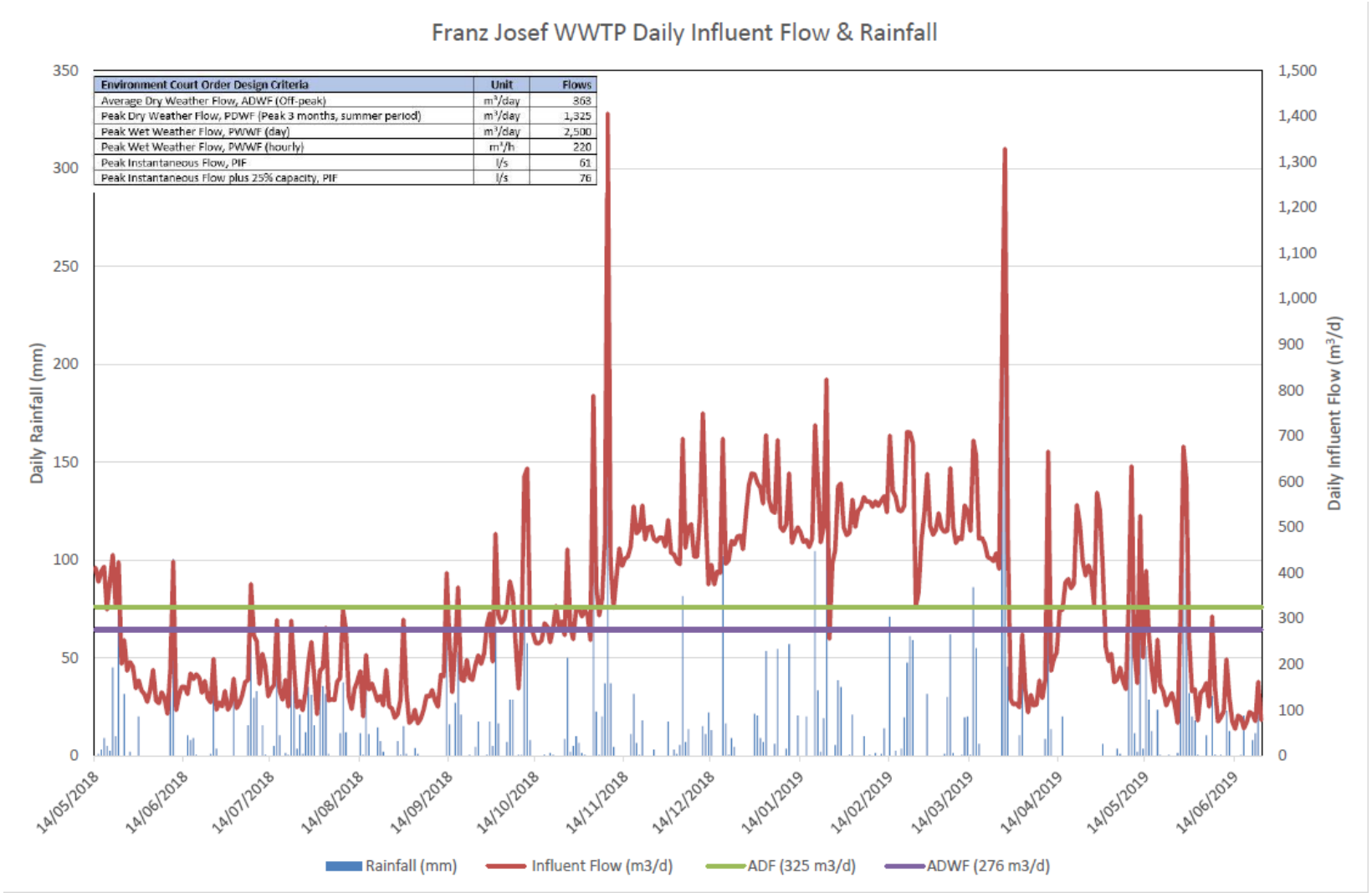


Figure 9 Impact of rainfall on daily influent flow at Franz Josef WWTP



7.2 Assessing demand

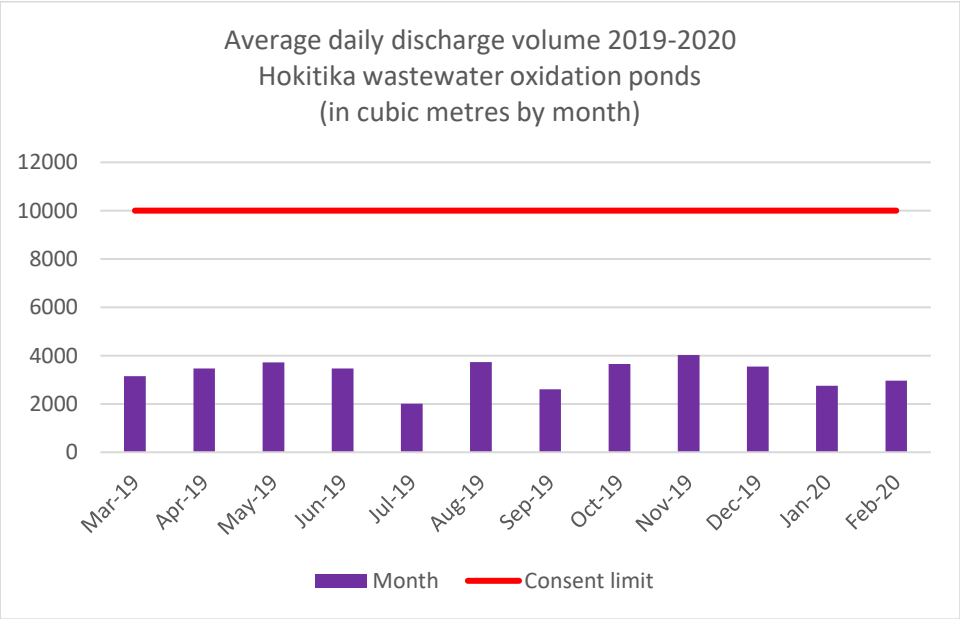
7.2.1 Current demand

There are various methods for assessing demand. The primary methods Council is using to assess and analyse demand are daily wastewater throughput rates and peak and off-peak loading calculations. Table 14 shows the average daily wastewater flows for each of the wastewater scheme. Figure 10 illustrates the average daily discharge volumes for Hokitika for 2019/20.

Table 14 Average daily wastewater flows (2019/20)

Wastewater Scheme	Average Daily Dry Weather Inflow	Average Daily Discharge	Consented Discharge Limit
Hokitika	3,400m^3	3,259m^3	10,000m^3
Franz Josef	350m^3	561m^3	800m^3
Fox Glacier	unknown	214m^3	400m^3
Haast	67m^3 (estimated)	unknown	150m^3

Figure 10 Average daily discharge volumes for Hokitika wastewater oxidation ponds over last year



Approximations of the daily wastewater throughput/inflow to the wastewater treatment ponds for Haast has been calculated by Council's Three Waters Engineer based on verifiable pump hours usage per month and the pumps' design flow rate expressed in litres per second. This is approximate and assumes the pump is operating at its intended capacity and is not operating at a sub-optimal level due to wear and tear.

It is recommended that, in the future, actual pump tests be carried out to identify any variances between the pumps' duty rates and actual performance.

No data is available for Fox Glacier due to no electrical connection being available to run a flow meter at the intake. Fox Glacier does not have a pump station as wastewater is delivered to the ponds via gravity.

Until the issue of power can be resolved, an interim solution to obtain an indication of influent flow data would be to hire a suitable inline flow meter.

7.2.2 Future demand

To identify the future wastewater demands, it is important that the current demands are accurately identified so they can be used as a baseline for future projections. Council uses the following tools and instruments to identify future probable demand and trends:

- Population growth (Statistics New Zealand).
- Household dwelling and development growth from number of building and resource consent applications (WDC Building and Planning Departments data).
- Research into tourism growth experience (usually sourced from Tourism West Coast and Ministry of Business, Innovation and Employment).

7.2.3 Future provision

It is recommended that, as part of future demand planning, Council investigates the environmental and public health impacts of septic tanks on townships that do not have a reticulated scheme and evaluate whether reticulated schemes could be warranted due to:

- increased population density
- failing/non-compliant septic tanks
- impact on waterways, protected fish and food gathering areas etc.

From 2004 to 2006, there were preliminary discussions about a reticulated sewerage scheme for Ross (this was at the time of central government subsidies for wastewater projects). In the early 1990s several cases of bacterial illness presented in the community and came to the attention of Community Public Health. These cases were believed to be related to the failure of septic tank soak pits, high regional rainfall and the high groundwater table in the area. The water table has since dropped with the start of a large mining operation in the township and no events of gastro-intestinal illness have been recorded since. Public health issues like this could re-emerge in the future. An environmental and public health analysis by township may be used to determine the costs and benefits of reticulated sewerage schemes versus self-managed household septic tanks.

7.3 Demand management

The objectives of demand management are to:

- optimise the utilisation and performance of Council's existing assets to reduce or defer the need for new assets where realistic and responsible
- meet Council's strategic objectives and deliver a sustainable service for the benefit of Council's customers
- accurately forecast demand and plan for it proactively so as to avoid costly clusters of capital expenditure for new assets that could have been avoided due to better forward planning.

7.3.1 Council's approach to demand management

Optimise telemetry to improve network management

Council's goal is to have full telemetry installed across the wastewater networks. Council uses SCADA technology to send text messages and email communications to plant operators and staff to notify of service faults.

Franz Josef had new telemetry installed in March 2020. Improvements for Hokitika telemetry are on hold, pending a strategic decision regarding the upgrade of the Hokitika WWTP. Fox Glacier and Haast WWTP's telemetry upgrades have been included in the Three Waters Reform Projects.

Trade waste load reduction and management

Although trade waste accounts for a small proportion of overall network load, it generates wastewater that has a high pollutant strength. These are two feasible mechanisms to manage demand:

- Charging: setting the trade waste charges at an appropriate level to encourage either pre-treatment, waste minimisation or other efficiencies. This also acts as an incentive for permit users to consider pre-treatment options.
- Conditions on trade waste permits: including discharge limits. Council liaises regularly with its main trade waste customer and has identified others that need to be contractually obligated within the immediate future.

Inflow and infiltration control

CCTV investigation work has been partially completed in Hokitika, Franz Josef and Fox Glacier during 2018/19 and 2019/20. The main focus of the CCTV was to locate missing assets (in Fox Glacier) and identify areas of fat build up (in Franz Josef). Pipe materials and sizes, sources of I&I and pipe condition in these areas were also verified as part of this work.

It is intended to also undertake smoke and dye testing in Hokitika and Franz Josef during 2020/21 due to significant I&I in these areas. This is a significant work programme only being targeted on predetermined catchments where I&I is known to be an issue.

Other initiatives

In addition to capital improvements, there are also other initiatives that can be taken to manage the demand for wastewater services including public education programmes that raise wastewater awareness.

One example of this is educating the public on the effects on our infrastructure (reticulation and pump stations) when sanitary and baby wipes are flushed. Council has used social media as a visual tool to show pictures of blocks in the network caused from these materials being flushed in order to educate residents on this particular issue.

Demand on the wastewater systems is currently managed by staff and contractors taking a proactive stance in identifying wastewater network infiltration from stormwater via 'field surveys'.

Council has also started a programme of grease trap investigations. The purpose of this is to identify commercial food premises in the district that may have inadequately sized grease traps or cleaning or dosing regimes that are insufficient or too infrequent and could be negatively impacting Council's wastewater systems. This programme is being undertaken by Council's Environmental Health Officer.

7.4 Assumptions

The key growth and demand assumptions are as follows:

- Population growth projections have been based on Statistics New Zealand census data.
- Silver Fern Farms will remain in Hokitika.
- Domestic tourist demand will continue to be moderate.
- International tourist demand will continue to be impacted by the global pandemic in the short to medium term.

Section 8 Lifecycle Management

Lifecycle cost is the total cost to Council of an asset throughout its life including creation, operations and maintenance, renewal and disposal. Council aims to manage its assets in a way that optimises the balance of these costs. This section summarises how Council plans to manage each part of the lifecycle for the wastewater activity.

8.1 Wastewater asset summary

The major wastewater asset classes are summarised in the following table.

Table 15 Wastewater asset summary

Wastewater asset class	Quantity
Pipelines (including service lines)	78 km
Manholes	629
Wastewater treatment plants	4
Pump stations	10

Source: Council's AssetFinda (as at 30 June 2019)

8.1.1 Critical assets

Asset criticality is an essential measure for prioritising maintenance and renewal activities. Council has defined criticality according to the IIMM which defines critical assets as "those that have a higher consequence of failure and can potentially have a more significant impact on the organisation's objectives".

Wastewater assets have been classified in terms of criticality as very high, high, medium, low and very low, as summarised in the following table.

Table 16 Criticality ranking for wastewater assets

Criticality ranking		Wastewater line assets	Wastewater point assets
Most critical	1 – Very high	Wastewater mains directly to ponds	Treatment plants, outlet
	2 - High	Wastewater feed / pumping mains	Pump stations
	3 - Medium	Wastewater mains – 150mm in diameter	Manholes, flow meters
	4 - Low		Inspection chamber
Least critical	5- Very low	Service connections	Blank cap, dummy node, flush tanks

Assets are categorised in AssetFinda at component level based on the 1 to 5 ranking as described above. This practice is well established (in place for about eight years).

However, criticality is currently not used in the day to day operations mainly due to the contractor not using AssetFinda in the field. This will be a requirement with the new contract (refer to Section 8.6). It is intended to use asset criticality in operations as well as asset planning for renewals and new works. It is recognised that it takes time to build internal and external capability.

8.2 Wastewater scheme overview

There are four wastewater schemes managed by Council. Table 17 provides a summary of these schemes. The resource consent for Hokitika will be expired in this LTP and needs to be renewed. Table 18 and Table 19 provide the details of wastewater pump stations and the number of connected properties by township respectively.

Table 17 Current situation with Westland District Council wastewater services

Wastewater Scheme	Installation date	Age of Scheme (years)	Population served (resident)	Peak Population served (bed nights)	Treatment	Consented discharge Volume (m^3/day)	Actual Discharge Volume (ADWF: m^3/day)	Water body that discharge enters	Resource Consent Number	Resource Consent Date Granted	Resource Consent Expiry Date
Hokitika (including Kaniere)	Hokitika: 1974 (with upgrade pending for 2020) Kaniere extension constructed in year 2000	46 years	3,887	5,000	Oxidation Ponds	10,000	3,259	Tasman Sea	RC-2015-0141	07/04/2016	07/04/2026
Franz Josef	New plant commissioned in March 2020 + 1972 (2 existing oxidation ponds)	0-48 years	341	1,750	Oxidation Ponds	800	571	To land but may enter Waiho River	RC-2018-0068	21/01/2019	21/01/2034
Fox Glacier	1975	45 years	306	1,070	Oxidation Ponds	400	214	Fox River	RC00388	21/09/2001	21/09/2036
Haast	1982 (upgrade incl. aeration added 2015)	4 – 38 years	80	200	Oxidation Pond	150	Not Known	Haast River	RC00389	21/09/2001	21/09/2036

Table 18 Breakdown of wastewater pump stations

Wastewater Scheme	Pump Station Street Address*	Pump Station Number
Fox Glacier	N/A	N/A
Franz Josef	North Cron	1
Haast	Tahutahi Road	2
Hokitika	Sewell Street	3
	Fitzherbert Street	4
	West Drive	5
Kaniere**	Shenandoah	6
	Kokatahi Road	7
	Kaniere Road	8
	Kaniere Tram	9
	Jones Town	10

**It is noted that there is no symbology for each site in IntraMaps due to the way the database was structured. This is currently undergoing upgrading in the GIS system*
***Kaniere is technically part of the Hokitika catchment, however, in-house data has historically been separated.*

Table 19 Wastewater property connections by scheme

Wastewater Scheme	Connected Properties	Not Connected Properties
Fox Glacier	476	8
Franz Josef	862	14
Haast	144	19
Hokitika	2,141	96
Kaniere*	230	34

**Kaniere is technically part of the Hokitika catchment, however, in-house data has historically been separated.*

8.3 Wastewater network descriptions

The wastewater systems are designed to collect, treat and dispose of all wastewater generated from domestic and commercial properties in the reticulated areas. Within this AMP the terms 'sewage' and 'wastewater' are both used and should be considered to have the same meaning. Similarly, the terms 'sewerage system' and 'wastewater system' are also used to describe the assets and procedures in place to collect, convey, treat and dispose of the wastewater.

The wastewater schemes treat the waste by means of oxidation ponds before final discharge to approved receiving waters or land. The rest of the district is self-sufficient in terms of the waste disposal, i.e. have on-site disposal systems such as septic tanks, which are managed by individual property owners. Septic tank contents are also disposed in one of the four wastewater treatment plants by septage contractors.

For 2018/19, the volume of septage discharged into each site was reported as:

Table 20 Septage disposal volume by scheme

Septage disposal by volume (m^3)	
Hokitika	1,073
Franz Josef	934
Fox Glacier	163
Haast	126

Each wastewater scheme comprises a number of asset components and types including: Pump stations, treatment facilities, reticulation pipelines and property connections.

The management of these schemes also involves applications for, and compliance with, resource consents with various conditions incorporated. These are covered in Section 10.3.

The detail of each scheme is outlined in Sections 8.3.1 to 8.3.4 below:

8.3.1 Hokitika

Site location

The wastewater treatment ponds are located adjacent to State Highway 6 and the Hokitika industrial branch railway, located approximately 2km north of Hokitika township. The urban population of Hokitika is 3,500 people. However, treatment plant impacts are considered to be higher due to trade waste impacts including rural septic tank disposal, campervan discharges and stock truck waste disposals.

Sewer collection

Hokitika's wastewater, inclusive of Kaniere, is received at the Fitzherbert Street pump station located within the township. Wastewater is then both pumped and gravity fed from this pump station along the Kumara Junction Highway approximately 2km north to the oxidation ponds. A minor wastewater flow further north of the oxidation ponds is also collected and pumped to the ponds from the West Drive catchment pump station.

Figure 11 Hokitika wastewater scheme

Treatment

Council operates and maintains the Hokitika township wastewater collection, transfer, treatment and disposal system. Treatment is facilitated by a two pond oxidation process currently operating in parallel with an above ground outfall which discharges final treated wastewater to the coastal marine area. The treatment system was originally constructed and operational in 1973.

The ponds are 2.5 hectares each with a depth of 1.5 metres. The average daily discharge is approximately 3,000m^3 with a consented maximum daily discharge of 10,000m^3.

Wastewater entering the ponds is currently derived from the following sources:

- Domestic discharge
- Silver Fern Farms (meat processor)
- Stock truck effluent
- In transit campervans
- Septage from septic tank disposal companies.

Improvements

The Hokitika wastewater treatment ponds were initially scheduled for a major upgrade commencing in 2019/20. This upgrade includes reconfiguring the ponds to operate in series and have an inlet screen installed to remove inorganics and a baffle curtain in each pond to increase hydraulic retention time and minimise short circuiting. This project has since been deferred and rescoped with an expected completion date by 2025.

Two aerators to provide supplementary oxygen have already been procured and are operational.

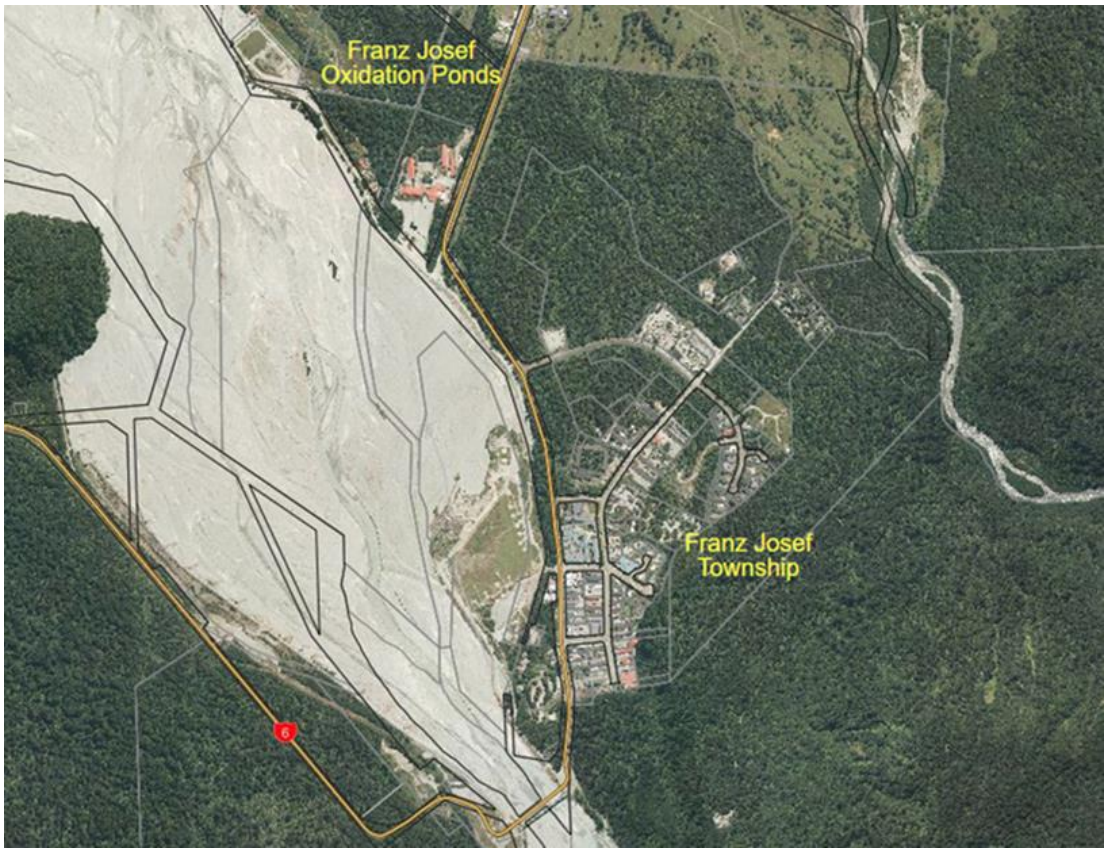
Desludging is not considered necessary at this time with a sludge survey having been completed which revealed the ponds to be containing approximately 30% sludge. Partial sludge removal was carried out in 2014/15 but ceased due to budget costs being inadequate and discharge implications.

8.3.2 Franz Josef

Site location

The wastewater treatment ponds are located on the northern side of the Waiho River, approximately 500 metres west of State Highway 6. It serves the Franz Josef township which has a permanent resident population of approximately 400 people. However, the influx of tourists can be up to 1,700 persons per night at full capacity during peak season (up to five months of the year).

Figure 12 Franz Josef wastewater scheme



Sewer collection

Franz Josef's wastewater is predominantly gravity fed to the treatment ponds. There is one pump station located off North Cron Street on private property (currently under investigation to divest to Council as road) near the South Westland Area Practice – Franz Josef Clinic, locally referred to as Gibb Memorial Drive. This pump station receives wastewater from the northern half of Cron Street, Kamahi Crescent, Paganini Road and Batson Place catchment.

Treatment

The WWTP serves the township of Franz Josef and has been recently upgraded. It consists of two new oxidation ponds plus two maturation ponds which are operated in series configuration. The new oxidation ponds have baffle curtains and are PE lined with provision for mechanical aerators to supplement oxygen as and when required. The two new ponds are approximately one hectare each with a depth of 1.5 metres. The average daily discharge via Rapid Infiltration Basins is 350m^3 with a consented maximum annual daily discharge of 800m^3.

An inlet screen ensures inorganics are removed from the influent prior to flow entering the oxidation ponds. This unit also has a septage receiving facility. An inlet pump station lifts the influent to the inlet screen and a second pump station pumps final effluent to a Rapid Infiltration Basins (RIB) disposal field located within the treatment plant site.

A stationary standby generator is available to provide power during outages.

Issues affecting this scheme are high seasonal tourism numbers, high rainfall and susceptibility to natural hazards. Regular flooding and slips in the last few years have cut off road access to Franz Josef township from both sides (sometimes for up to weeks at a time). This area is also at risk of earthquakes. Most of the township's residential and commercial premises (95%) are situated in the Alpine Fault Avoidance Zone. Although the ponds themselves are outside of this perimeter, in the event of an earthquake it is highly likely that the majority of the township's wastewater pipes would be damaged.

The ponds are also located adjacent to the flood-prone Waiho River, which breached the former oxidation ponds in March 2016 and destroyed them. However, they were reactivated some months later and continue to be an active part of the recent treatment plant upgrade.

Improvements

The wastewater pump station located on Gibb Memorial Drive (unofficial road) has been upgraded during December 2020and completed in January 2021.]. This will include larger pumps and storage capacity. The upgrade is required due to growth, stormwater inflow/infiltration within the network and improved level of service by protecting the environment.

8.3.3 Fox Glacier

Site location

The wastewater treatment ponds are located on council land situated within the boundary of a private farm on Cook Flat Road approximately two kilometres from the Fox Glacier township. The population is approximately 300 people.

Figure 13 Fox Glacier wastewater scheme

Sewer collection

Wastewater gravitates from the township reticulation network to the wastewater treatment ponds and there are no pump stations associated with this scheme.

Wastewater entering the ponds is derived from the following sources:

- Septage (septic tanks).
- Property connections.

Treatment

The WWTP serves the township of Fox Glacier and consists of two oxidation ponds. Currently there is no supplementary aeration, inlet screen or any baffling to prevent short circuiting.

The two ponds together are approximately 1.7 hectares, each with an average depth of approximately 1.5m. The average daily flow is unknown as there is currently no outflow meter on-site. Power is required to site before a metre can be installed and while this was planned for 2019/20, discrepancies with land ownership and usage have stalled this project. There is a maximum consented daily volume of 400m^3.

The final effluent discharges to the Cook River, adjacent to the plant.

Improvements

Improvement proposals to the wastewater treatment system include the provision of mains power, an inlet screen to remove inorganics from the inflow prior to entering the pond and desludging of the existing oxidation ponds.

An aerator already purchased needs to be installed in the primary pond and there could also be provision made for a standby power generator.

Site access needs to be improved especially at the entrance area to the primary pond.

8.3.4 Haast

Site location

The Haast wastewater treatment pond is located off State Highway 6 at the southern end of the township. The population of the town is approximately 80 people with numbers increasing during the tourist season.

Sewer collection

Wastewater gravitates to a pump station located within the township. It is then pumped to a single oxidation pond.

Wastewater entering the ponds is derived from the following sources:

- Septage (septic tanks).
- Property connections.
- Campervan effluent (disposed of via effluent disposal point on Marks Road adjacent to the public toilets).

Treatment

The WWTP serves the township of Haast and consists of one oxidation pond. The pond has a baffle curtain to maximise retention time by eliminating short circuiting. An aerator (blower type) is installed to provide supplementary oxygen and maintain a positive dissolved oxygen level at all times.

The pond is approximately 1,500m^2 with an average depth of 1.3m. The average daily flow is estimated to be 67m^3 with a maximum consented daily volume of 150m^3.

The final effluent is metered via a magflow meter and discharged to an infiltration trench located in the riverbed adjacent to the plant.

Figure 14 Haast wastewater scheme

Improvements

Possible improvements for the wastewater treatment process include the construction of a second pond which will provide increased capacity and result in improved effluent quality, and also installation of an inlet screen to remove inorganics from the inflow prior to entering the pond and desludging of the existing oxidation pond.

8.4 Asset condition

Council needs to understand the condition of its assets as this provides the data on which to base decisions regarding maintenance and renewal of assets and/or upgrading decisions. As well as condition and performance monitoring, renewal and upgrade decisions also take into account the criticality of assets, the risks of premature deterioration and the costs of data collection.

Above-ground wastewater assets include items and equipment within pump station and wastewater treatment plants that can be accessed or inspected without excavation. Below-ground assets typically include pipelines, manholes and underground valves.

Where a condition rating has been done, assets are rated on a scale of one to five (as per the NZWWA Infrastructure Asset Grading Guidelines) The condition rating is currently based on age and not physical site assessment for most assets. It is intended to verify the asset condition with additional internal resources. The initial focus will be on the critical above ground assets. Good industry practice is to survey asset condition about every three to five years. For below ground assets, condition is assessed through CCTV survey. These practices still need to be adopted and implemented and have been identified as improvement actions. The following sections provide a summary overview of the wastewater network's general condition rating and challenges at township level.

Council's wastewater assets and their age-based condition by geographic areas are shown in Table 21.

Table 21 Age-based wastewater assets condition assessment

Sub Group	Geographic Area	Age-Based Infrastructure Condition				
		Very Poor	Poor	Average	Good	Excellent
Pipelines	Fox Glacier		76%	1%	22%	1%
	Franz Josef		50%		41%	9%
	Haast			62%	23%	15%
	Hokitika (includes Kaniere)		64%	4%	23%	9%
Treatment Plants & Pump Stations	Fox Glacier	20%	50%	20%	10%	
	Franz Josef					100%
	Haast	23%	8%	46%	23%	
	Hokitika (includes Kaniere)	33%	11%	23%	30%	3%
Manholes & Flush Tanks	Fox Glacier		16%	84%		
	Franz Josef			62%	38%	
	Haast			3%	91%	6%
	Hokitika (includes Kaniere)	1%		72%	21%	6%

Source: AssetFinda age data (as at August 2020)

8.4.1 Hokitika

Reticulation

The Hokitika wastewater reticulation network (including Kaniere) extends over 61 kilometres in length (inclusive of service connections to properties). This is comprised of the following material types.

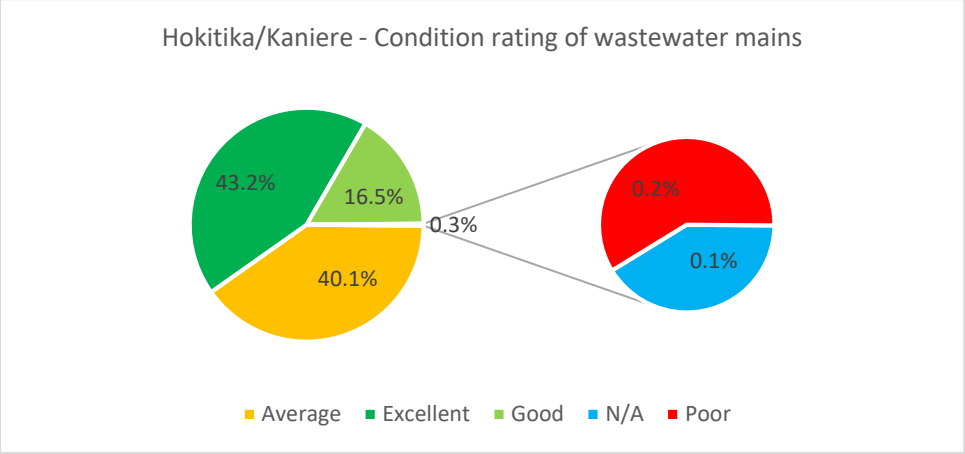
Table 22 Wastewater mains by material type – Hokitika

Material type	Length (metres)	Percentage of total reticulation
Asbestos Cement	37,519	61.5%
Medium Density Polyethylene	3,128	5.1%
PVC	16,722	27.4%
Reinforced Concrete Rubber Ring Joint	3,494	5.7%
*Other	198	0.3%
Total	**61,061**	**100.0%**

** Other is made up of the following material types: Ceramic, Earthenware, Concrete, Galvanised Iron and Steel.*

The condition rating of the pipeline assets is shown below. This shows that about 83% of wastewater mains are in either excellent or average condition.

Figure 15 Wastewater mains condition – Hokitika



Source: AssetFinda age data (as at August 2020)

Plant (including treatment and disposal)

Ponds – Average condition with upgrade project pending.

Fencing – New and considered in good condition

Outfall structure – Aging but functional.

Pump stations – West Drive Pump Station has mostly new components and is in good condition. Sewell and Fitzherbert Street Pump Stations and pump stations in Kaniere are mostly in average condition. An electrical upgrade of the Sewell Street Pump Station is needed.

Aerators – New and considered in good condition and performance.

Points

There are 444 manholes in Hokitika, and another 16 in Kaniere, a combined total of 460 (Based on the data in the system as at 30 June 2019). Of these, six are in poor condition, 362 are in average condition, 21 are in good condition and 71 are in excellent condition.

Most manholes have been assigned a medium criticality rating and are as listed as having excellent performance. No official tests have been conducted to demonstrate this "excellent" performance rating – this appears to be a system default setting used.

Table 23 Wastewater manholes condition – Hokitika

Asset type	Number	Condition					Criticality				
		Not listed	Poor	Average	Good	Excellent	Not listed	Very Low	Low	Medium	Very High
Manholes	460		6	362	21	71	16	1	-	442	1

8.4.2 Franz Josef

Reticulation

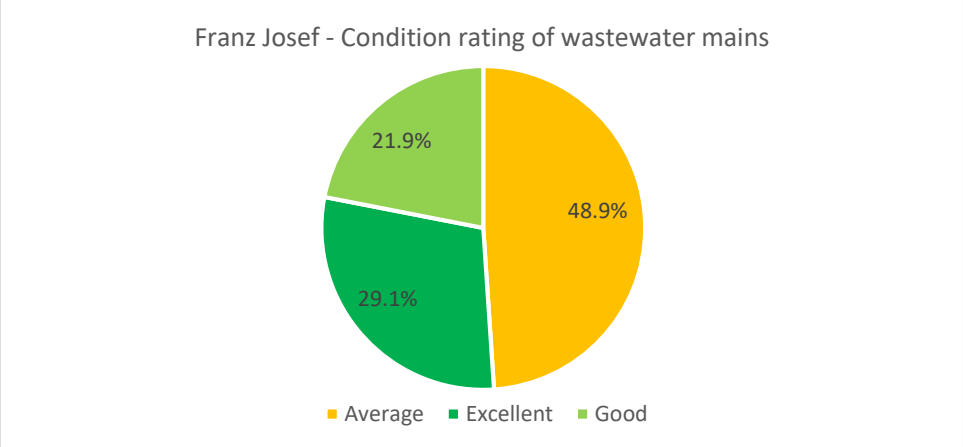
The Franz Josef wastewater reticulation network extends over 7.3kms in length (inclusive of service connections to properties). This is comprised of the following material types.

Table 24 Wastewater mains by material type – Franz Josef

Material type	Length (metres)	Percentage of Reticulation
Asbestos Cement	3,712	50.5%
MDPE	565	7.7%
PVC	3,067	41.8%
Total	**7,344**	**100.0%**

The condition rating of the pipeline assets is shown below. This shows that about half of wastewater mains are in average condition and about 22% are in good condition.

Figure 16 Wastewater mains condition – Franz Josef



Source: AssetFinda age data (as at August 2020)

Plant

Ponds (4) –Brand new ponds with modern RIB design and large capacity.

Fencing – New and considered in good condition

Pump station – Pump station has two new pumps and has been upgraded for improved capacity.

Aerator – Brand new condition.

Points

Based on the data in the system as at 30 June 2019, there are 78 manholes in Franz Josef. Of these 43 are in average condition, 17 are in good condition and 18 are in excellent condition.

All manholes have been assigned a medium criticality rating and are as listed as having excellent performance.

Table 25 Wastewater manholes condition – Franz Josef

Component type	Quantity	Condition				Criticality		
		Not listed	Average	Good	Excellent	Not listed	Medium	Very High
Manholes	78	0	43	17	18	0	78	0

8.4.3 Fox Glacier

Reticulation

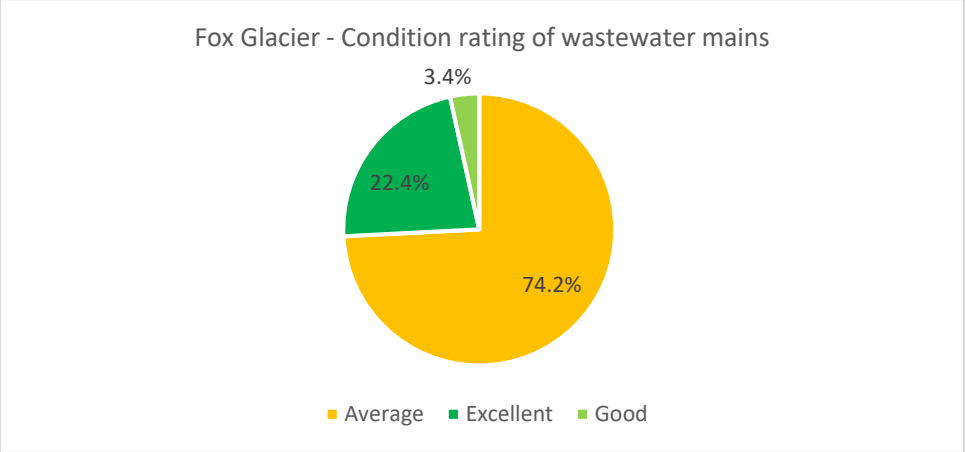
The Fox Glacier wastewater reticulation network extends over 5.1 kilometres in length (inclusive of service connections to properties). This is comprised of the following material types:

Table 26 Wastewater mains by material type – Fox Glacier

Material Type	Length (metres)	Percentage of Reticulation
AC	3918	76.7%
PVC	1147	22.4%
Earthenware	47	0.9%
Total	**5,112**	**100.0%**

The condition rating of the pipeline assets is shown below. This shows that most of wastewater mains (74%) are in average condition.

Figure 17 Wastewater mains condition – Fox Glacier



Source: AssetFinda age data (as at August 2020)

Plant

Ponds (2) – Average to good condition.

Fencing – Poor.

Pump station – N/A – no pump stations – gravity-fed.

Aerator – Not installed due to no electrical connection.

Small outfall pipe – Basic but functional. Good expected useful life remaining.

Points

Based on the data in the system as at 30 June 2019, there are 54 manholes in Fox Glacier. Of these 46 are in average condition, six are in good condition and two are in excellent condition.

All manholes have been assigned a medium criticality rating and are as listed as having excellent performance.

Table 27 Wastewater manholes condition – Fox Glacier

Component type	Quantity	Condition				Criticality		
		Not listed	Average	Good	Excellent	Not listed	Medium	Very High
Manholes	54	0	46	6	2	0	54	0

8.4.4 Haast

Reticulation

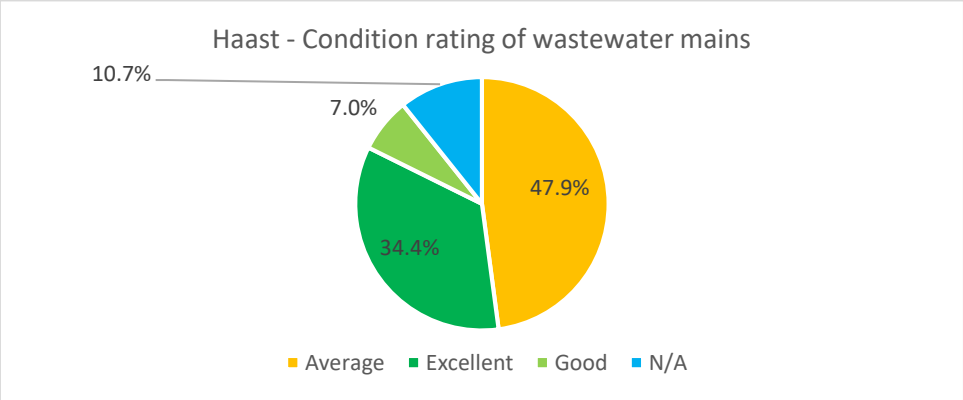
The Haast wastewater reticulation network extends nearly 3.7 kilometres in length (inclusive of service connections to properties). This is comprised of the following material types:

Table 28 Wastewater mains by material type – Haast

Material type	Length (metres)	Percentage of total network
Ceramic	1,525	41.6%
Earthenware	409	11.1%
Medium Density Polyethylene	289	7.9%
PVC	1,379	37.6%
Other (AC & GI)	67	1.8%
Total	**3,670**	**100.0%**

The condition rating of the pipeline assets is shown below. This shows that about half of wastewater mains (48%) are in average condition and around 11% of the assets have an unknown condition.

Figure 18 Wastewater mains condition – Haast



Source: AssetFinda age data (as at August 2020)

Plant

Pond – Remedial work required including to concrete waveband as identified in health and safety audit.

Fencing – Good., minor repairs needed.

Pump station – Ageing pumps. New pumps and electrical upgrade required.

Aerator – Ageing/poor condition.

Points

Based on the data in the system as at 30 June 2019, there are 37 manholes in Haast. Of these, one is in average condition, 27 are in good condition and nine are in excellent condition.

All manholes have been assigned a medium criticality rating, which the exception of three manholes for which no criticality rating has been entered. These are all listed as having excellent performance.

Table 29 Wastewater manholes condition – Haast

Component type	Quantity	Condition				Criticality		
		Not listed	Average	Good	Excellent	Not listed	Medium	Very High
Manholes	37	0	1	27	9	3	34	0

8.5 Asset performance

Council uses pipe material as a proxy for asset performance. For wastewater assets, asset performance is also considered in terms of the following:

- Inflow and infiltration (refer to Section 5.2)
- Dry and wet weather overflows (refer to Section 5.2)
- Blockages (refer to Section 5.2)
- Capacity constraints (refer to Section 5.2)
- Trade waste (refer to Section 7.1.2 and 0)
- Resource consents (Refer to Section 10.3).

In AssetFinda, Council's wastewater assets have performance ratings assigned to them. However, it is believed that in most cases the classifications are default settings, rather than based on performance tests. Improving knowledge of asset performance and updating AssetFinda accordingly is a recommended future action.

8.6 Operations and maintenance

8.6.1 Key maintenance and operational themes

Blockages

A proportion of maintenance activities involves responding to blockages either in the reticulation network or pumps. These can be caused by inappropriate materials being disposed of into the wastewater network (e.g. fats, rags, nappies, construction debris etc). Blockages can also be the result of flushing of lines.

There are known non-complying grease traps connected to the wastewater network which can cause frequent reticulation blockages in all schemes. Council has identified and started inspecting premises of interest and intend to resolve these issues including review of trade waste discharges from food premises into the public sewer.

Rising Pressure Main Breaks

These can occur due to pipe age/deterioration, damage from contractors doing excavation work, over-pressurising of pipelines during cleaning via water blasting and/or ground movement.

Any main break is treated with urgency and typically requires the affected section of pipe to be isolated and excavated. Repairs can require a section of pipe to be replaced or simply a minor repair on the pipe at the damaged point. These are considered to be critical repairs to ensure ongoing, compliant conveyance of wastewater to the treatment plant.

Sampling

A significant proportion of contractors' operational activities for wastewater is conducting sampling activities to fulfil the requirements of the resource consent conditions.

8.6.2 Maintenance contract

The operation and maintenance of the wastewater networks is part of the Westland District Utilities (Three Waters) Maintenance Contract. The current maintenance contract was awarded to Westroads Hokitika Limited in 2013. It was extended in 2018 for one year.

Due to uncertainty regarding the exact requirements of the pending three waters review from central government, it was extended again to avoid letting a new tender and then needing to make costly variations to contract. It now expires on 30 June 2021, which will coincide with the start of the 2021 LTP.

Council intends to go to the market with revised work scope.

8.6.3 Maintenance strategies

Maintenance works consists of reactive and routine maintenance. The main two types of reactive maintenance (blockages and rising main breaks) are described above.

Routine maintenance is generally more proactive in nature and are captured in the table below. The frequencies are indicative and specific instruction in the maintenance contract can vary by locality.

Table 30 Summary of routine maintenance activities

Frequency (indicative)	Maintenance Activities
Weekly or several times a week	Weekly maintenance programme includes: • Checking and recording run times of pumps • Check pump station glands for leaks and tighten as required • Check oxidation ponds • Inspect stock and camper van effluent disposal sites for vandalism, odour, blockages and other nuisance and tidy/clean accordingly • Inspect holding tank level of stock truck effluent site
Monthly maintenance	Monthly maintenance programme includes: • Clear wave bands (including floating material) of vegetation • Mow and tidy vegetation around ponds • Read and record manual outflow meter • Check outfall structure • Empty solids from stock truck effluent site holding tank • Compliance sampling at inlet, outlet and other points for parameters required under each ponds' resource consent including (but not limited to) Total Suspended Solids, E. coli, Faecal Coliforms, Ammonia Nitrogen, Phosphorus etc.
Annual maintenance and checks	Annual maintenance programme includes: • Full electrical check of pump stations for safety and compliance by qualified electrician • Clean out pump chambers • Change oil and grease pumps as recommended by manufacturer • Vibration checks on bearings • Replace bearing packings • Water blast reticulation • Check flush tanks and flush into system
Biennial maintenance and checks	Biennial maintenance programme includes: • Inspecting and cleaning manholes
Five yearly	Inspect integrity of stock truck effluent site holding tank
As needed/instructed	• Dose ponds with Sodium Nitrate • Check reticulation by CCTV

8.6.4 Historical operations and maintenance expenditure

The historical operational costs by township are summarised below for the last three years. The large operational cost for Hokitika in 2018/19 was due to the I&I investigation of wastewater laterals on private commercial properties.

Table 31 Historical wastewater operational costs by scheme

Wastewater Scheme	2017/18	2018/19	2019/20
Hokitika	$153,012	$266,184	$162,455
Franz Josef	$32,839	$61,123	$174,245
Fox Glacier	$13,804	$26,286	$24,406
Haast	$20,549	$63,443	$22,279
Total	**$220,204**	**$417,036**	**$383,385**

8.6.5 Forecast operations and maintenance expenditure

Operations and maintenance expenditure will increase for the Franz Josef WWTP due to the new ponds. The increase in number of ponds and higher level of design technology will require increased operations and maintenance expenditure compared to the former treatment plant.

Upgrades are also pending for the Haast, Fox Glacier and Hokitika wastewater oxidation ponds and these will also increase the operations and maintenance expenditure to ensure the new equipment is responsibly cared for.

The Fox Glacier oxidation ponds are awaiting a resolution to access issues. Once these issues are resolved, power to the site is intended to be installed and this will also result in charges for electricity for this scheme.

A sludge survey was undertaken in 2019 (by Conhur Limited) of the Fox Glacier, Hokitika and Haast Oxidation Ponds. Desludging is recommended for all sites. A preliminary estimate of costs to desludge the two Hokitika ponds revealed the cost to be somewhere in the vicinity of $900,000. This is on hold due to a pending pond upgrade. Access issues to the Fox Glacier oxidation ponds are preventing that project from going ahead. Due to the small size of the Haast ponds and the large mobilisation cost to get contractors from out of region to do the work, the Haast pond desludging will not proceed independently and will only go ahead concurrently with either the desludging of the Hokitika or Fox Glacier desludging.

As desludging is a not a resource consent requirement for any of the oxidation ponds, and due to the levels of uncertainty about these projects, no budgets have been included in the 10-year forecasts for any of these desludging projects. It is recommended however that operational budget for the Hokitika desludging project be included in the life of this plan due to the huge cost which would be untenable as unbudgeted expenditure (indicative cost: estimated at $1 million).

It is proposed that a maintenance budget of $460k per annum would be sustainable for Council going forward.

Table 32 Forecast wastewater operational costs by scheme (uninflated)

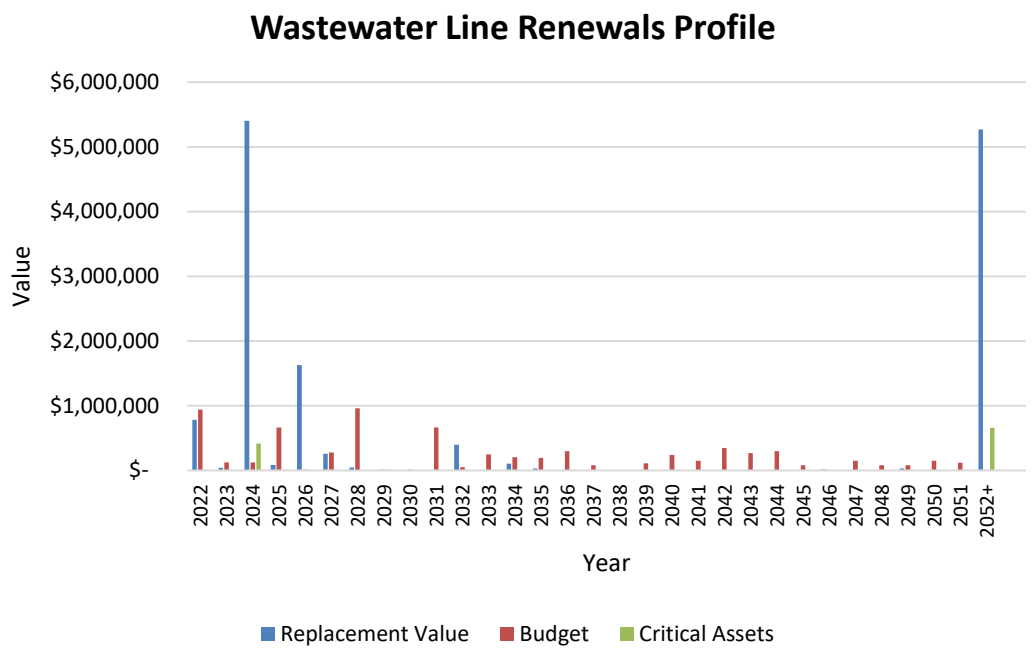
Wastewater Scheme	2021/22	2022/23	2023/24
Hokitika	$236,638	$236,638	$266,638
Franz Josef	$94,736	$94,736	$97,736
Fox Glacier	$32,892	$32,892	$32,892
Haast	$49,687	$49,687	$49,687
General Operating	$33,291	$33,291	$33,291
Total	**$447,244**	**$447,244**	**$480,244**

Source: Council's draft LTP budget (as at May 2021)

8.7 Asset renewal/replacement

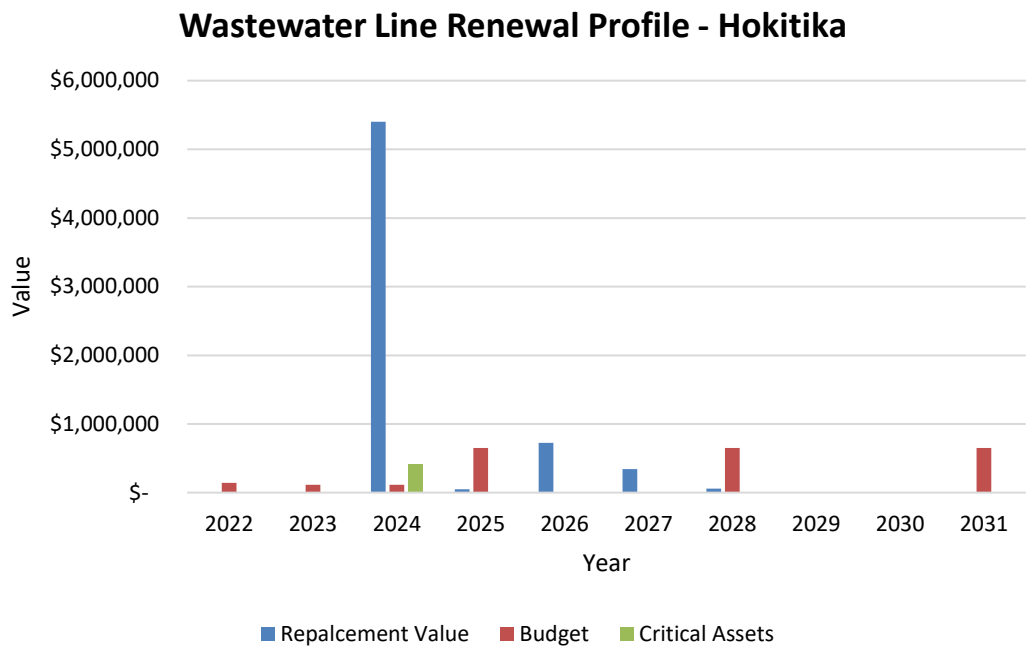
Major asset replacement expenditure that does not increase the asset's design capacity but instead restores, rehabilitates, renews or replaces an existing asset to its original capacity, using like-for-like materials is considered to be capital (maintenance) expenditure. Funding of work over and above an asset's original function or capacity is considered to be capital works (levels of service) expenditure. The following figures show the renewal profile for wastewater pipeline and treatment plant assets based on age.

Figure 19 Wastewater line renewals based on age versus planned budget



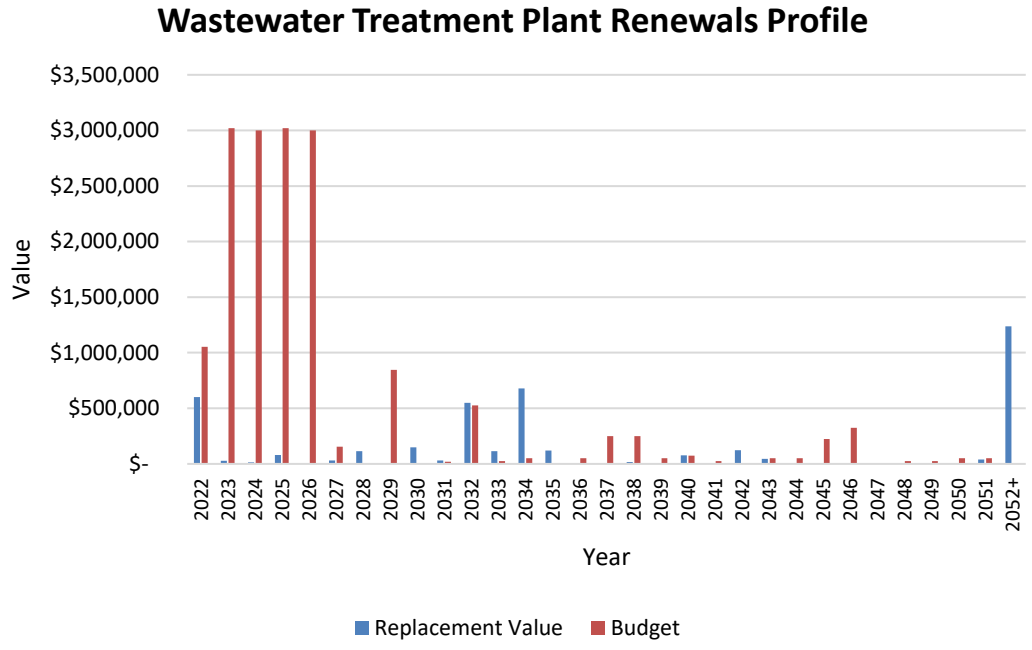
Source: AssetFinda age data (as at August 2020)

Figure 20 Wastewater line renewals based on age versus planned budget – Hokitika only



Source: AssetFinda age data (as at August 2020)

Figure 21 Wastewater Treatment Plant renewals based on age versus planned budget



Source: AssetFinda age data (as at August 2020)

8.7.1 Key asset replacement themes

Asset age, condition and performance is the primary consideration for determining asset end of life cycles driving the asset replacement programme. The asset criticality level is also considered when deciding which assets are a higher priority for replacement.

8.7.2 Asset replacement strategies

Assets are considered to need replacement when:

- there are health and safety concerns
- they near the end of their effective useful life
- the cost of maintenance becomes uneconomic and it would cost less to renew the asset than keep maintaining
- the risk of failure of critical assets is unacceptable.

Council's current renewal strategy is based on:

- asset failures
- undersized reticulation
- improving network resilience (LOS driven)
- operational knowledge.

Council wishes to move to a risk based wastewater renewal programme based on analysis of break histories and taking into account criticality, material type, condition, resilience and other factors, to be consistent with good industry practice. This new approach requires internal capability and better information to make decisions. It is recognised that this step-up in maturity will take time.

The asset renewal plans within this AMP are based on the asset information in AssetFinda database. Refer Section 12.5 for the asset data confidence, accuracy and completeness grades.

8.7.3 Forecast renewal expenditure

In summary, the planned wastewater renewals are about $1.2 million per annum (on average over ten years). Refer to Section 9.4 for financial details.

8.7.4 Forecast renewals versus depreciation

Comparison with annual depreciation, historical and forecast renewal expenditure at major asset class level is summarised below. The forecast renewal expenditure of $1.2 million per annum is significantly more than the annual depreciation of $450k. This is attributed to the historical low level of investment in renewal, and Council now has plans to accelerate the renewal programme as internal AM resources gradually increase.

Table 33 Renewal expenditure versus annual depreciation comparison

Asset class	Annual Depreciation (2019) ($)	Historical renewal (last three year average)	Ten year renewal forecast (average per year)
Lines	$40,439	$26,729	$1,218,539
Points	$303,821	$2,535	
Plant	$105,617	$0	
Total	**$449,876**	**$29,264**	

8.7.5 Key renewal projects

The key renewal projects planned for the next ten years are outlined in Table 34.We will focus on the Hokitika WWTP project and the replacement of z line section of Hokitika (bad ground and poor pipe condition resulting in frequent manhole overflows) for the first three years. In summary, the planned renewals are as follows:

Table 34 Key renewal projects (uninflated)

Wastewater Scheme	Description	Year 1	Year 2	Year 3	Year 4-10	Ten-year Total
		2021/22	2022/23	2023/24	2024-31	
Districtwide	Replacement of Wastewater Treatment Plant Components		✓		✓	$100,000
Fox Glacier	Mains replacements	✓			✓	$550,000
Franz Josef	Mains replacement	✓			✓	$240,000
Haast	CCTV	✓			✓	$25,000
Haast	Mains replacement	✓			✓	$170,000
Haast	WWTP Upgrade (40%)				✓	$370,000
Hokitika	Mains replacement				✓	$1,956,900
Hokitika	Z-line section replacement	✓	✓	✓		$338,492
Hokitika	Pump upgrades				✓	$35,000
Hokitika	Feasibility, design and build new WWTP (65%)		✓	✓	✓	$8,400,000

Source: Council's draft LTP budget (as at May 2021)

8.8 Asset development

Expanding the scope of services by creation of new assets (growth) or increasing the capacity of existing assets (increased levels of service) is classified as asset development activities. A summary of the main asset development themes and capital projects for next ten years is outlined below.

8.8.1 Key asset development themes

Resilience projects

The frequency of extreme weather (flooding/rainfall) events in Westland District and potential power outages is why Council has planned the installation of a site-specific WWTP generator for Franz Josef. The generator will boost resilience by providing back-up power to run the mechanical equipment at the treatment plant. This is important as extreme weather events can often temporarily cut the township power supply and road access, thereby affecting wastewater treatment requirements under the most recent consent conditions.

A new upgraded pump station (offering additional storage) will be installed in Franz Josef and provide extra capacity during heavy rainfall events to cope with I&I. We have secured central government funding assistance for this project and was completed in January 2021.

In Hokitika, the Fitzherbert Pump Station will also be equipped with a standby generator during 2021. A new generator has been purchased with the assistance of the Three Waters Reforms budget.

Standby pumps in case of mechanical failure

The standard design of most pump stations in our district is to have a duty pump and a standby pump. During times of high volume both may run concurrently. The standby pump can be used when the duty pump fails.

Standby electrical generation in case of power failure

Stand-by electrical generator is soon to be installed at our Franz Josef wastewater site. No on-site generation is currently installed at other sites. However, there is a mobile generator that can be used for South Westland sites. This generator is housed in the Haast area and can be made available when needed in power outages. Council also owns a mobile generator that can be used for Hokitika when needed.

Health and safety audits

A health and safety audit of three of the four wastewater treatment plants (Hokitika, Franz Josef and Haast) was undertaken in 2019 by Council's Health and Safety Officer. Remedies to relevant issues identified in the Health and Safety Audit have budget allocated for the next two - three years to allow for remediation of high priority risks.

A fencing upgrade of the Hokitika Wastewater Oxidation Ponds has already been undertaken in accordance with the recommendations of this report due to the severity of the defect.

Extending networks to allow more properties to connect

Westland is traditionally a district with limited population growth. However, some preliminary growth nodes in each community have been identified. In accordance with patterns that have been identified, some projects have been included to extend pipelines to allow additional properties to connect in the future.

Treatment plant improvements and telemetry

With environmental compliance tightening under the Resource Management Act and the pending three waters review, funding has also been allocated for treatment plant improvements (including telemetry) as part of the Hokitika Wastewater Treatment Plant upgrade.

8.8.2 Capex projects to support increasing levels of service

The main LOS capex projects are:

- resilience improvements to Hokitika wastewater treatment plant to protect against weather vulnerability
- new disposal structure or land disposal for Hokitika WWTP (to replace ageing ocean outfall structure, the consent for which expires in 2026)
- Haast WWTP upgrade to create second pond to improve biological efficiency/capacity of ponds, add more aeration and an inlet screen.

Table 35 outlines Council's wastewater LOS capex projects for the next ten years.

Table 35 LOS capex projects (uninflated)

Wastewater Scheme	Description	Year 1	Year 2	Year 3	Year 4-10	Ten-year Total
		2021/22	2022/23	2023/24	2024-31	
Districtwide	Retic CCTV (Hokitika, Fox Glacier, Franz Josef)	✓				$81,000
Fox Glacier	Power to site	✓				$25,000
Fox Glacier	Security Camera	✓				$5,000
Franz Josef	Retic I&I	✓				$97,000
Haast	WWTP improvements (security camera, telemetry, aerator)	✓				$32,500
Haast	Pump station upgrade	✓				$50,000
Haast	WWTP upgrade (50%)				✓	$462,500
Hokitika	Retic I&I	✓				$222,000
Hokitika	Feasibility, design and build new WWTP (20%)		✓	✓	✓	$2,400,000
Hokitika	Fitzherbert St pump station upgrade	✓				$125,000

Source: Council's draft LTP budget (as at May 2021)

8.8.3 Capex projects to support growth

The main growth capex projects are listed below:

- New Franz Josef wastewater treatment ponds (in line with Future Franz development to move township away from Alpine Fault Avoidance Zone and flood-prone zones).
- Contribution towards new residential developments.

Table 36 outlines Council's wastewater growth capex projects for the next ten years.

Table 36 Growth capex projects (uninflated)

Wastewater Scheme	Description	Year 1	Year 2	Year 3	Year 4-10	Ten-year Total
		2021/22	2022/23	2023/24	2024-31	
Districtwide	Contribution towards new developments	✓	✓	✓	✓	$100,000
Haast	Septage receiving area	✓				$57,291
Fox Glacier	Septage receiving area	✓				$57,293
Haast	WWTP Upgrade (10%)	✓			✓	$92,500
Hokitika	Feasibility, design and build new WWTP (15%)	✓	✓	✓	✓	$1,900,000

Source: Council's draft LTP budget (as at May 2021)

8.9 Asset disposal

Council has no plans to abandon any of the sewer schemes in totality, except the possible relocation of Franz Josef township as noted above.

Assets within the system that are replaced or made redundant following renewal or upgrade projects are either abandoned, disposed of, or held in stock as spare.

Generally, it is not practical to extract and remove buried pipelines, so these are typically capped and abandoned in-situ. Virtually all other obsolete assets are removed or demolished to clear the site for their replacement or other use. Given the specialist nature of the sewer equipment and the fact that assets are generally not replaced until they reach the end of their serviceable life, it is not common for Council to have a redundant asset with a significant residual value. In the unlikely event that a redundant asset is available for sale, it should be disposed of in accordance with Council's policy. The majority of redundant assets are most likely to be either disposed of to landfill or via recycling where possible.

Section 9 Financial Summary

9.1 Overview

This section contains the financial strategy, valuation forecasts, financial forecasts, key assumptions and requirements resulting from all the information presented in previous sections.

The total projected expenditure for operations, maintenance and capital for the wastewater activity over the next ten years is $37.9 million, as outlined in Table 37. Section 9.3 and 9.4 provide further details of these expenditures. The expenditure cash flow projections are founded on:

- providing services that are appropriate, fit for purpose and represent value for money
- protecting the integrity of the asset
- continuing to maintain appropriate levels of service
- seeking to achieve the best investment on behalf of the community and general ratepayers.

Table 37 Financial summary – wastewater (uninflated)

Description	Projected Expenditure				
	Year 1	Year 2	Year 3	Year 4-10	Ten-year total
	2021/22	2022/23	2023/24	2024-31	
Operational expenditure	$1,562,587	$1,736,631	$1,851,748	$14,811,474	$19,962,440
Capital expenditure					
Renewals	$527,831	$2,232,831	$2,212,830	$7,211,900	$12,185,392
LOS	$637,500	$600,000	$600,000	$1,662,500	$3,500,000
Growth	$824,584	$310,000	$310,000	$762,500	$2,207,084
Total	**$3,552,502**	**$4,879,462**	**$4,974,578**	**$24,448,374**	**$37,854,916**

Source: Council's draft LTP budget (as at May 2021)

9.2 Expenditure categories

Expenditure types are defined and reported as follows:

- Operating expenditure is used to fund the ongoing day to day activities and services of the Council. It is expensed (not capitalised) work that continues the provision of services provided by assets.
- Capital expenditure is used to replace existing deteriorated assets or components of assets to restore their remaining life and service potential and/or to increase the level of service or capacity provided.

Council categorises its capital expenditure projects as renewals, extending level of service or growth related projects. The following funding sources are used for each category under normal circumstances, with any alternative funding sources specifically resolved by the Council.

Renewal projects

Renewal projects restore or replace components of an asset or the entire asset to meet the current level of service (to its original size, condition or capacity). These projects will be funded from capital reserves built up from funded depreciation. Where the reserve is not sufficient to meet the programmed renewals, then loans will be utilised and repaid from a contribution from the reserve that best fits intergenerational equity and/or the operating funding sources for the particular activity as per the policy.

Extending level of service projects

The creation of a new asset or alterations to an existing asset that means a higher level of service is delivered. These projects are generally loan funded and repaid from the operational funding sources (i.e. rates). Where possible, applications for central government funding assistance will be lodged.

Growth projects

Additional assets required to serve growth in existing services due to new areas being served. These projects are generally loan funded and repaid from the operational funding sources (i.e. rates). Where possible, applications for central government funding assistance will be lodged where eligible funding schemes exist. Growth-related projects should go through a comprehensive business case process, including a cost/benefit analysis and risk assessment before being initiated.

Table 38 outlines the implications of meeting each of the expenditure category.

Table 38 Implications of expenditure category – wastewater

Expenditure category	Justification	Consequences if budget reduced
Opex	To meet LOS for public health and overflows	Increased risk of public health issues with reduced service Prosecution by Regional Council
	To protect the environment	
Capex renewals	Adequate renewals to optimise life of assets	Increase in backlog that may never be addressed adequately
	Consent renewals for WWTPs	Prosecution by Regional Council
Capex new works	To meet the likely new consent requirements for the discharge quality from the new disposal option for the Hokitika WWTP	Investments in WWTP upgrades will not meet future consent requirements

9.3 Operational expenditure summary

Table 39 outlines the wastewater operation and maintenance expenditure for the next ten years. This shows that the annual operating expenditure is around $2 million per annum.

Table 39 Operational expenditure – wastewater (uninflated)

Description	Projected Expenditure										
	Year 1 2021/22	Year 2 2022/23	Year 3 2023/24	Year 4 2024/25	Year 5 2025/26	Year 6 2026/27	Year 7 2027/28	Year 8 2028/29	Year 9 2029/30	Year 10 2030/31	Ten-year Total
Depreciation	$786,307	$951,990	$988,324	$1,025,822	$1,131,039	$1,157,373	$1,127,251	$1,202,285	$1,227,368	$1,229,015	$10,826,774
Overheads	$220,814	$228,762	$236,980	$228,360	$228,263	$239,340	$229,730	$229,663	$239,153	$228,169	$2,309,234
Interest and finance costs	$108,222	$108,635	$146,200	$183,780	$203,275	$240,669	$243,913	$237,844	$246,553	$231,323	$1,950,414
Operating costs											
Electricity	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$680,000
Insurance Premiums	$56,716	$56,716	$56,716	$56,716	$56,716	$56,716	$56,716	$56,716	$56,716	$56,716	$567,160
Condition Assesments	$0	$0	$33,000	$33,000	$33,000	$33,000	$33,000	$33,000	$33,000	$33,000	$264,000
Repairs & Maintenance	$265,000	$265,000	$265,000	$278,250	$278,250	$278,250	$278,250	$278,250	$292,164	$292,164	$2,770,578
Monitoring	$17,500	$17,500	$17,500	$18,500	$20,500	$20,500	$20,500	$20,500	$20,500	$20,500	$194,000
Rates Expense	$40,028	$40,028	$40,028	$40,028	$40,028	$40,028	$40,028	$40,028	$40,028	$40,028	$400,280
Total operating costs	$447,244	$447,244	$480,244	$494,494	$496,494	$496,494	$496,494	$496,494	$510,408	$510,408	$4,876,018
Total	**$1,562,587**	**$1,736,631**	**$1,851,748**	**$1,932,456**	**$2,059,071**	**$2,133,876**	**$2,097,388**	**$2,166,286**	**$2,223,482**	**$2,198,915**	**$19,962,440**

Source: Council's draft LTP budget (as at May 2021)
Note that the overheads include staff costs.

9.4 Capital expenditure summary

Table 40 outlines the wastewater renewal expenditure for the next ten years. This shows a large capital programme in the first year due to Government funding

Table 40 Renewal expenditure – wastewater (uninflated)

Description	Projected Expenditure										
	Year 1 2021/22	Year 2 2022/23	Year 3 2023/24	Year 4 2024/25	Year 5 2025/26	Year 6 2026/27	Year 7 2027/28	Year 8 2028/29	Year 9 2029/30	Year 10 2030/31	Ten-year Total
Districtwide - Replacement of Wastewater Treatment Plant Components		$20,000		$20,000		$20,000		$20,000		$20,000	$100,000
Fox Glacier - Mains replacements	$250,000						$300,000				$550,000
Franz Josef - Mains replacement	$90,000					$150,000					$240,000
Haast - CCTV	$25,000										$25,000
Haast - Mains replacement	$50,000					$120,000					$170,000
Haast - WWTP Upgrade (40%)						$40,000		$330,000			$370,000
Hokitika - Feasibility, design and build new WWTP (65%)		$2,100,000	$2,100,000	$2,100,000	$2,100,000						$8,400,000
Hokitika - Mains replacement				$652,300			$652,300			$652,300	$1,956,900
Hokitika - Z-line section replacement	$112,831	$112,831	$112,830								$338,492
Kaniere - Pump upgrades						$35,000					$35,000
Total	**$527,831**	**$2,232,831**	**$2,212,830**	**$2,772,300**	**$2,100,000**	**$365,000**	**$952,300**	**$350,000**	**$0**	**$672,300**	**$12,185,392**

Source: Council's draft LTP budget (as at May 2021)

Table 41 outlines the wastewater levels of service capex expenditure for the next ten years.

Table 41 Levels of service capex expenditure – wastewater (uninflated)

Description	Projected Expenditure										
	Year 1 2021/22	Year 2 2022/23	Year 3 2023/24	Year 4 2024/25	Year 5 2025/26	Year 6 2026/27	Year 7 2027/28	Year 8 2028/29	Year 9 2029/30	Year 10 2030/31	Ten-year Total
Districtwide - Retic CCTV (Hokitika, Fox Glacier, Franz Josef)	$81,000										$81,000
Fox Glacier - Power to site	$25,000										$25,000
Fox Glacier - Security Camera	$5,000										$5,000
Franz Josef - Retic I&I	$97,000										$97,000
Haast - WWTP improvements (security camera, telemetry, aerator)	$32,500										$32,500
Hasst - Pump station upgrade	$50,000										$50,000
Hasst - WWTP upgrade (50%)						$50,000		$412,500			$462,500
Hokitika - Feasibility, design and build new WWTP (20%)		$600,000	$600,000	$600,000	$600,000						$2,400,000
Hokitika - Fitzherbert St pump station upgrade	$125,000										$125,000
Hokitika - Retic I&I	$222,000										$222,000
Total	**$637,500**	**$600,000**	**$600,000**	**$600,000**	**$600,000**	**$50,000**	**$0**	**$412,500**	**$0**	**$0**	**$3,500,000**

Source: Council's draft LTP budget (as at May 2021)

Table 42 outlines the wastewater growth capex expenditure for the next ten years.

Table 42 Growth capex expenditure – wastewater (uninflated)

Description	Projected Expenditure										
	Year 1 2021/22	Year 2 2022/23	Year 3 2023/24	Year 4 2024/25	Year 5 2025/26	Year 6 2026/27	Year 7 2027/28	Year 8 2028/29	Year 9 2029/30	Year 10 2030/31	Ten-year Total
Contribution towards new developments	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$100,000
Fox Glacier - Septage receiving area	$57,293										$57,293
Haast - Septage receiving area	$57,291										$57,291
Haast - WWTP Upgrade (10%)						$10,000		$82,500			$92,500
Hokitika - Feasibility, design and build new WWTP (15%)	$700,000	$300,000	$300,000	$300,000	$300,000						$1,900,000
Total	**$824,584**	**$310,000**	**$310,000**	**$310,000**	**$310,000**	**$20,000**	**$10,000**	**$92,500**	**$10,000**	**$10,000**	**$2,207,084**

Source: Council's draft LTP budget (as at May 2021)

9.5 Asset valuation and depreciation

9.5.1 Asset valuation

Assets are revalued every three years. Wastewater assets were last revalued as at 30 June 2019.

This process was undertaken by Council staff using information and inputs from Buller and Grey District Councils to update unit rates prior to generating new valuation data. This process was peer reviewed by BECA. The majority of information for valuing the assets was obtained from Council's AssetFinda database.

Table 43 Wastewater asset valuation summary as at 30 June 2019

Wastewater Assets by Township	Optimised Replacement Cost ($) 2019	Depreciated Replacement Cost ($) 2019	Annual Depreciation Rate ($) 2019
Fox Glacier	**2,280,830**	**1,190,883**	**27,824**
Points	234,005	120,078	2,925
Lines	1,196,985	300,704	21,687
Plant	849,841	770,101	3,213
Franz Josef	**4,269,124**	**3,024,988**	**40,752**
Points	311,666	178,936	3,896
Lines	1,681,957	706,222	25,861
Plant	942,957	807,286	10,995
Stopbank	1,332,544	1,332,544	-
Haast	**1,421,129**	**785,405**	**26,714**
Points	155,691	98,183	1,946
Lines	844,784	429,847	13,041
Plant	420,655	257,375	11,727
Hokitika	**19,185,910**	**7,633,655**	**296,411**
Points	2,083,981	1,000,036	26,403
Lines	12,786,242	3,648,853	219,295
Plant	4,315,688	2,984,767	50,712
Kaniere*	**3,735,214**	**2,722,531**	**58,175**
Points	419,216	319,042	5,269
Lines	2,390,503	1,990,354	23,936
Plant	925,494	413,135	28,970
Total	**30,892,207**	**15,357,462**	**449,876**

**Kaniere is technically part of the Hokitika wastewater scheme, however, has always been listed separately in AssetFinda due to the extension of the reticulation into Kaniere in the year 2000 for which a Capital Contribution Rate was levied on ratepayers.*

Table 44 Wastewater valuation summary: 2019 versus 2016

Wastewater Assets (Values by Year)	Optimised Replacement Cost (S)	Depreciated Replacement Cost ($)	Annual Depreciation Rate ($)
Total 2019	30,892,207	15,357,462	449,876
Total 2016	26,233,708	15,874,928	366,544
Total 2014	22,379,717	9,276,820	366,146

Overall, the wastewater assets have increased in optimised replacement cost by 17.8% since the 2016 valuations. The increase in the replacement values is due to the following reasons.

- The addition of new wastewater assets since 2016.
- Increases in unit rates based on both local and regional evaluation.

The percentage increase in annual depreciation is 22.8%.

9.5.2 Depreciation

Depreciation of assets must be charged over their useful lives to ensure an availability of funds for when assets need to be replaced. Council calculates depreciation on a straight-line basis for infrastructural assets (other than land), at rates that will write off the cost (or valuation) of the assets to their estimated residual values over their useful lives.

The useful lives and associated depreciation rates of the most common types of wastewater assets have been listed below according to the depreciable life set in Council's AssetFinda database:

Table 45 Useful lives

Asset Type	Depreciable Life (years)
Pipelines	60 -100*
Manholes	80
Ocean Outfall	60
Pump Stations Electrical Instrumentation	15-30*
Pump Station Buildings	40-60*
Pump Station Pumps	15/20*
Oxidation Ponds	60
Aerators	10-20*
Flushing Tanks	50
Infiltration Gallery Structure	60

** Dependent on material.*

Council funds depreciation on wastewater assets to ensure the integrity and service potential of these assets continues to be maintained. However, it does not fully fund depreciation where any of the following apply:

- Where it is assumed that the asset will not be replaced.
- Where the asset replacement is likely to be funded from external sources.
- In the event of new assets and upgrades funded through external debt, Council will not fund depreciation of the amount of the principal loan repayment*

**As Council funds depreciation expenses and principal loan repayments both through rates, this avoids duplication of the charge.*

9.6 Financial performance

The actual achievements against the 2018 LTP budgets for the wastewater capital programme are presented below. This shows that the actuals achieved were generally lower than budgeted and implementing LOS projects was a focus of Council for the last three years.

Council recognises that it needs to develop the internal capability and capacity if it wishes to deliver an ambitious capital works programme as outlined in this AMP.

Figure 22 Capital expenditure performance – wastewater

	2017/18 actuals	2017/18 plan	2018/19 actuals	2018/19 plan	2019/20 actuals	2019/20 plan
Renewals	17,804	-	38,253	242,000	31,734	367,796
Growth	0	0	0	10,000	0	10,480
LOS	1,377,030	3,264,000	1,751,526	2,675,000	523,350	360,000

9.7 Funding sources

The Council has a mix of funding mechanisms with the bulk of the revenue coming from targeted wastewater rates. In general, only people directly and regularly using wastewater services pay for them within their rates.

Where financial assistance (including funded depreciation or central government funding) are not available, capital projects are generally loan-funded to spread the costs more effectively over the life of the asset and provide better intergenerational equity.

The wastewater activity will be funded in accordance with the financial policies of Council as indicated below.

Table 46 Funding strategy for wastewater

Programme	Funding mechanism
Operational	Targeted water rates
Renewal	Provided through depreciation reserves
LOS	Loan funded
Growth	Recovered through development contributions

Council will be reviewing the development contribution requirements in the District Plan so better reflects new infrastructure required for development (or growth) versus burdening existing ratepayers. It is intended Council will consider contributing to a development at consent stage on a case by case basis.

9.7.1 Targeted rates

The water and wastewater services attract a targeted rate.

Domestic Wastewater

For wastewater the rate is charged on each separately occupied portion of a property connected to the sewerage disposal system provided by Council. An unconnected rate of 50% of the connected charge is levied on a property where a Council sewerage system is available but is not connected.

Commercial Wastewater

Commercial properties are charged per pan (i.e. urinal or water closet). For example, if a hotel has 18 toilets, it will be charged for 18 pans. Each pan has a set rate that is the same across all schemes. In 2019/20, this was $371.85 per pan.

Kaniere Sewerage Capital Contributions

In addition, a targeted rate is levied to recover the capital costs for Kaniere Sewerage scheme. The rate is charged on each property able to be connected to the Kaniere Sewerage system that has not already completed payment of their proportion of the capital contribution. This scheme was constructed in 2000 and is an extension of the Hokitika wastewater scheme.

9.7.2 Industrial wastewater charges

Industrial users (e.g. Silver Fern Farms and septage operators) in Hokitika and Haast are charged set trade waste fees on a quarterly basis. No trade waste fees are collected for Franz Josef or Fox Glacier.

Septage operators provide data to Council regarding their volumes on a voluntary “honesty policy” basis at this stage. An overhaul of this charging scheme is needed.

It is recommended that:

- levies also be imposed for waste that impacts the biological loading of the oxidation ponds (e.g. BOD sample)
- a Trade Waste Bylaw be introduced (in accordance with legislative consultation requirements) to ensure clear and transparent pricing methodology
- septage operators have volumes measured and audited.

Section 10 Sustainability and Business Continuity

Sustainability means that we effectively balance the needs of present and future communities. In terms of asset management, sustainability is important, as many assets have a long lifespan and should be 'future-proofed' where possible. The LGA 2002 requires local authorities to take into account the current and future needs of their communities for good quality local infrastructure and effective, cost-efficient delivery of services.

Council has a responsibility to manage the wastewater activity and associated assets in a way that protects economic, social, environmental and cultural wellbeing. This includes planning for business continuity in the event of emergencies and being mindful of environmental trends like climate change that could affect land and infrastructure in the district and the way it can be used in the future.

10.1 Potential negative effects

The wastewater activity provides essential public health service but also may have negative effects particularly on the environment. These effects are managed through a variety of processes, summarised in Table 47.

Table 47 Potential negative effect summary

Effect	Description	Mitigation Measures
Noise	Sometimes wastewater activities may create noise that affects surrounding households or businesses. Such noise is temporary and a result of construction machinery used during repairs or installation of new wastewater assets.	Maintenance work is undertaken during normal operating hours except in emergency situations.
Odour	Odour can cause distress to affected local properties and restrict their activities, e.g. keeping windows closed and spending less time in their yard outdoors.	Odour Management Plans are prepared for desludging activities. Odour from treatment plants can be treated via a range of mechanisms: the use of aerators, chemical dosing of ponds (Sodium Nitrate), filters etc.
Visual disturbance	As all of Westland District's wastewater is treated by oxidation ponds, there can be an element of visual pollution that can be off-putting for locals or tourists. This is most prominent in Hokitika where the ponds are adjacent to (and visible from) State Highway 6 on the northern border to the town's entrance and because the above-ground outfall which discharges to the ocean is visible on the beach where many residents go for walks.	In the next few years, the new submerged marine outfall will remove the visual disturbance associated with the outfall pipe and outfall discharge. Keeping the ponds biologically healthy can encourage birdlife (e.g. swans and ducks) to congregate on and around the ponds which can mitigate the visual disturbance of the ponds themselves.

Effect	Description	Mitigation Measures
Disruption to service	Prolonged disruption (outages) to service can have an economic impact on businesses.	This is extremely rare and would only normally occur as a result of storms or force majeure events. The operations and maintenance contract has clear repair timeframes that must be adhered to. Timeframes for site attendance and resolution of issues are also reported on in Council's annual reports. If a long-term fix is unable to be made immediately, quick temporary repairs will often be made to restore services while a longer-term repair is being sought.
Overflows	Overflows can cause distress and a public health risk, especially when they occur on private property. Overflows on private property can occur from gully traps as they are typically the lowest point in the private reticulation system. Businesses and schools may need to close if they are unable to use the wastewater system because of blockages, faults or overflows.	WDC has a partial CCTV programme. This can identify blockage risks such as structural defects or root intrusions as well as I&I issues with problem catchments. Emergency storage is provided at key pump stations and most have the ability to be powered by one of Council's mobile generators. Several key pump stations have on-site generators.
Non-compliant discharges	May result in degradation of water quality, which could impact on shellfish collection and recreational activities at nearby rivers and beaches such as swimming.	Upgrade of Hokitika WWTP is planned to improve biological efficiencies and improve discharge compliance. Franz WWTP has recently been upgraded and the likelihood of non-compliance is now significantly reduced.
Increase in rates	Improving the level of service delivered can result in rates increases	Council uses competitive tendering processes to achieve best value for money for most capital works it undertakes, and projects prioritised before being adopted.
Tapu	Many of our current wastewater systems discharge direct to a waterbody – this has cultural sensitivity issues for Māori.	As wastewater systems go through planned upgrades, new discharge options will be explored that utilise land-based methods of disposal.

10.2 Potential positive effects

The positive effects provided by the wastewater activity are summarised below.

Table 48 Potential positive effect summary

Effect	Description
Public health benefits	Spread of disease is limited and public health improved by having a public wastewater collection and treatment system.
Environment and water quality	Strict resource consent conditions for wastewater treatment plants help safeguard the environment and water quality, as does regular monitoring and reporting.
Economic development	Providing a safe and efficient wastewater system allows for economic growth to occur by providing for new developments where capacity exists. In addition, by managing wastewater assets responsibly and using competitive tendering we can provide value for money for ratepayers and stimulate the economy with work for contractors.

10.3 Environmental management

The statutory framework detailing what activities require resource consents is the RMA (1991). The RMA is administered locally by the West Coast Regional Council for matters relating to wastewater, with the exception of on-site systems that are covered by WDC. The table below contains a list of the resource consents (and one Department of Conservation concession) that Council holds in relation to its wastewater activities.

Both the Franz Josef and Hokitika WWTPs require an annual environmental monitoring report to be prepared and filed with the West Coast Regional Council, one month prior to the anniversary of the consent grant date.

Three resource consents will reach their expiry date over the next ten years: these being those for the desludging of the Fox Glacier oxidation ponds desludging consent and the two resource consents in relation to the operation of the Hokitika wastewater oxidation ponds (discharge of treated sewage and odour to air).

Table 49 Summary of resource consents

Resource Consent/ Concession	Location	Description	Expiry Date
RC-2015-0141-01	Hokitika	To discharge treated sewage effluent from the Hokitika Oxidation Ponds to the Coastal Marine Area via an outfall pipe.	07 August 2026
RC-2015-0141-02		To discharge contaminants (odour) to air.	
RC-00388-01	Fox Glacier	Discharge permit to land to authorise the discharge of treated wastewater into and onto land from the Fox Glacier Wastewater Treatment Plant.	21 September 2036
RC-00388-02		Discharge permit to water to authorise the discharge of treated wastewater into the Fox River from the Fox Glacier Wastewater Treatment Plant.	
RC-00388-03		Discharge permit to air to authorise the discharge of contaminants to air from the Fox Glacier Wastewater Treatment Plant.	
RC-00389-01	Haast	Discharge permit to land to authorise the discharge of treated wastewater into and onto land from the Haast Wastewater Treatment Plant.	21 September 2036
RC-00389-02		Discharge permit to water to authorise the discharge of treated wastewater into the Haast River from the Haast Wastewater Treatment Plant.	
RC-00389-03		Discharge permit to air to authorise the discharge of contaminants to air from the Haast Wastewater Treatment Plant.	
RC-2019-0041-01	Fox Glacier	To discharge odour to air during the desludging of the Fox Glacier Oxidation Ponds.	20 June 2022
RC-2015-0146-01	Haast	Land use consent: To disturb the bed of the Haast River to divert water into a side channel.	01 March 2037
RC-2015-0146-02		Water permit: To divert water, Haast River.	
RC-2018-0068-01	Franz Josef (new WWTP)	Land use consent: To undertake earthworks, including vegetation clearance, in the non-erosion prone area, Franz Josef.	21 January 2034
RC-2018-0068-02		Discharge permit: To discharge treated sewage effluent to land where it may enter water (Waiho River), Franz Josef.	
RC-2018-0068-03		Discharge permit: To discharge contaminants (odour) to air from sewage oxidation ponds, Franz Josef.	

** At time of writing the new Franz Josef Wastewater Treatment Plant has not yet been commissioned. Once it has been commissioned the consents relating to the old Wastewater Treatment Plant in Franz Josef will be surrendered.*

10.3.1 Property designations (sewerage reserves)

Council holds a number of Local Purpose Reserves adjacent to or near the existing wastewater treatment plants. These designations are a way of identifying and protecting land that may be required for future public works. The designations, given under the New Zealand Gazette in accordance with the Reserves Act 1977, remain in effect until such time as Council as the Territorial Authority removes or alters the designation. If the designation is removed, the land returns to Crown ownership.

Table 50 Local purpose reserves

Assessment Number	Location of Site	Legal Name	Site Purpose
2580050301	Franz Josef Highway	PT RES 1015 BLK VII WAIHO SD	Local Purpose (Public Utility) Reserve – Waiho Gorge
2581020674	263 Haast Pass Highway	R S 6015 BLK VII VIII XII OKURU SD	Haast Water and Sewerage Reserve

Presently, we have a pipeline easement to the Fox Glacier WWTP. However, thoroughfare to the ponds crosses private land and there is no easement for service vehicle access. This is currently being negotiated between Council and the property owner.

10.4 Climate change and resilience

10.4.1 Changes in weather patterns

Council is using climate change projections for the West Coast region (sourced from the Ministry for the Environment's website). The anticipated effects from climate change on the West Coast (including Westland District) include:

Table 51 Climate change projections for West Coast Region

Climate Aspect	Description	Future Projections
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. Winter rainfall in Hokitika is projected to increase by 8 to 29 per cent by 2090.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	Changes in wind direction may lead to an increase in the frequency of westerly winds over the South Island, particularly in winter and spring.	The frequency of extremely windy days in the West Coast by 2090 is likely to increase by between 2 and 5 per cent.
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.

Climate Aspect	Description	Future Projections
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 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	The Ministry for the Environment provides guidance on coastal hazards and climate change, including recommendations for 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.

Impacts by season

By 2090, seasonally the region could expect: *

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

* *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.*

Potential effects

Coastal hazards – Coastal roads and infrastructure may face increased risk from coastal erosion and inundation, increased storminess and sea-level rise. This would pose a huge risk for the Hokitika Wastewater Oxidation Ponds which are adjacent to the coastline and the ocean outfall structure itself which discharges into the Tasman Sea.

Flooding and landslides – 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. The current Franz Josef wastewater oxidation ponds are in a flood-prone location.

Biosecurity – Warmer, wetter conditions could increase the spread of pests and weeds.

Agriculture – Warmer temperatures, a longer growing season and significantly fewer frosts could provide opportunities to grow new crops and farmers might benefit from faster growth of pasture and better growing conditions. However, these benefits may be limited by negative effects of climate change such as increased flood risk or greater frequency and intensity of storms.

It is also noted that if warmer temperatures created prolonged droughts this could result in more restrictive consent conditions for discharging to streams.

10.4.2 At national level

A National Climate Change Risk Assessment (August 2020) has recently been released by Ministry for the Environment. The setting of the framework for effective adaption is required by the Climate Change Response (Zero Carbon) Act. The risk assessment is a national overview of how New Zealand may be affected by climate change related hazards.

New Zealand's ten most significant climate change risks based on consequence and urgency were identified. Other priority risks include the risk to wastewater and stormwater systems (and levels of service) due to extreme weather events and ongoing sea-level rise. At a local level, we need to understand what this means on the wastewater activity.

10.4.3 At local and activity levels

These likely climate change impacts on the wastewater network will need to be considered with any long-term planning. The most likely effect due to climate change in the next ten years are:

- Franz Josef Wastewater Treatment Plant could be significantly damaged
- I&I increases and reduces pipeline capacity during events resulting in more overflow events.

10.4.4 Building resilience

The 2017 report on improving resilience to natural disasters, West Coast Lifelines Vulnerability and Interdependency Assessment[1] outlines the risks to Council's wastewater schemes from various types of natural disasters. While some of the information regarding each scheme is dated and no longer relevant, this document is still a good overview of the main emergency management risks for wastewater.

[1] https://westcoastemergency.govt.nz/wp-content/uploads/2018/04/12-Westland-Lifelines-Assets.pdf

Climate change directly impacts the wastewater activity. Council has undertaken the following measures to improve the resilience of the activity in disruption events:

- Building our knowledge based on latest thinking nationally and participating in forums where appropriate.
- Specify more resilient design and materials for the replacement programmes.
- Enhanced collaboration with Westroads to have robust communication protocols and procedures for keeping the network resilient.
- Council proactively prepares for emergencies by investing in equipment such as standby power generators at wastewater treatment plants.
- Working with NZ Transport Agency (Waka Kotahi) on state highway closures and ensuring service continuity for three waters operations (refer to next section).

Council's future actions in response to climate change to improve the resilience of the activity are:

- assess I&I across the catchments to prioritise our efforts and develop a cost effective and targeted programme
- assessment of critical underground wastewater pipelines
- upgrade wastewater pump stations that are at risk due to flooding inundation.

10.4.5 Transport network/access vulnerabilities

One of the main resilience issues that the district faces is due to the vulnerability of the transport network. Westland is 350km long and serviced by only one major road, State Highway 6. This leaves the district vulnerable in the event of road closures. The frequency of State Highway 6 road closures south of Hokitika is increasing, as shown below. This has implications for Council workers and contractors in reaching and attending to wastewater issues south of Hokitika. This is out of Council control as there are no bypass roads and the state highway is controlled by Waka Kotahi.

Figure 23 State highway 6 unplanned road closures greater than 10 hours, south of Hokitika, 2010 – 2020[2]

[2] Ten year closures SH6, Waka Kotahi, West Coast Maintenance Contract Manager

Table 52 Details of state highway 6 unplanned road closures greater than ten hours, south of Hokitika, 2010 – 2020[3]

Date	Location	Reason	Hours closed
17/04/2014	Whataroa to Fox	Strong Winds	20
1/02/2018	Whataroa to Haast	Slip	48
11/02/2018	Fox Hills	Slip	20
20/02/2018	Ross to Haast	Strong winds	17
8/11/2018	Ross to Haast	Surface flooding	28
8/11/2018	Hokitika to Fox	Slips and washouts	26
8/11/2018	Harihari to Franz	Slips and washouts	15
26/03/2019	Franz to Fox Glacier	Waiho Bridge	800
26/03/2019	Hokitika to Franz	Flooding and slips	24
26/03/2019	Fox to Haast	Slips and flooding	24
26/03/2019	Haast Pass	Slips and flooding	24
10/04/2019	Diana Falls	Washout	17
12/08/2019	Haast Pass	Rockfall	45
5/12/2019	Fox to Haast	Storm Damage	73
6/12/2019	Haast Pass	Clarke Bluff	42
7/12/2019	Franz to Fox	Storm Damage	88
7/12/2019	Harihari to Whataroa	Storm Damage	295
7/12/2019	Whataroa to Franz	Storm Damage	63
7/12/2019	Hokitika to Harihari	Storm Damage	55

10.4.6 Zero carbon

The Zero Carbon Act means that Council will be considering opportunities for reducing the carbon emissions it generates. Preliminary opportunities identified include the following:

[3] Ten year closures SH6, Waka Kotahi, West Coast Maintenance Contract Manager

- We will continue to seek new technology and opportunities to reduce our carbon footprint where appropriate for our district size, learning from other water utilities in New Zealand and internationally.
- Improve the efficiency of pumps as this will reduce power consumption costs as well as prolonging the asset component lives.

10.5 Emergency management

10.5.1 Lifelines

Wastewater is classified as a lifeline utility. Council is a member of the West Coast Lifelines Group, along with other West Coast local authorities and other service providers. Schedule 1 of the Civil Defence Emergency Management Act 2001 provides a list of all legislated lifeline utilities.

The West Coast Lifelines Group currently meets quarterly with all other 'special interests' groups meeting separately.

In the event of an emergency, all Lifeline Utility Providers, emergency services and welfare agencies work together to ensure essential services are restored as soon as possible. Organisations may call upon resources from within or outside of region.

10.5.2 Emergency response planning

Wastewater emergency risk events occur when they escalate from a routine event affecting an isolated network and before it is declared needing Civil Defence control. Council does not have an Emergency Response Plan, and this is identified as an improvement action. There is a West Coast Civil Defence Group Emergency Management Plan, and a dated Council Disaster Recovery Plan. No overarching Business Continuity Plan exists, although the IT Department is in the process of putting one together specific for the organisation's Information Management needs.

The COVID-19 pandemic situation was an unusual emergency situation that required new processes to be put in place. During the Level 4 lockdown, non-critical (project) work stopped. This delayed construction work programmes.

There were valuable lessons learnt with the lockdowns due to the global pandemic. For the wastewater activity, this includes the following:

- Overall Council's operational staff and the contractor still provided essential services uninterrupted and generally agile to the lockdown changes.
- There were additional contractor costs due to staff not able to travel together, daily toolbox meetings and additional personal protective gear.
- There were no issues with supplies to perform the duties.

Section 11 Risk Management and Assumptions

11.1 Our approach to risk management

A risk is defined in *AS/NZS ISO 31000:2009 – Risk management: Principles and guidelines* as the "effect of uncertainty on objectives". Each of those terms is further defined below:

- **Effect:** Deviation from the expected – positive or negative.
- **Uncertainty:** The state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.
- **Objectives:** i.e. risk types and risk hierarchy levels.

Therefore, risks are characterised by reference to potential events and consequences and ranked/rated in terms of the combination of both the probable consequences of an event and the likelihood of the event occurring. The combination of these two factors gives the overall risk rating. For the purpose of this Asset Management Plan, we have identified risks related to:

- Strategic (i.e. Achievement of Council Vision or Community Outcomes)
- Financial
- Health and Safety
- Service delivery to community
- Organisational capability and capacity
- Reputational
- Legal/regulatory compliance.

Council's approach to Risk Management is outlined in Council's Risk Management Policy. This policy is being revised.

Council's risks are documented in Quantate, an electronic risk register, and broken down by activity area. It is noted that for many infrastructure areas, risks listed in Quantate are not complete or up-to-date. Updating Quantate is a recommended improvement action for the wastewater activity. The full risk register is detailed in Appendix 14.2.

11.2 Activity risks and mitigation

Council's main risks to wastewater assets are adverse events and insufficient funding. Flooding is the most frequently experienced natural hazard in the District, and the likelihood of a major flood occurring in any year is high. Other natural hazards occur less frequently but have the potential to cause significant adverse effects and pose a risk to people and property. Unpredictable natural disasters and other catastrophic events could have an adverse effect on wastewater assets, potentially disrupting operations (as evidenced by the March 2016 Waiho River breach of the Franz Josef wastewater oxidation ponds). The incidence and severity of catastrophes are inherently unpredictable. Although Council carries insurance to mitigate its exposure to certain catastrophic events, catastrophic events can significantly affect Council's financial situation or operational activities.

Flooding also increases the potential for health risks. This is because wastewater can carry pathogens and viruses if discharged to the environment prior to full treatment.

Sufficient funding is needed to keep the wastewater assets performing adequately. This includes fully funding depreciation to replace assets once they reach the end of their useful life. Loan funding is only used for new capital items or upgrades due to growth (where no other funding assistance is available). With a very small ratepayer base and four wastewater schemes dispersed hundreds of kilometres apart, Council actively lobbies and applies for external funding and seeks new opportunities to gain value-for-money and improve cost efficiencies.

Council has been successful in securing external funding including $6.8 million as part of the Government's three waters reform package. The funding covers three waters and mix of projects and specialist equipment. The projects are mainly for strengthening resilience and are not all construction. There is a tight timeframe to deliver these projects as part of the funding agreement.

11.3 Assumptions and Uncertainties

This AMP and the financial forecasts within it have been developed from information that has varying degrees of completeness and accuracy. In order to make decisions in the face of uncertainties, assumptions have to be made.

A number of assumptions have been made for forecasting the ten year expenditure and activity improvements. These are detailed below:

Table 53 Key assumptions

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
Asset data Asset condition and performance data is not reliable for certain wastewater components. In many instances age has been used as a proxy except where improvements to data collection and monitoring have been made and therefore more information is available.	Asset data inaccuracies may mean more/less assets need to be renewed than projects and/or projected timing of renewals is incorrect. This could result in some assets failing before they are scheduled for planned renewal, creating a short-term loss/reduction of service delivery.	High	Improvement actions have been identified; some of which are in progress. An Asset Engineer and Asset Management Planner roles have been approved and now filled.
Asset lives The useful asset life reflects the best estimate available as at forecast date and is based on current asset information held.	That the useful asset life information held is incomplete or inaccurate and subsequent depreciation calculations will result in incorrect revenue setting meaning rates are either too high or too low. Insufficient funds may not be available.	Medium	Details relating to the Council's current estimates of useful lives are recorded within the depreciation note in the accounting policies.
Costs Capital expenditure costs are based on Council's best estimates and known planned expenditure.	Capital expenditure varies from budget. There may be increased operation and maintenance costs associated with maintaining assets that are beyond their useful life and a potential impact and risk to levels of service.	Medium	Council will review its budget annually through the LTP/Annual Planning process and may adjust work programmes/budgets where necessary.

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
Depreciation Depreciation for the revalued asset values has been calculated annually using the Council's inflation factors as a proxy for the adjusted revalued asset values.	Revaluation adjustments are different to those forecasts. That detailed components of new assets will be different from the inflation factors, requiring different depreciation rates.	Low	
Funding renewals That Council will choose to Strengthen its assets and infrastructure and fund depreciation on renewals to provide its community with financial stability and financially sustainable infrastructure and services over the long term.	That Council will choose to Strengthen its assets and infrastructure and fund depreciation on renewals to provide its community with financial stability and financially sustainable infrastructure and services over the long term.	Low	Council funds asset replacement through a variety of sources, as detailed in the Revenue and Financing Policy, with depreciation used when replacing assets with 'like for like'. The Council operates within the prudent parameters of its Liability Management Policy.
Funding sources Funding sources (including external funding) sources do not change over the life over this plan.	Levels and sources of funding differ from those forecast, resulting in projects being revised or alternative funding sources used.	Low	Funding for projects is considered before the commencement of each project or asset. A significant impact from changes in funding or funding sources may result in revised capital works programme.
Inflow and infiltration Continuation of the planned I&I investigation programme will mitigate the risk of sewer network overflows and consent breaches at wastewater treatment plants.	Should I&I investigations not proceed, and I&I is left unchecked and unremedied, overflows may increase over time and breaches may occur at wastewater treatment plant resulting in fines, prosecution, abatement notices etc.	Medium	Investigation programme underway. Additional budget proposed for 2021-2031 period.
Levels of Service Some increases in levels of service have been proposed and provisionally budgeted (subject to public consultation and Council approval). Service level increases are mainly to meet legislative compliance and minimise risks. In most other cases, service levels remain unchanged. Levels of Service increases will increase cost to ratepayers.	That the community demands, or central government imposes additional significantly enhanced service levels. This will lead to increased costs to ratepayers and also possibly require increased in-house resourcing.	Medium	Council to regularly monitor service provision. Minor changes may be made to service levels where contracts and resources allow. Major changes in service levels will be confirmed with the community via consultation and will generally require an increase to fees or rates.

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
Natural hazards The prevalence of heavy rainfall events (as seen in last few years) is likely to continue causing periodic disruption. Other natural hazards such as tsunami, Alpine Fault earthquakes are possible but have not been factored into the life of this Plan.	An alpine fault earthquake, tsunami event or other surprise natural disaster occurs that has a significant impact on wastewater services resulting in unbudgeted costs beyond the capacity of Council to cope.	Low	Council has a Civil Defence Emergency Plan that will be implemented in the event of an emergency. Council has insurance which can be claimed for the replacement of infrastructure damaged in the event of a natural hazard. In addition, Central government has a role in providing financial aid for disaster recovery.
New legislative requirements The Three Waters reform will introduce new legislative requirements from central government.	Three waters are likely to be managed by a regional entity.	High	Council is working with other West Coast councils on a local approach to three waters. It is also working with the wider Canterbury Group.
Population change The population of the District will remain static or grow slightly during the period of the Plan. The population statistics are based on Statistics New Zealand medium growth forecast (from 2013; no updated populations projections available from 2018 Census yet).	Population growth is significantly higher than forecast in a localised area, putting pressure on infrastructure. Or population significantly declines resulting in under-utilisation of infrastructure.	Low	Council will continue to monitor population change in the District. Generally, small changes in population can be managed within the existing level of service.
Resource consents Resource consents held for Council activities will require renewal and new consents granted will require increased monitoring. Resource consents will be obtained with acceptable conditions, and expiring resource consents will be renewed with affected party approval.	That resource consents cannot be obtained or renewed with the approval of affected parties requiring hearings. This may require an entirely new approach or would significantly delay projects. That new consent conditions imposed are unacceptable i.e. Council cannot afford to comply or respond to monitoring requirements. Potential service failures and/or adverse environmental effects. Potential infringement fines.	Low	Appropriate planning and investigations (i.e. environmental impact studies, geological surveys etc.) and effective early consultation with mana whenua on issues of significance should ensure that new resource consents are obtained without undue delay. Proactive investment in monitoring equipment for existing consents will help plan for future compliance needs. The renewal of consents is dependent upon the legislative and environmental standards and expectations that exist at that time.

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
Tourism Tourism growth will be static or decline in the first three years of the plan and then begin to grow again as the NZ borders reopen and international tourism resumes. Once tourism begins to grow it will be a major economic contributor to the district's GDP. The impact of tourism on Council infrastructure and services might not be severe as growth will be slow and Council will have improved infrastructure and services during the early part of the plan	That tourist numbers increase more quickly than expected when international travel resumes. Potential asset failure due to unsustainable growth of tourism result in service outages and need for new unbudgeted infrastructure that would increase Council's debt.	Medium	Council will continue to monitor tourism growth. Where growth requires additional infrastructure, Council will apply for financial contributions for this work.

Section 12 Asset Management Practices

Good quality data and asset management processes form the basis of effective long –term planning. This section details Council's approach to asset management processes, data management systems and strategies relating to the wastewater activity and associated assets.

12.1 Asset management policy

Council approved an Asset and Activity Management Policy in 2019 to guide the preparation of AMPs. The policy sets out the expectations for this activity. It also outlines related policies, legislation and a clear, concise methodology for achieving the objectives.

12.2 Asset management maturity levels

The Office of the Auditor General (OAG) uses the IIMM as the benchmark for measuring New Zealand councils' performance in asset management practices. There are five maturity levels in the IIMM: Aware, Basic, Core, Intermediate and Advanced. Each level has clear descriptions of the requirements for each area of asset management.

The Asset Management Policy has set the maturity level at Core as it is considered to be an appropriate level for districts with a rating population of less than 10,000 people. The aspirational level for all wastewater functions has been set at 65% (developing intermediate capacity). This reflects the low level of resourcing for this position (i.e. no in-house asset management team at present) and the smaller population base of Westland. Where some functions are already at or above 65%, the target has been extended by 5% reflecting the desire for continuous improvement in these areas. However, the key priority is addressing those functions of wastewater planning that are not yet up to full Core Maturity Level (i.e. below 60%). It is expected that these scores and appropriate targets will be reviewed in the LTP cycle.

12.3 Asset management capability

Council's main asset management improvement area identified was the limited in-house resource for this function. Internal asset management resources were set up in 2020/21 with the approval of three dedicated roles:

- Asset Manager
- Project Manager
- Asset Engineer

It is recognised that a formal Asset Management Steering Group needs to be established. This will be the responsibility of the new Asset Manager.

12.4 Service delivery

The LGA was amended in 2014 to include Section 17A requiring councils to review at regular intervals the cost effectiveness of all provision of local infrastructure, services and regulatory functions. These are normally conducted every three years during the preparatory work for the upcoming Long Term Plan.

Tonkin & Taylor was contracted in July 2019 to complete a service delivery review, consistent with the requirements of Section 17A, for all three West Coast Territorial Authorities for all three waters areas.

Their brief was to identify one or more preferred options to help the Councils effectively meet future delivery requirements in light of the pending three waters review. Council joined with Buller District Council and Grey District Council to cost-share on this project.

The preferred option from the S17A review for Council is to share procurement projects with the other West Coast councils.

12.5 Asset management systems and data

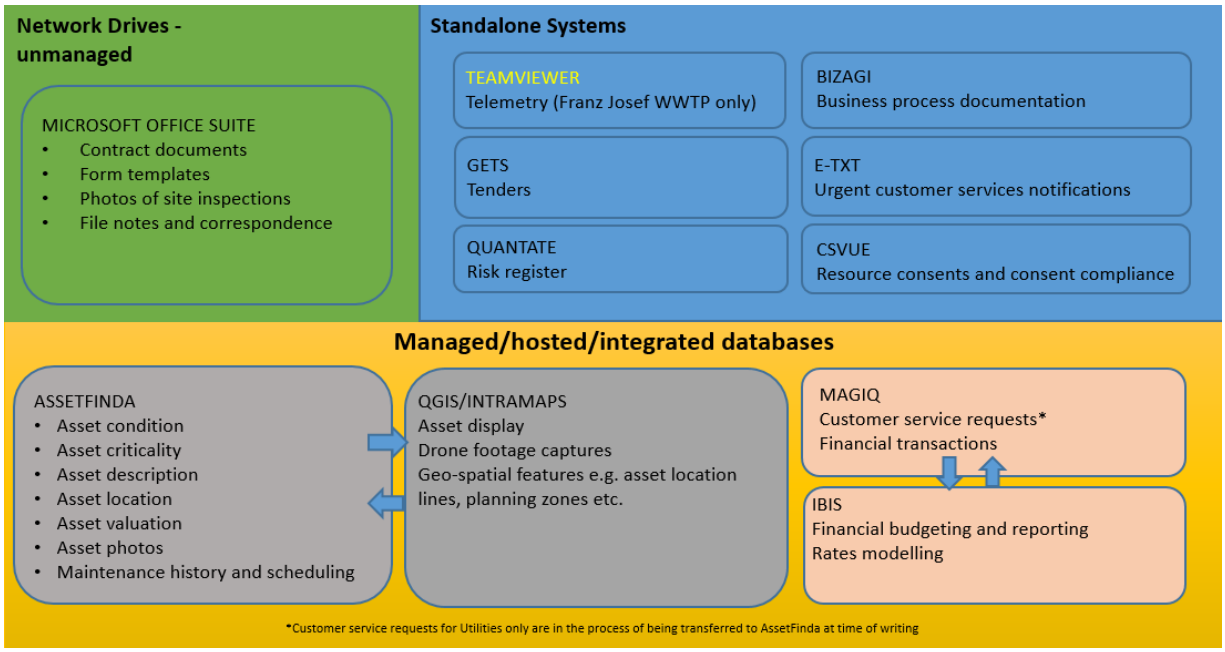
12.5.1 Information systems and tools

Council has a variety of systems and tools that support effective operation and maintenance and that record asset data. These are detailed in Figure 24 below. Many of these systems do not integrate well with others and Council is continually reviewing how to ensure all asset data is entered into the core asset management systems where possible. Where this is not achievable, attempts are made to integrate of link systems so they can be easily accessed. Inconsistencies have been noted by asset data held in Council's financials systems versus asset data held in Council's asset management systems and more cross-departmental work needs to be encouraged to ensure consistency.

In summary:

- AssetFinda is used as the primary technological system for AM. The GIS linked to AssetFinda is updated with alterations and/or additions to capital works. However, original hardcopies and electronic plans are also retained.
- QGIS is used by some staff as an interface through which to edit and update AssetFinda.
- Quantate software is used for Council's organisational risk register including governance and compliance risks.
- MAGIQ/NCS software holds customer requests and contains financial transaction information such as payment to creditors to debtors.
- IBIS software: financial budgeting and reporting is done in IBIS Breeze. This imports transactional informational from the MagiQ ERP system and makes sense of the figures to produce various reports. At the time of writing, the system was not fully operational and did not yet include projects reporting. IBIS Rates Modelling is used for rates and this also interacts with MagiQ.
- No formal process is in place for as-builts. However, these are generally saved against the property files and relevant contracts. A link is also added to AssetFinda through the QGIS interface by using the media button.
- Contract Files: Copies of all tender and contract documents are retained for each project. Unit rates from these tenders form the basis of the replacement costs recorded in the asset valuations.
- Operational Data: A number of parameters are constantly monitored (e.g. pump hours) and these records only need be referred to as part of specific performance investigations.
- Performance Records: The performance of key assets is regularly monitored, but not formally graded or classified.
- Council uses SCADA technology and can log in to plants remotely and view real-time data through TeamViewer.

Figure 24 Systems used for asset management



12.5.2 Asset data

Table 54 summarises the data accuracy and completeness of Council's wastewater asset information for physical assets.

Table 54 Asset data accuracy

		Asset condition	Asset performance	Data completeness	Overall confidence of asset data	Identified gaps
Wastewater	Point					Manhole depths and invert levels missing; performance data unreliable/missing
	Lines					Infiltration and inflow impacts undefined; performance data unreliable/missing
	Plant					Some plant equipment missing or believed to be duplicated in point category.

Key

A	Highly reliable data based on sound records, procedures, investigations and analysis, which is documented properly and recognised as the best method of assessment.
B	Reliable data based on sound records, procedures, investigations and analysis, which is documented properly but has minor shortcomings, for example the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation.
C	Uncertain data based on sound records, procedures, investigations and analysis, which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available
D	Very uncertain data based on unconfirmed verbal reports and/ or cursory inspection and analysis. Dataset may not be fully complete and most data is estimated or extrapolated.
N/A	Data does not exist or is not relevant

It is considered that asset age as recorded in AssetFinda is mostly accurate and complete. However, it is noted that condition and performance is not reported formally in order to update the asset management system.

12.6 Quality management

Audits, checks and reviews are carried out but are managed on a case-by-case basis. Table 55 below summarises the main quality management approaches to support Council's asset management processes. It also identifies gaps/deficiencies and proposed improvements to address these.

Table 55 Quality management approaches

Activity	Current Practice	Proposed Outcome
Asset creation	Asset Creation form to be filled in for Finance team. Assets separately created in AssetFinda database by District Assets staff.	AssetFinda to be single point of truth for all asset management including financial
Asset data integrity	Data is incomplete and not based on standard data dictionary.	Database to be cleansed and standardised with improved linkage for GIS outputs. Contractors to have more regular involvement in data assessment with maintenance contract process. Service Request information to have direct linkage with specific asset.
Asset valuations	Asset valuations are coordinated by Council Finance Department.	The various data improvements are key to improving the robustness of future valuations.
Capital Programme Delivery	Poor base information and assessment of why projects need to be carried out.	Project Priority Forms to be reviewed for work scope and budget. Potential delays are documented prior to funding being approved and each stage clearly structured. Business case prepared and approved before project progression and financial approval given.
Levels of Service	Key performance indicators are reported annually via the Council's Annual Report. This is audited by Audit New Zealand. Mandatory performance data and reporting is limited for some measures	Continue to report with greater levels of clarity. Set up systems and processes to measure real water losses and attendance to site times.
Operations	At present, the wastewater contractor is not formally audited. This is due to past vacancies in the three waters role within Council. Informal weekly Operations and Maintenance meetings are held with the contractor to ensure things are going smoothly and address any issues that arise.	In the next financial year, it is intended to start an annual formal audit process against the Preventative Maintenance Schedule outlined in the contract document. If the audit reveals that tasks have not been achieved, financial penalties may be applied to the contractor.

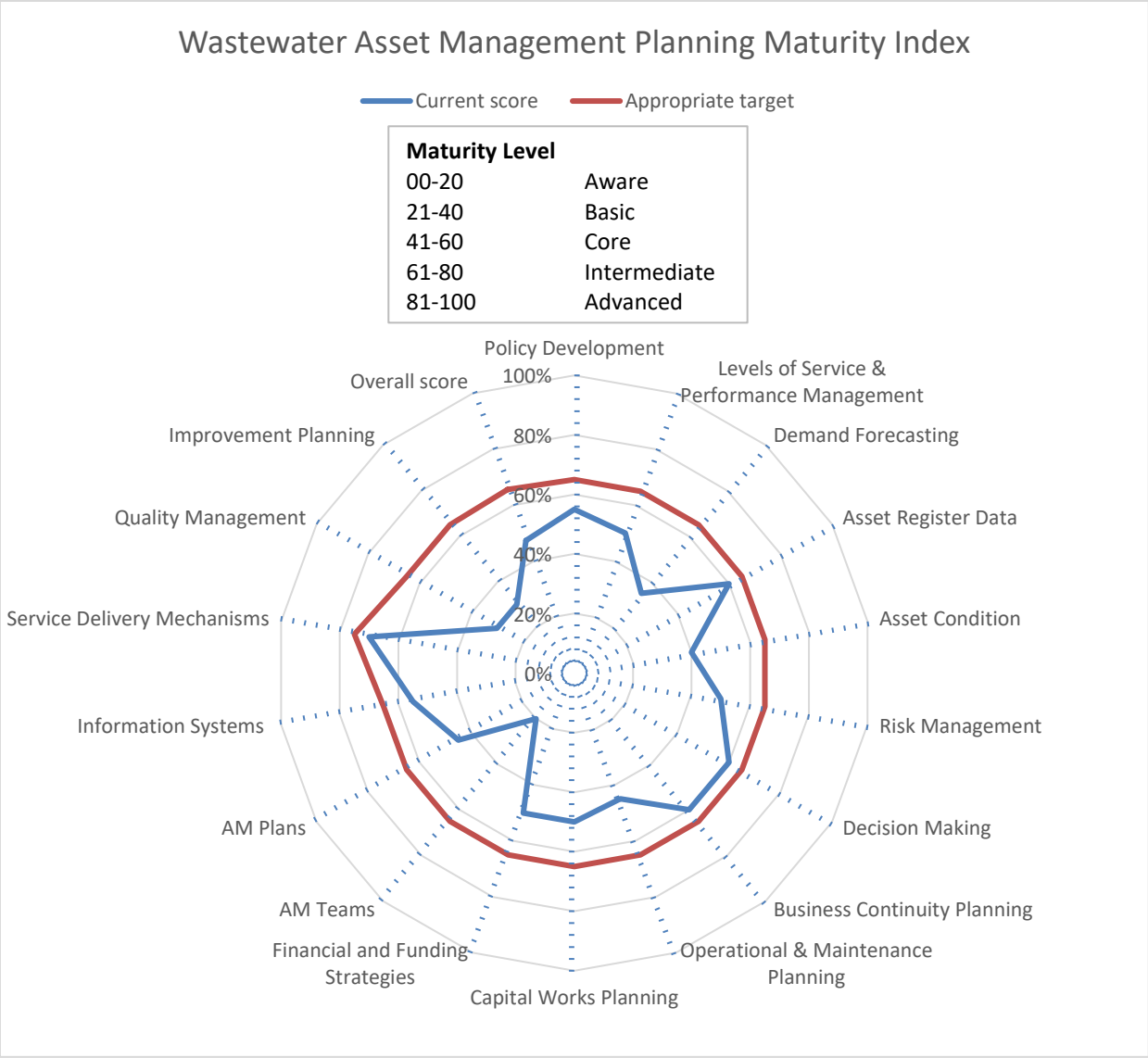
Section 13 Improvement Planning

AMPs require continual updating and improvements to ensure Council achieves the appropriate planning to manage assets on behalf of the community, deliver agreed levels of service and identify the expenditure and funding requirements of each activity.

13.1 Assessment of AMP maturity

A self-assessment of Council's AM maturity for wastewater based on IIMM definitions is shown in the spider map below.

Figure 25 Wastewater asset management planning maturity index (2020)



The graph above shows that overall score for wastewater AM planning is 47. The highest area is service delivery mechanisms (currently at 70%), while the lowest area is asset management teams (currently at 20%). The Current Gap is 17.6 with a current aspirational gap of 18.2.

The aspirational level for all wastewater functions has been set at 65% (developing intermediate capacity). This reflects the low level of resourcing for this position (i.e. no in-house asset management team at present) and the smaller population base of Westland. Where some functions are already at or above 65%, the target has been extended by 5% reflecting the desire for continuous improvement in these areas. However, the key priority is addressing those functions of wastewater planning that are not yet up to full Core Maturity Level standard (below 60%). It is expected that these scores and appropriate targets will be reviewed in the LTP cycle.

13.2 Peer review

Council's draft Quality Assurance Plan for the 2021-2031 LTP recommends consideration of an external review for AMPs. The LTP Steering Group agreed at its inaugural meeting on 4 December 2019 that all three waters AMPs would be peer reviewed.

Council engaged Morrison Low to undertake this work. The peer review was progressive to enable changes to be made during the plan preparation rather than at the end of the process. Their main recommendations for improvement for the Wastewater AMP are as follows:

- Overall plan:
  - The draft 2021 Wastewater AMP has addressed many of the recommendations identified with the draft Drinking Water AMP. This draft plan sets out the significant challenges for the wastewater activity well.
  - The Executive Summary presents the key challenges and sets the scene well. The Franz Josef wastewater scheme faces multiple significant issues, and this should be highlighted in the Executive Summary.
  - The draft plan provided for review still needs the financial forecasts to be included. It is important that the investment required is clearly articulated including the drivers and the consequences if the budgets are reduced.
  - The Improvement Programme will be very important for this activity. We have identified many actions through the review to help you prepare a complete programme.
- Plan structure:
  - Some of the recommendations to move sections have been adopted (i.e. moving the strategic sections to the front and moving technical section to the middle of the plan). This has helped the flow of the draft plan.

13.3 Improvement plan

Key improvement programmes and associated projects have been developed through a review of the gaps identified during the development of this AMP and the issues identified, and the peer review. The three year improvement programme is summarised in the following table.

Table 56 Improvement plan summary

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High/ Medium/Low)	Status (underway/ completed/deferred/ on hold/limited progress)	Indicative Timeframe		
							2021/22	2022/23	2023/24
1	AM Policy and Strategy	1.1	Review Trade Waste charges policy and introduce Trade Waste Bylaw.	Group Manager District Assets/ Group Manager Corporate Services	Medium	To start (new project added in)			
		1.2	Review the current Wastewater Bylaw.	Group Manager District Assets	Medium	To start (new project added in)			
		1.3	Adopt NZS 4404 as Council's formal engineering standard (to supersede its 1999 document).	Group Manager District Assets	Medium	To start (new project added in)			
2	Levels of Service and Performance Management	2.1	Consider start polling the community's expectations and satisfaction level on three waters activities.	Group Manager District Assets	Medium	To start (new project added in)			
		2.2	Develop a co-governance framework with iwi for handling waterways related issues.	Group Manager District Assets	High	To start (new project added in)			
3	Forecasting Demand	3.1	Monitor the tourist demand and impact on the wastewater activity with the pandemic lockdown.	Group Manager District Assets/ Asset Manager	Medium	To start (new project added in)			
		3.2	Install meters at WWTPs with continuous data for inflow and outflow using telemetry SCADA.	Operations Manager	Medium	To start (new project added in)			
		3.3	Develop a programme to undertake pump tests so variance between pump's duty rates and actual performance can be identified (until SCADA is implemented)	Operations Manager	High	To start (new project added in)			
4	Asset Register Data	4.1	Establish formal process for updating the asset inventory with as-builts.	Asset Manager	Medium	To start (new project added in)			
		4.2	Monitor and report on data accuracy and completeness to assess improvements and bed in good practices.	Asset Engineer	Medium	To start (new project added in)			
		4.3	Restructuring of asset information in AssetFinda system to ensure no duplications and to enable users to search accurately by filter. The initial focus will be on treatment plants as critical for the activity.	Asset Engineer	Medium	To start (new project added in)			

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High/ Medium/Low)	Status (underway/ completed/deferred/ on hold/limited progress)	Indicative Timeframe		
							2021/22	2022/23	2023/24
5	Asset Performance and Condition	5.1	Verify the asset condition of the critical wastewater assets (above ground).	Asset Manager	High	To start (new project added in)			
		5.2	Implement regular condition assessments and asset inspection programmes for non-critical assets (above ground). Inspection programme shall be about every three to five years.	Asset Manager	Medium	To start (new project added in)			
		5.3	Obtain reliable data on asset performance and update AssetFinda accordingly.	Asset Manager	Medium	To start (new project added in)			
		5.4	Develop a CCTV programme for below ground wastewater assets to better understand network condition.	Asset Manager / Operations Manager	High	To start (new project added in)			
6	Decision Making	6.1	Start to use asset criticality in operations as well as asset planning for renewals and new work decision making, as internal and external capability is built.	Asset Manager	High	To start (new project added in)			
7	Managing Risk	7.1	Develop an Emergency Response Plan for the wastewater activity as a priority.	Group Manager District Assets	Very high	To start (new project added in)			
		7.2	Update Quantate risk register for the wastewater activity. Use the high level findings for the next AMP.	Asset Manager	High	To start (new project added in)			
		7.3	Undertake the future climate change actions to ensure the wastewater activity is resilient to potential disruptions.	Group Manager District Assets	High	To start (new project added in)			
		7.4	Undertake risk assessments for reticulation and catchment for all schemes.	Asset Manager	Medium	To start (new project added in)			
8	Operational Planning	8.1	Review the Service Request process and system to ensure it is fit for purpose and can measure KPIs of attendance to site times for the mandatory performance measurement purposes.	Asset Manager	High	To start (new project added in)			
		8.2	Develop and document operational procedures for all WWTPs.	Operations Manager	Medium	To start (new project added in)			
		8.3	Develop mitigation measures and associated budgets to address unconsented discharges.	Operations Manager	High	To start (new project added in)			

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High/ Medium/Low)	Status (underway/ completed/deferred/ on hold/limited progress)	Indicative Timeframe		
							2021/22	2022/23	2023/24
		8.4	Start to consider and incorporate asset critically in operational planning activities.	Operations Manager	Medium	To start (new project added in)			
9	Capital Works Planning	9.1	Develop a risk based wastewater renewal programme based on performance, condition and taking into account criticality, material type, resilience and other factors, to be consistent with good industry practice.	Asset Manager	Very high	To start (new project added in)			
10	Financial Planning	10.1	None identified at this stage.						
11	Asset Management Leadership and Teams	11.1	Establish in-house AM team and resources to support future AM initiatives	Group Manager District Assets	High	Completed			
12	Asset Management Plans	12.1	None identified at this stage.						
13	Management Systems	13.1	Undertake the various quality management improvements to strengthen the underlying processes for the activity.	Asset Manager	Medium	To start (new project added in)			
14	Asset Management Information Systems	14.1	Review and improve Council/Contractor systems to ensure mandatory performance measures can be recorded (particularly response time).	Asset Manager	High	To start (new project added in)			
15	Service Delivery Mechanisms	15.1	Review the maintenance schedule in preparation for tendering of new Utilities Contract.	Group Manager District Assets	High	To start (new project added in)			
16	Audit and Improvement	16.1	Consider participating in Water New Zealand's national performance benchmarking to compare with water industry best practice.	Group Manager District Assets	Medium	To start (new project added in)			
		16.2	Establish a formal Asset Management Steering Group to provide oversight of the infrastructure activities.	Asset Manager	Medium	To start (new project added in)			

13.4 Improvement monitoring schedule

The following template is proposed to be used to drive improvement actions and reporting. The Asset Manager will be responsible in ensuring the review tasks are undertaken.

Table 57 Monitoring and review summary

Frequency	Review task	Action	KPI	Report name	Audience
Three yearly	AMP Development	Formal adoption of the plan by Council	100% Achievement	Council AMP Report	Council and Audit New Zealand
Annually	AMP Review (internal)	Revise plan annually to incorporate new knowledge from the AM improvement programme	100% Achievement	Internal Report	District Assets and Executive Team
Three Yearly	AMP Peer Review	The plan will be formally reviewed three yearly to assess adequacy and effectiveness.	100% Achievement	External Consultant Report	District Assets, Executive Team, Asset Management Steering Group & Audit New Zealand
Annually	Monitoring and Reporting	The KPIs identified in this table will be monitored and reported on annually through Annual Reports.	100% Achievement	Annual Report	General Public, Council and Audit New Zealand
Quarterly	Implementation of the Improvement Programme	Tracking the progress of implementing the improvement programme quarterly particularly of projects in the short term improvement programme.	100% Achievement	Quarterly Report	District Assets, Executive Team, Asset Management Steering Group & Council

Section 14 Appendices

14.1 Full level of service

Community Outcomes	Customer Outcomes	LOS Statement	Performance measure	Baseline results 2019/20 actuals	Current Year 2020/21 Target	2021/22 Target (year 1)	2022/23 Target (year 2)	2023/24 Target (year 3)	2024/25 to 2030/31 Target (years 4 to 10)	Measurement procedure
Resilient communities	Safety – public health	Council wastewater systems are managed without risk to public health	System adequacy ***(public safety***): The number of dry weather service overflows from Council's sewerage system per 1,000 connections.	Target 10 overflows per 1,000 connections. Performance – Achieved 1.8 overflows per 1,000 connections (including both dry and wet weather overflows, refer to note 1 below)	10 overflows per 1,000 connections.	10 overflows per 1,000 connections.	10 overflows per 1,000 connections.	10 overflows per 1,000 connections.	10 overflows per 1,000 connections.	MAGIQ
		Customers are generally satisfied with the Council supplied water	***Customer satisfaction:*** Measured conversely through number of reported incidents of dissatisfaction relating to: (a) Odour (b) Faults (c) Blockages (d) Responsiveness to dealing with complaints (Expressed per 1,000 connections to sewerage system)	Target Upper limit of 25 complaints per 1000 connections. Performance – Achieved (a) 4 (b) 7 (c) 13 (d) 2 Total number of complaints = 26 11.8 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	Upper limit of 25 complaints per 1,000 connections.	MAGIQ
	Responsiveness		Fault response times ***(responsiveness):*** (a) Service personnel attend the site within 2 hours of issue being reported to WDC (b) Block or fault resolved within 4 hours of issue being reported to WDC	Target 100% compliance with Department of Internal Affairs guideline times for odours, faults, blockages and response to complaints. Performance – Not achieved (a) No data for attendance times (b) 17% resolved within required timeframe (refer to note 3 below)	(b) 95% compliance (c) 90% compliance	(a) 95% compliance (b) 90% compliance	(a) 95% compliance (b) 90% compliance	(a) 95% compliance (b) 90% compliance	(a) 95% compliance (b) 90% compliance	MAGIQ
Sustainably-Managed Environment	Environmental sustainability	Council wastewater systems are safe and compliant	***Environmental performance:*** All necessary consents are in place, monitored accordingly and compliant.	Target 100% compliance i.e. zero abatement or infringement notices, enforcement orders or convictions received. Performance – Not Achieved One enforcement order (carried forward from 2017/18 year for Franz Josef wastewater treatment plant, refer to note 2 below)	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance	CSVUE

Note

1. Reported overflows includes all dry weather overflows as well as overflows where the amount of rainfall is unknown. An overflow is considered to be 'dry weather' in the absence of information to the contrary. This is because due to the variation in weather across the district on any given day, an overflow event is considered to be in fine weather unless specifically noted. It is considered good practice to record all wastewater overflow to indicate if there are ongoing issues with a particular line or if there is excessive stormwater infiltration in a particular part of the wastewater reticulation.
2. In March 2020 the Franz Josef WWTP met all the conditions outlined in the court enforcement order. The enforcement order for Franz Josef Wastewater Treatment Plant was carried forward from the 2017/18 year.
3. Council staff have reviewed the Service Request process and implemented a procedure where the request will require attendance times completed before the request be signed off as complete. This will be reported on in the 2020/2021 year.

14.2 Risk Register

Table 58 Wastewater risks

Risk Event	Probable Cause	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
Complete failure of reticulation and plant	Extreme Natural Hazard event e.g. Alpine Fault earthquake	*Current* Council Engineering and Civil Defence staff have previously been part of a West Coast Lifelines Group that assesses natural hazard vulnerability and shares information and planning with other key lifelines providers e.g. electricity scheme agencies etc. Council Engineering staff have previously been involved in AF8 (Alpine Fault Magnitude 8) meetings and workshops. *Proposed Future* Council to reconnect and continue involvement with these networks and workshops.	All	Rare	Catastrophic	**High**
Unforeseen failure of a critical network structure (e.g. pump station, rising mains)	Lack of routine maintenance and inspections	*Current* Routine maintenance and inspections are included in the maintenance contracts, e.g. flushing reticulation CCTV inspections *Proposed Future* Continued CCTV inspections	Service Delivery, Financial Reputational	Unlikely	Major	**High**
Premature deterioration or obsolescence of a non-critical asset	Lack of planned maintenance and renewal	*Current* Routine maintenance and inspections are included in the maintenance contracts. Performance measures documented in maintenance contract. *Proposed Future* To develop progressive forward works programme for aged infrastructure e.g. asbestos cement pipework replacement	Service Delivery, Financial	Possible	Minor	**Moderate**
Sub-optimal design and/or construction practices or materials	Outdated engineering practices	*Current* Engineering Standards and Policies document the desired levels. These are based on modern design and industry best practice and are specified in construction contracts. Professional services and construction contract specifications are peer reviewed as required. Tickets and certifications of staff and contractors must be up to date e.g. confined spaces permits etc. *Proposed Future* Ongoing staff training and professional development	Service Delivery, Financial, Reputational	Unlikely	Moderate	**Moderate**

Risk Event	Probable Cause	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
Ineffective stakeholder engagement	Cultural naivete	*Current* Iwi representation on Council was introduced in 2019 to increase engagement with the local Papatipu Rūnanga. *Proposed Future* Improved LTP project discussion and presentations to/with community	Reputational	Possible	Moderate	**High**
Failure to gain property access	Ineffective legislation	*Current* Negotiate with landowner to gain appropriate easements *Proposed Future* Public Works Act is back-up option	Strategic	Possible	Moderate	**High**
Growth greater than expected	Demand forecast is not	*Current* Census data is monitored *Proposed Future* Improve inter-departmental reporting of info to ensure subdivision and building consent data is fed into growth forecasts for each settlement area within Westland.	Financial, Service Delivery, Organisational Capacity	Rare	Moderate	Low
Prolonged power outage in excess of 12 hours	Emergency events or natural hazards	*Current* Emergency generators at some sites *Proposed Future* Provide emergency generators to all schemes	Service Delivery, Health and Safety	Likely	Minor	**High**
Inability to comply with necessary resource consents	Monitoring system failed to raise alarm as not fully operational	*Current* Has resulted in prosecution and reputational damage in past however those issues have been remedied and future instances (of same consequence) highly unlikely. *Proposed Future* Improved monitoring and contractor instruction.	Legal / compliance, Reputational	Possible	Minor	**Moderate**
Lack of availability of contractors and materials	Geographical and logistic limitations	*Current* Spread projects as much as possible and engage with contractors. *Proposed Future* Continue to improve robustness of contracts.	Organisational Capability, Service Delivery, Strategic	Rare	Major	**Moderate**
Poor or incomplete Asset Management Practices	Internal capacity and capability constraints	*Current* Establish additional in-house AM resources gradually. *Proposed Future* The draft 2021 Three Waters AMPs contain AM Improvement plans which aim to improve AM practices.	Organisational Capability	Possible	Moderate	**High**

Risk Event	Probable Cause	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
Member of public or contractor injured by falling into manhole	Insufficient hazard control	*Current* SOPs are adhered to during network operation to ensure manholes are not ajar. *Proposed Future* Identify repeatedly popping manholes and fitted with a safety device. Where physical works require manhole lid to be lifted, ensure personnel undertaking the works are responsible for site security and exclusion zone establishment.	Health & Safety	Possible	Major	**High**