WAIMAKARIRI
DISTRICT COUNCIL

Activity Management Plan 2021

Loburn Lea Wastewater Scheme

3 Waters | July 2021

Prepared by

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Document Acceptance

Action	Name		Signed	Date
Prepared by	Gavin Hutchinson	Wastewater Asset Manager		17/02/2021
	Simon Collin	Infrastructure Strategy Manager		17/02/2021
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Reviewed by	Kalley Simpson	3 Waters Manager		17/02/2021
Approved by	Gerard Cleary	Manager Utilities and Roading		17/02/2021
Adopted by	Council			

Contents

Tables

Figures

1 Executive Summary

The following table provides a summary of the key asset management issues of the Loburn Lea Wastewater 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

Resource Consents	The treatment plant generally complies with its resource consent conditions. The consent will be relinquished once the planned Loburn Lea connection to the Eastern Districts Wastewater Scheme is completed
Levels of Service	The scheme is meeting its service level targets.
Capacity & Performance	The existing reticulation system has the capacity for the peak wet weather flow.
	The volume of influent into the treatment plant periodically exceeds its design capacity, and the filter bed is probe to clogging prematurely. These issues will become immaterial when the plant is de-commissioned in 2022
Asset condition	The majority of the scheme is in good condition. Treatment plant asset replacements will no longer be required
Risk Assessment	There are no high or extreme risks on this scheme as identified through the Risk Assessment.
Disaster Resilience	There is some moderate risk of damage from earthquakes to the pump station and treatment plant identified through the Disaster Resilience Assessment. These risks will no longer exist when the plant is de-commissioned. The new configuration will be assessed for risks when the risk update is carried out in 2021
Growth Projections	Connection of the scheme to the Eastern Districts Wastewater network will remove the previous constraint on growth caused by the treatment plant

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 wastewater scheme, its condition and performance, and identifies future funding requirements including upgrades where necessary.

This activity management plan will be the last one required for the Loburn Scheme as a project is underway to connect it to the Eastern Districts Wastewater Scheme (EDWS). In 2025, therefore the information and planning for the assets for Loburn Lea will most likely be included in the Rangiora AMP. Depending on the outcome of the governments 3 Waters review, and the Council's appetite for district wide rating schemes, the AMP could remain as a stand alone one, but the scope and rating base would be different to the current scheme.

The data that has been relied upon to produce this document was taken at the of the 19/20 financial year. i.e. 30 June 2020 . More up to date scheme statistics are available on document TRIM 121108078891 which is to be updated quarterly.

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

Projects identified to improve asset management processes for this scheme will also benefit the performance of 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.

Repair of wastewater supply asset damage from the Canterbury earthquake sequence has now been completed. No significant legacy effects are expected.

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)

4 Scheme Description (What Do We Have?)

The Loburn Lea Wastewater Scheme only serves 38 connections, and is generally an urban gravity reticulation scheme except for a Council owned wastewater pump station and four private pump stations that discharge into the gravity reticulation. Most connections are direct, but some properties discharge effluent partially treated via onsite septic tanks.

The Loburn Lea Wastewater Treatment Plant consists of an inflow wastewater pump station, two recirculation tanks, a settlement tank and an N-DN Biofilter Sewage Treatment Plant and UV disinfection. It is a Recirculating Sand Contactor system in conjunction with a Modified Effluent Drainage System. A project is underway, partially funded by the governments Covid 19 stimulus funding, that will connect the Loburn Lea scheme to the Eastern Districts sewer network, rendering the Loburn Lea treatment plant redundant

The on-site septic tanks and pumps are owned and maintained by the individual property owners. This includes being responsible for cleaning the sludge out of the septic tanks. When the new network configuration is in place, these properties will be able to connect directly to the system via gravity, or via a tank and macerating pump should they wish to do so

Some key statistics (2019/20 year) of the scheme are shown in Tables 2 to 6. The extent of the currently serviced area and full flow data records for the scheme are presented in Figure 10 and Figure 11. The statistics are those in operation at the time of updating the AMP, before the treatment plant is decommissioned.

A schematic view of the treatment system is presented in Figure 1.

Table 2: Scheme Statistics for 2019/2020

Scheme Parameter	Statistics	Source
Type of Supply	Urban Gravity	
Treatment	Recirculating Sand Contactor	
Length of Reticulation	2.0 km	Wastewater Asset Valuation Tables 8-5 and 8-6, pages 59 to 62
Total Replacement Value	$1,760,794	
Depreciated Replacement Value	$1,333,506	
Number of Connections	38	2019/20 Rating Query
Number of Rating Charges	38	
Average Daily Flow (5 year average)	21 m^3/day	Flow Data Analysis – Sewer
Average Daily Flow/connection (5 year average)	545 l/day/con	
Treatment Plant Design Capacity	38 m^3/day	
Peak Daily Flow (5 year average)	56 m^3/day	
Peak Daily Flow/connection (5 year average)	1,469 l/day/con	
Resource Consent Discharge Limit	37 m^3/day (expires 27/04/2030)	CRC940617.2

Table 3: Wastewater Gravity pipe Data summary

Wastewater Gravity pipe length (m) by diameter and pipe material					
Pipe Material	**Pipe Diameter (mm)**				
	50	**100**	**150**	**200**	**Total**
PVC	0m	0m	1,635m	0m	1,635m
Total	**0m**	**0m**	**1,635m**	**0m**	**1,635m**

Table 4: Wastewater Pressure Pipe Data Summary

Wastewater Pressure pipe length (m) by diameter and pipe material					
Pipe Material	**Pipe Diameter (mm)**				
	50	100	150	200	Total
PVC	344m	0m	0m	0m	344m
Total	**344m**	**0m**	**0m**	**0m**	**344m**

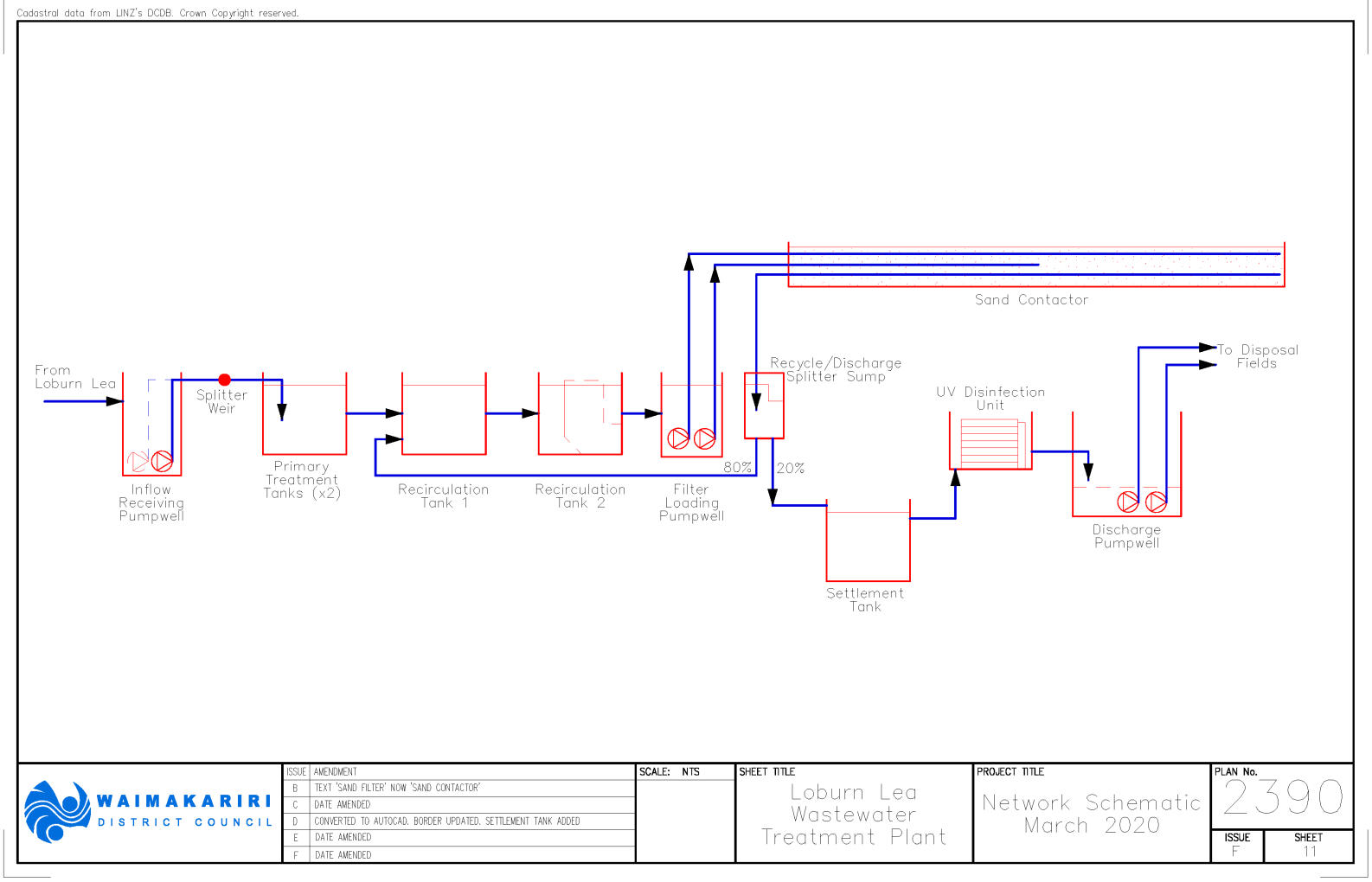
Table 5: Data References

Data Reference	Trim Reference	Other Ref
Flow Data Analysis – Sewer	121108078891	
2020 3 Waters Asset Valuation	200824109857	
2020 50 Year Water and Sewer Growth Forecast	200224024348	

Table 6: Wastewater Manhole Data Summary

Wastewater Manholes	
Diameter (mm)	**Count**
900	0
1050	27
1200	0
1500	0
Total	**27**

Figure 1: Network Schematic



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

There are a number of key aspects to consider when managing a wastewater scheme, these include:

- Desired & actual levels of service
- Asset condition & criticality
- Capacity & performance of the supply
- Risks associated with the supply
- 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 performance achievement against targets since 2008.

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

None of the WDC targets are expected 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 A "Y" indicates that the LOS has been met, and an "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
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	Nil	There were no complaints regarding midges or insects.	Achieved	N/A	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	There were no complaints regarding odour.	Achieved	N/A	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	Nil complaints	There were no complaints regarding odour.	Achieved	N/A	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	High level of maintenance on the UV plant is required to achieve compliance.	Achieved	N/A	N	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	There were no losses of service greater than 8 hours.	Achieved	N/A	Y	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May	1 in 2 year	Nil	This level of service is met.	Achieved	N/A	Y	Y	Y	Y

Section	Level of Service	2018 – 2021 Performance Measure	2018 – 2021 Target	2020				Previous Results#			
				Result	Commentary	Status	Action to Address	2017	2014	2011	2008
		1999 without overflows occurring									
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met.	Achieved	N/A	Y	Y	Y	Y
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met.	Achieved	N/A	Y	Insf. Data	Y	Y

5.2 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 rolling wastewater CCTV programme was started in 2008 to survey the reticulation network and assign evidence based condition ratings. District wide, these surveys have identified a number of mains faults that have led to remedial actions including immediate or scheduled repair, decreased remaining useful life and increased renewal priority. However analysis of this survey information has not been well managed due to the lack of appropriate software. The planned purchase of the widely used InfoAsset Manager software for this purpose will significantly improve this situation, and enable better determination of asset condition and remaining useful life.

The CCTV condition information is complemented with maintenance activity records from the field recording wastewater mains blockage and overflow records.

Figure 2 below, shows the assessed pipe condition for all pipes within the scheme. Figure 3 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. The view presented is at the time of updating the AMP, before the treatment plant is decommissioned.

Figure 2: Pipe Condition Assessment Plan

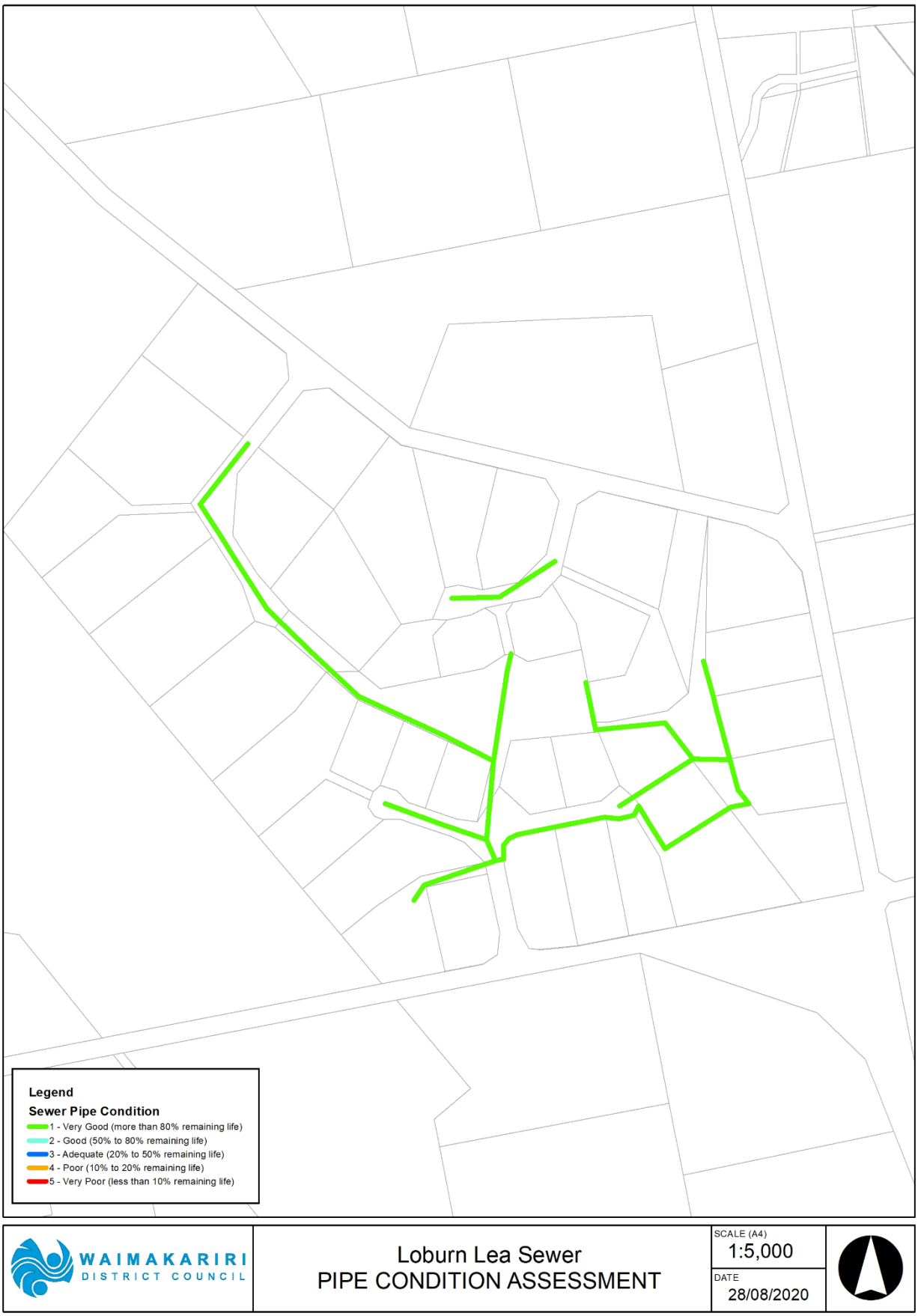
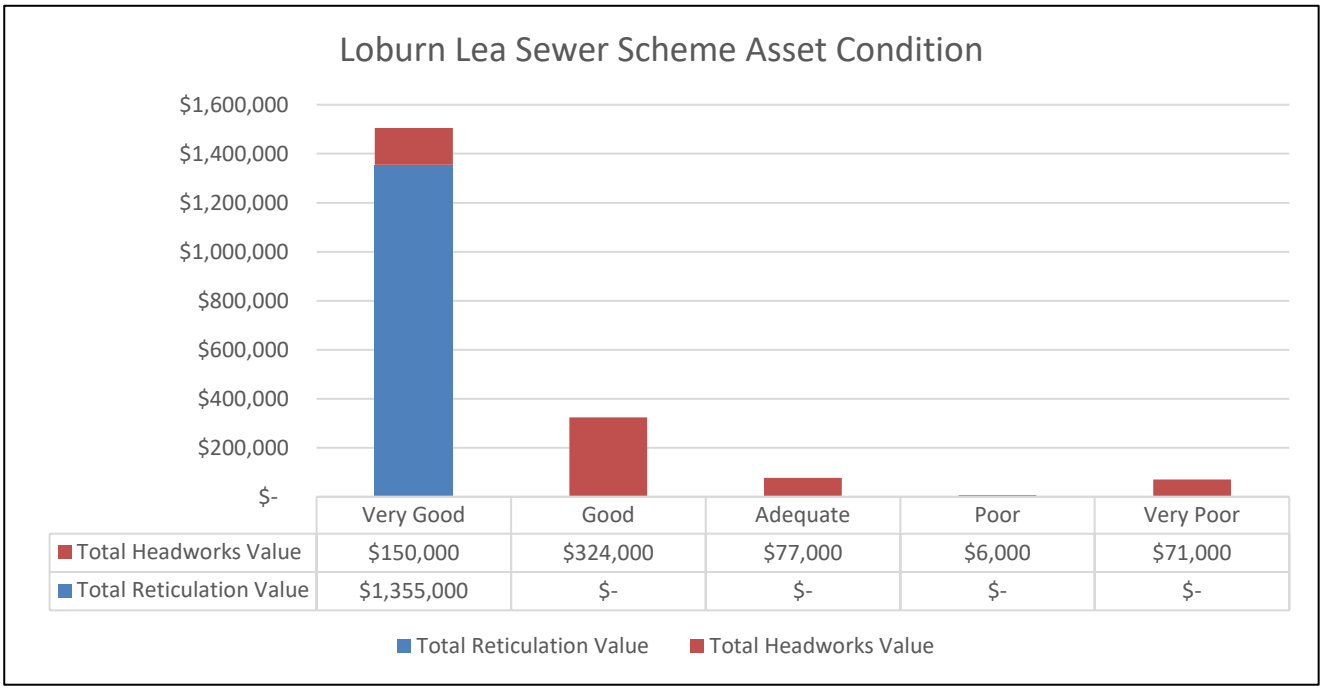


Figure 3: Asset Condition Summary



"Headworks" is inclusive of all above ground assets associated with the wastewater supply scheme e.g. buildings, pump sets.

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*	2.0 km *100%*	$ 1,355,000 *100%*	$ 150,000 *24%*	$ 1,505,000 *76%*
2	Good *Between 50% and 80% of life remaining*	0.0 km *0%*	$ - *0%*	$ 324,000 *52%*	$ 324,000 *16%*
3	Adequate *Between 20% and 50% of life remaining*	0.0 km *0%*	$ - *0%*	$ 77,000 *12%*	$ 77,000 *4%*
4	Poor *Between 10% and 20% of life remaining*	0.0 km *0%*	$ - *0%*	$ 6,000 *1%*	$ 6,000 *0%*
5	Very Poor *Less than 10% of life remaining*	0.0 km *0%*	$ - *0%*	$ 71,000 *11%*	$ 71,000 *4%*
Total		**2.0 km**	**$1,355,000**	**$628,000**	**$1,983,000**

*Assets to be decommissioned and written off in 2022

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. The Council has developed an assessment process which scores assets from most critical 'AA' to least critical 'C'.

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

Figure 4 provides a spatial view of asset criticality for the scheme.

Figure 4: Pipe and Facilities Criticality

5.4 Risk Assessment

An Operational Risk Assessment was first undertaken for the Loburn Lea Wastewater Scheme in 2004, and it has been regularly updated since that time. It was last updated for the 2015 AMP review. At the last review there were no high risks for the Loburn Lea scheme.

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

Table 9 summarises the number of events at each level of risk for the Loburn Lea Wastewater Scheme.

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

Table 9: Number of Events per Level of Risk

Risk Level	2004	2008	2011	2014
Extreme risks	N/A	0	0	0
High risks	N/A	1	0	0
Moderate risks	N/A	20	16	12
Low risks	N/A	10	18	22
Not applicable	N/A	3	0	0
Total	**-**	**34**	**34**	**34**

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.

Risk from earthquake events that could induce liquefaction on brittle pipes (AC and earthenware) is managed using a reticulation vulnerability score. This is used as an input to the risk based renewals assessment.

Above Ground Facilities

The above ground facilities were assessed for risk of failure against 13 natural and 2 manmade hazard scenarios. The following risk profile (Table 10) reflects the likelihood of the event occurring and the consequence on the community of the facility failing. Hazards classified as having 'No Known Risk' have been omitted from the table. Since the treatment plant is to be de-commissioned the assessment is no longer relevant. Depending on the final design, the pump station may also no longer be required.

Table 10: Risks to Above Ground Facilities

Threat	Loburn Lea Pump Station	Loburn Lea WWTP
475 yr Earthquake Induced Slope Hazard	L	L
Earthquake (50 yr)	M	M
150 Yr Earthquake	L	L
475 Yr Earthquake	L	L
Wildfire	L	L
Snow 150 Yr	L	L
Wind 100 Yr	L	L
Lightning	M	M
Pandemic	M	M
Terrorism / Sabotage	L	L
E = Extreme, H = High, M = Moderate, L = Low		

The scheme is located outside the zone of potential liquefaction thereby reducing possible impact and asset damage from an earthquake event.

All wastewater sites in the District have been identified as at moderate risk from lightning and pandemic.

The Councils 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. Since there is some overlap of the DRA and Operational Risk Assessment, a review and potential integration of the risk assessment methodologies is planned, prior to risk assessments next being carried out.

5.6 Growth Projections

Situation

The capacity of the Loburn Lea scheme is limited by the capacity of the treatment plant.

In 2013, due to concern over the high rates that properties connected to this scheme were having to pay, a study was initiated to consider alternative options for the future management of the scheme. This included options that would have removed the constraint on growth from the capacity of the treatment plant.

The initial study (TRIM 130607042687) considered two main option:

- Amalgamate Loburn Lea Sewer Scheme with the Eastern Districts Sewer Scheme.
- Modify the existing gravity system at the end of its serviceable life.

The report concluded that it was not financially feasible to amalgamate the two schemes, and further options were therefore considered in a subsequent report (TRIM 130815062799).

This report considered the feasibility of developing a reticulated wastewater scheme in the Ashley Village area, to replace the existing septic tanks. If that scheme had been feasible, there may have been potential savings for the Loburn Lea scheme in joint amalgamation with the EDWS, which would have provided capacity for growth.

The final conclusion from these reports was that the existing rate for the Loburn Lea wastewater scheme was the lowest that Council could provide a wastewater service to the Loburn Lea residents at that time. Therefore the option of continuing to operate the existing plant was retained.

More recently the District Plan Review process identified blocks of land nearby to the Loburn lea scheme which would be suitable for Rural Residential development, and landowners showed an interest in moving ahead with this potential rezoning. The possibility of spreading the cost of connecting Loburn Lea, the Ashley village and potential development areas to the EDWS, amongst a wider number of connections, led to another technical report looking at various options as how best to achieve this (TRIM200513055234). This possibility was confirmed with the governments Covid-2019 stimulus funding being made available, which has enabled a further reduction in the cost per connection. Planning and design for the works commenced late 2020 and is on a reasonably fast track programme in order to meet the stimulus funding requirements.

Population Growth

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. Wastewater growth projections were calculated using the New Projections for LTP 2021-2031 (TRIM 200908117997), 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.

Demand

Demand on the Loburn Lea wastewater scheme is expected to increase by 23%, by the end of the 2021-31 Long Term Plan (LTP) period. This projection is based on 9 connections being established from 2019/20 to 2030/31, as identified in the 2020 50 Year Water and Sewer Growth Forecast Report (TRIM reference number 200224024348).

The number of new residential connections are predicted to increase by 1 per year, during the 2021-31 Long Term Plan (LTP) period to accommodate this demand. Demand beyond the 2021-31 LTP period (2030/31 to 2070/71) is forecast to continue at a similar growth rate of 1 new connections per year (Table 11).

Table 11: Growth Projections

Loburn Lea	Rates Strike July 2019	Years 1 - 3	Years 4 - 10	Years 11 - 20	Years 21 - 30	Years 31 - 50
	2019/20	2021/22 to 2023/24	2024/25 to 2030/31	2031/32 to 2040/41	2041-42 to 2050/51	2051/52 to 2070/71
Projected Connections	38	42	47	54	60	71
Projected Rating Units	38	42	47	54	60	71
Projected increase in Connections		10%	23%	41%	58%	86%
Projected Average Dry Weather Flow (m3/day)	24	27	30	35	39	46
Projected Peak Wet Weather Flow (m3/day)	163	175	192	216	236	273

Note that the time frames have been chosen to reflect the periods 3, 10, 20 and 30 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.

Longer term, connections are projected to increase by 86%. This long term projection is slightly higher than the 2017 growth projection, 66% (used for the 2017 AMP). Both projections utilised the best data and information available to project the connections for the wastewater schemes at the time. Particularly in the small town / beach areas the 2019 projections assessment is more area specific, and therefore a better forecast for Loburn Lea.

Average Dry Weather Flow (ADWF) and Peak Wet Weather Flow (PWWF) projections have been based on the assumptions that for future development areas the Engineering Code of Practice (ECOP) ADWF or PWWF per person is added to the existing flow. The assumptions made to calculate the future ADWF were based on the ECOP, with the residential 0.675m3/prop/day and non-residential 0.2m3/Ha/day; and the future PWWF was based on the ECOP, at residential 3.375m3/prop/day and non-residential 1m3/Ha/day.

Projections

Figure 5 and Figure 6 present the projected growth and corresponding demand trends for the Loburn Lea Area.

Figure 5: Population Projections

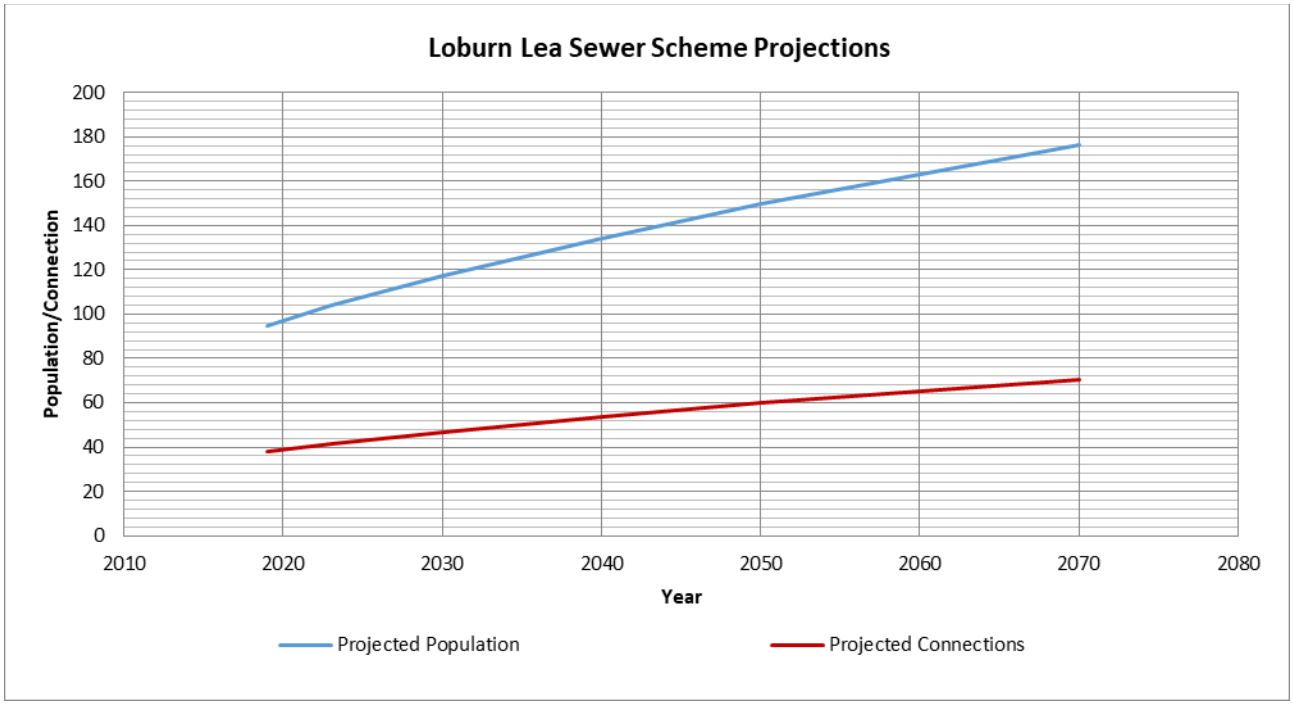
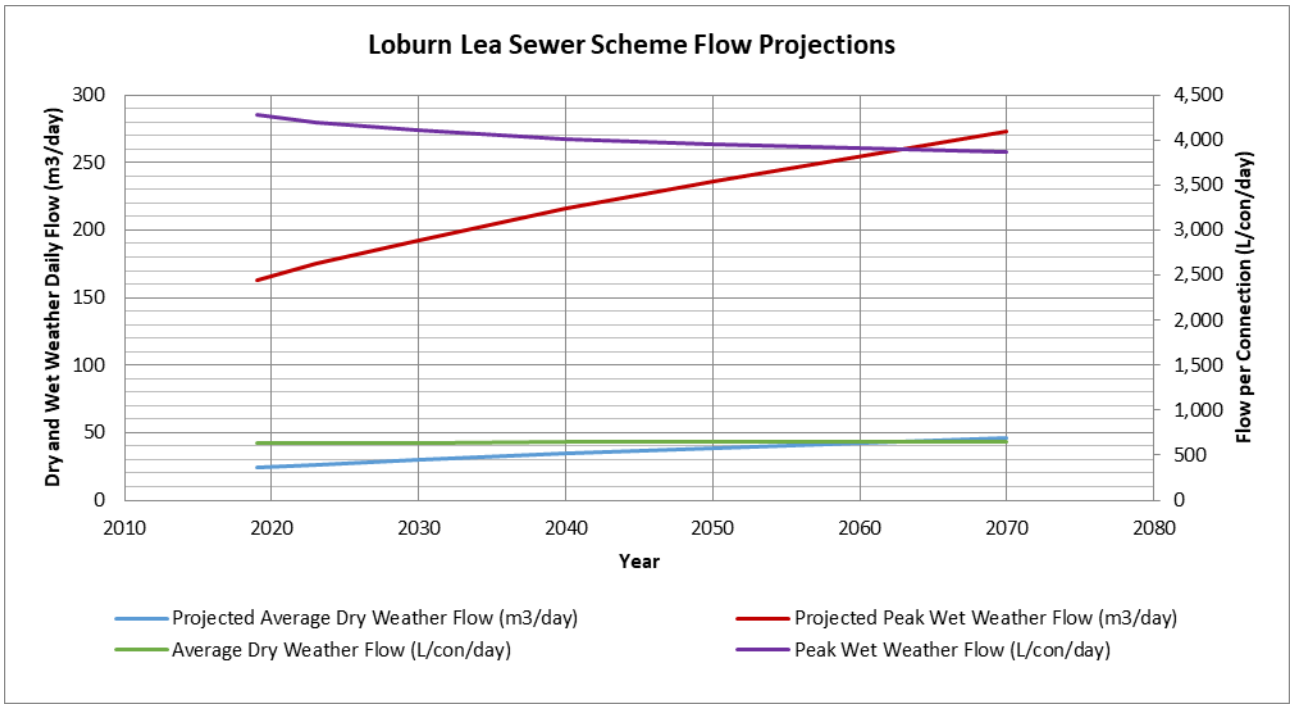


Figure 6: Flow Projections



5.7 Capacity & Performance

This section of the AMP considers the capacity and performance of the Loburn Lea Wastewater Scheme. The specific aspects of the scheme that have been considered are the treatment plant and the reticulation system. These are discussed in more detail in the following sections.

Treatment

The Wastewater Treatment Plant consists of an N-DN Biofilter Sewage Treatment Plant. This is a Recirculating Sand Contactor system in conjunction with a Modified Effluent Drainage System.

As discussed in the preceding section, a key constraint to growth on the scheme has been the capacity of this treatment plant. In 2022 with the completion of the connection to the EDWS and treatment thereafter at the Rangiora treatment plant, the plant will be de-commissioned.

Reticulation

While the reticulation system is relatively new and located in a good ground drainage area, it has historically suffered from high Inflitration and Inflow due to poor construction. This has been at least partially resolved with work carried out in 2011.

A desktop study indicated that for the reticulation, stormwater infiltration and inflow was not significant and that the system has sufficient capacity to accommodate the existing peak wet weather flow during the 2-year rainfall (target level of service). Consequently, no capital works associated with the reticulation system works have been identified in this AMP.

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.

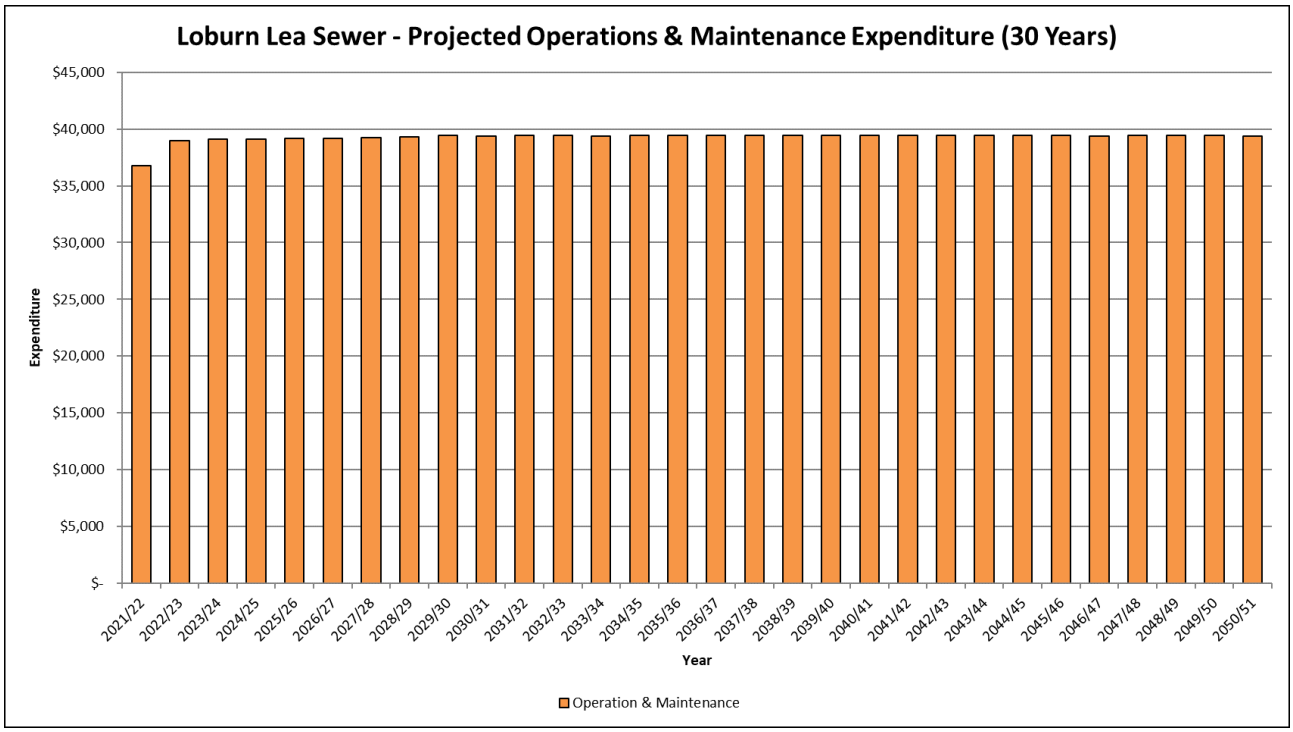
6.1 Operation & Maintenance

Operation and maintenance (O&M) expenditure incorporates the day to day running of the water supply network 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 within the Overview document.

O&M budgets are set based on a combination of past expenditure (for reactive tasks), cost estimates for planned works, and adjustments going forward to account for growth, inflation, depreciation and any significant new works planned. Further detail of this process is provided in the Overview document. The results shown in Figure 7 are based on the past maintenance costs of running the treatment plant which, as already noted, will be decommissioned sometime in FY 2022/23. Depending on the final design, maintenance costs for one medium sized, and possibly one small pump station will replace the costs shown below. The budget will be updated to reflect the changes in the 2022/23 Annual Plan.

Figure 7: Annual Operation & Maintenance 30-Year Budget

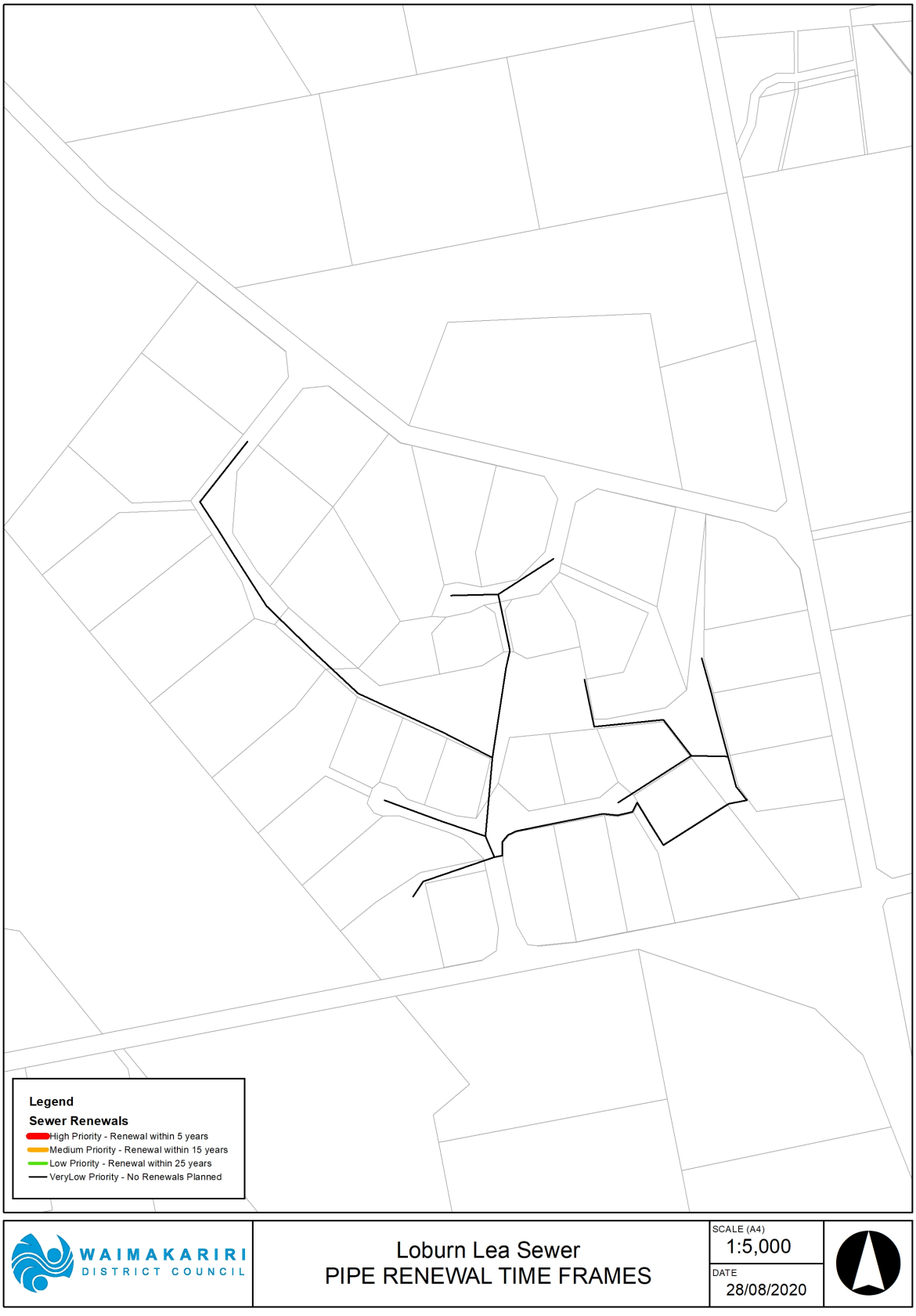


6.2 Renewals Programme

The 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 both expenditure and the depreciation funding required to ensure that a renewals fund is sufficient to enable future asset renewals, without needing to borrow. Asset Managers then consider factors such as other works that may be planned in the area, as well as local asset history, in determining final projects for the first ten years of the LTP.

With the planned decommissioning of the treatment plant (and most likely the remaining pump station as well), renewals only need to be considered for the reticulation. The pipe network is relatively new, and the model shows no renewals are required until after the 50 year period shown in the financial graphs and tables of the 3 Waters AMPS. The wastewater asset manager has no additional information that changes this view. No graph is therefore shown and Figure 8 below shows that there are no planned network renewals within a 50 year time horizon

Figure 8: Pipe Renewal Time Frames



6.3 Capital Works

Similarly there are no projects driven by growth and levels of service other than the project currently under way to connect the scheme to the EDWS. Accordingly there is no scheme funded capital works graph shown.

Covid-19 Stimulus Funded Works

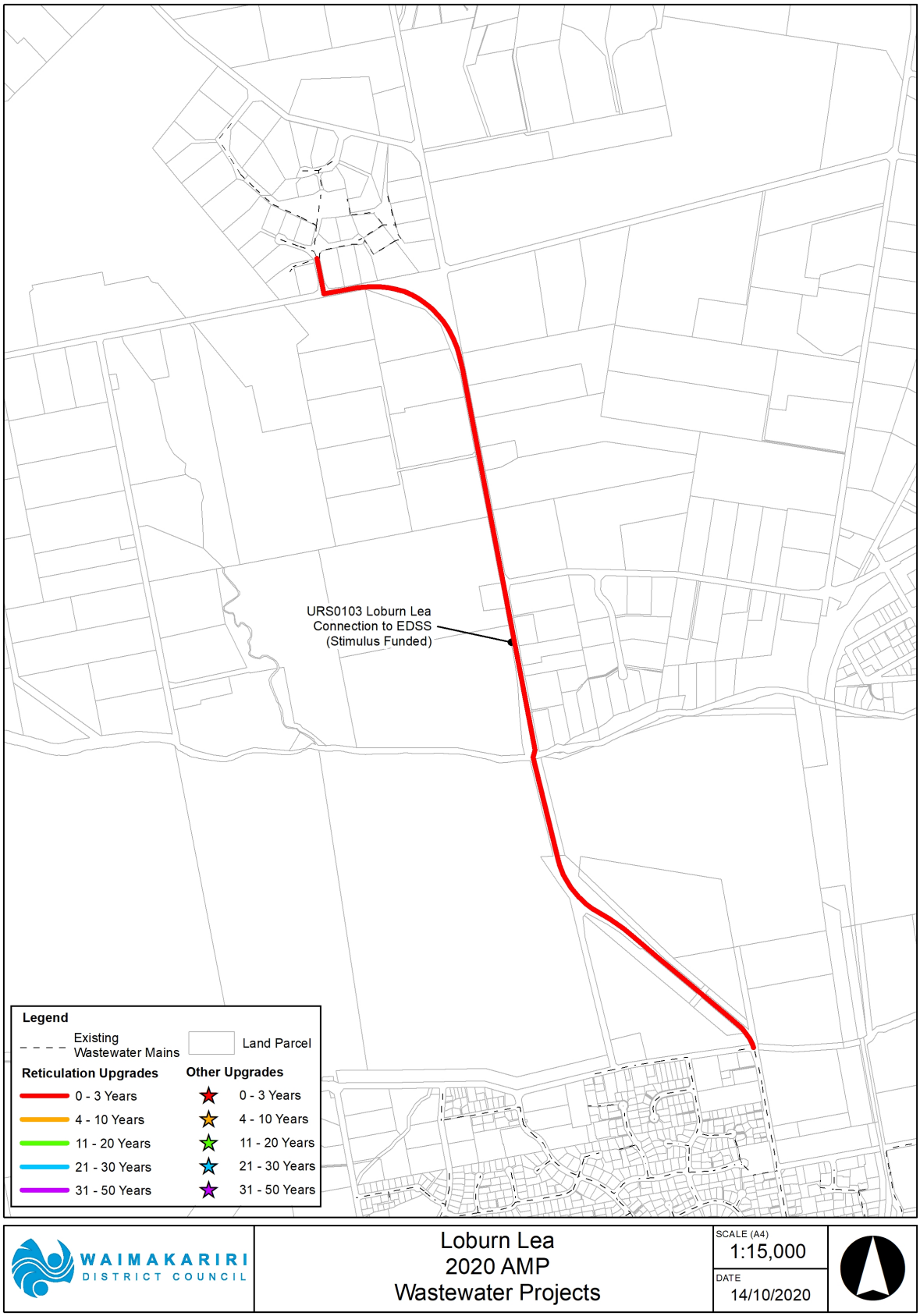
Table 12 below presents details of the project currently under way to connect the scheme to the EDWS and funded from the Covid-19 stimulus package provided by central government.

Table 12: Covid-19 Stimulus Funded Works

Start Year	Project ID	Project Name	Level of Confidence	Project Value	LOS Component	Renewals Component	Growth Component
Year 1 - 10							
2022	URS0103	Loburn Lea connection to EDWS	5 - Medium	$2,199,500	$984,500		$1,125,000

Figure 8 below shows the project spatially.

Figure 8 : Projected Capital Upgrade Works



Not

6.4 Financial Projections

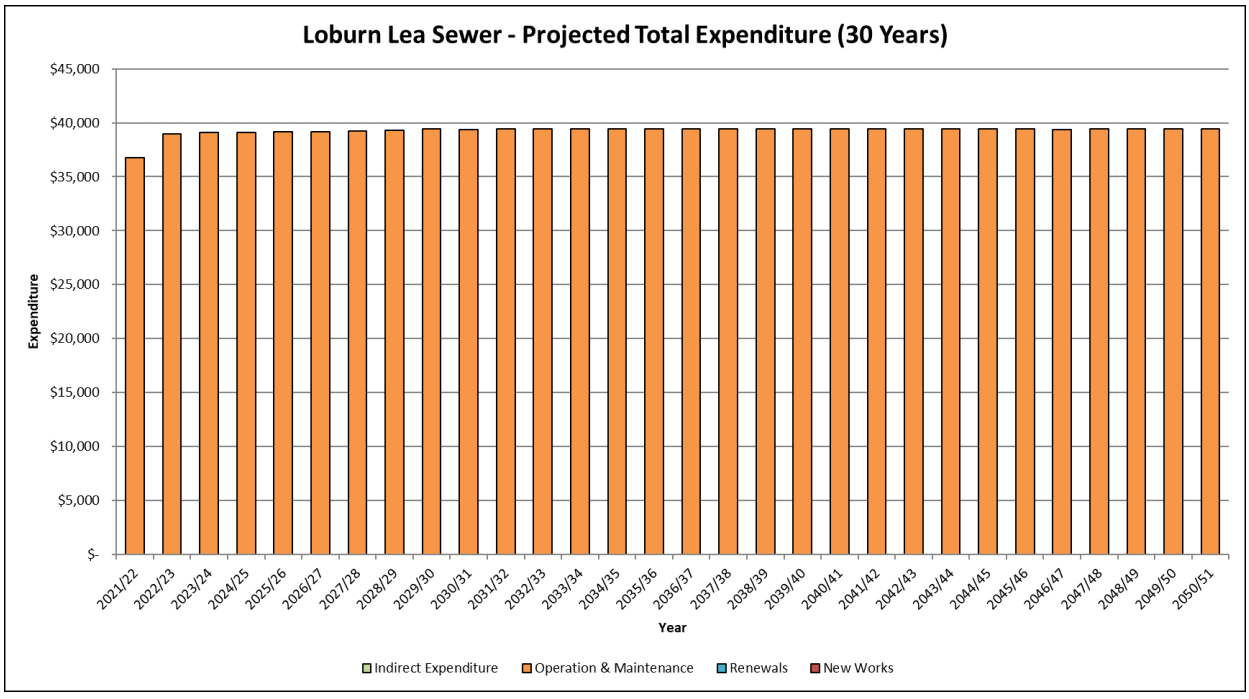
The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure, where any exists funded from the scheme. Capital includes expenditure for growth, levels of service and renewals. Operational costs include operations and maintenance, and indirect expenditure.

Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and other internal overhead costs.

For systems connected to the Eastern District Wastewater Scheme, these costs are aggregated within the Eastern District Scheme budget. Since Loburn Lea is to be connected to the EDWS, that is the case for this AMP.

Capital includes expenditure for growth, levels of service and renewals, but excludes projects funded from other than the rating scheme.

Figure 9: 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 13 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme, as at June 2019.

Table 13: Asset Valuation

Asset Type	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Manhole	No.	27	$279,966	$240,552	$2,240
Valve	No.	0	$-	$-	$-
Main	m	1,979	$817,743	$675,333	$8,177
Service Line	properties	37	$35,236	$29,006	$352
Facilities			**$627,849**	**$388,615**	**$15,710**
Total			**$1,760,794**	**$1,333,506**	**$26,480**

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).

An additional source of funding has become available on a one off basis for this AMP, in the form of the governments Covid-19 stimulus package funding.

7 Improvement Plan

7.1 2021 Improvement Plan

Table 14 details the scheme specific improvements and relevant district wide 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 Councils response. Short term indicates within the first three years of the LTP, long term, out beyond that timeframe.

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 14: 2021 AMP Improvement Plan

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

APPENDIX 'A'. PLANS

Figure 10: A1 - Plan of Serviced Area

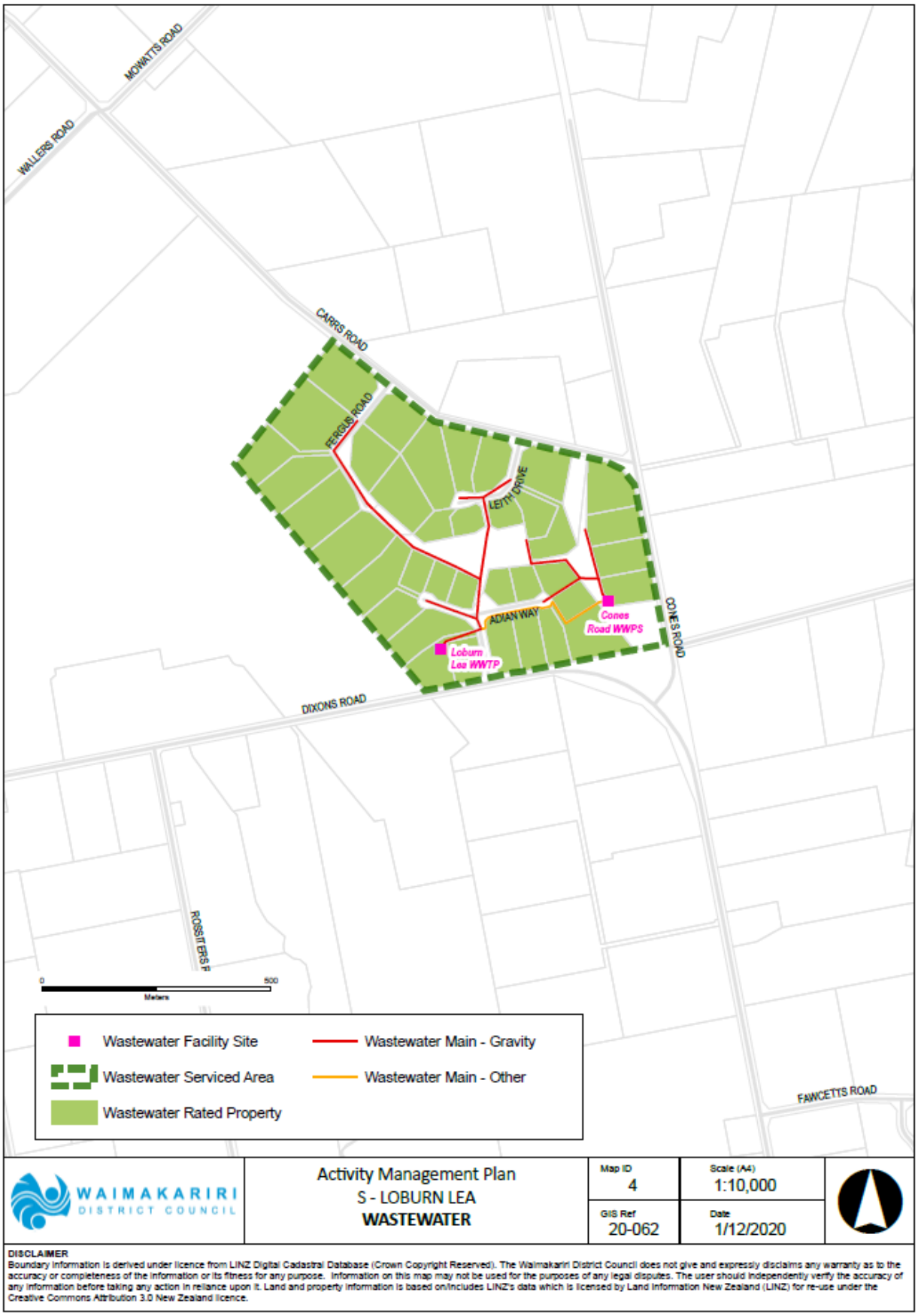


Figure 11: Loburn Lea Wastewater Statistics

Loburn Lea Wastewater Statistics

Loburn Lea | 19/20 | Updated: Jun-20

Note that shading indicates the relative quantity measured for the ten year period (i.e. the lowest value has no shading, the highest has complete shading.)

		July '09 - June '10	July '10 - June '11	July '11 - June '12	July '12 - June '13	July '13 - June '14	July '14 - June '15	July '15 - June '16	July '16 - June '17	July '17 - June '18	July '18 - June '19	July '19 - June '20	5 yr Average	10 yr Average
Average Daily Flow	m^3/day	18	19	19	21	22	19	19	20	24	20	21	21	20
Average Dry Weather Flow	m^3/day	16	17	19	20	20	19	19	19	20	18	20	19	19
Peak Daily Flow	m^3/day	45	73	37	62	79	28	36	54	81	55	53	56	56
Peak Weekly Flow	m^3/day	31	34	23	39	37	21	22	32	44	33	31	33	32
Peak Monthly Flow	m^3/day	26	24	20	28	27	20	20	26	31	25	23	25	24
Peak Instantaneous Flow	L/s	-	-	-	-	-	-	-	-	-	-	-	-	-
Peak Month		Jun	Jul	Jun	Jun	Jun	Sep	Nov	Apr	Jul	Nov	Aug		
Peak Week		Week 23	Week 31	Week 43	Week 26	Week 25	Week 33	Week 34	Week 16	Week 34	Week 52	Week 30		
Peak Day		25/06/2010	25/07/2010	21/10/2011	16/08/2012	18/04/2014	19/06/2015	16/08/2015	15/04/2017	21/02/2018	10/11/2018	21/07/2019		
Peak Day Rainfall	mm	9.6	0	0	0	74	17.4	18.6	0	124.2	0.2	11.2		
Peak Day Weather		Wet	Wet	Storm	Storm	Storm	Storm	Storm	Storm	Storm	Storm	Storm		
Total Annual Volume	m^3	6,446	6,911	7,049	7,662	8,024	6,995	6,933	7,468	8,818	7,236	7,581	7,607	7,468
Rating Connections		38	38	38	38	38	38	38	38	38	38	38		
Rating Charges		38	38	38	38	38	38	38	38	38	38	38		
Average Daily Flow per Connection	L/con/day	462	496	505	549	575	502	497	535	632	519	544	545	535
Peak Daily Flow per Connection	L/con/day	1,187	1,921	961	1,629	2,083	747	938	1,427	2,140	1,440	1,402	1,469	1,469
Data Quality		very high	very high	very high	very high	very high	very high	high	high	high	high	high		