

# **Activity Management Plan 2021**

## **Loburn Lea Rural Drainage Scheme**

**3 Waters | July 2021**








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## **Contents**

1	Executive Summary .....	4
2	Introduction.....	5
3	Related Documents .....	5
4	Scheme Description (What Do We Have?).....	5
5	Scheme Management Issues (What Do We Need to Consider?).....	8
5.1	Levels of Service .....	8
5.2	Asset Condition .....	10
5.3	Asset Criticality.....	13
5.4	Risk Assessment .....	15
5.5	Disaster Resilience Assessment .....	15
5.6	Growth Projections .....	16
5.7	Capacity and Performance .....	17
	The scheme is relatively new and is designed to cope with the target service levels. For the 2019/20 year there are no complaints recorded for flooding, or drainage issues within this scheme.....	17
6	Future Works & Financial Projections (What Do We Need To Do?).....	18
6.1	Operation & Maintenance .....	18
6.2	Renewals Programme .....	19
6.3	Capital Works .....	22
6.4	Financial Projections .....	25
6.5	Valuation .....	26
6.6	Revenue Sources .....	26
7	Improvement Plan .....	27
7.1	2021 Improvement Plan .....	27

## Tables

Table 1: Key Asset Management Components.....	4
Table 2: Scheme Statistics for 2019/2020 .....	6
Table 3: Stormwater Pipe Data Summary .....	6
Table 4: Open Channel Drain Data Summary .....	6
Table 5: Other Stormwater Asset Data Summary .....	6
Table 6: Data References .....	7
Table 7: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020 .....	9
Table 8: Pipe Condition Summary.....	12
Table 9: Number of Events per Level of Risk .....	15
Table 10: Risks to Assets .....	16
Table 11: Growth Projections .....	17
Table 12: Asset Valuation .....	26
Table 13: 2021 AMP Improvement Plan .....	27

## Figures

Figure 1: Pipe Condition Assessment Plan.....	11
Figure 2: Asset Condition Summary.....	12
Figure 3: Pipe and Facilities Criticality .....	14
Figure 4: Annual Water Operation & Maintenance 30-Year Budget.....	18
Figure 5: Annual Drainage – Projected Renewals 150 year Budget .....	19
Figure 6: Pipe Renewal Time Frames.....	21
Figure 7: Projected Capital Upgrade Works (not to scale) .....	24
Figure 8: Projected Total Expenditure .....	25
Figure 9: A1 - Plan of Serviced Area as of November 2017 .....	28

## 1 Executive Summary

The following table provides a summary of the key asset management issues of Loburn Lea Rural Drainage Scheme identified through consideration of the levels of service, consents, asset condition, risk analysis, disaster resilience, growth projections, and capacity assessment:

**Table 1: Key Asset Management Components**

Levels of Service	Customer levels of service are measured at district level and reported in the Drainage Overview document. Of those levels of service not met the failures related to response times not being achieved. Overall the district customer satisfaction at 76.1% (satisfied or very satisfied) did not meet the 90% target There is only one scheme specific service level, which has been met
Resource Consents	There is one discharge consents associated with the stormwater management area. No non compliance reports have been received from the Regional Council over the period of the last LTP regarding these consents
Capacity & Performance	The scheme is relatively new and is designed to cope with the target service levels.
Asset Condition	Replaceable assets are relatively new and are therefore assumed to be in good condition
Risk Assessment	There are no high or extreme risks on the scheme which need to be mitigated.
Disaster Resilience	There are 500m of reticulation mains considered to be at moderate risk in an earthquake, but there are no plans to replace these assets.
Growth Projections	No future growth on this scheme is expected.

## 2 Introduction

The purpose of this Activity Management Plan (AMP) is to outline the significant issues associated with the Council's assets and to show how the Council proposes to manage the schemes in the future.

This plan summarises the various components of the Loburn Lea Rural Drainage Scheme, its condition and performance, and identifies future funding requirements including upgrades where necessary.

The data that has been relied upon to produce this document was taken at the end of the 19/20 financial year. i.e. 30 June 2020.

Further details of the asset management practices used by Council to manage this scheme are summarised in the District Drainage AMP Overview document.

Projects identified to improve asset management processes for this scheme will also benefit the performance of the other 3 waters schemes and are managed at a District level for efficiency.

Projects are also identified within this AMP that will maintain or improve levels of service.

All figures within this AMP exclude inflation.

## 3 Related Documents

The following related documents have been used as reference documents or for guidance in the development of some of the sections in this Activity Management Plan.

- Waimakariri District Plan
- Population in the Waimakariri District (TRIM 170328030077)
- New Projections for LTP 2021-2031 (TRIM 200908117997)
- WDC Asset Management Policy (TRIM 180605062091)
- 2019 Customer satisfaction Survey (TRIM 200313034937)
- Development Contributions Policy 2021/22 (TRIM 200729095963)
- Flood Mitigation Works and Funding (TRIM 141009110892[v2])

## 4 Scheme Description (What Do We Have?)

Loburn Lea is situated north of the Ashley (Rakahuri) River approximately 3km from Rangiora. It is on rolling lowlands at the southern foot of the Ashley Forest range. It is bounded by Dixons Road in the south, Cones Road in the east, Carrs Road in the north, and on the western flank by an 'L' shaped boundary formed by the rear of the properties facing Fergus Road. A map outlining the rating area can be found in Appendix 1.

Roughly centre of the development is a designated drainage (attenuation) reserve area known as Loburn Lea Basin (Fergus Drain branch). This has been designed to take runoff from the upstream catchment including hill runoff.

To the east, roughly parallel with Cones Road, lies a drainage route originating in the Ashley Forest range. This too has an attenuation pond known as Loburn Lea Basin (Straight Drain Branch), with a flow restricting device, as shown on the front page.



Both drainage outfall systems eventually drain to the Ashley (Rakahuri) River.

Some key statistics (end of 2019/20 year) of the scheme are shown in Table 2 to 6.

**Table 2: Scheme Statistics for 2019/2020**

Scheme Parameter	Statistics	Data Source
Drainage System	Gravity	
Drainage Area	41 hectares	Source - GIS Layer
Reticulation & Treatment	Open drains, 2 attenuation basins, no formal treatment	
Length of Reticulation and Open Channel	0.7 km Mains 1.0 km Channel	Drainage Asset Valuation Tables 9-4 and 9-5, pages 66 to 68.
Total Replacement Value	\$1,011,955	
Depreciated Replacement Value	\$909,268	
Properties rated	39	Source 2019/20 Rating Query

**Table 3: Stormwater Pipe Data Summary**

Stormwater pipe length (m) by diameter and pipe material								
Pipe Material	Pipe Diameter (mm)							
	225	250	300	375	450	525	600	Total
Concrete	0m	0m	16m	0m	513m	0m	181m	710m
Other	30m	0m	0m	0m	0m	0m	0m	30m
<b>Total</b>	<b>30m</b>	<b>0m</b>	<b>16m</b>	<b>0m</b>	<b>513m</b>	<b>0m</b>	<b>181m</b>	<b>741m</b>

**Table 4: Open Channel Drain Data Summary**

Open Channel Drains	
Material	Length (m)
Unlined Drain	993
Lined Drain	0
<b>Total</b>	<b>993</b>

**Table 5: Other Stormwater Asset Data Summary**

Stormwater Assets	
Asset Type	Count
Inlet (Sump)	0
Manhole	7
Node	0
Valve	0
<b>Total</b>	<b>7</b>

**Table 6: Data References**

<b>Data Reference</b>	<b>Trim Reference</b>
2020 3 Waters Asset Valuation	<a href="#"><u>200824109857</u></a>
2020 50 Year Water and Sewer Growth Forecast	<a href="#"><u>200224024348</u></a>



## 5 Scheme Management Issues (What Do We Need to Consider?)

There are a number of key aspects to consider when managing a drainage scheme; these include:

- Desired & actual levels of service
- Asset condition & criticality
- Capacity & performance
- Risks
- Growth predictions for the scheme

These issues have been assessed in detail and are summarised in the following sections.

### 5.1 Levels of Service

Table 7 sets out the performance measures and targets for the scheme, and records achievement against targets since 2008.

Mandatory performance measures are measured at the district wide level and are not included in the individual drainage scheme AMPs. They are located in the District Overview Drainage Activity Management Plan. However, there is considerable overlap between the measures at Scheme and District levels. Mandatory measures cover flooding, consent compliance, time to respond to faults, and complaints. The scheme LOS measures include more detail, and cover complaints, consent compliance, flooding, but not response times, which are only measured at scheme level

None of the WDC targets are planned to change over the 10 year LTP period, so only the one target value has been shown in this document.

Performance in Table 7 is measured against the performance measures set in 2018, as part of the 2018-28 Long Term Plan process. Going forward from 2021 onwards, performance will be against the modified set of performance measures that were presented to the Council's Utilities and Roading Committee in 2020 (refer report 200406043184[v2]), and subsequently approved by Council. These revised levels and targets are detailed in the District Overview Water Supply Activity Management Plan.

**Table 7: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020**

\* Note “Y” indicates that the LOS has been met, and “N” indicates it has not been met

# Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment.

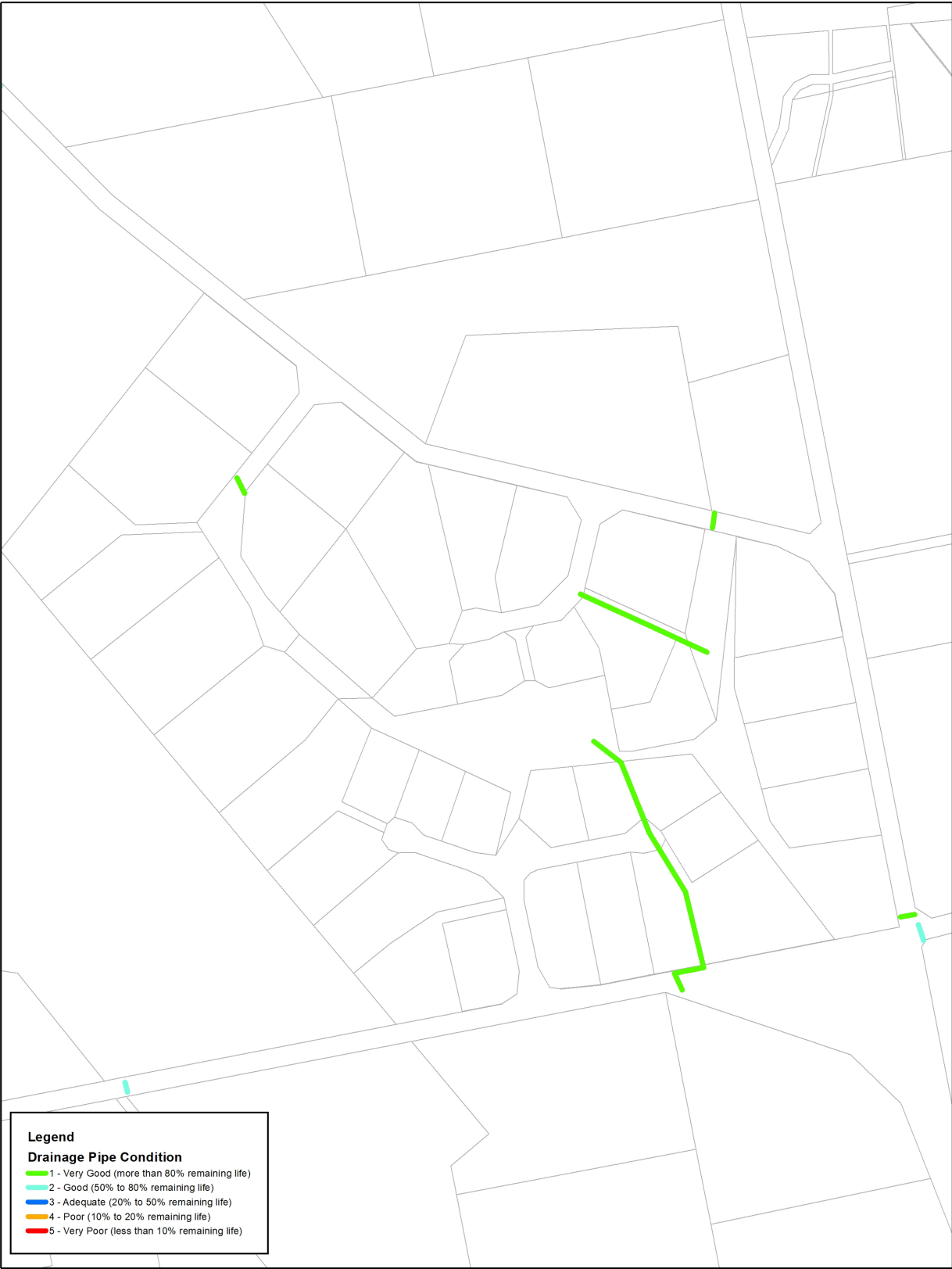
Section	Level of Service	2018 – 2021 Performance Measure	2018 – 2021 Target	2020				Previous Results*			
				Result	Commentary	Status	Action to Address	2017	2014	2011	2008
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per year	0%	There were no consent breaches that resulted in non-compliance reports being received from Environment Canterbury for FY 19/20.	Achieved	N/A	Y	-	-	-



## 5.2 Asset Condition

The current assessment of asset condition for hard assets (as against the open drain networks) 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.

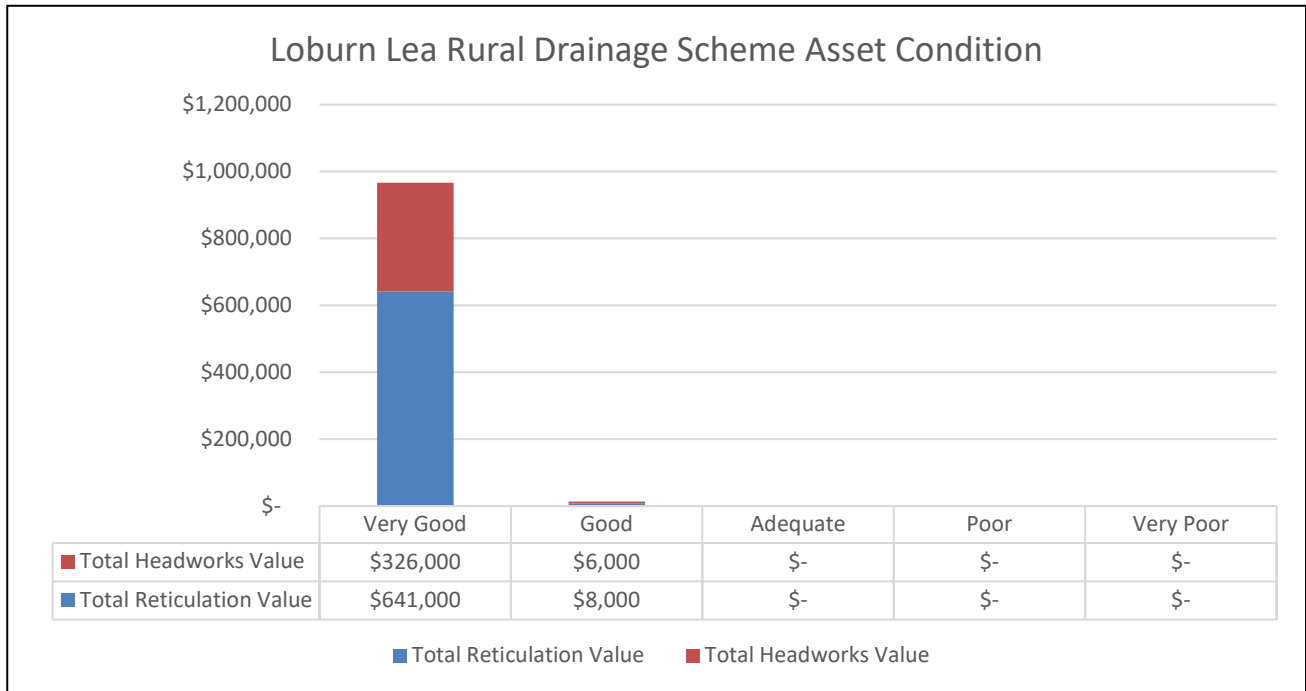
Figure 1 below, shows the assessed pipe condition for all pipes within the scheme. Figure 2 summarises the theoretical asset condition for both the network and headworks in a graph, while Table 8 provides more detail about the value of the assets within different asset condition categories.

Figure 1: Pipe Condition Assessment Plan



 <b>WAIMAKARIRI</b> DISTRICT COUNCIL	<b>Loburn Lea Drainage</b>	SCALE (A4) <b>1:5,000</b>	
	<b>PIPE CONDITION ASSESSMENT</b>	DATE <b>28/08/2020</b>	

**Figure 2: Asset Condition Summary**



“Headworks” is inclusive of all above ground assets associated with the scheme

**Table 8: Pipe Condition Summary**

Condition Grade	Definition	Pipeline Quantity	Total Reticulation Value	Total Headworks Value	Total Value
1	Very Good <i>More than 80% of life remaining</i>	0.7 km 98%	\$ 641,000 99%	\$ 326,000 98%	\$ 967,000 99%
2	Good <i>Between 50% and 80% of life remaining</i>	0.0 km 2%	\$ 8,000 1%	\$ 6,000 2%	\$ 14,000 1%
3	Adequate <i>Between 20% and 50% of life remaining</i>	0.0 km 0%	\$ - 0%	\$ - 0%	\$ - 0%
4	Poor <i>Between 10% and 20% of life remaining</i>	0.0 km 0%	\$ - 0%	\$ - 0%	\$ - 0%
5	Very Poor <i>Less than 10% of life remaining</i>	0.0 km 0%	\$ - 0%	\$ - 0%	\$ - 0%
<b>Total</b>		<b>0.7 km</b>	<b>\$649,000</b>	<b>\$332,000</b>	<b>\$981,000</b>

### 5.3 Asset Criticality

Asset criticality provides an indication of the importance of an individual asset and the corresponding impact on the service delivery should the asset fail for any reason. Criticality is used in risk based investment decisions to help decide when an asset should be replaced to avoid the consequences of failure. For 3 Waters the Council has developed an assessment process for pipes and other replaceable assets which scores assets from most critical 'AA' to least critical 'C'. Further details of the criticality assessment methodology is covered in the Drainage Overview AMP. However it does not apply to the majority of rural drainage scheme assets, which are open drains and channels which can be maintained effectively in perpetuity. The criticality assessment is used as an input to the renewals model

The criticality scoring process, has been significantly improved through automation and dynamic links to GIS data layers for this AMP.

Figure 3 provides a spatial view of asset criticality for the scheme.

**Figure 3: Pipe and Facilities Criticality**





## 5.4 Risk Assessment

An Operational Risk Assessment was first undertaken for the components of the Drainage Scheme in 2004, and it has been regularly updated since that time. It was last updated for the 2015 AMP review.

The District Wide Overview details the risk events considered and includes a summary of the risk assessment results for all the drainage supply schemes and is useful in indicating overall drainage network priorities.

Table 9 summarises the risks for the Loburn Lea Rural Drainage Scheme:

**Table 9: Number of Events per Level of Risk**

Risk Level	2004	2008	2011	2014
Extreme risks	0	0	0	0
High risks	0	0	0	0
Moderate risks	4	4	4	4
Low risks	19	19	20	20
Not applicable	4	4	4	4
Total	27	27	28	28

The table shows there are no high or extreme risks on this scheme.

District wide, moderate risks are being deferred until extreme and high risks have been addressed.

## 5.5 Disaster Resilience Assessment

The 2009 Disaster Resilience Assessment (DRA) is a desk top study that primarily considered the risks to above ground structures presented by natural hazard events across all Council operated 3 Waters schemes. The original assessment was updated in 2012 using revised hazard and asset behaviour information captured during the 2010-11 Canterbury earthquake sequence.

The Loburn Lea scheme area is not susceptible to liquefaction, so the pipeline vulnerability assessment process carried out within other scheme boundaries is not relevant. However reticulation mains were assessed for earthquake risk, and concluded to be moderate low risk. No specific mitigation actions were identified.

### Above Ground Facilities

There are no above ground drainage assets in this rural scheme.

Table 10 details the hazard impacts that the scheme is exposed to.

**Table 10: Risks to Assets**

Threat	Hazard Impact
Flooding	None
Earthquake	Vulnerable to shaking effects
Liquefaction	None
Slope Hazard	Low to very low threat
Tsunami	None
Wildfire	Medium to high threat
Snow	30-40cm could be expected
Wind	Medium to high threat
Lightning	District wide hazard
Terrorism	District wide hazard

The Council's response to these risks is being managed at a district level via the DRA Action Plan and related projects. Refer to the District level AMPs for details.

## **5.6 Growth Projections**

There are a number of factors that are likely to influence future demand on land drainage systems. These may include:

- Population trends
- Changes in land use
- Climate change
- Changes in legislation
- Advancements in drain management

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. Stormwater 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 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.

No further development is expected under current consent conditions, as shown in Table 11 below, while most significant water flow through Loburn Lea comes from upstream and outside the scheme area.

**Table 11: Growth Projections**

<b>Loburn Lea</b>	<b>Rates Strike</b>	<b>Years 1 - 3</b>	<b>Years 4 - 10</b>	<b>Years 11 - 20</b>	<b>Years 21 - 30</b>
	<b>2019/20</b>	<b>2021/22 to 2023/24</b>	<b>2024/25 to 2030/31</b>	<b>2031/32 to 2040/41</b>	<b>2041-42 to 2050/51</b>
<b>Projected Properties</b>	39	39	39	39	39

Note that the time frames have been chosen to reflect the periods 3, 10, 20, 30 and 50 years from the AMP release date, however due to the time it takes to complete the analysis the base rates strike data used was from 2019/20.

## 5.7 Capacity and Performance

The scheme is relatively new and is designed to cope with the target service levels. For the 2019/20 year there are no complaints recorded for flooding, or drainage issues within this scheme

## 6 Future Works & Financial Projections (What Do We Need To Do?)

This section covers the future works required to meet the target levels of service, maintain the asset in an acceptable condition, reduce the risks to an acceptable level and accommodate growth.

### 6.1 Operation & Maintenance

Maintenance of the open drains is a combination of proactive and reactive work. Drains known to require clean out are completed on an annual basis, with other drains being cleaned when notification is given by adjacent landowners. Much of the routine work is done in the summer months when weed growth is at its peak. In some locations only hand cleaning and or spraying is possible given the limited access available.

Depending on weed growth, some areas may be cleaned more than once a year. This is particularly so where drains are in highly visual areas. In addition to weed-spraying, drains are cleaned out and re-shaped with a digger depending on condition. Retention basins are mowed regularly.

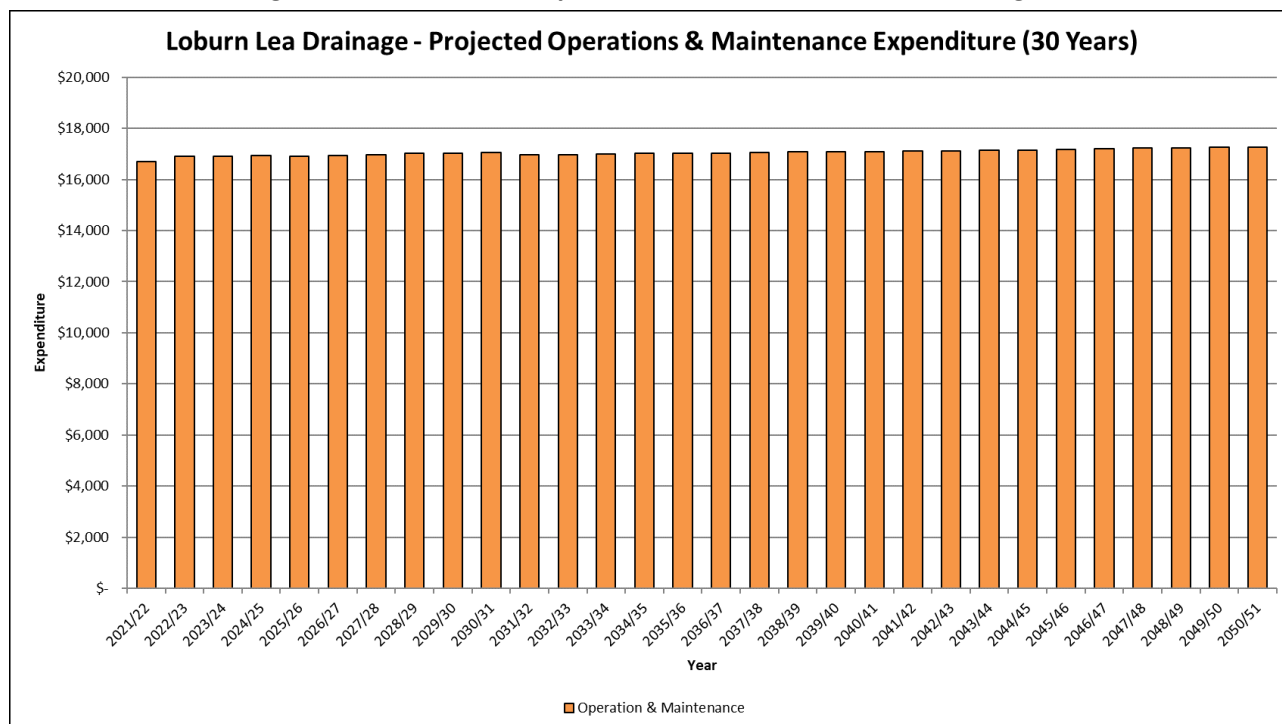
There are no pump stations in the Loburn Lea Rural Drainage Scheme, so Council's Water Unit are not involved in maintenance. Inlet grills and more rural drains are maintained by the WDC Drainage Maintenance Contractor

Little active maintenance is carried out on the reticulated network. The CCTV programme now under way will provide information as to whether more active maintenance is required, although this is unlikely given the relatively low age of assets.

Figure 4 shows the projected Operations and Maintenance budget over the next 30 years.

Systems are not yet in place to capture the cost distinction between planned and unplanned maintenance.

**Figure 4: Annual Water Operation & Maintenance 30-Year Budget**



## 6.2 Renewals Programme

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 annual funding required to ensure long term funding is available to replace assets in the future is shown in Figure 5

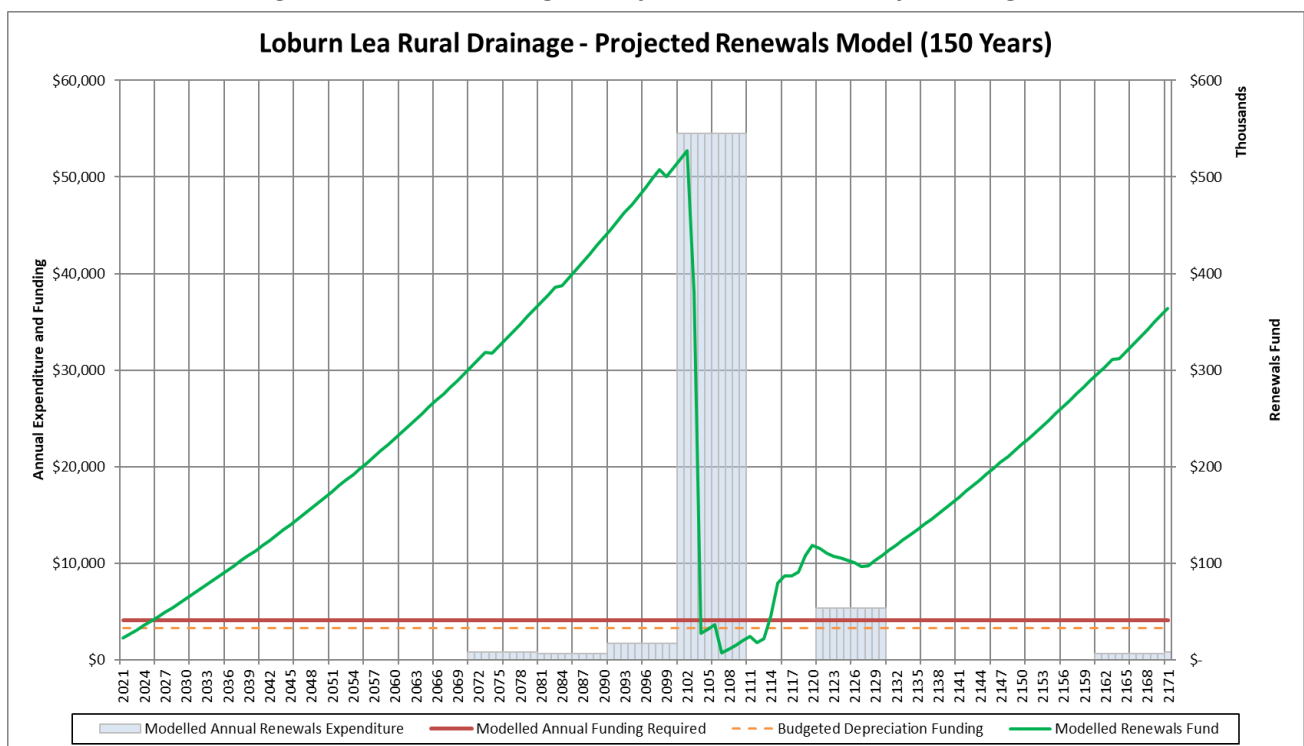
The network renewals programme is determined in two stages. The renewals model, details of which are provided in the overview document, provides a long term view of the required funding.

The model prioritises candidates for consideration by Asset Managers for renewal based on criticality, risk, and expected asset life. Renewal of pipework assets are then programmed on an annual basis, taking into account the outputs from the renewals model, but also being informed by other works that may be planned in the area, as well as local asset history for the cases where a particular asset may be performing differently than its base life suggests.

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

For the Loburn Lea scheme, since the assets are fairly new, the average condition of the assets is assumed to be good, and no renewals are expected to be needed until at least 2072

**Figure 5: Annual Drainage – Projected Renewals 150 year Budget**



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 later this century, before being drawn down as the first lifecycle of current assets is completed.

As may be seen depreciation funding is just below the annual funding required. 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 between the depreciation funding and annual funding required

There are no issues with deferred renewals.

The planned renewals for this scheme, which are the outcome from the described process, are shown spatially and temporally in Figure 6 below

**Figure 6: Pipe Renewal Time Frames**





### 6.3 Capital Works

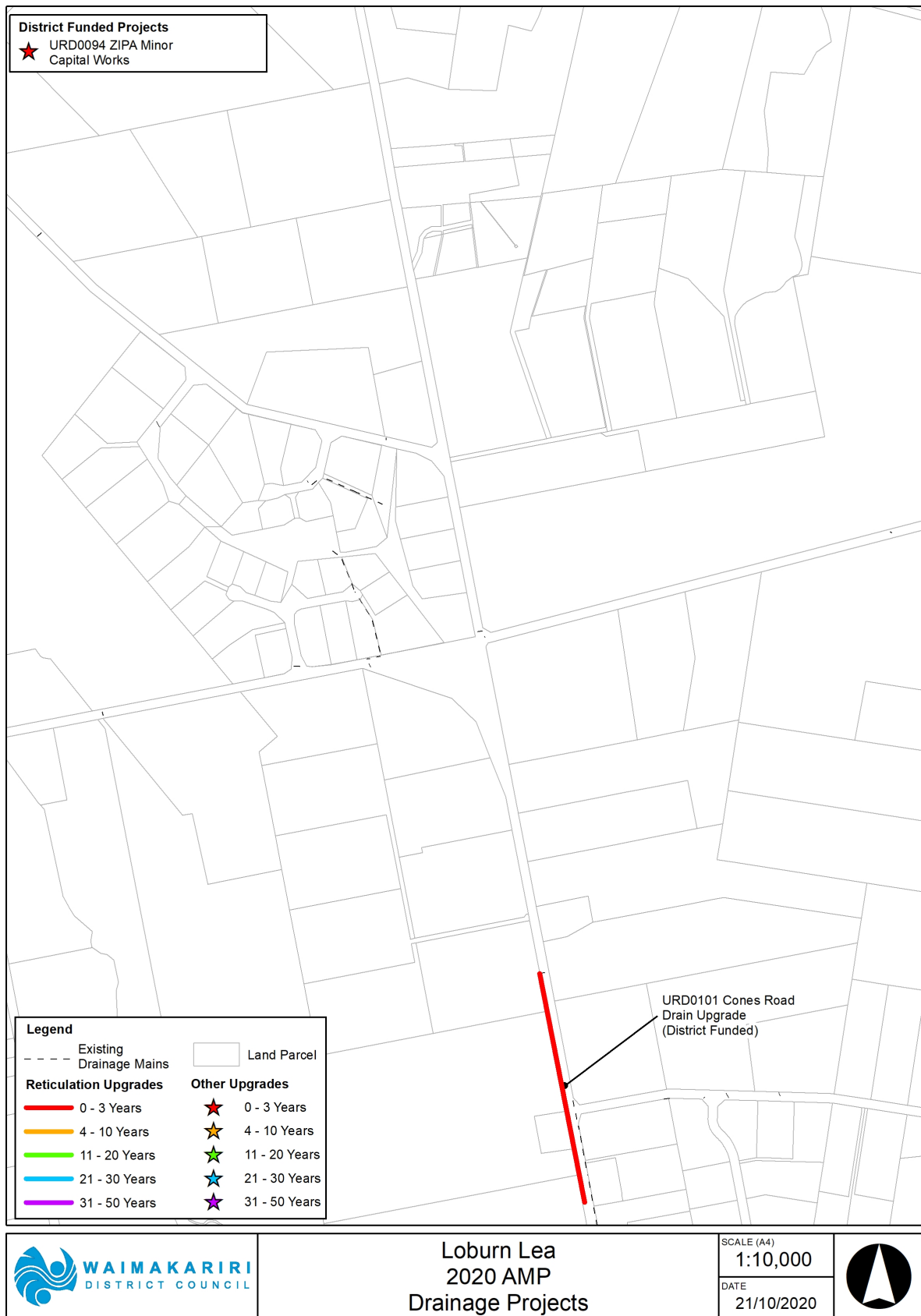
There are no new works planned for the Loburn Lea Drainage Scheme over the next thirty years, either for growth or for levels of service, that are funded by the scheme rate. However the Cones Road drain is due to be upgraded in year 1-3 of the 2021-31 LTP, funded from the district wide rate. This project will mitigate local flooding issues identified during the 2014 storm event. Details are shown in the table below.

There are no renewals necessary over the next thirty years

Project ID	Project Name	Level of Confidence	Description	StartYear	LOS Total	Renewals Total	Growth Total	Partial Growth Total	Total
URD0101	Cones Road Drain Upgrade	3 - Low	Upgrade of the Cones Road Drain opposite Fawcetts Road	2022	\$ 100,000.00	\$ -	\$ -	\$ -	\$ 100,000.00
Grand Total					\$ 9,010,000.00	\$ -	\$ -	\$ -	\$ 9,010,000.00

**Figure 7: Projected Capital Upgrade Works (not to scale)**

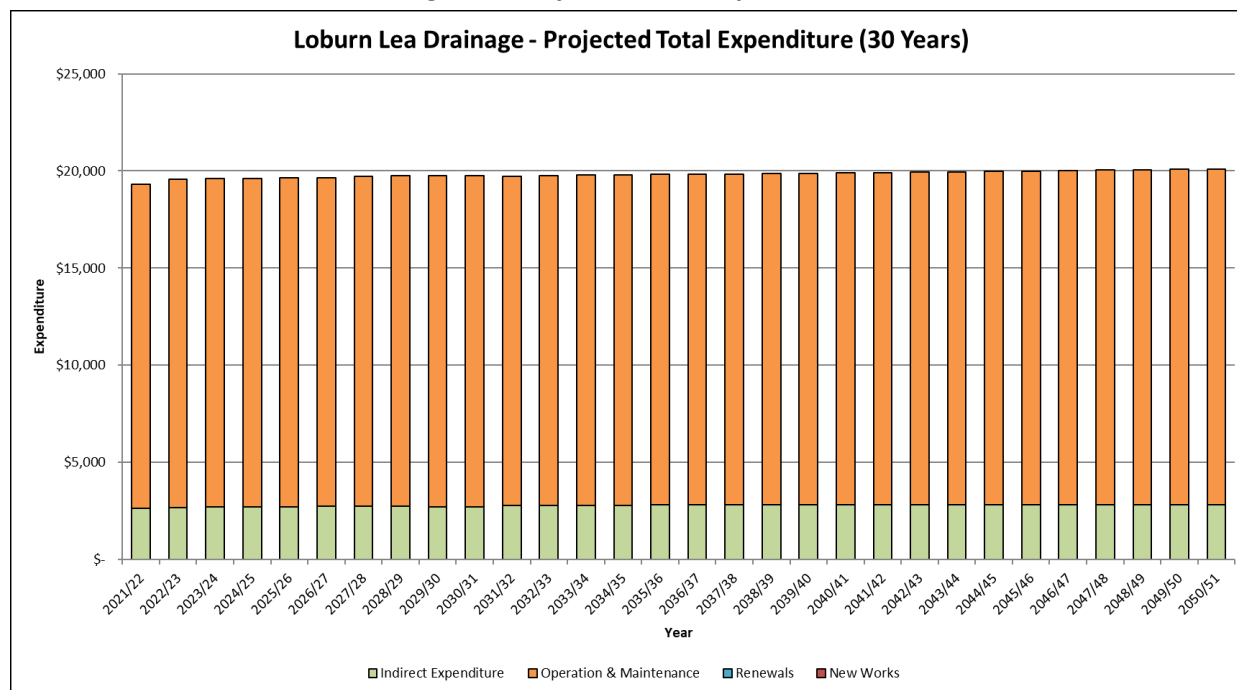
*Includes works funded through the flood response works*



## 6.4 Financial Projections

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure (with the exception of the flood response work). Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service and renewals (including carry forwards), but excludes projects funded by the district wide drainage rate.

**Figure 8: Projected Total Expenditure**



## 6.5 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 12 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme

**Table 12: Asset Valuation**

Asset Type	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Manhole	No.	7	\$67,622	\$56,565	\$676
Sump	No.	0	\$-	\$-	\$-
Valve	No.	0	\$-	\$-	\$-
Network Main	m	741	\$581,200	\$490,867	\$5,812
Open Channel	m	993	\$30,695	\$30,695	\$-
Facilities			<b>\$332,438</b>	<b>\$331,141</b>	<b>\$79</b>
Total			<b>\$1,011,955</b>	<b>\$909,268</b>	<b>\$6,567</b>

## 6.6 Revenue Sources

Revenue is provided from two key sources; targeted rates and Development Contributions. Development contributions are calculated in accordance with Council's Development Contributions Policy (TRIM [191129168016](#)), while targeted rates are charged in accordance with Council's Revenue and Financing Policy (TRIM 180522056008).

Generally rates are targeted rates charged to homeowners within the schemes geographical boundaries. There is also a district wide Flood Response rate which is used to fund flood improvement works anywhere within the district.

## 7 Improvement Plan

### 7.1 2021 Improvement Plan

Table 13 details the scheme specific improvements recommended to address the management issues identified in Section 3. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track the Council's response. Short term indicates within the first three years of the LTP, long term, out beyond 2021.

If the table is empty, this indicates that all improvements required are either district wide improvements (covered by the Overview AMP), or covered by a capital project or projects, covered in the Capital Works section

**Table 13: 2021 AMP Improvement Plan**

Project Ref	AMP Section	Project Description	Priority	Status	Estimated Cost
NA	NA	NA	NA	NA	NA

APPENDIX 'A'. PLANS

Figure 9: A1 - Plan of Serviced Area as of November 2017

