WAIMAKARIRI
DISTRICT COUNCIL

Activity Management Plan 2021

Cust Rural Drainage Scheme

3 Waters | July 2021

Prepared by

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Revision History:

Revision Nº	Description	TRIM	Date
A	Draft for Presentation to U and R Committee	200120006587	18/12/2020
C	Draft for presentation to Council	200120006587	23/02/2021
D	Final for presentation to Council	200120006587	

Document Acceptance

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

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1 Executive Summary

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

Table 1: Key Asset Management Components

Levels of Service	There is only one scheme specific service level which has been met Although not a scheme specific service level, with analysis now possible down to scheme level, customer satisfaction (high and very high) can be reported for this scheme at 75%. However sample numbers are very small. The district wide result is 76.1% and the target is 90% There were no service requests from within the scheme boundaries that met the threshold for a complaint regarding insufficient flood capacity
Resource Consents	No consents relate specifically to this scheme, but a new district wide consent has recently been granted from Ecan for the maintenance of rural waterways
Capacity & Performance	The stormwater and land drainage system is working and there have been no reported cases of property damage.
Asset condition	Apart from open drains, the Cust Rural Drainage Scheme does not have any significant drainage assets.
Risk Assessment	There are no extreme or high risks on this scheme as identified through the Risk Assessment.
Disaster Resilience	As this scheme is thought to consist of open channels only, no drainage assets for this scheme were included in the assessment.
Growth Projections	Some division of land into lifestyle block or rural residential clusters is possible.

2 Introduction

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

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

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

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

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

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

All figures within this AMP exclude inflation.

3 Related Documents

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

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

4 Scheme Description (What Do We Have?)

The Cust Rural Drainage Scheme lies west of the Cust Township and north of the Cust River. Its eastern boundary runs roughly around the western edge of Summerhill and is located approximately 20 km from Rangiora on the Oxford Road. A map outlining the rating area is included in Appendix A.

The Cust Rural Drainage Scheme services a small farming community and consists of a small network of open drains discharging into natural watercourses in the Cust River catchment. It has a Drainage Advisory Group made up of ratepayers from the area.

Some key statistics (end of 2019/20 year) of the scheme are shown in Tables 1 to 4.

Table 2: Scheme Statistics for 2019/2020

Scheme Parameter	Statistics	Source
Drainage System	Gravity	
Drainage Area	374 hectares	Source - GIS Layer
Reticulation & Treatment	Piped and open drains, no formal treatment.	
Length of Reticulation and Open Channel	0.4 km Mains 5.6 km Channel	Drainage Asset Valuation Tables 9-4 and 9-5, pages 66 to 68
Total Replacement Value	$372,663	
Depreciated Replacement Value	$329,753	
Properties rated	11	Source 2019/20 Rating Query

Table 3: Stormwater Pipe Data Summary

Stormwater pipe length (m) by diameter and pipe material					
Pipe Material	Pipe Diameter (mm)				
	225	250	300	375	Total
Concrete	102m	0m	37m	0m	139m
PVC	0m	0m	228m	0m	228m
Total	102m	0m	265m	0m	367m

Table 4 Open Channel Drain Data Summary

Open channel drains	
Material	Length (m)
Unlined drain	5,622
Other	0
Total	5,622

Table 5: Data References

Data Reference	Trim Reference
2020 3 Waters Asset Valuation	200824109857
2020 50 Year Water and Sewer Growth Forecast	200224024348

It has been identified that the assets shown in the Table 3 are actually geographically located outside the drainage scheme boundary. A project is underway to confirm scheme boundaries and review and correct all drainage asset locations within the asset database.

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

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

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

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

5.1 Levels of Service

Table 5 sets out the performance measures and targets for the scheme, and performance achievement against targets since 2008.

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

None of the WDC targets are expected to change with time so only the one target value has been shown in this document

Performance in Table 6 is measured against the performance measures set in 2018, as part of the 2018-28 Long Term Plan process. Going forward from 2021 onwards, performance will be against the modified set of performance measures that were presented to the Council's Utilities and Roading Committee in 2020 (refer report 200406043184[v2]), and subsequently approved by Council. These revised levels and targets are detailed in the District Overview Water Supply Activity Management Plan.

While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement, although with Cust being a very small scheme the survey sample size is very small. 75% of those surveyed reported a high or very high level of satisfaction. The district target is 90%.

There were no service requests from within the scheme boundaries that met the threshold for a complaint regarding insufficient flood capacity

Table 6: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020
**** Note "Y" indicates that the LOS has been met, and "N" indicates it has not been met***

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

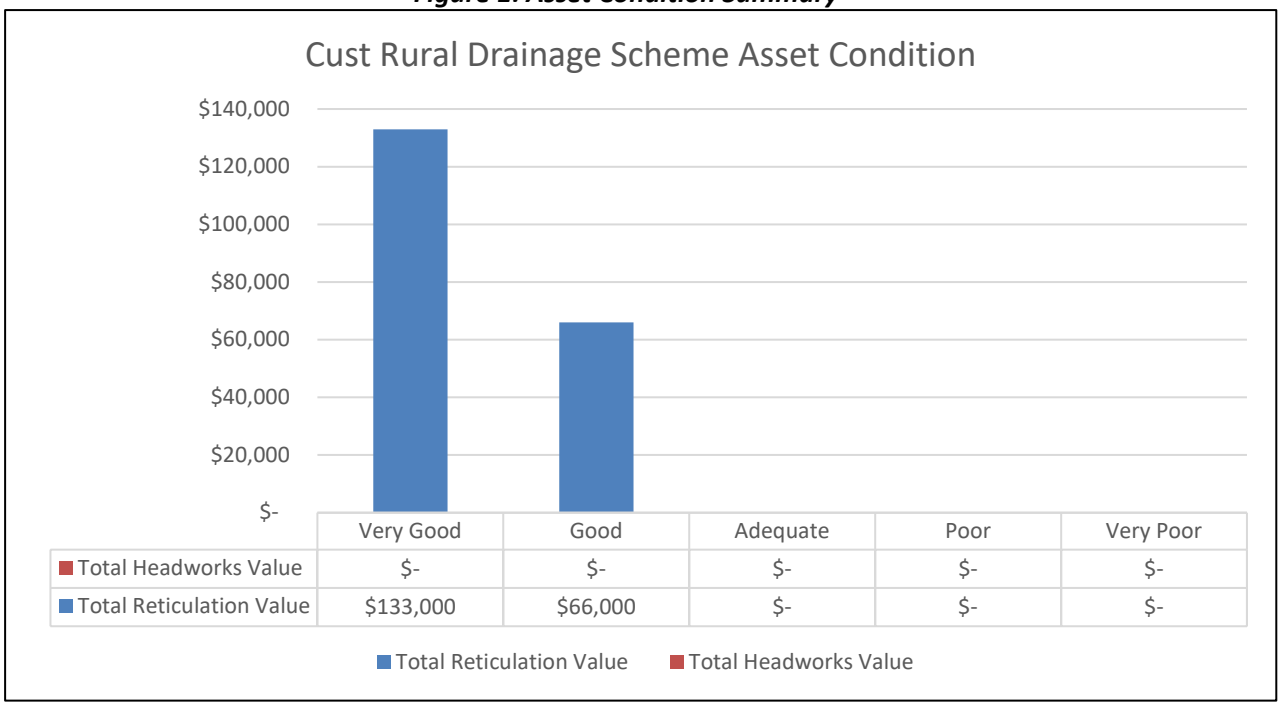
Section	Level of Service	2018 – 2021 Performance Measure	2018 – 2021 Target	2020				Previous Results*			
				Result	Commentary	Status	Action to Address	2017	2014	2011	2008
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.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

5.2 Asset Condition

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

Figure 1 summarises the theoretical asset condition for both the network and headworks in a graph, while Table 7 provides more detail about the value of the assets within different asset condition categories.

Figure 1: Asset Condition Summary



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

Table 7: Pipe Condition Summary

Condition Grade	Definition	Pipeline Quantity	Total Reticulation Value	Total Headworks Value	Total Value
1	Very Good *More than 80% of life remaining*	0.3 km *72%*	$ 133,000 *67%*	$ - *0%*	$ 133,000 *67%*
2	Good *Between 50% and 80% of life remaining*	0.1 km *28%*	$ 66,000 *33%*	$ - *0%*	$ 66,000 *33%*
3	Adequate *Between 20% and 50% of life remaining*	0.0 km *0%*	$ - *0%*	$ - *0%*	$ - *0%*
4	Poor *Between 10% and 20% of life remaining*	0.0 km *0%*	$ - *0%*	$ - *0%*	$ - *0%*
5	Very Poor *Less than 10% of life remaining*	0.0 km *0%*	$ - *0%*	$ - *0%*	$ - *0%*
Total		**0.4 km**	**$199,000**	**$-**	**$199,000**

5.3 Asset Criticality

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

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

5.4 Risk Assessment

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

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

Table 8 below shows a summary of the number of events at each level of risk for the Cust Rural Drainage Scheme.

Table 8: Number of Events per Level of Risk

Risk Level	2004	2008	2011	2014
Extreme risks	0	0	0	0
High risks	0	0	0	0
Moderate risks	7	7	7	7
Low risks	8	8	9	9
Not applicable	12	12	12	12
Total	**27**	**27**	**28**	**28**

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

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

5.5 Disaster Resilience Assessment

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

At the time the scheme was assessed as consisting of open channels only, so no drainage assets for the scheme were included in the assessment.

5.6 Growth Projections

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

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

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

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

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

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

Growth for the Stormwater schemes was calculated using the WDC population projections (TRIM200908117997). Growth in the number of properties expected to be included within the whole drainage scheme are included in Table 9 below.

Table 9: Growth Projections

Cust	Rates Strike	Years 1 - 3	Years 4 - 10	Years 11 - 20	Years 21 - 30
	2019/20	**2021/22 to 2023/24**	**2024/25 to 2030/31**	**2031/32 to 2040/41**	**2041-42 to 2050/51**
Projected Properties	11	12	14	16	17

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

To calculate connection growth numbers from the population projections, existing Cust drainage connections were counted then the rural population growth profile from New Projections for LTP 2021-2031 (TRIM200908117997) was applied, for the development horizons in Table 9

5.7 Capacity and Performance

The Cust Rural Drainage Scheme is expected to have sufficient capacity for the target Levels of Service. As most of the system consists of open drains, regular maintenance is required so that the capacity can be maintained.

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

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

6.1 Operation & Maintenance

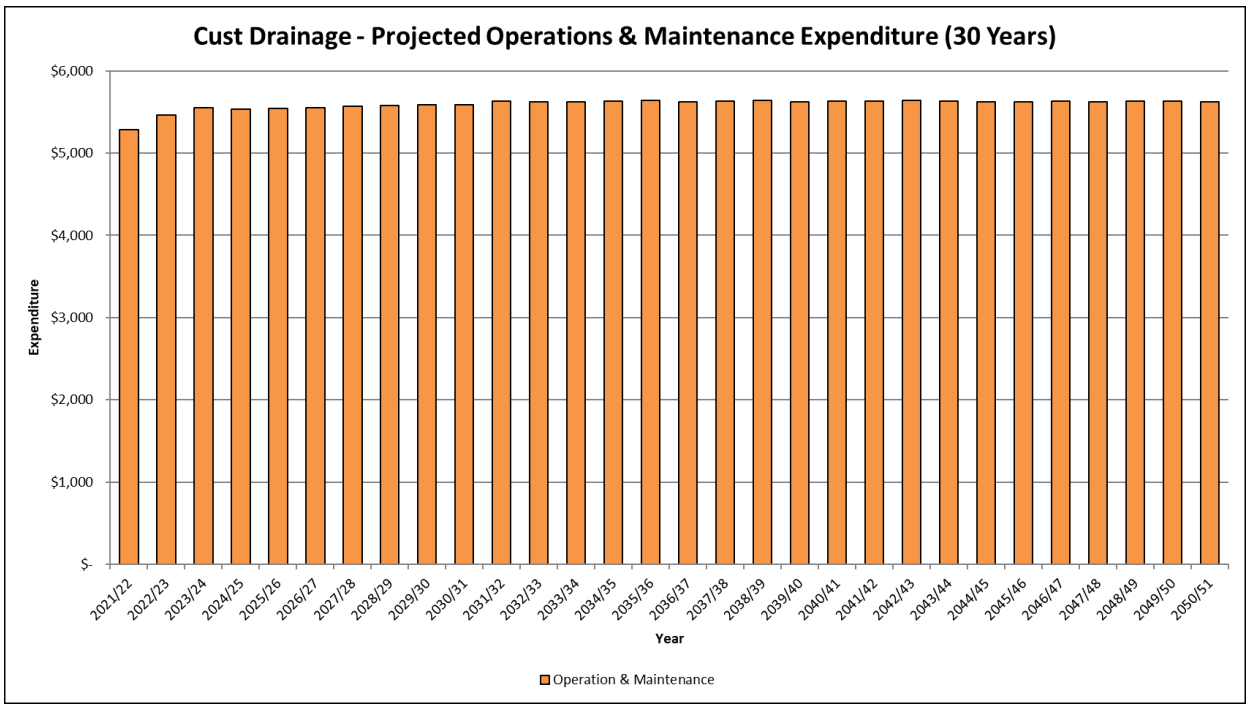
Maintenance of the open drains is a combination of proactive and reactive work. Drains known to require clean out are completed on an annual basis, with other drains being cleaned when notification is given by adjacent landowners. Much of the routine work is done in the summer months when weed growth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

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

No change in budget provision is envisaged in the immediate future (see Figure 2) however if the Drainage Advisory Group requests provision of extra services beyond what is currently provided then this would have to be provided by an increase in local drainage rates.

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

Figure 2: Annual Projected Operations & Maintenance 30-Year Budget



6.2 Renewals Programme

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. Renewal work is funded from a budget generated by the depreciation component of the rates. The annual funding required to ensure long term funding is available to replace assets in the future is shown in Figure 3.

The Cust scheme has few renewable assets so the costs involved are relatively small

Since the average condition of the assets is assumed to be good, and the assets are relatively young, no actual renewals are expected to be needed until at least 2060.

Figure 3 below shows the financial output from the model alone. Over a 150 year period it shows the projected expenditure; the value in the renewals fund; the level of funding required to ensure the fund can meet the required renewals programme, and the annual depreciation, which is the income source for the renewals fund.

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

Figure 3: Projected Renewals 150 year Budget

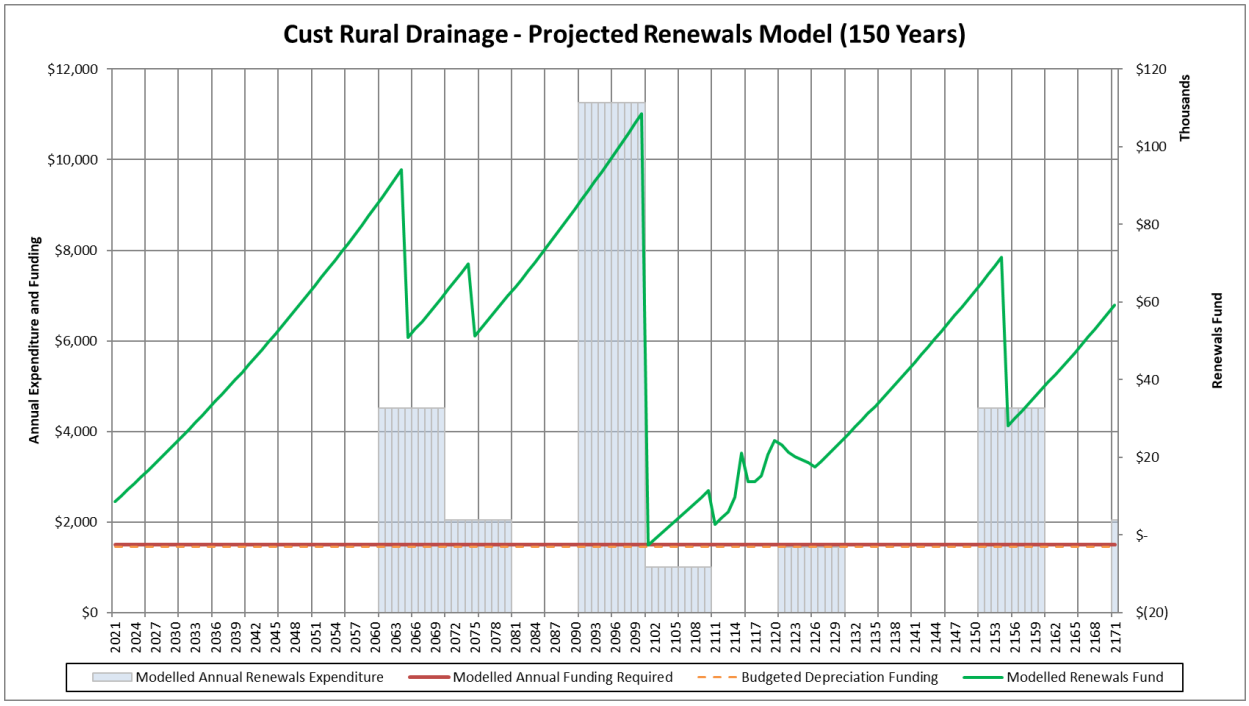


Figure 3 shows that the budgeted depreciation matches the required funding to meet future renewals commitments. There are also no deferred maintenance issues.

6.3 Capital Works

The following graph shows the 50 year budget for all capital works, including projects driven by growth and levels of service (Figure 4). It does not show flood improvement works which is expenditure funded by the district drainage rate. For Cust the only planned capital works are pipeline renewals some 40 years in the future

Figure 4: Annual Projected Capital works Expenditure – 50 years

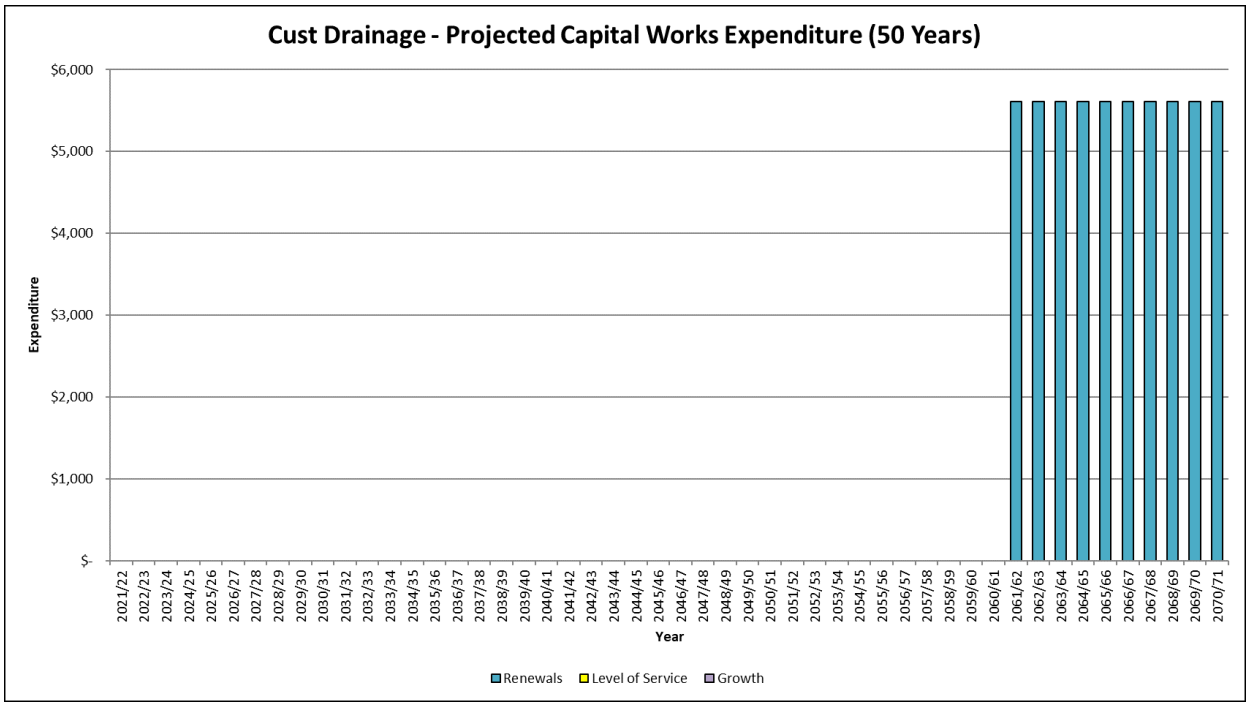


Table 10 shows all planned capital works over the next 50 years, including renewals, but not flood response works.

The level of confidence in the budget for the works (High / Medium / Low) is presented in the table. For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP.

The figures in the table are not adjusted for inflation.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected total cost of the project over the number of years it occurs.

Table 10: Summary of Capital Works (Includes Renewals)

Year	Project ID	Project Name	Level of Confidence	Project Value	LOS Component	Renewals Component	Growth Component
Year 31 - 50							
2062	URD0083	Cust Rural Drainage Long Term Renewals	3 - Low	$ 56,111	$ -	$ 56,111	$ -
Grand Total				$ 56,111	$ -	$ 56,111	$ -

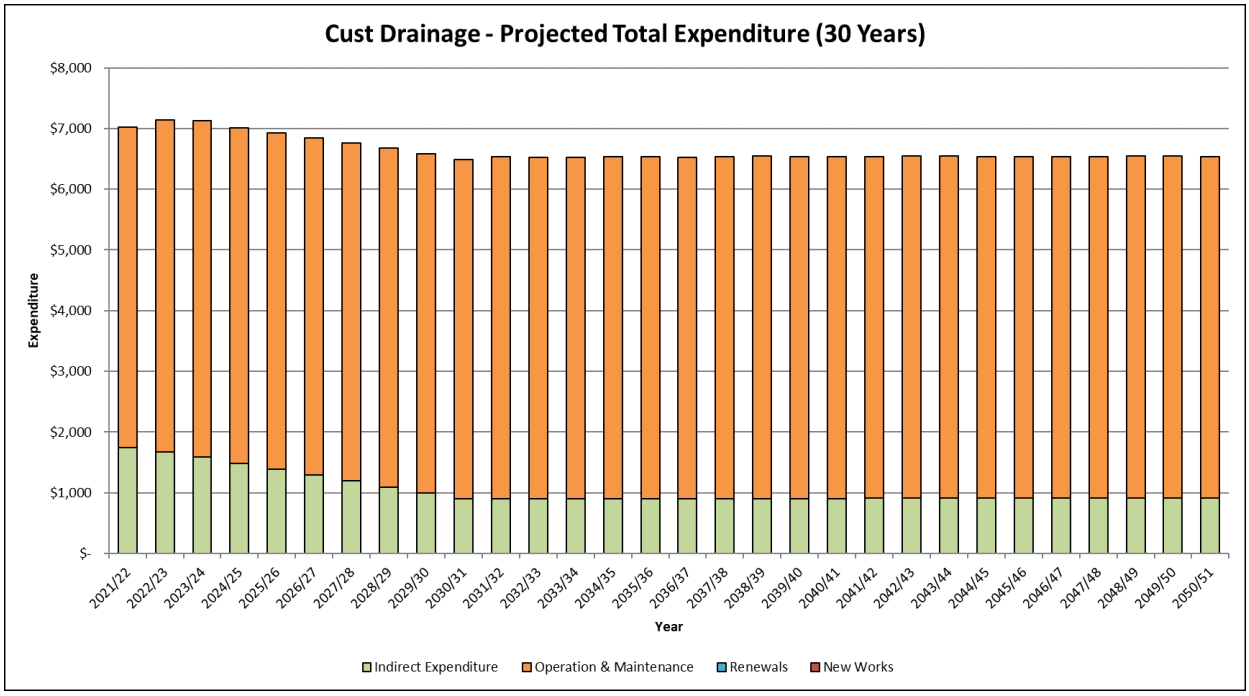
Flood Response Programme

There are no district wide funded flood response works planned for the Cust drainage scheme

6.4 Financial Projections

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

Figure 5: Projected Total Expenditure



6.5 Valuation

A full peer reviewed valuation of assets is carried out on a three yearly cycle, using the asset data in our asset management information system. Table 11 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme

Table 11: Asset Valuation

Asset Type	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Manhole	No.	0	$-	$-	$-
Sump	No.	0	$-	$-	$-
Valve	No.	0	$-	$-	$-
Network Main	m	367	$198,869	$155,959	$1,989
Open Channel	m	5,622	$173,794	$173,794	$-
Facilities			**$-**	**$-**	**$-**
Total			**$372,663**	**$329,753**	**$1,989**

6.6 Revenue Sources

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

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

7 Improvement Plan

7.1 2021 Improvement Plan

Table 12 details the scheme specific improvements recommended to address the management issues identified in Section 3. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track Councils response.

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

Table 12: 2021 AMP Improvement Plan

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

APPENDIX 'A'. PLANS

Figure 6: A1 - Plan of Serviced Area as of November 2017