



# Stormwater

## Activity Management Plan

2021-2031



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**Cover Photo:** Surface flooding on Weld Street, Hokitika on Friday 21 February 2020 after 40mm of rain received in a period of one hour.

## Document Control

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Authorised By	Group Manager – District Assets
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### ***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.*





*Photo of drowned loader as results of Franz 2016 flood event.*

*(Photo credit: D Inwood)*

## 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.
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.
ERP	Enterprise Resource Planning: integrated management of main business processes, often in real time and mediated by software and technology.
e-TXT	Internet service provided by Spark New Zealand that allows Council to send SMS text messages to customers from a web platform to communicate urgent updates.
GIS	Geographic Information System: a framework for gathering, managing and analysing data by creating layers of spatial location information to create maps, 3D scenes etc.
HIRDS	High Intensity Rainfall Design System
IIMM	International Infrastructure Management Manual is a global how to guide in terms of applying the standards for infrastructure asset management.
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.
KPI	Key Performance Indicator: a measurable target against which Council can evaluate the success of its delivery of Levels of Service standards.



Term	Definition
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 ten 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.
NAMS	National Asset Management Support, provides technical guidance and support for management of community and infrastructure assets.
NZWWA	New Zealand Water & Waste Association, precursor to Water NZ. NZWWA produced water infrastructure condition assessment guidelines.
PCBU	"Person Conducting a Business or Undertaking": broad concept used throughout the Health and Safety Work Act to define who has a duty of care in relation to health and safety.
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.
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.
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.
WCRC	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. Also, owner and manager of stopbanks and coastal erosion protection works.

## Section 1 Executive Summary

### 1.1 Introduction

Stormwater is the runoff of rainwater which requires management and disposal using various drainage systems. The stormwater activity protects people and property from flood damage. It also minimises the adverse effects of stormwater discharges into the lakes and waterways of the district. Westland District Council (WDC / Council) are responsible for 46km of pipelines and 1.5km of open drains and associated manholes and sumps.

This Stormwater Activity Management Plan (AMP) has undergone significant change since the previous edition due to changes and improvements in the knowledge based information and as a result of a number of significant rainfall events. These events provided learnings about factors influencing specific catchments and resulted in the development of an issues and options flood assessment for Hokitika including specific projects with selected design criteria.

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

- Implications of the Government's three waters reforms and changes to legislation are likely to result in higher standards for water treatment and compliance costs.
- Limited internal resources (capability and capacity) available for asset planning.
- The implications of the National Policy Statement for Freshwater Management 2020 on Council's water quality improvements.
- Higher intensity rainfall with shorter duration (due to climate change) impacting rural land upstream of communities and contributing to landslides and infrastructure damage/loss.

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 (LTP). 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.

Key achievements over the past few years have been the \$1 million upgrade of the pipe network, primarily in the Bealey and Rolleston Street catchment zones. A brand new super sump was installed in Tancred Street in May 2020 as part of a pump upgrade. Additionally, investigations of approximately 10% of the Hokitika network occurred over the last two years.

Most of the Hokitika urban stormwater system is under-sized for the rainfall events that occur in the district. The pipes typically are not being able to convey a 1 in 2 year rainfall event. This has resulted in frequent road and property flooding as well as occasionally affecting habitable dwellings.

There is limited understanding of overland flow paths and the carrying capacity of channels in the catchments. No reports have been received of incidents or concerns in regards to fast flowing or deep water in flood events. Further detailed catchment analysis is required to ensure habitable dwelling floor levels are protected from a 1 in 50 year event. Also required to ensure adequate information is held on property files to inform the public of risks associated with any land or buildings in these potential flood zones.



## 1.2 What we do

The only township with a recognised rating area for a stormwater network is Hokitika, which includes Kaniere. This includes piped network reticulation and pumping systems from a number of catchments and open channels.

This activity has a direct correlation in some townships with Waka Kotahi (NZ Transport Agency) roading assets, specifically State Highway 6 pipes, culverts and sumps. Other townships have stormwater assets such as piped reticulation, open channel and flood protection. These are generally funded and managed through either Waka Kotahi or West Coast Regional Council (WCRC) and/or Council general rates.

The following table summarises key components of the stormwater activity.

**Table 1 Key components of stormwater activity**

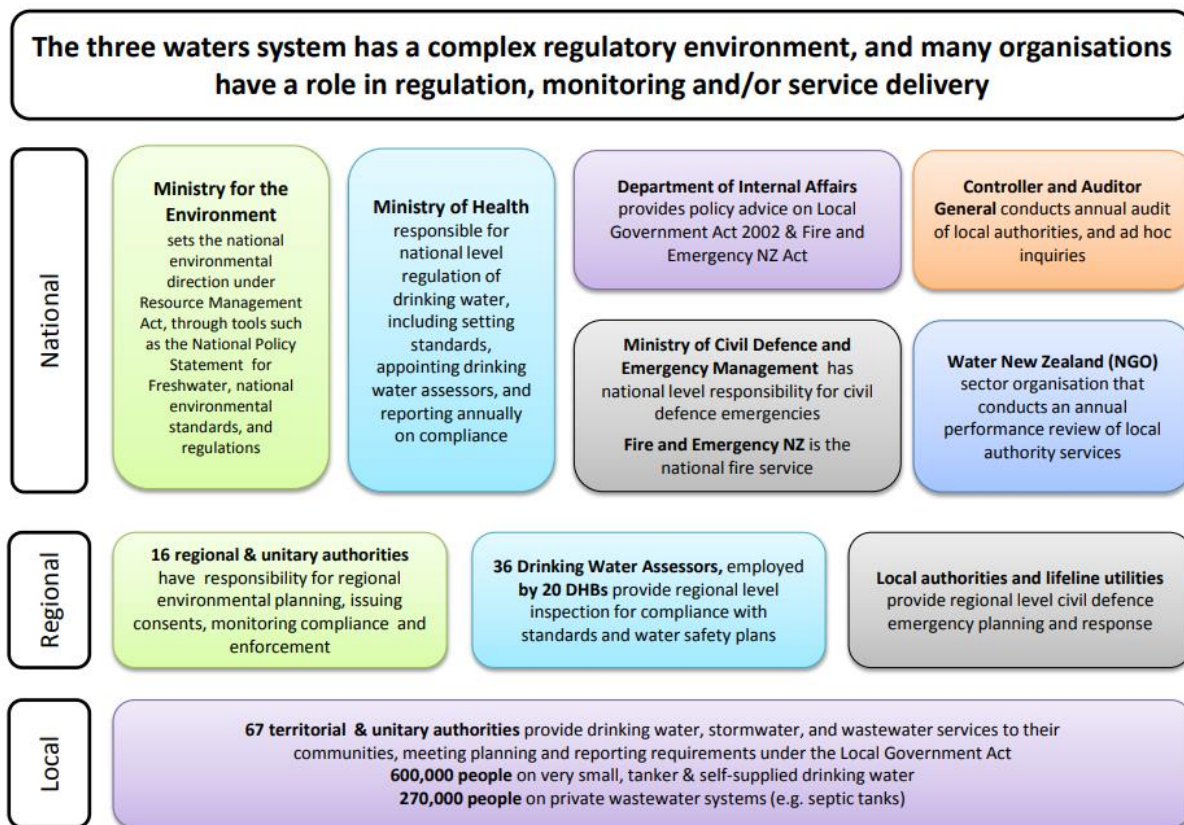
<b>Township</b>
<ul style="list-style-type: none"> <li>Hokitika (fully reticulated including Kaniere)</li> <li>All other townships (partially reticulated)</li> </ul>
<b>Reticulation Infrastructure</b>
<ul style="list-style-type: none"> <li>46km of pipelines (excluding service lines)</li> <li>361 manholes</li> <li>6 pump stations</li> <li>871 sumps (incl. Max &amp; Mega pit)</li> </ul>
<b>Other Stormwater Infrastructure</b>
<ul style="list-style-type: none"> <li>1.5km of open drains</li> <li>Additional sumps and catchpits are located in the road reserves and managed through the transportation activity</li> <li>Inlets / outlets</li> </ul>
<b>Population</b>
<ul style="list-style-type: none"> <li>Approximately 500 connections (Hokitika only)</li> </ul>

## 1.3 Why we do it

Stormwater must be managed to minimise the risk of flooding or inundation of buildings and property from surface flooding.

Figure 1 below shows the complexity of Three Waters delivery (including stormwater) 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

The current statements are included in Section 5 of this document and are linked to the Community Outcomes. Council has planned investments over the next ten years to upgrade the Hokitika stormwater network and to take action as required to continue activities to meet compliance with the resource consents for discharge and treatment as well as stormwater management.

Stormwater catchment modelling was completed based on new LiDAR (Light Detection and Ranging) following the June 2015 rainfall event at Hokitika that flooded a significant portion of low-lying areas. Determination of pump station capacities was completed to confirm the current level of service achievable and to set new levels of service. This is outlined in Section 8.7.

Council aims to provide a level of service that does not have adverse effects or degrade receiving waters, reduces risk to the community and property, and implement a strategy to ensure that best value for money is delivered to the satisfaction of the communities. Council has met all of the LOS targets except for customer satisfaction in 2019/20. It is expected that capital improvements will be required to meet the National Policy Statement for Freshwater Management 2020, and stormwater quality management.

## 1.5 Key issues

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

**Table 2** Key stormwater 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	<ul style="list-style-type: none"> <li>Continue to work with other West Coast councils on regional aggregation model</li> </ul>
Limited internal resources (capability and capacity) available for asset planning	<ul style="list-style-type: none"> <li>Build internal capability -By defining the optimum organisation design to meet shortfall including reviewing Recruitment Policy, determining match market remuneration, and developing training and retention programmes</li> </ul>
The implications of the National Policy Statement for Freshwater Management 2020 on Council's water quality improvements.	<ul style="list-style-type: none"> <li>Develop evidence based strategy and programmes to be more proactive in stormwater quality than our current practices, aligned with the new requirements</li> </ul>
Higher intensity rainfall with shorter duration (due to climate change) impacting rural land upstream of communities and contributing to landslides and infrastructure damage/loss.	<ul style="list-style-type: none"> <li>Allow for increase in rainfall intensity when designing new infrastructure</li> </ul>

## 1.6 Financial summary

The total projected expenditure for operations, maintenance and capital for the stormwater activity over the next ten years is \$12.8 million. Approximately 22% of this projected expenditure is capital expenditure, which equates to \$2.9 million. Renewals make up most of the capital expenditure followed by LOS projects.

The operational expenditure is approximately \$990k per annum. Table 3 provides a summary of the projected expenditure.

**Table 3** Financial summary – stormwater (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	\$881,312	\$925,433	\$957,902	\$7,144,043	\$9,908,690
Capital expenditure					
Renewals	\$584,900	\$237,400	\$157,400	\$918,800	\$1,898,500
LOS	\$287,500	\$60,000	\$0	\$510,000	\$857,500
Growth	\$20,000	\$10,000	\$10,000	\$70,000	\$110,000
<b>Total</b>	<b>\$1,773,712</b>	<b>\$1,232,833</b>	<b>\$1,125,302</b>	<b>\$8,642,843</b>	<b>\$12,774,690</b>

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

## 1.7 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 resources for AM then set up the basic building blocks needed.

The main improvement objectives to be achieved in the next three years due to their priority and importance for achieving core asset management status for the stormwater activity include:

- AM Policy and Strategy – Develop Stormwater Policy and Bylaw
- Performance management – Develop a co-governance framework with iwi for handling waterways related issues
- Data quality – Monitor and report on data accuracy and completeness to assess improvements and bed in good practices
- Asset condition – Verify the asset condition of the critical above ground stormwater assets (i.e. pump stations). Implement regular condition assessments and asset inspection programmes for above ground critical assets
- Managing Risk – Develop Stormwater Catchment Management Plans
- Renewal planning – Develop a risk based stormwater renewal programme based on condition and taking into account criticality, material type, resilience and other factors, to be consistent with good industry practice
- Quality management – Undertake the various quality management improvements to strengthen the underlying processes for the activity.

## Section 2 Introduction

### 2.1 Stormwater activity

Council is responsible for delivering stormwater service to communities within the district, and this includes the disposal of excess rainfall runoff from urban and rural areas by means of drainage systems including open channels, reticulated pipe networks and other structures. The stormwater activity protects people and property from flood damage. It also minimises the adverse effects of stormwater discharges into the waterways of the district.

Efficient and effective stormwater infrastructure is a key element in the sustainable and healthy development of a community. A developed stormwater network provides a safe and efficient means of collecting and conducting stormwater through townships. The district's stormwater network consists of approximately 46km of pipelines and 1.5km of open drains and associated manholes and sumps. Hokitika is the only township with a purpose built reticulation system while other townships are less developed.

### 2.2 Purpose

The purpose of developing this AMP is to ensure that the creation, operation, maintenance, repairs and replacement of Council's stormwater assets is managed in a cost-effective manner and provides 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 stormwater activity.

Stormwater management is considered to be one of the core public health functions of local government that Councils have always provided.

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

- Consistency with WDC's governing strategic plans, objectives and policies
- Alignment with WDC's other tactical plans
- Compliance with legislative requirements
- Demonstrates environmental responsibility
- Translating the needs of the community into agreed practical Levels of Service
- Providing a sound basis to justify funding requirements, now and in future years
- Deliver a basis for the development of Operational Plans and Contracts

This plan provides the information required for good Asset Management 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 Stormwater AMP covers all activities associated with the provision of stormwater 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

This activity has a direct correlation in some townships with Waka Kotahi roading assets, specifically pipes, culverts and sumps along State Highway 6. Other townships do have stormwater assets such as piped reticulation, open channel and flood protection but these are generally funded and managed through either Waka Kotahi or WCRC and/or Council general rates.

The following table summarises key components of the stormwater activity along with asset ownership:

**Table 4 Key components of stormwater activity**

<b>Township</b>
<ul style="list-style-type: none"> <li>Hokitika (fully reticulated, including Kaniere)</li> <li>All other townships (partially reticulated)</li> </ul>
<b>Reticulation Infrastructure</b>
<ul style="list-style-type: none"> <li>46km of pipelines (excluding service lines)</li> <li>361 manholes</li> <li>6 pump stations</li> <li>871 sumps (incl. Max &amp; Mega pit)</li> </ul>
<b>Other Stormwater Infrastructure</b>
<ul style="list-style-type: none"> <li>1.5km of open drains</li> <li>Additional sumps and catchpits are located in the road reserves and managed through the transportation activity</li> <li>Inlets / outlets</li> </ul>
<b>Population</b>
<ul style="list-style-type: none"> <li>Approximately 500 connections (Hokitika only)</li> </ul>

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

**Table 5 Summary of 2019 stormwater valuation**

<b>Stormwater</b>	<b>Optimised Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annual Depreciation</b>
Points	\$28,836,371	\$14,096,522	\$359,688
Lines	\$3,748,503	\$1,889,644	\$53,058
Plant	\$1,550,140	\$840,903	\$43,872
<b>Total Assets</b>	<b>\$34,135,014</b>	<b>\$16,827,069</b>	<b>\$456,618</b>

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

## 2.4 Key issues

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

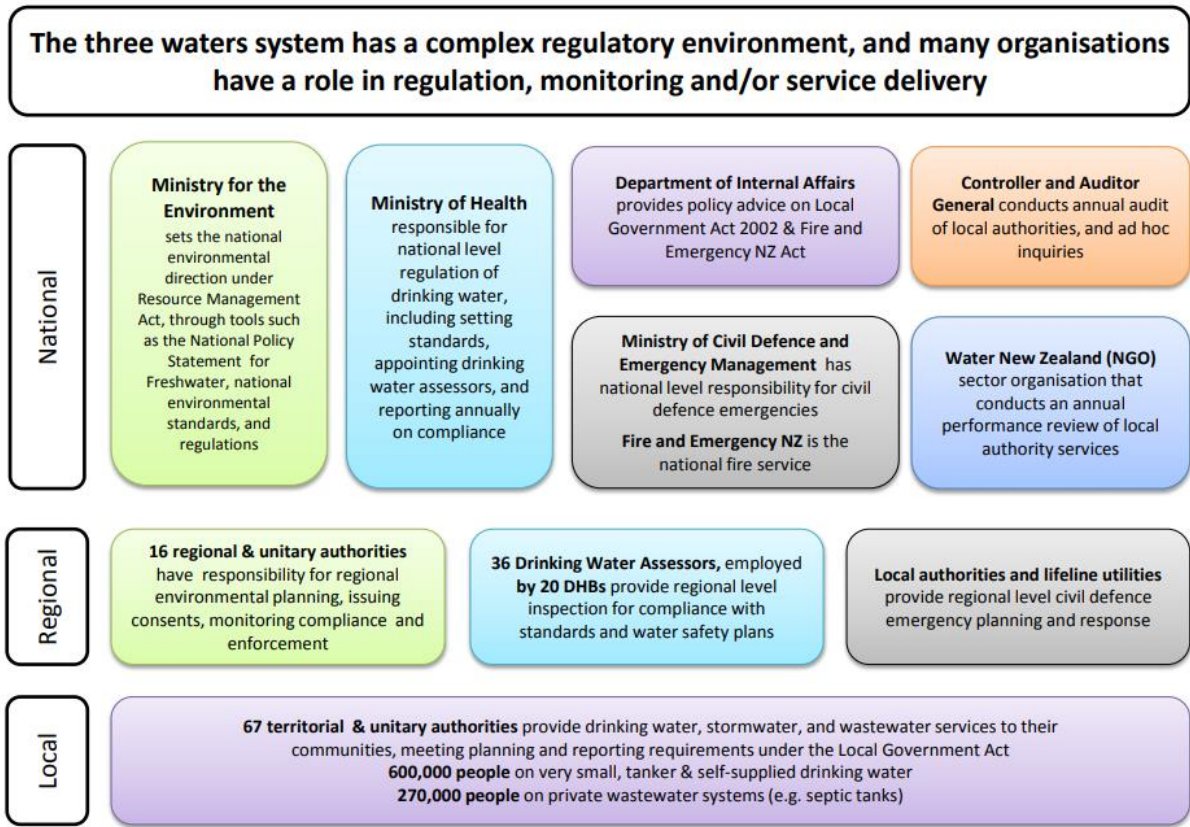


Table 6 Discussion and response to key issues

Key Issue	Discussion	Our Response	Refer to AMP section
<b>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</b>	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.	<ul style="list-style-type: none"> <li>Continue to work with other West Coast councils on regional aggregation model</li> </ul>	Section 4.2 Legislation framework
<b>Limited internal resources (capability and capacity) available for asset planning</b>	Internal resourcing focused on day to day operational activities. Difficult to attract and retain suitable candidates in a remote district.	<ul style="list-style-type: none"> <li>Build internal capability -By defining the optimum organisation design to meet shortfall including reviewing Recruitment Policy, determining match market remuneration, and developing training and retention programmes</li> </ul>	0 AM practices
<b>The implications of the National Policy Statement for Freshwater Management 2020 on Council's water quality improvements</b>	This will impact the conditions for the resource consent for the stormwater network.	<ul style="list-style-type: none"> <li>Develop evidence based strategy and programmes to be more proactive in stormwater quality than our current practices, aligned with the new requirements</li> </ul>	Section 0 Asset performance
<b>Higher intensity rainfall with shorter duration (due to climate change) impacting rural land upstream of communities and contributing to landslides and infrastructure damage/loss</b>	This has potential to cause widespread damage and flooding downstream to urban communities.	<ul style="list-style-type: none"> <li>Allow for increase in rainfall intensity when designing new infrastructure</li> </ul>	Section 0 Asset development Section 10.4 Climate change and resilience

The following figure shows the complexity of three waters delivery (including stormwater) 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. The strategic direction for Council’s AM function is set by the AM Policy and the 30-year Infrastructure Strategy. Our strategic objective is to reduce the impact of flooding in urban areas while meeting compliance with relevant environmental standards and agreed LOS. Refer to Section 4 (Key Linkages) for other documents and policies that guide the stormwater 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
<i><b>This means...</b></i>	<i><b>This means...</b></i>	<i><b>This means...</b></i>
<ul style="list-style-type: none"> <li>• We work to find sustainable, diverse and resilient options for encouraging economic growth.</li> <li>• Innovation supports diversity from traditional district industries and sustainable economic growth.</li> <li>• We collaborate with other stakeholders to achieve common outcomes.</li> <li>• Economic growth has a minor / reduced impact on the natural environment.</li> </ul>	<ul style="list-style-type: none"> <li>• The district is involved in sustainable waste management practices.</li> <li>• We support sustainable environmental practices.</li> <li>• We support strategies to enhance and protect the district’s ecosystems.</li> <li>• Development is sustainable, meeting the needs of the present without compromising the ability of future generations to meet their own needs.</li> </ul>	<ul style="list-style-type: none"> <li>• All areas of the district have access to quality recreational and cultural facilities.</li> <li>• A community that cares for all members at all life stages to reduce isolation and promote inclusion.</li> <li>• Communities less vulnerable to natural hazards and climate change.</li> <li>• All voices are enabled and heard, power is more evenly distributed, and the community can share its strengths.</li> </ul>
<i><b>This is measured by...</b></i>	<i><b>This is measured by...</b></i>	<i><b>This is measured by...</b></i>
<ul style="list-style-type: none"> <li>• Retention of residents in the district</li> <li>• Housing and employment for all life stages</li> <li>• Growth in small businesses</li> <li>• Growth in businesses outside of traditional Westland industries, i.e. technology based.</li> <li>• Fewer tourists who stay longer for high value activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Recycling increases and waste to landfill decreases.</li> <li>• Council meets central government environmental targets including three waters and carbon.</li> <li>• Zero tolerance for unsustainable and polluting practices.</li> <li>• Proactive planning around climate change.</li> <li>• Communities prepared for severe weather events and natural disasters.</li> </ul>	<ul style="list-style-type: none"> <li>• More opportunities for walking and cycling, connecting our communities safely and healthy.</li> <li>• Community participates in engagement and consultation opportunities.</li> <li>• Reduced social isolation.</li> <li>• Reduced crime and harm.</li> <li>• Community sees definitive action from local and central government after participating in engagement and consultation opportunities.</li> </ul>

The Stormwater activity has very 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. 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, it 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.

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### 3.4 Catchment Management Plans

The use of integrated stormwater management to protect the natural and built environment is a preferred strategy solution to ensure best practice outcomes are achieved through urban design. This can be accomplished by using techniques such as water sensitive (low impact) urban design and in-line treatment devices combined with good 1D and 2D flow analysis to typically remedy or mitigate any identified issues.

Council does not currently have Catchment Management Plans for its urban schemes, and it is recommended that these be funded for preparation and implementation prior to the next review of this AMP. There is however basic catchment information based on the 2015 LiDAR to determine impacts of areas worst impacted in the 2015 rainfall event at Hokitika. The development of Catchment Management Plans for Hokitika have been identified as an improvement action. Refer to Section 8.3 for stormwater scheme overview.

## 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 stormwater activity is summarised in the following table.

**Table 7** Legislative requirements

Key Legislation	Implications for the Activity
<b>Local Government Act (LGA) 2002</b>	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 stormwater) and assessing those options in terms of benefits and costs to current and future community wellbeing.
<b>Utilities Access Act 2010</b>	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.
<b>Railways Act 2005</b>	Places onerous responsibility on road controlling authority for maintenance costs in rural areas where no rating areas are established. A proportion of the stormwater reticulation in Hokitika is intertwined with railway drainage.
<b>Resource Management Act (RMA) 1991</b>	Describes Council's responsibilities to protect natural resources including land, air, water, plants, ecology and stream health. This includes avoiding, remedying or mitigating any adverse effect on the environment. In relation to stormwater, the RMA sets certain controls for the purpose of maintaining and enhancing water quality in water bodies and coastal marine areas including: <ul style="list-style-type: none"> <li>• discharges of contaminants into water and discharges of water into water</li> <li>• taking, using, damming and diverting water specifically: <ul style="list-style-type: none"> <li>– setting maximum or minimum water level flows</li> <li>– controlling the rate and range of changes to water level flows.</li> </ul> </li> </ul>
<b>National Policy Statement for Freshwater Management 2020</b>	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 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.
<b>Taumata Arowai Water Services Regulator Act (2020) and Water Services Bill</b>	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: <ul style="list-style-type: none"> <li>• Protect and promote drinking water safety and related public health outcomes</li> <li>• Effectively administer the drinking water regulatory system</li> <li>• Build and maintain capability among drinking water suppliers and across the wider industry</li> <li>• 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</li> </ul>

Key Legislation	Implications for the Activity
	<ul style="list-style-type: none"> <li>• Provide oversight of, and advice on, the regulation, management, and environmental performance of wastewater and stormwater networks</li> <li>• Promote public understanding of the environmental performance of wastewater and stormwater networks.</li> </ul> <p>A Water Service Bill will provide the regulatory system that Taumata Arowai will administer.</p> <p>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.</p> <p>Regional councils will continue to regulate wastewater and stormwater systems under the Resource Management Act – Taumata Arowai will be the watchdog.</p> <p>The Ministry for the Environment is developing a National Environmental Standard on Wastewater – setting new requirements for wastewater systems and discharge.</p>
<b>Public Works Act 1981</b>	Gives Council the statutory mandate to acquire necessary land for public infrastructure.
<b>Climate Change Response (Zero Carbon) Amendment Act</b>	<p>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.</p> <p>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.</p>
<b>Civil Defence Emergency Management Act 2002</b>	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.
<b>Health and Safety at Work Act 2015</b>	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.
<b>Te Tiriti o Waitangi – Treaty of Waitangi</b>	<p>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.’</p> <p>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.</p>

### 4.3 Key standards and guidelines

The primary documents that guide service standards for the stormwater activity are summarised in the following table. At present, Council does not have a Stormwater Bylaw, and this has been identified as an improvement action.

Table 8 Key stormwater standards and guidelines

Key standards / guidelines	Implications for the Activity
<b>Asset Management Policy 2019</b>	Outlines the approach to be taken by WDC when preparing or developing Asset or Activity Management Plans.
<b>Risk Management Policy 2011</b>	Policy about how to appropriately address and manage organisational risks.
<b>Engineering standards</b>	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).
<b>New Zealand Pipe Inspection Manual 3<sup>rd</sup> ed. (2006)</b>	A guide to completing wastewater and stormwater pipe inspections using CCTV.
<b>West Coast Regional Council Operative Land and Water Plan</b>	Applies rules and conditions to various activities concerning the Region's lakes, rivers, groundwater, wetlands, geothermal water and river and lake beds.
<b>Water New Zealand Best Practice Guidelines and Technical Documents</b>	Water New Zealand is a national not-for-profit sector organisation that provides best practice guidelines in the provision of stormwater. The guidelines include (but are not limited to) modelling, standards for treatment plants and water loss calculations, guides for occupational health and safety and underground utilities-seismic assessment and design guidelines.

### 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 9 Relevant strategic studies

Study Name	Network/Area	Brief description	Conducted by	Date of study
Hokitika Stormwater Flooding: Issues and Options Assessment	Hokitika	Catchment study with recommendations for improvements	MWH (Stantec)	November 2015
Jollie Street stormwater improvement	Hokitika	Investigate the causes of the stormwater problem identified in the upper section of Jollie St and provide an assessment of potential solutions	Stantec	June 2020
WCRC Flooding – Rapid Assessment	Hokitika	Property information regarding inundation/flooding events	West Coast CDEM, WCRC + WDC	Updated after each storm event when information is made available
LIDAR mapping	Hokitika	Showing properties below 0 metres (sea level), below 1 metre and below 2 metres	WDC	December 2019
Hokitika River Outfall Flap Gates	Hokitika	Outlet assessment and condition reported.	WDC & Westroads	2019

Study Name	Network/Area	Brief description	Conducted by	Date of study
West Coast Lifelines Vulnerability and Interdependency Assessment – Supplement 3: Storm Scenario	West Coast	Looks at physical results and damage to lifelines and other infrastructure in a 500-year rain and wind event storm	West Coast Civil Defence Emergency Management Group	August 2017
West Coast Lifelines Vulnerability & Interdependency Assessment – Supplement 12: Westland District Council Lifelines Assets	Westland District	A summary of Westland District Council’s transport systems, water supplies, sewerage schemes and stormwater systems and an assessment of their vulnerability to the following natural disasters: major earthquake, major rain and wind storm and a large tsunami.	West Coast Civil Defence Emergency Management Group	August 2017

## Section 5 Levels of Service

### 5.1 Our levels of service

A key objective of this plan is to match the levels of service provided by this activity with the agreed expectations of our customers and their willingness to pay for that 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 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.

There has been no specific research undertaken on customer expectations, other than customer feedback. There are good channels of communication between the community and the Council on stormwater or more specifically flooding aspects can be openly discussed. This can be in the form of debriefs after significant events as each incident is typically different to anything that has previously been experienced or minor stormwater/flooding issues that are raised by the community.

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 stormwater 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. With the current review of three waters by central government in progress, there is some uncertainty about future monitoring and compliance needs. Under the current regime, resource consents are held that assist in determining the level of service that is expected with volumes of discharge and quality discharged to the receiving environment. The only changes sought by the customer typically relate to reactive scenarios where a street, dwelling or property has become inundated during a rainfall event from either direct ponding or overland flow path impact.

Table 10 Service level summary

Community Outcomes	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 safety	Stormwater systems have the capacity to resist major storms and flooding events.	(a) The number of flooding events that occur in a territorial authority district. (b) For each flooding event, the number of habitable floors affected. Expressed per 1000 properties connected to the territorial authority’s stormwater system.	(a) 0 – No flooding events affecting habitable floors within the Council reticulated stormwater system. (b) Total habitable floors = 0 Per 1000 connections = 0 (refer to note 1 below)	(a) 2 (b) 10 per 1000	(a) 2 (b) 10 per 1000
Diverse Economy	Responsiveness	Requests for service are dealt with promptly.	<b>Response times:</b> The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site (1 hour).	There were no reported flooding events to attend.	100%.	90%
			<b>Customer satisfaction:</b> The number of complaints received by the territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority’s stormwater system.	Total number of complaints: 58 Complaints per 1000: 117.2 (refer to note 2 below)	10 per 1000	10 per 1000



Community Outcomes	Customer Outcomes	LOS Statement	Performance Measure	Baseline Results 2019/20 Actuals	Current Year 2020/21 Target	2021/22 Target (Year 1)
Sustainably Managed Environment	Sustainable – Environmental performance	Council reticulated stormwater systems protect the natural environment.	<b>Discharge compliance:</b> Compliance with the territorial authority’s resource consents for the discharge from its stormwater system, measured by the number of: (a) Abatement notices (b) Infringement notices (c) Enforcement orders, and (d) Convictions	100% compliance: Zero abatement or infringement notices, enforcement orders or convictions.	100% compliance	100% compliance

Notes:

1. No habitable floors were reported as flooded to Council. However, media reports for the flash flooding event in February 2020 note that two shops and a couple of sleep-outs may have had stormwater enter the properties.
2. The reason for the variation in number of complaints from previous years: following DIA guidance, each request is logged as a new complaint when the customer advises the original issue is unresolved. This is a process change from previous years.

## 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. There are interrelated issues including challenges with addressing flooding, NPS for Fresh Water Management (2020) and carbon emission.

LOS performance of Council's stormwater network is assessed in terms of capacity constraints (flood protection), customer satisfaction and meeting resource consenting requirements. Council has met all of the LOS targets except for customer satisfaction in 2019/20. It is expected that capital improvements will be required to meet the NPS for Freshwater Management 2020, and stormwater quality management.

### 5.2.1 Stormwater flooding

A rainfall event on the 18 and 19 of June 2015 caused widespread flooding throughout Hokitika and the neighbouring area. The storm event's magnitude was measured as one that could be expected to occur once every 100 years. The magnitude of this event is above most infrastructure drainage capacities in towns and cities in New Zealand. Council has subsequently engaged MWH (now Stantec) to undertake a desktop based stormwater assessment of several locals with known flooding issues. Figure 4 shows the rainfall data recorded at the Hokitika Airport Weather Station during the event.

**Figure 4 Rainfall depth, duration and frequency chart from Hokitika Airport Weather Station**

Source is K:\HILLTOP\Jun 2015 storm.hts										
Rainfall at Hokitika Rv @ Hokitika Aero										
From 17-Jun-2015 00:00:00 to 21-Jun-2015 21:30:00										
ARI	10 min	20 min	30 min	1 hour	2 hour	3 hour	6 hour	12 hour	1 day	2 day
2 year	5.7	9.9	13.7	22.9	32.4		56.3	78.2	105.6	130.5
10 year	10.3	16.5	21.7	31.3	44.2		75.3	111.7	146	179.4
20 year	12.3	19.4	25.2	35	49.2		83.5	126.1	163.5	200.4
50 year	14.9	23.1	29.6	39.7	55.7		94.1	144.8	186	227.6
100 year	16.8	25.9	33	43.2	60.6		102	158.8	202.9	248
200 year	18.8	28.6	36.3	46.7	65.5		110	172.7	219.7	268.3
This data	6.2	12	17.4	30.6	53.8	72.2	101.8	146.2	196.6	250.2
Time (hours)	0.1666667	0.3333333	0.5	1	2	3	6	12	24	48

The outcome of this assessment has formed the basis for Council's stormwater capital works programme for the 2018 LTP. The 2021 LTP has continued with this programme with additional improvements identified from the comprehensive Jollie Street catchment study in 2020.

Hokitika is the only township with a full stormwater reticulation system. Council has measures in place to respond to and minimise flood damage caused by stormwater to property. Council reports on the number of flooding events and the number of habitable floors affected by each flooding event for LTP reporting. The historical performance is shown in the table below. It is noted that the reported figures are only related to Hokitika and flooding in other townships is not currently recorded under the stormwater activity.

**Table 11 Number of historical flooding events and habitable floors effected**

Year	No. of flooding events	No. habitable floors effected
2019/20	0	0
2018/19	1	Total habitable floor = 3 Per 1,000 connection = 6.9
2017/18	0	0
2016/17	0	0

Source: Council's Annual Reports

When a flood event occurs, Council's levels of service is for service personnel to attend and assess the flooding within one hour of notification. Flood events are prioritised according to the following hierarchy:

**Table 12 Hazard type and priority level**

Hazard type	Priority level
Hazard to people	Top priority
Flooding damage risk to habitable properties	High priority
Nuisance surface flooding of roads etc	Medium to low priority

The majority of Council's existing primary stormwater network (pipes) is designed to cater for a 1 in 2-year rainfall event. During bigger rainfall events the capacity of these pipes will be exceeded, and stormwater will flow via overland flow paths towards the nearest stream.

There are a number of 'bubble-up' sumps throughout the district including Hokitika CBD. In some instances, they are inter-linked and underperform with the rain fall events experienced. This caused localised flooding and ponding that can remain for many days after the event. These intakes are ineffective as they cannot cope with many small rainfall events or storm surge in the CBD area. Council has identified a series of capital works to improve the network performance.

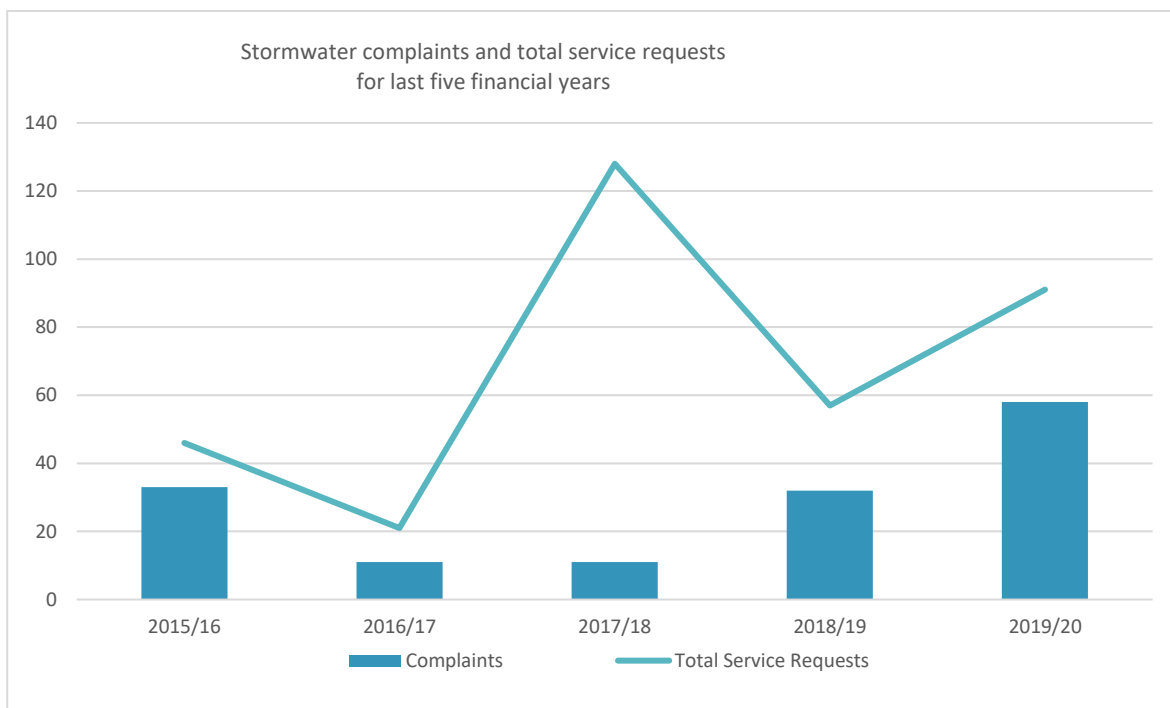
### 5.3.2 Customer satisfaction

Stormwater satisfaction is not measured through Council's biennial Residents Survey. However, each year stormwater system adequacy and stormwater customer satisfaction is reported in Council's Annual Report utilising the DIA mandatory reporting measures. The last three years of data show that Council has met the target measures for system adequacy (measured by number of habitable floors flooded). However, it has not met the targets for customer satisfaction.

Customer satisfaction or dissatisfaction seems largely driven by major rain events and the flooding that occurs as a result of this. With the expected increase in rainfall due to climate change, it is important that Council raises awareness within the community that overland flow paths are an important part of how stormwater is managed but that some nuisances (e.g. flooded roads and gardens in the hours immediately following a heavy deluge) may still occur.

The following graph shows the number of complaints received and the total service requests received over the last five financial years.

**Figure 5 Total complaints and service requests over last five years**



Council relies heavily on local residents to report known issues in order to provide an appropriate response. In some cases, Council is also aware of residents cleaning out rural culverts themselves in response to adverse weather events.

It is worth noting that Council frequently receives service requests outside the control or jurisdiction of the public system (e.g. issues with private properties receiving overland flows or private sumps being blocked).

The most common types of service requests lodged are related to:

- Flooding in street/surface flooding
- Ponding
- Blocked drains or sumps
- Reports of perceived system inadequacy, i.e. general complaints about poor drainage
- Missing grates or manhole lids
- Personal property flooding issues (not always under jurisdiction of Council)
- Tradespeople unable to locate services.

**5.2.2 The environment**

Council holds a stormwater discharge permit into the Hokitika River. This requires annual water sampling to be provided to the West Coast Regional Council, which is undertaken each year therefore meeting consent requirements. No infringement or abatement notices, enforcement orders or convictions have been received to date. Refer to Section 10.3 for more detail.

## 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 stormwater assets.

Council has a Consultation Policy and a Significance and Engagement Policy. This document outlines when, why and how we consult, what decisions we consult on and who we consult with.

Some of the key stakeholders Council consults or (more informally) liaises with for stormwater activities are:

- **Elected members and Council committees:** Tenders Committee and Operations Committee
- **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)
- **Stormwater customers:** Hokitika residential and commercial property owners.
- **Neighbouring Territorial Authorities:** Buller District Council and Grey District Council.
- Waka Kotahi
- KiwiRail
- Internal – Transportation and Finance team

### 6.2 Consultation

#### 6.2.1 Purpose of consultation and types of consultation

Consultation with the community serves the purpose of gaining a better understanding of customer expectations and preferences.

Council’s knowledge of customer expectation and stormwater preferences primarily is based on:

- Biennial formal residents survey undertaken by phone from independent research organisation (although this has not traditionally asked questions about stormwater)
- Alternate years’ online customer survey conducted by Council’s Strategy and Communications Officer
- Feedback direct from public via service requests, staff liaison with community groups or individuals or via elected members
- Levels of Service consultation on specific issues via the Annual Plan and Long Term Plan processes
- Periodic Mahitahi Roopu meetings (with representatives from Department of Conservation, Te Runanga Papatipu, West Coast Regional Council etc.)
- As-needed community consultation on specific stormwater issues
- Flooding patterns
- Feedback from advisory groups and working parties.

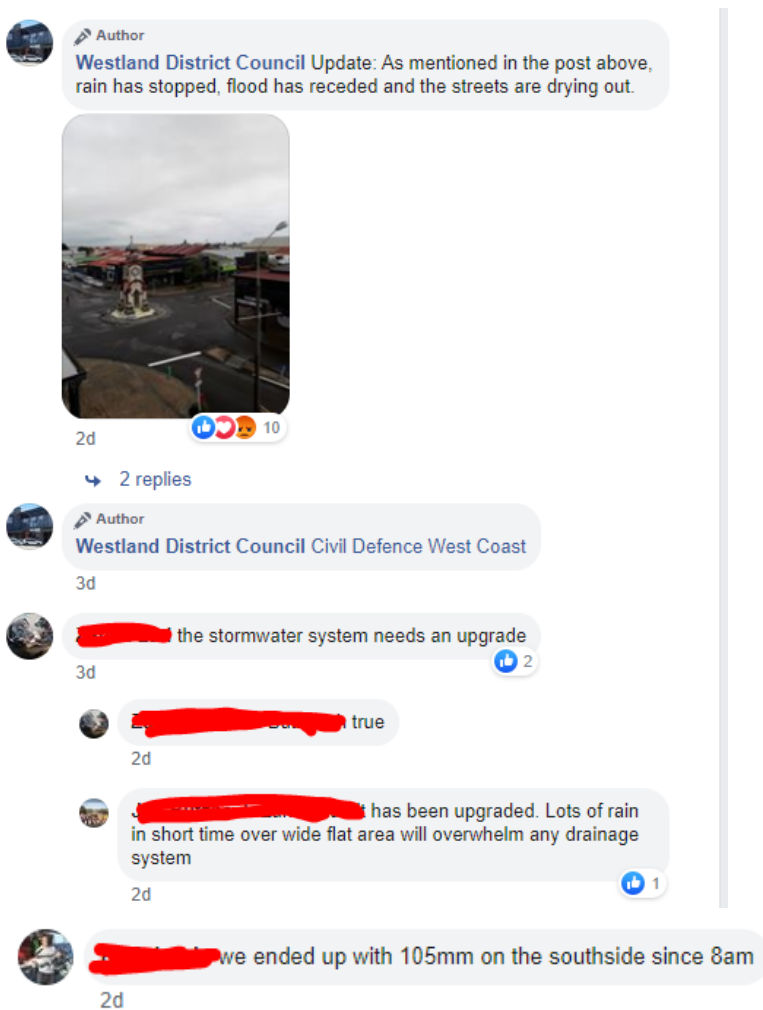
### 6.2.2 Consultation outcomes

In addition to formal consultation, better communication with the public regarding stormwater issues is strongly recommended, in particular to advise developers and their agents about any financial inputs or implications that may impact on the scheme.

The most recent NRB Communitrak™ Survey was undertaken in January and February of 2020. However, it did not seek feedback on Council’s stormwater services as the current KPI for stormwater measures customer satisfaction conversely through customer dissatisfaction, i.e. the number of complaints lodged in the service request system.

Informally, stormwater feedback is also received from comments on Council’s Facebook page. Figure 6 shows a sample screenshot of Council’s Facebook page.

Figure 6 Screenshot of Council’s Facebook page



## Section 7 Current and Future Demand

The ability to predict future demand for services enables Council to plan ahead and identify the best way of meeting that demand. That may be through a combination of demand management and investing in improvements as required.

### 7.1 Demand drivers

The future demand for stormwater services will change over time in response to a wide range of influences, including:

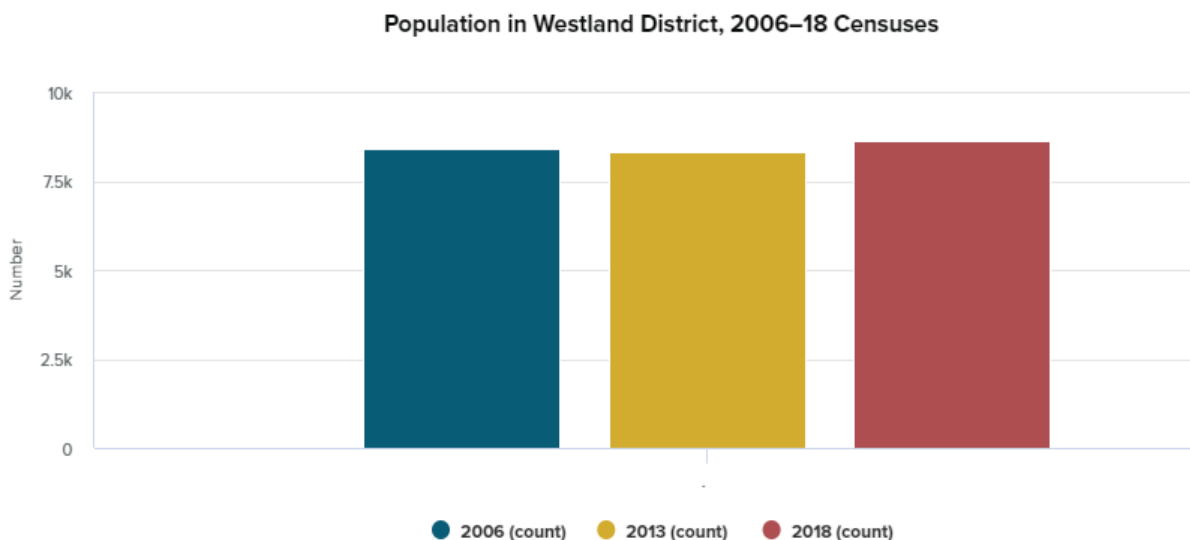
- Population trends/growth
- Development trends and economic growth
- Climate change and anticipated increased rainfall and sea level rise
- Changing national legislation and regional planning requirements

#### 7.1.1 Residential usage and population growth

Demographic changes such as an increase in population can impact the demand for stormwater services. Stormwater demand is linked indirectly to population growth with the creation of impervious or paved surfaces.

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 censuses.

Figure 7 Population in Westland District – 2006, 2013 and 2018 census



Source: Statistics New Zealand

Figure 8 below 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 8 Westland projected population 30 June 2013 – 30 June 2043



Source: Statistics New Zealand

### 7.1.2 Development trends and economic growth

Preliminary growth node observations based on trends seen in subdivision applications through Council’s Planning Department shows the following trends in the wider Hokitika area. New builds are taking place in the following areas: Takutai Terrace (Southside), Keogans Drive, Mehrtens Road and Providence Drive in Awatuna, Blue Spur from both the Brickfield and Arahura ends – including Brickfield Road, Cement Lead Road, Reg Cox Drive and Ballarat Terrace. Kaniere is experiencing large growth (by our District’s standards), especially on both ends of Pine Tree Road. Most of these areas are outside the Hokitika reticulated (and rated) stormwater zone.

At this stage, industrial patterns within Hokitika are mostly static. Major economic contributors are tourism (via accommodation and food services) and farming (via manufacturing activities such as through companies such as Silver Fern Farms and Westland Milk Products).

### 7.1.3 Climate change

The anticipated effects from climate change in Westland District include:

- An increase in seasonal mean temperature and high temperature extremes
- A significant increase in rainfall in winter and spring for the entire district and more extreme rainy days
- Increase in number of extremely windy days, potential change in wind direction with more Westerly winds in winter and spring
- Seasonal snow decrease, duration of snow cover at lower elevation will decrease significantly
- Some increase in storm intensity and thunderstorms (although minimal compared to rest of country).
- Franz Josef Glacier may retreat approximately five kilometres and lose 38% of its mass by 2100.

More detailed climate change predictions sourced from the Ministry for the Environment is in Section 10.4.

Climatic factors including rainfall, temperature and evaporation have potential to increase the likelihood of flooding issues and potential property damage and require Council to provide higher levels of service to the community.

#### **7.1.4 Changing legislation**

There is a national desire to move towards an integrated approach to urban stormwater management with a holistic approach to address values such as ecology, water quality and amenity. This approach will likely include water sensitive and low impact design as well as implementation of stormwater treatment, stream restoration.

Central Government initiatives drive reporting and compliance requirements for Stormwater. The Three Waters Review and Freshwater Management Reforms (pending at time of writing) are likely to introduce tougher criteria that councils will need to comply with.

### **7.2 Assessing demand**

#### **7.2.1 Current demand**

Demand for stormwater infrastructure is directly related to the creation of imperviousness and rainfall. Most areas of New Zealand have between 600 and 1600 mm of rainfall, spread throughout the year with a dry period during the summer. Over the northern and central areas of New Zealand more rainfall falls in winter than in summer, whereas for much of the southern part of New Zealand, winter is the season of least rainfall.

The climate of western South Island is greatly dependent on its exposure to weather systems from the Tasman Sea and the lie of the Southern Alps to the east. Although mean annual rainfall is very high, dry spells do occur, especially in late summer and during winter. Heavy rainfall occurs from the northwest.

Climate change directly impacts the stormwater activity in the following ways:

- More frequent and intense rainfall events which the primary stormwater network may not be able to cope with
- Flooding may occur when high rainfall coincides with high lake levels and outlets are blocked
- More erosion of stream, riverbeds and drainage channels. Systems will carry more debris and silt which will change the watercourse capacity and flows.

Figure 9 shows the mean annual rainfall of Westland locations compared with other New Zealand centres, and Figure 10 shows the median annual rainfall in Westland District over a 30 year period.

Figure 9 Mean annual rainfall of Westland locations compared with other New Zealand centres

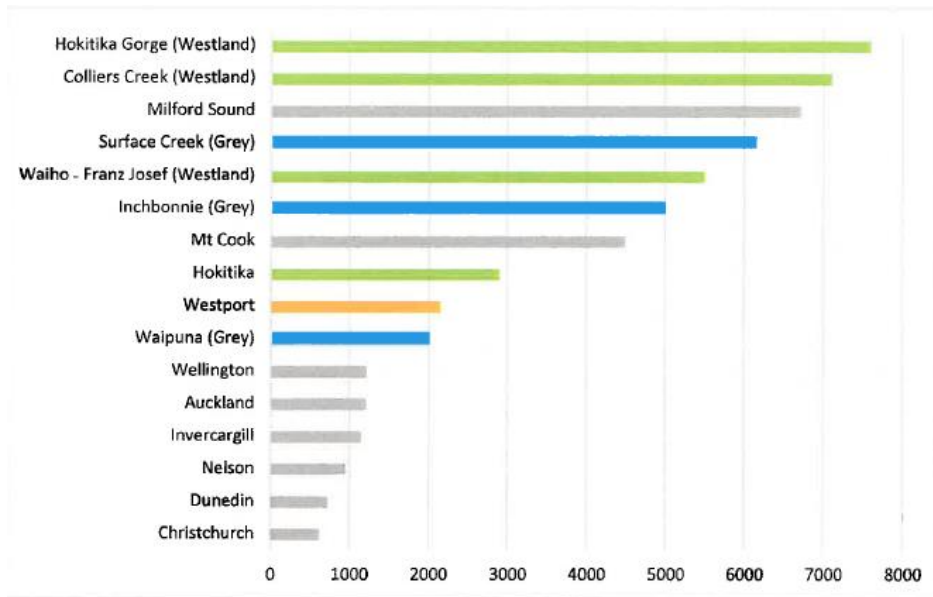
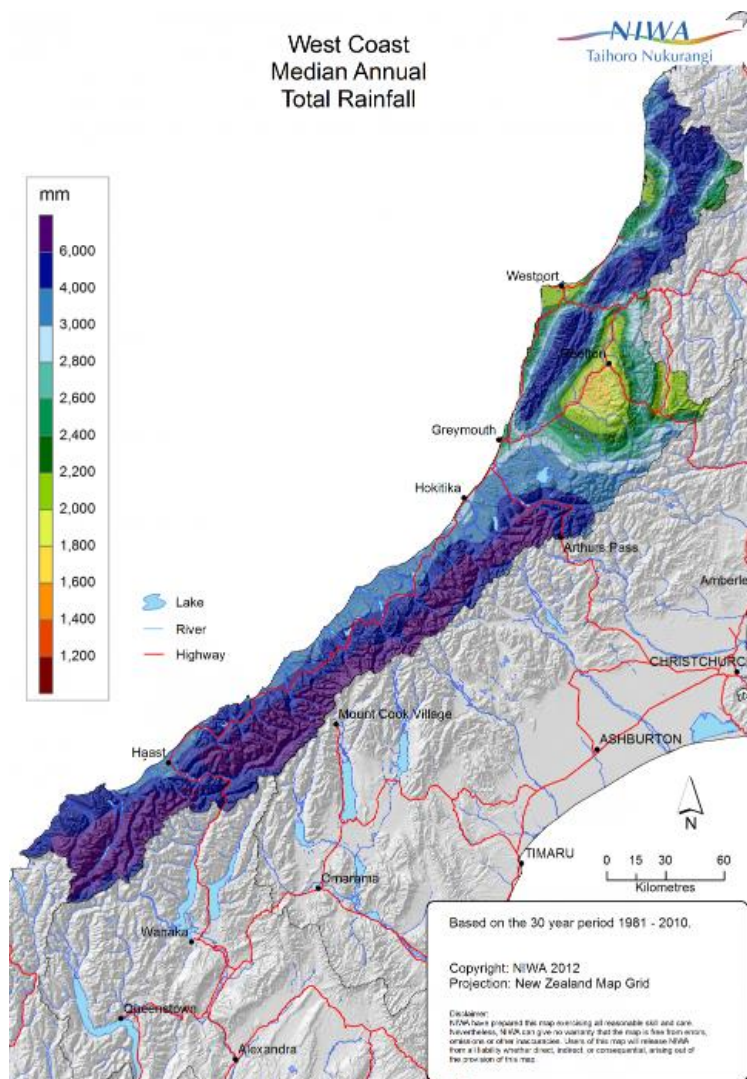


Figure 10 Westland median annual rainfall (over 30 year period)



## 7.2.2 Future Demand

Changes in weather patterns and climate change such as temperature and rainfall area already occurring. These changes will occur to different extent across New Zealand throughout this century and beyond. The MfE has stated that, based on the latest climate projections for New Zealand, by the end of this century we are likely to experience:

- Higher temperatures:
  - greater increases in the North Island than the South, with the greatest warming in the northeast
  - the amount of warming in New Zealand is likely to be lower than the global average
- Rising sea levels
- More frequent extreme weather events:
  - droughts (especially in the east of New Zealand)
  - floods
- A change in rainfall patterns:
  - increased summer rainfall in the north and east of the North Island
  - increased winter rainfall in many parts of the South Island

There will also be more frequent intense winter rainfalls. These are expected to increase the likelihood of rivers flooding, and flash flooding when urban drainage systems become overwhelmed

To identify future stormwater demands, Council uses the following tools:

- LiDAR data from West Coast Regional Council
- Records of flooding events.

Figure 11 Cropp rain gauge



Cropp rain gauge is the wettest in New Zealand at 12,000 mm per year. This is the upper catchment of Hokitika River.

### 7.2.3 Demand management

Managing Council's stormwater demand is not only about managing increasing future needs and expectations but is also about changes in behaviours and philosophy.

Council's current stormwater demand management programme is summarised in Table 13. It is acknowledged that there is a need to develop Catchment Management Plans to assist Council in identifying integrated solutions and manage competing needs.

**Table 13 Council's stormwater demand management programme**

Programme	Description
District Plan	The District Plan is the legal framework that Council uses for land use planning. The management of imperviousness areas is promoted along with appropriate stormwater management. It contains provisions governing stormwater and flood protection management, including implementing planning controls to limit future development in known problem areas that are too costly to solve.
Request for Service	Council provides on-going operational and maintenance support to properties within the stormwater areas of service. This helps reduce the amount of flooding and inundation.
Climate change planning	Our response to climate change includes building our knowledge based on latest thinking nationally and participating in forums where appropriate. We will continue to monitor trends in wet weather overflows as these may increase with more intense and frequent storms.

### 7.2.4 Assumptions

The key growth and demand assumptions are as follows:

- Population growth projections have been based on Statistics New Zealand census data.
- 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 Plan

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 stormwater activity.

### 8.1 Stormwater asset summary

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

**Table 14 Stormwater asset summary**

Stormwater asset class	Quantity
Pipelines (excluding service lines)	46km
Pump stations	6
Manholes	361
Sumps	861
Open drains	1.5km
Outlets	100
Inlets	64
Maxpit / Megapit	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”. Therefore, critical assets are those assets that are deemed essential to providing critical services in times of emergency (albeit at a reduced level of service), or assets that have an unacceptable consequence of failure.

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

**Table 15 Criticality ranking for stormwater assets**

Criticality ranking		Stormwater line assets	Stormwater point assets
<b>Most critical</b>	1 – Very high	Stormwater main – 900mm in diameter and greater	Outlets (if ø900 & over)
	2 - High	Stormwater main – 450mm to 900mm in diameter	Pump stations, Maxpit/ Megapit
	3 - Medium	Stormwater main – 150mm to 450mm in diameter, open drain	Inlets, manholes, sumps
	4 - Low	Stormwater main – 100mm to 150mm in diameter	
<b>Least critical</b>	5- Very low	Service connections	Blank cap, dummy node



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 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 Asset ownership

Table 16 provides an overview of the stormwater asset ownership within the district. Council has complete ownership over all stormwater assets inside the town boundary including assets associated with the State Highway. The management responsibility is shared between Council's Utilities and Transportation team. Waka Kotahi owns and manages the remaining assets along the State Highway.

There are three known that are owned and maintained by WCRC stopbanks (i.e. Gibson Quay and Beachfront in Hokitika and Havill Wall in Franz Josef). WCRC is also responsible for maintaining all other stopbanks within the district.

**Table 16 Stormwater asset ownership**

Asset	Ownership
<b>Hokitika (including Kaniere)</b>	
Stormwater Pump Stations	WDC – Utilities
Stormwater reticulation (including manholes etc.)	WDC – Utilities
Stormwater reticulation (including manholes etc. on State Highway <b>inside</b> town boundaries)	WDC – Utilities
Open drains – Five listed in the maintenance document	WDC – Utilities
Other open drains	WDC – Roading
Stormwater reticulation (including manholes etc. on State Highway <b>outside</b> town boundaries)	Waka Kotahi
Gibson Quay Stopbanks and Beachfront Stopbanks	WCRC
Wadenson Island drainage channel	WDC – Utilities
<b>Other Townships</b>	
Stormwater reticulation (including manholes etc. on State Highway <b>inside</b> town boundaries)	WDC – Roading
Other open drains	WDC – Roading
Stormwater reticulation (including manholes etc. on State Highway <b>outside</b> town boundaries)	Waka Kotahi
Havill Wall Stopbank	WCRC
Other Stopbanks	WCRC



### 8.3 Stormwater scheme overview

Hokitika is the only township with a full stormwater reticulation system. Road drainage from both local roads and State Highways (the latter administered by Waka Kotahi) exist in Kumara, Arahura, Ross, Hari, Whataroa, Franz Josef, Fox Glacier, Haast, Hannahs Clearing, Rimu, Kokatahi, Ōkārito and Neils Beach.

Arahura, Kokatahi, Ōkārito, Hannah’s Clearing and Neils Beach have predominantly open roadside street drainage systems. These are captured in the Transportation activity, including culverts.

The Hokitika Stormwater system is mostly gravity fed with a total of five major pump stations and one minor pump station. Stormwater outfalls discharge to the Tasman Sea, Hokitika River and waterways or land drainage systems with some, but very little, on-site soakage.

Figure 12 shows the map of stormwater catchments for Hokitika. The general trend is that the Hokitika catchments are governed by stormwater pipelines which typically drain laterally compared to Hokitika River - from higher ground near the airport to the river’s edge.

Figure 12 Map of stormwater catchment areas – Hokitika



Source: Hokitika Stormwater Flooding Issues and Options Assessment (MWH, November 2015)

Note: The catchment boundaries have since been updated in the Livingston St and Jollie St area

## 8.4 Asset information and condition

This section provides an asset summary of Council's major stormwater asset groups.

### 8.4.1 Reticulation network

The stormwater reticulation network consists of approximately 46km of stormwater mains, as illustrated in Table 17. Hokitika, being the only township with a full stormwater reticulation system, contains most (79%) of the district stormwater mains in length.

**Table 17** Length of stormwater pipeline by township

Township	Length of mains (m)	%
Fox Glacier	610	1%
Franz Josef Glacier	2,033	4%
Haast	627	1%
Harihari	1,573	3%
Hokitika	36,340	79%
Kaniere	1,616	4%
Kumara	1,238	3%
Ross	1,642	4%
Whataroa	265	1%
<b>Total</b>	<b>45,942</b>	<b>100%</b>

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

Table 18 outlines the length of stormwater mains by material type. Concrete is the most common pipe material followed by PVC.

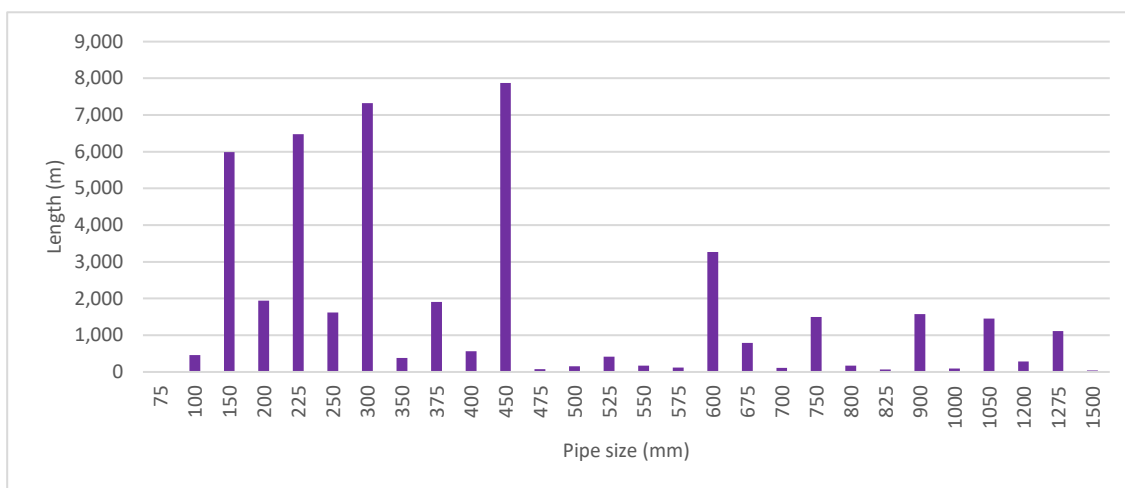
**Table 18** Length of stormwater pipeline by material type

Material type	Length of mains (m)	%
Ceramic	83	<1%
Conc	27,749	60%
EW	3,834	8%
GI	4	<1%
Open Drain	42	<1%
PVC	6,052	13%
RC	5,097	11%
RCFJ	646	1%
RCRR	1,041	2%
RCRRJ	422	1%
Stormboss	970	2%
<b>Total</b>	<b>45,942</b>	<b>100%</b>

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

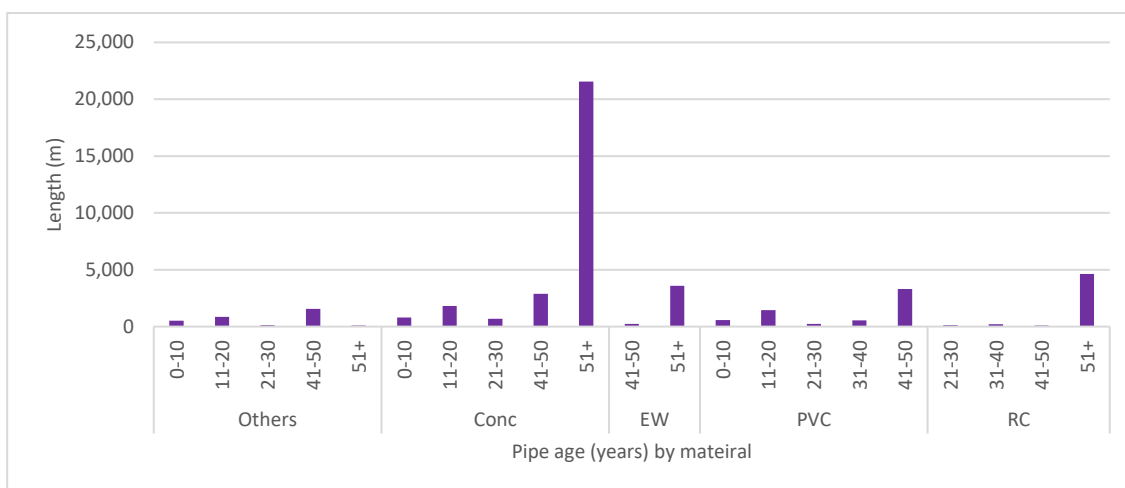
Figure 13 and Figure 14 show the pipe size and pipe age distribution, respectively. Most of these mains are less than 500mm in diameter. The majority of pipes are between 41 to 51 years old: this is approximately two third through their design lives.

**Figure 13 Pipe size distribution – stormwater reticulation**



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

**Figure 14 Pipe age distribution – stormwater reticulation**



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

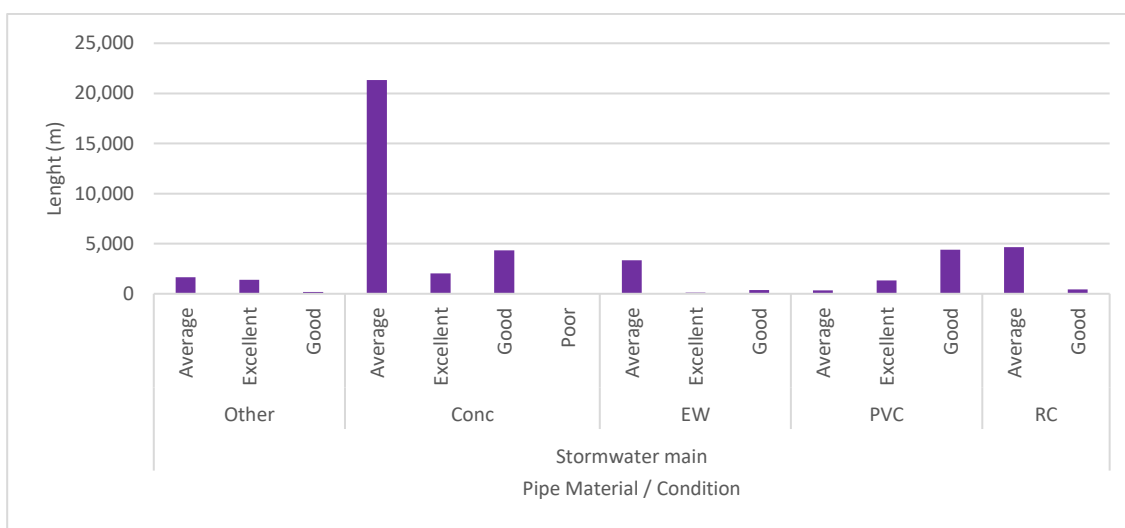
Traditionally the stormwater activity is mainly a reactive service compared to drinking water and wastewater activities. We have limited physical asset condition information and knowledge of our stormwater network. Condition surveys have generally only been undertaken in response to an issue. Currently, most of the asset condition information stored in AssetFinda has been derived from age. Table 19 and Figure 15 shows the condition distribution of stormwater pipeline. Only less than 1% of these assets are in poor condition.

**Table 19 Condition of stormwater pipeline**

Township	Length of mains (m)	%
Average	31,315	68%
Excellent	4,867	11%
Good	9,707	21%
Poor	53	<1%
Total	45,942	100%

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

**Figure 15 Condition of stormwater pipe by material**



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

Council’s stormwater assets and their age-based condition by geographic areas are shown in Table 20.

**Table 20 Age-based stormwater assets condition assessment**

Sub Group	Geographic Area	Age-Based Infrastructure Condition				
		Very Poor	Poor	Average	Good	Excellent
Pipelines	Fox Glacier			22%	77%	1%
	Franz Josef			26%	69%	5%
	Haast				98%	2%
	Harihari			97%	3%	
	Hokitika (includes Kaniere)		0.1%	75.4%	17.5%	7%
	Kumara			90.1%	9.4%	0.5%
	Ross			77%	23%	
	Whataroa			91%	9%	
Pump Stations	Hokitika	15%	3%	34%	48%	15%
Manholes	Fox Glacier			33%	67%	
	Franz Josef			25%	75%	
	Haast			100%		
	Harihari			100%		
	Hokitika			66%	20%	14%
	Kaniere			100%		
	Ross			100%		
	Whataroa			100%		

Source: AssetFinda age data (as at August 2020)

### 8.4.2 Stormwater channels

Council owns and manages approximately 1.5km of open drains. The majority (91%) of these assets are situated in Hokitika as outlined in Table 21. Table 22 show the condition of open drains, and more than two third of them are in excellent condition (derived from age).



**Table 21 Length of open drains by township**

Township	Length of mains (m)	%
Fox Glacier	26	2%
Franz Josef Glacier	30	2%
Harihari	6	<1%
Hokitika	1,401	91%
Kaniere	83	5%
<b>Total</b>	<b>1,547</b>	<b>100%</b>

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

**Table 22 Condition of open drains**

Condition	Length of open drains (m)	%
Average	497	32%
Excellent	1,044	67%
Good	6	<1%
<b>Total</b>	<b>1,547</b>	<b>100%</b>

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

### 8.4.3 Pump stations

Stormwater pump stations are required for the small local areas that cannot be served by the gravity system. There are six stormwater pump stations in the district, and all are currently active. All stormwater pump stations are situated in and serve the Hokitika township as shown in Figure 16.

**Figure 16 Map of stormwater pump stations – Hokitika**



#### 8.4.4 Manholes and sumps

Council owns and manages 361 manholes and 861 sumps across the district, as illustrated in Table 23. Hokitika contains the majority for these assets.

**Table 23** Distribution of manholes and sumps by township

Township	No. of manholes	%	No. of sumps	%
Fox Glacier	6	2%	44	5%
Franz Josef Glacier	32	9%	45	5%
Haast	2	1%	15	2%
Harihari	6	2%	21	2%
Hokitika	264	73%	617	72%
Kaniere	24	7%	44	5%
Kumara	15	4%	39	5%
Ross	8	2%	33	4%
Whataroa	4	1%	3	<1%
<b>Total</b>	<b>361</b>	<b>100%</b>	<b>861</b>	<b>100%</b>

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

Table 24 outlines the condition distribution of manholes and sumps respectively. Similar to other stormwater asset groups, the condition information is derived from age. Most of these assets are in good condition.

**Table 24** Condition of manholes

Condition	No. of manholes	%	No. of sumps	%
Average	224	62%	599	70%
Excellent	74	20%	129	15%
Good	61	17%	133	15%
N/A	2	1%	0	0%
<b>Total</b>	<b>361</b>	<b>100%</b>	<b>861</b>	<b>100%</b>

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

#### 8.4.5 Green infrastructure

There is a move nationally towards using green infrastructure for managing stormwater rather than traditional hard assets such as pipes and manholes. This slows down the stormwater flows as well as providing quality treatment, rather than the hard engineered assets. Historically we have installed kerb and channel in urban areas as part of our transport activity, and many of our communities expect this. We will work internally with our transport team and educate our community about this new stormwater management approach.

Stormwater is collected from private dwellings, commercial and industrial sites, parks and reserves, roading kerbs and catchpits. While Council owns the pipes which generate the discharges into the environment, there are many contributing partners, from households, commercial owners, Waka Kotahi and individual Council departments.

National legislative changes with the freshwater programme, three waters reforms and a general review has indicated that Council needs a strategy and a policy to manage stormwater to cover current and future improvements. These documents will be developed when the RMA changes and three waters regulations have clarified the legislative positions.

## 8.5 Asset performance

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

- Stormwater flooding and protection (refer to Section 5.2)
- Customer satisfaction (refer to Section 5.2)
- Consent status (refer to Section 5.2 and 10.3).

## 8.6 Operations and maintenance

### 8.6.1 Key maintenance and operational themes

Council’s operational and maintenance themes for stormwater are:

- Inspection, unblocking and repairs of the stormwater reticulation system
- Inspection and general maintenance of sumps
- Maintaining the flap gates adjacent to the Hokitika River
- Regular electrical and mechanical checks of pump stations
- Regular inspection and control of vegetation in open drains
- Removal of deposited gravels or sediment in drains and creeks and erosion protection as required
- Response to storm events and flooding

### 8.6.2 Key operational issues

The most important operation issues relating to stormwater are identified in Table 25. These are related to Hokitika only based on the Hokitika Stormwater Flooding Issues and Options Assessment completed by MWH in 2015.

Table 26 outlines the catchment issues that have been addressed since 2015.

**Table 25 Key issues by catchment- Hokitika**

Catchment Area	Network Issues
Hoffman Street	<ul style="list-style-type: none"> <li>• The low point of Hoffman Street does not have a suitable overland flow path to the river.</li> <li>• Ponding can develop to a depth above floor level for a number of houses.</li> <li>• Stormwater capacity needs to meet the 50 year LOS to protect floor levels as per Building Code.</li> <li>• The Hoffman Street pump station capacity exceeds the flow it can receive and hence it does not operate efficiently.</li> <li>• The overall catchment stormwater conveyance system is operating at less than 2 year LOS.</li> <li>• The 450mm and 600mm diameter pipelines are throttles to the performance of the pump station and stormwater system.</li> <li>• Ponding is likely to be increased from overland flows from Livingstone Street that get dammed by the Stafford Street road formation.</li> </ul>
Livingstone Street	<ul style="list-style-type: none"> <li>• Drainage from the low point of Livingstone Street is likely to be affected by river levels.</li> <li>• The low point of Livingstone Street does not have a suitable overland flow path to the river.</li> <li>• Ponding develops to a depth above floor level for a number of houses due to the crowns of the roads which are proud of the ground and prohibit overland flow paths.</li> <li>• Stormwater capacity needs to exceed the 50 year LOS to protect floor levels as per Building Code.</li> </ul>



Catchment Area	Network Issues
	<ul style="list-style-type: none"> <li>The Livingstone Street stormwater system does not have a pump station.</li> <li>The overall catchment stormwater conveyance system is operating at less than 2 year LOS.</li> <li>The existing pipeline in Livingstone Street flows at a high velocity to Stafford Street and then must reduce speed through the flat section of pipeline between Stafford Street and Weld Street. A hydraulic jump could occur inside the pipeline (depending on suitable flow rate and downstream water level conditions), surging the level of the water and exiting the pipeline through the sumps and manhole lids and open channel intakes into the Westland Milk Products site and their carpark area across the road.</li> <li>The flow from the steep section of Livingstone Street tends to discharge onto the surface low point of Livingstone Street before it is drained back into the pipeline.</li> <li>Ponding will be more frequent and deeper if other catchment areas spill towards the Livingstone Street low point which is shown in LiDAR analysis to be one of the lowest points in the area.</li> </ul>
Kaniere Road	<ul style="list-style-type: none"> <li>Existing pipes and sumps are not well maintained and have been observed to have sediments and leaves blocking the intakes and outlets</li> <li>The outlet channels towards the river are overgrown in places</li> <li>No flap gates observed on the river side of the pipelines. This allows high river levels to back up through the pipeline</li> <li>Council GIS information appears to be incorrect/incomplete in a number of areas, leading to lack of knowledge and lack of maintenance</li> <li>Existing pipes appear to be too high to drain some areas of the catchment</li> <li>Groundwater from the tailing areas can pond in localised low points and affect structures and property</li> </ul>
Richards Drive	<p>Richards Drive residents desire that the open drain on the north side of Richards Drive be piped. The issues appear to include:</p> <ul style="list-style-type: none"> <li>A large steep-sided catchment draining into a confined channel cross-section</li> <li>Small culverts compared to the open channel</li> <li>Services exposed across the channel</li> <li>The houses (true right bank) are a lower elevation than the road centreline (true left bank)</li> <li>Vehicle crossings not dished in the middle of the channel to allow overflows</li> <li>Maintenance issues, silts, vegetation, debris, rubbish</li> <li>Outlet maintenance at the beach</li> <li>Ponding of water onto property(s) reported during the 2015 storm event</li> </ul>

**Table 26 Other catchment issues that have been addressed since 2015**

Catchment Area	Network Issues
Bealey Street	<ul style="list-style-type: none"> <li>The existing 1500mm diameter pipeline provides a 20 year LOS for the large Bealey Street catchment. Water in this pipeline flows at a high velocity down the river terrace to Stafford St and Weld St, but then must reduce speed through the flat section of the pipeline between Weld Street and Gibson Quay. Under certain conditions a hydraulic jump could occur inside the pipeline, surging the level of water inside the pipe and exiting the pipeline through sumps and manhole lids around the Weld St intersection.</li> <li>The Bealey Street pump station is capable of providing a &gt;50 year LOS for the smaller Bealey Street catchment. The corresponding 450mm pipeline provides a 10 year LOS therefore limits the flows that are able to be pumped by the pump station.</li> <li>The low point of Bealey Street at the Weld Street intersection does not have a suitable overland flow path to the river. Ponding can develop above floor level for a number of houses (as evidenced by the June 2015 flooding event). Stormwater capacity needs to meet the 50 year LOS to protect floor levels as per Building Code requirement.</li> </ul>

Catchment Area	Network Issues
	<ul style="list-style-type: none"> <li>• Ponding that develops from surcharging of the 1500mm pipeline will be drained by the pump station, which is throttled by the 450mm diameter pipeline.</li> <li>• Ponding will be more frequent and deeper if other catchment areas spill towards the Bealey Street low point.</li> <li>• The pump station has only one pump, and it was reported that during the June 2015 storm event that there was a high number of pump starts. This supports the existing hydraulic systems assessment showing the pump can discharge significantly more water than it can receive from the gravity system.</li> </ul>
Rolleston Street	<ul style="list-style-type: none"> <li>• The low point of Rolleston Street does not have a suitable overland flow path to the river.</li> <li>• Ponding can develop above floor level for a number of houses (as evidenced by the June flooding event). Stormwater capacity needs to meet the 50 year LOS to protect floor levels as per Building Code.</li> <li>• The Rolleston Street pump station capacity exceeds the flow it can receive and hence it does not operate efficiently.</li> <li>• The overall catchment stormwater conveyance system is operating at less than 2 year LOS.</li> <li>• The 450mm diameter pipeline is a throttle to the performance of the pump station and stormwater system.</li> <li>• The existing 450mm diameter pipeline in Rolleston Street flows at a high velocity to Stafford Street and Weld Street [this section of pipe is <math>\varnothing 900\text{mm}</math>]. A hydraulic jump could occur inside the pipeline (depending on suitable flow rate and downstream water level conditions), surging the level of the water and exiting the pipeline through sumps and manhole lids.</li> <li>• The flow from the steep section of Rolleston Street tends to discharge into the low point of Rolleston Street before it reaches the pump station.</li> <li>• Ponding will be more frequent and deeper if other catchment areas spill towards the Rolleston Street low point which is shown in LiDAR analysis to be one of the lowest points in the area.</li> </ul>
Tancred Street	<ul style="list-style-type: none"> <li>• Sump intakes, pipeline and pumping capacity are all below the 2 year LOS. Ponding can be expected frequently on the road and potentially affect road users, pedestrians and building floor levels.</li> <li>• The existing stormwater system relies on the overland flow capacity of the Tancred St road cross section to pass the 10 year and 50 year runoff events to the Tancred St pump station.</li> <li>• Ponding will be more frequent and deeper if other catchment areas spill towards the Tancred Street pump station vicinity (which is shown in the LiDAR analysis to be one of the lowest points in Hokitika)</li> <li>• The sump capacity around the Tancred Street pump station is very low, and part of the catchment appears to divert to the Sewell Street pump station making it reliant on that pump station’s capacity to drain.</li> <li>• It will take a long time to drain surface ponding in the vicinity of the Tancred Street pump station.</li> </ul>

Of the issues identified above,

Table 27 shows the priority rating that has been assigned for the catchment areas assessed.

Table 27 Priority ratings

Catchment Area	Priority and Rationale
Tancred Street	HIGH: The current pipeline and pump station only has capacity for a one-in-two year flood event. (Pump being upgraded at time of writing).
Livingstone Street	HIGH: LiDAR analysis reveals this catchment to be one of the lowest points in town; current pipeline only has capacity for a one-in-two year flood event.
Kaniere Road	MEDIUM: Improvements may be needed but other projects have been identified earlier and been continually deferred so are a higher priority.
Bealey Street	LOW: Some work has been done on this catchment already in 2016/17 since the Stantec report recommendations. Additional work may be needed in future.
Hoffman Street	LOW: The current pipeline and pump station only has capacity for a one-in-two year flood event.
Rolleston Street	LOW: The former pipeline (which previously had capacity for a one-in-two year flood event) has been upgraded. Meanwhile the pump station has capacity for one-in-five year storm event.
Richards Drive	LOW: Project considered not a necessity but an option.

### 8.6.3 Maintenance contract

The operation and maintenance of the stormwater network is part of the Westland District Utilities (3 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 reforms from Central Government, it was extended again to avoid letting a new tender and then needing to make potentially costly variations to contract. It now expires on 30 June 2021. Council intends to go to the market with revised work scope.

### 8.6.4 Maintenance strategies

Maintenance works can be broken down into reactive maintenance and routine maintenance. Reactive work refers to corrective work carried out in response to reported problems and defects with the stormwater network. Council's reactive maintenance activities for stormwater include:

- Response to all work orders
- Repair and resolution of faults on stormwater mains
- Investigating and resolution of customer complaints in relation to flooding and blockages
- Repairing damaged stormwater assets
- Repairing damage to any part of the stormwater system by a third party (e.g. another contractor)
- Communicating with residents when reported issues are their own responsibility
- Obtaining asset data and reporting results that are accurate and usable
- Response to major events and emergencies.

Routine maintenance is generally more proactive in nature. Some of the main activities carried out under routine maintenance are captured in

Table 28.

**Table 28 Summary of routine maintenance activities**

Frequency (indicative)	Maintenance Activities (Check or Report)
Weekly or several times a week	Weekly maintenance programme includes: <ul style="list-style-type: none"> <li>• Pump station checks (3 X weekly)</li> </ul>
Quarterly maintenance	Check and clean flap gates
Six Monthly Maintenance	Inspect and clear open drains as listed in Contract
Annual maintenance/checks	Annual maintenance programme includes: <ul style="list-style-type: none"> <li>• Electrical checks on pump stations</li> <li>• Clean out pump chambers</li> <li>• Inspect and clean all sumps</li> <li>• Inspect and clean all manholes</li> </ul>

### 8.6.5 Historical operations and maintenance expenditure

The historical operational costs are summarised below for the last three years. The large operational cost in 2018/19 was due to CCTV inspections in Hokitika in response to the major storm event.

**Table 29 Historical stormwater operational costs**

Township	2017/18	2018/19	2019/20
Hokitika	\$37,054	\$179,118	\$67,153

### 8.6.6 Forecast operations and maintenance expenditure

The operations and maintenance expenditure covers all day to day activities that are required to manage the stormwater activity. Based on historical spent, it is proposed that a maintenance budget of \$163k per annum would be sustainable for Council going forward.

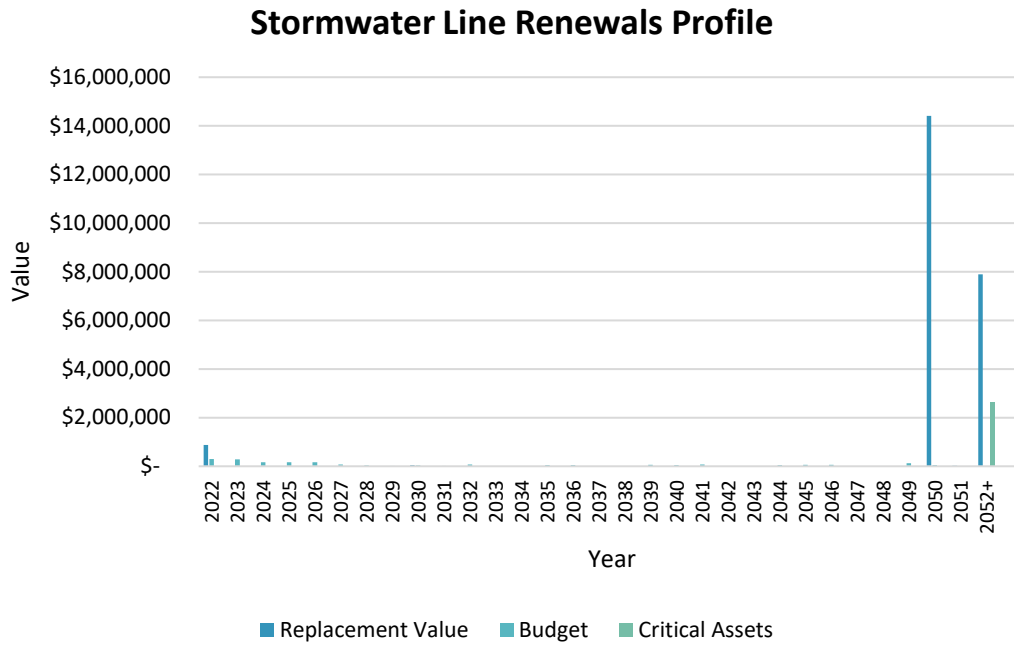
## 8.7 Asset renewal/replacement

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. It is recognised that a proportion of the improvement projects can be attributed to renewals.

### 8.7.1 Key asset replacement themes

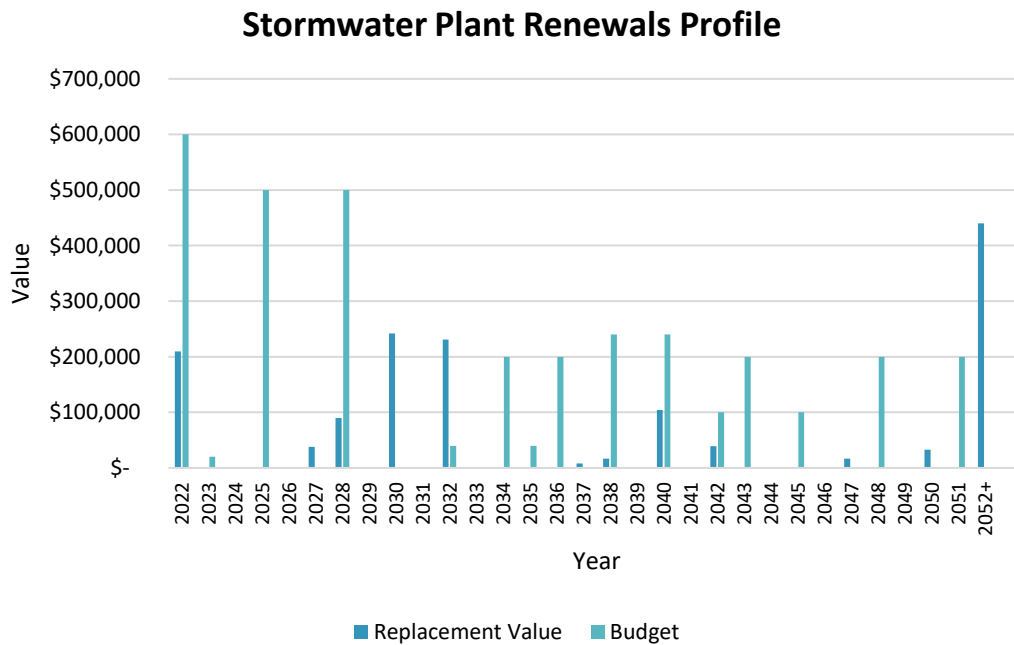
Asset age, condition and performance is the primary consideration for determining asset end of life cycles driving the asset replacement programme. The asset criticality level is also considered when deciding which assets are a higher priority for replacement. The following figures show the renewal profile for stormwater pipeline and plant assets based on age.

Figure 17 Stormwater line renewals based on age versus planned budget



Source: AssetFinda age data (as at August 2020)

Figure 18 Stormwater plant renewals based on age versus planned budget



Source: AssetFinda age data (as at August 2020)



### 8.7.2 Asset replacement strategies

Assets are considered to need replacement when:

- there are health and safety concerns
- they are now undersized due to development surrounding the asset
- 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 is committed to improve the drainage systems with an aim to have all drainage systems upgraded to have capacity to deal with a one-in-10-year storm event with various considerations based on whether an overland flow path exists. Neither primary nor secondary overland flow paths have been formally mapped, although 2015 LiDAR is being used to identify low-lying properties that may be susceptible to ponding.

Recommendations from Stantec (formerly MWH) advised improving the capacity of most pump stations to deal with at least one-in-50 year flood event with the exception of Tancred Street (one-in-ten-year capacity). Council is assessing their recommendations while noting the ability to downgrade this in zones of lower priority).

**Table 30 Summary of pump and pipeline capacity and recommended improvements – Hokitika**

Zone	Current Capacity (no. year flood event)		Desired Future Capacity (no. year flood event)	
	Pump Station	Pipeline	Pump Station	Pipeline
Tancred Street	<2 yr	<2 yr	10 yr	10 yr
Rolleston Street	<5yr	<2 yr	50 yr	50 yr
Livingstone Street	N/A	<2 yr	50 yr ( pump station to be installed)	50 yr
Hoffman Street	<2yr	<2 yr	50 yr	50 yr
Bealey Street (pump station)	>50yr	10 yr	50 yr	50 yr
Bealey Street		20 yr		50 yr
Richards Drive		10-100 yr (culvert)		50 yr (pipeline to be installed)

Source: Hokitika Stormwater Flooding Issues and Options Assessment (MWH, November 2015)

### 8.7.3 Forecast renewal expenditure

In Summary, the planned stormwater renewals are about \$180k per annum (on average over ten years). Refer to Section 9.4 for financial details.

#### 8.7.4 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 \$190k per annum is approximately less than half of the annual depreciation of \$457k. Given the overall good condition of the stormwater assets, wastewater renewals will be a focus of Council for the next ten years as these assets require accelerated investigation and increased investment. Council will continue to monitor the stormwater renewal needs.

The renewal forecasts provided in this plan are based on age derived condition as recorded in our asset management system. This shows that many of the stormwater assets expiring from year 2051. This will not be the case in practice as most pipelines are made of concrete material and will generally last longer than their theoretical lives.

We will focus on gathering evidence on the state of our critical stormwater assets to inform the development of risk based renewal programme as good industry practice. This will result in a renewal programme over many years rather than in a short period as currently shown. It is expected that most of the renewals will be undertaken beyond 2051 (outside the period of this 30 year strategy).

There may be implications on maintaining the levels of service as well as increased costs for unplanned maintenance with assets failing. This is mitigated by:

- Ongoing monitoring of the achievement on meeting the performance measures as set out in our Stormwater Activity Management Plan and against acceptable industry benchmarks
- A proactive regime is being developed to monitor the proper balance between planned and unplanned maintenance expenditure to understand trends overtime with our increased internal resources as well as our Network Maintenance Contractor.

#### Tancred Street Pump Upgrade – May 2020

Council is in the process of improving the Tancred Street pump station, with work expected to be completed this financial year (2020/21). The project will increase the level of service for this pump station from a 2-year event to a 10-year event. As recommended by consultants Stantec, the 450mm pipeline along Tancred Street to the Gibson Quay has been diverted to the pumping station. The next stage was for a high capacity sump to be installed outside the low point junction of Hamilton and Tancred Streets which was completed in June 2020. The two larger 50kW pumps, doubling the capacity, are expected to be installed by November 2020. The benefits of this project included better resilience within the catchment area and reduced surface flooding in certain areas of the CBD.



Table 31 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	\$359,688	\$313,576	\$189,850
Points	\$53,058	\$86,525	
Plant	\$43,872	\$0	
<b>Total</b>	<b>\$456,618</b>	<b>\$400,101</b>	

### 8.7.5 Key renewal projects

The key renewal projects planned for the next ten years are outlined in Table 32. We will focus on the replacement of stormwater mains in Hokitika and various pump station upgrades for the first three years. In summary, the key planned renewals are as follows:

Table 32 Key renewal projects (uninflated)

Township	Description	Year 1	Year 2	Year 3	Year 4-10	Ten-year Total
		2021/22	2022/23	2023/24	2024-31	
Hokitika	River outfall flap gates				✓	\$10,000
Hokitika	Retic CCTV	✓				\$100,000
Hokitika	Mains replacement	✓	✓	✓	✓	\$841,000
Hokitika	Pump upgrade (Bealey St)		✓			\$20,000
Hokitika	Pump upgrade (Sewell St) (70%)	✓				\$70,000
Hokitika	Pump upgrade (Livingstone St) (50%)	✓			✓	\$750,000
Hokitika	Kaniere Rd network pipeline investigations/upgrades (50%)	✓	✓			\$67,500
Hokitika	Weld St extension (80%)				✓	\$40,000

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

## 8.8 Asset development

This section summarises future capital work requirements for this activity. 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.

### 8.8.1 Capex projects to support increasing levels of service

Table 33 outlines Council's stormwater LOS capex projects for the next ten years.

Table 33 LOS capex projects (uninflated)

Township	Description	Year 1	Year 2	Year 3	Year 4-10	Ten-year Total
		2021/22	2022/23	2023/24	2024-31	
Hokitika	Pump upgrade (Sewell St) (30%)	✓				\$30,000
Hokitika	Pump upgrade (Livingstone St) (50%)	✓			✓	\$750,000
Hokitika	Kaniere Rd network pipeline investigations/upgrades (50%)	✓	✓			\$67,500
Hokitika	Weld St extension (20%)				✓	\$10,000

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

### 8.8.2 Capex projects to support growth

The only stormwater growth project currently forecast is the contribution towards new developments. An allowance of \$110k has been made for minor contributions.

### 8.9 Asset disposal

Disposal is any activity associated with disposal of a decommissioned asset, including sale, demolition or relocation. Asset disposal occurs when an asset is no longer required or becomes uneconomical to maintain or rehabilitate, it requires making the site safe, removing surplus structures, and covering the costs of any environmental remediation. These costs are generally included as part of the capital project.

Assets or asset components from pumping stations are often replaced as part of *business as usual* operations. The assets being replaced are assessed and either left in the ground (pipes), recycled, dumped or repurposed. This is assessed on a case-by-case basis, and in some cases is guided by the market rates for scrap materials.

There are no stormwater assets of significant value that have been identified for decommission for the period of this plan. Council currently has no plans to dispose of, or cease to maintain, any of the existing stormwater assets.

## 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 stormwater activity over the next ten years is \$12.8 million, as outlined in Table 34. Approximately 22% of this projected expenditure is capital expenditure, which equates to \$2.9 million. Renewals make up most of the capital expenditure followed by LOS projects.

**Table 34 Financial summary – stormwater (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	\$881,312	\$925,433	\$957,902	\$7,144,043	\$9,908,690
Capital expenditure					
Renewals	\$584,900	\$237,400	\$157,400	\$918,800	\$1,898,500
LOS	\$287,500	\$60,000	\$0	\$510,000	\$857,500
Growth	\$20,000	\$10,000	\$10,000	\$70,000	\$110,000
<b>Total</b>	<b>\$1,773,712</b>	<b>\$1,232,833</b>	<b>\$1,125,302</b>	<b>\$8,642,843</b>	<b>\$12,774,690</b>

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 35 outlines the implication of meeting each of the expenditure category.

**Table 35 Implications of expenditure category – stormwater**

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
	To protect the environment	Prosecution by Regional Council
Capex renewals	Adequate renewals to optimise life of assets	Increase in backlog that may never be addressed adequately
	Consent renewals for stormwater discharge	Prosecution by Regional Council
Capex new works	To meet the likely new consent requirements for the stormwater discharge	Investments in improving stormwater quality will not meet future consent requirements



### 9.3 Operational expenditure summary

Table 36 outlines the stormwater operational expenditure for the next ten years. This shows that the annual operating expenditure is around \$990k per annum.

Table 36 Operation and maintenance expenditure – stormwater (uninflated)

Description	Projected Expenditure										Ten-year Total
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	
<b>Depreciation</b>	\$439,208	\$468,344	\$470,678	\$471,011	\$512,178	\$512,511	\$513,511	\$557,097	\$557,430	\$557,763	\$5,059,731
<b>Overheads</b>	\$194,836	\$201,849	\$209,100	\$201,494	\$201,408	\$211,182	\$202,703	\$202,644	\$211,018	\$201,326	\$2,037,560
<b>Interest and finance costs</b>	\$87,462	\$95,433	\$108,316	\$115,343	\$117,718	\$121,124	\$121,909	\$128,700	\$122,545	\$114,744	\$1,133,294
<b>Operating costs</b>											
Electricity	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$12,300	\$123,000
Insurance Premiums	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$50,681	\$506,810
Condition Assessments			\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$80,000
Repairs & Maintenance	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000	\$700,000
Consultants Fees	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$20,000
Rates Expense	\$24,825	\$24,826	\$24,827	\$24,828	\$24,829	\$24,830	\$24,831	\$24,832	\$24,833	\$24,834	\$248,295
<b>Total operating costs</b>	\$159,806	\$159,807	\$169,808	\$169,809	\$169,810	\$169,811	\$169,812	\$169,813	\$169,814	\$169,815	\$1,678,105
<b>Total</b>	<b>\$881,312</b>	<b>\$925,433</b>	<b>\$957,902</b>	<b>\$957,657</b>	<b>\$1,001,114</b>	<b>\$1,014,628</b>	<b>\$1,007,935</b>	<b>\$1,058,254</b>	<b>\$1,060,807</b>	<b>\$1,043,648</b>	<b>\$9,908,690</b>

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

### 9.4 Capital expenditure summary

Table 37 outlines the stormwater renewal expenditure for the next ten years. This shows a large capital programme in the first year due to Government funding.

Table 37 Renewal expenditure – stormwater (uninflated)

Description	Projected Expenditure										Ten-year Total
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	
<b>Hokitika - River outfall flap gates</b>						\$10,000					\$10,000
<b>Hokitika Retic CCTV</b>	\$100,000										\$100,000
<b>Hokitika Mains replacement</b>	\$157,400	\$157,400	\$157,400	\$157,400	\$157,400	\$0	\$27,000		\$27,000		\$841,000
<b>Hokitika - Pump upgrade (Bealey St)</b>		\$20,000									\$20,000
<b>Hokitika - Pump upgrade (Sewell St) (70%)</b>	\$70,000										\$70,000
<b>Hokitika - Pump upgrade (Livingstone St) (50%)</b>	\$250,000			\$250,000			\$250,000				\$750,000
<b>Hokitika - Kaniere Rd network pipeline investigations/upgrades (50%)</b>	\$7,500	\$60,000									\$67,500
<b>Hokitika - Weld St extension (80%)</b>						\$40,000					\$40,000
<b>Total</b>	<b>\$584,900</b>	<b>\$237,400</b>	<b>\$157,400</b>	<b>\$407,400</b>	<b>\$157,400</b>	<b>\$50,000</b>	<b>\$277,000</b>	<b>\$0</b>	<b>\$27,000</b>	<b>\$0</b>	<b>\$1,898,500</b>

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

Table 38 outlines the stormwater levels of service capex expenditure for the next ten years.

**Table 38 Levels of service capex expenditure – stormwater (uninflated)**

Description	Projected Expenditure										Ten-year Total
	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	
Hokitika - Pump upgrade (Sewell St) (30%)	\$30,000										\$30,000
Hokitika - Pump upgrade (Livingstone St) (50%)	\$250,000			\$250,000			\$250,000				\$750,000
Hokitika - Kaniere Rd network pipeline investigations/upgrades (50%)	\$7,500	\$60,000									\$67,500
Hokitika - Weld St extension (20%)						\$10,000					\$10,000
<b>Total</b>	<b>\$287,500</b>	<b>\$60,000</b>	<b>\$0</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$10,000</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$857,500</b>

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

Table 39 outlines the stormwater growth capex expenditure for the next ten years.

**Table 39 Growth capex expenditure – stormwater (uninflated)**

Description	Projected Expenditure										Ten-year Total
	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	
Hokitika - Contributions towards new developments	\$20,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$110,000

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

## 9.5 Asset valuation and depreciation

Stormwater assets were last revalued as at June 2019 from data held in the AssetFinda system. Assets are generally revalued every three years.

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 40 Stormwater asset valuation summary by township as at 30 June 2019**

Stormwater	Optimised Replacement Cost 2019	Depreciated Replacement Cost 2019	Annual Depreciation Rate 2019
Hokitika	28,672,207	13,788,942	387,852
Franz Josef	1,527,163	1,022,119	18,655
Fox Glacier	355,302	230,315	4,542
Haast	225,025	146,534	2,875
Harihari	947,706	480,025	11,966
Kaniere	984,361	607,784	12,130
Kumara	666,286	255,011	8,555
Ross	634,737	234,071	8,508
Whataroa	122,228	62,268	1,534
<b>Total</b>	<b>\$34,135,014</b>	<b>\$16,827,069</b>	<b>\$456,618</b>

**Table 41 Stormwater asset valuation summary – comparison with last two previous valuations**

Stormwater (values by year)	Optimised Replacement Cost (\$)	Depreciated Replacement Cost (\$)	Annual Depreciation Rate (\$)
Total 2019	34,135,014	16,827,069	456,618
Total 2016	16,363,411	8,709,127	211,413
Total 2014	19,649,777	9,900,752	307,392

Overall, the stormwater assets have increased in optimised replacement cost by 109% since the 2016 valuations. The increase in the replacement values is due to the following reasons:

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

The percentage increase in annual depreciation of 116%.

Note that sumps are included in AssetFinda data for valuations (including those that are part of the Waka Kotahi fundable roading activity) and related to roading kerb and channel assets.

For the purposes of clarity moving forward, it is recommended that these sumps be removed from AssetFinda (and captured in RAMM instead) to ensure that stormwater valuations only cover those assets covered under the scope of the stormwater activity.

### 9.5.1 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 stormwater assets have been listed below according to the depreciable life set in Council's AssetFinda database.

Asset Type	Depreciable life (years)*
Pipeline	60 to 100
Bank protections	50 to 100
Manholes	50 to 80
Pump Stations	10 to 20

*\*Dependent on material.*

Council funds depreciation on stormwater 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; or
- 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.*

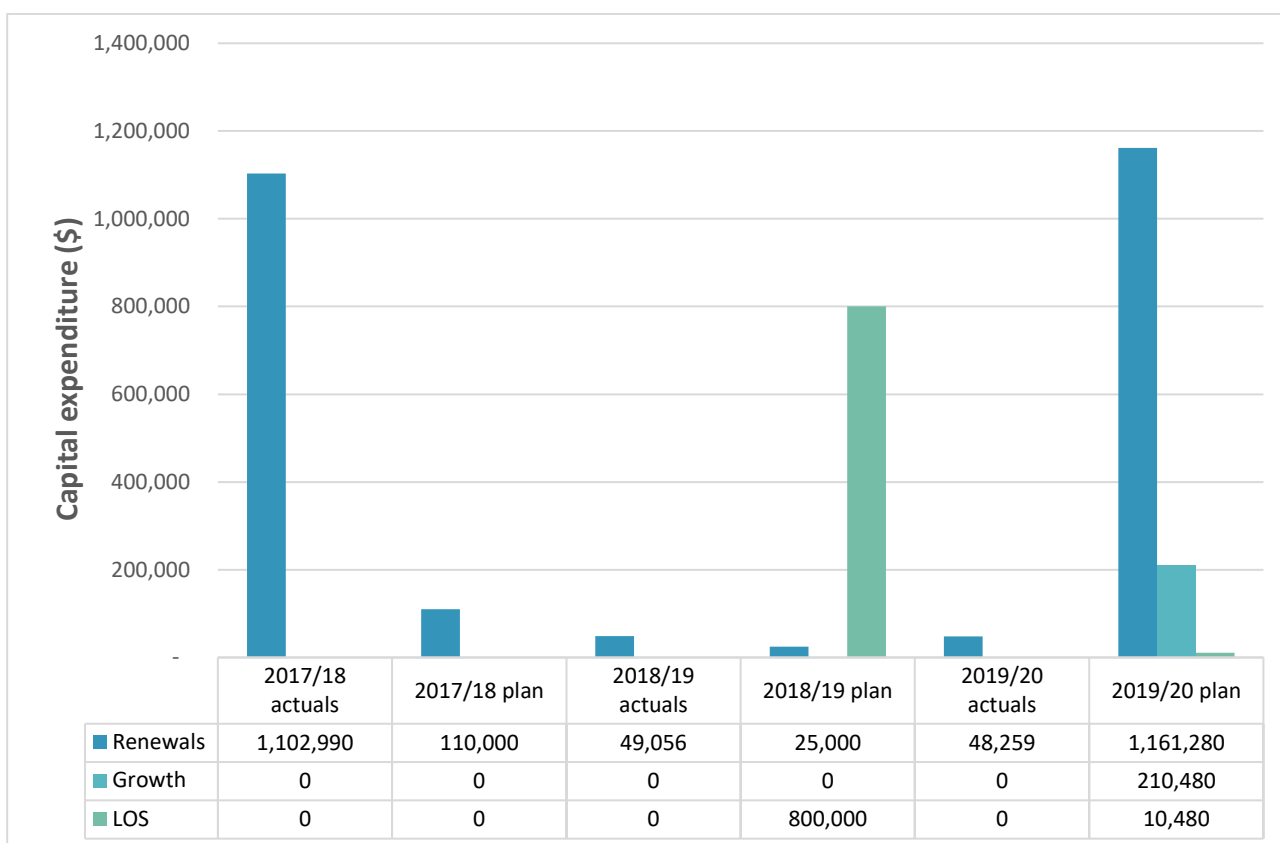
## 9.6 Financial performance

The actual achievements against the 2018 LTP budgets for the stormwater capital programme are presented below. This shows that while Council has undertaken significantly more renewal works in 2017/18 than planned, capital expenditure delivered was drastically reduced in 2018/19 and 2019/20.

It is acknowledged that if the renewal expenditure starts falling behind the accumulative depreciation it can indicate that assets might not be getting replaced or renewed at the rate at which they are reaching their useful life. Where such a pattern continues for an extended period of time, future communities could inherit run-down assets with high maintenance costs and high capital expenditure to replace failing infrastructure.

Council has developed the internal capability and capacity to reduce deferred renewals going forward.

Figure 19 Capital expenditure performance – stormwater



### 9.7 Funding sources

The Council has a mix of funding mechanisms with the bulk of the revenue coming from general rates. All properties are rated for stormwater as part of the general 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 stormwater activity will be funded in accordance with the financial policies of Council as indicated below.

Table 42 Funding strategy for stormwater

Programme	Funding mechanism
Operational	General 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 it 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.

## 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 stormwater 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

Schedule 10 of the Local Government Act (LGA) requires an outline of any significant negative effects that an activity may have on the local activity may have on the local activity. Potential negative effects associated with the stormwater activity are outlined in the table below.

**Table 43** Potential negative effects

Effect	Description	Mitigation Measures
Flooding	Localised flooding may occur in pockets of township due to under capacity of the stormwater system. This could cause some habitable floors /dwellings to be affected. The effect would be much worse without stormwater systems in place	<ul style="list-style-type: none"> <li>• Catchment management planning</li> <li>• Stormwater modelling</li> <li>• CCTV investigations</li> <li>• Flowpath mapping</li> <li>• Capital works to increase network capacity</li> </ul>
Impact on waterways	Flooding can mean that sediments, e.g. oil, grease, organic materials can be washed into natural water courses.	<ul style="list-style-type: none"> <li>• Annual sampling of Hokitika River</li> </ul>
Noise	Sometimes repairs to stormwater assets (or installation of new assets) may create noise that affects surrounding households or businesses. Such noise is temporary, and a result of construction machinery used.	Maintenance work is undertaken during normal operating hours except in emergency situations.
Disruption to service	Prolonged disruption (outages) to service can have an economic impact on businesses.	<p>Prolonged outages are extremely rare and would only normally occur as a result of storms or force majeure events.</p> <p>The operations and maintenance contract has clearly defined 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.</p>
Erosion	Localised erosion can have an adverse effect on the stormwater outlets which are predominately river outlets.	Maintenance work is undertaken during normal operating hours in conjunction with WCRC if rock work is required.
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.

## 10.2 Positive effects

Effect	Description
Environmental and public health benefits	Stormwater disposal systems contribute to making a safe and healthy place to live and work.
Protection of life and property	Stormwater infrastructure can minimise impact of heavy rainfall and intensity of flooding, thus protecting people and property.
Economic development	Provision and maintenance of stormwater scheme makes Hokitika a more attractive place to develop new commercial businesses, residential homes and industrial activities (compared to areas without public stormwater systems) thus contributing to economic growth.

## 10.3 Environmental management

The statutory framework detailing what activities require resource consents is the Resource Management Act (1991). The RMA is administered locally by the West Coast Regional Council. The following sections contains a list of the resource consents that Council holds in relation to its stormwater activities.

### 10.3.1 Resource consents

A summary of resource consents held for the Council's stormwater activities is detailed in Table 44. Note that this does not include transportation-related stormwater activities, e.g. roadside drainage/culverts or stormwater activities related to Butlers landfill.

**Table 44** Schedule of current resource consents relating to the stormwater activity

Resource Consent Number	Location	Description	Expiry Date
RC11027/1	Hokitika	To discharge stormwater from the Hokitika reticulated stormwater system to the Hokitika River upstream of the coastal marine area.	01 June 2046
RC11027/2			

No resource consents are expiring within the next ten years.

### 10.3.2 Resource consent reporting and monitoring

The extent to which Council has been able to meet all of the conditions of each consent is reported in its Annual Report each year.

A detailed register of the organisations' consents is held in Council's consents database CS Vue.

The Council aims to achieve minimum compliance with all consents and/or operating conditions. Minimum compliance has been met for the resource consents listed in the table above, which require annual reporting to the WCRC.

### 10.3.3 Stormwater quality

We will need to be more proactive in stormwater quality management in future, driven by global consents, NPS for Freshwater Management 2020 and iwi as well as community expectations.

One of the future drivers is a demand for higher treatment of stormwater before it is released into the environment. The environmental parameters are set out in the RMA 1991. Much of the influence comes from the NPS for Freshwater Management 2020.



Stormwater treatment will also be required with global consents. We need to develop evidence-based strategy and programmes to be more proactive in stormwater quality.






Environmental sustainability is also about reducing the runoff from roads and the degradation of receiving environments. It is recognised that stormwater runoff from the transport network pollutes the waterways. We need to be more proactive with reducing the impacts from the road runoff. Also, Waka Kotahi's State Highway network contributes runoff into the stormwater network and potential generates the highest number of untreated contaminants to the environment. Council will need to work with Waka Kotahi to develop treatment systems for stormwater.



## 10.4 Climate change and resilience

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 45 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.
 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.

Climate Aspect	Description	Future Projections
 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 <i>study</i> 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.

#### 10.4.1 Potential effects

**Coastal hazards**– Coastal roads and infrastructure may face increased risk from coastal erosion and inundation, increased storminess and sea-level rise.

**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.

**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.

#### 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 adaptation 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 stormwater activity.

#### 10.4.3 At local and activity levels

These likely climate change impacts on the stormwater network will need to be considered with any long-term planning. The most likely effect due to climate change in the next ten years is increased flooding due to pipe capacity issues.

#### 10.4.4 Building resilience

The 2017 report on improving resilience to natural disasters, West Coast Lifelines Vulnerability and Interdependency Assessment<sup>1</sup> outlines the risks to Council’s stormwater schemes from various types of natural disasters. While some of the information is dated and no longer relevant, this document is still a good overview of the main emergency management risks for stormwater.

Climate change directly impacts the stormwater 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.
- Working with Waka Kotahi on state highway closures and ensuring service continuity for three waters operations (refer to next section).

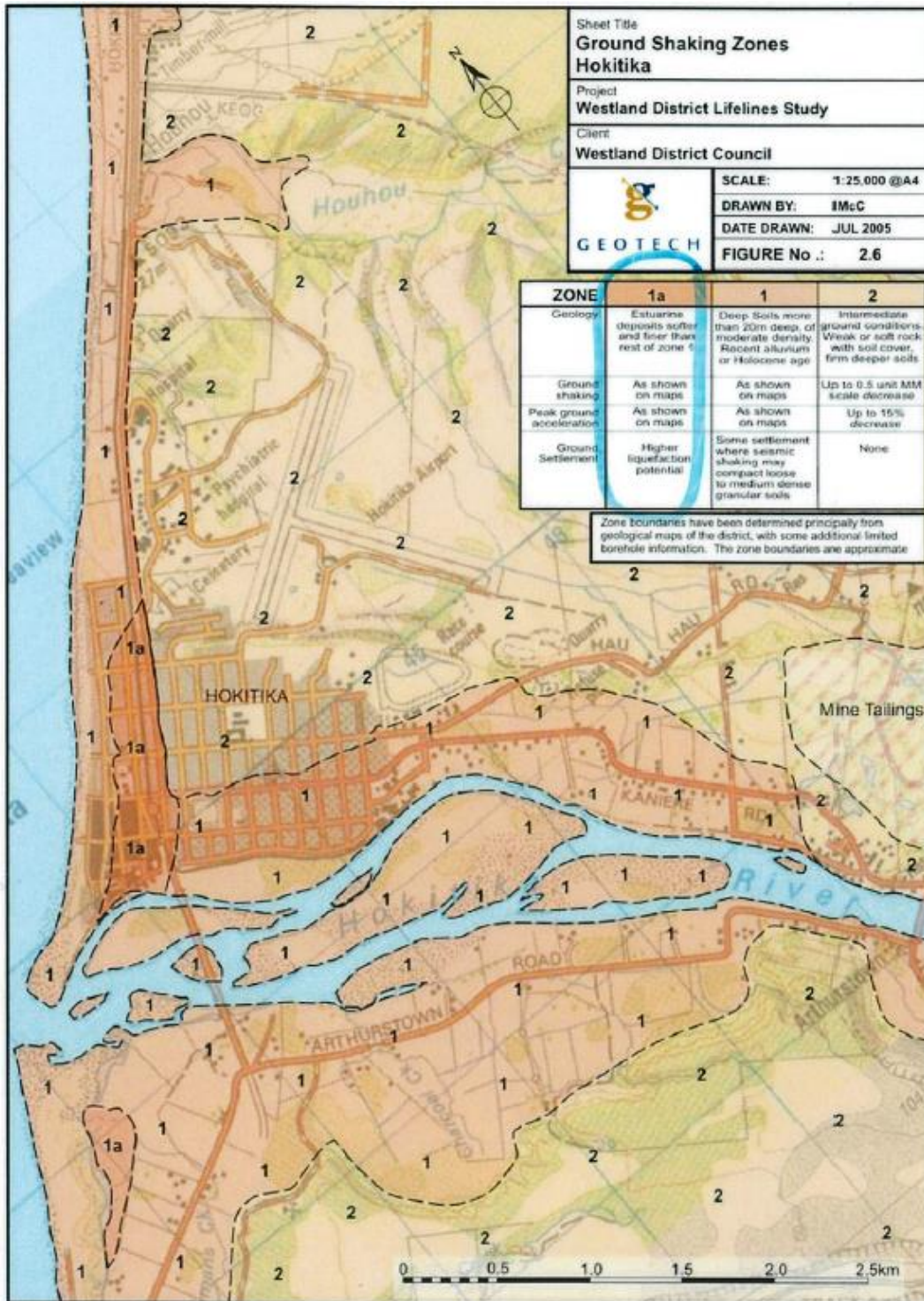
Council’s future actions in response to climate change to improve the resilience of the activity are:

- Identify options to protect the Tancred and Sewell Streets Pump Stations from tsunami waves
- Prepare a formal plan for stormwater management after a major natural disaster.
- Prioritise replacement of rigid pipes beginning with aging key mains and pipes in soft or liquefiable soils (refer to Figure 20).
- Review likely spare part requirements for response and recovery after a major event especially for electrical and control components damaged by water inundation.

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<sup>1</sup> <https://westcoastemergency.govt.nz/wp-content/uploads/2018/04/12-Westland-Lifelines-Assets.pdf>

Figure 20 Map of likely liquefaction areas for Hokitika





#### 10.4.5 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:

- 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

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

Stormwater 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 stormwater 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.

## 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.

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 stormwater activity. The full risk register is detailed in Appendix 14.2.

### 11.2 Activity risks and mitigation measures

Council’s main risks to stormwater assets’ activity are adverse events and sufficient 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. 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.

Sufficient funding is needed to keep the stormwater assets performing adequately. With a very small ratepayer base and townships dispersed over a land area 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

The following information identifies uncertainties and assumptions that Council considers could have a significant effect on the financial forecasts and discusses the potential risks that this creates.

**Table 46 Assumptions and uncertainties**

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
<b>Asset data</b> Asset condition and performance data is not reliable for certain stormwater 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 have been appointed.
<b>Asset lives</b> 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.
<b>Availability of contractors and materials</b> Contractors and materials will be available to undertake the work required to agreed standards, deadlines and cost.	Projects could be delayed if there is a shortage of materials or contractors or if contractors fail to deliver to agreed standards, budget and timeframe. Delays may further increase costs and chances of asset failure in the interim which could also impact on Levels of Service.	Low	Spread projects as much as possible and continue to engage with contractors. Ensure robust contracts are in place.
<b>Climate Change</b> The predicted higher rainfall combined with storm surge and high river flows will increase the potential and risk of townships flooding, in particular Hokitika and Franz Josef.	Flooding of townships placing lives at risk and damage to land.	Medium	Continue to review impacts and effects of rainfall events and river/sea level rise with planned retreat in some instances.
<b>Costs</b> 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	The 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
<p><b>Depreciation</b> 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.</p>	<p>Revaluation adjustments are different to those forecasts. That detailed components of new assets will be different from the inflation factors, requiring different depreciation rates.</p>	<p>Low</p>	
<p><b>Funding renewals</b> 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.</p>	<p>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.</p>	<p>Low</p>	<p>The 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.</p>
<p><b>Funding sources</b> Funding sources (including external funding) sources do not change over the life over this Plan</p>	<p>Levels and sources of funding differ from those forecast, resulting in projects being revised or alternative funding sources used.</p>	<p>Low</p>	<p>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.</p>
<p><b>Levels of Service</b> 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 increase the capacity to deal with storm and flooding events. In most other cases, service levels remain unchanged. Levels of Service increases will increase cost to ratepayers.</p>	<p>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.</p>	<p>Medium</p>	<p>Council to regularly monitor service provision. Minor changes may be made to service levels where contracts and resources allow.</p> <p>Major changes in service levels will be confirmed with the community via consultation and will generally require an increase to fees or rates.</p>

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
<p><b>Natural hazards and future rainfall events</b></p> <p>The prevalence of heavy rainfall events (as seen in last few years) is likely to continue causing periodic disruption.</p> <p>Other natural hazards such as tsunami, Alpine Fault earthquakes are possible but have not been factored into the life of this Plan.</p>	<p>An alpine fault earthquake, tsunami event or other surprise natural disaster occurs that has a significant impact on stormwater services resulting in unbudgeted costs beyond the capacity of Council to cope.</p>	Low	<p>Council has a Civil Defence Emergency Plan that will be implemented in the event of an emergency.</p> <p>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.</p>
<p><b>New legislative requirements</b></p> <p>The Three Waters reform will introduce new legislative requirements from Central Government.</p>	<p>Three waters are likely to be managed by a regional entity.</p>	High	<p>Council is working with other West Coast councils on a local approach to three waters. It is also working with the wider Canterbury Group.</p>
<p><b>Population change</b></p> <p>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).</p>	<p>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.</p>	Low	<p>Council will continue to monitor population change in the District. Generally, small changes in population can be managed within the existing Level of Service. It has less direct impact on the stormwater activity.</p>
<p><b>Resource consents</b></p> <p>Resource consents held for Council activities will require renewal and new consents granted will require increased monitoring.</p> <p>Resource consents will be obtained with acceptable conditions, and expiring resource consents will be renewed with affected party approval.</p>	<p>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.</p> <p>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.</p> <p>Potential infringement fines.</p>	Low	<p>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.</p>

Significant assumptions	Risk and impact	Level of uncertainty	Mitigation
			<p>Proactive investment in monitoring equipment for existing consents will help plan for future compliance needs.</p> <p>The renewal of consents is dependent upon the legislative and environmental standards and expectations that exist at that time.</p>
<p><b>Tourism</b>                      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</p>	<p>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.</p>	<p>Medium</p>	<p>Council will continue to monitor tourism growth. Where growth requires additional infrastructure, Council will apply for financial contributions for this work.</p>

## Section 12 Asset Management Processes and 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 stormwater 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 AM 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 most stormwater functions has been set at 60% (top end of core category). Where some functions are already at or above 60%, the target has been extended by an additional 5% reflecting the desire for continuous improvement in these areas. However, the key priority is addressing those functions of stormwater asset planning that are not yet in excess of the Core Maturity Level (above 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 and Grey District Councils 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.

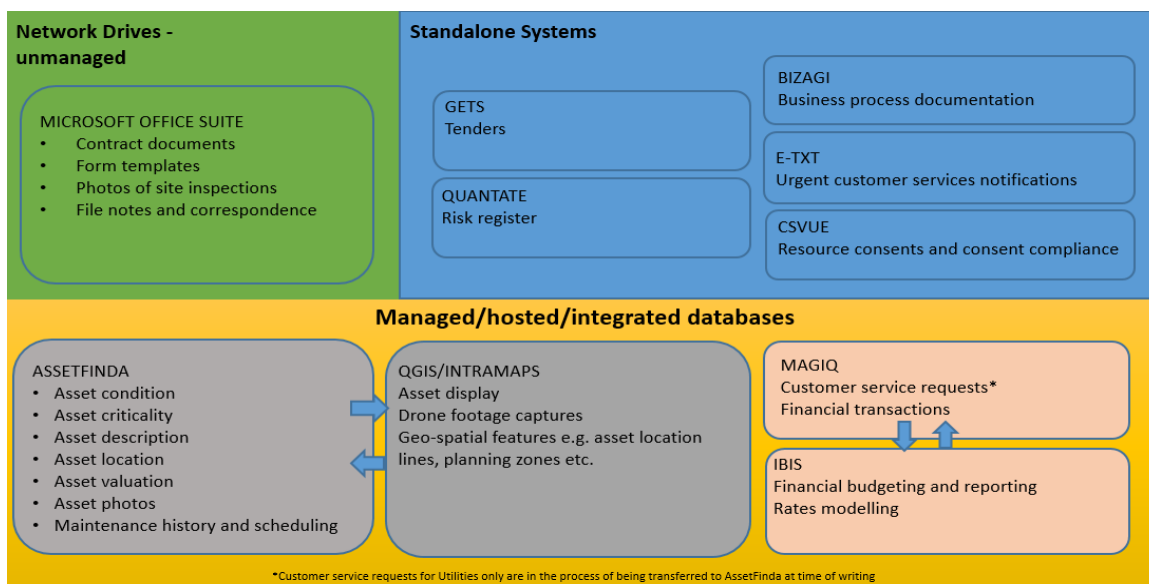
## 12.5 Asset management systems and data

Council has a variety of systems and tools that support effective operation and maintenance and that record asset data. These are detailed in Figure 21 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 and link systems so they can be easily accessed. Inconsistencies have been noted with asset data held in Council's financials systems versus asset data held in Council's asset management systems. Improved cross-departmental work needs to be encouraged to ensure consistency with a single point of truth for data.

In summary:

- AssetFinda is used as the primary technological system for Asset Management. 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 information 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-built plans. 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 monitored (e.g. pump hours).
- Performance Records: The performance of key assets is regularly monitored, but not formally graded or classified, with the exception of CCTV inspections.

Figure 21 Systems used for asset management



### 12.5.1 Asset data

Table 47 summarises the data accuracy and completeness of Council’s stormwater asset information.

Table 47 Asset data accuracy

		Asset condition and age	Asset performance	Data completeness	Overall confidence in asset data	Identified gaps
Stormwater	Point					Manhole depths and invert levels missing; performance data unreliable/missing. Poor knowledge of flapgates (this impacts plant). Not all unique serial codes/ids reported. No info on manhole rungs (health and safety issue).
	Lines					Overflow impacts undefined – no formal overland flow info to link with system. Not all catchment pipes have been fully evaluated for performance. It is noted that some very old pipes were poorly laid with bad jointing including butt joints that don’t connect/touch.
	Plant					Some plant equipment missing or believed to be duplicated in point category.

**Key**

A	B	C	D	N/A
Highly reliable data based on sound records, procedures, investigations and analysis, which is documented properly and recognised as the best method of assessment	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.	Uncertain 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.	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.	Data does not exist or is not relevant

## 12.6 Quality management

Audits, checks and reviews are carried out but are managed on a case-by-case basis. Table 48 below delineates the main quality management approaches to support Council's asset management processes. It also identifies gaps/deficiencies and proposed improvements to address these.

**Table 48** 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.	Continue to report with greater levels of clarity.
Operations	At present, the stormwater 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 2020/21 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.
Planning	The Long Term Plan and associated processes are formalised across Council. Basic planning only due to limited resource input.	Following completion of the AMP, a peer review is carried out and the outcomes used to update the AMP Improvement Plan. In-house asset management position being looked at for 2021.
Policy and Process Development	Currently not available for many activities including stormwater	Develop and adopt Stormwater Policy and implement Development Contributions.



Activity	Current Practice	Proposed Outcome
Procurement	Best practice tendering procedure is followed depending on the value and nature of tender/ contract with Tenders committee approval.	Continue following Policy procedure and ensure new staff have appropriate training in contract evaluation.
Reports to Council	All reports that are presented to Council by staff in relation to stormwater are reviewed and approved by the Group Manager: District Assets and the Chief Executive prior to release.	It has been noted that Council reports should include better coverage of alternative options.
Subdivision Works	Developers install new pipework and vest to council upon completion. The linkage of As-Builts and 224c is not well synchronised. Poor knowledge of existing pipework capacity and catchment influences	Ensure good synergy with Engineers and Planners for consent conditions and signoff at time of 224c with good catchment knowledge for both pipework and overland flow paths.

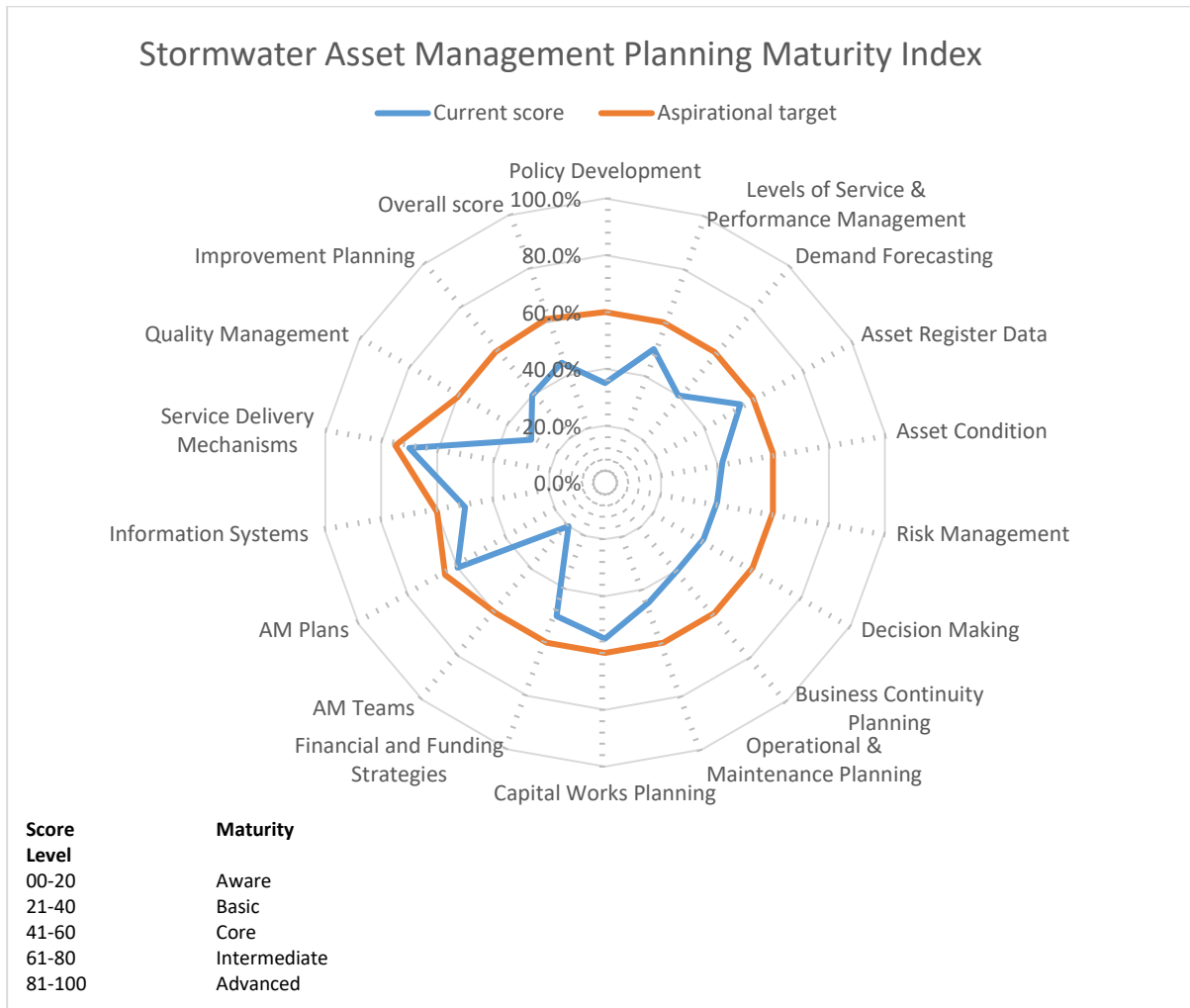
## Section 13 Improvement Planning

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 stormwater based on IIMM definitions is shown in the spider map below.

Figure 22 Asset management maturity results (as at May 2020)



The graph above shows that overall score for stormwater asset management planning is 44.8. The highest area is service delivery mechanisms (currently at 70%), while the lowest area is Asset Management teams (currently at 20%).

The aspirational level for most stormwater functions has been set at 60% (top end of core category). Where some functions are already at or above 60%, the target has been extended by an additional 5% reflecting the desire for continuous improvement in these areas. However, the key priority is addressing those functions of stormwater asset planning that are not yet in excess of the Core Maturity Level (above 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 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 Stormwater AMP are as follows:

- Overall plan:
  - The draft 2021 Stormwater AMP has addressed many of the recommendations identified with the draft Drinking Water and Wastewater AMPs. This draft plan sets out the significant challenges for the stormwater activity well, particularly addressing the known flooding in Hokitika after the 2015 event.
  - The draft 2021 Stormwater AMP uses maps, photographs, and snapshots well for good readability.
  - It is recognised that this plan is still being developed and considered at working draft status. The key issues still to be addressed are:
    - Clarity on the three existing stopbanks owned by Council and whether these are covered in this AMP or not
    - Reducing generic population growth information from Section 7 Current and Future Demand so it is relevant for the stormwater activity and adding content, so it is complete
    - The actions identified through this review need to be included in the Improvement Programme.
  - All three AMPs still need the following to be completed:
    - Financial forecasts to be included and ensuring that the investment required are clearly articulated and the consequences if the budgets are reduced
    - All relevant content added
    - Provide breakdown of information presented in financial graphs so easier to understand
    - Documents need heavy editing including setting up of the sections correctly and adding captions for all tables and figures
    - Data source and date added to all tables and graphs.

### 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 49 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	Develop Stormwater Policy and Bylaw	Group Manager District Assets	High	To start (new project added in)			
		1.2	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 impact of climate change on the stormwater activity.	Group Manager District Assets/ Asset Manager	Medium	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 Manager	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 the identification of transport assets.	Asset Manager	Medium	To start (new project added in)			
5	Asset Performance and Condition	5.1	Verify the asset condition of the critical above ground stormwater assets (i.e pump stations).	Asset Manager	High	To start (new project added in)			
		5.2	Implement regular condition assessments and asset inspection programmes for above ground critical assets. Inspection programme shall be about every three to five years.	Asset Manager	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
		5.3	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 stormwater assets to better understand network condition.	Asset Manager / Operations Manager	Medium	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 stormwater activity as a priority.	Group Manager District Assets	Very High	To start (new project added in)			
		7.2	Update Quantate risk register for the stormwater 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 stormwater activity is resilient to potential disruptions.	Group Manager District Assets	High	To start (new project added in)			
		7.4	Develop Stormwater Catchment Management Plans.	Group Manager District Assets / Operations Manager	High	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.	Group Manager District Assets	High	To start (new project added in)			
		8.2	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 stormwater renewal programme based on analysis of 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	Revise Development Contributions Policy.	Group Manager District Assets	Medium	To start (new project added in)			
11	Asset Management Leadership and Teams	11.1	Establish in-house AM team and resources to support future AM initiatives.			Completed			

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
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	None identified at this stage.						
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 50 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	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 safety	Stormwater systems have the capacity to resist major storms and flooding events.	(a) The number of flooding events that occur in a territorial authority district. (b) For each flooding event, the number of habitable floors affected. Expressed per 1000 properties connected to the territorial authority’s stormwater system.	Data from Council’s Building Department records.	(c) 0 – No flooding events affecting habitable floors within the Council reticulated stormwater system. (d) Total habitable floors = 0 Per 1000 connections = 0 (See note 1)	(c) 2 (d) 10 per 1000	(c) 2 (d) 10 per 1000	(a) 2 (b) 10 per 1000	(a) 2 (b) 10 per 1000	(a) 2 (b) 10 per 1000	MAGIQ
Diverse Economy	Responsiveness	Requests for service are dealt with promptly.	<b>Response times:</b> The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site (1 hour).	Service request system and contractor records.	There were no reported flooding events to attend.	100%.	90%	90%	90%	90%	MAGIQ
			<b>Customer satisfaction:</b> The number of complaints received by the territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority’s stormwater system.	Service request system	Total number of complaints: 58 Complaints per 1000: 117.2 (See note 2)	10 per 1000	10 per 1000	10 per 1000	10 per 1000	10 per 1000	MAGIQ
Sustainably Managed Environment	Sustainable – Environmental performance	Council reticulated stormwater systems protect the natural environment.	<b>Discharge compliance:</b> Compliance with the territorial authority’s resource consents for the discharge from its stormwater system, measured by the number of: (a) Abatement notices (b) Infringement notices (c) Enforcement orders, and (d) Convictions	Annual sampling and notices received from WCRC.	100% compliance: Zero abatement or infringement notices, enforcement orders or convictions.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance	CSVUE

Note

1. No habitable floors were reported as flooded to Council. However, media reports for the flash flooding event in February 2020 note that two shops and a couple of sleep-outs may have had stormwater enter the properties.
2. The reason for the variation in number of complaints from previous years: following DIA guidance, each request is logged as a new complaint when the customer advises the original issue is unresolved. This is a process change from previous years.

## 14.2 Risk Register

Risk Event	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
Extreme weather events overloading network	<p><i>Current</i></p> <ul style="list-style-type: none"> <li>Routine maintenance and removal of blockages</li> </ul> <p><i>Proposed</i></p> <ul style="list-style-type: none"> <li>Capital project upgrades to increase capacity of pipes and pumps for catchments</li> </ul>	Service Delivery	Almost Certain	Moderate	<b>Extreme</b>
Complete failure of reticulation and plant due to an extreme natural hazard event, e.g. Alpine Fault earthquake	<p><i>Current</i></p> <p>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.</p> <p>Council Engineering staff have previously been involved in AF8 (Alpine Fault Magnitude 8) meetings and workshops.</p> <p><i>Proposed Future</i></p> <p>Council to reconnect and continue involvement with these networks and workshops and ensure new pipe installations are with appropriate durable material.</p>	All	Rare	Catastrophic	<b>High</b>
Unforeseen failure of a critical network structure (e.g. pump station)	<p><i>Current</i></p> <p>Routine maintenance and inspections are included in the maintenance contracts, e.g. flushing reticulation, CCTV inspections</p> <p><i>Proposed Future</i></p> <p>Continued CCTV inspections and have contingency plan for power outages to pump stations. Also ensure access to hired standby equipment. Develop Business Continuity Plan.</p>	Service Delivery, Financial Reputational	Unlikely	Major	<b>High</b>
Premature deterioration or obsolescence of a non-critical asset	<p><i>Current</i></p> <p>Routine maintenance and inspections are included in the maintenance contracts.</p> <p>Performance measures documented in maintenance contract.</p> <p><i>Proposed Future</i></p> <p>To develop progressive forward works programme for aged infrastructure, e.g. asbestos cement pipework replacement</p>	Service Delivery, Financial	Possible	Minor	<b>Moderate</b>

Risk Event	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
Sub-optimal design and/or construction practices or materials	<p><i>Current</i> 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.</p> <p><i>Proposed Future</i> Ongoing staff training and professional development</p>	Service Delivery, Financial, Reputational	Unlikely	Moderate	Moderate
Poor or incomplete Asset Management practices due to internal capacity and capability constraints.	<p><i>Current</i> No Asset Management staff or Asset Management Steering Group. Asset Management function has been resourced with two contractors on short-term contracts. Lack of staff knowledge or interest in Asset Management. Process and asset database deficiencies.</p> <p><i>Proposed Future</i> Creation of Asset Management Steering Group. In-house resourcing of Asset Management function. Investment in professional development training for asset management staff. AssetFinda database “cleansing”. Policies to be created and adopted by Council to address known strategic gaps.</p>	Organisational Capacity, Legal /Compliance, Financial	Almost certain	Moderate	Extreme
Prolonged power outage in excess of 12 hours	<p><i>Current</i> Emergency generators at some sites</p> <p><i>Proposed Future</i> Provide emergency generators to all schemes and critical plant.</p>	Service Delivery, Health & Safety	Likely	Minor	High
Inability to comply with necessary resource consents	<p><i>Current</i> Stormwater discharge has traditionally been compliant with no issues noted.</p> <p><i>Proposed Future</i> Continue to ensure discharges are fit for the receiving environment and healthy waterways.</p>	Legal/Compliance, Reputational	Rare	Minor	Low
Lack of availability of contractors and materials	<p><i>Current</i> Spread projects as much as possible and engage with contractors.</p> <p><i>Proposed Future</i> Continue to improve robustness of contracts.</p>	Organisational Capability, Service Delivery, Strategic	Rare	Major	Moderate

Risk Event	Mitigation Measures	Risk Types	Likelihood of Risk	Potential Consequence	Overall Risk Rating
<p>Inadequate project scoping resulting in project failure or bad investment</p>	<p><i>Current</i> Most stormwater projects have been scoped in depth by consultants with detailed investigations. Contract documents reviewed by experienced, independent Engineer. Tenders evaluated by Committee according to clearly defined grading scale.</p> <p><i>Proposed Future</i> Project priority forms to be reviewed for work scope and budget. Potential delays documented prior to funding being approved and each stage clearly structured. Business case prepared and approved before project progression and financial approval given.</p>	<p>Financial, Reputational Strategic</p>	<p>Unlikely</p>	<p>Minor</p>	<p><b>Moderate</b></p>
<p>Public safety compromised by popped stormwater manhole lids</p>	<p><i>Current</i> Contractors checking known sites or reports of popped lids as soon as practical. Some lids are bolted down.</p> <p><i>Proposed future</i> Investigate known areas of concern for short term fix (i.e. bolting down of lids) and long term fix (i.e. upsize of mains to relieve pressure points).</p>	<p>Health &amp; Safety</p>	<p>Possible</p>	<p>Moderate</p>	<p><b>High</b></p>