

HAURAKI DISTRICT COUNCIL
EXECUTIVE SUMMARY OF THE
**2015-25 LAND DRAINAGE
ASSET MANAGEMENT PLAN**



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1. OVERVIEW OF THE LAND DRAINAGE ACTIVITY

The Land Drainage activity involves the disposal of excess rainfall runoff from rural areas using drainage systems which include natural watercourses, man-made drains, open channels, reticulated pipe networks and other structures for accepting rainfall runoff. The purpose of this activity is to ensure the safe removal of floodwater to maintain transport and communication networks, minimise the risk of flooding to property and minimise the risk to human life in the rural communities of the District.

This service is provided to 45,000ha of highly productive pastoral land. The Land Drainage and Flood Protection and Control activities aim to protect the productive capability of the land.

The Hauraki District Council has a statutory obligation to provide Land Drainage services in the rural areas. However, there is also a community expectation that adequate Land Drainage services will be provided and the Council is seen to be the most appropriate organisation to provide this service. The Land Drainage activity is complementary to the stormwater activity in the rural towns of the Hauraki Plains and in the northern part of Paeroa. In these areas the urban stormwater reticulation discharges to a Land Drains which in-turn discharge to the rivers via Regional Council floodgates and pumpstations.

Land Drainage is a particularly significant activity for Hauraki District Council, more so than for most other local authorities in New Zealand. The Council has Land Drainage standing committees that have representatives from both the Council and users that advise the Council on land drainage and flood protection and control measures.

Council resolved to accept the recommendations in relation to Land Drainage, Stormwater, Flood Protection and Control Works as being two Groups of Activities as for Hauraki District there is a different service provision for Flood Protection and Control from most other Council's and we have a much more extensive Land Drainage Activity than most other Council's.

Land drainage and flood protection and control are key functions of the Council's operation, as a considerable portion of the northern Hauraki Plains lies at or below the normal high tide level in the Firth of Thames. The remainder of the land on the Hauraki Plains is only slightly above this level, so protection against high water tables, extreme weather events, high tides and river floods is essential to the continuing occupation and use of the land for residential, agricultural and horticultural purposes.

LAND DRAINAGE

The land drainage assets collect runoff from their catchment areas and convey it to the primary flood protection assets which discharge it direct to river. In addition to the drainage network, land drainage assets can include stop banks, floodgates and pumps. The latter drainage assets perform a land drainage function, e.g. pumping from a minor drain into a major drain; they do not provide direct protection from river and tidal flooding, and are referred to as secondary protection assets. These services are provided by the Council in four Drainage Districts:

- The Western Plains Drainage District which lies between the Piako River and State Highway 27, from the Firth of Thames to the District boundary with Matamata-Piako District Council.
- The Eastern Plains Drainage District which lies between the Piako River and the Waihou River, from the Firth of Thames to the District boundary with Matamata-Piako District Council.
- The Paeroa Rural Drainage District which comprises three smaller former drainage districts east of the Waihou River. The former districts were the Komata North, Opukeko and Tirohia Rotokohu drainage districts.
- Taramaire Drainage District is a small drainage district south of Kaiaua.

The Land Drainage activity provides protection in a sustainable manner, through achieving a high degree of public safety and effective protection of property, farmland and roads by draining excess surface water and managing ground water levels. This activity delivers services which the community

needs to function productively and conveniently on a day to day basis, which meets high community health and safety standards, and which promotes continuing productive use of the land.

The land drainage schemes have a replacement value of approximately \$11m (excluding land value). The components of the land drainage system are listed in the table below.

SERVICE	ASSET	SIZE
Land Drainage	Rural drains	650km
	Stopbanks	49km
	Flood gates	93
	Pumpstations	4

FLOOD PROTECTION

The majority of the Flood Protection activity in the Hauraki District is provided by the river schemes of the Waikato Regional Council, except in the northwest part of the District (Waitakaruru to Miranda) where it is provided by Hauraki District Council. The assets that provide direct protection from river and tidal flooding include stopbanks, floodgates and pump stations, and are referred to as primary flood protection assets.

The Flood Protection schemes have a replacement value of \$4.3m (excluding land value). The components are listed below.

SERVICE	ASSET	SIZE
Flood protection	Stopbanks	54km
	Flood gates	30
	Pumpstations	1

RELATIONSHIP WITH WAIKATO REGIONAL COUNCIL

The Hauraki Plains land drainage network discharges into Waikato Regional Council’s river scheme assets, which also provide protection from tidal and river flooding.

There is close co-operation at Council and staff level between the two organizations. Council is represented on the Region’s Waihou-Piako Zone Subcommittee and monitoring and operational responsibility for the region’s floodgates and pumpstations is shared.

LEVEL OF ASSET MANAGEMENT PRACTICE

Council has assessed “CORE PLUS” as defined in the International Infrastructure Management Manual as the appropriate level of asset management practice for Land Drainage. The Asset Management Planning Policy 2010 document contains details.

The CORE and CORE PLUS assessment criteria are listed at the beginning of each of the respective sections.

2. LAND DRAINAGE ACTIVITY GOALS & OBJECTIVES

The Land Drainage activity is responsible, as outlined in the Local Government Act 2002, for Land Drainage and Flood protection and control.

The goal of this activity is to:

- preserve and enhance the productivity of the land in a sustainable manner by effectively managing the water table using drainage systems.
- preserve and enhance the productivity of the land in a sustainable manner by effectively managing the impacts of extreme weather events which cause river or stream flooding, and extreme tidal events using flood protection systems.

To achieve these outcomes, the council regulates land use activities and manages a Land Drainage network that conveys rainfall runoff from urban and rural areas into rivers.

Land Drainage is technically managed through land the provision of specialist drainage infrastructure.

The objectives of this Asset Management Plan are:

- To demonstrate that our asset management strategies are carried out at an appropriate level for the Hauraki community;
- To outline how Council will meet its legal and regulatory obligations both as a local District Council and as operator of the public Land Drainage network;
- To ensure and demonstrate that the Council has applied a long-term view in respect of environmental and financial sustainability;
- To provide substantiated financial forecasts and projections demonstrating financial stewardship of the Land Drainage assets that Hauraki District Council manages on behalf of the community;
- To promote and carry out a continuous improvement process that identifies both need an opportunity for improvements in the management and operation of the Land Drainage activity.

The asset classes covered by this Plan are: all Council owned drains, floodgates, pumpstations and stop banks.

3. COMMUNITY OUTCOMES

As required by the Local Government Act 2002, Council has carried out a process to identify community outcomes by giving the community the opportunity to discuss what they think is important in terms of the present and future social, economic, environmental and cultural wellbeing of their community.

The community identified the following six community outcomes:

- **PREPARED HAURAKI:**
We provide a range of services and facilities to meet our District's needs and expectations for a safe environment.
- **INTERACTIVE HAURAKI:**
We are a proactive Council that provides leadership and communicates effectively with all sectors of our District.
- **PROGRESS HAURAKI:**
We have a positive climate that encourages balanced and sustained economic growth throughout our District.
- **SUSTAINABLE HAURAKI:**
We plan for the wise use and management of all land and resources for the continued benefit of our District.
- **LIFESTYLE HAURAKI:**
We provide an environment that encourages vibrant communities and an enhanced quality of life.
- **KOTAHITANGA HAURAKI:**
We take a collaborative approach with both Mana Whenua and Tangata Whenua in our District.

The contribution made by the Land Drainage service to Community outcomes is described in Table 1, page over.

Table 1: The Land Drainage Service Contribution to Community Outcomes

COUNCIL COMMUNITY OUTCOMES	STRATEGIC OUTCOME	HOW THE LAND DRAINAGE ACTIVITY CONTRIBUTES
PREPARED HAURAKI We provide a range of services and facilities to meet our District's needs and expectations for a safe environment.	Land Drainage is provided within the district in a manner that protects pasture from extended periods of flooding.	By providing: Open drains, pumps and flood gates with sufficient capacity to convey runoff resulting from rainfall events within an agreed time.
KOTAHITANGA HAURAKI We take a collaborative approach with both Mana Whenua and Tangata Whenua in our District.	To operate the Land Drainage system in a manner that is sensitive to the natural environment.	By ensuring that cultural values are taken into account when planning for future infrastructure in the District.
LIFESTYLE HAURAKI We provide an environment that encourages vibrant communities and an enhanced quality of life.	Land Drainage is provided within the district in a manner that protects pasture from extended periods of flooding.	By providing: Open drains, pumps and flood gates with sufficient capacity to convey runoff resulting from rainfall events within an agreed time.
PROGRESS HAURAKI We have a positive climate that encourages balanced and sustained economic	Land Drainage is provided within the district, providing security for economic activity.	By providing: Open drains, pumps and flood gates with sufficient capacity to convey runoff resulting from rainfall events within an agreed time.

COUNCIL COMMUNITY OUTCOMES	STRATEGIC OUTCOME	HOW THE LAND DRAINAGE ACTIVITY CONTRIBUTES
growth throughout our District.		
<p>SUSTAINABLE HAURAKI</p> <p>We plan for the wise use and management of all land and resources for the continued benefit of our District.</p>	<p>To operate the Land Drainage activity in a manner that recognises the critical importance of its impacts on the communities well-being</p>	<p>By mitigating adverse effects from the Land Drainage activity, and promoting the communities well-being..</p>

4. ASSET MANAGEMENT PLANNING POLICY AND COUNCIL COMMITMENT

The small population of Hauraki District emphasizes the importance of a fit-for-purpose asset management approach within the district. In context, the total district population served by the Land Drainage services (17,814 people) is less than the population of a suburb in Auckland City.

4.1 COUNCIL COMMITMENT TO ASSET MANAGEMENT

Asset management practice at the CORE PLUS level for Land Drainage has been formally adopted within Council Policy, and approved by Council.

Hauraki DC has established an 'AMP Development Team' to project manage the asset management planning processes within Hauraki District Council, including those for the Land Drainage activity and asset management.

The asset management plans for the Land Drainage activity are updated and republished every three years. The published asset management plans are officially adopted by Council and any subsequent changes are captured in the Change Register.

5. THE SERVICE WE PROVIDE

CORE levels of service apply to the following:

- Define Levels of service or performance.
- Linkage to strategic/community outcomes
- Links to other planning documents.
- Levels of consolidation identified and agreed.
- Service life of network stated.

CORE PLUS levels of service apply to the following:

- None.

5.1 INTRODUCTION

Levels of service (LoS) define the standard of service delivered to the community, over and above the legislative requirements. LoS represent Council's agreement with the Community about what scope and standard of service the Council will provide.

The LoS targets impact on the cost of the service provided. Level of service targets guide decisions made by Council's engineers and management about designing and maintaining the network. These decisions ultimately affect the cost of Land Drainage service to customers.

The LoS therefore, represent an agreement between the Council and Community on what aspects of the Land Drainage service are important to the community, and what the Community is prepared to pay for.

5.2 WHAT IS IMPORTANT TO THE COMMUNITY

The following five aspects of the Land Drainage service were identified as those of greatest importance to the community:

1. Council provides Land Drainage services at agreed levels of service.
2. Land Drainage services meet regulatory requirements.
3. Protection is provided to the community and the environment.
4. Pasture protection is provided.
5. Timely response to customer requests.

5.3 CUSTOMER LEVELS OF SERVICE and TECHNICAL LEVELS OF SERVICE

Two types of Level of Service have been prepared:

- i. Customer Levels of Service; and
- ii. Technical Levels of Service.

The customer levels of service are focussed on the public and encapsulate the five aspects of importance to the community.

The Technical Levels of Service are the means by which Council meets its agreement with the community to provide the Customer Levels of Service. They are intended for use by Council management and engineers to help assess at a technical level whether or not the Land Drainage activity is being managed in the manner than will deliver the Customer Levels of Service.

The Customer Levels of Service are those that are described in the Hauraki Long Term Planning documents and this executive summary. The Technical Levels of Service are described in the main body of this AMP.

5.4 LEVELS OF SERVICE FOR THE HAURAKI LONG-TERM-PLAN

The levels of service have been revised for the 2015-25 Asset Management Plan to reflect the five aspects of greatest importance to the community list above.

Five Levels of Service are used to monitor whether the aspects important to the community (Section 5.2) are being met, (refer Table 2, page over).

Table 2: Customer Levels of Service, Performance Indicator & Targets

LEVEL OF SERVICE OBJECTIVE	COMMUNITY VALUE BEING ADDRESSED	PERFORMANCE INDICATOR	TARGET
The land drainage service meets customers' expectations.	Council provides Land Drainage services at agreed levels of service	More than 70% of respondents are satisfied With the Land Drainage service	> 70%
The land drainage service will comply with relevant legal requirements.	Land Drainage services meet regulatory requirements	Number of abatement notices received or enforcement proceedings initiated.	0
The network of flood protection stop banks will be maintained in serviceable condition.	Protection is provided to the community and the environment	The crest height of the stop banks will be above design flood level.	100%
Environmental effects caused by the maintenance of the drainage network will be minimised	Protection is provided to the community and the environment	Number of erosion sites caused by the land drainage activity	0

6. ASSET DESCRIPTION

CORE level asset management applies to:

- Process of Development.
- Adequate physical description of the asset.
- Adequate financial description of the asset.
- Remaining useful life.
- Ability to aggregate and disaggregate information.
- CORE PLUS level asset management applies to:
 - Reliable physical inventory.
 - Physical attributes
 - Systematic condition monitoring.

6.1 LAND DRAINAGE ASSET DESCRIPTION

Hauraki District Council owns and operates the Land Drainage infrastructure servicing the rural areas within the District. The infrastructure utilised to deliver the Land Drainage service includes stop banks, drainage channels, pumpstations and flood gates.

SERVICE	ASSET	SIZE
Land Drainage	Rural drains	650km
	Stopbanks	49km
	Flood gates	93
	Pumpstations	4
Flood protection	Stopbanks	54km
	Flood gates	30
	Pumpstations	1

The 2014 valuation puts the total value of Land Drainage assets within the Hauraki District at approximately \$15.3 million. Details are shown in Table 3.

Table 3: Asset Valuation as 30 June 2014

ASSET	OPTIMISED REPLACEMENT COST ¹ (\$ million)	FAIR VALUE ² (\$ million)
Open Drains	3.1	3.1
Stop Banks	9.8	9.3
Floodgates	7.9	2.1
Pumpstations	2.6	0.9
Total	23.4	15.3

1. Optimised replacement cost assesses the replacement cost of adequate capacity assets at the date of valuation.

2. Fair value is based upon the optimised depreciated replacement cost (ODRC). It defines the fair value of assets as the gross current replacement cost less allowances for physical deterioration, optimisation for obsolescence and relevant surplus capacity.

7. DEMAND AND GROWTH

CORE levels of service apply to the following:

- Demand Forecasts (10 year)
- Demand Management drivers documented.
- Demand Management strategies documented.
- Sustainability strategies.

CORE PLUS level asset management applies to:

- Forecasts include various factors that comprise demand.
- Sensitivity of asset development (Capital Works) to demand changes documented.

7.1 FUTURE DEMAND

The population in the Hauraki District is projected to remain virtually static over the next 10 years followed by a slight decline to 2045. Little impact to the current infrastructure is expected over the life span of this plan (2015-2018).

THE EFFECT OF CLIMATE CHANGE ON LAND DRAINAGE

Research undertaken by the University of Waikato (2011) indicates that, in the context of the Waikato Region, Hauraki District is at the highest risk of exposure to extreme climatic events in terms of future rainfall and drought conditions. This means that over the course of the next 100 years or so, the District is expected to experience both an increased risk of heavy or prolonged rainfall and also extended periods of reduced rainfall.

THE EFFECT OF PEAT SHRINKAGE

Observations show that on average peat soils that are in pastoral farming will shrink by an average of 25mm annually. Intensive cropping could result in higher rates of shrinkage.

South of Ngatea ground levels are currently between mean sea level and high tide level and are projected to settle below low tide level over the next 30-100 years. This lower land will not be able to be drained by gravity means and will require pumping to sustain pasture. The Regional Council is proposing to construct new pumps to serve the area.

7.2 DEMAND MANAGEMENT

Based on the current levels of service and the community level of satisfaction of 76%, significant demand for changes to the Land Drainage system during the life of this Plan as a result of increasing community expectations is not expected.

The supporting assumptions of this Plan indicate that population and the number of rating units are not expected to increase significantly. The existing Land Drainage infrastructure has sufficient capacity.

It is likely that climate change will impact on the Land Drainage activity over time and may affect future extensions to and/or maintenance of this asset. Council's adopted assumption is that average annual rainfall is likely to slightly decrease over the next 100 years; however major rainfall events are predicted to intensify. Change is expected to be gradual and not to have a significant effect on the asset during the life of this Plan.

As the peat shrinks and the land contour changes, some re-orientation of the drainage network will be required. In addition a contribution to the capital cost of the pump project may be made.

8. RISK MANAGEMENT

CORE level asset management applies to:

- Identify critical assets.
- Identify associated risks and risk management strategies for critical assets.
- Identify significant negative effects.

CORE PLUS level asset management applies to:

- Recognition and application of principles of integrated risk management to assets is demonstrated.
- Apply standards and industry good practice.
- Risk management integrated with other corporate processes.

A comprehensive risk analysis for the Land Drainage services and assets in Hauraki district was undertaken in the preparation for the 2012 AMP planning cycle. The foundation of the 2012-2022 risk management strategy was developed by Waugh Infrastructure Ltd. Business risks as well as asset risks were identified and analysed using the corporate risk evaluation frameworks, into extreme, high, medium or low risk categories.

8.1 ASSET BASED RISK MANAGEMENT APPROACH

The 2012-2022 risk management profile and practices were reviewed and found thorough and largely still relevant to the 2015-2018 AMP planning cycle, requiring only minor updating for the 2015-2025 planning cycle.

Council's engineers assessed the likely consequence of assets failing, and measured that consequence against the impact of whether the LoS reliability criteria would be compromised by that failure. Individual assets, e.g. pumpstations, servicing large numbers of people showed up as requiring a high criticality rating due to their ability to affect a large number of people during a single outage. Other assets were deemed to be difficult to repair or replace within an eight hour time frame. Where repair or replacement in less than eight hours was deemed to be challenging, the asset's criticality rating was raised (if not already raised during the 2012-15 risk assessment). Some assets are at risk of failure against both Level of Service criteria (number of people affected and time to repair). These assets have been given the highest asset criticality ratings.

Mitigation strategies were reviewed to determine whether they provided for unexpected failures to be quickly corrected, limiting the risk of failing to meet either of the two reliability criteria.

Power supply failures were identified as one of the highest risks. Portable generators are used as mitigation to this risk.

The Council has an Operative Civil Defence and Emergency Management Plan which, in the event of an emergency, will see the establishment of an emergency management headquarters within the Hauraki District or the Thames Valley Combined District.

In recent years declared emergencies have resulted from the effects of weather (e.g. flooding, wind). However, the Operative Plan caters for operational systems in response to all possible civil defence emergencies including earthquake, fire, hazardous substances, volcanic eruption and subsidence.

The Council is an active member of the Waikato Civil Defence Emergency Management Group and the Thames Valley Combined Civil Defence Committee, which includes all local authorities within the Waikato Region including that of the Waikato Regional Council.

This group was established under the Civil Defence Emergency Management Act 2002 (CDEM Act). The CDEM Group's members work together to manage the Waikato's hazards, so that the communities face only an acceptable level of risk. Arrangements for managing emergencies in a coordinated, multi-agency manner are specified in the Waikato CDEM Group Plan. As an integrated part of the Group Plan, this local arrangement specifies the unique local operational arrangements of the Hauraki District Council.

Council also has a response plan for smaller operational failures. Emergencies are reported through a call centre and service request system. Operational staff are on standby and can respond to emergency situations that may occur.

9. LIFECYCLE MANAGEMENT

CORE level asset management applies to:

- Lifecycle and Asset Management Practices.
- Service capacity gap analysis.
- Evaluation and ranking, based on criteria of options for significant investment decisions.
- Maintenance outcomes, strategies, standards and plans documented.

CORE PLUS level asset management applies to:

- None

9.1 INTRODUCTION: THE OBJECTIVES OF LIFECYCLE MANAGEMENT

The objective of lifecycle management is to manage assets from conception to disposal whilst meeting levels of service, maximising benefits and minimising whole of life costs.

Lifecycle management is based on the premise that the cost of operating and/or maintaining an asset increases as the asset ages. When the cost of continuing to use and maintain an asset exceeds the cost of replacement, the maximum value of that asset has been extracted, and this is the theoretical optimal time to replace the asset (Figure 2).

The optimal time to replace an asset needs also to take into account the economic cost to the community of interruption to the service it provides. The analysis of the optimal replacement time is therefore not a simple cost-based decision.

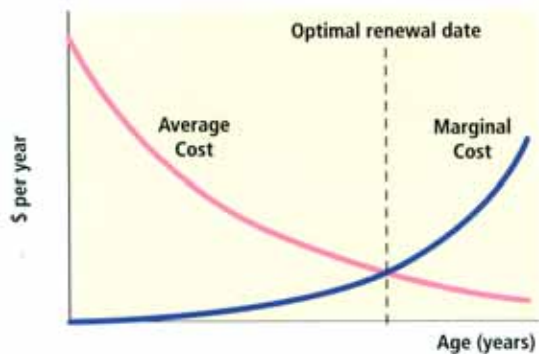
Asset lifecycle is managed by balancing three programmes of work:

- i. The Operation and Maintenance Programme;
- ii. The Asset Renewals Programme; and,
- iii. The Capital Investment Programme.

9.2 LIFECYCLE MANAGEMENT STRATEGY

Council's lifecycle management strategy is to maximise the useful and economic lives of its assets. Thus Council is able to reduce the cost of the land drainage service to the community.

Figure 2: Theoretical example of the optimal time to replace an Asset



Source: *International Infrastructure Management Manual (2011) P67.*

The figure illustrates the theory that the cost of operating and maintaining an asset increases as the asset ages. The optimal time to replace the asset occurs when the cost of maintaining the asset (blue line) exceeds the cost of replacing the asset (red line).

Asset lives are maximised by managing:

- The consequential risks of an asset failing; and,
- the extent, duration, and frequency of interruption to the service due to repair or replacement of an asset.

Assets with high failure consequences are rated high criticality, and assets where failure consequences have minimal impact on the community are rated low criticality. The criticality rating process is a part of the Council's Risk Management activity, see Section 8.

The asset criticality determines the extent of the risk mitigation undertaken to limit the extent and frequency of any interruption caused by unexpected failure and/or repair/maintenance of the asset. The risk mitigation measures in relation to asset criticality are summarised below:

9.3 RISK MITIGATION VS ASSET CRITICALLY

VERY HIGH CRITICALITY AND HIGH CRITICALITY ASSETS:

- Very-high and high criticality assets are proactively managed to prevent interruption to the service that would exceed the level-of-service reliability targets;
- The management process:
 - Critical assets are monitored throughout their life for performance indicators of a potential premature deterioration in the asset's condition. A database of critical assets is being established that will be used to track repairs and other indicators that might signal that the condition of the asset has deteriorated;
 - Opportunistic sampling of the condition is carried out if and when such opportunities arise;
 - Proactive condition sampling is carried out when the asset reaches 80% of its expected life, or if performance indicators suggest premature deterioration of the asset;
 - Data from asset condition inspections (opportunistic or proactive), will be used to re-project the asset's life, and schedule the next condition inspection. If the inspection finds that replacement is required, the asset will be scheduled replacement;

- Council will document an Interruption Management Strategy within the critical assets database for unexpected failure of each Very-High and High criticality asset. Examples may include asset duplication; carrying spare / replacement parts; or reconfiguration of the network. The programming of inspections for Very-High and High criticality assets will be maintained within the critical-asset database that is being created.

MEDIUM CRITICALITY ASSETS:

- The condition of Medium criticality assets is not proactively monitored throughout the assets' life since the consequence of an unexpected failure of a Medium criticality asset is not expected to warrant the cost of proactive monitoring;
- Instead, the time to repair will be assessed for each Medium criticality asset and stored within the criticality database;
 - Medium Criticality assets will be kept in service until:
 - Economics indicate that it is cheaper to replace than repair / maintain the asset; or
 - Assets can no longer meet the reliability targets specified in the levels-of-service; or
 - The asset's performance has degraded to the point where the Council's performance based level-of-service targets are no longer being met.

LOW AND VERY-LOW CRITICALITY ASSETS:

- Low and Very Low criticality assets will be kept in service, repaired and maintained until:
 - Economics indicate that it is cheaper to replace than repair / maintain the asset; or
 - They can no longer meet the reliability targets specified in the levels-of-service; or
 - The asset's performance has degraded to the point where the Council's performance based level-of-service targets are no longer being met.

SUMMARY

The criticality vs. useful-lifespan process described above enables the Council to maximise the useful lives of its assets, while balancing the risks, costs, and consequences of each asset failing to both the Council and the wider community.

9.4 MANAGING RISK

Risks Identified:

- Delay to repair or response due to tidal or flood conditions
- 'Above design' events in rivers or tide
- Loss of power to pumps during storm events
- Impacts of climate change or peat shrinkage on service delivery
- Change of land use

To mitigate the flooding risks Council maintains a response ready capability for the large storm events. To mitigate the loss of power, there provision for generator connect-ability to the pumpstations and provision for the deployment of mobile flood pumps. Climate and land use changes are gradual and not expected to impact the life of this plan. However, Council is aware of the potential future changes. Change of land use due to more intensive farming practices may place a demand for a higher level of service.

9.5 EXPECTED LIVES

As described above, Hauraki District Council's Lifespan Management and Risk Management strategies are reliant on an understanding of the expected lives of the Council's assets.

One of the challenges for Hauraki District Council, with its relatively small asset base, is obtaining sufficient data on asset lives.

For these assets, Council draws upon the experience of specialists in infrastructure management who maintained their own databases; or industry standard lives.

MODELLING EXPECTED LIVES

Council has developed a statistical model to forecast the expected life of its assets. The model has been used where the Council has a sufficient number of assets to use as a foundation for analysis.

9.6 OPERATIONS AND MAINTENANCE

The objective of the operation and maintenance activities is to maintain and operate the system such that the performance and reliability targets within the Land Drainage levels of service are met. The present level of maintenance and operation is sufficient to meet these targets.

Of the 4 major land drainage asset types, i.e. stop banks, pumps, floodgates and land drains, the drains and stop banks are effectively maintained to design standards and would never be renewed or replaced. There are few pumps, all less than 15 years old or substantially rebuilt in the last 15 years. Many of the flood gates are minor structures and all under 50 years old. Minor components of the floodgates are renewed generally as and when required.

OPERATION AND MAINTENANCE STRATEGY

Hauraki District Council's operation and maintenance strategy is to make informed decisions based upon data. The strategy relates not just to the operation and maintenance activity, but data captured through the operation and maintenance activity being used to support larger and longer-term decisions around capital investment and asset renewal.

MONITORING COMPLIANCE WITH LEVEL-OF-SERVICE TARGETS AND LEGISLATIVE REQUIREMENTS

The Land Drainage manager is required to report to the Council's senior management team quarterly on performance and reliability level of service targets and legislative compliance. For measures that only change slowly over time, yearly reporting is required. The details of what is reported, how frequently it is reported, and how it is measured are described in full within the Level-of-Service and Performance Measurements section of the main body of the AMP.

PROACTIVE OPERATION AND MAINTENANCE

In a top level down approach: the quarterly reporting process outlined above enables the Land Drainage manager, and Council management to identify any issues that are arising with the land drainage activity and address them in a timely manner.

In a bottom level up approach: maintenance issues identified by field staff are dealt with as they arise and reported to the drainage manager. The drainage committee members are active within their areas and act as a liaison between the rate payers and Council staff in matters of drain maintenance, pump operation etc.

REACTIVE MAINTENANCE

Reactive maintenance is primarily handled through the Customer Service Request system. The customer services team trained to assess the relative priority of the customer's request. All requests are sent to the Council's field staff for action and compliance with levels of service targets is analysed and sent to Council.

FORWARD IMPROVEMENTS

Over the next three years Hauraki DC will be placing an emphasis on streamlining and improving the collection of data about the operation and maintenance activities carried out on the Land Drainage infrastructure. Areas for particular attention will be:

- improving the ability to efficiently measure level of service compliance;
- track operating costs (eg: electricity);
- track maintenance costs;
- track asset reliability;
- spatially present and analyse the data.
- An emphasis on capturing sufficient data that enables informed decisions to be made.

9.7 ASSET CONDITION AND PERFORMANCE MONITORING

“Performance” relates to the ability of an asset to provide a required level of service the customer.

“Condition” relates to the structural integrity of an asset.

STRATEGY

Council has adopted a primarily performance based asset monitoring approach. Outside of the asset condition monitoring described within the Lifespan Management Strategy asset condition monitoring and assessment has been encapsulated within the level of service performance criteria. Specifically, following targets:

- The land drainage service meets customers’ expectations;
- Land Drainage services meet regulatory requirements.

The levels of service also specify more traditional measures of performance, including: customer satisfaction and good response times.

MONITORING PERFORMANCE

The customer service requests database is used to monitor the performance of the network. The customer service requests are reported monthly, to Council.

9.8 RENEWAL

Stop banks and land drains are effectively maintained to design standards and will never be renewed or replaced. There are few pumps, all less than 15 years old or substantially rebuilt in the last 15 years. Many of the flood gates are minor structures and all under 50 years old. Minor components of the floodgates are renewed generally as and when required.

Council will continue to renew assets to sustain agreed levels of service targets. Prior to commissioning a renewal, Council will assess whether asset can be abandoned altogether.

Assets are renewed on the following basis:

- Performance:
 - The existing asset cannot (even with modification) meet the required performance level of service targets;
- Reliability:
 - An asset has reached the end of its useful life, and been scheduled for replacement;
 - A Very Low, Low, or Medium criticality asset has reached an age where it has started to fail at a frequency that exceeds the reliability targets specified within the levels of service.
- Economic:
 - The asset has become uneconomic to maintain and operate; and net present value analysis (NPV) has shown that it is cheaper to replace the asset with a modern equivalent.

- NPV analysis shows that a modern equivalent operating cost is sufficiently lower than the existing asset to justify replacement;
- Obsolescence:
 - The asset has become obsolete and needs to be replaced in order to integrate with wider Council systems;
- Opportunistic:
 - Where other activities or maintenance has been carried out in the vicinity of an asset that is nearing the end of its economic useful life, assets may be replaced prematurely to tie in with those other activities or maintenance been carried out. An example would be a pipe buried underneath the road that is about to be dug up for repair. In this circumstance it may be cheaper to renew the pipe while the road is being repaired.
 - Opportunistic renewals will only be carried out when it is determined that premature renewal of the asset to coincide with the other activities or maintenance is likely to be the cheapest long-term option. Opportunistic renewals are assessed on a case-by-case basis.

IDENTIFICATION OF RENEWALS

With the exception of opportunistic renewals, the data capture and analysis process as described within the operations and maintenance section (Section 9.6) are used by Council to identify assets that require renewal for one of the reasons listed above.

Opportunistic renewals are currently identified through an ad hoc process, predominantly facilitated by departmental and interdepartmental team meetings.

LONGER TERM RENEWAL FORECASTS

Longer term renewal forecasts are based upon the expected lives of the assets. The asset criticality is assigned to each asset within the Council's asset register. The safety margin applied to very high and high criticality assets reduces the forecast useful life of these assets.

Where sufficient data exists, the Council's annual forecasting model will be used to simulate the period when each asset is forecast to fail. The use of a Monte Carlo simulation enables an average renewals forecast to be derived, and the confidence intervals around the forecast to be understood.

9.9 CREATION AND ACQUISITION

ASSET CREATION AND ACQUISITION POLICY

Council policy requires a business case to be prepared for the creation or acquisition of any new significant assets. The business case must:

- show that the proposed asset represents good value for money for both households and businesses over the anticipated life of the service; and,
- Consider the risks that surround the creation or acquisition of the asset.

Because the land drainage activity is area based and not subject to population variation or changes in the number of rating units, it is largely being maintained in a "maintenance of existing service" mode.

This policy also applies to the flood protection assets which have undergone a substantial program of improvement to upgrade the level of service provide by these assets.

10. FINANCIAL FORECASTS & MANAGEMENT

CORE level asset management applies to:

- AM reflected in 10 year financial plan.
- Validata the depreciation/decline in service potential.

CORE PLUS level asset management applies to:

- None.

The operational expenditure and capital investment forecasts included in this AMP cover a period of 10 years and are based on the latest asset information held by Council. The renewal forecasts have been prepared for a period of 30 years. This is to align with the requirements for councils to prepare 30 year Infrastructure Asset Management Strategy Plans.

All values reported are presented in today's dollars (2014-15). Council consider that presenting the forecasts in 'today's dollars' makes it easier to read and interpret the forecasts.

10.1 FORECAST OVERVIEW

The 10 year forecast for operational expenditure and capital investment has been deemed appropriate for the Land Drainage AMP due to the static population growth forecast within the district.

Council's forecast shows that the primary activity required to maintain the land drainage activity, will be maintenance of the drains and pumpstations.

10.2 OPERATION AND MAINTENANCE

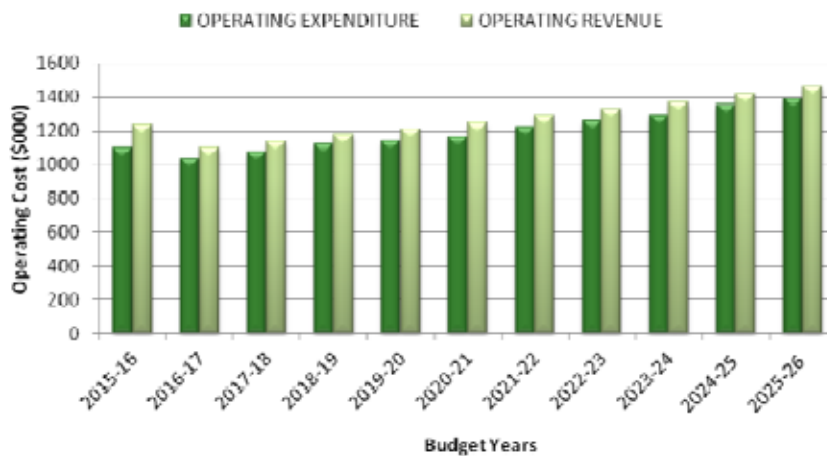
The objective of the operation and maintenance activities is to:

- Maintain the land drainage system reliability to the levels described within the level of service targets;
- Maintain the infrastructure in a serviceable condition that minimises day-to-day operational costs over the long term.

PLANNED OPERATIONS AND MAINTENANCE PROJECTS OVER THE NEXT 3 YEARS

Over the next three years Council plans to continue the existing operational and maintenance regime. As stated in section 9.5, the drains and stop banks are effectively maintained to design standards and would never be renewed or replaced.

Figure 3: Forecast Operation and Maintenance Expenditure – Inflated (\$000)



10.3 CAPITAL INVESTMENT

Council is not proposing any capital investments during the lifespan of this plan. However there may be a requirement for a contribution to the Muggeridge Pumpstation project.

Additional drainage control structures may be required in the southern stage of the Pouarua-Maukoro scheme area as peat settlement occurs and drainage patterns need to be modified.

10.4 RENEWALS

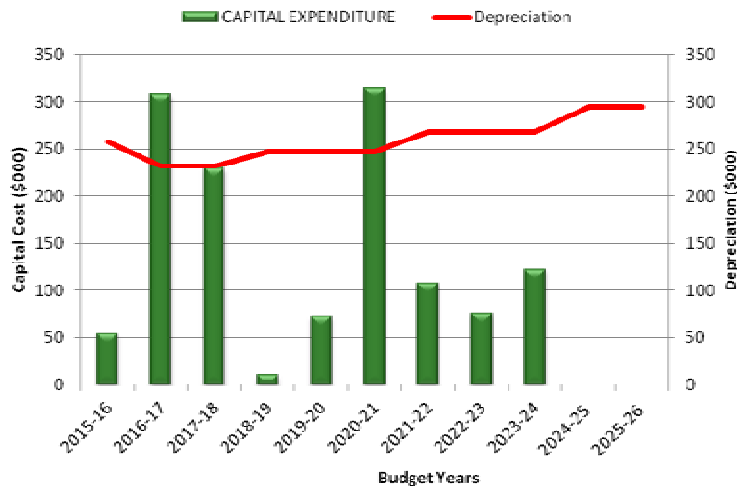
As described in the Lifecycle Management section, council will continue to renew assets to sustain the agreed level of service targets. Renewals may be:

- Performance-based;
- Condition-based;
- Economic;
- Due to obsolescence; or
- Opportunistic.

PERFORMANCE-BASED RENEWALS

Performance-based renewals will be commissioned if required where existing assets are not able to deliver specified levels of service. An example would be a floodgate or culvert becoming undersized due to changes in the upstream catchment area.

Figure 4: Forecast Capital Expenditure



PLANNED RENEWALS DURING THE NEXT 3-YEARS

Performance-based Renewals:

The performance-based renewals planned for the Land Drainage network during the next three years involve stop-bank reinstatement to design profile and pumpstation component replacement.

Condition-based Renewals:

There are no known condition based renewals required during the next three years

10.5 FUNDING OF LAND DRAINAGE

Council’s current funding approach is to levy separate targeted rates in each of the 6 land drainage rating areas to meet operational and capital budget estimates and each drainage rating area is rated on a single land value rate.

The flood protection rates, where applicable, are also rated on a single land value basis within each area receiving the flood protection service.

Council’s current funding approach for Land Drainage is:

- A flat ‘D’ rate (which is different in each drainage rating area) levied on land value to fund drainage activities, comprising drain maintenance, pump operation, monitoring and oversight, management, operation and depreciation of drainage assets.
- A flat ‘P’ rate levied on land area to fund the depreciation of the pump stations of the northern stage of the Pouarua Maukoro Drainage scheme.

Council’s current funding for Flood Protection is:

- A differential ‘F’ rate levied on land value to fund the operation, maintenance and depreciation of the stopbanks, floodgates and pumps outside areas of Waikato Regional Council flood protection schemes.
- Flood protection rates levied by Waikato Regional Council for the Piako River and Waihou Valley Schemes are substantially funded by the ratepayers in the Hauraki drainage districts.

Council’s current policy is to make a district contribution of 15% of the land drainage and flood protection costs.

10.6 FINANCIAL POLICY

Council will continue to fund the Decline in Service Potential (DISP), calculated as asset depreciation.

Land Drainage renewals will be funded by the annual depreciation; the positive difference between annual depreciation and annual renewals will be used as internal revenue and loaned to fund new capital activities at organisational level. The loan ceiling will remain unchanged.

11. STRATEGIC PRIORITIES FOR NEXT 3 YEARS

Council will be investigating the options of increasing the level of service of the foreshore stopbanks to match the level of service provided by the Regional Council's foreshore stopbanks.

12. KEY PROJECTS

Council is not proposing any capital investments during the lifespan of this plan. However there may be a requirement for a contribution to the Muggerridge Pumpstation project in the southern stages of the Pouarua-Maukoko.

Additional drainage control structures may be required in the southern stage of the Pouarua-Maukoro scheme area as peat settlement occurs and drainage patterns need to be modified.

13. LEGISLATION and BYLAWS

The Land Drainage Activity was implemented and is managed in terms of a variety of Legislative controls. The precedence of the various documents needs to be considered in the management of the Land Drainage Schemes.

13.1 RELEVANT STRATEGIES AND PLANS

The following documents are applicable to Land Drainage:

- Asset Management Planning Policy
- Hauraki District Council Engineering Manual
- Operative District Plan
- Annual Plan
- Long Term Plan
- Waikato Regional Council policies and plans:
 - Operative Regional Policy Statement
 - Proposed Regional Policy Statement
 - Operative Regional Plan.

13.2 LEGISLATION

Key Statutes:

- Building Act 2004
- Civil Defence and Emergency Management Act 2002
- Local Government Act 2002 (LGA 2002)
- Sections of the Local Government Act 1974
- Resource Management Act 1991
- Climate Change Response Act, 2002
- Health Act 1956
- New Zealand Coastal Policy Statement
- Governments Sustainable Development Action Plan
- The Land Drainage Act 1908
- Soils Conservation and Rivers Control Act 1941 and Amendment Act 1946
- Historic Places Act 1993

14. ASSET MANAGEMENT IMPROVEMENT PROGRAMME

14.1 2015-18 IMPROVEMENT PROGRAM

The primary focus of this improvement programme for the period between 2015-18 is to improve the of the assets and efficiency of the data management processes that support the asset management planning activity.

Table 7: Asset management improvement initiatives for the period 2015-18

ASSET MANAGEMENT FUNCTION IMPROVEMENT	IMPROVEMENT ACTION
Improve the ability to forecast asset life and identify performance based renewals	<ul style="list-style-type: none"> • Create and maintain a database that documents the location, dates of failures, failure mode, and customers affected by any failure to the land drainage system.
Asset life-cycle risk management	<ul style="list-style-type: none"> • Establish and populate an asset criticality database;]. • Schedule inspection dates as required by asset criticality.
Reactive maintenance: improving preparedness	<ul style="list-style-type: none"> • Review necessary equipment and spare parts availability to undertake repairs.
Accuracy and completeness of asset data	<ul style="list-style-type: none"> • Enter backlog of As-builts into GIS and AssetFinda. • Review AssetFinda database for obvious mistakes. • Develop an Asset Specification for Utilities Infrastructure & As-Built Standards for the GIS & AMS.
Capture of financial information	<ul style="list-style-type: none"> • Improve the systems that record project costs against assets. • Improve the systems that record the cost of construction for vested assets. • Develop a unit rate data base.

15. SIGNIFICANT ASSUMPTIONS AND UNCERTAINTIES

CORE level asset management applies to:

- List all the assumptions and possible effects.
- Confidence level on asset condition.
- Confidence level on asset performance.
- Accuracy of asset inventory.
- Confidence level demand/growth forecasts.
- Confidence level on financial forecasts.

CORE PLUS level asset management applies to:

- Inventory and condition data for all assets.

Below is a summary of the assumptions that relate to Land Drainage activity.

15.1 Asset Condition & Confidence Levels

Land Drainage assets condition and performance assessments vary substantially depending on the scheme and specific assets. Data related to quantity, size, capacity, material, performance, unit rate and criticality is of a reliable confidence level while data related to location, age, base life and condition is uncertain

Confidence level in the data on demand and financial forecasts are considered reliable.

Table 8: Summary of Assumptions for 2015/25 LTP and AMPs

ISSUE	ASSUMPTIONS
Population Growth	The population of the District will remain essentially static for the next 10-years, following by a slight decline to 2045.
Rating Unit Growth	There will be a slight increase in the rating units cause by a shift to fewer people per household.
Levels of Service	Demand for Council services and community expectations regarding the levels of service Council gives will not significantly change.
Resource Consents	Conditions of resource consents held by Council will not be altered significantly.
Operating Environment	There will be no significant changes to Council's operating environment which have not already been planned for, e.g. natural disasters, health epidemics, significant asset loss, changes to legislation and improvements in efficiency.
Method of Service Delivery	Services will continue to be delivered at the same cost (inflation-adjusted).
Asset Information	Condition data for assets that have been replaced, or are nearing the end of their useable lives is reliable. The data held of the age, material, and size of the assets within the Council's asset register is reliable
Climate Change	Temperature in Hauraki will likely rise 2.5 degree Celsius in the next 100 years, although will most likely not alter significantly during the life of this plan.

ISSUE	ASSUMPTIONS
Rainfall	Rainfall will be likely to decrease by 10 mm in the Plains, 30 mm in Waihi and 10mm in Paeroa as an annual average over the next 100 years. During the life of this plan, there is likely to be little change.
Major rainfall	Major rainfall intensity will be likely to increase by 20 % in the next 100 years in Hauraki. This will be a gradual increase, and only minor effect will be likely during the life of this plan.
Sea Level	Sea Level is likely to rise by 0.5m over the next 100 years. There is likely to be little change seen during the life of this plan.
Inflation	Separate inflation projections have been used for individual cost categories for each year of the 10 year projections.
Interest	Interest rates on Term Debt will not change sufficiently to require changes to the management of the land drainage activity.
Renewals Works Costs	On average, costs of major renewal works will not vary significantly from costs estimated at the concept stage.
Capital Works Costs	On average, costs of major capital works will not vary significantly from costs estimated at the concept stage.
Asset Life	Approximately 70% of assets will need replacement within 15% either-side of their expected service lives. The industry standard lives of all assets are correct.
Asset Value	The asset values used in the valuation are reasonably correct.