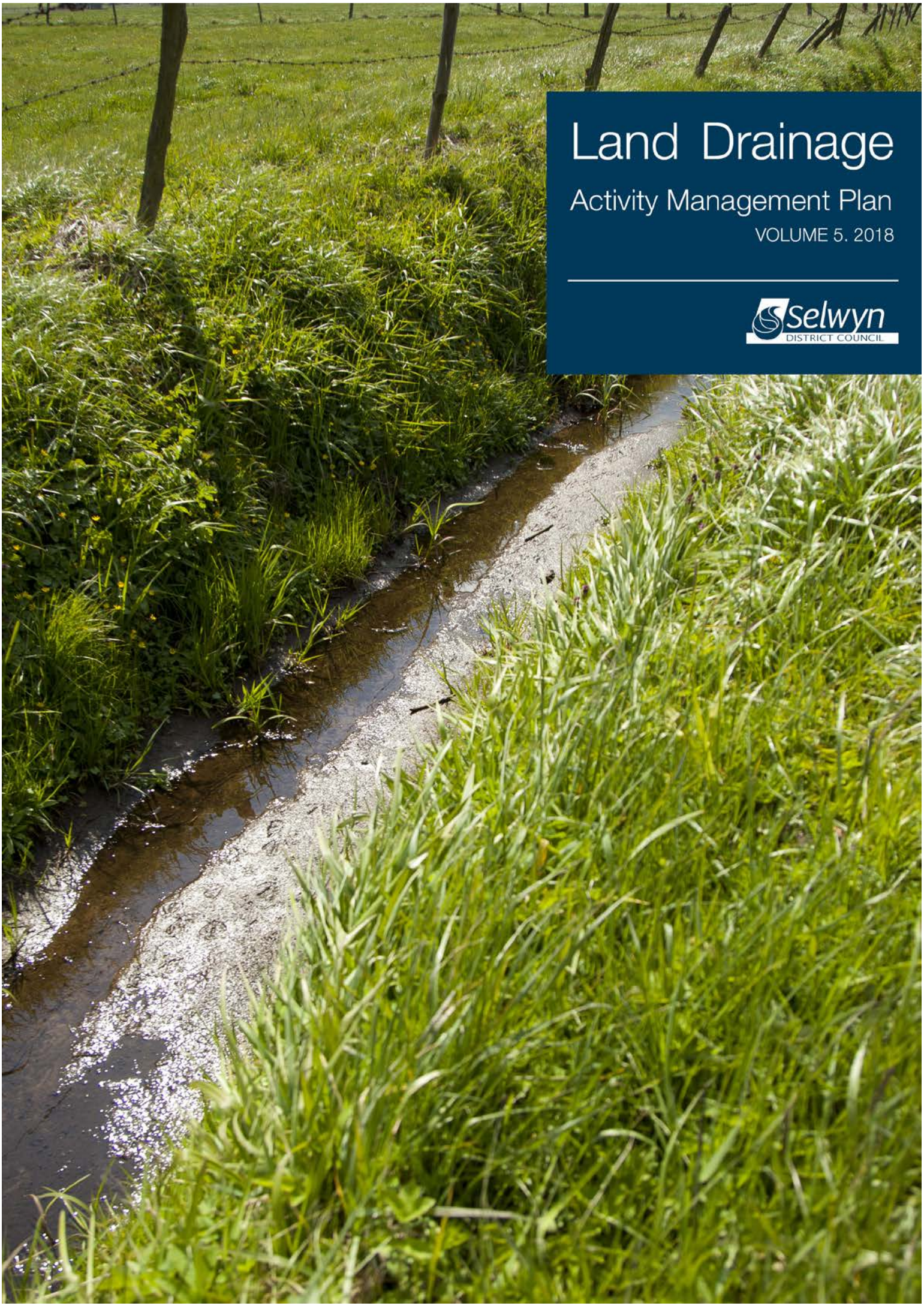

Land Drainage

Activity Management Plan

VOLUME 5. 2018

Selwyn DISTRICT COUNCIL

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1.0 ARTHURS PASS DRAINAGE SCHEME

1.1 Scheme Summary

Description		Quantity
Scheme Area		15.44 ha
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	-
	Class B	-
	Class C	-
Systems components	Drain Length (m)	None
	Pump stations (No.)	None
	Other assets	Floodbank
History	Installation Date	Installed progressively from 1850's
Value ($)	**Replacement Cost**	$42,749
	Depreciated Replacement Cost	$42,749
Financial	2018/2019 Estimate Annual maintenance cost % of total	$15,000 every 2-3 years 0.01%
Drainage Outlet	Ultimate discharge point	Bealey River
Sustainability	Sustainable drain management practices	Adopted and Encouraged

1.2 Key Issues

The following key issues are associated with the Bealey Flood Protection area. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 1-1 Bealey Flood Protection Area Key Issues

What's the Problem	What we plan to do
Risk to the Arthurs Pass Village following breach of Bealey River Stop Bank.	Regular inspections of the stop bank and maintaining close working relationship with Arthurs Pass Community Committee.

1.3 Overview & History

The Arthur's Pass drainage district relates to the flood protection works within the Bealey River. The flood protection scheme consists of a manmade floodbank constructed from local sourced rock positioned along critical points of the Bealey River. These form a barrier and divert extreme river flood events away from the Arthurs Pass township. The total length of flood protection works is 300m.

In February 2009 armouring work was undertaken based on an assessment by Mr B Reid (ex Environment Canterbury Catchment Engineer) and in consultation with the Department of Conservation. No consents were required to undertake this work.

Work is only undertaken after severe flooding, last required in 2012/13. Annual maintenance is not required, but inspections should be undertaken at regular intervals.

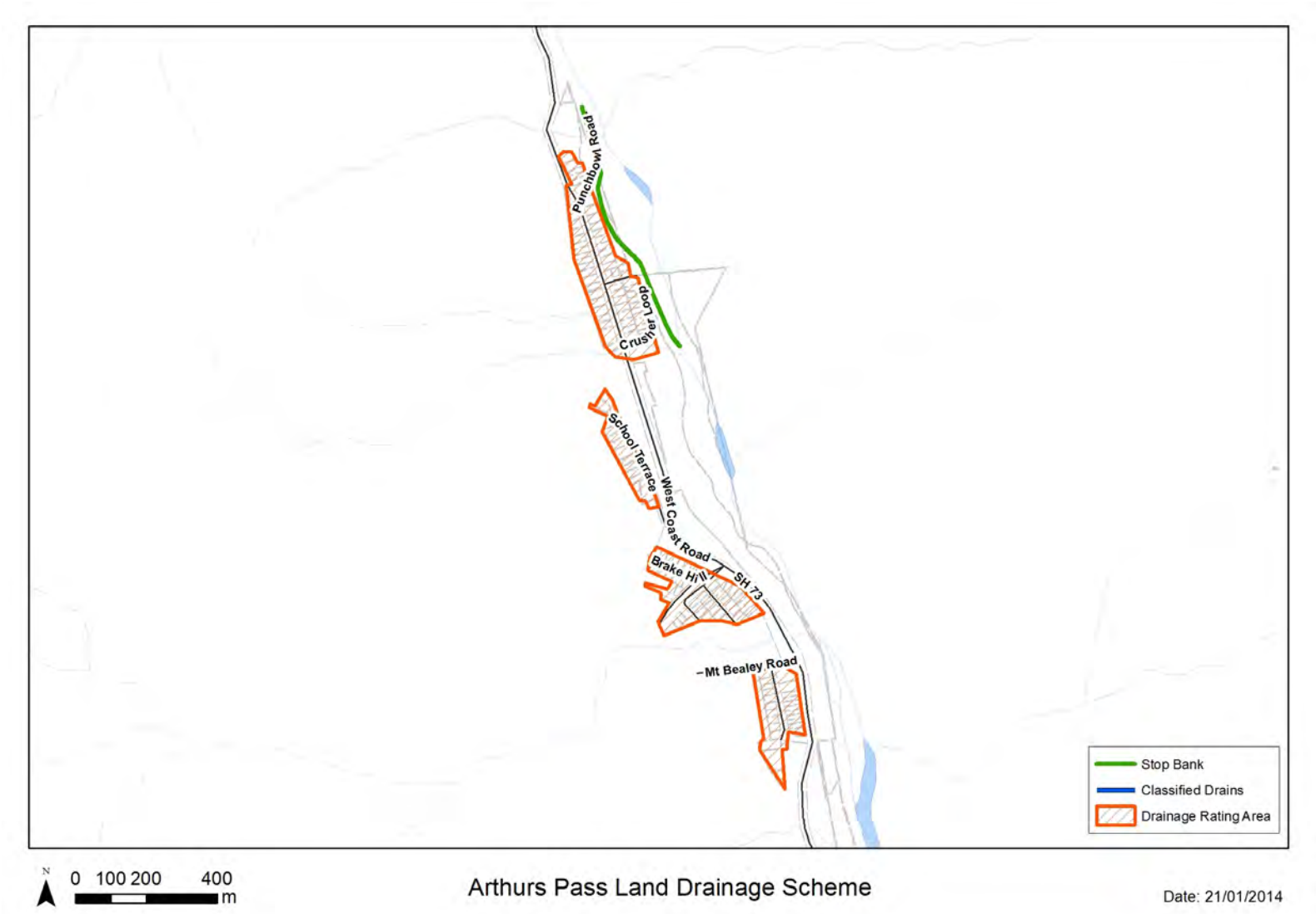

Figure 1-1 Scheme Map

1.4 Resource Consents

There are no existing consents for this land drainage scheme. Works are completed as a permitted activity under Waimak River Regional Plan.

1.5 Scheme Assets

The stopbank/flood bank is constructed from locally sourced river rock from the Bealey River. Larger boulders are used as armering.

There are no other assets within this scheme.

1.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

1.7 Photos of Main Assets

Figure 1-2 Flood Protection Works

1.8 Risk Assessment

A risk assessment has been undertaken for the Arthurs Pass scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. Table 1-2 details the risk priority rating, Table 1-3 outlines the risks and the list of key projects is found in Table 1-6.

Table 1-2 Risk Priority Rating

Risk Score	Level of Risk	Risk Response
> 50	Extreme	Awareness of the event to be reported to Council. Urgent action to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

35-50	Very High	Risk to be eliminated / mitigated / managed through normal business planning processes with responsibility assigned.
14-35	High	Manage risk using routine procedures.
3.5-14	Moderate	Monitor the risk.
< 3.5	Low	Awareness of the event to be reported to Council. Immediate action required to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

Table 1-3 Risks – Arthurs Pass

Risk	Action/Project	Year Identified	2014 Risk Rating	2017 Risk Rating	Residual Risk Rating
Flood bank failure would impact on local properties without Council's knowledge	Review options to better monitor stockbank condition and performance	2014	6	6	6

The list of district wide risks can be found in 5Waters Activity Management Plan: Volume 1.

1.9 Asset Valuation Details

The total replacement value of assets within the Arthurs Pass Scheme is $42,749 with further details in Table 1-4 below. All of the value, is made up of the flood bank.

Table 1-4 Replacement Value, Arthurs Pass

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$42,749

Channels are broken down into the following subcategories: drains, pipes and flood banks. At Arthurs Pass there is a stopbank which protects the township from flooding.

1.10 Renewals

The renewal profile has been taken from the 2017 5 Waters Valuation. There are no renewals for this scheme. This asset has an infinite life.

1.11 Critical Assets

The criticality model for has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. There is no criticality assessment for this scheme.

1.12 Asset Condition

The asset condition model was run for Arthurs Pass in 2017. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). The condition of this asset is maintained at a high level.

1.13 Funding Program

The 10 year budgets for Arthurs Pass are shown by Table 1-5 and Figure 1-3. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 1-5 Arthurs Pass Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$25		$1,000	
2019/20	$25		$15,000	
2020/21	$25			
2021/22	$25		$15,000	
2022/2023	$25			
2023/2024	$25			
2024/2025	$25		$15,000	
2025/2026	$25			
2026/2027	$25			
2027/2028	$25		$15,000	
Total	$250		$61,000	

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

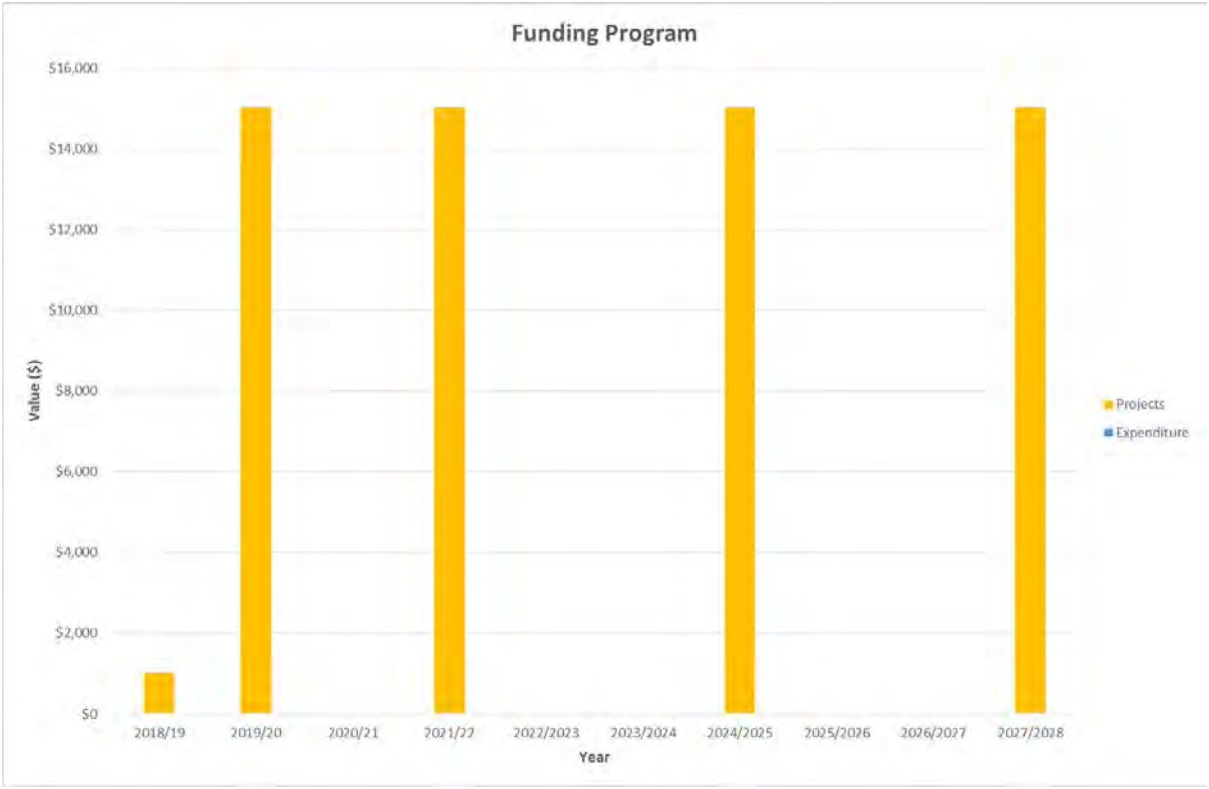

Figure 1-3 Arthurs Pass Funding Summary

There are two projects for Arthurs Pass in the LTP budget, this relates to the maintenance of the stopbank.

Table 1-6 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[1]
Projects	4505001	Stop Bank Maintenance		$15,000		$45,000	100% LoS
Projects	4505004	Investigate monitoring stockbank	$1,000				100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear.

[1] Where LoS refers to Level of Service and G refers to Growth

2.0 ELLESMERE LAND DRAINAGE DISTRICT

2.1 Scheme Summary

Description		Quantity
Scheme Area		1,265.59 ha
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	25,905
	Pump stations (No.)	None
	Other assets	None
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$3,355,545
	Depreciated Replacement Cost	$3,355,545
Financial	2018/2019 Estimate Annual maintenance cost % of total	$26,300 11.15%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

2.2 Key Issues

There are no key issues are associated with the Ellesmere Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

2.3 Overview & History

The Ellesmere scheme has a rating area of 1,266ha, servicing a total area of 2,820ha between Curries Road and Bethels roads with drainage outlets for this scheme via the Selwyn River in the vicinity of Coes Ford. The ultimate receiving environment for this area is Te Waihora (Lake Ellesmere).

Miles drain located on the eastern extreme of the Ellesmere scheme was an addition to the original scheme. The drainage system includes a number of privately owned flood flap valves.

The land drainage scheme was constructed to remove groundwater, allowing farming to occur. As a secondary use, stormwater from properties is also discharged to the network of open drains.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

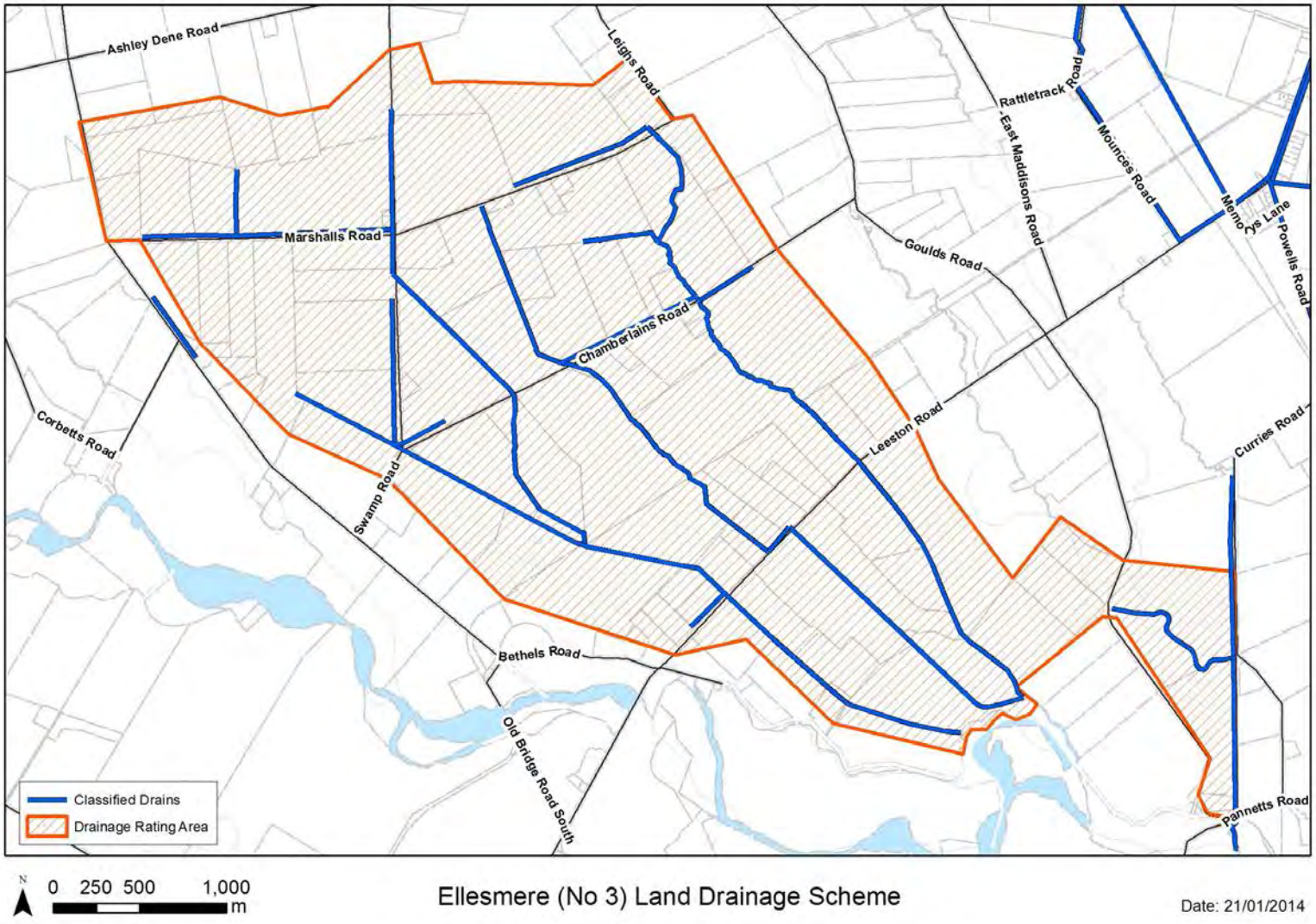

Figure 2-1 Scheme Map

2.4 Resource Consents

There are no existing consents for this land drainage scheme.

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

2.5 Scheme Assets

This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

2.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

2.7 Photos of Main Assets

Photo 1: Miles Drain – flood bank left hand bank

Photo 2: Discharge from Silverstream Drain

2.8 Risk Assessment

A risk assessment has been undertaken for the Ellesmere scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. Table 2-1 details the risk priority rating, Table 2-2 outlines the risk identified in this scheme and Table 2-7 details the key projects.

Table 2-1 Risk Priority Rating

Risk Score	Level of Risk	Risk Response
> 50	Extreme	Awareness of the event to be reported to Council. Urgent action to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

35-50	Very High	Risk to be eliminated / mitigated / managed through normal business planning processes with responsibility assigned.
14-35	High	Manage risk using routine procedures.
3.5-14	Moderate	Monitor the risk.
< 3.5	Low	Awareness of the event to be reported to Council. Immediate action required to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

Table 2-2 Risks – Ellesmere

Risk	Action/Project	Year Identified	2014 Risk Rating	2017 Risk Rating	Residual Risk Rating
Inadequate drainage at Raven Drive	Raven Drive drainage upgrade	2017		9	2

The list of district wide risks can be found in 5Waters Activity Management Plan: Volume 1.

2.9 Asset Valuation Details

The total replacement value of assets within the Ellesmere Scheme is $3,355,545 with further details in Table 2-3 below. All of the value is made up of channels.

Table 2-3 Replacement Value, Ellesmere

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$3,355,545

Channels are broken down into drains, pipes and stock banks. The Ellesmere Land drainage district is made up of classified drains.

2.10 Renewals

The renewal profile has been taken from the 2017 5 Waters Valuation. There are no renewals for this scheme. This asset has a maintained infinite life.

2.11 Critical Assets

The criticality model for Ellesmere has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 2-4 and Figure 2-2 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 2-4 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	14,190
4	Medium-Low	3,104
3	Medium	8,636
2	Medium-High	0
1	High	0

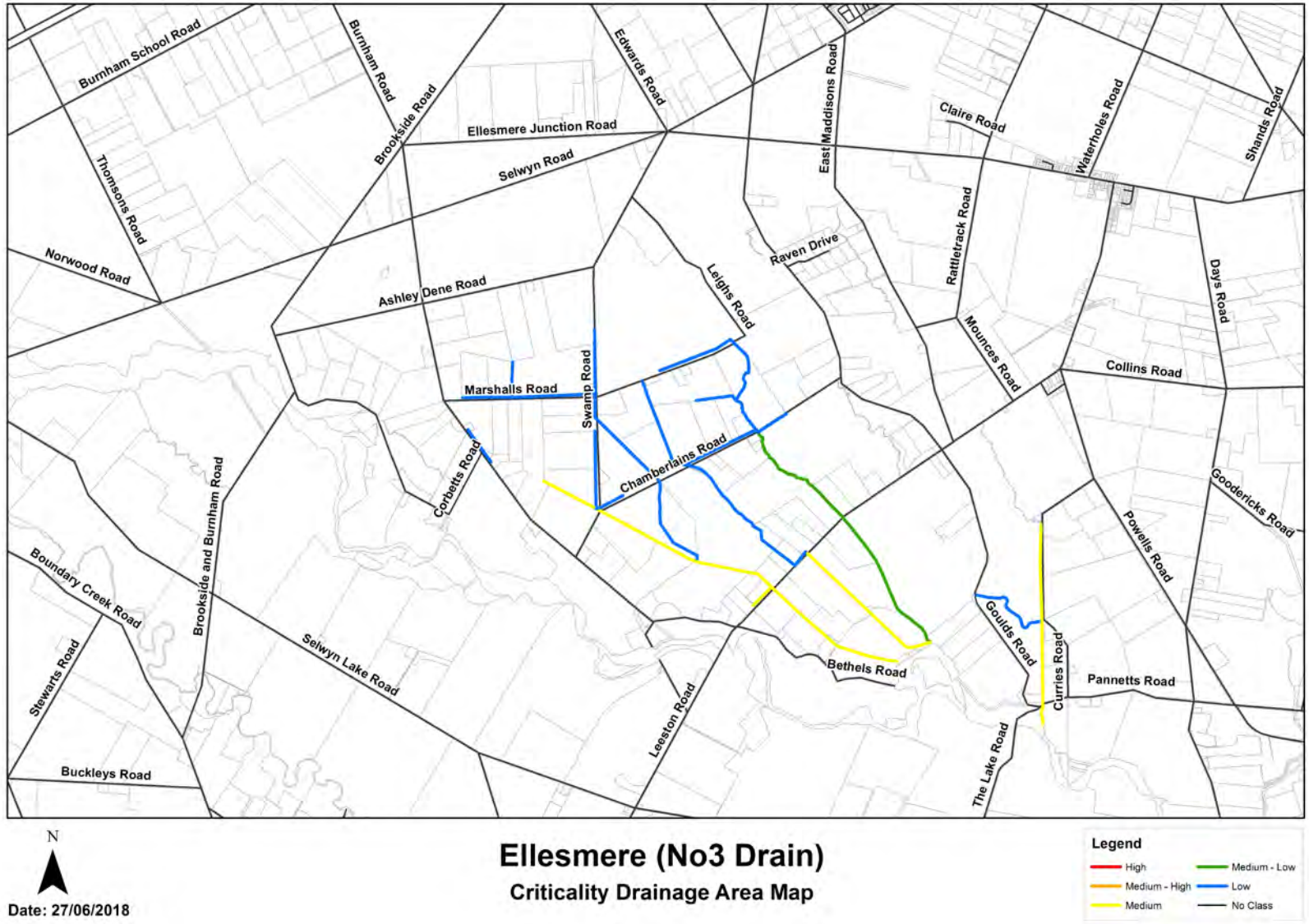

Figure 2-2 Criticality Map

2.12 Asset Condition

The asset condition model was run for Ellesmere in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

2.13 Funding Program

The 10 year budgets for Ellesmere Land Drainage are shown by Table 2-6 and Figure 2-4. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 2-5 Ellesmere Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$26,300		$20,000	
2019/20	$21,300			
2020/21	$16,300			
2021/22	$16,300			
2022/2023	$16,300			
2023/2024	$11,300			
2024/2025	$11,300			
2025/2026	$11,300			
2026/2027	$11,300			
2027/2028	$11,300			
Total	$153,000		$20,000	

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

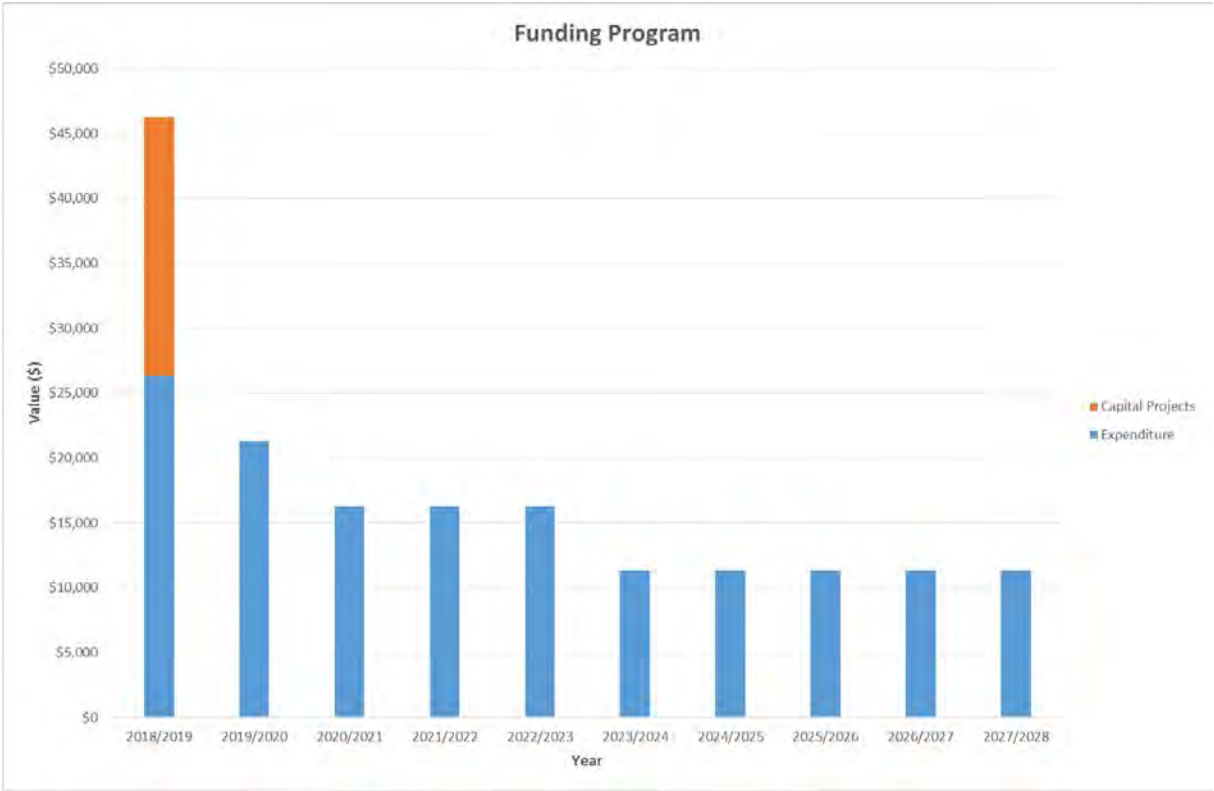

Figure 2-3 Ellesmere Funding Summary

There is one project for Ellesmere in the LTP budget.

Table 2-6 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[2]
Capital Projects	452190004	Raven Drive Drainage Upgrade	$20,000				100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear.

[2] Where LoS refers to Level of Service and G refers to Growth

3.0 GREENPARK DRAINAGE DISTRICT

3.1 Scheme Summary

Description		Quantity
Scheme Area		2,243.87 ha
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	21,613
	Pump stations (No.)	None
	Other assets	None
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$1,935,702
	Depreciated Replacement Cost	$1,935,702
Financial	2018/2019 Estimate Annual maintenance cost % of total	$4,790 2.03%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

3.2 Key Issues

The following key issues are associated with the Greenpark Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 3-1 Greenpark Drainage District Key Issues

What's the Problem	What we plan to do
Better understanding is required on the influence of the lake on the land drainage system in terms of water quality and flooding.	Visually monitor water levels in drain in relation to the lake levels. Undertake water quality samples

3.3 Overview & History

The Greenpark scheme has a rating area of 2,244ha located between the rural L2, Hudsons Road and the Lake. The drainage outlets for this area are to Te Waihora (Lake Ellesmere). Total length of classified drains in 21.2km.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

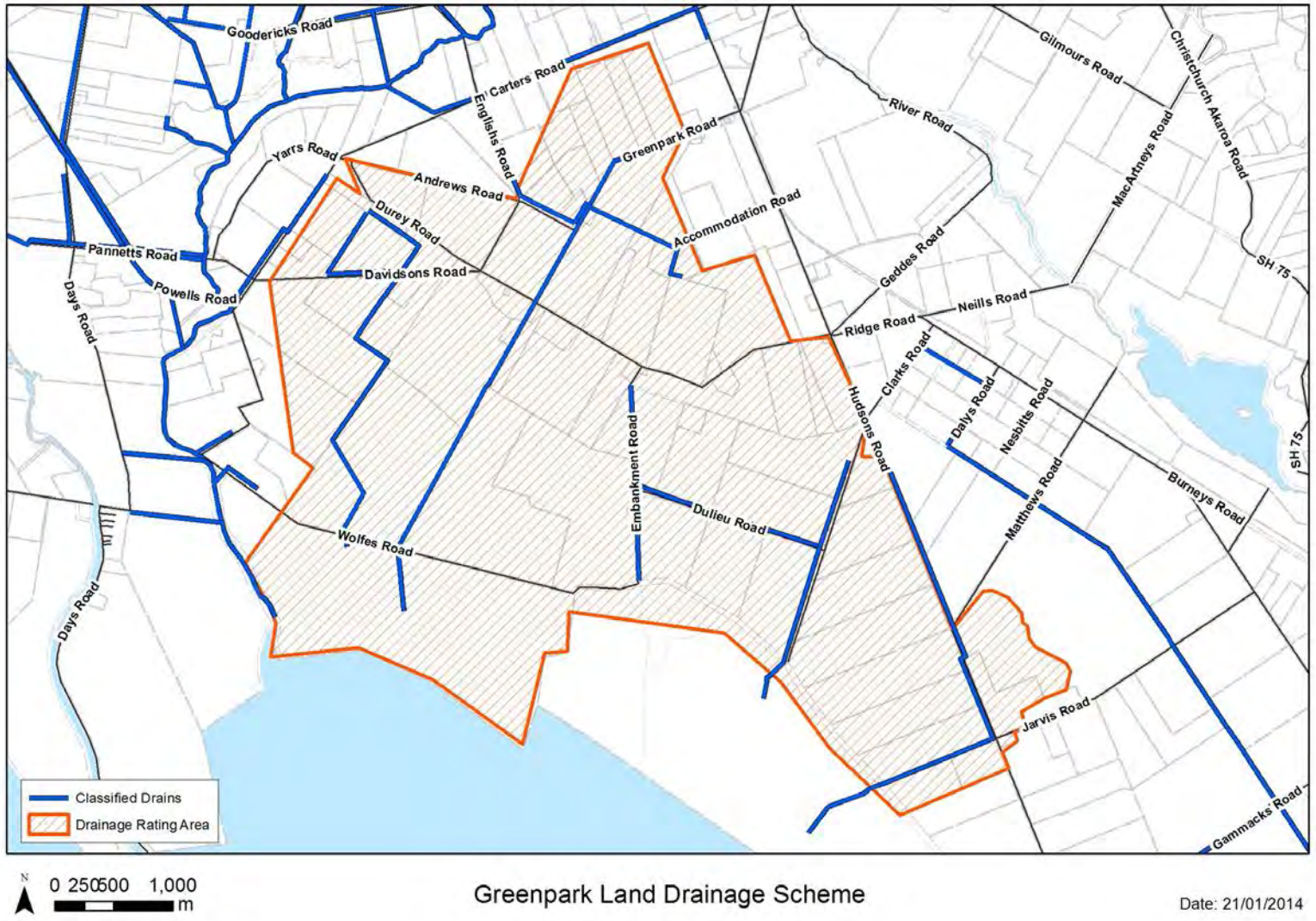

Figure 3-1 Scheme Map

3.4 Resource Consents

There are no existing consents for this land drainage scheme.

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

3.5 Scheme Assets

This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

No summary of material and diameter of these channels is available for this scheme.

3.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

3.7 Photos of Main Assets

Photo 1: Jarvis Road Drain

Photo 2: Greenpark Road Drain

3.8 Risk Assessment

A risk assessment has been undertaken for the Greenpark scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. No high risks have been identified for this scheme.

3.9 Asset Valuation Details

The total replacement value of assets within the Greenpark Scheme is $1,935,702 with further details in Table 3-2 . All of the value is made up of channels.

Table 3-2 Replacement Value, Greenpark

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$1,935,702

Channels are broken down into drains, pipes and stock banks. The Greenpark Land drainage district is made up of classified drains.

3.10 Renewals

The renewal profile has been taken from the 2018 5 Waters Valuation. There are no renewals for this scheme. This asset has a maintained infinite life.

3.11 Critical Assets

The criticality model for Greenpark has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 3-3 and Figure 3-2 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 3-3 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	14,142
4	Medium-Low	7108
3	Medium	211
2	Medium-High	0
1	High	0

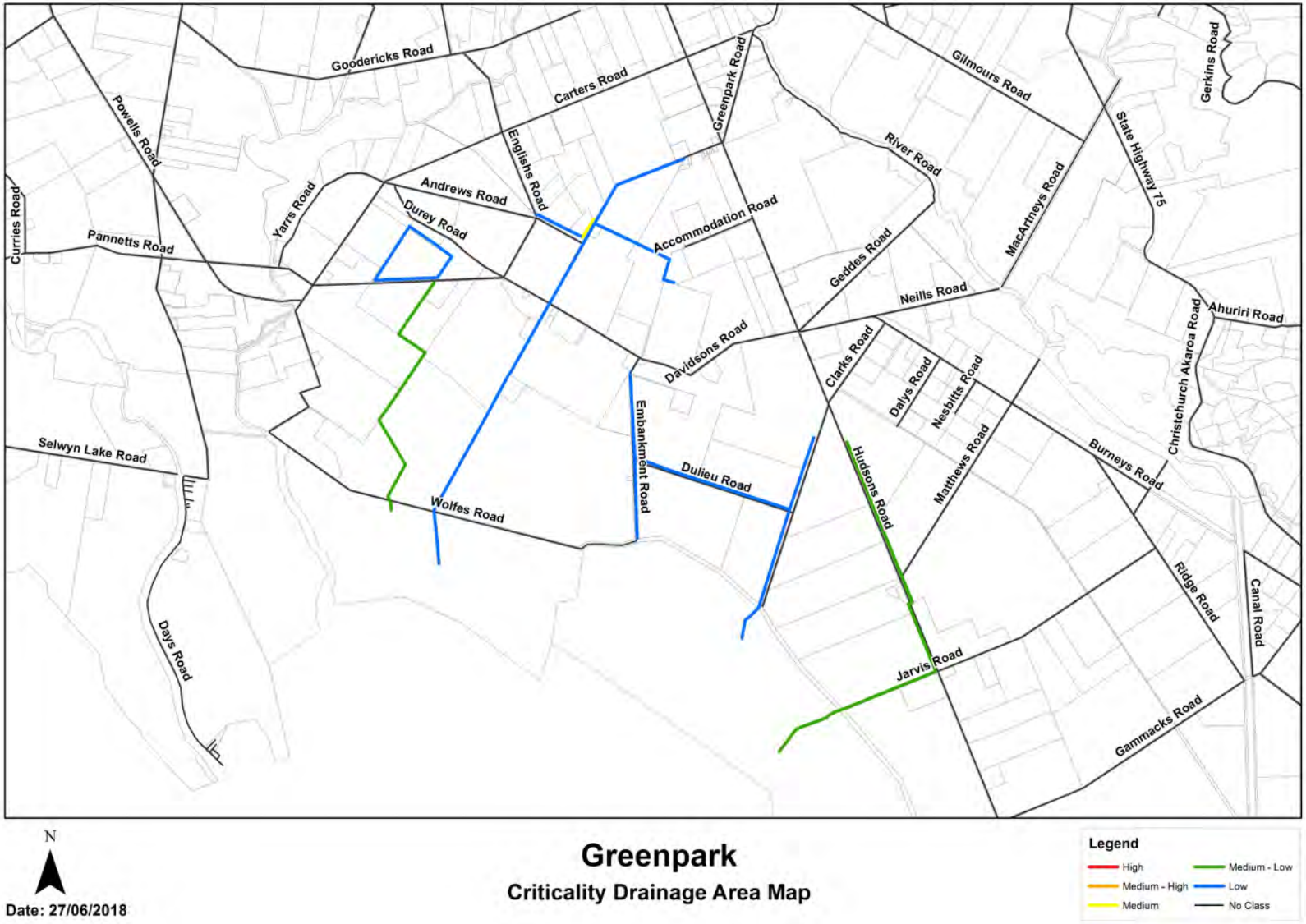

Figure 3-2 Criticality Map

3.12 Asset Condition

The asset condition model was run for Greenpark in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

3.13 Funding Program

The 10 year budgets for Greenpark are shown by Table 3-4 and Figure 3-3. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 3-4 Greenpark Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$4,790			
2019/20	$4,790			
2020/21	$4,290			
2021/22	$4,290			
2022/2023	$3,790			
2023/2024	$3,790			
2024/2025	$3,790			
2025/2026	$3,790			
2026/2027	$3,790			
2027/2028	$3,790			
Total	$40,900			

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

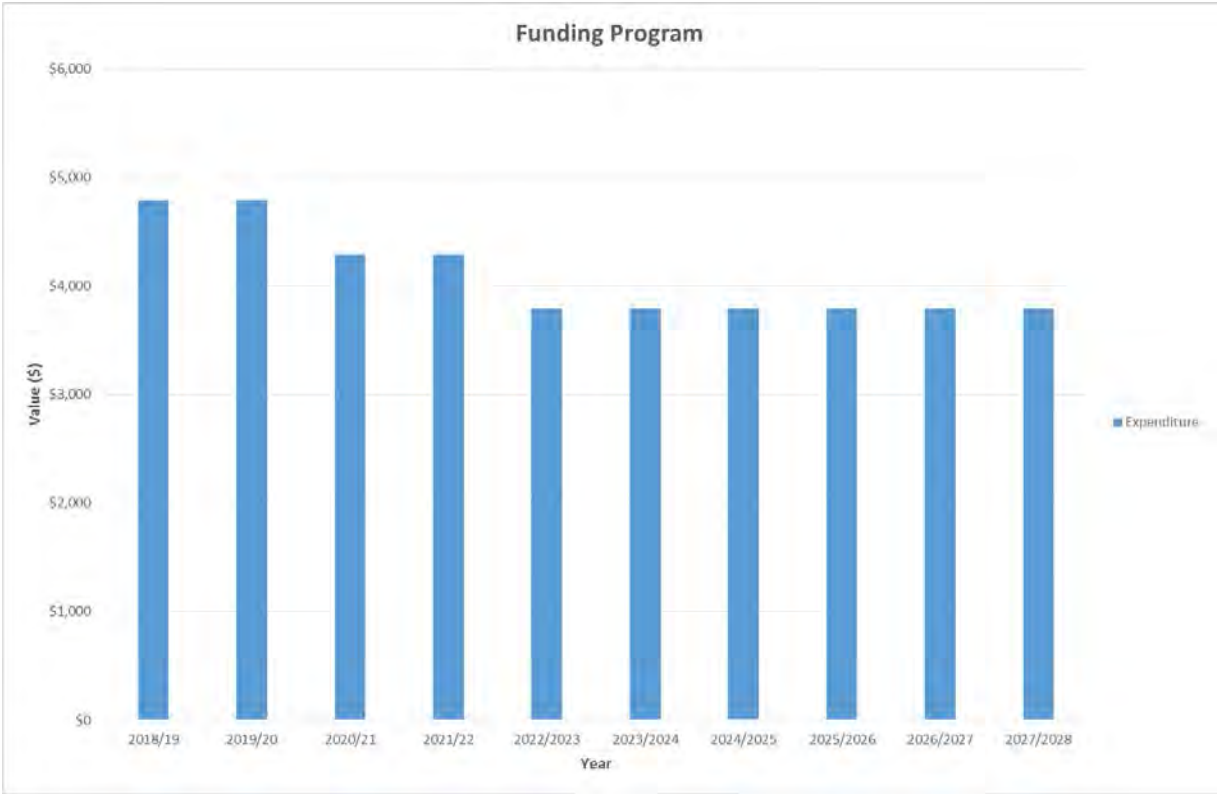

Figure 3-3 Greenpark Funding Summary

There are no key projects for this scheme. The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

4.0 HORORATA RIVER DRAINAGE AREA

4.1 Scheme Summary

Description		Quantity
Scheme Area		761.91 ha
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	None
	Pump stations (No.)	None
	Other assets	None
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	-
	Depreciated Replacement Cost	-
Financial	2018/2019 Estimate Annual maintenance cost % of total	$5,150 2.18%
Drainage Outlet	Ultimate discharge point	Hororata River
Sustainability	Sustainable drain management practices	Adopted and Encouraged

4.2 Key Issues

The following key issues are associated with the Hororata River Drainage area. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 4-1 Hororata River Key Issues

What's the Problem	What we plan to do
Changing regulations regarding activities that can be undertaken in and adjacent to natural waterways and managing this against community expectations and budgets.	Continue to work with the Community Committees and Environment Canterbury to identify appropriate mitigation works as issues arise.

4.3 Overview & History

The Hororata river scheme has a rating area of 762Ha.

The scheme being associated with a section of the Hororata River is adjacent to the Hororata Township. Rates are collected for willow control and other minor works within the river.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

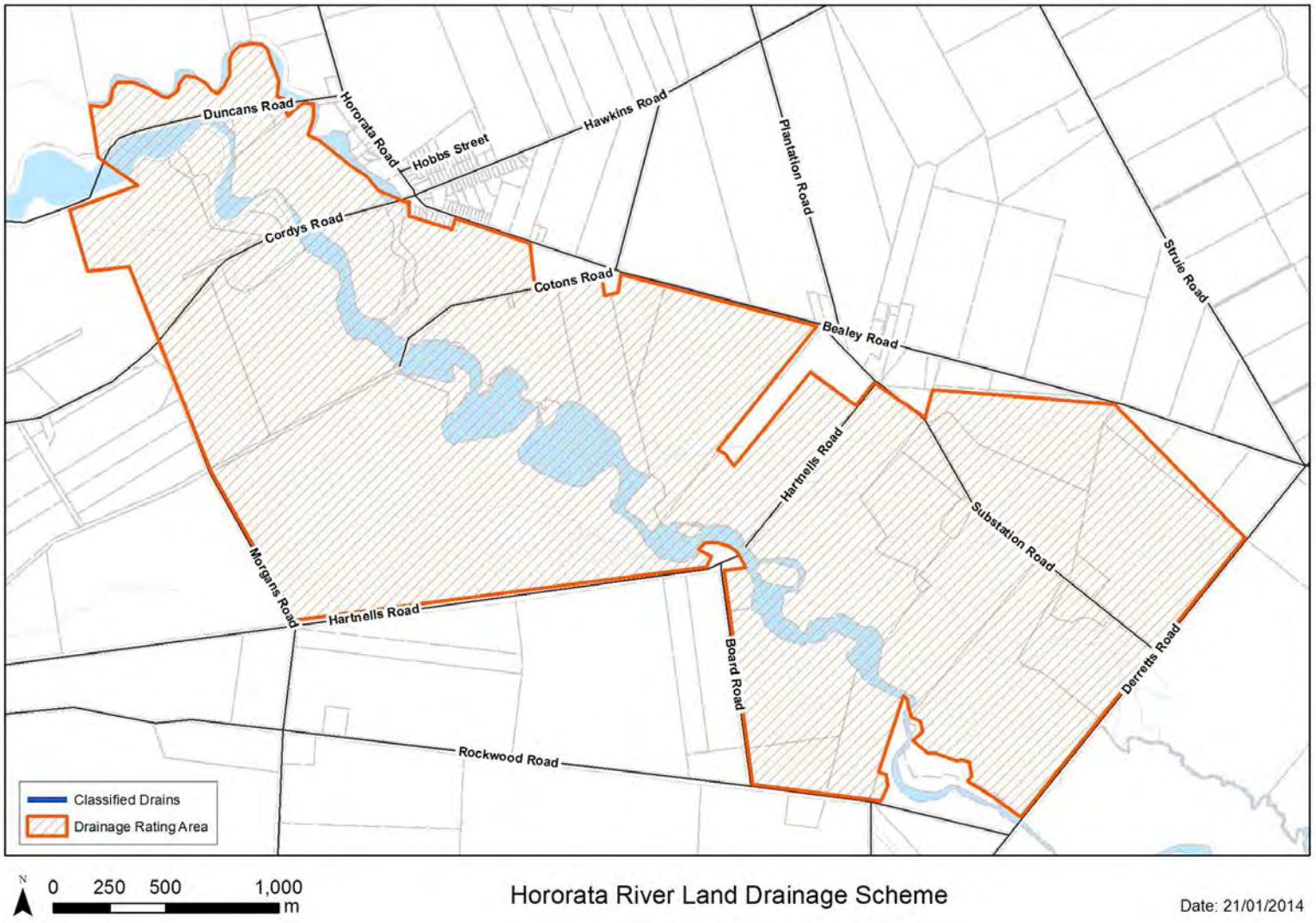

Figure 4-1 Scheme Map

4.4 Resource Consents

There are no existing consents for this land drainage scheme.

4.5 Scheme Assets

There are no Council owned assets within this scheme.

4.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

4.7 Photos of Main Assets

Photo 1 – Hororata River

4.8 Risk Assessment

A risk assessment has been undertaken for Hororata River scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. No high risks have been identified for this scheme.

4.9 Asset Valuation Details

There are no Council owned assets within this scheme.

4.10 Renewals

There are no renewals for this scheme.

4.11 Critical Assets

The criticality model for has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. There is no criticality for this scheme.

4.12 Asset Condition

The asset condition model was run for Hororata in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

4.13 Funding Program

The 10 year budgets for Hororata River drainage area are shown by Table 4-2 and Figure 4-2. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 4-2 Hororata River Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$5,150			
2019/20	$4,150			
2020/21	$3,150			
2021/22	$2,150			
2022/2023	$2,150			
2023/2024	$2,150			
2024/2025	$2,150			
2025/2026	$2,150			
2026/2027	$2,150			
2027/2028	$2,150			
Total	$27,500			

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

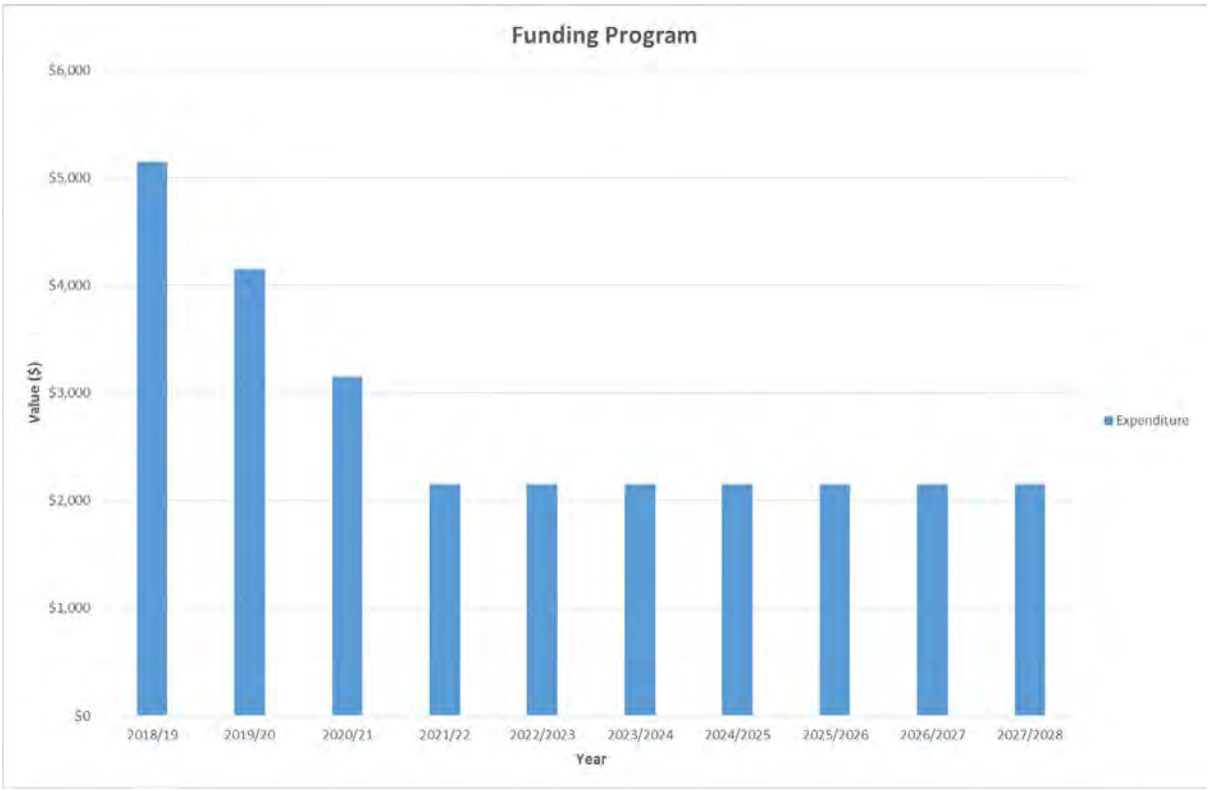

Figure 4-2 Hororata River Funding Summary

There are no key projects for this scheme. The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

5.0 LEESTON DRAINAGE DISTRICT

5.1 Scheme Summary

Description		Quantity
Scheme Area		10,607.13 ha
Scheme Coverage (as at 1 June 2017)	Total Rated Area (ha)	
	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	211,063
	Pump stations (No.)	None
	Other assets	Pipes, Weirs, Headwalls
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$21,680,045
	Depreciated Replacement Cost	$21,433,957
Financial	2018/2019 Estimate Annual maintenance cost % of total	$70,300 29.8%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

5.2 Key Issues

The following key issues are associated with the Leeston Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 5-1 Leeston Key Issues

What's the Problem	What we plan to do
Proposed changes to drainage patterns around the Leeston township as part of the Leeston stormwater mitigation project.	Continue to consult with the community including those outside the township.

Sewer discharges from Ellesmere Treatment Plant to Volckman Road Drain at times of high groundwater and flows. Flooding in the township impacts volumes to the treatment plant.	Discharges undertaken in line with consent conditions.
Potential failure of Hamner Drop Structures	Regular Engineering Inspection, Weight restrictions, renewals
Flooding in the township from classified drains including Leeston Creek and the upper catchment. Leeston Creek and others undersized for both the flows from the township and upper catchment.	Completion of stormwater mitigation measures which went to public vote in May 2014. Continued monitoring and early warning of rising creek levels.
Access to clean Leeston Creek through the township. Not all parts of the Creek are accessible by machine and costs for hand cleaning are high.	Annual cleaning of Leeston Creek to be planned and budgeted for within stormwater budgets

5.3 Overview & History

The Leeston drainage district is segregated into two management areas – 'Leeston Rural' and 'Leeston Township'. The 'Leeston Township' budget was amalgamated with the 'Leeston Stormwater' budget. The Leeston scheme has a rating area of 10,400ha, servicing a total area of 21,150ha between Brookside and Irwell Road and with drainage outlets for this scheme discharging to Te Waihora (Lake Ellesmere).

The Leeston Township management area sits within the greater Leeston Rural area and as the name suggests is limited to the bounds of the Leeston Township.

The leeston urban drainage district is managed by the leeston urban drainage committee. The boundary of the district includes leeston creek, pound road drain down to the diversion structure at the outlet of the show grounds culvert. Flooding occurred by leeston creek in June 2013 and a diversion is planned for the town which is discussed in the Leeston stormwater Activity Management Plan. Regular maintenance on the creek is required to cut back vegetation and remove obstructions from the bed. This was undertaken in December 2013 subsequent to the floods once water levels had dropped.

The Leeston Rural management area sits outside the Leeston township boundary.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

Hanmer's Drain

Hanmer's drain was deepened for flood relief measures in 1945 in conjunction with the general upgrading of drains within the Ellesmere area. The Hanmer's drain is different in that it was designed for both drainage and flood relief.

Reinforced concrete drop structures were installed at 14 locations to reduce flood flow velocities. On account of the shortage of steel, concrete access bridges were designed with mass concrete abutments and only the decks were reinforced. Some structures are beginning to experience spalling and concrete erosion.

Engineering inspections of the drop structures are undertaken every two years.

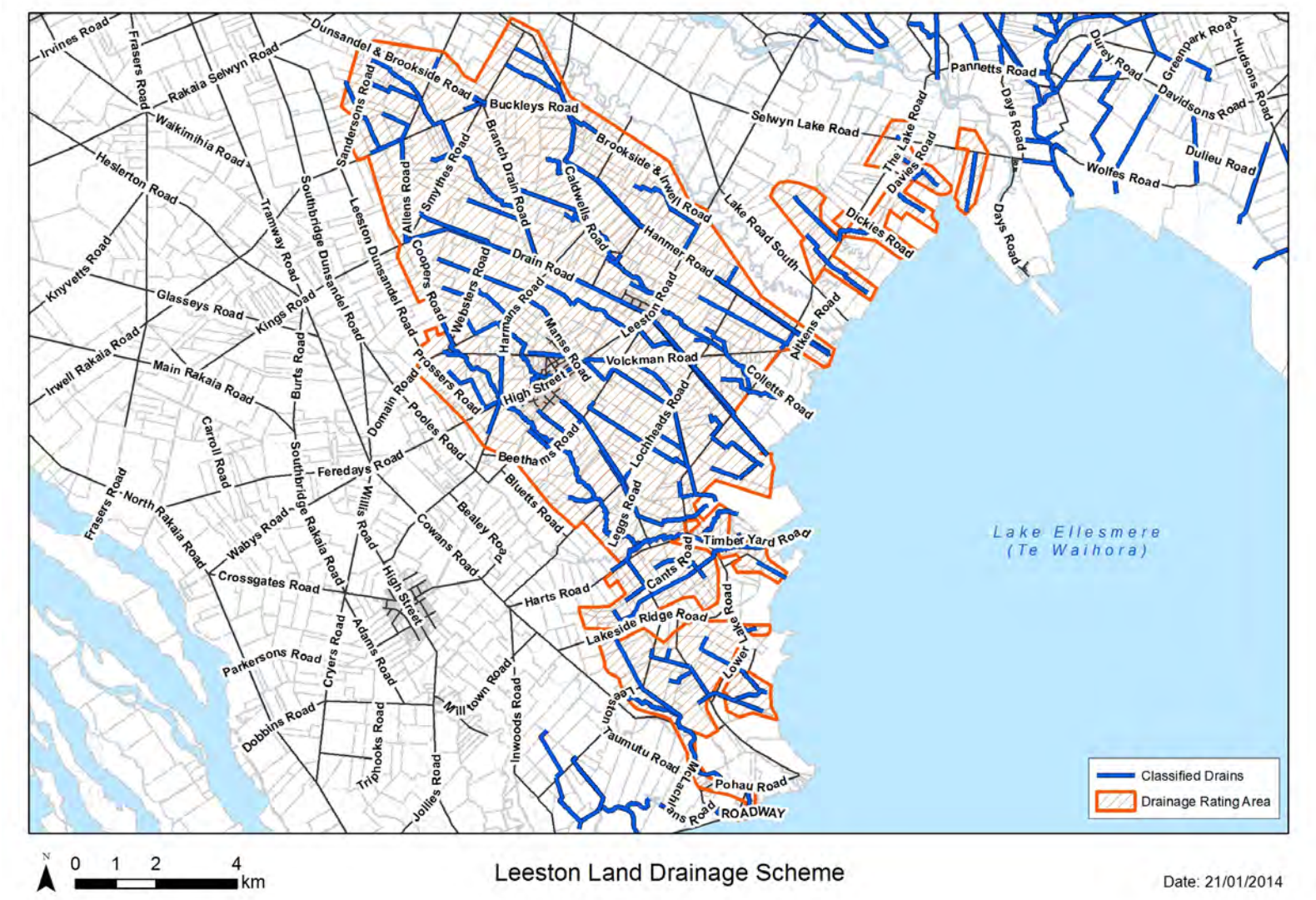

Figure 5-1 Leeston Scheme Map

5.4 Resource Consents

There are existing resource consents for Leeston urban land drainage scheme. Historically flooding in the township has inundated low lying houses. Consent has been granted for a flood diversion (under construction which incorporates stormwater in a greenfield development area of Leeston North (Manse Road) refer CRC071838.2.

To also assist with flood mitigation a flood diversion structure (gate) was constructed at the downstream end of the Leeston township which when opened discharges stormwater down drain 58 which ultimately discharges to the Tramway reserve drain above Lochheads Road. The consent for this diversion is covered under CRC930163.

Table 5-2 Resource Consents

Consent	Description	Location	Date Issued	Expiry Date	Application Status
CRC930163	To dam Leeston Creek by means of an existing concrete structure and to divert flow to Tramway Reserve Drain.	Leeston And Springston Roads, LEESTON	29-Aug-95	28-Jul-29	Issued - Active

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

5.5 Scheme Assets

There are three main scheme assets within this scheme:

1. Land drainage channels - excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.
2. Drop structures - engineered weirs will stilling basins designed to dissipate energy and minimise erosive velocities.
3. Flood Level Gauge - Telemetry linked water level pressure transducer used to prelude alarms during rising flood levels.

A summary of material and diameter for pipes, where known, is shown below in Figure 5-2 and Figure 5-3.

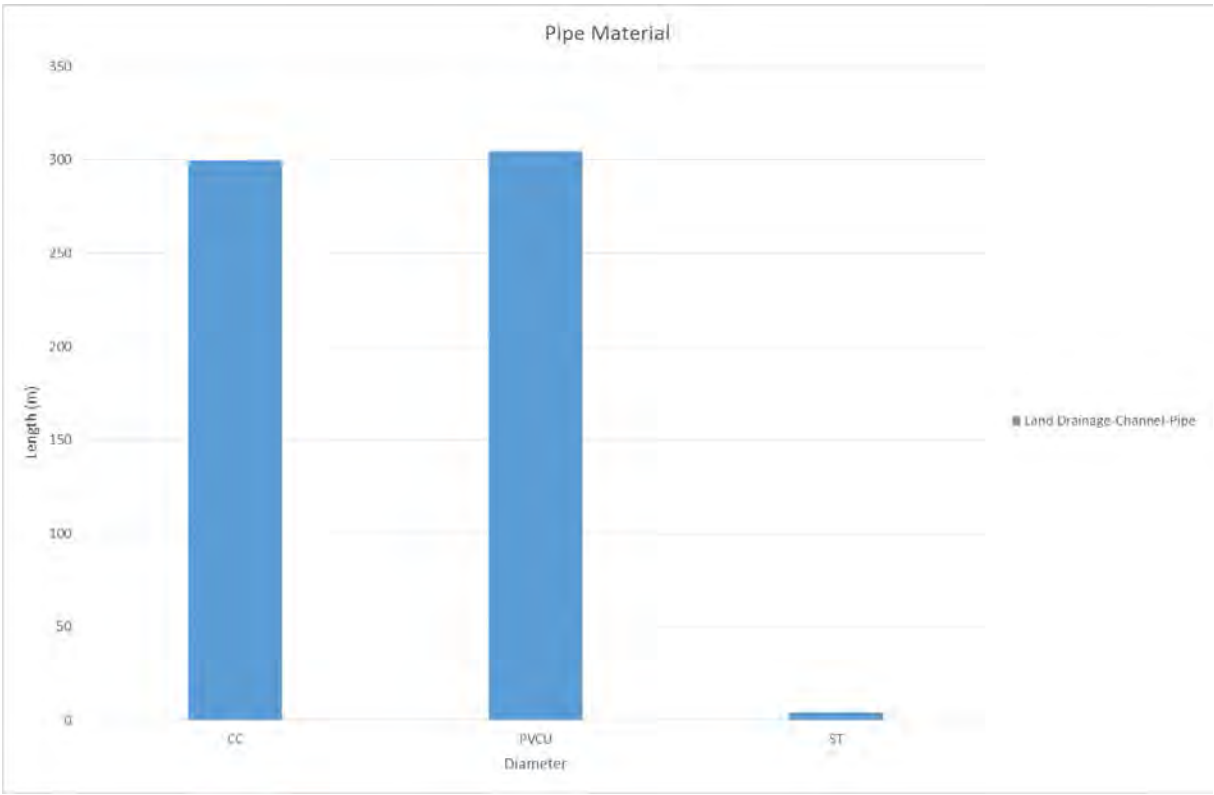

Figure 5-2 Pipe Material - Leeston

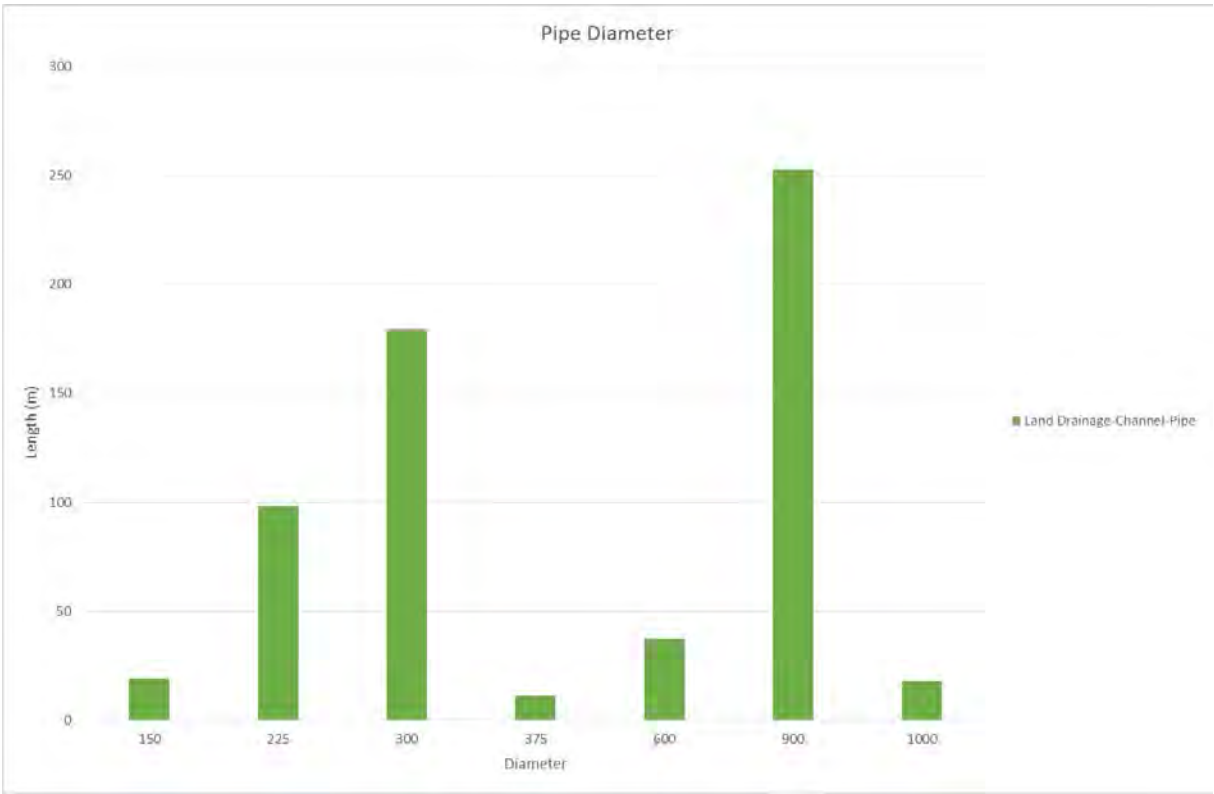

Figure 5-3 Pipe Diameter – Leeston

5.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

5.7 Photos of Main Assets

Photo 1: Hanmer Drop Structure

Photo 2: Tramway Reserve Drain

5.8 Risk Assessment

A risk assessment has been undertaken for the Leeston scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. Table 5-3 details the risk priority rating, Table 5-4 outlines the risks and the list of key projects is found in Table 5-9.

Table 5-3 Risk Priority Rating

Risk Score	Level of Risk	Risk Response
> 50	Extreme	Awareness of the event to be reported to Council. Urgent action to eliminate / mitigate / manage the risk. Document risk and action in the AMP.
35-50	Very High	Risk to be eliminated / mitigated / managed through normal business planning processes with responsibility assigned.
14-35	High	Manage risk using routine procedures.
3.5-14	Moderate	Monitor the risk.
< 3.5	Low	Awareness of the event to be reported to Council. Immediate action required to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

Table 5-4 Risks – Leeston

Risk	Action/Project	Year Identified	2014 Risk Rating	2017 Risk Rating	Residual Risk Rating
Drain and culvert capacities within the township are largely unknown	Review drain capacities and report on upgrade strategy	2014	6	6	6

The list of district wide risks can be found in 5Waters Activity Management Plan: Volume 1.

5.9 Asset Valuation Details

The total replacement value of assets within the Leeston Land Drainage District is $21,680,045 with further details in Table 5-5 below. The majority of value is made up of channels.

Table 5-5 Replacement Value, Leeston (Rural and Urban)

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$21,445,426
	Feature	$234,619

Channels are broken down into drains, pipes and stock banks. The Leeston land drainage district is made up of drains and pipes.

5.10 Renewals

The renewal profile has been taken from the 2018 5 Waters Valuation. Renewals are scheduled for Leeston are shown in Figure 5-4 below.

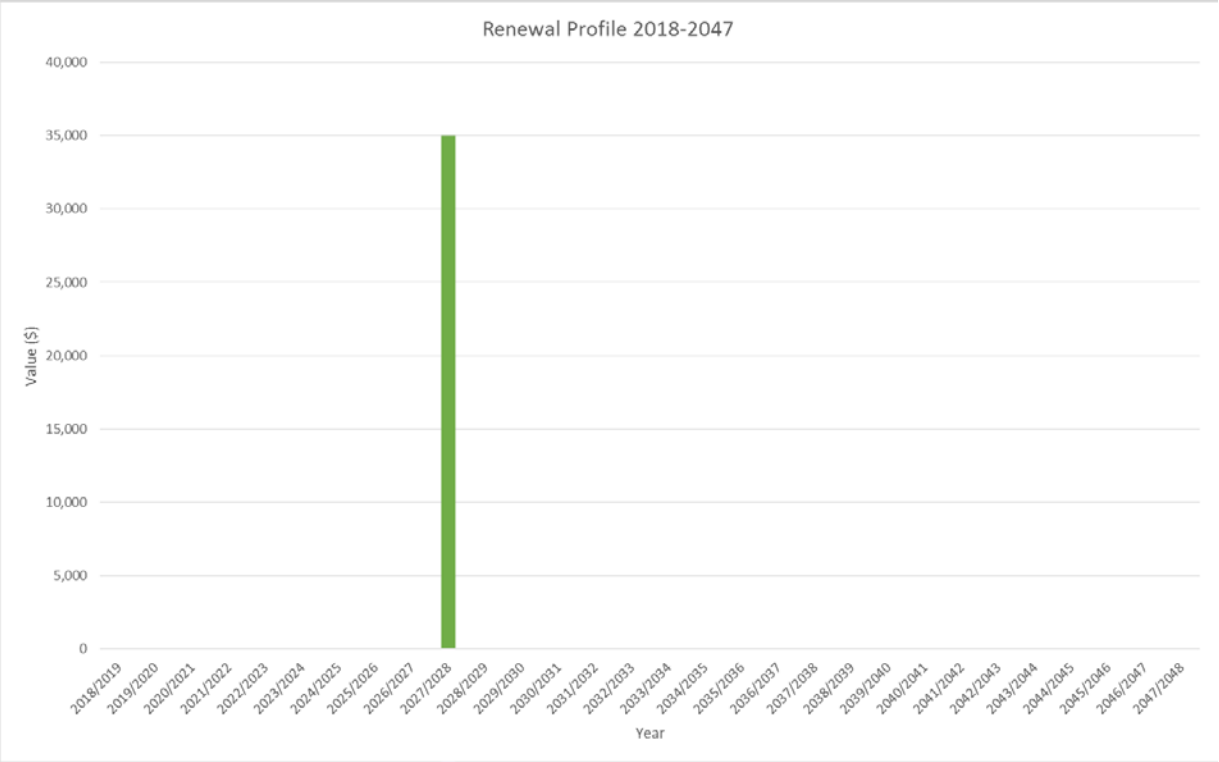

Figure 5-4 Leeston Renewal Profile

5.11 Critical Assets

The criticality model for Leeston has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 5-6 and Figure 5-5 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 5-6 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	161,833
4	Medium-Low	17,926
3	Medium	19,637
2	Medium-High	8,501
1	High	0

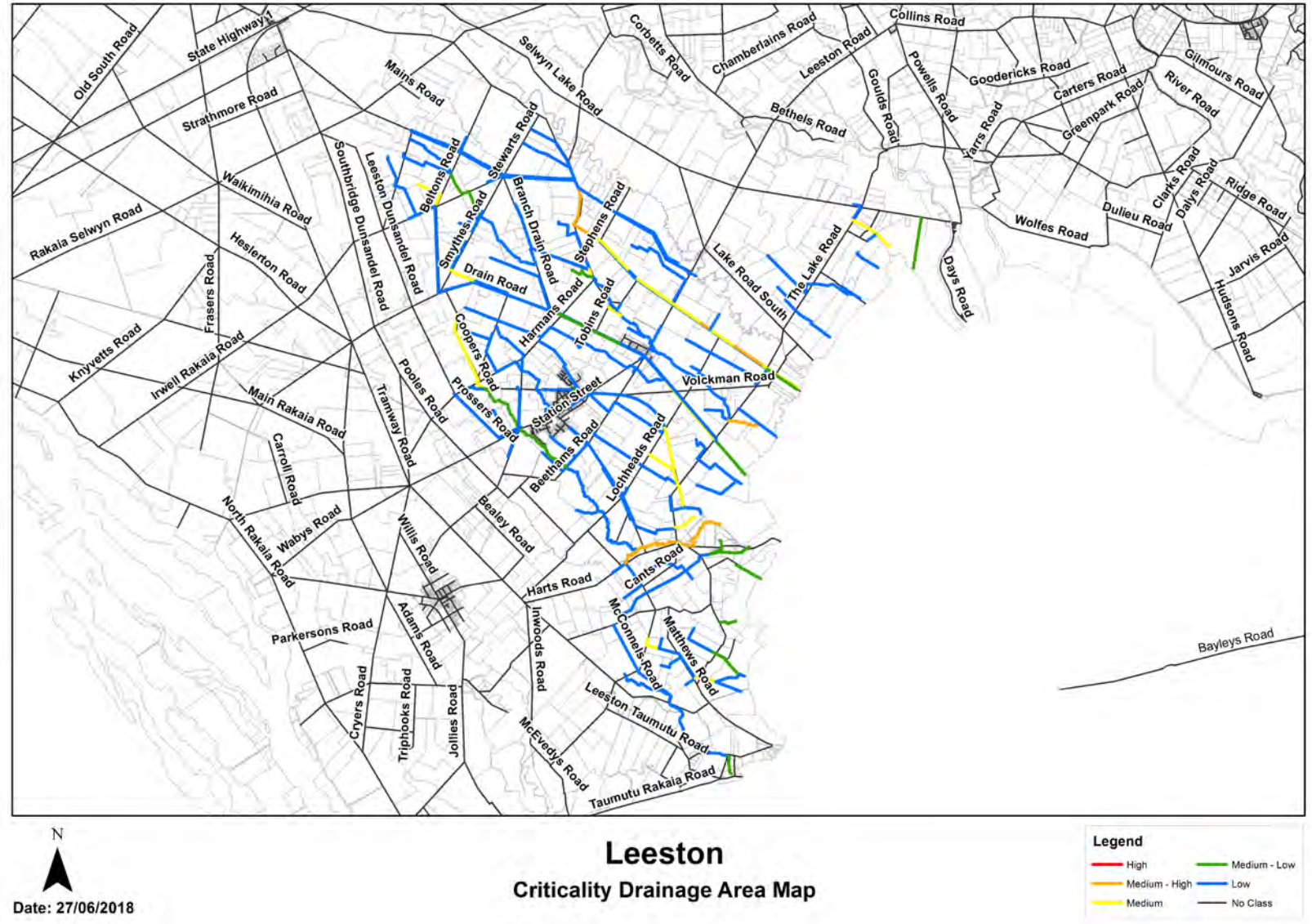

Figure 5-5 Criticality Map

5.12 Asset Condition

The asset condition model was run for Leeston in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

5.13 Funding Program

The 10 year budgets for Leeston are shown by Table 5-8 and Figure 5-7. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 5-7 Leeston Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$70,300			
2019/20	$71,300		$5,000	
2020/21	$71,300			
2021/22	$71,300		$5,000	
2022/2023	$71,300			
2023/2024	$71,300		$5,000	
2024/2025	$71,300			
2025/2026	$71,300			
2026/2027	$71,300		$5,000	
2027/2028	$71,300	$35,000		
Total	$712,000	$35,000	$20,000	

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

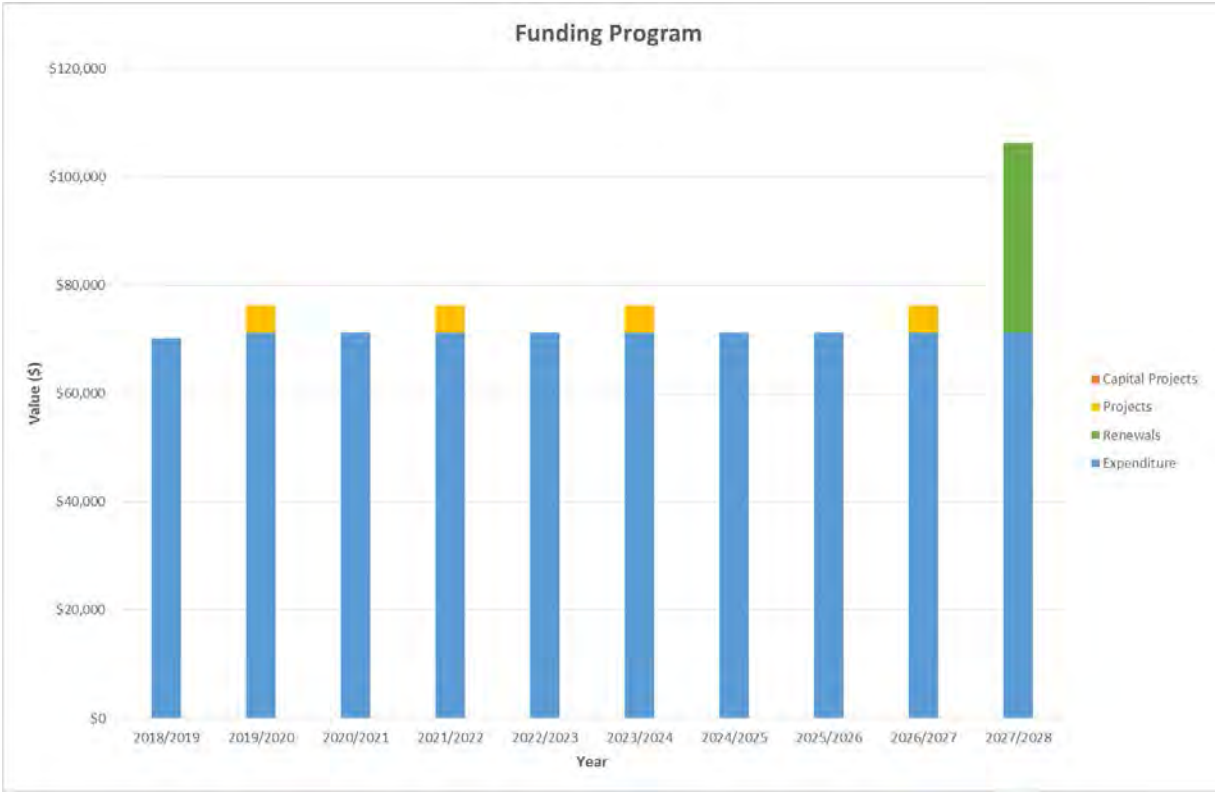

Figure 5-6 Leeston Funding Summary

There is one major project for this scheme.

Table 5-8 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[3]
Projects	4545011	Drop Structures - Hanmer Road		$5,000		$15,000	100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear

[3] Where LoS refers to Level of Service and G refers to Growth

6.0 L2 DRAINAGE DISTRICT

6.1 Scheme Summary

Description		Quantity
Scheme Area		4,755.06 ha
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	76,022
	Pump stations (No.)	None
	Other assets	Pipes, Headwalls
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$7,882,568
	Depreciated Replacement Cost	$7,862,522
Financial	2018/2019 Estimate Annual maintenance cost % of total	$77,500 32.85%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

6.2 Key Issues

The following key issues are associated with the L2 Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 6-1 L2 Drainage District Key Issues

What's the Problem	What we plan to do
Flooding in lower catchment	Continue to monitor. Investigate increased frequency of weed cutting and regular dredging for potential 10 year program.
Increased sediment loading to the catchment from new subdivisions.	Continue to monitor water quality as per stormwater consent conditions and investigate any non-compliances.

Classified drains in urban areas and changing community expectations regarding level of maintenance undertaken.	Council to consider how these drains are managed in the future.

6.3 Overview & History

The L2 drainage scheme has a rating area of 4,755ha, servicing a total area of 6,690ha roughly between Hudson and Powells Roads with drainage outlets for this scheme via the L2 river (enhanced for drainage purposes). The ultimate receiving environment for this area is Te Waihora (Lake Ellesmere).

L1 River

The L1 River becomes a classified drain in the Lincoln township south of South Belt (see maps). The L2 Committee is responsible for maintenance of all classified drains in the scheme. The L1 within the Ryelands reserve has traditionally been hard cleaned by ECan clearing gangs and prison gangs, funded by Council budgets. Areas of the L1 not classified are private land owner responsibility.

L2 River

The L2 starts at the edge of Lincoln township, with spring and water race fed base flows. It also takes stormwater flows from Lincoln and Springston.

Council is creating a number of esplanade strips along the L2 south of Southfield drive. Council are responsible for maintaining vegetation in these esplanade strips.

The L2 relies on a clear river to convey groundwater, spring flows and stormwater away from Lincoln township and arable land along the way via Yarrs Lagoon to Te Waihora / Lake Ellesmere.

In addition to roadside excavator cleaning, the L2 drainage scheme also has a weed cleaning consent. Weed is cut in-river, and trapped in downstream booms installed near the lower end of Wolfes Road. The weed is then removed from the river and stockpiled to dry, being left to compost.

Yarrs Lagoon

Yarrs Lagoon area comprises of an area of approximately 76.9 hectares described as Reserve 3706. Its boundaries were defined by the then Springs County Council Reclamation and Empowering Act of 1915. This Act was promulgated by the former Springs County in 1915 following public pressure from the local community for it take some action to alleviate the flooding of adjacent farmland by the L2 river caused by the nature of the lagoon and the stream at that time. The adjoining Yarrs property was underwater for long periods making it uneconomic and unfarmable while various areas of Yarrs Road were frequently flooded. The purpose of the Act was to “improve the flow of the L2 River through Yarrs lagoon and the drainage of adjoining lands”. Essentially this allows council to manage the lagoon in the way of reclamation, drainage, willow removal etc. Spraying of willows on the drain edge was undertaken in 2012/2013.

Paparua Water Race

Flow from the Paparua water race scheme (from Waimakariri River) flows into the top sections predominantly through soakhole systems to mitigate the potential for didymo (if present) to enter the system of the L2 drainage scheme. This occurs predominantly during the winter period and significantly reduces during the peak summer periods.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

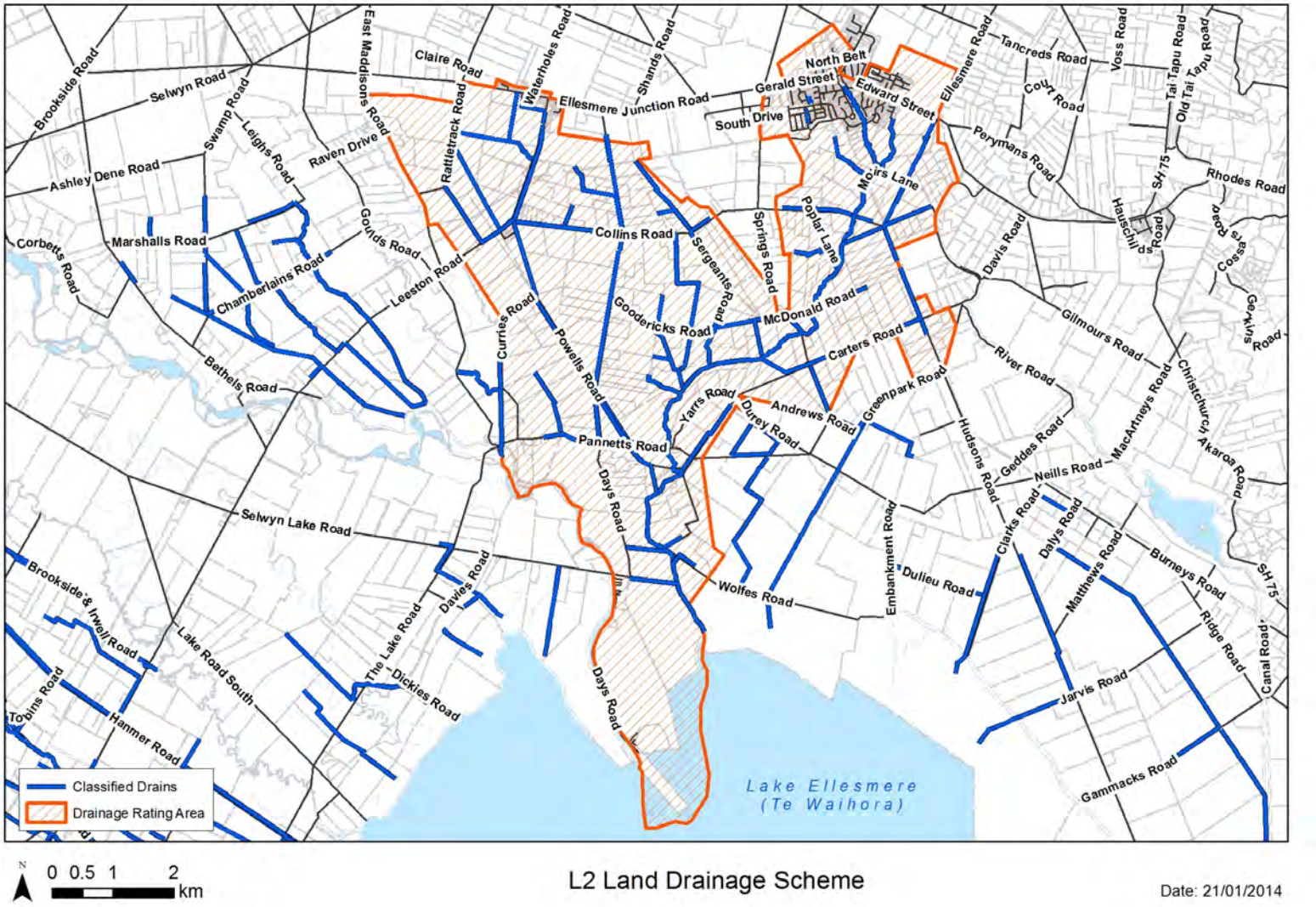

Figure 6-1 Scheme Map

6.4 Resource Consents

Resource consents are held for weed cutting.

Table 6-2 Resource Consents

Consent	Description	Location	Date Issued	Expiry Date	Application Status
CRC000818.1	To erect, reconstruct and use a structure across the LII River, at or about map reference NZMS 260 M36:6565-2180, for the purpose of capturing cut weed.	Lii River, LAKE ELLESMERE	19-Jan-12	19-Nov-34	Issued – Active
CRC000819	To discharge cut weed into Lake Ellesmere/Te Waihora at or about map reference NZMS 260 M36:6624-2001.	Lii River, LAKE ELLESMERE	22-Nov-99	19-Nov-34	Issued - Active

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

The Springs County Council Recalmation and Empowering Act, 1915 empowers the Springs County Council to reclaim parts of Yarr's Lagoon for the purpose of improving the flow of the L2 River through the lagoon.

6.5 Scheme Assets

The L2 river is a largely human modified system. This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

This scheme also has a weed cutting boat which is a diesel powered paddle wheel boat with cutting blades at the front which extend into water in a ‘U’ shape.

A summary of material and diameter for pipes, where known, is shown below in Figure 6-2 and Figure 6-3.

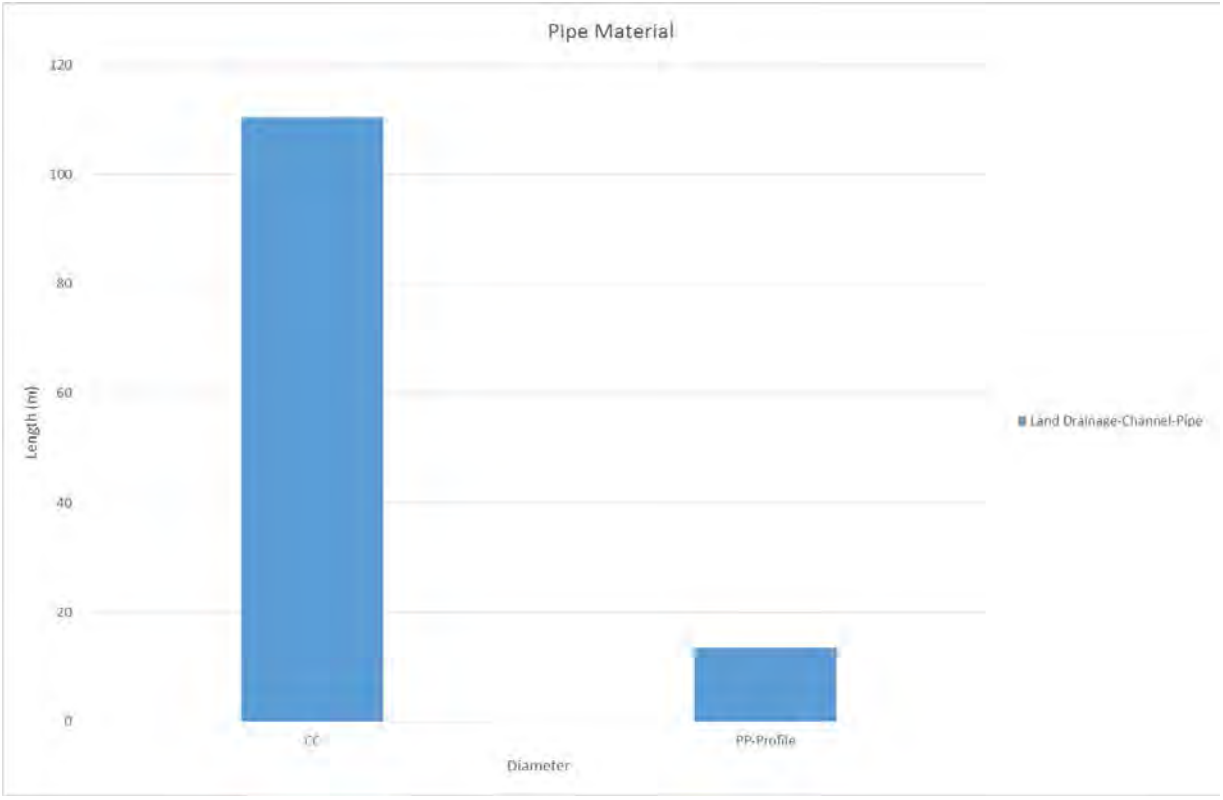

Figure 6-2 Pipe Material – L2

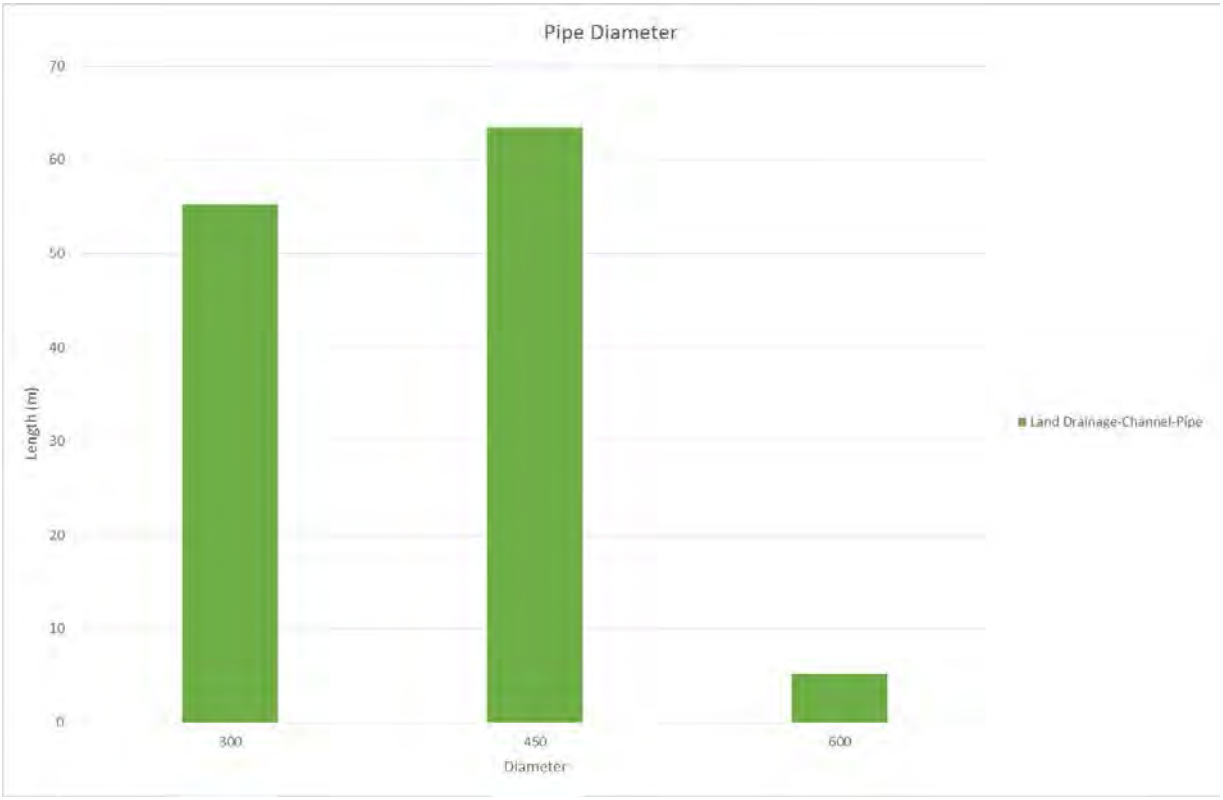

Figure 6-3 Pipe Diameter – L2

6.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

6.7 Photos of Main Assets

Photo 1: L2 looking downstream from Collins Rd

Photo 2: L2 looking downstream from Wolfes Rd

6.8 Risk Assessment

A risk assessment has been undertaken for L2 scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. No high risks have been identified for this scheme.

6.9 Asset Valuation Details

The total replacement value of assets within the L2 Drainage Scheme is $7,882,568 with further details in Table 6-3 below. The majority of value, 98%, is made up of channels.

Table 6-3 Replacement Value, L2

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$7,877,428
	Feature	$5,140

Channels are broken down into drains, pipes and stock banks. The L2 Land drainage district is made up of classified drains, pipes and headwalls.

6.10 Renewals

The renewal profile has been taken from the 2017 5 Waters Valuation. A graph showing the renewals for this scheme are shown by Figure 6-4 below. The assets requiring renewal are pipes and headwalls which occur in the year 2032/33.

Figure 6-4 L2 River Renewal Profile

6.11 Critical Assets

The criticality model for the L2 has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 6-4 and Figure 6-5 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 6-4 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	54,966
4	Medium-Low	3,569
3	Medium	15,122
2	Medium-High	2,845
1	High	0

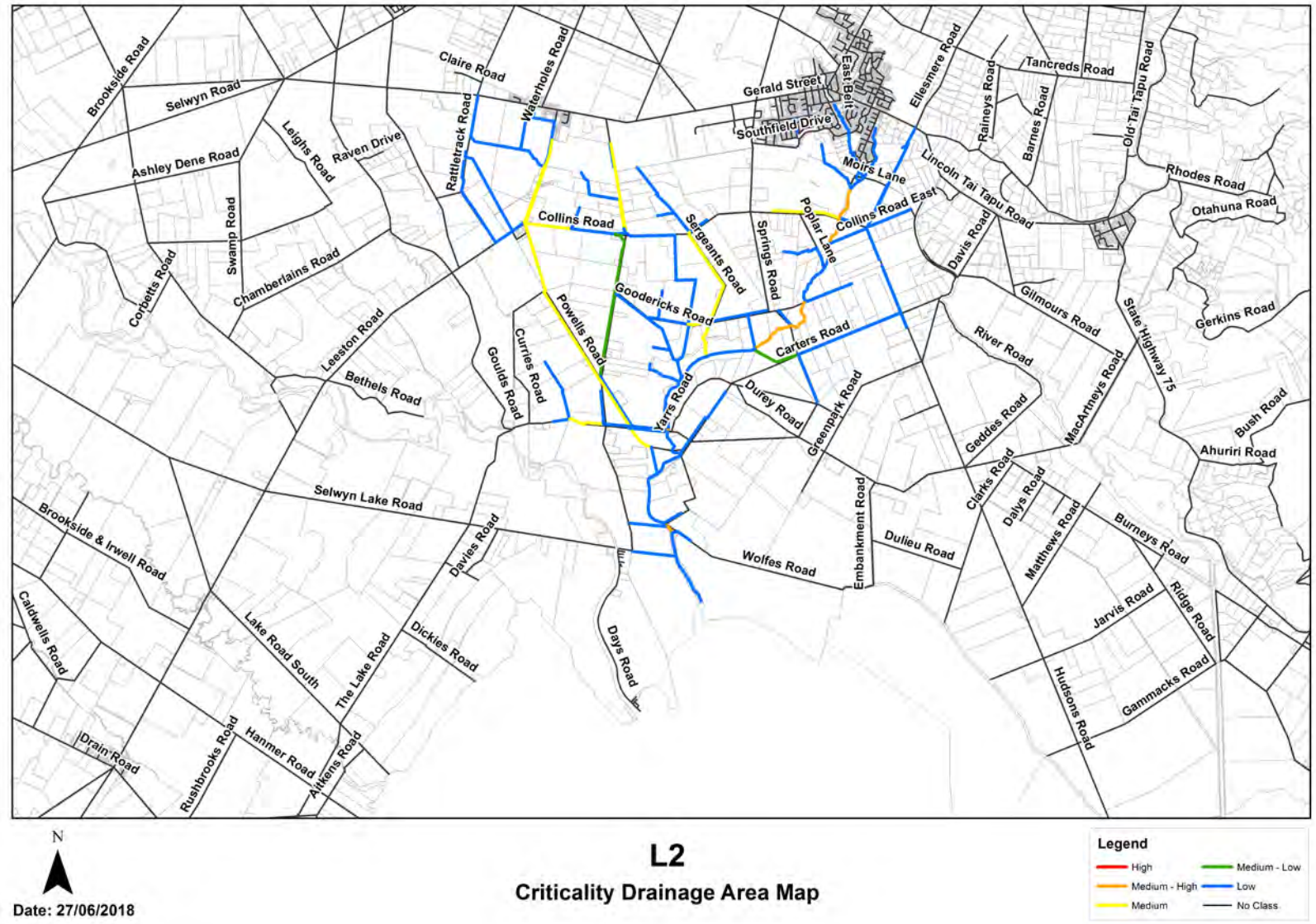

Figure 6-5 Criticality Map

6.12 Asset Condition

The asset condition model was run for the L2 drainage district in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

6.13 Funding Program

The 10 year budgets for L2 River District are shown by Table 6-6 and Figure 6-7. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 6-5 L2 River Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$77,500			
2019/20	$62,500		$2,000	
2020/21	$60,500			
2021/22	$60,500			
2022/2023	$60,500		$2,000	
2023/2024	$60,500			
2024/2025	$60,500			
2025/2026	$60,500		$2,000	
2026/2027	$60,500			
2027/2028	$60,500			
Total	$624,000		$6,000	

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

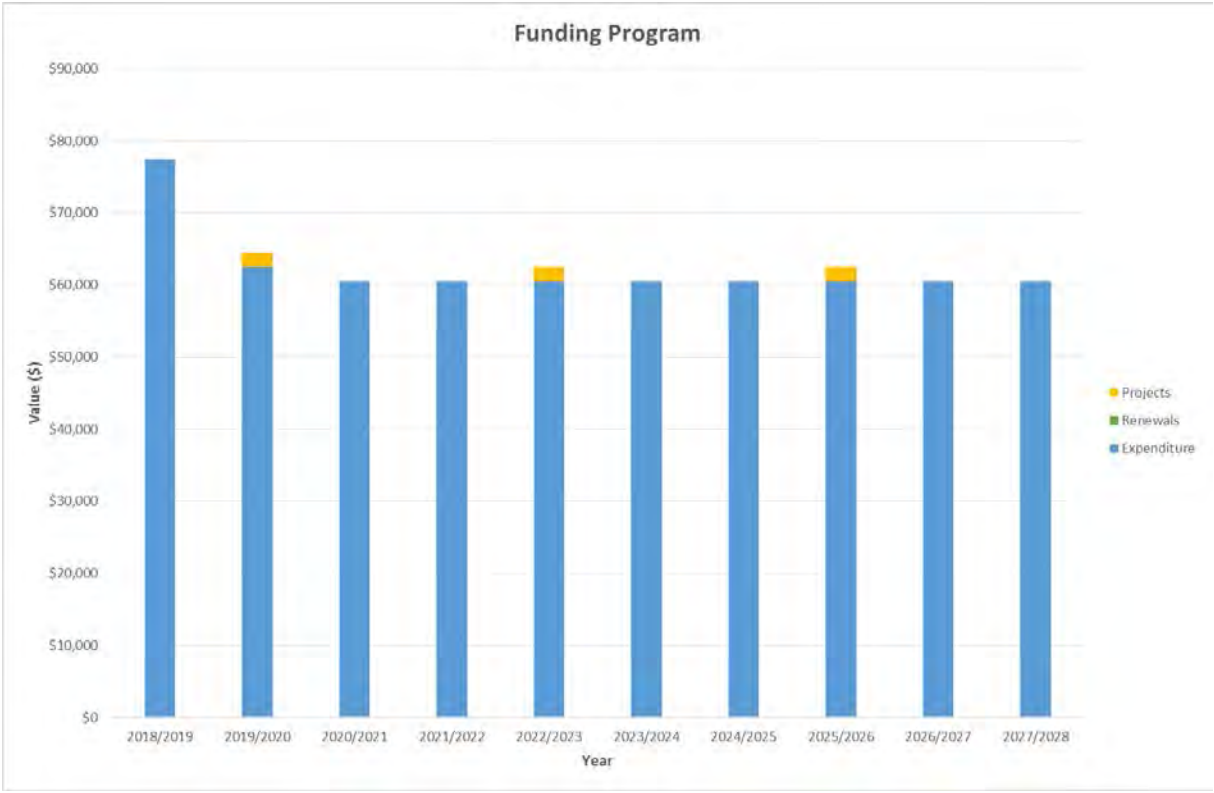

Figure 6-6 L2 River Funding Summary

There is one major project for L2 drainage district in the LTP budget.

Table 6-6 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[4]
Projects	4549010	Engineering inspection of Weed Boat		$2,000		$ 4,000	100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear.

[4] Where LoS refers to Level of Service and G refers to Growth

7.0 OSBORNE DRAINAGE DISTRICT

7.1 Scheme Summary

Description		Quantity
Scheme Area		1,791.77 ha
Scheme Coverage (as at 1 June 2017)	Total Rated Area (ha)	
	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	10,252
	Pump stations (No.)	1
	Other assets	Rock sediment and aeration bunds
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$2,518,743
	Depreciated Replacement Cost	$2,411,718
Financial	2018/2019 Estimate Annual maintenance cost % of total	$34,660 14.69%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

7.2 Key Issues

The following key issues are associated with the Osborne Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 7-1 Osbornes Drainage District Key Issues

What's the Problem	What we plan to do
Council's reliance on volunteers (Committee Members) to operate Council Assets and ensuring their health and safety.	Continued communication with Committee members regarding any issues or concerns.
Changing expectations of stakeholders regarding water quality discharge.	Council to continue to monitor water quality and impact of physical works undertaken as part of the Osborne Working Party
Aging infrastructure and potential costs associated with pump upgrades and renewals.	Budget for future upgrade works. Continue to strive to manage operational costs.

7.3 Overview & History

The Osbornes scheme has a rating area of 1790ha, servicing a total area of 1620ha between Halswell Cannel and Hudson Roads with the main drainage outlets for this scheme via the Osbornes Pump Station. The ultimate receiving environment for this area is Te Waihora (Lake Ellesmere).

Total length of classified drains is 9km.

Below is a summary of the drainage schemes history taken from the publication 'Osbornes Drain and Pumping Scheme – An Evaluation' July 1989

1868	Regular lake openings began
1889	Halswell Canal constructed
****	Drain re-routed through stone-faced bank direct to the lake
1955	Double, manually operated flood gate installed within stop bank
1962/63	Osbornes Pump Scheme initiated by North Canterbury Catchment Board
1967/68	Scheme constructed under supervision of the Ellesmere County Council
1968	First pump reading was taken late May 1968

Prior to European settlement most of the area was a shallow bay covered by the high levels of Te Waihora (Lake Ellesmere). The land drain running through the catchment (Osbornes drain) originally flowed into the Halswell Canal via a wooden floodgate in the stone face bank. Improvements in the Halswell drainage system keep the canal levels high so the drain was rerouted through the stone face bank directly to the Lake. In 1955 a double, manually operated, floodgate was installed.

The upgrade of this land drainage scheme was initiated by the then North Canterbury Catchment Board in 1962/63 and was constructed under the supervision of the then Ellesmere County Council. The scheme provided for two pumps with a combined capacity of approximately 1.7 cumecs designed to cope with all floodwaters, except under extreme rainfall. The main canal is designed to act as a ponding area. From an economic return perspective the capital works had a return on investment of 3 years. However this did not consider the impact of drainage water on lake health and cultural impact.

On 24 Feburary 2017 a discharge consent for Osbornes Drain was granted. This is the outcome of collaborative working party.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

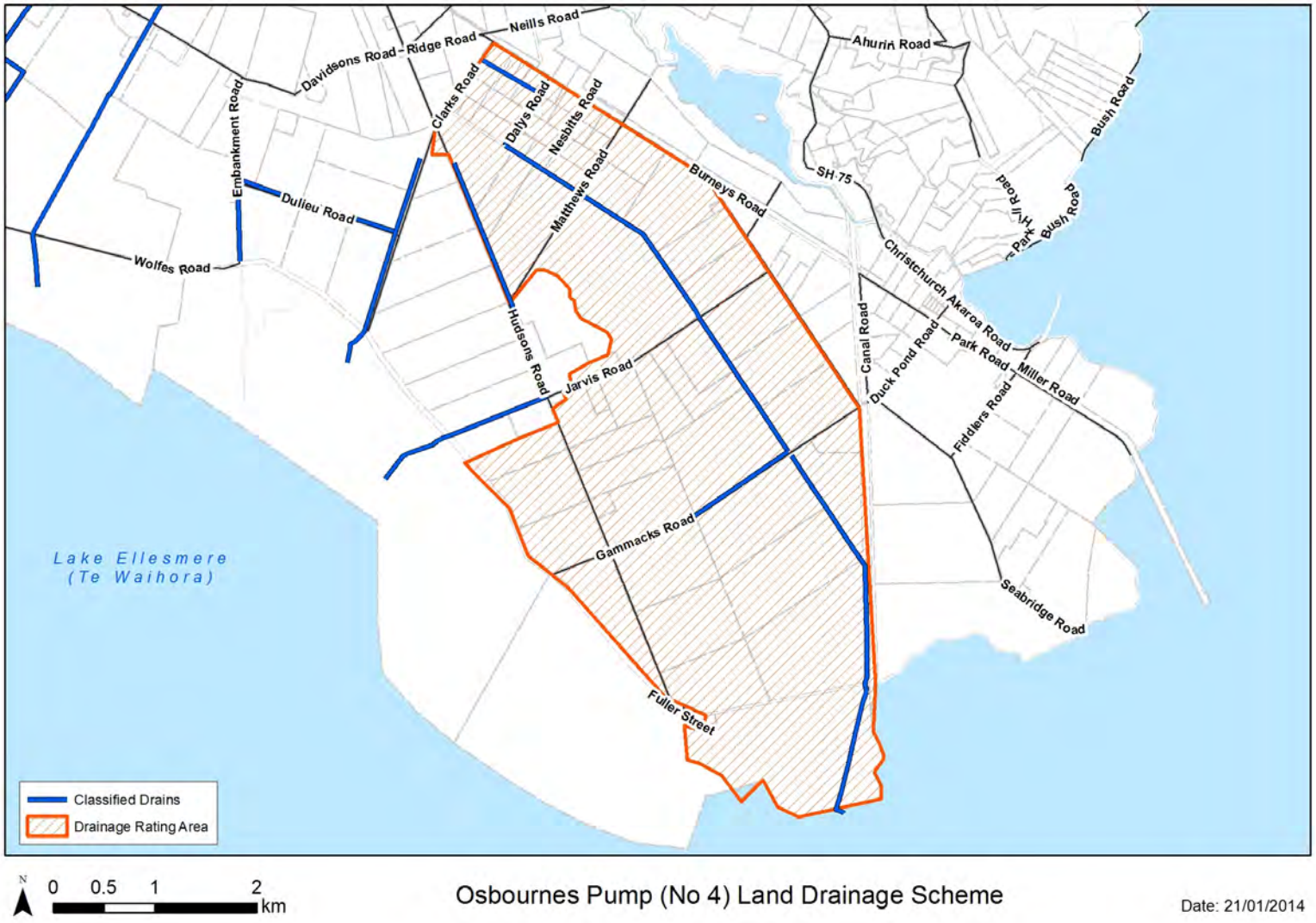

Figure 7-1 Scheme Map

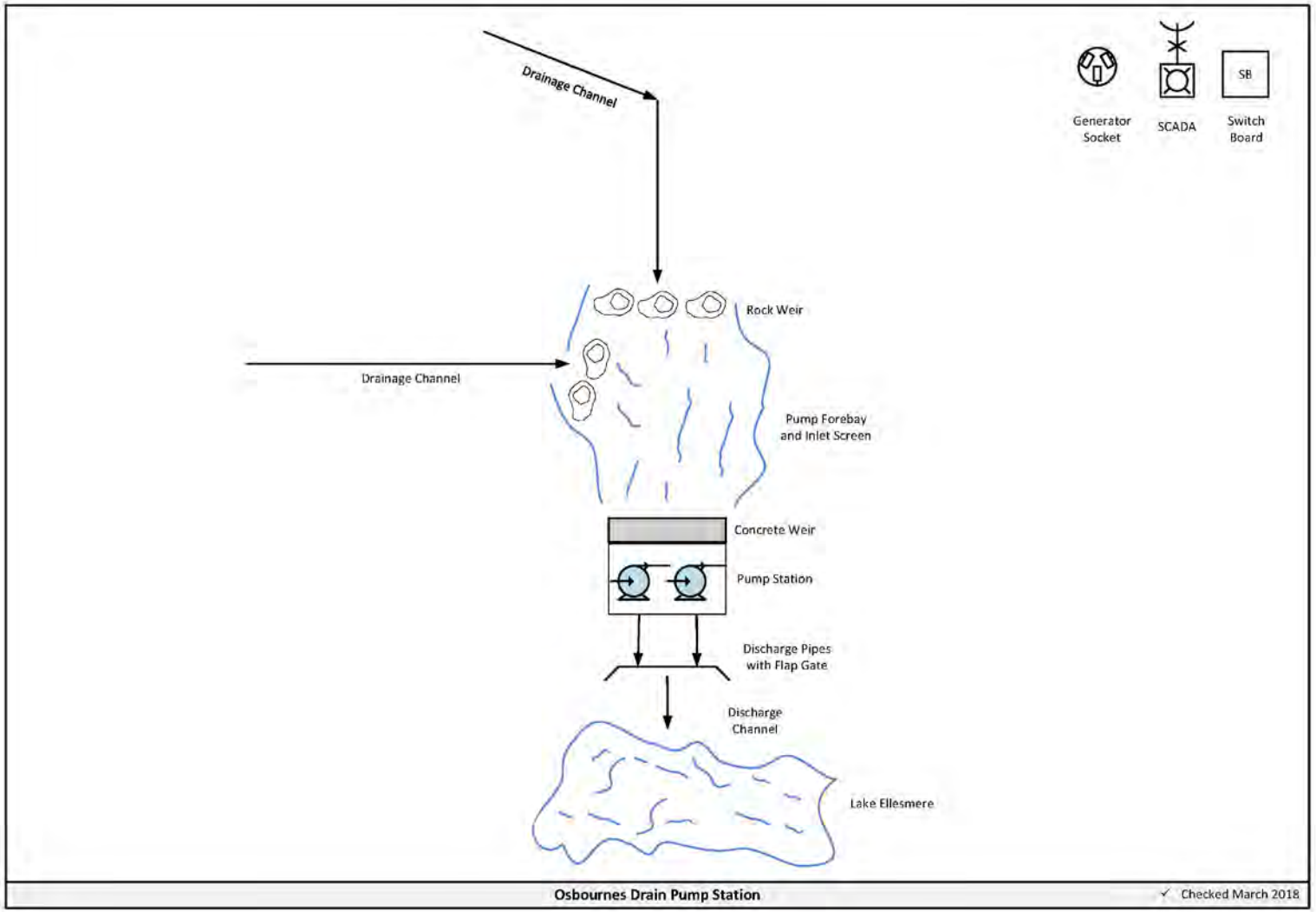

Figure 7-2 Scheme Schematic

7.4 Resource Consents

Table 7-2 outlines the resource consents for this scheme.

Table 7-2 Resource Consents

Consent	Description	Location	Date Issued	Expiry Date	Application Status
CRC172230	To excavate material and distrurb the bed and banks of a surface water body.	Osbornes Drain, Motukarara	24/02/2017	24/02/2027	Issued - Active
CRC172231	To discharge water that may contain contaminants into Osbornes Drain	Osbornes Drain, Motukarara	24/02/2017	24/02/2027	Issued - Active

7.5 Scheme Assets

This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

No summary of material and diameter of these channels is available for this scheme.

7.5.1 Pump Station

The pumping hours change substantially over the year. Figure 7-3 shows the amount of pumping hours required in 2014.

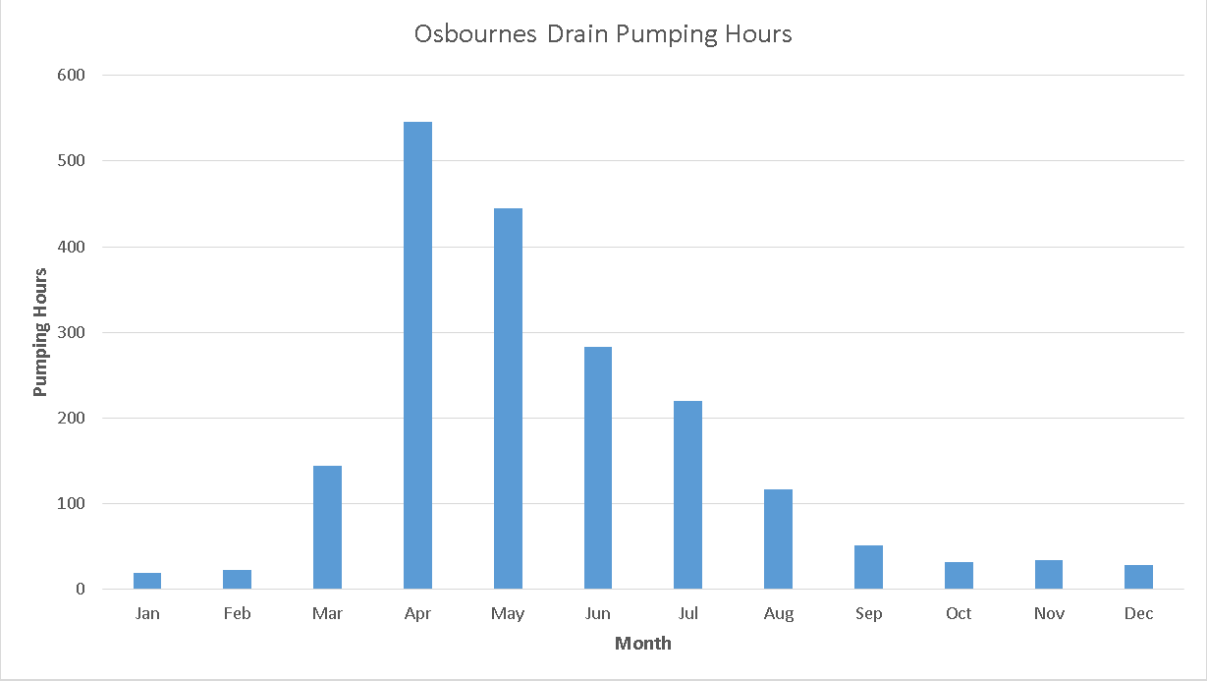

Figure 7-3 Pumping Hours

A new switchboard was installed in 2013 enabling the pumpstation to be connected to SCADA. Text alerts are received by the drainage committee. The Drainage committee is comprised of landowners in the area. Several monitor any increase in drain water levels that would indicate pump failure/power outages etc.

7.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors. The Osborne's Drain Pumpstation is managed by the Osborne's Land Drainage Committee supported by specialist contractors as required.

7.7 Photos of Main Assets

Photo 1: Osbornes Pump Shed – Intake

Photo 2: Osbornes Pumpshed - Outlet

Photo 3: Main Channel

7.8 Risk Assessment

A risk assessment has been undertaken for the Osbornes Drain scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. Table 7-3 details the risk priority rating, Table 7-4 outlines the risks for this scheme and Table 7-8 details the key projects.

Table 7-3 Risk Priority Rating

Risk Score	Level of Risk	Risk Response
> 50	Extreme	Awareness of the event to be reported to Council. Urgent action to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

35-50	Very High	Risk to be eliminated / mitigated / managed through normal business planning processes with responsibility assigned.
14-35	High	Manage risk using routine procedures.
3.5-14	Moderate	Monitor the risk.
< 3.5	Low	Awareness of the event to be reported to Council. Immediate action required to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

Table 7-4 Risks – Osbornes Drain

Risk	Action/Project	Year Identified	2014 Risk Rating	2017 Risk Rating	Residual Risk Rating
Pump failure due to age	Pump renewal	2017		4	0.7
Pump failure due to age	Pump renewal design	2017		4	0.7
Water quality does not meet aspirations of key stakeholders	Water quality improvements	2014	27	27	27

The list of district wide risks can be found in 5Waters Activity Management Plan: Volume 1.

7.9 Asset Valuation Details

The total replacement value of assets within the Osborne Drainage Scheme is $2,518,743 with further details in Table 7-5 below. The majority of value, 99%, is made up of channels.

Table 7-5 Replacement Value, Osborne Drainage District

Asset Class 1	Asset Class 2	Sum of Replacement Value
Plant and Equipment		$213,866
Land Drainage	Channel	$2,283,559
	Feature	$21,318

Channels are broken down into drains, pipes and stock banks. The Osbornes Drain Land drainage district is made up of classified drains.

7.10 Renewals

The renewal profile has been taken from the 2018 5 Waters Valuation. A graph showing the renewals for this scheme are shown by Figure 7-4 below. The majority of assets requiring renewal of pumps which in the period 2018-20.

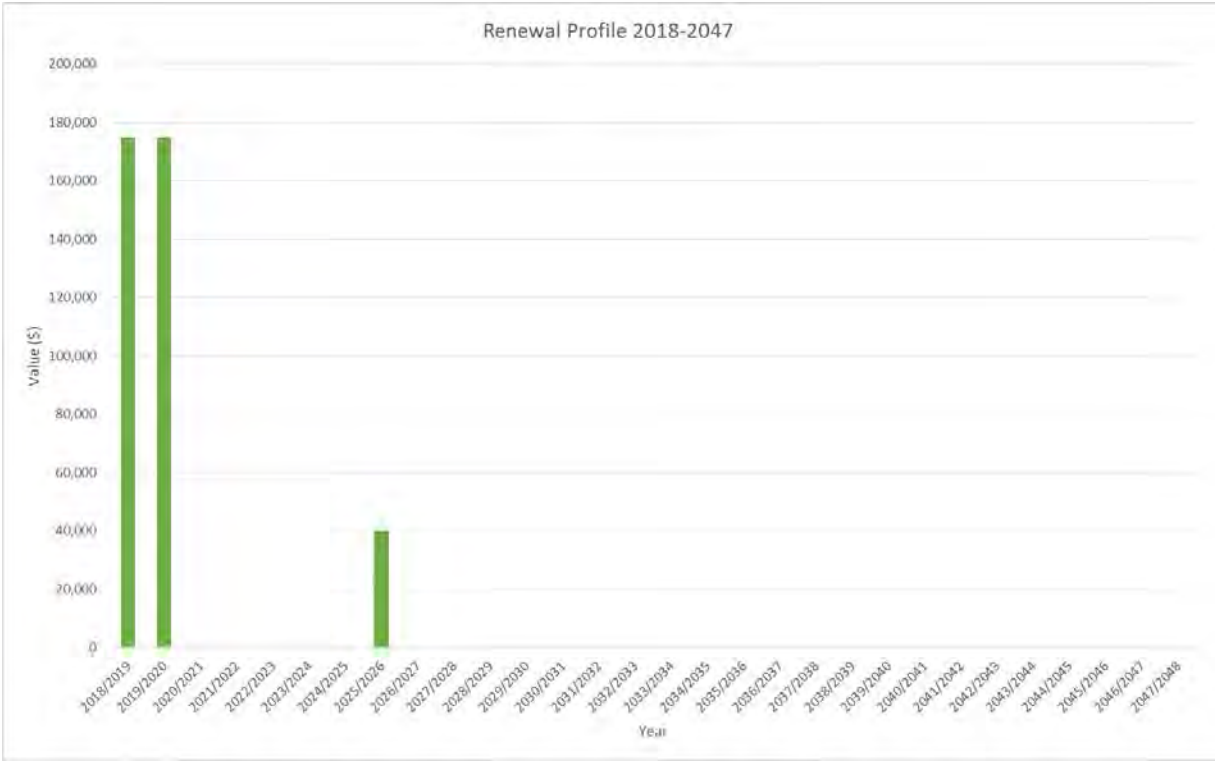

Figure 7-4 Osbornes Drain Renewal Profile

7.11 Critical Assets

The criticality model for Osbornes Drain has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 7-6 and Figure 7-5 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 7-6 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	6538
4	Medium-Low	0
3	Medium	1327
2	Medium-High	2490
1	High	0

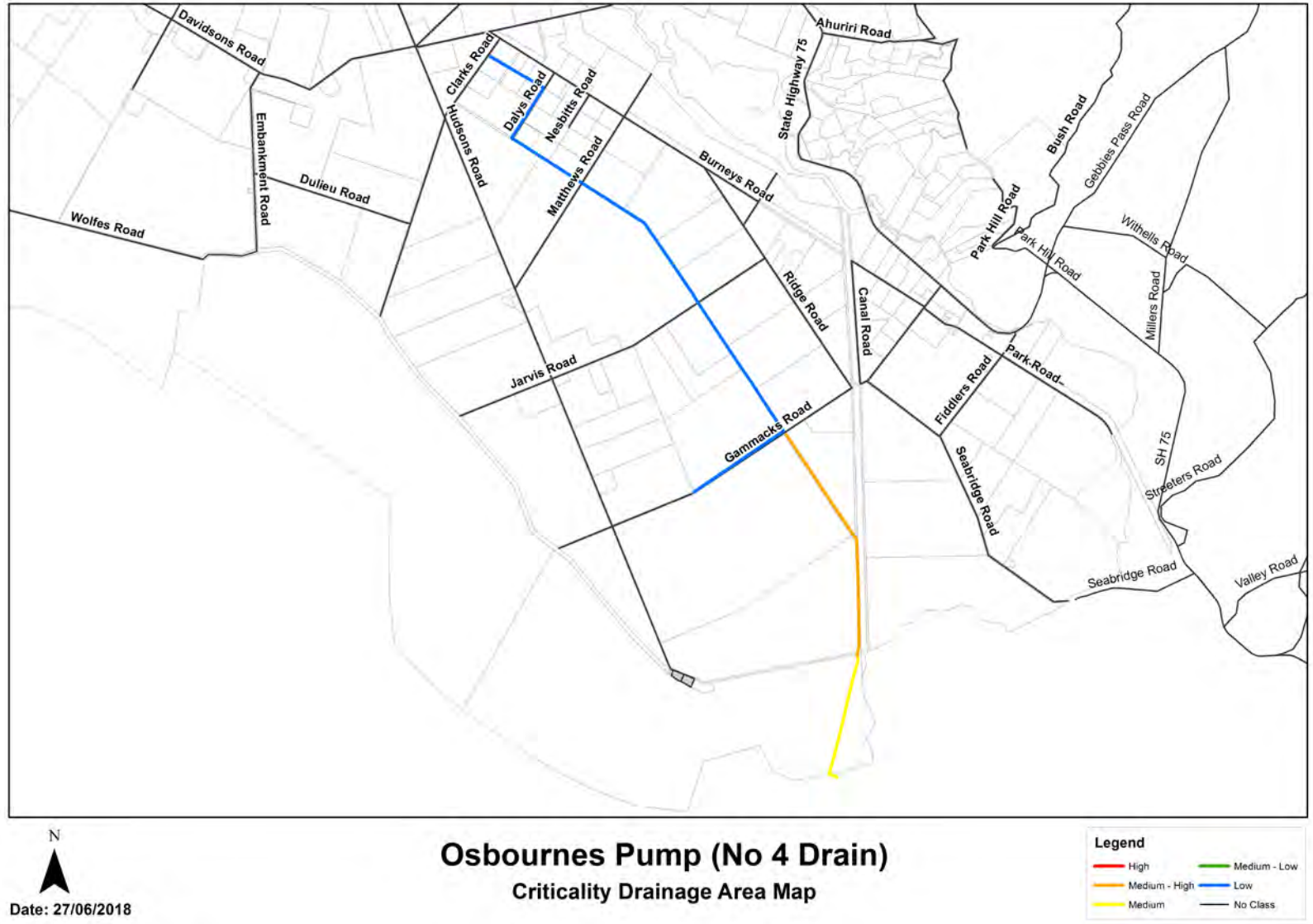

Figure 7-5 Criticality Map

7.12 Asset Condition

The asset condition model was run for Osbornes Drain in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

7.13 Funding Program

The 10 year budgets for Osbornes Drain are shown by Table 7-7 and Figure 7-6. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 7-7 Osbornes Drain Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$34,660	$175,000	$5,000	$5,000
2019/20	$32,660	$175,000		$20,000
2020/21	$31,660			
2021/22	$29,660		$5,000	
2022/2023	$29,660			
2023/2024	$29,660			$100,000
2024/2025	$29,660		$5,000	
2025/2026	$29,660	$40,000		
2026/2027	$29,660			
2027/2028	$29,660		$5,000	
Total	$306,600	$390,000	$20,000	$125,000

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

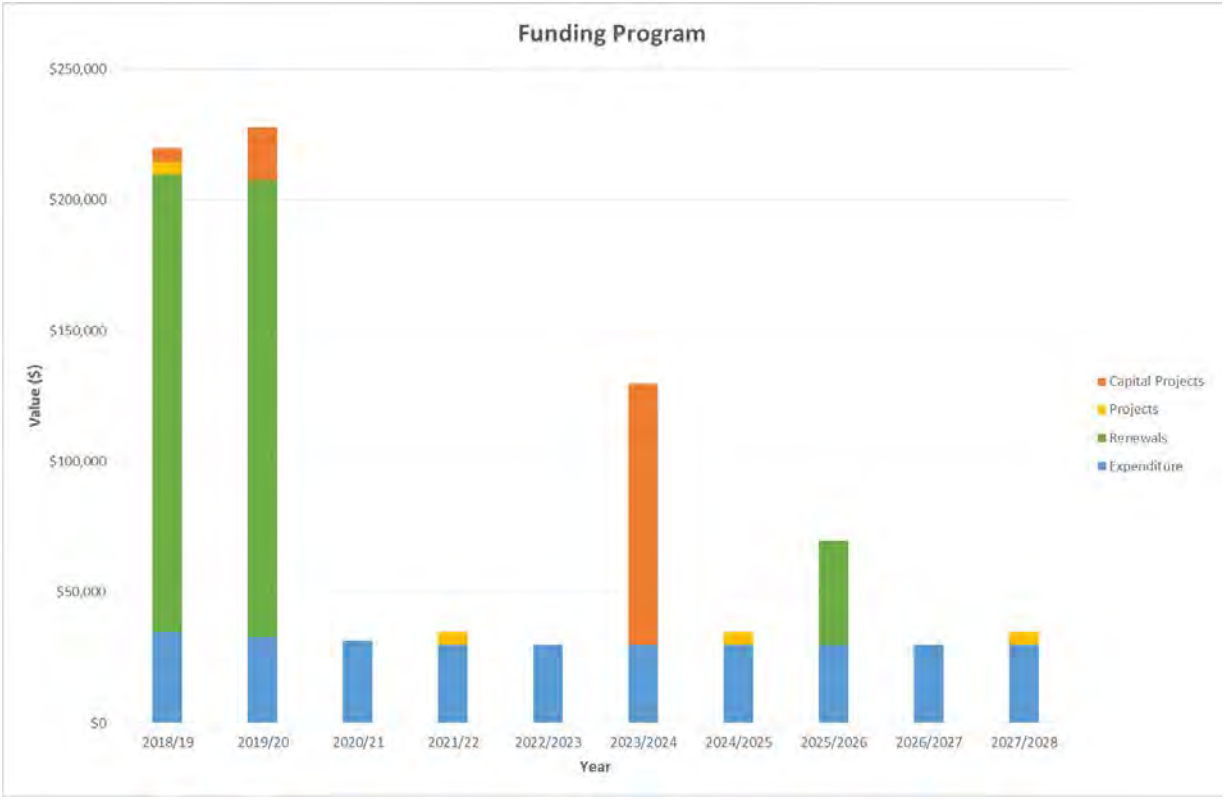

Figure 7-6 Osbornes Drain Funding Summary

There is one major project for the Osborne drainage district in the LTP budget.

Table 7-8 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[5]
Projects	4553014	Restoration plan	$5,000			$15,000	100% LoS
Capital Projects	455390006	WQ Improvements	$5,000	$20,000		$100,000	100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear.

[5] Where LoS refers to Level of Service and G refers to Growth

8.0 TAUMUTU DRAINAGE DISTRICT

8.1 Scheme Summary

Description		Quantity
Scheme Area		653.60 ha
Scheme Coverage (as at 1 June 2017)	Total Rated Area (ha)	
	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	10436.70
	Pump stations (No.)	None
	Other assets	Pipes, Headwalls
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$1,459,992
	Depreciated Replacement Cost	1,427,172
Financial	2018/2019 Estimate Annual maintenance cost % of total	$6,970 2.95%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

8.2 Key Issues

The following key issues are associated with the Taumutu Drainage District. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 8-1 Taumutu Drainage District Key Issues

What's the Problem	What we plan to do
Continued erosion of redundant SDC outfall structure at the Salmon Farm.	Continue to inspect annually (SDC staff) and undertake any physical works to make structure safe. Isolate location minimises risk to the public.
Coastal migration inland and continued erosion of outfall structures.	Annual inspections by SDC staff to continue.

8.3 Overview & History

The Taumutu scheme has a rating area of 655ha, servicing a total area of 8,780ha between Leeston Taumutu and Smiths Roads. The ultimate receiving environment for this area is the Pacific Ocean.

The Taumutu Drainage District is divided into two distinct parts - Taumutu Drains and Taumutu Culverts. Information about Taumutu Culverts can be found in 9.0 Taumutu Culverts.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

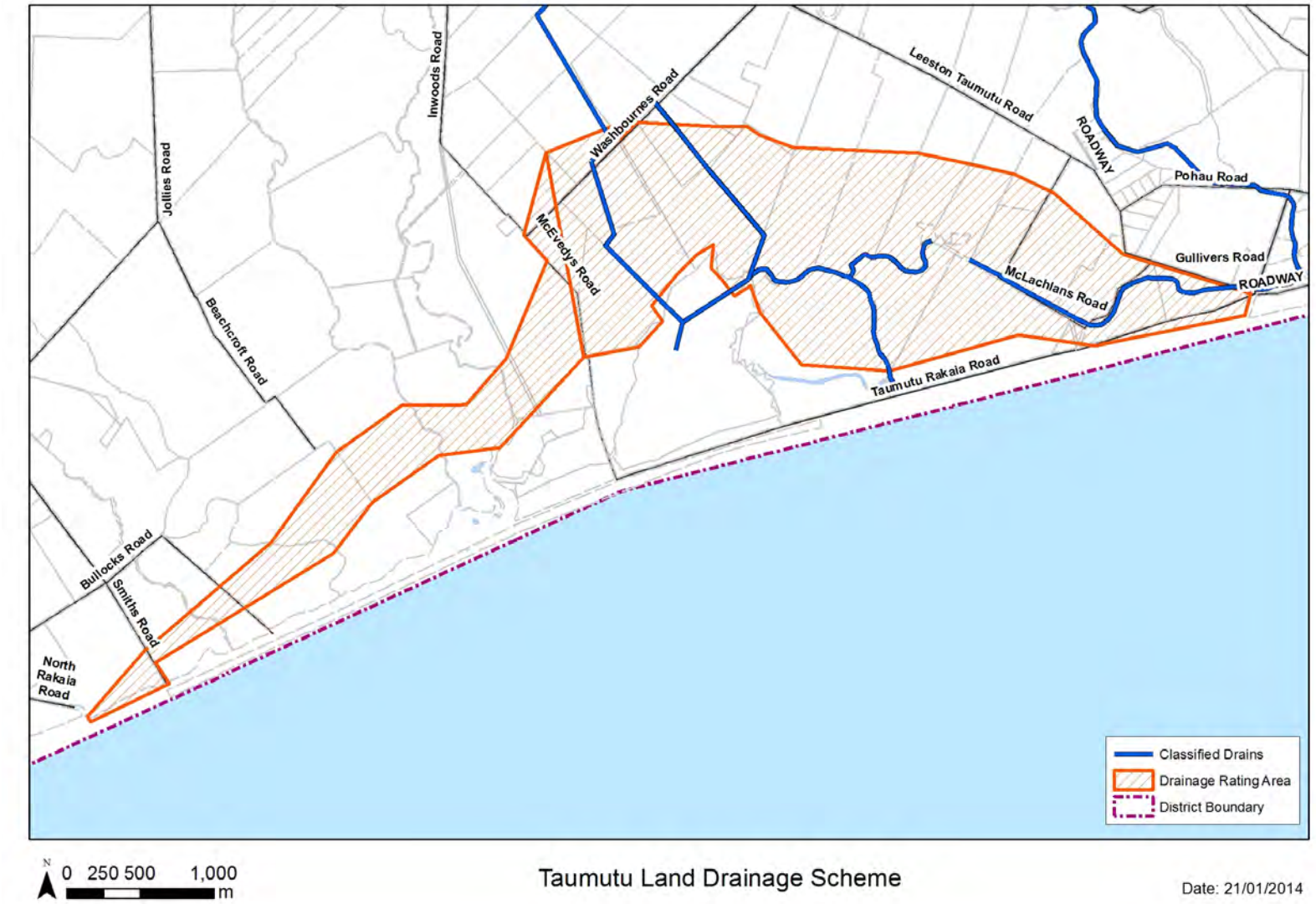

Figure 8-1 Scheme Map

8.4 Resource Consents

A resource consent is held to divert water from Coopers drain.

Table 8-2 Resource Consents

Consent	Description	Location	Date Issued	Expiry Date	Application Status
CRC916349	To divert water from Coopers Lagoon, at or about map reference M37:556-043, via an open channel to a channel leading to the No 4 outfall to maintain the static level of Coopers Lagoon.	Coopers Lagoon, SEDGEMERE	6-May-93	30-Apr-28	Issued - Active

The occupation of the culverts in coastal marine area is a permitted activity as per Environment Canterbury letter dated 10th November 2010.

In addition, the follow agreement applies:

Table 8-3 Resource Consent Agreement

Agreement	Description	Date Issued
Drainage Easement Agreement, Muriwai (Coopers Lagoon)	The easement makes provision for the maintenance of McEvedy's Culvert, including extension or relocation from time to time	Jul-01

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

8.5 Scheme Assets

This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

No summary of material and diameter of these channels is available for this scheme.

8.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

8.7 Photos of Main Assets

Photo 1: Land Drainage channel looking towards the lake

8.8 Risk Assessment

A risk assessment has been undertaken for the Taumutu scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. No high risks have been identified for this scheme.

8.9 Asset Valuation Details

The total replacement value of assets within the Taumutu Land Drainage Scheme is $1,459,992 with further details in Table 8-4 below. The majority of value, 99%, is made up of channels.

Table 8-4 Replacement Value, Taumutu

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$1,414,325
	Feature	$45,667

Channels are broken down into drains, pipes and stock banks. The Taumutu Land drainage district is made up of classified drains.

8.10 Renewals

The renewal profile has been taken from the 2018 5 Waters Valuation. There are some renewals in 2026/27.

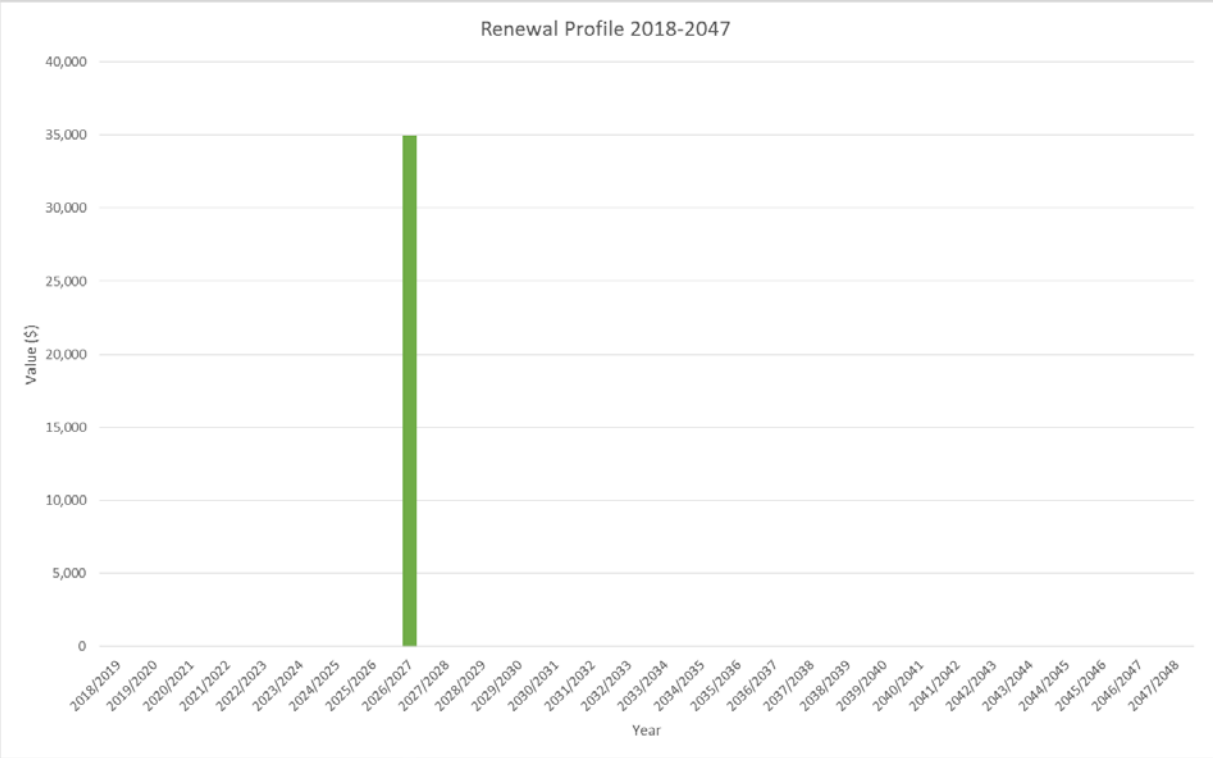

Figure 8-2 Taumutu Renewal Profile

8.11 Critical Assets

The criticality model for Taumutu Drainage District has been updated for the 2018 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 8-5 and Figure 8-3 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 8-5 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	3,274
4	Medium-Low	1,654
3	Medium	2,778
2	Medium-High	2,647
1	High	0

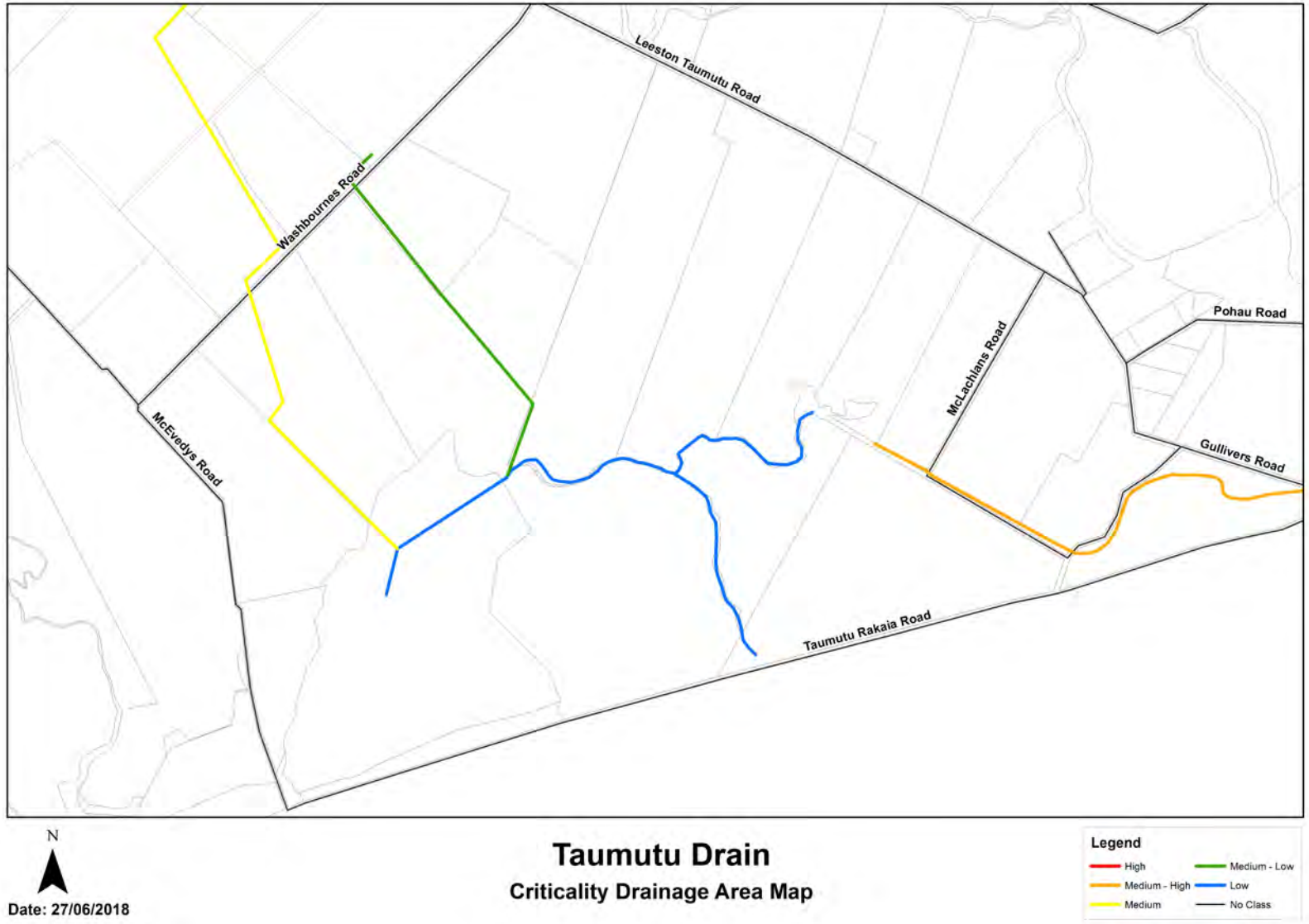

Figure 8-3 Criticality Map

8.12 Asset Condition

The asset condition model was run for the Taumutu drainage district in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

8.13 Funding Program

The 10 year budgets for Taumutu District are shown by Table 8-7 and Figure 8-5. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 8-6 Taumutu Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$6,970			
2019/20	$5,970			
2020/21	$4,970			
2021/22	$4,270			
2022/2023	$4,270			
2023/2024	$4,270			
2024/2025	$4,270			
2025/2026	$4,270			
2026/2027	$4,270	$35,000		
2027/2028	$4,270			
Total	$47,800	$35,000		

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

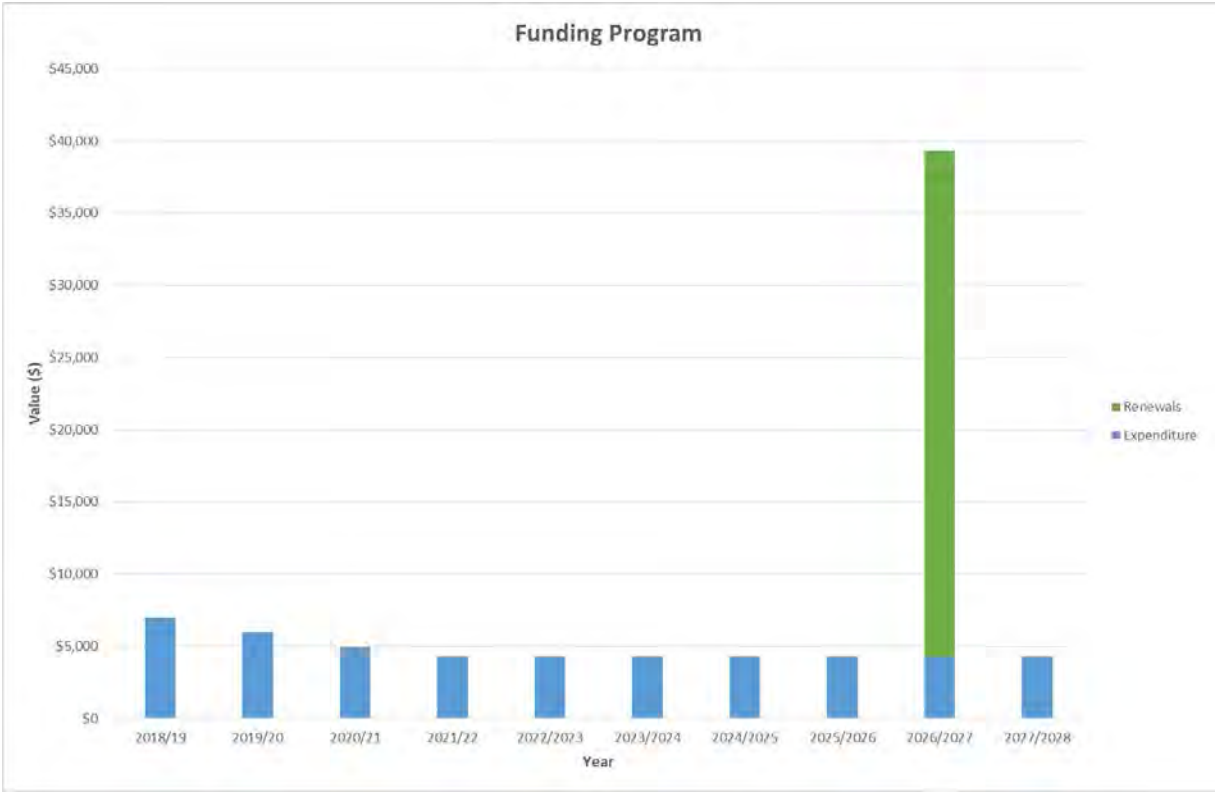

Figure 8-4 Taumutu Funding Summary

There are no major projects for Taumutu Drainage District in the LTP budget. The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

9.0 TAUMUTU CULVERTS

9.1 Scheme Summary

Description		Quantity
Scheme Area		Not Applicable
Scheme Coverage - Capital value (as at 1 June 2017)	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	-
	Pump stations (No.)	None
	Other assets	None
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$104,919
	Depreciated Replacement Cost	$44,596
Financial	2018/2019 Estimate Annual maintenance cost % of total	$5,600 2.37%
Drainage Outlet	Ultimate discharge point	Te Waihora (Lake Ellesmere)
Sustainability	Sustainable drain management practices	Adopted and Encouraged

9.2 Key Issues

The following key issues are associated with the Taumutu Culverts. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 9-1 Taumutu Culverts Key Issues

What's the Problem	What we plan to do
Maintenance of culverts due to sea damage and receding coastline.	Engineering inspections along with capital work program in conjunction with committee.

9.3 Overview & History

The Taumutu culverts were installed in the early 1900's, these are:

- Whites Culvert (Rakaia No 1)
- McEvedys Culvert (Rakaia No 2)
- Coopers Culvert (Rakaia No 3)
- Forsythe's Culvert (Rakaia No 4)

Council undertook repairs to the Forsythe's Culvert in 2010 to concrete cap the culvert. The works cost $33,300.

Repairs to the Coopers Culvert was undertaken in 2014 and cost $120,993.

The Salmon farm (NZ King Salmon) maintain a culvert they own adjacent to Councils culverts at McEvedy's. NZ King Salmon have invested significantly in maintenance of the Culvert since it was installed. Council's adjacent culvert is used periodically as an alternative to the Salmon Farm culvert that services both them and other rate payers in the scheme. Council and the Salmon farm are discussing funding of the maintenance of these culverts.

Works on these culverts in the marine environment requires significant planning. Culverts shall be visited at low tide and a low height low tide should be used for planned maintenance works. The environment is high risk and the necessary health and safety plans are required for all works in this area. Southerly swells can prevent work even at low tide.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

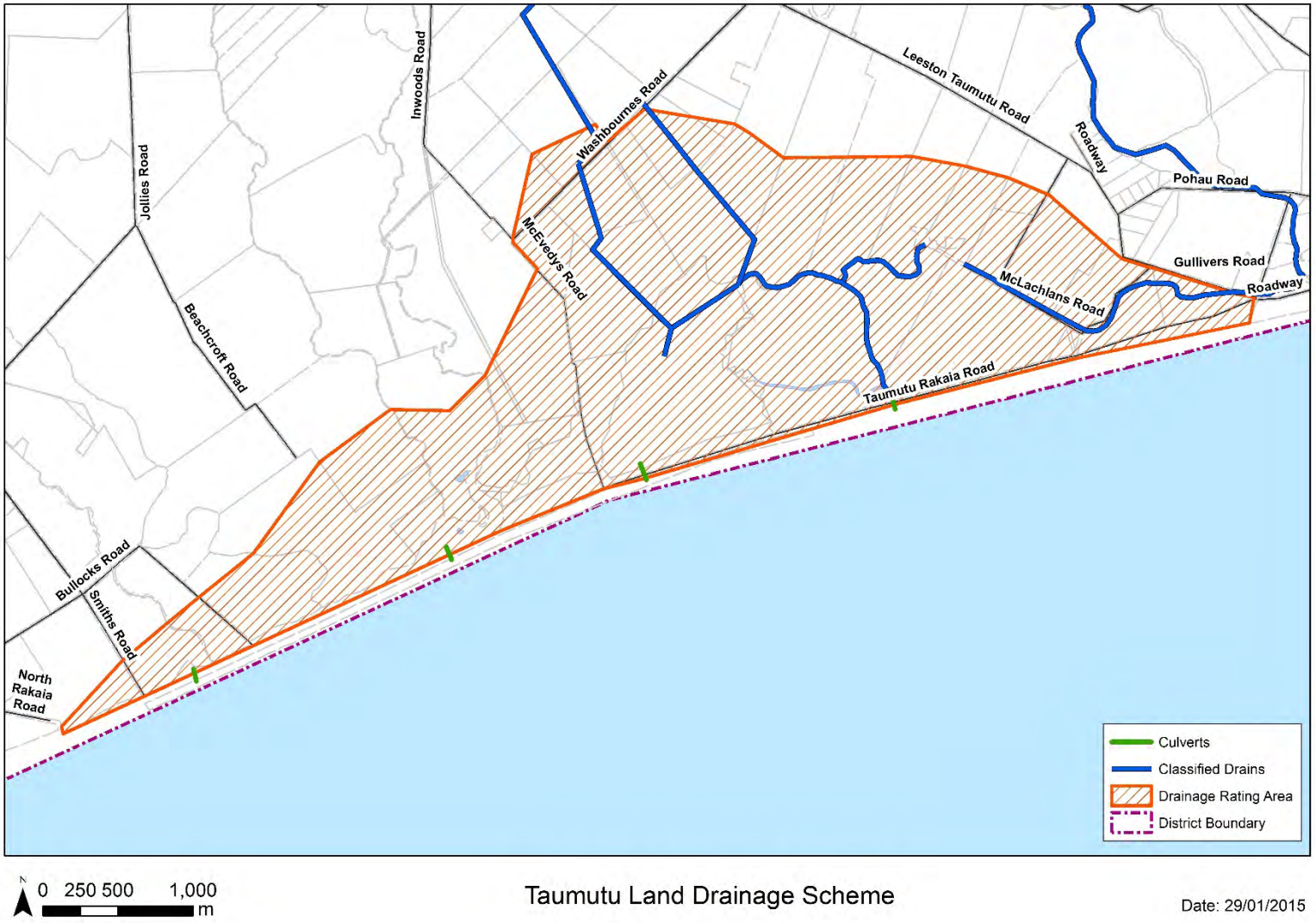

Figure 9-1 Scheme Map

9.4 Resource Consents

A resource consent is held to divert water from Coopers drain.

Table 9-2 Resource Consents

Consent	Description	Location	Date Issued	Expiry Date	Application Status
CRC916349	To divert water from Coopers Lagoon, at or about map reference M37:556-043, via an open channel to a channel leading to the No 4 outfall to maintain the static level of Coopers Lagoon.	Coopers Lagoon, SEDGEMERE	6-May-93	30-Apr-28	Issued - Active

The occupation of the culverts in coastal marine area is a permitted activity as per Environment Canterbury letter dated 10th November 2010.

In addition, the follow agreement applies:

Table 9-3 Resource Consent Agreement

Agreement	Description	Date Issued
Drainage Easement Agreement, Muriwai (Coopers Lagoon)	The easement makes provision for the maintenance of McEvedy's Culvert, including extension or relocation from time to time	Jul-01

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders, further monitoring and development of the Selwyn-Waihora Zone Plan priorities.

9.5 Scheme Assets

This scheme has four coastal culverts. A summary of material and diameter for pipes, where known, is shown below in Figure 9-2 and Figure 9-3.

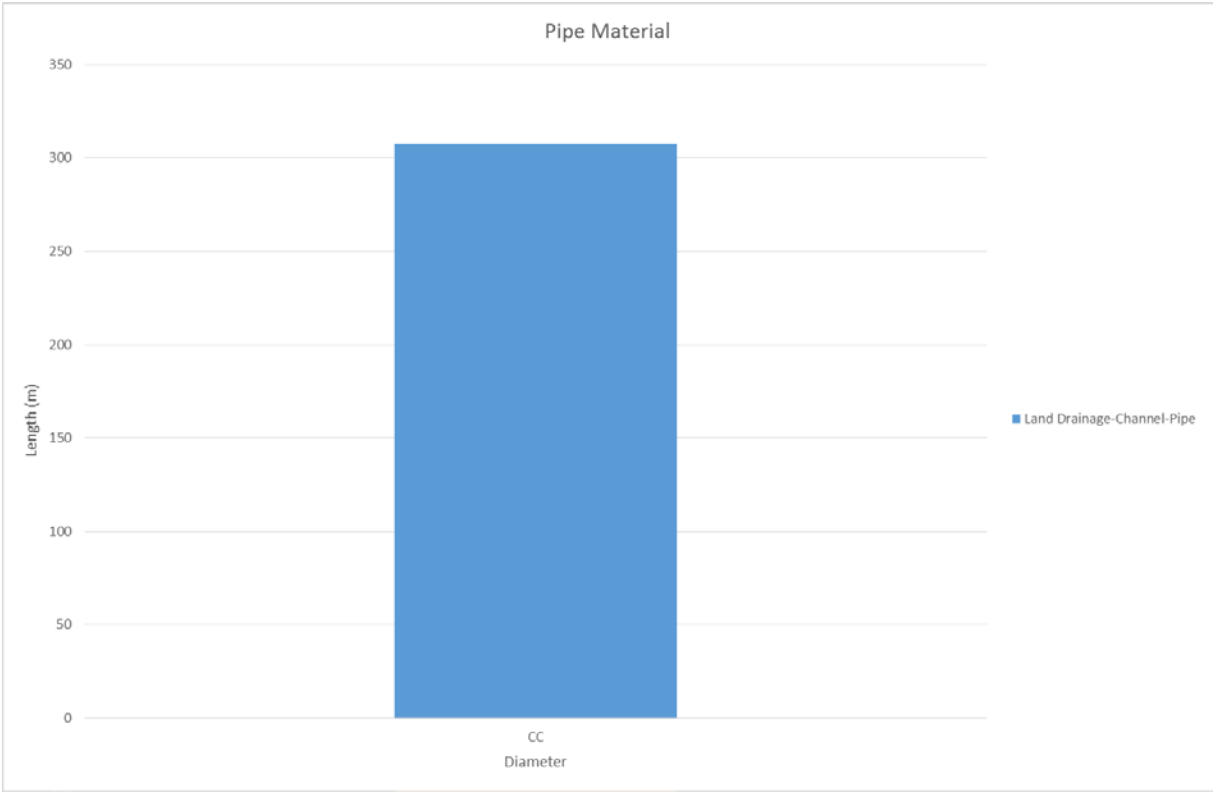

Figure 9-2 – Pipe Material – Taumutu Culverts

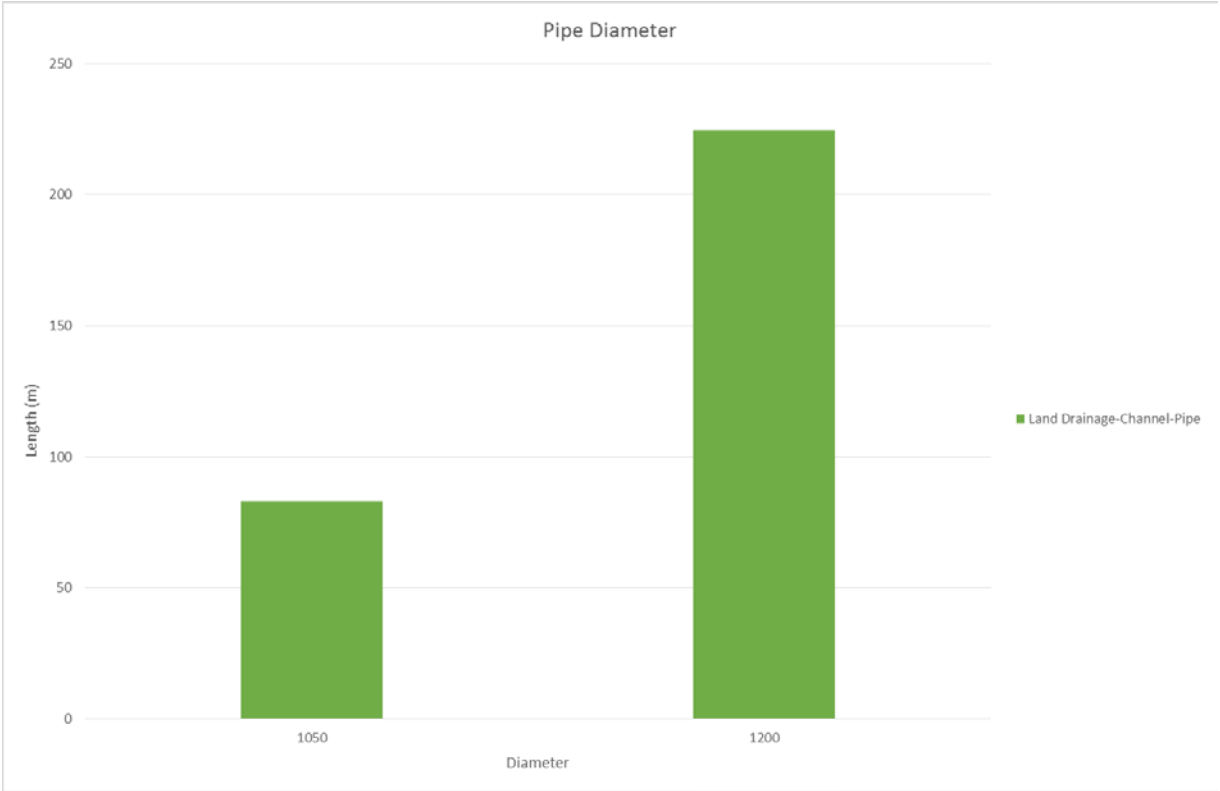

Figure 9-3 Pipe Diameter – Taumutu Culverts

9.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

9.7 Photos of Main Assets

Photo 1: Rakaia Culvert Number 1

Photo 2: Rakaia Culvert Number 2

Photo 3: Rakaia Culvert Number 3

Photo 4: Rakaia Culvert Number 4

Committee members and landowners typically unblock the culverts when required and request assistance from Council as required e.g. for repairs and water blasting.

9.8 Risk Assessment

A risk assessment has been undertaken for the Taumutu Culverts. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. Table 9-4 details the risk priority rating, Table 9-5 outlines the risks and the list of key projects is found in Table 9-9.

Table 9-4 Risk Priority Rating

Risk Score	Level of Risk	Risk Response
> 50	Extreme	Awareness of the event to be reported to Council. Urgent action to eliminate / mitigate / manage the risk. Document risk and action in the AMP.
35-50	Very High	Risk to be eliminated / mitigated / managed through normal business planning processes with responsibility assigned.
14-35	High	Manage risk using routine procedures.
3.5-14	Moderate	Monitor the risk.
< 3.5	Low	Awareness of the event to be reported to Council. Immediate action required to eliminate / mitigate / manage the risk. Document risk and action in the AMP.

Table 9-5 Risks – Taumutu Culverts

Risk	Action/Project	Year Identified	2014 Risk Rating	2017 Risk Rating	Residual Risk Rating
Coastal damage to outfall culverts	Outlets to sea. Operationally a risk (blocks with shingle)	2014	20	20	20

The list of district wide risks can be found in 5Waters Activity Management Plan: Volume 1.

9.9 Asset Valuation Details

The total replacement value of assets within the Taumutu Culverts is $104,919 with further details in Figure 9-5 below.

Table 9-6 Replacement Value, Taumutu Culverts

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Culverts	$104,919

Channels are broken down into drains, pipes and stock banks. The Taumutu Culverts is made up of four culverts.

9.10 Renewals

The renewal profile has been taken from the 2017 5 Waters Valuation. There are no renewals for this scheme.

9.11 Critical Assets

The criticality model for has been updated for the 2017AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Culverts were not included in the criticality model at this stage.

9.12 Asset Condition

The asset condition model was run for the Taumutu Culverts in 2017. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

9.13 Funding Program

The 10 year budgets for Taumutu Culverts are shown by Table 9-8 and Figure 9-5 . Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 9-7 Taumutu Culverts Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$5,600		$10,000	
2019/20	$5,600			
2020/21	$5,600		$2,000	
2021/22	$5,600			
2022/2023	$5,600		$2,000	
2023/2024	$5,600			
2024/2025	$5,600		$2,000	
2025/2026	$5,600			
2026/2027	$5,600		$2,000	
2027/2028	$5,600			
Total	$56,000		$18,000	

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

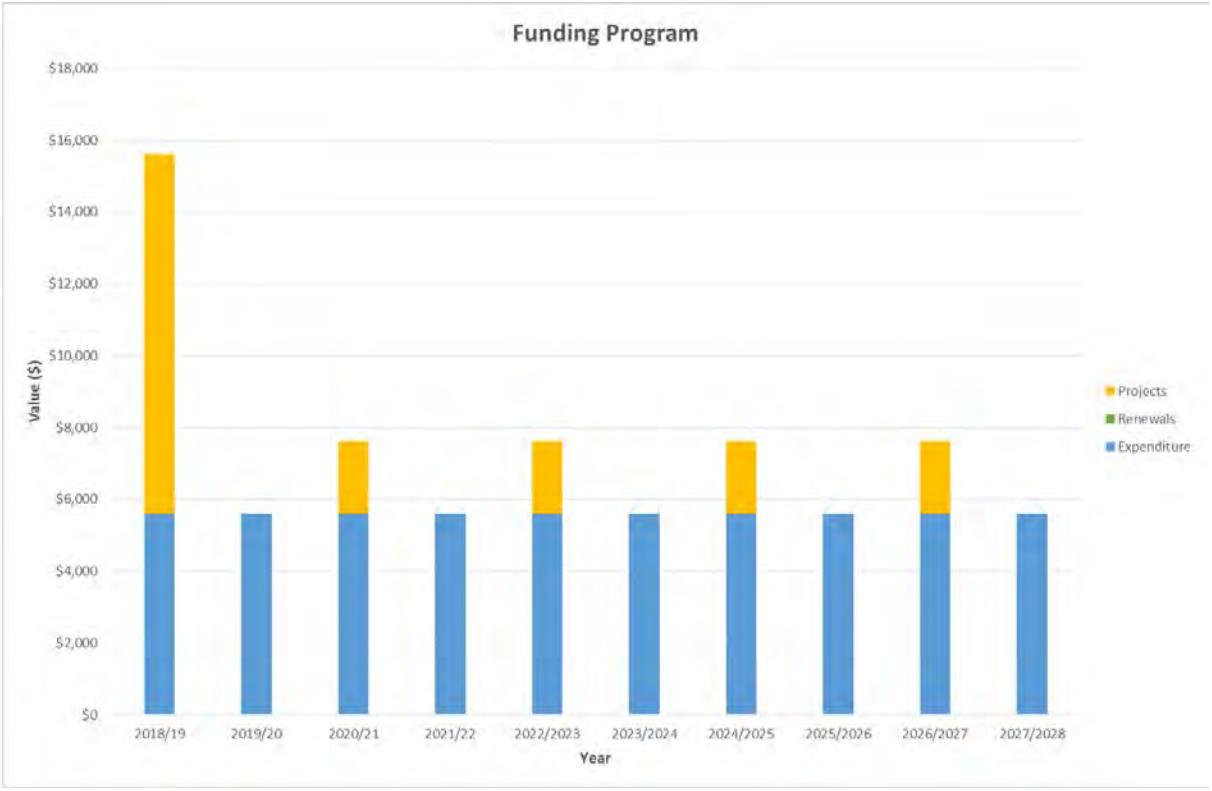

Figure 9-4 Taumutu Culverts Funding Summary

There is one major projects for Taumutu Culverts in the LTP budget.

Table 9-8 Key Projects

Account Label	GL	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10	Funding Split[6]
Projects	4585010	Taumutu Culverts: Inspection			$2,000	$6,000	100% LoS
Projects	4585012	Upgrades to Taumutu culvert	$10,000				100% LoS

The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.

Discussion on Projects

Projects have been determined based on their:

- Relevance to the scheme
- Requirement to be completed under legislation
- Ability to bring the scheme up to or maintain the Level of Service required under council's Asset Management Policy.

Many projects are **jointly** funded by more than one scheme and activity. Each scheme pays a pro-rata share only, equivalent to the number of connections.

Discussion on Capital and Projects

Where relevant, Capital (Levels of Service) and Capital (Growth) projects have been included in the scheme financial details.

Levels of Service Projects and growth splits have been provided to ensure the costs of population driven works are clear.

[6] Where LoS refers to Level of Service and G refers to Growth

10.0 WAIRIRI VALLEY DRAINAGE AREA

10.1 Scheme Summary

Description		Quantity
Scheme Area		377.46 ha
Scheme Coverage (as at 1 June 2017)	Total Rated Area (ha)	
	Class A	
	Class B	
	Class C	
Systems components	Drain Length (m)	14,436.00
	Pump stations (No.)	None
	Other assets	None
History	Installation Date	Installed progressively from 1850's
Value ($)	Replacement Cost	$4,188,322
	Depreciated Replacement Cost	$4,188,322
Financial	2018/2019 Estimate Annual maintenance cost % of total	$4,600 1.95%
Drainage Outlet	Ultimate discharge point	Selwyn River
Sustainability	Sustainable drain management practices	Adopted and Encouraged

10.2 Key Issues

The following key issues are associated with the Wairiri Valley Drainage area. A list of district wide issues are located in 5Waters Activity Management Plan: Volume 1.

Table 10-1 Wairiri Valley Drainage District Key Issues

What's the Problem	What we plan to do
The Wairiri Valley do not have a formal Land Drainage Committee to prioritise works and maintenance work is undertaken infrequently and on an ad hoc basis.	Continue to work with land owners and if more frequent requests for cleaning are received, ask Community to reinstate Committee.
Rates collected in this scheme are low and a low level of service is provided.	Continue to work with land owners as required to identify works required and increase the rate if necessary.

10.3 Overview & History

The Wairiri scheme is located within the Wairiri Valley situated south west of the township of Whitecliffs.

The Wairiri Valley scheme has a rating area of 378ha, servicing a total area of 1690ha between Wairiri and Davis Roads. The ultimate receiving environment for this area is the Selwyn River.

There are 14.4km of classified drains.

Council staff met with local land owners in 2014 to discuss the level of service offered by the scheme and maintenance requirements. A single point of contact from the community has been appointed who should be contacted annually to determine cleaning requirements for the season.

In 2011, a variation to the Te Waihora Water Conservation Order was made, bringing a strong cultural focus into place. The Selwyn - Waihora Zone Committee (established under the Canterbury Water Management Strategy) also released its Zone Implementation Plan (ZIP) and ZIP addendum.

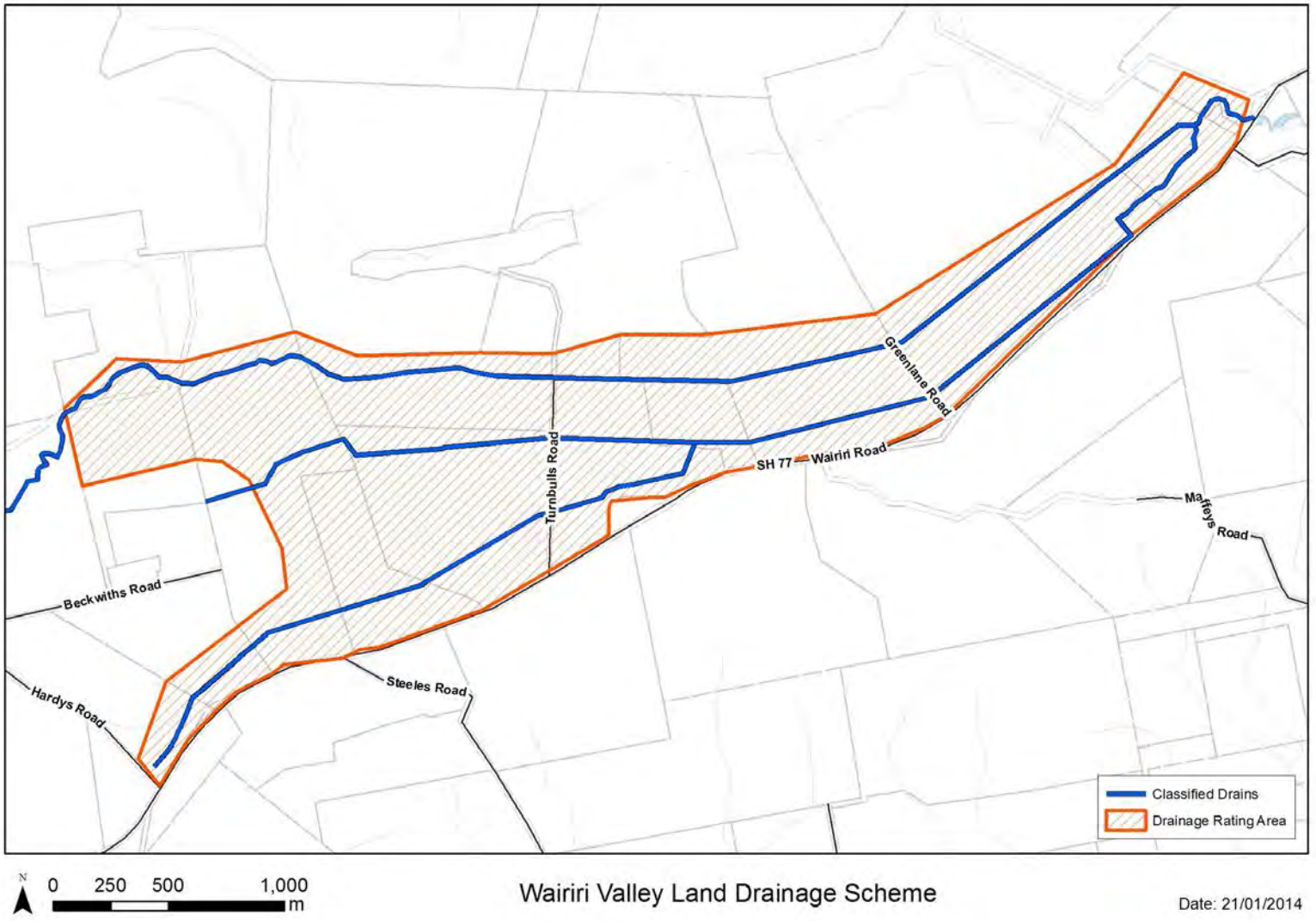

Figure 10-1 Scheme Map

10.4 Resource Consents

There are no existing consents for this land drainage scheme.

Land drainage activities are controlled through Rules 5.57 and 5.58 under the Land and Water Plan. An application was lodged in November 2011, with a request that it be put on hold pending discussion with stakeholders.

10.5 Scheme Assets

This scheme is predominately Land drainage channels which are excavated open channels that intercept, convey and discharge groundwater to allow productive use of land.

No summary of material and diameter of these channels is available for this scheme.

10.6 Operational Management

Council delegates some aspects of management of the Land Drainage network to 9 Land Drainage Committee's comprising of local residents with an interest in the Land Drainage network. Council Service Delivery Staff work alongside the Committee's to prioritise and facilitate maintenance activities which are undertaken by a number of local contractors.

10.7 Photos of Main Assets

Photo 1: A Land Drainage Channel in the Scheme

10.8 Risk Assessment

A risk assessment has been undertaken for Wairiri Valley scheme. The key output from the risk assessment is the identification of any extreme and high risks which need to be mitigated. In order to mitigate these risks they have been included and budgeted for in the projects within this LTP. No high risks have been identified for this scheme.

10.9 Asset Valuation Details

The total replacement value of assets within the Wairiri Valley Scheme is $4,188,322 with further details in Table 10-2 below. All of the value is made up of channels.

Table 10-2 Replacement Value, Wairiri Valley

Asset Class 1	Asset Class 2	Sum of Replacement Value
Land Drainage	Channel	$4,188,322

Channels are broken down into drains, pipes and stock banks. The Wairiri Valley Land drainage district is made up of classified drains.

10.10 Renewals

The renewal profile has been taken from the 2017 5 Waters Valuation. There are no renewals for this scheme.

10.11 Critical Assets

The criticality model for Wairiri Valley has been updated for the 2017 AcMP. The methodology of the criticality model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the criticality has been calculated for the reticulation assets. Table 10-3 and Figure 10-2 below shows the calculated criticality for all of the assets within this scheme that have a recorded known length.

Table 10-3 Length of Assets per Criticality Level

Criticality Bands		Length (m)
5	Low	7,919
4	Medium-Low	0
3	Medium	0
2	Medium-High	0
1	High	6,541

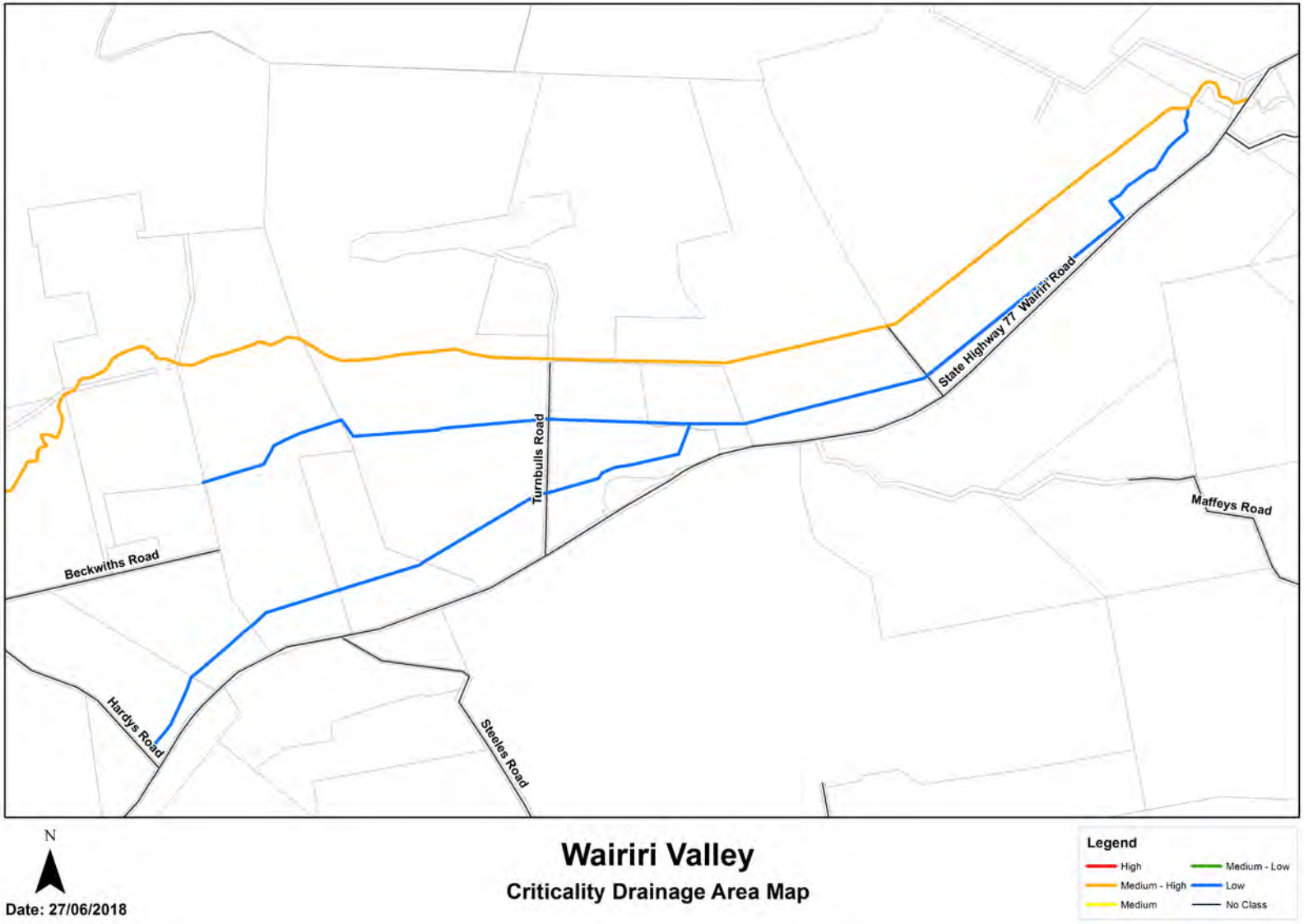

Figure 10-2 Criticality Map

10.12 Asset Condition

The asset condition model was run for the Wairiri Valley in 2018. The methodology of the model can be found in 5Waters Activity Management Plan: Volume 1 and it provides details of how the model has been calculated for the reticulation assets (particularly pipes). There is no known recorded condition for assets within this scheme.

10.13 Funding Program

The 10 year budgets for Wairiri Valley are shown by Table 10-5 and Figure 10-4. Budgets are split into expenditure, renewals, projects and capital projects.

All figures are ($) not adjusted for CPI "inflation". They are calculated on historical data, and population growth where relevant.

Table 10-4 Wairiri Valley Budget Summary

Years	Expenditure	Renewals	Projects	Capital Projects
2018/19	$4,600			
2019/20	$4,100			
2020/21	$4,100			
2021/22	$4,100			
2022/2023	$4,100			
2023/2024	$4,100			
2024/2025	$4,100			
2025/2026	$4,100			
2026/2027	$4,100			
2027/2028	$4,100			
Total	$41,500			

An explanation of the categories within the budgets are as follows below:

- Expenditure consists of operation and maintenance costs;
- Renewals are replacement of assets which are nearing or exceeded their useful life;
- Projects are investigations, decisions and planning activities which exclude capital works; and
- Capital projects are activities involving physical works.

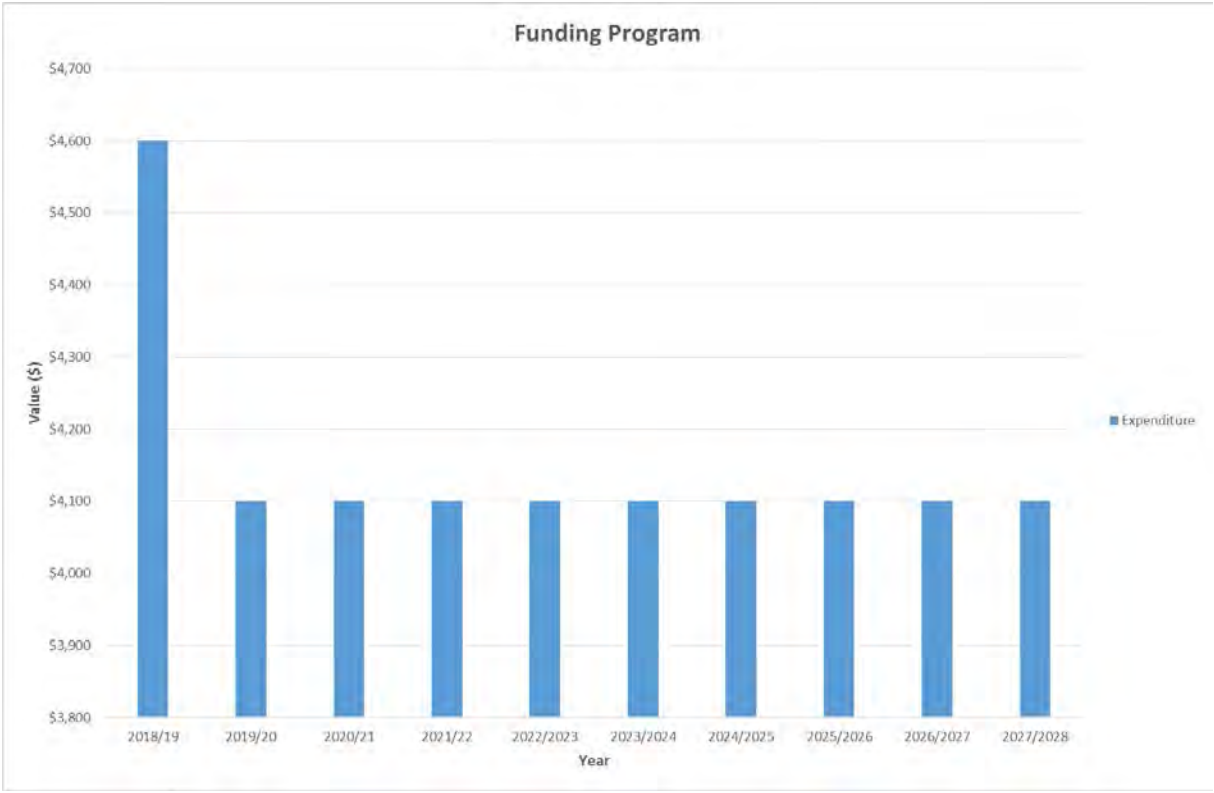

Figure 10-3 Wairiri Valley Funding Summary

There are no major projects for Wairiri Valley in the LTP budget. The list of district wide projects can be found in 5Waters Activity Management Plan: Volume 1.