

Activity Management Plan 2021 Drainage District Overview

3 Waters | July 2021



Prepared by Waimakariri District Council 215 High Street, Private Bag 1005 Rangiora 7440, New Zealand waimakariri.govt.nz

Revision History:

| Revision N ^o | Description | TRIM | Date |
|-------------------------|---|--------------|------------|
| А | Draft for Presentation to U and R Committee | 200120006602 | 18/12/2020 |
| В | Draft for presentation to Council | 200120006602 | 23/02/2021 |
| С | Final for presentation to Council | 200120006602 | |
| | | | |
| | | | |

Document Acceptance

| Action | Name | | Signed | Date |
|----------------|-------------------|---------------------------------|---------|------------|
| | Kalley Simpson | 3 Waters Manager | KDS | 17/02/2021 |
| Prepared by | Simon Collin | Infrastructure Strategy Manager | JCO_ | 21/01/2021 |
| | Chris Bacon | Network Planning Team Leader | the | 17/02/2021 |
| Reviewed by | Kalley Simpson | 3 Waters Manager | KDS | 17/02/2021 |
| Approved by | Gerard Cleary | Manager Utilities and Roading | f. Clan | 17/02/2021 |
| Adopted by | Council | | | |

Contents

| 1 | Executive Summary | 5 |
|---|--|----|
| | What assets do we have? | 5 |
| | Levels of Service | 5 |
| | Asset Condition | 5 |
| | Risk | 5 |
| | Growth and Demand | 6 |
| | Capacity and Performance | 6 |
| | Operation and Maintenance | 7 |
| | Renewals | 7 |
| | Financial Forecasts | 7 |
| | Future Challenges and key Decisions | 8 |
| 2 | Introduction | 9 |
| | Document structure and Improvement Plan | 9 |
| | Document Review Process | 10 |
| | Financial Forecasts | 10 |
| | District Overview- Scheme Upgrades | 10 |
| 3 | Scheme Description (What Do We Have?) | 11 |
| | Scheme Statistics | 14 |
| 4 | Levels of Service | 15 |
| | Mandatory Performance Measures | 15 |
| | Elective Levels of Service | 15 |
| | Community Engagement | 16 |
| | Changes to LoS for 2020 | 16 |
| | District Overview: 2019/20 Levels of Service Performance | 23 |
| | Benchmarking | 26 |
| | Scheme differences | 26 |
| 5 | Asset Condition | 27 |
| | Remaining Useful Lives | 27 |
| 6 | Criticality | |
| | Operations | 31 |
| | District Overview – Criticality | 31 |
| 7 | Risk Assessment - Overview | |
| 8 | Operational Risk Assessment | |
| | Risk Matrix | |

| | District Overview - Risk | 35 |
|----|--|----|
| 9 | Disaster Resilience Assessment | 36 |
| | Hazard Scenarios | 36 |
| | District Overview – Disaster Resilience | 37 |
| 10 | Corporate Risks & Assumptions | 38 |
| 11 | Climate Change | 39 |
| 12 | Demand | 41 |
| | Growth Uncertainty | 42 |
| 13 | Capacity & Performance | 44 |
| | Consents | 44 |
| 14 | Operation and Maintenance | 46 |
| | District Overview – Operation & Maintenance Expenditure | 46 |
| 15 | Capital Works | 49 |
| 16 | Renewals | 50 |
| | District Overview – Renewals Expenditure | 50 |
| 17 | New Works | 53 |
| | District Overview – Capital Works | 55 |
| 18 | Overall Financial Forecasts | 56 |
| | Financial Forecast Key Assumptions | 56 |
| | Funding | 56 |
| | Valuation | 57 |
| | Revenue Sources | 57 |
| 19 | Data Confidence | 58 |
| 20 | Asset Management Systems | 60 |
| 21 | Negative Effects | 60 |
| 22 | Service Delivery | 60 |
| 23 | Improvement Plan | 61 |
| 24 | Changes to AMP as a Result of Long Term Plan Consultation | 66 |
| | Appendix 1: Asset Management Maturity Assessment | 67 |
| | Appendix 2 Glossary Of Terms | 71 |
| | Appendix 3: Key Assumptions and Risks | 76 |
| | Appendix 4 : Long Term Plan (Incl Mandatory) Drainage Performance Measures | 88 |

Tables

| 11 |
|----|
| 12 |
| 12 |
| 12 |
| 15 |
| 18 |
| 23 |
| 29 |
| 31 |
| 32 |
| 34 |
| 35 |
| 37 |
| 37 |
| 42 |
| 54 |
| 57 |
| 58 |
| 62 |
| |

Figures

| Figure 1: District Drainage Scheme Map | . 13 |
|---|------|
| Figure 2: Asset Condition Summary | . 29 |
| Figure 3: WDC Risk Matrix | . 34 |
| Figure 4: District Overview - Projected Operation & Maintenance Expenditure | . 48 |
| Figure 5: District Overview - Projected Renewals Expenditure | . 51 |
| Figure 6: Renewals Expenditure Model | |
| Figure 7: District Overview - Projected New Works Expenditure | . 55 |
| Figure 8: Projected Total Expenditure | . 56 |

1 EXECUTIVE SUMMARY

What assets do we have?

There are 7 rural and 5 urban rated drainage areas within the Waimakariri District. Together the 12 drainage schemes cover approximately 10% of the District's land area but service approximately 90% of the District's population.

The urban scheme assets include piped stormwater networks, treatment devices, basins, stormwater pump stations and open drains while in the rural schemes assets are primarily open drains and waterways which the Council maintains.

Each of the rural drainage schemes has a Drainage Advisory Group that meets three times per year with the Drainage Asset Manager, and other staff.

Levels of Service

A review of the 2018-2021 AMP Levels of Service has been carried out. There were five changes made to non-mandatory measures. Two related to clarifying the response to nuisance flooding; one clarified that a complaints measure applied to post drain cleaning; and two had reduced targets for stormwater response times, for consistency with roading maintenance targets.

Details of the changes are shown in the relevant section of this document.

These changes were presented to the Council's Utilities and Roading Committee in July 2020, who recommended that the Council include them within the Draft 2021-31 Long Term Plan (refer to report 200406043184)

Many levels of service are measured at scheme level and details regarding whether these have been met or not, are shown in the individual scheme AMP's. Table 7 in this document shows performance against the levels of service measured at district level. Just over half of the levels of service were met. Response times to service requests, and the overall satisfaction with the drainage services as measured by the community survey are the two main representative issues from levels of service that were not met

Asset Condition

The stormwater pipe network now has a programme of CCTV inspections under way. The early results from this programme will indicate whether the rate of CCTV inspection should be increased.

A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is low. It is proposed that they will be physically assessed for condition in the next three years, following a comprehensive asset inventory review at all of the facility sites.

Risk

A range of different types of risk assessments has been carried out for the Districts drainage supply schemes. The operational risk assessment has not been updated for this AMP review but the assessment previously identified 26 high risk issues across the District's drainage schemes. There were no extreme risks recorded.

Of these high risks identified, 15 relate to potential earthquake damage to assets, and need further evaluation to better define the actual degree of risk, 4 relate to flooding from malfunction of flap

valves, for which an improvement programme has been implemented, one relates to Tsunami risk, and 6 are flood risks related to asset failure or insufficient capacity. Projects to resolve these flood risks have been identified and programmed, and are detailed in the individual scheme Activity Management Plans

The vulnerability assessment and criticality assessments provide input data to the renewals programme. The effect of the vulnerability assessment, which only applies to underground pipes, is to accelerate the renewal of old brittle pipework, in areas of high risk of liquefaction.

It is expected that this category of pipes will have been completely replaced by 2033 thereby increasing the resilience of the network.

The Disaster Resilience Assessment considers the risk to above ground assets from a broad range of potential natural disasters. Further work is needed on the high priority recommendations from this assessment, although since there is some overlap between the DRA and the operational risk assessment, some DRA risks are being reduced through the projects identified and programmed through the operational risk assessment. Most notably the flood risks.

Growth and Demand

Population projections were updated in 2020 to determine the expected growth in the District and to understand what upgrade works, if any, are required to meet the agreed levels of service. The update included establishing projected increases in the number of properties expected to receive drainage services.

The overall district population growth scenario used for the 2021 AMP update was supplied by Council's Development Planning Unit, broken into towns and rural areas. 3 waters growth projections were calculated using the New Projections for LTP 2021-2031 (TRIM200908117997), which was the basis for infrastructure planning.

However, new developments are required to construct infrastructure that will ensure that discharge from the development is treated to the quality standards required by the Regional Council's Land and Water Regional Plan, and also to not discharge at a rate greater than that which existed before the development. Therefore nearly all the cost for capital works for growth falls directly to the developer, and works within the AMP's for growth are minimal.

Capacity and Performance

The existing capacity and performance of the main reticulated drainage schemes in the district are monitored using hydraulic models constructed and maintained by the Council for each scheme. Where a scheme has been identified as performing below the required levels of service, either currently or with the inclusion of future growth, upgrades have been subsequently modelled and budgets, if necessary, to carry out the upgrades included in the Long Term Plan. In some cases the need to refresh models has been identified.

For a number of schemes a flood response programme of improvements was developed following the 2014 floods, with this work now being largely complete. Subsequent wet weather events have resulted in some minor adjustments to that programme. Remaining works from this programme not yet completed are identified in the Ohoka Rural and Rangiora Urban drainage scheme AMPs

Under the Land and Water Regional Plan Council is required to obtain consents for discharge of its urban stormwater. Under these consents Council will be required to improve the quality of the water it discharged into streams and rivers. Consents for all the district's urban centres have been lodged

and the outcome is pending. Provisional budgets to meet the expected consent conditions have been included in the relevant scheme AMPs.

Operation and Maintenance

Operational and maintenance expenditure for drainage remains largely based on the previous year's expenditure carried forward. The biggest single expenditure item typically being spent on carrying out day to day maintenance in both rural and urban areas –drain cleaning and the like. Drainage maintenance is carried out in association with the Greenspaces maintenance contract (urban areas), and the Roading maintenance contract (rural areas).

In association with a district wide waterways maintenance consent from the Regional Council, Council has developed a <u>Drainage Maintenance Management Plan 2020</u>. This provides a new direction for the way that waterways are to be maintained, with a new emphasis on maintaining and enhancing ecological values, as well as providing for the traditional drainage function. It is anticipated that over time, with increased planting, installation of sediment traps and other improvements, streams may be able to be left "unmaintained" in the traditional sense of being cleaned out by digger on a regular basis. Much of the impetus for these changes is being directed by the Canterbury Water Zone Committees, managed by Environment Canterbury, each of which now has a Zone Implementation Programme. <u>Waimakariri Zone Implementation Programme</u>

Renewals

Improvements have been made to the Council's risk based renewals model, so that different levels of acceptable risk can be applied to the various categories of criticality. For network assets the model includes that highly critical assets are renewed before 85% of their expected life, while the lowest criticality assets may not be replaced until 120% of their expected life. Based on these risk profiles the model provides a prioritised list of pipe renewals needed across the district, identified by scheme, which Asset Managers assess and adjust as necessary. The model provides an annual expenditure profile for the next 150 years, and also identifies the annual revenue required that will enable this renewals expenditure to be made without the renewals fund falling into debt.

Financial Forecasts

Financial forecasts included within the individual scheme AMP's show projected capital expenditure for growth, level of service, and renewals, together with operational and maintenance expenditure. Funds carried forward from previous years because capital projects have been delayed are not included. Periods shown for the different categories of budget vary, from 30 years for operations and maintenance, through to the full life cycle of long lived assets such as pipelines – 150 years. Forecasts are aggregated up from the different schemes, district wide flood response projects included and then shown graphically within this overview document. See Section 56.

There is a programme of district wide improvement works that was a consequence of a storm event in 2014. This programme is funded by a district wide rate, which is part of the General Rate. Capital budgets and associated financial graphs shown in the scheme AMP's, are funded from ratepayers entirely within each scheme, and do not include works funded by this district wide rate. Therefore there are some significant planned improvement works within the geographical boundaries of some schemes which are not shown in the scheme AMP budgets. The same applies to recent central government funded projects arising from the Covid 19 stimulus package, and 'shovel ready" projects. These projects themselves are identified, however, and the maps showing capital works within the scheme boundaries show all the capital works, irrespective of funding source.

Capital budgets/graphs shown in this overview document include the projects funded from the district wide rate, and government "shovel ready" projects.

Future Challenges and key Decisions

Putting aside managing expectations around stormwater levels of service which will remain as an ongoing challenge, the four most significant challenges facing Waimakariri District Council in the drainage area, are global discharge consents, climate change effects, 3 Waters reform, and the effects of the Freshwater National Environmental Standards.

• Discharge Consents

As noted above Council has applied for discharge consents into receiving waters for all of its urban drainage networks. Although there is now more certainty about the conditions that these consents will impose, challenges remain about how best to comply with the conditions. Further detail on this issue is provided in the Consents section of this overview document.

• Climate change

Climate change mitigation is the most significant long term challenge. Research to date has indicated that while low lying coastal areas will remain protected by the dune system, increasing ground water levels will become problematic, and various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of stop banks and natural river banks will occur. Further assessment work is needed, and consideration given to the types of solutions that may be practical. The issues need to start being discussed with stakeholders, most notably the Regional Council, and affected communities. Major decisions will need to be made, to agree an adaptive strategy that is acceptable to both the affected communities and the wider district, within the 10 year period of the LTP

• Water Reform

The 3 Waters reform being advocated by central government appears increasingly likely to result in major structural change to at least water supply and wastewater management in New Zealand, over the period of the 2021-23 LTP. The form of that change is unclear, but the period of transition itself is likely to be very disruptive. On the current timetable, Council will need to make a decision on whether it wishes to opt in to the reforms in 2021. Related to this, is consideration of 3 Waters rates reform. Three years ago a working party looked at various options for district wide rates, but Council decided to delay any community engagement on the issue for three years. Should Council decide not to opt in to the reform process, it may wish to consult with the community on the possibility of district wide rates for 3 waters in the 2021-2023 LTP period

National Environmental Standards-Freshwater

The National Environmental Standard regulations have recently come into force. The Regional Council will, in due course, be defining wetland areas within the district. Limited works will be permitted within these areas, and the ability to farm some of them, as has traditionally occurred, could be in doubt. Council will inevitably be involved in this process however it unfolds.

2 INTRODUCTION

The purpose of this Drainage Activity Management Plan (AMP) is to provide an overview of the Councils drainage assets, outline the issues associated with these assets and show how the Council proposes to manage them in the future, so as to continue to supply agreed levels of service.

The overview also describes the processes and asset management practices common to all of the drainage schemes. There is an introductory chapter that provides an overview of the activities and asset management practices and processes that are common to all of Council's infrastructure activities, which should be read in conjunction with the other documents.

The Drainage AMP has been split into individual sections for each of the twelve individual drainage schemes, which are rated separately. There are five urban schemes and seven rural schemes:

| Urban Schemes | Rural Schemes |
|---------------|---------------|
| Каіароі | Coastal Rural |
| Rangiora | Clarkville |
| Oxford | Central |
| Pegasus | Ohoka |
| Coastal | Loburn Lea |
| | Cust |
| | Oxford Rural |

The 12 drainage schemes cover approximately 10% of the District's land area and service approximately 90% of the District's population.

The urban scheme assets include piped stormwater networks, treatment devices, basins, stormwater pump stations and open drains while in the rural schemes assets are primarily open drains and waterways which the Council maintains.

Each of the rural drainage schemes has a Drainage Advisory Group that meets three times per year. Outside of these areas, the drainage features are predominantly natural and looked after by the riparian owner or as part of the roading infrastructure. The focus of the Drainage Advisory Groups generally centres on the operational maintenance of rural drains

In recent years the issue of properties upstream of drainage rated areas contributing to stormwater problems within the rated area is becoming a bit of an issue. In addition the problem of how to manage requests for minor drainage works in areas that are not inside a rated drainage area has become more prominent. This latter issue has to some extent been alleviated by the introduction of a small, \$6.00 per property district wide rate introduced in 2018. Never the less moving to district wide rating was starting to be seen as a possible way forward, but the 3 Waters reform may mean that this will be put on hold.

With increasing public awareness and concern about stream water quality, stormwater and drainage management has a much higher profile across the district than was the case a few years ago.

Document structure and Improvement Plan

The assessments carried out as part of the Asset Management review process are intended to identify issues that need to be addressed. Resolution may include new capital works, adjusted management or process practice. A summary is provided within this document, but generally capital projects to improve issues are identified in the individual AMPs. However most process issues and many investigations will be district wide, and are therefore identified in this document at the end of each section. All of these improvements are collated in Table

Document Review Process

Review of the AMPs has been carried out by a project team comprising the 3 Waters Manager, the Infrastructure Strategy Manager, the three Asset Managers (Water, Wastewater and Drainage), and the Network Planning Team Leader, with additional technical input from the Network Planning Team. Project Management has been led by the Water Supply Asset Manager.

The project team met fortnightly, and progress was tracked against a detailed programme that set out the review actions necessary for each section of the document

Internal advice was sought from the Council's Development Planning Team for growth projections, and liaison with the Asset Management Information team occurred during the update of the valuations. Asset Managers work closely with the Finance Unit during development of the budgets.

Information regarding progress and requirements for the LTP development was provided via the LTP Project Manager.

An overview of the Activity Management Plans was presented in a report to the Utilities and Roading Committee in December, which provided an opportunity for Councillors to understand the context of asset management planning and what it expects to achieve. Draft plans were formally presented in a report to Council for adoption for consultation on 23rd February 2021. Any changes in the AMPs resulting from the LTP consultation process, have been addressed in AMP's by the addition of an addendum where necessary, and incorporated in the final version published on the Council's webpages after adoption of the 2021-2031 LTP.

Financial Forecasts

None of the financial forecasts shown in the AMPs include inflation. Scheme financial forecasts, which are funded by ratepayers within the schemes, do not include works arising from the district wide flood response programme.

District Overview- Scheme Upgrades

There are several scheme drainage improvement programmes that are included within the 2021/31 LTP programme of works. Many of these resulted from the 2014 flood event, or from more recent rain events that fell on areas not badly affected by the 2014 even. The Kaiapoi upgrade has been planned for some time but it has been possible to bring it forward due to government "shovel ready" funding. The major schemes upgrades are for the Rangiora and Kaiapoi Urban schemes, the Ohoka Rural scheme which encompasses the Mandeville and Ohoka communities, which was badly affected by the 2014 event, and the Coastal Urban scheme.

Significant sums are included in each of the urban scheme budgets to carry out works to meet the requirements of the new network discharge consents. \$50k per annum for 50 years has also been included for district wide waterway improvement works associated with the regional Zone

Implementation Programme Addendum (ZIPA) initiative under which local Councils fund and implement ecological improvement works.

3 SCHEME DESCRIPTION (WHAT DO WE HAVE?)

The following table outlines the total area of each scheme (ha.) and outlines the total number of properties connected at the time of the 2020/21 Rates Strike. The 12 drainage schemes cover approximately 10% of the District's land area and service approximately 90% of the District's population. Tables 2,3 and 4 summarise the district wide network assets. In addition to the individual assets shown in these tables there are 14 stormwater pump stations.

The figure that follow the statistics tables shows the scheme boundaries of the drainage schemes.

| Drainage Scheme | Area (ha.) | Number of Properties 2019/20 Rates Strike |
|--|------------|--|
| Rangiora Urban | 915 | 7,144 |
| Kaiapoi Urban | 845 | 4,929 |
| Coastal Urban Made up of: Woodend Pines/Kairaki Waikuku Beach | 214 | 1,601 |
| Pegasus Urban | 282 | 1,496 |
| Oxford Urban | 174 | 743 |
| Central Rural | 5,745 | 1,136 |
| Oxford Rural | 5,245 | 440 |
| Waimakariri Coastal Rural | 4,932 | 823 |
| Ohoka Rural | 4,624 | 1,227 |
| Clarkville Rural | 835 | 211 |
| Loburn Lea Rural | 41 | 39 |
| Cust Rural | 374 | 14 |
| Total | 24,226 | 20,922 |

Table 1: District Overview – Scheme Summary Information

| Stormwater pipe length (m) by diameter and pipe material | | | | | | | | | | | | | |
|--|------|--------|---------|---------|--------------------|---------|---------|--------|--------|--------|--------|--------|----------|
| | | | | | Pipe Diameter (mm) | | | | | | | | |
| Pipe Material | 100 | 150 | 225 | 300 | 375 | 450 | 525 | 600 | 750 | 900 | 1050 | >1200 | Total |
| Concrete | 0m | 619m | 5,532m | 10,126m | 12,844m | 15,779m | 11,068m | 8,824m | 9,536m | 5,598m | 2,387m | 1,649m | 83,962m |
| Perforated HDPE | 251m | 1,662m | 84m | 1,315m | 0m | 0m | 0m | 5m | 0m | 0m | 0m | 0m | 3,317m |
| PVC | 220m | 842m | 3,886m | 9,177m | 2,174m | 277m | 86m | 160m | 52m | 0m | 0m | 0m | 16,873m |
| Other | 224m | 76m | 1,968m | 173m | 79m | 67m | 19m | 262m | 60m | 0m | 17m | 0m | 2,944m |
| Total | 695m | 3,200m | 11,470m | 20,791m | 15,097m | 16,122m | 11,172m | 9,251m | 9,648m | 5,598m | 2,404m | 1,649m | 107,097m |

Table 2: Pipe Data Summary

Table 3: Open Channel Drain Data Summary

| Open Channel Drains | | | | |
|---------------------|---------|--|--|--|
| Material Length (m) | | | | |
| Unlined Drain | 284,103 | | | |
| Lined Drain | 4,046 | | | |
| Total | 288,149 | | | |

Table 4: Other Stormwater Asset Data Summary

| Stormwater Assets | | | |
|-------------------|-------|--|--|
| Asset Type | Count | | |
| Inlet (Sump) | 130 | | |
| Manhole | 2,042 | | |
| Node | 58 | | |
| Valve | 54 | | |
| Basins | 49 | | |
| Treatment Devices | 7 | | |
| Total | 2,284 | | |





Scheme Statistics

The scheme description section of each scheme AMP includes a Scheme Statistics table current for the end of FY2019/20. A "Data Reference" table has been included which lists the technical reports and file reference numbers outlining the data sources used to compile each AMP document.

4 LEVELS OF SERVICE

Levels of Service (LoS) are a measure of the standard of service being provided. The target levels of service are a significant factor in determining the size, capacity and cost of operating each scheme.

There is a hierarchy to the LoS. Some are measured at district wide level, some at scheme level, and some differ depending whether the scheme is urban or rural. The way that LoS measures are assigned, measured, and reported is summarised below, and explained in more detail in the following paragraphs.

| | Mandatory Performance Measures | Elective Performance Measures |
|------------|---|--|
| Set By: | These measures are set by the Department of Internal Affairs (DIA), but the targets set by individual local authorities. | These measures are set by individual local authorities. |
| Reporting: | Long Term Plan and Annual Report | Individual scheme Activity Management Plans |
| | | Annual report to Council (future improvement). |
| | | Some measures are also included within the Long Term Plan and Annual Report. |

Table 5: Summary of Performance Measure Types, and Reporting

Mandatory Performance Measures

In 2010, the Local Government Act 2002 was amended to require new rules specifying non-financial performance measures for local authorities. The measures are intended to help members of the public compare the level of service provided by different councils at District or City level. The Council is required to incorporate the performance measures into their long-term plans and report against them in their annual reports. These measures, prescribed in accordance with Section 261B of the Local Government Act 2002, are included within the Council's Long Term Plan.

Mandatory performance measures are measured at the district wide level and therefore are not included in the individual water supply scheme AMP's, but rather are reported in the Council's Long Term Plan, and Annual Report.

Appendix 4 shows the Council's performance measures for the stormwater and drainage activities that were published in the 2018/19 Annual Report. They include the mandatory performance measures for wastewater, shown in italics. These measures are reported to Council on a quarterly basis

Elective Levels of Service

The mandatory measures do not replace the scheme specific elective LoS reported in the AMPs and used by the Council to monitor and manage the performance of individual drainage schemes.

The LoS detailed in each scheme AMP are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by established best practice. These are categorised as technical levels of service, and starting in 20/21 they are to be reported to Council

on an annual basis. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (Strategic goals and objectives)
- Legislative Requirements

Primary customers are households or businesses that are connected to Council drainage schemes, with key stakeholders being Community Boards, Councillors and the Regional Council.

Annual report measures as shown in Appendix 4 include five elective performance measures

Community Engagement

The level of service component of the Activity Management Plans was consulted upon comprehensively as part of the 2005 review. While a comprehensive public review has not been carried out since then, levels of service are tested with the public in a number of ways.

- For general feedback the principle method of communicating proposed LoS to customers is via the LTP process. As noted, mandatory performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP.
- The Council's drainage AMP's, which are updated concurrently with preparation for the LTP are made available on Council's website, which allows a channel for feedback from customers who may be interested.
- The general satisfaction of customers with the level of service received is gauged through the Council's customer satisfaction survey. Changes to this survey have been made since 2018 so that information is now available on a per scheme basis.

Council received considerable community criticism after the 2014 flood event, particularly from the Mandeville area. It responded with a new district wide flood rate introduced in the 2015-2025 LTP, and a programme of works to address the concerns of the affected communities.

There have been two significant rain events since that time, 20 Feb 2018 and 1 June 2019. For both of these events, Council subsequently carried out an analysis of the drainage service requests received during the event. Issues relating to capacity (as against those relating to system blockage, which were mostly dealt with during the event) were investigated and, where warranted, improvements were identified and submitted to Council for approval of additional funding. Where the works are not yet completed, this additional funding is now incorporated in the financial information provided within the 2021/31 AMPs. The summary reports to Council seeking funding approvals at the time are TRIM <u>180809090003</u> and TRIM <u>200709085254</u>

Each rural drainage scheme has a permanent engagement group in the form of Drainage Advisory Groups. These groups, for which new membership is sought on a three yearly cycle, meet at least three times per year, and enable local drainage concerns to be discussed, guided and resolved.

Changes to LoS for 2020

A review of levels of service was carried out in 2017 to check that the scheme specific performance measure definitions were still relevant. In 2020 a subsequent review was completed, to further refine these measures.

As a result of the 2020 review, the following changes were made to the elective performance measures:

- 6 measures were changed, either to clarify or modify the performance measure.
- No measures were either removed or introduced.

Table 6 summarises the adopted set of performance measures, including changes between the 2018 and 2021 AMPs, and provides an explanation for the changes. Refer to Council report <u>TRIM</u> 200406043184 for background to these changes.

The LoS section in each scheme specific AMP contains a table that summarises the improvements required to ensure that all performance measure targets can be achieved in the future. The table lists the response type and improvement project details for tracking.

 Table 6: Elective Performance Measures for Drainage for 2021 relative to 2021

| Level of Service | Performance Measure (2018) | Performance Measure (2021) | Target | Type of Change / Reason | Community Outcomes that this LoS Contributes to |
|--|--|---|--------------|--|---|
| Flooding - Dwellings | Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings. | Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings. | 1 in 50 year | No change | There is a safe environment for all |
| Flooding - Nuisance or Carriageway | The percentage of complaints about nuisance flooding caused by lack of capacity that are investigated and a project planned to resolve the issue. Applies to rain events with an Average Recurrence Interval of 5years or less. | For urban areas: For properties or carriageways within urban drainage schemes, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less. For rural areas: For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood | 100% | Change Type: Clarification, plus included need for justification before committing to a solution to an issue. Reason: Wording change to allow the possibility that while improvements will be investigated and considered, the 5 year ARI target may not be met on urban schemes and to acknowledge that there may be more frequent nuisance issues on rural schemes. | There is a safe environment for all Core utility services are sustainable, resilient, affordable; and provided in a timely manner |

| Level of Service | Performance Measure (2018) | Performance Measure (2021) | Target | Type of Change / Reason | Community Outcomes that this LoS Contributes to |
|--|---|---|--------------|--|---|
| Flooding - CBD Nuisance or Carriageway | Minimum return period of flood event that can be accommodated in the system without having nuisance flooding of properties or road carriageways in the CBD area. | For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 10 years or less. | 100% | Change Type: Modification Reason: Wording modified to be consistent with the general urban level of service above. | There is a safe environment for all Core utility services are sustainable, resilient, affordable; and provided in a timely manner |
| Complaints - Odour or Insects - Open Network | Number of complaints about odour, midges or insects in the open network including drains and ponds. | about tts in the g drains and Number of complaints about odour, midges or insects in the open network including drains and ponds. | | No change | Core utility services are sustainable, resilient, affordable; and provided in a timely manner |
| Complaints - Aesthetics - Drain Clearance | Number of complaints resulting from unsatisfactory drain cleaning operations or service | Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service | Nil per year | Change Type: Clarification Reason: Clarifying that the LOS relates to post cleaning complaints | Core utility services are sustainable, resilient, affordable; and provided in a timely manner |

| Level of Service | Performance Measure (2018) | Performance Measure (2021) | Target | Type of Change / Reason | Community Outcomes that this LoS Contributes to |
|--|---|---|------------------------|---|---|
| Consent Breach — Action Required | Number breaches of consent conditions that result in an ECan report that identifies compliance issues. | Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action. | 0% | Change Type: Clarification Reason: Clarified that this is measuring only breaches that require actions, and also modified the measure to give more context to the level of breaches | There is a healthy and sustainable environment for all. |
| Customers - % Satisfied | Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory". | Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory". | > 90% | No change | Core utility services are sustainable, resilient, affordable; and provided in a timely manner |
| Response Time - Drain Cleaning | Rural Drainage Areas: Percentage of service requests for drain cleaning that are responded to within 5 working days | Rural Drainage Areas: The percentage of service requests for drain cleaning that are responded to within 5 working days. | 100% 95% | Alignment and consistency with the Roading maintenance target. | Core utility services are sustainable, resilient, affordable; and provided in a timely manner |

| Level of Service | Performance Measure (2018) | Performance Measure (2021) | Target | Type of Change / Reason | Community Outcomes that this LoS Contributes to |
|--|---|--|------------------------|---|---|
| Response Time - Drainage Enquiries | Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days | Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days | 100% 95% | Alignment and consistency with the Roading maintenance target. | Core utility services are sustainable, resilient, affordable; and provided in a timely manner |

For the mandatory performance measures, the element that is measured cannot be changed (as this is mandatory), however the targets can be changed. No changes were proposed to the mandatory performance measure targets as part of the 2020 review. As for the elective measures a report noting no changes was approved by the Council's Utilities and Roading Committee for inclusion in the Draft Long Term Plan (report 200406043184), before ultimately being approved by Council.

.District Overview: 2019/20 Levels of Service Performance

Table 7 shows both the Mandatory and elective recent levels of service achievement for those measures that are assessed at the district level. Scheme AMPs can be referred to for the elective LoS and performance results for the individual schemes. The target shown is the target from the AMP's associated with the 2018 -2028 LTP, and the Community outcomes are also from the 2018-2028 LTP.

| Performance Measure | Target | Target met 2019/20 | Commentary | Action to Address | Community Outcome that this LOS contributes to |
|--|--|------------------------------|---|--------------------------------------|--|
| * Urban stormwater a) The number of flooding events that occur as a result of overflow from the stormwater system that enters a habitable floor b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to a territorial authority's stormwater system. | a)Nil in less than 50 year storm events b)Nil per 1000 connected properties in less than 50 year storm events | a) Y b)Y | a) There were no flooding events of habitable floor levels during this year. b) There were no flooding events of habitable floor levels during this year. | a) N/A b)N/A | Core utility services are provided in a timely, sustainable and affordable manner |
| *Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of: (a) abatement notices (b) infringement notices (c) enforcement orders, and (d) convictions, | a) Nil b) Nil c) Nil d) Nil | a) Y b) Y c) Y d) Y | a) No abatement notices were received from Environment Canterbury this year. b) No infringement notices were received from Environment Canterbury during this year. c) No enforcement orders were received from | a) N/A b) N/A c) N/A d) N/A | There is a healthy and sustainable environment for all. |

Table 7: District Overview - Levels of Service Performance Measured at District Level

| Performance Measure | Target | Target met 2019/20 | Commentary | Action to Address | Community Outcome that this LOS contributes to |
|--|--|-----------------------|---|--|--|
| Received in relation those resource consents. | | | Environment Canterbury during this year. d) No convictions were received from Environment Canterbury during this year. | | |
| * 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. | Less than 180 minutes | Y | There were no flooding events of habitable floor levels during this year. | N/A | Core utility services are provided in a timely, sustainable and affordable manner |
| *Complaints The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system. | Fewer than 10 complaints per 1000 connections. | Y | There have been 73 complaints this year related to the performance of the stormwater system. (4.0 complaints per 1,000 connections) | N/A | Core utility services are provided in a timely, sustainable and affordable manner |
| Rural Drainage Areas: Percentage of service requests for drain cleaning that are responded to within 5 working days | 100% within 5 working days | Ν | 245 of the 264 (93%) service requests relating to rural drainage maintenance received this year were responded to within 5 working days. | Weekly meetings with staff and contractors are being coordinated by the Water Operations Team Leader. | Core utility services are provided in a timely, sustainable and affordable manner |
| Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days | 100% within 5 working days | N | The target was met for 359 of the 389 service requests received (92%) | Water Operations Team Leader holding weekly meetings | |

| Performance Measure | Target | Target met 2019/20 | Commentary | Action to Address | Community Outcome that this LOS contributes to |
|--|--|-----------------------|--|--|---|
| Maintain dialogue and consultation with Te Ngai Tuahuriri Runanga | Drainage team represented at all scheduled Runanga meetings | Y | All Runanga meetings that were held this year have been attended by representatives from the Drainage team. | N/A | The Council and Te Ngai Tuahuriri Runanga, through the MOU continue to build their relationship |
| Facilitate and engage with all drainage and water race advisory groups | 3 meetings per group per year | Ν | 11 out of 15 advisory group meetings were held | None. Meetings were missed because of Covid- 19 | There are wide ranging opportunities for people to contribute to the decision making by local, regional and national organisations that affects our District |
| Number of complaints resulting from unsatisfactory drain cleaning operations or service | Nil | Ν | Two complaints received, both related to a slow response to a request | Water Operations Team Leader holding weekly meetings | There is a healthy and sustainable environment for all |
| Number of complaints about odour, midges or insects in the open network including drains and ponds. | Nil | Y | No complaints received | N/A | There is a healthy and sustainable environment for all |
| Percentage of respondents to a three- yearly community survey that have an opinion that rates the service as "Satisfactory" or "Very Satisfactory". | >90% | N | Of those who identified themselves as being within a drainage area 76.1% were satisfied or very satisfied, 11.9% were dissatisfied and 12% had no opinion | Completion of the flood response works and the Kaiapoi capacity upgrade. | Council sewerage and water supply schemes, and drainage and waste collection services are provided to a high standard |

Benchmarking

WDC is in the middle of the field when compared nationally against other provincial local authorities for stormwater performance. Using the Water NZ National Performance Review most recent results (2018/19):

- 22% of WDC stormwater discharges are consented, with the remainder having been applied for. 10 TLA's have all of their discharges consented, 7 have more than 22% but not 100%, and the remaining 26 have fewer consents
- WDC is among the 25 TLAs which are monitoring stormwater quality, and have stormwater catchment management plans in place.
- Flooding response times were not reported for WDC
- WDC average annual residential charges are higher at \$238 per annum than the average across all TLA's at \$169 per annum
- Operational cost per property at \$134 p.a. is higher than the national average of \$81
- Capital expenditure per property at \$233 p.a. is higher than the national average of \$124
- Debt servicing levels are below prudent debt servicing levels for high growth councils, the category into which WDC falls
- 4 habitable floors were flooded in the 2018/19 year. 7 other TLAs had some flooded floors.

Scheme differences

Pegasus, as a recently built complete new town, performs better than other urban areas within the District, as it has been designed for higher levels of service. Older areas of Kaipoi and Rangiora were typically build with lower design standards, and retrospectively increasing them to current standards is not considered to be affordable. However the minimum return period for a flood event below which flooding of floor levels must not occur, is a universal LOS across all urban areas. The nuisance flooding LOS is generally aimed at indentifying issues in these older areas, with the intention being to avoid those issues not being addressed.

Parts of old Kaiapoi are low lying and have suffered from sporadic flooding for years. Projects to deal with these problems were included in the 10 year 2018 LTP programme, but Covid 19 response funding from central government has enabled these works to be brought forward.

Performance across the rural is fairly uniform, but the Mandeville settlement within the Ohoka rural area is a challenge. This settlement of some 700 properties comprises almost exclusively of rural residential type properties and covers a fairly large area. It suffers from bouts of resurgant ground water, for the which the original drainage systems were not adequately designed. In addition, among parts of the community there is a level of expectation that the service levels that Council should be achieving should be akin to urban levels of service.

5 ASSET CONDITION

The current assessment of asset condition is based on theoretical remaining useful life derived from component age and adopted useful life. Adjustments to the remaining life are made to individual components where information is available to suggest the theoretical remaining life is inappropriate.

A modest wastewater CCTV programme was started in 2015 to survey the reticulation network and assign evidence based condition ratings. While the information has been useful to identify major pipe structural problems that need immediate attention, these surveys need to be properly analysed and the budget potentially increased in the future, should the analysis show a greater level of deterioration than anticipated. In the interim the initial CCTV budget has been carried forward into the period of the 2018/2028 LTP

To date Council has not had the appropriate software to effectively carry out proper analysis of the CCTV work, which is critical to assess condition of the stormwater network. It is proposed to purchase the widely used InfoAssets package which will allow more efficient importing of CCTV data, and proper analysis of that data. It is expected that this will provide immediate benefits in assessing asset condition. A project is also under way to integrate the data that will be imported into InfoAssets with the main asset management system (Technology One) data.

Remaining Useful Lives

The useful lives of asset groups as shown in the valuation are consistent with the asset life assumptions used to develop the renewal forecasts. The assumptions about the remaining useful lives of the drainage assets will progressively be informed by the ongoing collation and analysis of the asset maintenance and repair data. Details of the assumptions pertaining to the remaining useful lives of each asset category are included in the Valuation report (TRIM 200824109857).

Assets are revalued on a three yearly valuation cycle with the most recent valuation being carried out for 30 June 20120.

• **Reticulation** The approach of compiling better condition and maintenance information over time, has been considered relatively low risk for reticulation as the average age relative to asset life is reasonably young. The majority of reticulation assets have more than 50% remaining useful life and are considered to be in good condition.

As noted, however, a CCTV programme is in place to assess the condition and expected life of gravity drainage assets, which will in time improve confidence in asset lives.

Each scheme AMP contains a GIS plan which shows the assessed asset lives as held in the Asset Management Information System. The plans will evolve as the CCTV coverage increases and will eventually supersede the remaining useful life based condition assessment.

• *Headworks (pump stations)* A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is low. It is proposed that they will be physically assessed for condition in the next three years. Based on age, the majority of headworks assets have more than 50% of remaining useful life.

An assessment of all the electrical componentry at headworks was carried out for the 2018 AMP's and has been repeated/updated for this review to identify renewal needs. The rolling VSD servicing plan developed in 2017 is ongoing, factoring in site criticality and environmental factors.

Other works identified from this assessment have been programmed and budgets incorporated in the ten year plan

- **Useful Lives on GIS** Each scheme AMP contains a GIS plan that spatially illustrates the remaining useful life of the reticulation assets within the network. This provides a useful picture of the relative asset age and performance.
- **District Overview** Figure 2 and Table 8 below summarises assessed asset condition for the 2020 AMP reviews. Note that "Headworks" is inclusive of all above ground assets, while "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.

Figure 2: Asset Condition Summary



Table 8: Pipe Condition Summary

| Condition Grade | Definition | Pipeline Quantity | Total Reticulation Value | Total Headworks Value | Total Value |
|--------------------|---|-----------------------|-----------------------------|-----------------------------|-----------------------------|
| 1 | Very Good More than 80% of life remaining | 70.8 km <i>64%</i> | \$ 69,178,000 <i>66%</i> | \$ 19,454,000 <i>89%</i> | \$ 88,632,000 <i>70%</i> |
| 2 | Good Between 50% and 80% of life remaining | 34.7 km <i>31%</i> | \$ 31,451,000 <i>30%</i> | \$ 1,374,000 <i>6%</i> | \$ 32,825,000 <i>26%</i> |
| 3 | Adequate Between 20% and 50% of life remaining | 4.9 km <i>4%</i> | \$ 3,301,000 <i>3%</i> | \$ 406,000 <i>2%</i> | \$ 3,707,000 <i>3%</i> |
| 4 | Poor Between 10% and 20% of life remaining | 0.0 km <i>0%</i> | \$ 97,000 <i>0%</i> | \$ - 0% | \$ 97,000 <i>0%</i> |
| 5 | Very Poor Less than 10% of life remaining | 0.6 km <i>1%</i> | \$ 638,000 <i>1%</i> | \$ 632,000 <i>3%</i> | \$ 1,270,000 <i>1%</i> |
| Total | | 111.0 km | \$ 104,665,000 | \$ 21,866,000 | \$ 126,531,000 |

6 CRITICALITY

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network
- Prioritise assets that warrant specific condition assessment
- Prioritise assets for repair following multiple failures, e.g. following an earthquake
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals. Specifically this means that assets with higher criticality rating are renewed before their end of life, while renewal of low criticality assets will be delayed beyond theoretical end of life.

The criticality assessment carried out on the reticulation uses an automated GIS model using both GIS and modelling data to determine the criticality of pipes. The previous critically assessment model for treatment plants and pump stations has been updated and used again in this document. It is expected that a new model for assessing the criticality of pump stations and treatment plants will be completed in time for the next AMP document, but is subject to a comprehensive asset stocktake at facilities being undertaken first.

WDC have chosen to use a component failure and public-impact based approach to identify and rank critical assets.

For drainage assets "Failure" is defined as any single component malfunctioning causing a loss of service or significant impact to others under normal operating circumstances. "Impact" is defined as:

- Public health impact the failure of the asset creates an unacceptable impact on public health.
- Socio-economic impact the failure of the asset creates an unacceptable social and/or economic loss to the community. This includes disruption to essential services, significant economic activities and important roads.
- Financial Loss The failure of the asset, or the repair of a failed asset, creates an unacceptable financial loss to the community, including the Council.
- Environmental impact the failure of the asset creates an unacceptable environmental effect.

The stormwater reticulation and pump stations are assessed by five main criteria:

- The amount of customers potentially affected by failure of the main or facility
- The diameter of the gravity or pumped stormwater main
- The location of any potential flooding from main, manhole or pump station
- The depth of the stormwater main
- The location of the main, i.e. if it is located in a strategic road, near a train line or a stop bank

Each individual main is then graded between AA and C categories.

| Criticality Rank | | Criticality Rank Code |
|----------------------|---------------------|-----------------------|
| High Criticality | Extreme Criticality | AA |
| | High Criticality | А |
| Moderate Criticality | | В |
| Low Criticality | | C |

Table 9: Criticality Score Categories

The scheme specific AMP sections detail the lengths of mains for each criticality rating and the assessed criticality of each above ground asset. Because the pipe criticality assessment is undertaken using GIS data the assessment can now be repeated and updated on a more regular basis. Annual updates are therefore planned that will inform each years detailed renewals programme.

Operations

Criticality is used as an input to the CCTV programme, and also to determine if a "stand over" is necessary by our in-house operations contractor, when external contractors are working on or near WDC assets.

District Overview – Criticality

Table 10 summaries the percentage of mains in each of the criticality classes:

| Scheme | AA | Α | В | С |
|---------------------------|-----|-----|-----|-----|
| Central Rural Drainage | 0% | 23% | 58% | 19% |
| Clarkville Rural Drainage | 0% | 58% | 42% | 0% |
| Coastal Rural Drainage | 0% | 51% | 7% | 43% |
| Coastal Urban Drainage | 7% | 41% | 34% | 18% |
| Cust Rural Drainage | 74% | 0% | 20% | 6% |
| Kaiapoi Urban Drainage | 14% | 42% | 29% | 15% |
| Loburn Lea Rural Drainage | 0% | 24% | 76% | 0% |
| Ohoka Rural Drainage | 1% | 26% | 56% | 18% |
| Oxford Rural Drainage | 0% | 76% | 24% | 0% |
| Oxford Urban Drainage | 8% | 20% | 63% | 9% |
| Pegasus Urban Drainage | 0% | 31% | 29% | 40% |
| Rangiora Urban Drainage | 6% | 39% | 34% | 22% |
| All Schemes | 9% | 39% | 33% | 20% |

 Table 10: District Criticality Assessment

7 RISK ASSESSMENT - OVERVIEW

The purpose of carrying out risk assessments on drainage schemes is to identify any risks to the scheme which need to be mitigated, and to prioritise implementation of any mitigation plans.

A number of different risk assessment have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below

• **Operational Risk Assessment:** This is the broadest scope assessment. Possible causes of failure of the drainage system are examined, together with the consequences of that failure. Failure includes failure caused by natural disasters. This assessment, was last carried out for the 2015 AMP review. Progress on projects to mitigate the identified risks is reported in the scheme AMPs, where relevant.

When next reviewed the methodology will also be reviewed, to align with ISO 31000.

- **Disaster Resilience Assessment** (DRA): Assesses the risk to above ground assets from a broad range of potential natural disasters. See Section 9
- **Vulnerability Assessment:** Focuses solely on underground assets, assessing the vulnerability of pipes to damage from natural hazards, and uses an automated approach. However, for drainage there are no AC or earthenware pipes in areas assessed as vulnerable to liquefaction, so no vulnerability assessment was carried out
- i. Corporate Risk: High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. This risk assessment is appended at the end of this document. Council adopted a Risk Management Framework in April 2018 that demonstrates how the Council considers and responds to risk (TRIM 180316028262). This has been used to guide the appended Corporate Risk Assessment

8 OPERATIONAL RISK ASSESSMENT

A total of 27 possible causes of failure were assessed by the Drainage Asset Manager for each of the drainage schemes. If the drainage scheme has more than one pump station, for example in Kaiapoi, then a number of events, such as flooding of upstream properties, were considered for each stormwater pump station on the scheme.

Table11 details the 10 separate events considered under each process area

| Process | Event |
|------------|---|
| | Overflow or flooding stormwater from pipes or open drains |
| Collection | Collapse or failure of pipe or open drains |
| Collection | Overflow or flooding of stormwater from pump station |
| | Natural disaster and other |
| | Overflow or discharge of untreated stormwater |
| Treatment | Stormwater not sufficiently treated |
| | Natural disaster and other |
| Diseased | Stormwater unable to be discharged or discharged uncontrollably |
| Disposai | Natural disaster and other |
| General | Operations/management failures |

Table 11: Risk Events Considered

Risk Matrix

Each of the 27 possible causes are rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix as Figure 3. The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 Waters assets.

| | rigare 5. WDe hisk matrix | | | | | | | | |
|-------------|---------------------------|---------------|-------|----------|-------|--------------|--|--|--|
| Risk Matrix | | Consequences | | | | | | | |
| | | Insignificant | Minor | Moderate | Major | Catastrophic | | | |
| | | 1 | 2 | 3 | 4 | 5 | | | |
| ikelihood | A Almost certain | М | Н | Н | Е | E | | | |
| | B Likely | М | Н | Н | Е | E | | | |
| | C Possible | L | М | Н | Н | E | | | |
| | D Unlikely | L | L | М | Н | Е | | | |
| | E Rare | L | L | М | Н | Н | | | |

For each scheme AMP, where the assessment shows unresolved extreme or high risks, a table is provided that shows more details of the nature and response to those risks. Improvement projects have been assigned to each risk event. In some cases multiple projects are required to address a

wide ranging risk. Improvement projects take the form of either capital works (ref URD) or process improvement (ref IP) projects.

District Overview - Risk

Table 1 summarises the number of high and extreme risks identified across the drainage schemes. All high and extreme risks items have been tagged to a preferred treatment method within the individual scheme AMPs.

The Coastal Urban scheme includes individual assessments for Waikuku Beach, Woodend and Pines Kairaki.

| Scheme | Extreme | High |
|------------------|---------|------|
| Central Rural | 0 | 0 |
| Clarkville Rural | 0 | 0 |
| Coastal Rural | 0 | 3 |
| Coastal Urban | 0 | 9 |
| Cust Rural | 0 | 0 |
| Kaiapoi Urban | 0 | 9 |
| Loburn Lea Rural | 0 | 0 |
| Ohoka Rural | 0 | 1 |
| Oxford Rural | 0 | 0 |
| Oxford Urban | 0 | 0 |
| Pegasus Urban | 0 | 3 |
| Rangiora Urban | 0 | 1 |

Table 12: District Overview – Extreme and high Risks (Operational)

Of the 26 high risks identified, fifteen relate to potential earthquake damage to assets, and need further evaluation to better define the actual degree of risk, four relate to flooding from malfunction of flap valves, for which an improvement programme has been identified, one relates to Tsunami risk, and 6 are flood risks related to asset failure or insufficient capacity. Projects to resolve all of these flood risks have been identified, and are detailed in the individual scheme Activity Management Plans (Rangiora and Ohoka).

The Kaiapoi network is the most vulnerable with four of the six identified district flooding risks associated with that network. Individual projects that have arisen from the 2014 flood event have improved the situation, but further work is required. Funding recently received from the Covid-19 Response and Recovery Fund means that the significant works required to alleviate the long term flooding issues on both sides of the Kaiapoi river have been brought forward and will be completed within the first two years of the 2021-31 LTP. Further details are provided in the Kaiapoi scheme AMP.
9 DISASTER RESILIENCE ASSESSMENT

The 2009 Disaster Resilience Assessment (DRA) was a desktop assessment of the risk from natural hazard events for all Council operated water supply, wastewater and drainage schemes including above ground and reticulation assets.

In calculating risk the following factors were considered:

- The likelihood of the hazard event occurring, determined from return period
- The resilience or vulnerability of the asset to each hazard (desktop based)
- The consequence of asset failure to the community

The DRA was updated in 2011 to take into account new hazard assessments, in particular the increased seismic risk to the assets throughout the District including further work on areas susceptible to liquefaction. The outputs of new tsunami modelling, a rapid flood hazard assessment and, an updated wildfire threat assessment were also included. This update focused on above ground assets, as the assessment of risk to below ground assets became incorporated from this time on, into the renewals model. See Figure . Accordingly, each scheme DRA section only shows risks associated with above ground assets.

A comprehensive review of the DRA Action Plan was carried out in 2014 to update progress made on tasks and prioritise future initiatives. As a result of the review, related tasks were consolidated into one of three improvement projects to be actioned over the following three years. Refer to planned improvements at the end of this section. Limited progress has been made on these improvements since the 2015 AMP revision, due to resource constraints.

The DRA, together with the risk based renewals assessment, are the Council's 3 Waters department's primary tools in meeting the obligations of the CDEM Act which requires that all lifeline utilities operate to the fullest possible extent before, during and after an emergency. The results from the DRA inform expenditure decisions for physical works, further assessments and other actions to increase readiness, but these are prioritised, as resources to action implementation plans are limited.

Hazard Scenarios

All above ground facilities were assessed for risk of failure against 13 natural and 2 manmade hazard events.

Table 1 details the hazard scenarios and approximate return periods considered for the DRA.



Table 13: Disaster Hazard Scenarios Considered

District Overview – Disaster Resilience

Table summarises the number of high and extreme natural hazard risks identified for Kaiapoi Urban and Rangiora Urban drainage schemes.

| Scheme | Extreme | High | Facilities |
|----------------|---------|------|------------|
| Kaiapoi Urban | 0 | 7 | 10 |
| Rangiora Urban | 0 | 0 | 1 |
| District | 0 | 7 | 11 |

Table 14: District Overview - Extreme and High Risks (Natural Hazards)

10 CORPORATE RISKS & ASSUMPTIONS

An assessment of key risks and assumptions was prepared by the Council in preparation for the Infrastructure strategy and 2021-31 LTP. The assessment outlines all of the Key Assumptions and Risks that could potentially impact Council service delivery for the 3 Waters activities. Mitigation measures are explained in response to each identified risk.

The Key Risks and Assumptions table has been reproduced as Appendix 3.

The definitions of likelihood and consequence and the overall risk priority used in the Corporate Risk Assessment are included in the Council's Risk Framework Document (TRIM <u>180316028262</u>), and are also reproduced at the end of Appendix 3

A number of the financial risks and assumptions identified in Appendix 3 imply future uncertainty, with future changes potentially affecting the individual scheme financial projections. Changes to corporate assumptions are picked up during annual budget reviews and projections are revised accordingly for the subsequent AMPs and LTP.

11 CLIMATE CHANGE

Waimakariri District Council intends to base its climate scenario on the NIWA report commissioned by ECAN in Feb 2020 entitled 'Climate Change projections for the Canterbury Region.

Climate projections in this report are presented as a 20 year average for two future periods: 2031-2050 (referred to as 2040) and 2081-2100 (referred to as 2090). All changes shown on the maps are relative to the baseline climate of 1986-2005 (referred to as 1995). NIWA acknowledges there are limitations on the results and use of the data but also state the projections are currently the best available for New Zealand.

WDC intends to use the RCP8.5 scenario (representative concentration pathways), which is the current worst case projection

The key findings of the NIWA report for Canterbury as a whole are as follows:

- The projected Canterbury temperature changes increase with time and increasing greenhouse gas concentrations. Future annual average warming spans a wide range: 0.5-1.5°C by 2040, and 0.5-3.5°C by 2090. Diurnal temperature range (i.e., difference between minimum and maximum temperature of a given day) is expected to increase with time and increasing greenhouse gas concentrations.
- The average number of hot days (days ≥25°C) is expected to increase with time, in some areas quite significantly. The number of frost days (days <0°C) is expected to decrease throughout the region. Largest decreases are expected in inland areas; 10-30 fewer frost days per year by 2040, and 20-50 fewer frost days per year by 2090.
- Projected changes in rainfall show variability across the Canterbury region. Small changes to annual rainfall of ±5% are projected for most of the region by 2040 and 2090. Seasonally the largest increases are projected during winter, with 15-40% more rainfall projected in many eastern, western and southern parts (by 2090 under RCP8.5).
- The future amount of accumulated PED (Potential Evapotranspiration Deficit) is projected to increase across most of Canterbury, therefore drought potential is projected to increase.
- Mean annual low flow in rivers generally decreases by late century, with decreases exceeding 20% in many areas of the region.
- Floods (characterised by the Mean Annual Flood; MAF) are expected to become larger for many parts of Canterbury, with some increases exceeding 100%. However, there are some pockets of little change or decreasing Mean Annual Flood.
- Sea-level rise will continually lift the base mean sea level on which the tide rides, which means there will be an increasing percentage of normal high tides which exceed a given present-day elevation e.g., street level, berm or stopbank crest.

Consideration is being given to engaging NIWA to carry out more detailed work specifically for the district as this would provide more detail than is currently available through interpolating the Canterbury wide data.

These effects are expected to increase pressure on flood protection infrastructure and stormwater systems, and could damage coastal infrastructure.

WDC's own studies carried out to date have focused on the coastal fringe. An investigation into groundwater levels, (TRIM 191202168785) concluded that rising groundwater levels will subject

underground assets to more frequent inundation, and exacerbate surface flooding. Existing drainage systems are likely to become less effective. However a study of coastal erosion (TRIM 191202168789) found that dune erosion is not likely to follow from sea level rise, as the Waikamariri river delivers enough additional material along the coast to the north of the river, to compensate for any increased rate of erosion. This study also considered coastal inundation, but a further more comprehensive study (TRIM 200312034365) concluded that various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of existing stop banks and natural river banks.

During the period of the 2021/2031 LTP further assessment work will need to be carried out, and consideration given to the types of solutions that may be practical. Since the Regional Council is responsible for management of the major rivers, Councils role with respect to these will be an advocacy one. The issues will need to start being discussed with affected communities.

Specific actions in the 3 Waters area that the WDC is carrying out with respect to reduction of carbon emissions are noted in the wastewater overview Asset Management Plan. None of these have any effect on drainage activities, which is a low emissions activity relative the wastewater.

12 DEMAND

There are a number of factors that are likely to influence future demand on drainage systems in the district:

- Population trends or increases in population
- Changes in land use
- Changes in legislation
- Advancements in drain management
- Climate change
- Changes in public awareness/opinion

Where specific information on these characteristics is available it is included in each scheme AMP, but comment is provided below on these factors, where relevant, at a district level.

Growth

Population projections were updated in 2020 to determine the expected growth in the District and to understand what upgrade works, if any, are required to meet the agreed levels of service. The update included establishing projected increases in the number of properties expected to receive drainage services.

The overall district population growth scenario used for the 2021 AMP update was supplied by Council's Development Planning Unit, broken into towns and rural areas. 3 waters growth projections were calculated using the New Projections for LTP 2021-2031 (TRIM200908117997), which was the basis for infrastructure planning.

Due to issues that have occurred with the Census 2018, the population projections that would normally be used as a basis for updating the work previously developed by the Council's Development Planning Unit have not been released by Stats NZ in sufficient time for the development of this assessment.

However, based on the historical growth patterns of new dwelling Building Consents over the last three years (636 in 2017/18, 661 in 2018/19 and 615 in 2019/20), the projections used for the previous LTP/infrastructure strategy remain valid to be used for infrastructure planning. As the timeframe for this infrastructure planning is for the thirty years between 2021 to 2051, the previous population projections have been extended out a further three years, as documented in New Projections for LTP 2021-2031 (TRIM200908117997)

It is important to provide a brief comment on COVID19 and the impact it could have on population projections. At the time of writing this paragraph (August 2020), New Zealand is currently in Level 3 restrictions in Auckland and Level 2 restrictions in the remainder of the country. While international migration is currently low arising from the COVID19 travel restrictions, a significant number of New Zealanders are returning home due to the impact of COVID19 on overseas countries. This has contributed to a high level of population growth nationally over the last six months, which has had a flow on effect to growth in the Greater Christchurch and Waimakariri Districts. How long this might continue for and when international migration (from other countries) might return to pre COVID levels is still to be determined. However the existing population projections remained the most appropriate to use for infrastructure planning at this time.

The drainage rated boundary areas shown on the drainage servicing plans for each scheme record new stormwater management areas and their serviced properties. As part of all new development work, each development area must ensure that there are appropriate stormwater retention and treatment facilities created that both treat stormwater run-off and ensure that run-off from newly developed areas does not increase pre-existing stormwater flows.

Stormwater treatment and retention ponds are typically built or funded by each developer in the various development areas. The Council takes over the maintenance of these assets once constructed.

Although new stormwater assets would be funded and peak flows maintained through attenuation, growth on the drain schemes are still calculated for financial and planning reasons. The following projections were calculated using population percentage growth from the New Projections for LTP 2021-2031 (TRIM 200908117997).

Table shows the projected 50 year increase in drainage serviced properties, by scheme.

| C. home | Rates Strike July 2019 | Years 1 - 3 | Years 4 - 10 | Years 11 - 20 | Years 21 - 30 |
|------------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| scheme | 2019/20 | 2021/22 to 2023/24 | 2024/25 to 2030/31 | 2031/32 to 2040/41 | 2041-42 to 2050/51 |
| Alexander Lane | 8 | 8 | 8 | 8 | 8 |
| Central Rural | 1034 | 1134 | 1274 | 1463 | 1631 |
| Clarkville | 209 | 229 | 258 | 296 | 329 |
| Coastal Urban | 2008 | 2412 | 2881 | 3484 | 4017 |
| Cust | 11 | 12 | 14 | 16 | 17 |
| Kaiapoi urban rural extension | 53 | 53 | 53 | 53 | 53 |
| Kaiapoi Urban | 5174 | 5517 | 5995 | 6635 | 7198 |
| Ohoka Rural | 1299 | 1400 | 1539 | 1727 | 1890 |
| Oxford Rural | 447 | 490 | 551 | 632 | 704 |
| Oxford Urban | 750 | 832 | 947 | 1100 | 1233 |
| Pegasus Urban | 1560 | 1919 | 1943 | 1943 | 1943 |
| Rangiora Urban | 7697 | 8571 | 9790 | 11429 | 12871 |
| WMK Coastal Rural | 641 | 703 | 790 | 907 | 1010 |
| Loburn Lea Urban | 39 | 39 | 39 | 39 | 39 |
| Total District Properties serviced | 20930 | 23319 | 26081 | 29731 | 32944 |

| Table 15: Growth Forecast | for drainage servicea | properties by scheme |
|---------------------------|-----------------------|----------------------|
|---------------------------|-----------------------|----------------------|

Growth Uncertainty

The corporate growth model developed by the Council for assessing growth related works is by its nature uncertain as it relies on population projections that are highly dependent on changing

economic and social factors. Generally however, there is a greater degree of certainty in initial years, and greater levels of uncertainty when looking forward to the future. This means that over time, there is the ability for growth projections to be updated and refined over time as contributing factors evolve. There are also a number of other strategies employed to manage this uncertainty, which are outlined below.

A key means of managing this uncertainly has been to use the best available data and consult widely with Council staff in the policy and planning fields for the best information. It should be noted here that the policy of requiring developments to undertake work on the development site to ensure stormwater site runoff is not increased by the development, does to a large degree reduce uncertainties for stormwater planning.

As part of the 2021 AMPs, a sensibility analysis was also undertaken by comparing the past 5 years of actual scheme connection growth with the future growth projections. The projections are seen to align well with the recent flattening of growth that has occurred, following the rapid rise in growth that occurred post-earthquake, which informed the 2021 AMP growth projections.

Long term, the 2021 projections are very similar to the 2017 AMP projections, which would result in a similar capital works programme.

To further reduce the uncertainties from the model it is proposed that the model will be updated annually to align with the Annual Plan Process. Managing growth related capital expenditure to match actual demand from development always presents its challenges due to the possibility of the market increasing or decreasing demand at short notice. It is intended to carry out an annual planning adjustments to be made to cope with changing market requirements.

Recent changes in legislation (National Policy Statement on Urban development 2020) mean that the planned sequencing of future urban developments is more at risk than under the previous NPS. Little can be done to manage plan change applications allowed under the new NPS that may be located outside of any previously planned growth infrastructure. They will have to be reacted to as and when they arise.

Changes in Land Use

WDC is currently undertaking a District Plan review. The only expected effect on land use from a drainage perspective is the move from the currently permitted 4 hectare minimum lot size for rural subdivisions, to 20 hectares. This will have the beneficial effect of reducing potential increased runoff from such developments. The review also includes for a number of smaller lot sized rural residential developments (approx. 5000m2). The effect of these changes may encourage those seeking a lifestyle block to accept smaller lots, from which it is easier to manage overall runoff.

Changes in Public Awareness

There is increasing demand for an improvement to water quality in lowland streams, which is translating into new legislation. Further comment on the effect of this on drainage activity management is provided in the section on consents.

13 CAPACITY & PERFORMANCE

The existing capacity and performance of the main reticulated drainage schemes throughout the district are monitored using hydraulic models constructed and maintained by the Council's in house team for each scheme. District flood hazard mapping has been carried out by the same modelling team on behalf of the Development Planning/District Plan team, which has been made publicly available. These are used in rural areas to set floor levels for new dwellings.

Where parts of a scheme have been identified as performing below the required Levels of Service set out in the Engineering Code of Practice upgrades have been subsequently modelled and recommended. These upgrades are costed and added to the list of AMP capital projects for inclusion in the Council's Long Term Plan. For Oxford the need to update or create a new model has been identified

Uncertainties affecting the timing and demand for upgrades are assessed through the options and investigations reports for affected schemes, prior to the confirmation of capital projects. These reports are referenced in the Data Reference table in Section 2 of each AMP.

The 2014 floods within the District highlighted a number of capacity problems with the stormwater systems. A subsequent programme of works to resolve the issues, the Flood Response Programme detailed in report TRIM <u>141009110892</u>, is funded by a district wide rate. This work is largely completed, with \$4M of works remaining. Final completion is planned for FY 2028/29.

More recent wet weather events, with in some instances heavy localised rainfalls in areas different to the 2014 storms, have identified additional capacity problems within parts of the network. Scheme budgets have been adjusted within the 2021-31 LTP to attend to these issues. Details are provided in the individual scheme AMPs.

Consents

Information about relevant Drainage consents is contained within each AMP, in the Capacity and Performance section.

Council has now applied for stormwater discharge consents for all of its major town drainage schemes, with the outcome pending. Consent conditions are expected to require improvement to water quality discharged into urban waterways, and provisional budgets have been included in the scheme budgets.

Consent applications propose that by 2025 Council will have developed and costed a strategy for meeting water quality standards that will be implemented in the 2025 to 2040 period.

Potential innovations from overseas and new technologies currently being developed by the University of Canterbury and other NZ education providers for improving water quality in existing urban areas will be investigated and assessed, for possible inclusion in the proposed strategy. It is proposed that desk top assessments of processes that promise to be able to deliver cost effective improvements will be field trialled before 2025. A number of these are now being trialled within the stormwater networks including proprietary devices (for instance gross pollutant traps), sump filter baskets and new filtration systems within stormwater management areas.

The Council is working closely with Ngai Tuahuriri Runanga in assessing these potential solutions. Testing of innovative stormwater treatment options will be coordinated through the Canterbury.

Regional Stormwater Forum so that trials can be cost effectively resourced and funded from among the various members, and results shared. Forum participants include Environment Canterbury, the University of Canterbury, Te Runanga O Ngai Tahu and other Canterbury territorial local authorities.

The Waimakariri District Council is likely to adopt some form of the "industrial site stormwater audit" now being implemented by the Christchurch City Council under terms of its global stormwater consent. The audit comprises staff site visits to industrial properties, undertaking site runoff sampling, introduction of new products to intercept site pollutants and advising on improved site management practices. The approach involves ongoing negotiation with the site owners/operators and has within its first year of implementation been shown to be effective at reducing contaminant inputs into the stormwater networks.

The cost of retro fitting stormwater treatment to the Council's existing urban networks is likely to be high (roughly estimated at in excess of \$100m). The uncertainty arises in part from the fact that worldwide, much of the work in this area is still experimental. Some improvements can only be effected by change that is led at a national level (e.g. a national decision to phase out use of copper brake pads which are a key urban stormwater contamination source would assist all territorial authorities to meet the required water quality standards for dissolved copper discharges).

Council has also recently obtained a global consent for the ongoing maintenance work it carries out on its rural open drainage network. The management plan (Drainage Maintenance Management Plan 2020) associated with the consent signals the changing approach to open drain management within the district. While maintaining hydraulic capacity remains the primary objective of maintenance works, there is a recognition that other ecological improvement objectives are also important, and not in conflict with the drainage objective per se. Accordingly drain maintenance practices will increasingly include ecological improvement works such as drain re-shaping, riparian planting, creation of low flow channeling and meanders, and installation of sediment traps. Trials of lower levels of intervention are also planned. Additional funding for these enhancements has been included in the 2021 LTP for projects that were developed under the guidance of the Waimakariri Water Zone Committee.

Council has a range of other drainage consents, many related to stormwater management areas that have been built as part of recent new housing developments. Improving the way the Council manages its consents through the implementation of a dedicated consent management system is one of the improvement projects detailed in the Improvement Plan section of this document.

14 OPERATION AND MAINTENANCE

Operation and maintenance expenditure incorporates the day to day running of the drainage schemes and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised below:

| Task | Fask Planned | |
|---|---|---|
| Headworks Maintenance (pump stations) | Frequent inspections (typically weekly) and basic maintenance | If required for particular headworks items in response to alarms, or defects noted as part of inspections. |
| Generator Checks | Planned monthly, quarterly and annual checks | If required in response to alarms |
| Pipe repairs | No planned repairs | Repairs undertaken in response to service requests / leaks. |
| Valve repairs No planned repairs | | Repairs undertaken in response to service requests / leaks. |

There are a relatively small number of stormwater pump stations in the district, which are maintained on a planned basis. Most of the maintenance effort goes into maintaining the rural network of open drains, which is reactive. Efforts are being made to move more towards planned maintenance of open drains via process changes and the new maintenance contract.

As noted earlier a significant shift in emphasis in the way that waterway maintenance is carried out has occurred recently, with a much greater emphasis on ecological values. This is explained in detail in the Council's <u>Drainage Maintenance Management Plan 2020</u>, which covers not only the philosophy supporting this change, but also describes planned best practice for all of Council's waterway maintenance activities. These may need adjustment following the National Environment Standards regulations having recently become operational.

The CCTV programme will, with time, provide a view of the rate at which some stormwater networks may silt up, which will enable better planning of cleaning, and maintenance of systems that is operating at full capacity

District Overview – Operation & Maintenance Expenditure

Budgets are largely based on past expenditure carried forward, which has also been the case for the 2021/31 LTP. However consideration of the effect on drainage maintenance costs of rising groundwater levels in coastal areas caused by sea level rise should be made during the three year period before the next LTP, so that likely increasing costs can start to be factored in

The operation and maintenance (O&M) budgets are currently set up to automatically account for inflation and growth. Inflation is accounted for with a factor set by the Council's Finance Unit, but

this is not used in the development of the graphs and tables in the AMP's so as to provide a clearer picture of asset O&M costs year to year

The implication of growth on O&M budgets is accounted for with the inclusion of a formula that increases the O&M costs on a pro rata basis proportionally with the population (as new developments come online). However, depending on asset class the increase in O&M costs may be reduced from being directly proportional. So for example costs for a particular scheme to maintain the network pipes and valves is expected to increase directly in proportion to increasing numbers of connections, but maintenance of pumps costs are only expected to increase at 50% of the increasing number of connections.

In addition to the automated increases, part of the consideration when setting the O&M budgets across the district's schemes is the potential impact of any new capital projects. These increases are accounted for in two ways:

- <u>Direct O&M Increases</u>: Through Asset Managers calculating what areas of the budget that may increase, and manually adjusting the appropriate parts of the budgets from the year following when the capital project will be completed. An example of this would be a new headworks being constructed. This would require power costs to be reviewed (as the new headworks would consume power), as well as items related to headworks inspections and maintenance.
- <u>Depreciation Increases</u>: Changes in depreciation as a result of new capital projects are accounted for by the Council's Finance Team. As a new capital budget is introduced to a scheme, there is a formula to increase the depreciation amount for that scheme based on the size of the capital budget being assumed to represent the value of the assets being added, and the asset life being assigned a representative figure for that scheme (depreciation rates are typically in the order of 1.5% to 2.5% of the value of assets added for example). Every three years a comprehensive valuation is carried out, which then assigns accurate valuation rates and base lives to any new assets created in the last years, to refine the accuracy of the depreciation rates further.

Figure presents the forecast Operations and Maintenance Expenditure across all the Council's drainage schemes for the following 10 year period.



Figure 4: District Overview - Projected Operation & Maintenance Expenditure

15 CAPITAL WORKS

Until recently Waimakariri District Council has not applied significant constraints to applications through the Long Term Plan process for capital expenditure. However with the Council's debt having risen following the 2010/11 Canterbury earthquakes, more rigour is being applied to the development of an approval process for capital works. All new capital projects of value greater than \$250,000 are now required have a "Project Justification" document filled in for them, which is essentially a mini business case. The following information is required to be supplied:

- Project description and scope
- Strategic case LOS, growth or renewal. Contribution to Community Outcomes, national programmes. Public value benefits
- Risks and assumptions
- Economic case Preferred option and alternatives considered
- Financial case Requested budget, (components –LOS, growth, renewal), expensed component, funding sources (DC's if relevant), effect on rates. Budget confidence.
- Management Case ability to deliver and how

16 RENEWALS

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. Renewal work is funded from a budget generated by the depreciation component of the rates.

The risk based model for renewals previously used for water and wastewater assets has now been extended to include drainage renewals asset planning which incorporates the following criteria:

- Condition Rating standard scoring from pipe inspection manual based on CCTV data, where available.
- Remaining Useful Life based on the design life, as used previously.
- Vulnerability a function of location, material and joint type calculated as part of the DRA review, which assesses the risk of earthquake damage in areas subject to liquifaction.
- Criticality the criticality score calculated for each main.

The model also enables an assessment to be made of the depreciation required to fund future replacement costs, for different levels of risk. This allows risk and affordability to be balanced. Key outputs from the model are a prioritised list of pipe renewals needed across the district, identified by scheme, and an annual expenditure profile for the next 150 years. A schematic of the modelling process is shown below in Figure . Criticality, which is an input to this model incorporates factors such as pipe material type, groundwater and soil types.

A potential emerging pipe renewals risk is the health issue associated with the replacement of asbestos cement pipes in private property that will be coming to the end of their lives in the medium term future. A policy has not yet been established as to the approach to be taken with abandoned pipes, but the potential exists to significantly increase renewal costs above those currently used.

The model developed for headworks uses the same methodology as the pipe renewals model. Since knowledge of the headworks condition is not high, standard industry lives for the relevant asset classes have been used as inputs to the headworks renewals model. As the headworks criticality model is still under development, a simplified renewals assessment methodology has been used in the interim, which does not factor in criticality.

The final decision about pipe renewals to be carried out in a particular year is made by the Asset Manager, taking into account factors such as Roading projects and other utilities renewals and any operational requirements.

District Overview – Renewals Expenditure

Figure presents the forecast Renewals Expenditure across all the Council's drainage schemes for the following 150 year period.

The figure only shows the output from the model, so expenditure shown in the graph for the first three years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager.



Figure 5: District Overview - Projected Renewals Expenditure

The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen, this account is maintained as a surplus, peaking at approximately \$45 million in the year 2090, before being drawn down over the following 80 years.

The key point to note is that the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this discrepancy is as follows:

Depreciation Discount Factor: Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end of their useful life. The renewals model takes a simpler and more conservative approach to the way this effect is calculated, which accounts for the difference shown in Figure .



Figure 6: Renewals Expenditure Model

17 NEW WORKS

There are five main sources of new works in the District that come together to produce the new works programme. These are:

- Modelled capacity assessments provide details on any LOS shortfall on the schemes and new works are prioritised to address these.
- Flooding events. These are the primary source of improvement programmes, an example of which is the the 2014 Flood Response Programme.
- The Risk Assessments provide information on the highest risk areas on each drainage scheme, with any extreme or high risks requiring works to mitigate against those risks.
- The Disaster Resilience Assessment action plan provides a prioritised list of actions to improve resilience against a number of potential disasters. Some of these relate directly to individual sites, and where necessary, have been included in the new works programme.
- Operational works are identified through the operation of the schemes rather than being identified through the assessment of level of service, capacity, risk or resilience. These works are normally identified by an operator or Asset Manager and include such works as health and safety improvements.

These five sources all provide new works projects that provide a budget for the next 50 years. The table below shows the projected budgets for new works for the next 50 years for all drainage schemes, including both renewals, and Flood Response Programme Works.

| Scheme | 2021 - 2030 | 2031 - 2040 | 2041 - 2050 | 2051 - 2070 | Total |
|------------------------------|--------------|--------------|-------------|--------------|--------------|
| District Flood Area | \$4,010,000 | \$0 | \$0 | \$0 | \$4,010,000 |
| Rangiora Drainage | \$14,104,000 | \$6,974,629 | \$1,002,630 | \$4,288,876 | \$26,370,135 |
| Coastal Urban Drainage | \$4,956,910 | \$1,235,612 | \$348,175 | \$1,124,498 | \$7,665,195 |
| Pegasus Drainage | \$100,000 | \$100,000 | \$100,000 | \$462,842 | \$762,842 |
| Kaiapoi Drainage | \$7,857,500 | \$5,084,353 | \$1,776,267 | \$5,644,355 | \$20,362,475 |
| Oxford Urban Drainage | \$1,910,000 | \$730,890 | \$104,808 | \$260,331 | \$3,006,030 |
| Ohoka Drainage | \$470,000 | \$0 | \$40,056 | \$417,774 | \$927,830 |
| Central Rural Drainage | \$0 | \$0 | \$0 | \$259,859 | \$259,859 |
| Clarkville Rural Drainage | \$0 | \$0 | \$0 | \$0 | \$0 |
| Coastal Rural Drainage | \$0 | \$0 | \$0 | \$12,992 | \$12,992 |
| Cust Drainage | \$0 | \$0 | \$0 | \$56,111 | \$56,111 |
| Loburn Lea Drainage | \$0 | \$0 | \$0 | \$0 | \$0 |
| Oxford Rural Drainage | \$20,000 | \$5887 | \$0 | \$212,597 | \$238,484 |
| Shovel Ready Drainage | \$15,063,000 | \$0 | \$0 | \$0 | \$15,063,000 |
| Total | \$48,491,410 | \$14,131,371 | \$3,371,936 | \$12,740,236 | \$78,734,953 |

Table 16: New Works across Drainage Schemes Over 50 Years

Note: Dates refer to beginning of financial year (e.g. 2021 is 2021/22 financial year).

The figures in the table above are based on the assumption that LOS do not change significantly into the future, and that growth forecasts are accurate. Growth projects may be delayed to fit actual growth patterns.

All projects are included in a central database of capital works projects. Projects are required to ensure the levels of service targets are met, assets are maintained in an acceptable condition, risks are reduced to an acceptable level, growth is accommodated for in the District, and to improve resilience operational efficiencies. The data base also includes renewals expenditure, and therefore is Council's "single source of truth" for all of its 3 waters capital expenditure.

This data is used to populate the "WDC Capital Works Project Justification" template that is required to be filled in for any new project of a higher capital value than \$250,000.

When a scheme upgrade is undertaken, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. These investigative reports are referenced within the scheme AMP's in the Data Reference table in Section 2, Scheme Description.

As well as the processes above identifying works on a scheme by scheme, or by service type, further consideration is required to coordinate work programmes between a combination of service types. Utilities Providers Coordination meetings are held quarterly between 3 Waters, Roading, power and telecommunication providers. This enables opportunities for collaboration to be identified. In addition, Council is working on a GIS tool where future planned works can be overlaid to optimise the coordination process further.

District Overview – Capital Works

The following graph shows the 50 year budget for all capital works, including projects driven by growth and levels of service (Figure 7), but excluding the Flood Response Programme, and "shovel ready" funded works.





18 OVERALL FINANCIAL FORECASTS

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure.

Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, interest and internal overhead costs. Capital includes expenditure for growth, levels of service, renewals, but excludes the Flood Response Programme, and "shovel ready" funded projects .



Figure 8: Projected Total Expenditure

Financial Forecast Key Assumptions

- 1. Asset data in the asset register is fit for purpose.
- 2. Asset lives based on nominal material life, are reasonably accurate.
- 3. LOS will not change, for example required by legislation.
- 4. WDC does not suffer any major natural disaster during the period of the financial forecasts.
- 5. Effects of climate change are not felt during the term of this LTP
- 6. Growth matches the projected profiles.
- 7. Maintaining Operational and Maintenance costs at current levels is cost effective

Funding

An explanation of the sources of funding for the activity is fully detailed in the Council's Revenue and Financing Policy, published within the 2018-2028 LTP. This includes the rationale for each source of funding for each scheme, and an explanation of how the different funding methods are applied to each scheme in relation to the service delivered.

Primary sources of funding for all schemes are targeted rates and development contributions for works required to accommodate growth. In addition a district wide drainage rate, included as

part of the General Rate funds a specific Flood Response Programme. A further \$6.00 per property is applied to the General Rate to fund minor drainage works outside of the targeted drainage rating areas

All capital works budgets are split into three components, Level of Service, Renewal and Growth. The division may be seen for scheme projects in the Capital Works section (section 4.3) of the scheme AMPs. The growth component is recovered through development contributions (DC's). An assessment has been made for the 2021-2031 LTP of the value of the DC required per future connection to the scheme, to fully recover the growth component of the capital works associated with the particular scheme. These assessments are updated as part of the Annual Plan process, and published on the Council's website at the following are link http://www.waimakariri.govt.nz/ data/assets/pdf file/0023/16358/Copy-of-DRAFT-2016-17-Development-contributions-calculations-schedules-Comments.pdf

Summary calculation sheets for individual schemes can be viewed by clicking on links within the main document.

Valuation

A full peer reviewed valuation of assets is carried out on a three yearly cycle, using the asset data in our asset management information system. Table below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for the district.

| Asset Type | Unit | Quantity | Replacement Cost | Depreciated Replacement Cost | Annual Depreciation |
|--------------|------|---------------|---------------------|---------------------------------|---------------------|
| Manhole | No. | 2,042 | \$20,096,490 | \$17,114,430 | \$200,965 |
| Sump | No. | 130 | \$283,183 | \$220,469 | \$2,832 |
| Valve | No. | 54 | \$302,050 | \$213,834 | \$3,021 |
| Network Main | m | 107,339 | \$85,186,898 | \$70,431,128 | \$853,559 |
| Open Channel | m | 288,149 | \$9,239,409 | \$9,190,041 | \$1,227 |
| Facilities | | \$21,866,986 | \$20,426,227 | \$98,511 | |
| Total | | \$136,975,016 | \$117,596,130 | \$1,160,114 | |

Table 17: Asset Valuation

Revenue Sources

Targeted rates generally provide nearly all of the revenue for the district. The only other revenue source, Development Contributions, provides a budgeted revenue only over a three year period, FY 22/23 to 24/25. Development contributions are calculated in accordance with Councils Development Contributions Policy (TRIM <u>191129168016</u>).

For the 2021 LTP, Council has been able to take advantage of the Covid-19 Stimulus package, which has provided an additional short term but significant revenue source

19 DATA CONFIDENCE

Data confidence has been assessed for the first time as part of this AMP review, across a range of asset data and processes. The confidence grading used has been taken from the IIMM as follows:

| Confidence Grade | Description |
|-------------------|--|
| A Highly Reliable | Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset accuracy $\pm 2\%$ |
| B Reliable | Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Data set accuracy <u>+</u> 10% |
| C Uncertain | Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Up to 50% data is extrapolated and accuracy estimated at \pm 25% |
| D Very Uncertain | Data based on unconfirmed verbal reports and/or cursory inspection and analysis, Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated at \pm 40% |
| E Unknown | None or very little data held |

Confidence grades have been assessed as:

| Element | Grade | |
|-------------------------------------|--------------|---|
| | Reticulation | В |
| Asset Inventory | Headworks | С |
| Performance and service gap interpr | etation | В |
| | Reticulation | D |
| Asset condition | Headworks | D |
| | Reticulation | С |
| Asset remaining lives | Headworks | С |
| Demand forecasts | В | |
| Valuation and depreciation | В | |
| Financial forecasts | В | |

Confidence in headworks assets can be seen to be consistently lower than reticulation assets. This is a reflection of more focus being placed historically on network assets rather than facilities, as that is where the majority of the maintenance effort is expended. While Council has a good

understanding of our pipe materials and ages, a full inventory of all facility asssets has not yet been undertaken, from which it follows that asset condition and remaining life are uncertain.

Council has been aware of this gap in its asset inventory for some time, and a portion of the funding available from the Covid-19 Response and Recovery Fund is to be directed to carry out a facilities asset inventory survey. If the funding allows, asset attributes and condition will also be recorded at the same time. This work will be carried out in FY 21/22

In the interim, it is worth noting that because headworks assets are above ground, any assets in poor condition can be readily identified and the risk associated with asset failure mitigated through regular visual inspections that can be carried out when operations staff are carrying out routine maintenance operations.

Note that demand forecasts and financial forecasts sections have been assessed on the basis of the confidence in our infrastructure planning given a particular growth scenario. Growth predictions themselves are always inherently uncertain, and elastic. If actual growth is faster or slower than the growth scenario selected, projects to cope with the demand, provided they have been well scoped, can be readily brought forward or delayed as necessary.

20 ASSET MANAGEMENT SYSTEMS

A register of drainage supply assets is held within the Councils Financial Management System and referred to as the Asset Management Information System (AMIS). The register is maintained by the Asset Information Management (AIM) Team on behalf of the 3 Waters Team. The platform is the Council's Finance Management System, Technology One.

The AMIS provides the base data used for the asset criticality model, the drainage network models and RAMM roading data, so it is essential that every effort is made to ensure the dataset in the AMIS is accurate. This need is driving a number of planned data improvements.

For new assets, built as part of development, or as stand alone capital projects, the AIM team collates as-built data from as-built engineering plans and incorporates this data into the GIS system and asset database. This data then feeds through into the Council's asset valuation process.

The asset management system has been recently enhanced with the introduction of a works order system. Maintenance activity, for example in the form of a pipe blockage attended to by the Council Water Unit under instruction from a work order is now entered digitally via mobile devices in the field. The field devices record job costs, asset location and any changes to assets, and the information is direct uploaded into asset register. Costs are recorded against the repaired assets.

Service requests are generated out of Councils Property and Rates System and for certain job types automatically raise a work order to be sent to the Water Unit via email. Other service request types are forwarded to asset managers for triage

Implementation of these asset management modules has been one of the major focuses for asset management improvement since the 2018 AMP reviews were carried out. The system now in place will allow a maintenance history record against assets to be built up over time.

21 NEGATIVE EFFECTS

At the District level the activity of providing a drainage service to the various communities has the following negative effects:

- Potential damage to private property through access of machinery used to clean drains
- Increased silt load in streams, following drain cleaning , particularly if operator not properly aware of the issue
- Potential ecological damage, including fish spawning habitats from drain maintenance activities

22 SERVICE DELIVERY

Delivery of most capital works is via competitive tendering practice in accordance with the Council's procurement policy, (<u>TRIM 190516069552</u>). Design is usually carried out in house, or where resources are insufficient, via external consultants, again engaged in accordance with the procurement policy.

Routine maintenance of the rural drainage network is carried out via a long term contract, competitively tendered at the end of its term. The contract is included as a component of the district wide roading maintenance contract, put out for tender in 2020. The service provided is reactive, but well regarded within the community serviced. One of the objectives of including the contract within the roading maintenance was to place a higher emphasis on planned maintenance.

23 IMPROVEMENT PLAN

Table below summarises the planned AMP improvements applicable district wide, identified as each section has been reviewed. Some of these have been carried forward from the 2018 AMPs, but have not yet been completed. These projects will be managed under the 2021-24 AMP Improvement Programme full details of which are provided in <u>S:\3Waters\AMP\2021 AMPS and IS\Improvement programme\2021 Improvement Programme.xlsx</u>. The summary table below shows which section the AMP that the improvement project was derived from, and includes projects that have been completed since the 2018 AMP.

Projects have been given a priority in Table , but only high and medium priority projects have been included. High priority projects are where budgets have been allowed for, and it is expected that the work will be completed within the first three years of the 2021/31 LTP. The medium priority category indicates that the project is programmed for the years 4 to 10 of the 2021/31 LTP.

Improvements only relevant for individual schemes are identified in the individual scheme AMPS, and these tend to be capital improvements, rather than AMP process or development projects.

| Project Ref | AMP Section | Project Description | Priority | Status | Estimated Cost |
|-------------|-------------------------------|---|----------|-------------------------------------|----------------|
| IP001 | Renewals | Stage 1 - Maintain and analyse pipe bursts data to inform new base lives | Medium | Complete | N/A |
| IP002 | Asset Management System | Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions | High | Planned for 2021 | \$250,000 |
| IP011 | Disaster Resilience | Confirm natural hazard information at facilities sites. | Medium | Planned for 2024-2025 onwards | \$48,000 |
| IP012 | Asset Management System | Define asset data and spatial accuracy requirements for all 3 Waters assets | High | Complete | N/A |
| IP022 | Asset Management System | Develop system to store and manage consent information | High | Planned for 2022 | \$9,600 |
| IP027 | Asset Management System | Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team | High | Planned for 2021 | \$48,000 |
| IP032 | New Works | Develop Capital Programme Management Tool, scope expanded to include project justification and cost estimate guidelines. | Medium | Complete | N/A |
| IP039 | Risk Assessment | Advocate for the development of a corporate Risk Management framework, via corporate AMP Steering Group. | High | Complete | N/A |
| IP045 | Risk Assessment | Update DRA in parallel with Risk Assessment Update using common risk approach. Develop high level framework, seek update of hazard information. | High | Planned for 2022-23 | \$24,000 |
| IP048 | Operations and Maintenance | Standardise operational and maintenance items used in the budget to enable better expenditure monitoring | Medium | Planned for 2024-2025 onwards | \$9,600 |

Table 19: 2021 AMP Improvement Plan

| Project Ref | AMP Section | Project Description | Priority | Status | Estimated Cost |
|-------------|-------------|---|-----------------|--------------------------|----------------|
| IP053 | Overview | Work with the Regional Council and advocate for them to progress GW modelling and consideration of effects of SL rise on their infrastructure | High | Planned for 2021-2023 | \$- |
| IP054 | Overview | Carry out an assessment of the likely operational and asset management risks asociated with rising GW levels in affected areas. | Risk Assessment | Planned for 2021-2023 | \$50,000 |

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans, has been reproduced below with responses. Additional improvement projects are included in Table that fill gaps identified through this process.

| Audit NZ Question | Response |
|---|--|
| 1. Have you got a strategy for the long-term sustainability of your assets? | Council has Asset Management Plans that are reviewed in house, at three yearly intervals, that contain a well developed renewals assessment and funding model that ensures the long term sustainability of its 3 waters assets. Maintenance programmes do need improving, and this has been recognised with the planned stage 2 of the Asset Management Information System project that will provide a more robust and trackable maintenance programme |
| 2. Have you set an asset management policy? | Yes. <u>TRIM link to policy</u> |
| 3. Do you have good quality up-to-date asset management plans for achieving your strategy? | Yes. These are comprehensively reviewed every three years and submitted for peer review. |
| 4. Does your organisation have appropriate asset management skills and experience? | Yes. For 3 waters each of the activity areas – water supply, wastewater and drainage, has a dedicated asset manager responsible for the management of the relevant assets |
| 5. Do you know the reliability of your asset information? | Reasonably well. Asset data for our reticulation network is reliable and being improved through analysis of maintenance data. Facility asset data is less reliable, and the need for a comprehensive assessment of all facility assets has been recognised and planned for in the improvement programme |
| 6. Do you have a structured approach to assessing the condition and performance of your assets? | Yes. Noting that the average age of its network assets is relatively young, the condition of water supply assets has been the subject of recent analysis through examination of pipe performance. This has enabled condition to be inferred in more detail than has previously been the case. For |

| | gravity pipes, Council has recognised that the way it previously managed it's CCTV data was inadequate and will be using InfoAssets software in the future to improve this situation |
|---|--|
| 7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets? | Yes. These are reviewed and approved by Council in conjunction with the three yearly AMP review |
| 8. How well do you forecast future demand for the services that are delivered or supported by your assets? | Demand forecast is largely based on growth projections. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies |
| 9. Do you report, and get reports, on achievement of your asset management plan(s)? | Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council Asset Management Plans themselves are peer reviewed. |
| 10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it? | No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals |

24 CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULTATION

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 25-26 May (TRIM 210506072970). For the Rangiora Urban scheme the following changes approved by Council have been made:

- A new budget of \$40,000 in 2021/22 was approved for planting the new Pentecost SMA currently being constructed. The current construction works includes grassing the SMA, but additional planting is proposed to integrate this area with the adjacent reserve.
- As part of the Three Brooks Enhancements work it has been identified that the existing retaining wall on the banks of Railway Drain, between the railway line and Kowhai Avenue, needs to be replaced. The investigation work undertaken this year identified that the current budget of \$420,000 for this work is not adequate. This increase is due to a longer length of drain requiring a retaining wall and also construction constraints that limit the type of retaining wall that can be used. An additional budget of \$120,000 was approved to give a revised budget of \$540,000 in the 2021/22 financial year
- Stage 1 of the North Brook Janelle to White upgrade was completed this year. It is proposed to upgrade the White Street culvert next financial year, which is Stage 2 of the North Brook Janelle to White upgrade. As the Stage 1 works went over budget there was not adequate remaining budget to complete the hydroseeding of the drain works or design for the culvert. Furthermore the need for an additional 10m section of retaining wall has been identified. An additional budget of \$80,000 was approved to give a revised budget of \$350,000 in the 2021/22 financial year.
- The total additional \$240,000 for the budget changes to the three Rangiora projects increases the Rangiora drainage rate by \$1.80 or 0.7% from 2022/23

For the Coastal Urban scheme one change was approved by Council for Norton Place in the Woodend catchment.

During the June 2019 rainfall event a house was flooded at the end of the Norton Place cul-de-sac, in Woodend. Investigation work undertaken this year identified a preferred option that is proposed to be constructed next financial year. The estimate has been updated as part of this work and an additional budget of \$40,000 is required to implement the preferred option. Given that this project still requires consultation with the Greenspace team, community board and the community Council approved deferring the construction budget to the 2022/23 financial year. The additional \$40,000 increases the Coastal Urban drainage rate by \$1.12 or 0.6% from 2023/24.

| Ass | Asset Management Maturity Assessment Tool. Drainage | | | | Maturity Levels | | | | | | .get |
|------------|---|--|---|--|--|---|---|---|--|------------|------------|
| | | | | | Aware | Minimum | Core | Intermediate | Advanced | ore | e Tar |
| Reference | Question | Section | Questions | Why | 0-20 | 25-40 | 45-60 | 65-80 | 85-100 | Current Sc | Appropriat |
| | | | | | Understanding and De | fining Requirement | | | | | |
| ШММ 2.1 | 1 | AM Policy and Strategy | To what extent has your organisation's AM Policy and AM Strategy been articulated, approved, communicated and acted on? How consistent is this policy and strategy with current government policies? | The AM Policy supports an organisation's strategic objectives. It articulates the principles, requirements and responsibilities for asset management (AM). It articulates the objectives, practices and action plans for AM improvement, audit and review processes. The AM Policy and Strategy may be incorporated into the AM Plan. | The Organisation is aware of the need to develop an AM Policy, but hasn't yet completed this work. | Corporate expectations are expressed informally and simply, e.g. "all departments must update AMPs every s years". | There are defined policy statements for all significant business activities. There is a clear linkage to corporate goals. AM Policy is supported by high level action plans with defined responsibilities for delivery. | Expectations of each business activity are supported by detailed action plans, resources, responsibilities and timeframes. AM Policy and Strategy is reviewed and adopted by Executive Team each year. | AM Policy and Strategy is fully integrated into the organisation's business processes and subject to defined audit, review and updating procedures. | 55 | 70 |
| ШММ 2.2 | 2 | Levels of Service and Performance Management | How does your organisation determine what is the appropriate level of service for its customers and then ensure that asset performance is appropriate to those service levels? | Levels of service are the cornerstone of asset management and provide the platform for all lifecycle decision making. Levels of service are the outputs a customer receives from the organisation, and are supported by performance measures. One of the first steps in developing asset management plans or processes is to find out what levels of service customers are prepared to pay for, then understand asset performance and capability to deliver those requirements. | The organisation recognises the benefits of defining levels of service but has yet to implement guidelines for development of these. | Basic levels of service have been defined and agreed, along with the contribution of asset performance to the organisation's objectives. | Customer Groups have been defined and requirements understood. Levels of service and performance measures are in place covering a range of service attributes. There is annual reporting against targets. | Customer Group needs have been analysed and costs of delivering alternate levels of service have been assessed. Customers are consulted on significant service levels and options. | There is formal consultation over levels of service. Customer levels of service and technical (ie asset performance) levels of service are an integral part of to decision making and business planning. | 55 | 75 |
| ШММ 2.3 | 3 | Demand Forecasting | How robust is the approach your organisation uses to forecast demand for its services and the possible impact on its asset portfolios? | This AM activity involves estimating demand for the service over the life of the AM plan or the life of the asset. Demand is a measure of how much customers consume the services provided by the assets. The ability to predict demand enables an organisation to plan ahead and meet that demand, or manage risks of not meeting demand. | The organisation recognises the benefits of demand forecasting but has yet to implement processes to forecast demand. | Demand forecasts are derived by experienced staff (rather than data models), taking account of past demand trends and likely future growth patterns. | Demand Forecasts are based on robust projections of a single primary demand factor (e.g. population growth) and extrapolation of historic trends. Risk associated with changes in demand is broadly understood and documented. | Demand forecasts are based on mathematical analysis of past trends and primary demand factors. A range of demand scenarios is developed (e.g.: high/medium/ low). | As for intermediate, plus there is an assessment of risks associated with different demand scenarios, and mitigation actions are identified. | 70 | 85 |
| ШММ 2.4 | 4 | Asset Register Data | What sort of asset-related information does the organisation collect, and how does it ensure the information has the requisite quality (accuracy, consistency, reliability)? | Asset data is the foundation for enabling most AM functions. Planning for asset renewal and maintenance activities cannot proceed until organisations know exactly what assets they own or operate and where they are located | The organisation recognises the benefits of capturing asset data but has yet to implement systems to capture the data. | Basic physical information recorded in a spread sheet or similar (e.g. location, size, type), but may be based on broad assumptions or not complete. | Sufficient information to complete asset valuation – as above plus replacement cost and asset age/ life. Asset hierarchy, asset identification and asset attribute systems documented. | A reliable register of physical and financial attributes recorded in an information system with data analysis and reporting functionality. Systematic and documented data collection process in place. High level of confidence in critical asset data. | Information on work history type and cost, condition, performance, etc. recorded at asset component level. Systematic and fully optimised data collection programme. Complete data-base for critical assets; minimal assumptions for noncritical assets. | 45 | 85 |

| ШММ 2.5 | 5 | Asset Condition Assessment | How does the organisation measure and manage the condition of its assets? | Timely and complete condition information supports risk management, lifecycle decision-making and financial / performance reporting. | The organisation recognises the need for monitoring asset condition but has not developed a coherent approach. Measures are incomplete, predominantly reactive. There is no linkage to asset management objectives. | Condition assessment at asset group level ('top-down). Supports minimum requirements for managing critical assets and statutory requirements (e.g. safety). | Condition assessment programme in place for major asset types, prioritised based on asset risk. Data supports asset life assessment. Data management standards and processes documented. Programme for data improvement developed. | Condition assessment programme derived from benefit- cost analysis of options. A good range of condition data for all asset types (may be sampling- based). Data management processes fully integrated into business processes. Data validation process in place. | The quality and completeness of condition information supports risk management, lifecycle decision-making and financial / performance reporting. The organisation conducts periodic reviews of the suitability of its condition assessment programme. | 30 | 65 |
|------------|---|--|--|---|---|---|---|--|--|----|----|
| ШММ 2.6 | 6 | Risk Management | How does your organisation manage the interplay between business risks and asset- related risks? | Risk management helps identify higher risks, and identify actions to mitigate those risks. This process reduces the organisation's exposure to asset related risk, especially around critical assets, and drives renewal and rehabilitation programmes and decision making. | The organisation recognises the benefits of risk management but has yet to implement processes for development of these. | Critical assets understood by staff involved in maintenance / renewal decisions. | Risk framework developed. Critical assets and high risks identified. Documented risk management strategies for critical assets and high risks. | Systematic risk analysis to assist key decision-making. Risk register regularly monitored and reported. Risk managed consistently across the organisation. | A formal risk management policy in place. Risk is quantified and risk mitigation options evaluated. Risk is integrated into all aspects of decision making. | 45 | 80 |
| | | | | | Lifecycle Decis | ion Making | | | | | |
| ШММ 3.1 | 7 | Decision Making | How does your organisation go about making decisions on the replacement or refurbishment of existing assets or investment in new ones? | Decision techniques provide the best value for money form an organisation's expenditure programmes. These techniques reveal strategic choices, and balance the trade off between levels of service, cost and risk. ODM is a formal process to identify and prioritise all potential asset and non-asset solutions with consideration of financial viability, social and environmental responsibility and cultural outcomes. | The organisation recognises the benefits of optimised decision making but has yet to implement processes. | AM decisions are based largely on staff judgement and agreed corporate priorities. | Formal decision making techniques (eg using BCA) are applied to major projects and programmes. | Formal decision making and prioritisation techniques are applied to all operational and capital asset programmes within each main budget category/business unit. Formal decision making techniques (eg BCA) are applied to major projects and programmes. Critical assumptions and estimates are tested for sensitivity to results. | As for Intermediate, plus the decision making framework enables projects and programmes to be optimised across the whole business. Formal risk-based sensitivity analysis is carried out. | 55 | 80 |
| ШММ 3.2 | 8 | Operational Planning and Reporting | How does your organisation manage the cost effective performance of its key business assets over time (e.g. in terms of utilisation, availability, fitness for purpose)? | Effective operational strategies can mitigate risk, defer the need for asset renewals and minimise service downtime following asset failures. Planning for business continuity and full utilisation of assets are key factors in good asset management processes. | The organisation recognises the benefits of operational planning and asset performance reporting but has yet to implement processes to implement these. | Operational responses are understood by key staff, but plans aren't well-documented, or are mainly reactive in nature. Asset performance is measured for some key assets but is not routinely analysed. | Emergency response plan is developed. Demand management is considered in major asset planning. Asset performance is measured for critical asset groups and is routinely analysed. | Emergency response plans and business continuity plans are routinely developed and tested. Demand management is a component of all operational decision making. Asset performance is measured and analysed for most asset groups. | Operational plans are routinely analysed, tested and improved. Formal debriefs occur after incidents. Asset performance is measured in real-time and cost- effectiveness is analysed across all asset groups. Operational programmes are optimised using benefit-cost and risk analysis. | 35 | 65 |
| ШММ 3.3 | 9 | Maintenance Planning | How does the organisation plan and manage its maintenance activity? | Maintenance is "all actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal". Maintenance slows deterioration: it is mechanism to ensure assets continue to deliver performance associated with the required level of service. A major challenge for the asset manager is striking the appropriate balance between planned maintenance (inspections and scheduled maintenance etc.) and unplanned maintenance (arising from unexpected failures) | The organisation recognises the benefits of maintenance planning but has yet to implement such processes. | Managers and operators understand how asset functions support organisational objectives. Processes comply with legislation and regulations. Maintenance records are maintained. Critical assets have been identified. | Asset criticality considered in response, fault tracking and closure processes. There is a strategy for prescriptive vs. performance-based maintenance. Key maintenance objectives have been established, measured and reported on. | Contingency plans exist for all maintenance activities. Asset failure modes are understood. Timing and frequency of major preventative maintenance is optimised using benefit-cost analysis. Maintenance management software is being applied appropriately. | Forensic root cause analysis is conducted for major faults. All reactive and planned programmes are optimised with respect to renewal planning. Different procurement models have been fully explored. Maintenance operations represent value for money. | 30 | 65 |

| IIMM 3.4 | 10 | Capital Investment Strategies | What processes and practices does the organisation have in place to plan and prioritise capital expenditure? | Capital investment include the upgrade, creation or purchase of new assets, typically to address growth or changes in levels of service requirements, or for the periodic renewal of existing assets, to maintain service levels. Agencies need to plan for the long term asset requirements relative to future levels of service. The decision on whether to create a new asset is typically the time when there is the most opportunity to impact on the potential cost and level of service. Cabinet expects all capital-intensive agencies to disclose 10 year capital intentions and make appropriate use of the better business cases methodology for programmes and individual investment proposals. | The organisation recognises the benefits of capital planning, but has yet to implement such processes. | There is a schedule of proposed capital projects and associated costs, based on staff judgement of future requirements. | Projects have been collated from a wide range of sources such as business unit planning processes and corporate risk processes. Capital projects for the next three years are fully scoped and estimated. | As for core, plus formal options analysis has been completed for major projects that need to be brought into service within the next 5 years. Capital intentions reports identify all major capital projects for the next 10 or more years with broad estimates of the costs and benefits of those projects or programmes. | Long -term capital investment programmes are developed using advanced decision techniques, such as predictive renewal modelling. The organisation has a reliable and approved 10 year view of its future capital requirements and the strategic choices available to meet changing fiscal or level of service requirements. | 55 | 90 |
|-------------|----|-------------------------------------|--|--|---|--|--|---|---|----|----|
| IIMM 3.5 | 11 | Financial and Funding Strategies | How does your organisation plan for the funding of its future capital expenditure and asset-related costs? | Poor financial management can lead to higher long run life cycle costs, inequitable fees and charges, and financial "shocks". Good collaboration between financial and asset managers is important, especially in relation to long term financial forecasts and asset revaluations. Asset valuation is required by International Accounting Standards, and can be used in lifecycle decision making. Robust financial budgets are a key output of any asset management planning process. | The organisation recognises the benefits of developing medium to long term financial and funding strategies, but does yet have any in place. The organisational focus is on the operating statement rather than the balance sheet. | Financial forecasts are based on extrapolation of past trends and broad assumptions about the future. Assets are re-valued in accordance with NZ International Accounting Standards (NZ IFRS). | Ten year+ financial forecasts based on current AMP outputs. The quality of forecasts meets NZ IFRS requirements. Significant assumptions are specific and well reasoned. Expenditure captured at a level useful for AM analysis. | Ten year+ financial forecasts are based on current and comprehensive AMP's with detailed supporting assumptions / reliability factors. Asset expenditure information is linked with asset performance information. | The organisation publishes reliable ten year+ financial forecasts based on comprehensive, advanced AMPs with detailed underlying assumptions and high confidence in accuracy. Advanced financial modelling provides sensitivity analysis, evidence-based whole of life costs and cost analysis for level of service options. | 65 | 85 |
| | | | | | Asset Managem | ent Enablers | | | | | |
| ШММ 4.1 | 12 | Asset Management Teams | What is the level of organisational commitment to asset management? How is this reflected in existing organisation structure, responsibilities and resourcing of AM competencies? | Effective asset management requires a committed and co-ordinated effort across all sections of an organisation. | The organisation recognises the benefits of an asset management function within the organisation, but has yet to implement a structure to support it. | Asset Management functions are performed by a small number of people with AM experience. | An organisation-wide Steering Group or Committee coordinates all capital asset management activity. There is relevant training for key AM staff. The Executive Team have considered options for AM functions and structures. | All staff in the organisation understand their role in relation to AM, it is defined in their job descriptions, and they receive training aligned to their roles. A person on the Executive Team has responsibility for delivering the AM policy and strategy. | There is strong leadership of the AM functions across the organisation. There is a formal AM capability management programme. The cost effectiveness of the AM structure has been formally reviewed. | 45 | 75 |
| ШММ 4.2 | 13 | AM Plans | How does your organisation develop, communicate, resource and action its asset management plans? | An asset management plan is a written representation of intended capital and operational programmes for it's new and existing infrastructure, based on the organisations understanding of demand, customer requirements and it's own network of assets. | The organisation recognises the benefits of asset management plan(s), but has not yet developed any. | The AM Plan contains basic information on assets, service levels, planned works and financial forecasts up to 5 years, and future AM improvement actions. | As for minimum plus a description of services and key / critical assets, future demand forecasts, description of supporting AM processes, 10 year financial forecasts, 3 year AM improvement plan. | As for core, plus analysis of asset condition and performance trends (past / future), effective customer engagement in setting LoS, ODM / risk techniques applied to major programmes. | As for intermediate plus evidence of programmes driven by comprehensive ODM techniques, risk management programmes and level of service / cost trade-off analysis. Improvement programmes are largely complete. There is a focus on maintaining appropriate practices. | 70 | 85 |

| ШММ 4.3 | 14 | Information Systems | How does your organisation meet the information needs of those responsible for various aspects of asset management? | AM systems have become an essential tool for the management of assets in order to effectively deal with the extent of analysis required. | The organisation recognises the benefits of using an asset management system, but does not have one in place. | Asset register records core asset attributes - size, location, age, etc. Asset information reports can be manually generated for AMP input. | Asset register enables hierarchal reporting (from component level to whole-of- facility level). There are systems for tracking customer service requests and for planning maintenance activity. System enables manual reports to be generated for valuation, renewal forecasting. | More automated asset performance reporting on a wider range of information. Key operations, unplanned maintenance and condition information held. | Financial, asset and customer service systems are integrated and enable advanced AM functions. There is optimised forecasting of renewal expenditure. | 50 | 85 |
|-------------|----|----------------------------|---|--|--|--|---|---|--|----|----|
| IIMM 4.4 | 15 | Service Delivery Models | How does your organisation procure asset-related services like maintenance and consumables for different classes of assets? How does the organisation exercise control over any outsourced asset management services? | The effectiveness of asset management planning is proven in the efficient and effective delivery of services at an operational level. | The organisation recognises the benefits of defining services delivery mechanisms and functions, but has yet to define these. | Service delivery roles are clear. Allocation of roles (internal and external) generally follows past procurement preferences. | Core functions defined. Contracts in place for external service providers. Tendering / contracting policy in place. Competitive tendering practices applied. | As for core, plus internal service level agreements in place with internal service providers. Contracting approaches have been reviewed to identify best value delivery mechanism. | All potential service delivery mechanisms have been reviewed and formal analysis carried out. Risks, benefits and costs of various outsourcing options have been considered and the best value arrangement has been or is being implemented. | 65 | 85 |
| ШММ 4.5 | 16 | Quality Management | How does your organisation ensure that it's asset management processes and practices are appropriate and effective? | When AM processes are part of a Quality Management system the organisation is able to operate consistent and reliable processes,, provide evidence that what was planned was delivered, and ensure that knowledge is shared. In short, that processes are appropriate and consistently applied and understood. | The organisation recognises the benefits of quality assurance processes, but has yet to implement processes for these. | Simple process documentation in place for service-critical activities. | There is a clear quality policy and basic quality management system. All critical AM activity processes are documented. | Process documentation has been implemented in accordance with the Quality Management System plan. All processes documented to appropriate level detail. | Quality certification has been achieved. Surveillance audits demonstrate the quality management system is operating satisfactorily. | 35 | 65 |
| ШММ 4.6 | 17 | Improvement Planning | How does your organisation ensure that it continues to develop its asset management capability towards an appropriate level of maturity? | Well performing agencies give careful consideration of the value that can be obtained from improving AM information, processes, systems and capability. The focus is on ensuring AM practices are "appropriate" to the business objectives and government requirements. | The organisation recognises the benefits of improving asset management processes and practises, but has yet to develop an improvement plan | Improvement actions have been identified and allocated to appropriate staff. | Current and future AM performance has been assessed and improvement actions identified to close the gaps. Improvement plans identify objectives, timeframes, deliverables, resource requirements and responsibilities. | There is formal monitoring and reporting on the improvement programme to the Executive Team. Project briefs have been developed for all key improvement actions. Resources have been allocated to the improvement actions. | There is evidence that agreed improvement plans have delivered the expected business benefits. | 65 | 80 |

Appendix 2 Glossary Of Terms

The following terms and acronyms (in brackets) are used in this Activity Management Plan.

| Activity | As defined in the <i>Local Government Act 2002</i> : 'Goods or services provided |
|---|--|
| | includes: |
| | a) The provision of facilities and amenities; |
| | b) The making of grants; and |
| | The performance of regulatory and other governmental functions. |
| Activity Management Plan (AM Plan) | Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The documents are an information source for the Council's LTP and IS, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards. |
| Asset Condition | This describes an asset's structural integrity or ability to deliver the service required from it. The condition can deteriorate slowly over the life of an asset or rapidly if it is damaged. |
| Annual Plan | The Annual Plan has the meaning given to it in the Local Government Act 2002. |
| Asset | A physical item that enables provision of services and has an economic life of greater than 12 months, has value of at least \$250 and is recorded in the asset register. |
| Asset Management (AM) | The combination of management, financial, economic, engineering and other practices applied systematically to physical assets with the objective of providing the required level of service in the most cost-effective and sustainable manner. |
| Asset Management | A system (usually computerised) for collecting analysing and reporting data on |
| System (AMS) (also known as asset register) | the utilisation, performance, lifecycle management and funding of existing assets. |
| Asset Management Plan (AMP) | In the Waimakariri District Council's context, this is referred to as an activity management plan. |
| Asset Management Planning | A set of interrelated or interacting elements of an organisation, including the AM policy, AM objectives, AM Strategy, AM Plans, and the processes to achieve these objectives. |
| Ancillary | A structure or an arrangement within the drainage collection system such as a pumping station, weir, syphon, or pond. |
| ARI | Average Recurrence Interval. The statistical period between events (e.g. rainfall or overflows) occurring. |
| Brownfields | Previously developed land with potential for new development. |
| Capital Expenditure (CAPEX) | Expenditure used to create new assets, renew assets, expand or upgrade assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset. |
|--|--|
| CCTV | Closed Circuit Television. It is used to visually assess the condition inside pipe networks. |
| Condition Monitoring | The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action |
| Connection | From the point of view of the utility provider this relates to the physical connection of a particular customer to the service. |
| Critical Assets | Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify prioritisation for inspection, rehabilitation or replacement ahead of other assets. |
| Current Replacement Cost | The cost of replacing an existing asset with an appropriate modern equivalent asset to deliver the same level of service. |
| Customer | A customer is an individual or business that creates the demand for and is the recipient of goods or services. Customers can be internal or external. |
| Deferred Maintenance | The shortfall in maintenance or rehabilitation work required to maintain the service potential of an asset. |
| Demand Management | The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management may be 'SUPPLY-SIDE' demand management (for example minimising wastage through pipe leak detection) or customer DEMAND-SIDE management, to reduce demand for over-utilised assets or vice versa (for example, through pricing, regulation, education and incentives). |
| Depreciation | The annual sum budgeted to enable the assets to be replaced at the end of their economic life. It is generally based on the value of the asset divided by its remaining life at that point in time. |
| Depreciated Replacement Cost (DRC) | The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset. |
| Disaster Resilience Assessment (DRA) | An assessment first carried out in 2007 and updated in 2011/12 to determine the risk to assets from natural hazards. |
| Disposal | Activities necessary to decommission and dispose of assets that are no longer required. |
| 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 physical life, however obsolescence will often ensure that the economic life is less than the physical life. |
| Facility | A complex comprising many assets (eg. swimming pool complex, sewage treatment plant etc.) which represents a single management unit for financial, operational, maintenance or other purposes. |

| Geographic Information System (GIS) | Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic data-base |
|---|---|
| Greenfield Development Area | Existing undeveloped land with potential for development or newly rezoned land that has yet to be developed with the appropriate infrastructure to support a residential or commercial land use. |
| Infrastructure Assets | Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components. |
| Key Performance Indicator (KPI) | A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Key performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction. Some of these may be mandatory performance measures as prescribed by central government. Also referred to as performance indicators (PI) or performance measures (PM). |
| Level of Service (LOS) | A measure of the standard of service that the Council intends to provide. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost. |
| Life | A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc. |
| Life Cycle | The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset ie. from planning and design to decommissioning or disposal. |
| Life Cycle Cost | The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs. |
| Life Cycle Maintenance | All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal. |
| Long Term Plan (LTP) | The Long Term Plan (LTP) has the meaning given to it in the Local Government Act 2002. |
| LGA | Local Government Act 2002. |
| Maintenance Plan | Details the specific planned or reactive maintenance actions for the optimum maintenance of an asset, or group of assets. |
| Network Utility Operator | A person or in many cases a local authority that provides a reticulated sewer system. |
| NZ Treasury Asset Management Maturity Assessment Tool (AMMA) | A tool (in spreadsheet format) that allows organisations to assess the maturity of their current Asset Management Plans, and to define a target maturity to which future Asset management Plans can aspire to, that is appropriate to the activity under consideration. |
| Optimised Renewal Decision Making (ORDM) | An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment. |

| Performance Monitoring | Quantitative and qualitative assessments of the actual performance compared with specific objectives, measures, targets or standards. |
|------------------------------------|--|
| Planned Maintenance | Day to day operational activities to keep the asset operating (fixing potholes, clearing drains, repairing leaks, mowing etc.) and which form part of the annual operating budget. These may be cyclic, e.g. on specific timeframe, or needs-based, i.e. where a fault is monitored until it reaches a point at which some action must be taken to ensure continued performance/life of asset. |
| Rating Charges | This is the unit charge applied to rate payers for a particular service. On some drainage schemes this is per property. On other schemes this is the area of land contributing to the discharge. |
| Renewal | Works to upgrade, refurbish, rehabilitate or replace existing assets with ones of equivalent capacity or performance capability. |
| Replacement | The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service. |
| Renewal Programme | This is the programmed replacement of like asset with like asset (as opposed to an upgrade), when it reaches the end of its useful life due to deterioration of its condition. |
| Remaining Economic Life | The time remaining until an asset ceases to provide service level or economic usefulness. |
| Reticulation | The network of pipes that collects, stores and delivers stormwater to the point of discharge. It includes gravity pipes, open drains, manholes and pump stations. |
| Risk Assessment | The process of looking at all possible events that might cause the failure of a given asset or component. The risk assessment considers both the probability and consequences of an event occurring. Risks are assessed and prioritised, and appropriate reduction or mitigation measures are implemented. |
| Risk Cost | The assessed annual cost or benefit relating to the consequence of an event. Risk cost equals the costs relating to the event multiplied by the probability of the event occurring. |
| Risk Management | Risk management is the identification, assessment, and prioritisation of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events. |
| Routine Maintenance | Day to day operational activities to keep the asset operating such as replacement of minor equipment, oil and greasing pumps and motors, cleaning of equipment, repairing leaks, etc. It forms part of the annual operating budget, including preventative maintenance. |
| Service Potential | The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. |
| SMA | Stormwater Management Area. |
| SS | Suspended Solids. |
| Stormwater / Drainage Catchment | An area containing properties that are connected to the stormwater collection system upstream of a particular point whether it is a particular manhole or a network pumping station. |

| Unplanned Maintenance (or repair) | Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity. |
|--------------------------------------|---|
| Upgrade | The addition or replacement of an asset, or component of that asset, that materially improves its original service potential. |
| Valuation | The process of determining the worth of an asset or liability. Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for life cycle costing or replacement plus a percentage for insurance purposes. |

Appendix 3: Key Assumptions and Risks

The following table is extracted from the 2021 to 2051 Waimakariri District Council Infrastructure Strategy. At a corporate level it outlines all of the key assumptions and risks that could potentially impact Council service delivery. Mitigation measures are explained in response to each identified risk.

Key Assumptions and Risks

The Council has identified a number of risks and assumptions when preparing this Long Term Plan (LTP) to ensure that all estimates and forecasts, contained throughout this document, are made on the same basis throughout the 10 year period, and in the case of the Infrastructure Strategy (IS) throughout the 30 year period.

| LIKELIHOOD RATINGS | | | |
|-------------------------|--|--|--|
| Descriptor | Description | | |
| Likely - Almost Certain | The event is expected or likely to occur in most circumstances. A very low level of confidence/information | | |
| Medium | The event should occur at some time. A moderate level of confidence/information | | |
| Unlikely - Rare | The event may occur at some time or only in exceptional circumstances. A very high level of confidence/information | | |

| CONSEQUENCES | | | | | | |
|----------------------|---|--|----------------------------------|--|--|--|
| Descriptor | Health and Safety \$ Project Delays Design robustness Environment | | | | | |
| Major - Show stopper | Risk of multiple fatalities | Millions to tens of millions of dollars | More than 6 Months - Years delay | Significant performance deficiencies | Widespread ecological damage, costly restoration | |
| Medium | Risk of serious injuries | Hundreds of thousands to millions of dollars | Weeks to months | Unable to meet some design criteria | Significant but recoverable damage | |
| Routine to Minor | Risk of minor injuries | Tens of thousands to hundreds of thousands dollars or less | Days - Weeks | Meets design criteria most of the time | Minor short term effects | |

COMBINED FACTOR RATINGS

High significance

Medium significance

Activity Management Plan 2021 Drainage Overview Document July 2021

| Low significance | | | | |
|--|--|---|---|--|
| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
| | | ENVIRONMENTAL | | |
| Earthquakes Significant earthquakes that cause major damage to Council's assets. | Medium likelihood (refer to Alpine Fault Magnitude 8 Study, 2016). This confirms a 30% probability of a magnitude 8.0 or above event within the next 50 years. | The community is significantly disrupted and displaced; Infrastructure and facilities are significantly damaged by more earthquakes; As well as a large amount of additional funding being required for service restoration affecting Council's debt and rate levels, provision for infrastructure renewals would also be affected. | Continuing to maintain CDEM readiness for response and recovery; Adopting resilient infrastructure standards through asset management plans and practises; All Council existing and above ground facilities upgraded to or otherwise at least 67% of current building code requirements; All new facilities meeting or exceeding current code requirements; Making appropriate District Plan provisions in relation to known active faults; Providing for borrowing 'headroom' in the Financial Strategy (FS). | CDEM emergency readiness and infrastructure and buildings seismic resiliency are all reflected in relevant budgets; Borrowing 'headroom' of \$69M to fund the Council's share of rebuild in relation to a 'maximum probable loss scenario is provided for within the Council's FS. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|--|---|--|---|---|
| | | ENVIRONMENTAL | | |
| Other Hazards/Significant Unplanned Adverse Events Fire, floods, windstorms, snowstorms, tsunamis outside of expected risk assessments; | Possible for tsunami, likely for flooding and snowstorms, possible for high winds (refer to Table 3.4 on page 31 of Canterbury CDEM Group Plan June 2014); | Some community disruption and displacement; Localised Infrastructure and facilities damage; Lesser scale affects than 1. above on the Council's financial position; | Ongoing mitigation measures as for a very large earthquake are more or less relevant depending on the event; Making provisions in the Reviewed District Plan informed by updated flood hazard mapping to guide development location and floor heights in relation to localised as well as major flooding scenarios; Continue to maintain CDEM readiness for response and recovery; Continue to support FENZ and their urban and rural Fire Forces. | The borrowing 'headroom' assumption in 1. above applies and is considered sufficient to account for reasonably foreseeable costs; |
| A Pandemic or Similar Event That would affect the District's population to an extent that has a significant effect on community wellbeing. | NZ is geographically isolated and border protection and preventative healthprogrammes are well developed and in place. However, biosecurity risks are of increasing concern. | In the case of wide-spread epidemic, District health and welfare services cannot keep up with demand; Low direct impact, but if it were to occur, some adverse indirect impact on Council's financial position could be expected. | Continue to maintain CDEM readiness for response and recovery; Continue to support relevant agencies border protection, monitoring and response programmes capacity and readiness; | COVID-19 is contained. There will not be another significant health event across the entire community in the next ten years. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|---|--|--|---|---|
| Impacts of Climate Change Hazards planning has not adequately accounted for climate change impacts. | Hazards planning allows for projected sea level rise and flood mitigation measures account for anticipated changes to weather patterns. There is an increasing likelihood of sea surge, coastal inundation and groundwater rise affecting coastal settlements. IF average mean temperatures rise in the District, THEN the risks of wild fire, drought and windstorms is likely to increase. | Sea level rise progressively impacts low lying coastal areas affecting ecology and beach settlements; More significant rainfall events, (incl. higher rainfall intensity) may cause more localised flooding and alter major river flow patterns. Loss of essential services and damage to infrastructure and natural systems habitat. | Updating flood hazard mapping as in 2. above allows for 1 metre of sea level rise by 2100. This will be reflected in Reviewed District Plan provisions; Allowing for implications of slow sea level (sea surge and coastal inundation) and groundwater rise and changing weather patterns in infrastructural asset management planning and the forthcoming Reviewed District Plan. | Consequences of climate change for asset management are or are soon to be accounted for in relevant plans and policies. |
| | | ENVIRONMENTAL | | |
| Water Quality Rising regulatory requirements and community expectations in relation to freshwater quality and in the face of deteriorating groundwater and lowland stream water quality; Previously secure deep source drinking water supplies are impacted with contaminants. | Ongoing adjustments to national and regional policy requirements are highly likely and this poses uncertainty to the adequacy of capital works programmes; Regular testing and proactive approach to treatment as necessary will ensure deep source supplies are protected from contamination. | Increasing standards for water quality management impact the Council's regulatory, monitoring and infrastructure requirements; Community drinking water supplies pose a health risk to the public in the event of deep-well water quality deterioration. | Provisions of asset management plans are updated and this is reflected in capital works programmes; New and revised consenting requirements set by Regional Plans are responded to; Regular testing and proactive safety plan implementation to ensure compliance with NZDWS. | Planned expenditure, monitoring and regulatory initiatives are effective in responding to rising regulatory requirements and observed deterioration in water quality; Drinking water safety plans are being implemented. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|--|---|---|---|---|
| | | ECONOMIC | | |
| Population Growth The population growth rate is significantly different from that assumed. | Relative to recent and reasonably foreseeable growth based on development activity, the Council is taking a conservative approach to future projected growth for financial planning purposes; This approach together with close ongoing monitoring is consistent with established practice whereby growth assumptions have historically been very accurate. | Population growth and hence the development rate affects the demand for Council's services and infrastructure investment, as well as the ability for the community to afford improved facilities; If the population does not grow as quickly as projected then the revenue from rates and development contributions will not be accurately forecasted and improvements in community facilities and infrastructure will be delayed. | Making conservative (i.e. medium) growth assumptions for financial planning purposes that account for reasonably foreseeable development activity; For long term infrastructure planning purposes a medium- high growth assumption ensures sufficient capacity; Closely monitoring local trends, as well as wider demographic and development activity changes affecting Greater Christchurch, which has the potential to impact growth in the District; Formally review growth projections every three years as part of the LTP process and adjust programmes accordingly. | The estimated resident population of the District at 30 June 2021 is 62,200. This is projected to grow to 74,600 by 30 June 2031; For the IS out to 2051 it is assumed that population growth will trend towards the latest available Statistics New Zealand 'medium' variant growth rate and so increase to 97,000 by 2051. For capacity planning purposes, a population of XX,XXX by 2051 has been considered. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|---|---|---|--|--|
| 🔲 low 🗖 medium 📕 high | 🔲 low 🔲 medium 📕 high | 🔲 low 🔲 medium 📕 high | | |
| | | ECONOMIC | | |
| Growth Distribution Residential and business development does not occur within the expected locations. | The distribution of future urban and rural-residential development is determined by statutory plans and policies. This includes a shortly to be adopted District Development Strategy that sets out an anticipated development distribution through to 2048. | Unexpected or out-of-sequence development would put pressure on Council's head-works and trunk infrastructure as well as roading investment; The availability of services and facilities to cater for growth may be compromised. | Consenting new development in accordance with the adopted District Development Strategy and the Canterbury Regional Policy Statement directed provisions of the Waimakariri District Plan as reviewed. | Urban development over the next 10 years occurs within the Infrastructure Boundary and generally in Priority Areas identified in the Canterbury Regional Policy Statement; Over the 30 year period of the IS to 2051 development occurs in accordance with the adopted District Development Strategy and gives effect to the amended provisions of the Canterbury Regional Policy Statement as may be required in order to give effect to the National Policy Statement on Urban Development Capacity; To service urban and rural- residential development under these policy settings provision is made for networked infrastructural services in activity management plans. |
| Insurance The Council generally maintains prudent insurance cover that is readily available. However in the event of 1. above the risk is that cover may be withdrawn/ be unavailable to provide for reinstatement of otherwise insured Council assets. | It is likely Council will retain full replacement cover for above ground assets and cover, along with Government support, is in place for below ground assets. | Should insurance be lost, the cost of damage reinstatement from a major disaster would be significant and works prioritised and funded through borrowing and rates. | Allowing adequate borrowing 'headroom' in LTP in case full replacement cover is not retained for above and below ground assets. | Council will retain full replacement cover for above ground assets; The 60% Government share for below ground assets is maintained; Borrowing 'headroom' is provided for in the FS, in the unlikely event full cover is not available. |

Activity Management Plan 2021 Drainage Overview Document

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|--|--|--|--|---|
| | | | | |
| | | ECONOMIC | | |
| Inflation Inflation is significantly higher than that allowed for in the FS. The risk category is low in the short term (1 to 3 years), but medium in the longer term (4 to 10 years). | A comprehensive local government sector-wideapproach to inflation projections has been used which allows for the fact that costs typically increase at a faster rate than the consumer price index (CPI). | Greater than anticipated cost increases, especially in construction and contracting rates increases the overall cost of the capital and maintenance programmes, in turn having an impact on debt servicing costs and rates. | Greater than anticipated cost increases, especially in construction and contracting rates increases the overall cost of the capital and maintenance programmes, in turn having an impact on debt servicing costs and rates. | Greater than anticipated cost increases, especially in construction and contracting rates increases the overall cost of the capital and maintenance programmes, in turn having an impact on debt servicing costs and rates. |
| <i>Asset Revaluation</i> Asset revaluation is higher than estimated. | A comprehensive local government sector-wide approach to inflation projections has been used which allows for the fact that costs typically increase at a faster rate than the Capital Goods Price Index (CGPI). | Greater than anticipated cost increases, especially in construction and contracting rates increases the overall cost of the capital and maintenance programmes, in turn having an impact on rates. | Council monitors the valuation movements for all significant infrastructural assets on a yearly basis. | In the LTP, Council has revalued its significant infrastructural assets on a yearly basis in line with the CGPI. |
| New Zealand Transport Agency (NZTA) Revenue Sufficent funds may not be available to pay for the planned capital projects. | Past roading capital projects were performed in line with approved NZTA policies. | There is a risk that sufficient funds will not be available to pay for the planned capital projects. For example, because growth does not provide sufficient funding from development contributions or the community considers that required rates rises are not affordable. | The Council will assess the availability of funds as part of the annual budget process and if funds are not available, it may revise the capital programme that is set out in the LTP. | It is assumed that the level of financial assistance received from NZTA will remain at 51% for the period of the LTP. Funding assistance for large capital transport works would be achieved on a case by case basis through a Business Case approach with NZTA. NZTA funding will be awarded for 3 year periods and that the following 7 years will be funded in a similar manner. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|--|--|---|---|--|
| 🔲 low 🔤 medium 📕 high | low 🧧 medium 📕 high | 🔲 low 🔤 medium 📕 high | | |
| | | ECONOMIC | | |
| Interest Rates Long-term interest rate on loans will exceed a weighted average of 5% (Existing loans have a weighted average interest cost of 4.2 %). | It is likely that interest rates on loans will stay within a 4% to 6% range over the next 10 years. | Increases in interest rates flow through to higher debt servicing costs and higher rates. | Maintaining a prudent level of debt and related hedging programme established within the limits of adopted treasury policy. | Interest rates on loans will average 5% over the next 10 years. |
| <i>Economic Growth</i> Long-term economic growth will not continue to be consistent with historic trends and remain moderate. | Long-term projections by Treasury last updated on a four-year cycle in 2016 indicate favourable or better long-term prospects and are reasonably likely to be accurate. These projections do not allow for major/catastrophic world events leading to sustained adverse economic downturn, nor disruptive technological change. However, the underlying assumptions do anticipate a continuing incremental impact of technology on the labour market and productivity. Government fiscal policies will seek to ameliorate significant adverse effects, as was the case during the Global Financial Crisis. | A persistent downturn in economic prospects may mean the Waimakariri District is not able to sustain high employment and continued real growthin incomes; Ratepayers are unable or unwilling to support maintaining Council levels of service. | Making conservative projections for growth and development and so the contribution of growth to revenue; Allowing for moderate overall rates increases. | Treasury's 40-year economic growth outlook and related fiscal projections are an adequate basis for the Council assuming continuing moderate economic growth and consistent Government financial policies; Underlying assumptions make some provision for incremental technological change and this is reflected in the LTP provision for information technology expenditure. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|---|---|---|--|---|
| | | ECONOMIC | | |
| Useful Life of Significant Assets and Depreciation Funding The useful lives of significant assets are not accurate and major assets do not have a lifespan of 50-100 years as estimated; Fully funding depreciation does not accurately reflect the life cycle of assets. | It is unlikely that the useful life of significant assets will fall short and they will require replacement before their estimated life; Even though assets wear out at different rates and the depreciation allowed for their wear and tear may not be enough to reinstate the asset when due for replacement or be too much over and above replacement costs, this is unlikely given historic use of fully funded depreciation rates. | Depreciation and borrowing costs would increase if capital expenditure was required earlier than anticipated; Rates will be affected where depreciation funding is set too high or too low. | Maintaining realistic estimates of asset useful life; Continuing efforts to improve knowledge of the condition and useful life of assets; Funding of depreciation is set at amounts that reflects the replacement cost of assets; Allowance for excess capacity or additional provision that is made to cater directly or indirectly for growth is excluded from the depreciation charge until such a time that the capacity of the network isused; If required, reprioritising the capital expenditure programme. | The life of significant assets is as set out in Accounting Policies; Funding sources for the required replacement of assets are identified in the Council's Revenue and Financing Policy; Rating levels are set to recover depreciation costs in accordance with the Council's Revenue and Financing Policy. |

| RISK AND ITS SIGNIFICANCE Level of significance = likelihood x consequence, shown as: | LIKELIHOOD OF RISK With level of likelihood shown as: Iow medium high | CONSEQUENCE OF RISK With level of severity shown as: | MITIGATION MEASURES | ASSUMPTIONS FOR LONG TERM PLAN (LTP) AND INFRASTRUCTURE STRATEGY (IS) |
|---|--|---|--|--|
| | | SOCIAL | | |
| Impact of Demographic Change Projected change in the age structure and household characteristics of the population do not come to fruition. | Projected demographic changes are well known and recently adopted profiles have proved generally accurate. | The Council's policy approach in relation to provision and levels of service are not maintained which affects the Council's overall financial position. | Continuing to monitor and assess District demographic change; Consider adjusting planning for levels of service accordingly. | Statistics New Zealand medium variant projections for demographic change are used and considered most likely to occur. |
| Changes to Central and Regional Government Policy Central and Regional Government policy changes place additional requirements on Council and communities to comply. | It is likely that over time changes in Central and Regional Government policy will occur and place additional compliance requirements on councils. | Could have significant financial impact on resources to meet legislative requirements and require changes to service delivery and/or organisational form. | Continuing to advocate for moderate changes in policy that do not place additional compliance cost on Councils; Seeking the most cost effective ways to meet new statutory requirements as they arise. | Known Central and Regional Government policy settings as they impact local government costs in relation to water management have been reflected in LTP budgets but it is assumed in other respects they remain constant; Known changes to Environmental standards have been reflected in LTP budgets but it is assumed in other respects they remain constant. |

Likelihood and Consequences

The Likelihood and Consequences rating and the subsequent risk ratings described in Council's Risk Management Framework are shown below

| LIKELIHOOD RATINGS | | | | | | | | |
|------------------------|--|--|------------------|-----------------------|--|---|-----------------------------|---------------------|
| Descriptor | Descripti | on | | | | | | Rating |
| Almost Certain | The event | is expect | ed to occur in | most circumstances | or A very low level of | confidence/informatior | ۱ | 5 |
| Likely | The event | The event will probably occur in most circumstances or A low level of confidence/information | | | | | 4 | |
| Moderate | The event | should or | ccur at some t | ime A moderate leve | l of confidence/inform | ation | | 3 |
| Unlikely | The event | could occ | cur at some tir | ne A high level of co | nfidence/information | | | 2 |
| Rare | The event | may occu | ur only in exce | ptional circumstance | es A very high level of | confidence/informatior | 1 | 1 |
| CONSEQUENCE RATINGS | | | | | | | | |
| Descriptor | Health ar | d Safety | \$ | Project Delays | Design/Project robustness | Environment | Ima | age |
| Severe | Fatality, o permaner disability | t total | >\$20m | Years | Significant performance deficiencies | Permanent widespread ecological damage | Internatior public enq | nal media, uiry |
| Major | Significan | tiniury | | | | | | |
| 70 | resulting i permaner disability. Harm | t partial Serious | \$2m-20m | 6-12 months | Fails to meet design criteria | Heavy ecological damage, costly restoration | National m ministerial | nedia, questions |
| Moderate 50 | Serious in illness, wi days lost | jury or h >10 ime | \$200K- \$2m | 0-6 months | Unable to meet some design criteria | Significant but recoverable damage | Regional r official info | nedia, ormation |
| Minor 10 | Injury or il requiring t treatment 10 days lo | ness nedical with < st time. | \$20K- \$200K | Weeks | Meets design criteria most of the time | Limited but medium term effects | Local med | lia, minor |
| Routine | Slight injuries | | <\$20K | Days | Routine operational niggles | Minor short term effects | Internal qu | lestions |
| Combined factor | Combined factor ratings | | | | | | | |
| Low risk | 0 - 149 | - | | | | | | |
| Medium risk | 150 - 199 | | | | | | | |

200 +

High risk

Appendix 4 : Long Term Plan (Incl Mandatory) Drainage Performance Measures

The following table shows the Council's performance measures that were used for the 2018-2028 LTP for its stormwater and drainage activity. Monitoring results were reported annually in the Council's Annual Report.

Note: any performance measures in italics on the following page indicate a mandatory performance measure prescribed in accordance with Section 261B of the Local Government Act 2002, 2010 amendment.

| STORMWATER DRAINAGE | | | | | |
|--|---|--|--|--|--|
| COMMUNITY OUTCOMES That this activity contributes to | WHAT COUNCIL PROVIDES Major levels of service | MEASURING PEFORMANCE | TARGET | | |
| | System and Adequacy The stormwater system is adequately sized and maintained and rural drainage areas are adequately maintained | * Urban Stormwater: a) The number of flooding events that occur as a result of overflow from the stormwater system that enters a habitable floor b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to the territorial authority's stormwater system | a) Nil in less than 50 year storm events b) Nil per 1000 connected properties in less than 50 year storm events | | |
| Core utility services are provided in a timely sustainable and affordable manner | maintained | The percentage of service requests for drain cleaning that are responded to within 5 working days. * Compliance with the territorial authority's resource consents for | 100% | | |
| | Discharge Compliance The Stormwater system is managed in accordance with consent conditions | discharge from its stormwater system measured by the number of (a) Abatement notices (b) Infringement notices (c) Enforcement orders, and (d) Convictions, Received in relation to those resource consents | a) Nil b) Nil c) Nil d) Nil | | |
| | | Breaches of consent conditions that result in an in Environment Canterbury report identifying compliance issues. | Nil | | |

| STORMWATER DRAINAGE | | | | | |
|---|--|---|--|------------------------------|--|
| COMMUNITY OUTCOMES That this activity contributes to | WHAT COUNCIL PROVIDES Major levels of service | MEASURING PEFORMANCE | TARGET | | |
| There is a healthy and sustainable environment for all. | Response Times Flooding events from the stormwater system are promptly attended to | * 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 | Less than 180 minutes | | |
| | Customer Satisfaction The stormwater system is managed to an appropriate quality of service | * Complaints The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system | Less than 10 complaints per 1000 connected properties | | |
| | | Service Requests The percentage of service requests relating to any drainage enquiries that are responded to within 5 working days. | 100% | | |
| | Community Engagement The community is | Maintain dialogue and consultation with Te Ngāi Tūāhuriri Rūnanga | Drainage team represented at all scheduled Rūnanga meetings | | |
| | | drainage related proposals | Facilitate and engage with all drainage and water race advisory groups | 3 meeting per group per year | |