

ASSET MANAGEMENT STRATEGY

HE RAUTAKI WHAKAHAERE RAWA



Mountain to Sea
Te Kaunihera-ā-Rohe o Ngāmotu
NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

DOCUMENT CONTROL

Document Name	Asset Management Strategy
Prepared By	Steve Ilkovics, Asset Operations Planning Lead
Reviewed By	David Langford, Infrastructure Manager
Approved By	David Langford, Infrastructure Manager

August 2018



1.	Asset Management System	6
2.	Asset Management Policy	7
3.	Asset Management Plans	8
4.	Asset Lifecycle Management Plan	11
4.1	Asset Creation	11
4.2	Operations and Maintenance	11
4.3	Renewal	13
4.4	Disposal	14
5.	Asset Data	15
6.	Asset Management Improvement Programme	16
7.	Risk Management	20

LIST OF TABLES

List of Tables

Table 1 Asset management document structure	9
Table 2 Asset management plans structure	10
Table 3 Asset data accuracy/confidence grades	15
Table 4 Asset condition grades	16
Table 5 Asset criticality ratings	16
Table 6 Asset management improvement actions	18
Table 7 Risk monitoring and review	20
Table 8 Risk monitoring, review and reporting	21

List of Figures

Figure 1 Asset management system	5
Figure 2 Asset management plans links with key documents	7
Figure 3 Asset life cycle diagram	10
Figure 4 Asset maintenance	11
Figure 5 Typical asset condition decay - deterioration and intervention curve	12
Figure 6 Enterprise asset management model	14
Figure 7 Asset management maturity ratings scale	16
Figure 8 Asset management maturity ratings score	16



GLOSSARY

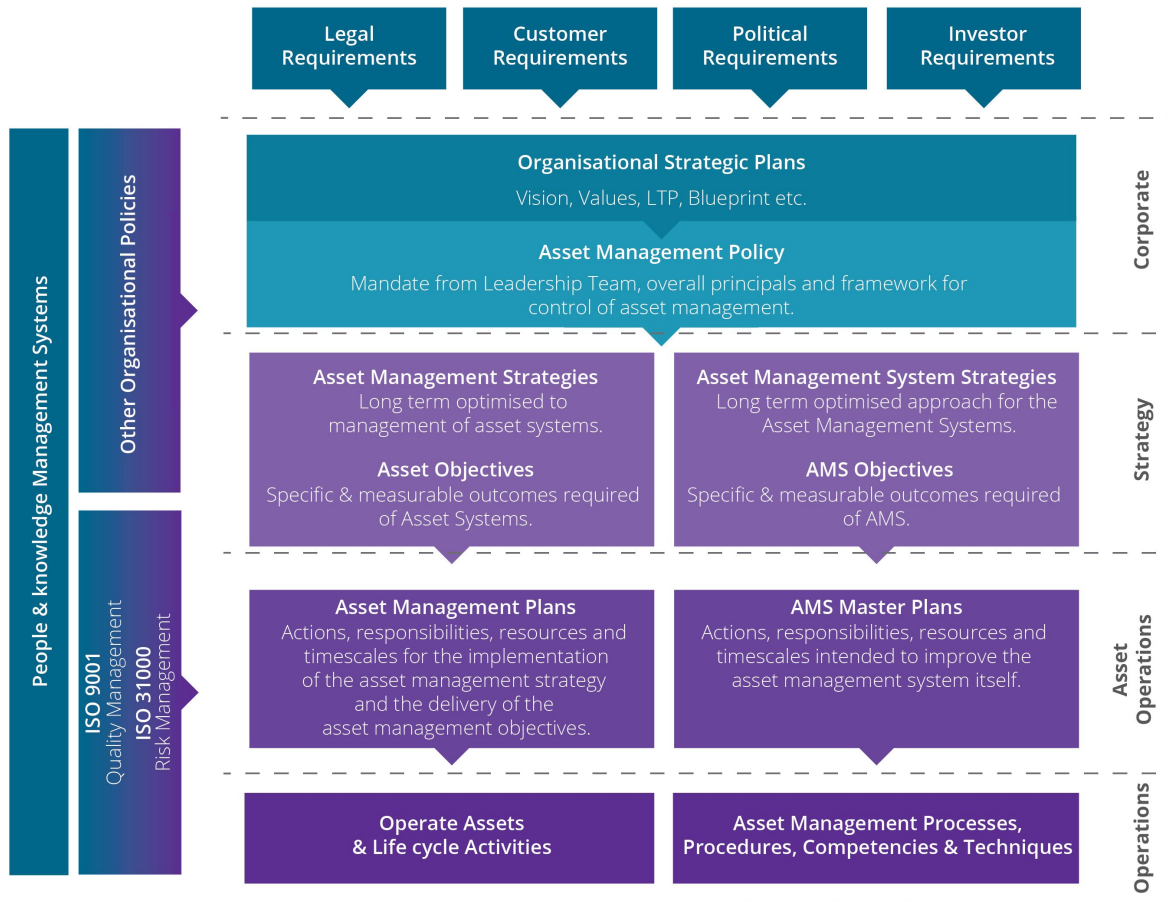
AMP	Asset Management Plan
AMS	Asset Management System
AMSG	Asset Management Steering Group
AP	Annual Plan
BSI	British Standards Institute
EAM	Enterprise Asset Management
ECM	Enterprise Content Management
GIS	Geographic Information System
IAM	Institute of Asset Management
IIMM	International Infrastructure Management Manual
IS	Information Services
ISO	International Standards Organisation
LOS	Level of Service
LTP	Long Term Plan
MTA	Maintenance Task Analysis
NPDC	New Plymouth District Council
P&IDs	Piping and Instrumentation Drawings
RAMM	Roading Asset Maintenance & Management
RCM	Reliability Centred Maintenance



1. ASSET MANAGEMENT SYSTEM

The overarching asset management system is shown in the diagram in Figure 1. It incorporates the high level stakeholder inputs and requirements including legal, customer, political and investor that feed into our organisational strategic plans. The asset management policy then guides two streams consisting of asset management (strategies, objectives, plans and operations) and the asset management system (supporting systems, IS, processes and procedures). This is supported and linked by other organisational policies and international/national standards.

Figure 1 Asset management system



2. ASSET MANAGEMENT POLICY

We have implemented an Asset Management Policy (the Policy) that provides a framework for consistent practise of asset management within our organisation. The outcomes targeted by the Policy are:

1. Investment in safe and reliable infrastructure assets being made at the optimal time in an asset's lifecycle.
2. Optimal planning for growth, maintenance and replacement of existing assets.
3. Congruent capital plans and investment priorities.
4. Taking a holistic and systematic approach that considers the combined implications of asset management decisions with a methodology that ensures consistent and repeatable results.
5. Assigning clear roles and responsibilities to all those involved in looking after our assets.
6. Using best practice processes, tools and capability in planning, integrated risk management, design and engineering, project delivery, programme management and operation of our assets.
7. Driving efficiency, improve performance and reduce total cost through innovation, risk management, partnerships and effective contract management.
8. Performing an infrastructure asset revaluation at least every three years which is peer reviewed by a third party.
9. Providing the Councillors with the officers' best professional advice on the management of assets to deliver the agreed levels of service to the community.
10. Reviewing all Asset Management Plans every three years to inform the Infrastructure Strategy as a part of Long Term Plan preparation.

We intend to achieve the above targets by implementing an Asset Management System (AMS) consistent with the practices included in BS ISO 55000 standards series – Asset Management. In addition we have created a multi-disciplinary Asset Management Steering Group (AMSG) tasked with the delivery of the Asset Management Policy. The current focus of the AMSG is to review the policy and group terms of reference, develop and implement an overarching asset management framework and to drive asset management improvements into the organisation.

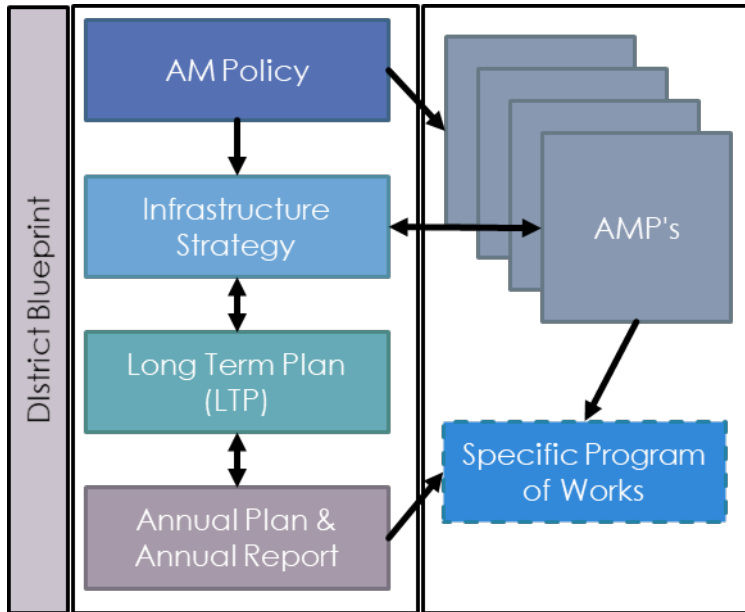


3. ASSET MANAGEMENT PLANS

Asset Management Plans (AMPs) are created for each asset type e.g. transportation and water supply and provide the detail around what we will be doing to contribute to the community outcomes and priorities identified in the 2018-2028 Long Term Plan (LTP). Our generic asset management processes are summarised in this section in order to avoid the need to explain them within each AMP.

The works programmes and associated expenditure forecasts identified in the AMPs for each infrastructure type are used to advise the Long Term Plan (LTP) and Annual Plan (AP) processes. Prior to an LTP or AP being approved plans are prepared for approval by Councillors. Individual projects that are budgeted for and included in APs are then subject to individual business case review and approval through the delegated authority system. The asset management plans are linked with other key documents and plans as shown in the diagram in Figure 2.

Figure 2 Asset management plans links with key documents



3. ASSET MANAGEMENT PLANS

The contents of the overall asset management plan are spread between the key documents as shown in Table 1. This ensures a consistent approach to asset management and provides information at meaningful levels for different purposes throughout the organisation.

Table 1 Asset management document structure

No.	Document Name	Key Document Contents
1	Long Term Plan (LTP)	Infrastructure Strategy <ul style="list-style-type: none"> • Strategic Framework • Guiding Themes • High Level Information for Each Asset Class Council Services <ul style="list-style-type: none"> • High Level Information • Levels of Service • Financial Plan
2	Asset Management Strategy	General Asset Management Principles and Overview (this document)
3	Asset Class General Volumes	General Information and Glossary about each asset class <ul style="list-style-type: none"> • Executive Summary • Introduction • Levels of Service • Future Demand • Risk Management Plan • Financial Summary • Plan Improvement and Monitoring

4	Asset Category Lifecycle Management Volumes	Asset Life Cycle Management for each asset category within each asset class <ul style="list-style-type: none"> • Description • Condition • Remaining Lives • Valuation • Operations & Maintenance • Renewals • Acquisition and Augmentation • Disposals • Annual Work Plan • Risk Management • Financial Summary • Improvement Plan
---	---	---

3. ASSET MANAGEMENT PLANS

The structure and contents of the general asset class volumes and particular asset category volumes of the asset management plan are shown in Table 2.

Table 2 Asset management plans structure

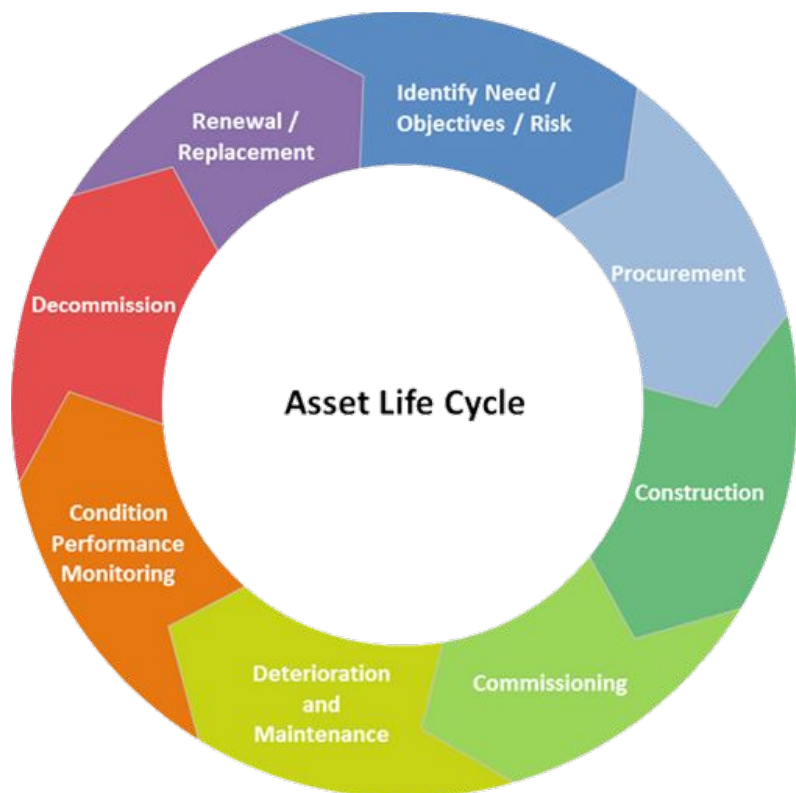
Asset Class General Volume	Asset Category Volumes
Transportation	Volume 1 – Pavements
	Volume 2 – Bridges and Structures
	Volume 3 – Footpaths and Cycle Ways
	Volume 4 – Storm Water Drainage
	Volume 5 – Traffic Services
	Volume 6 – Street Furniture
Water Supply	Volume 1 – Headworks and Intakes
	Volume 2 – Treatment Plants
	Volume 3 – Pump Stations
	Volume 4 – Reticulation Network
	Volume 5 – Storage
Wastewater	Volume 1 – Treatment Plant
	Volume 2 – Pump Stations
	Volume 3 – Reticulation Network
Stormwater and Flood Protection	Volume 1 – Pump Station
	Volume 2 – Reticulation Network
	Volume 3 – Inlets and Outlets
	Volume 4 – Flood Protection
Waste Management & Minimisation	Combined single volume

Asset Class General Volume (cont.)	Asset Category Volumes
Parks	Volume 1 – Structures
	Volume 2 – Play Spaces
	Volume 3 – Roads, Car Parks and Paths
	Volume 4 – Features
	Volume 5 – Services
	Volume 6 – Soft Assets
Property	Volume 1 – Civic Centre
	Volume 2 – Event Venues and Pools
	Volume 3 – GBAG and Len Lye Centre
	Volume 4 – Puke Ariki and Libraries
	Volume 5 – Regulatory Services Buildings
	Volume 6 – Housing for the Elderly
	Volume 7 – Parks Buildings
	Volume 8 - Water & Waste Buildings

4. ASSET LIFECYCLE MANAGEMENT PLAN

The remaining life of an asset can be described purely in financial accounting terms i.e. when it is fully depreciated based on its original book value and recorded expected life it should be replaced. However, a better understanding of how to obtain the optimum value from an asset prior to making a decision to invest in its renewal is to assess its condition, criticality, actual expected remaining life, maintenance history, performance, whole of life analysis of renewal options, failure modes and risk/consequence of failure. These factors can be determined and recorded in a systematic manner to assist obtaining the optimum value from assets e.g. some can be run to failure where risk is low. These factors can also assist in developing targeted maintenance strategies to ensure that the risk of critical assets failing or underperforming is minimised in the most economical way. The asset life cycle is depicted in Figure 3.

Figure 3 Asset life cycle diagram



The lifecycle of an asset consists of four main stages:

1. Creation or Acquisition (plan, design, procure, construct, commission);
2. Operation and maintenance;
3. Renewal or rehabilitation; and
4. Disposal.

The costs associated with each of these stages of an asset’s life must be understood and taken into consideration in order to minimise lifecycle costs.

4.1 Asset Creation

When new assets are created the total lifecycle cost is considered e.g. a cheaper valve which requires a lot of maintenance over its life may not be the best choice when compared with another valve that costs more to purchase, but less to maintain. Assets are designed to ensure future operation and maintenance can be conducted easily and safely.

4.2 Operations and Maintenance

The main operation and maintenance objectives are to sustain the operational status of the assets, minimize interruptions to customers, minimise losses and to maintain the quality of services provided. This ensures that we manage the assets in order to deliver the Levels of Service in the most cost effective way over the long term.

We carry out a number of activities to support these objectives including:

- Accurate and cost effective capture of asset data from various maintenance activities.
- System of performance indicators, aligned with Council’s Levels of Service.
- Investigating preventive maintenance opportunities.
- Extended reporting on maintenance activities to facilitate solutions based on the analysis of fault history.
- Improvement of asset knowledge at component level by field validation of asset data and condition surveys.
- Review, utilisation, further development and integration of information management systems and customer service management tools to enable comprehensive asset optimization analysis.
- Monitoring and control of new connections to assets to minimize any effects on the delivery of services.
- Designing new systems for either replacement of obsolete assets (renewals) or improvements to accommodate growth or level of service achievement.

4. ASSET LIFECYCLE MANAGEMENT

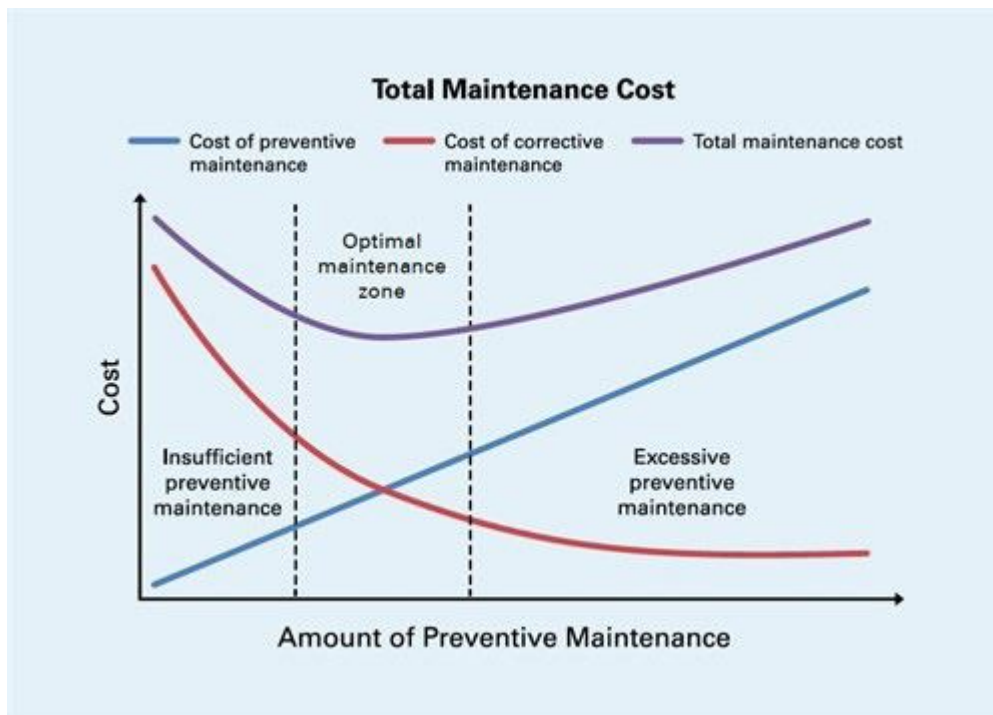
Types of Maintenance

Maintenance activities are categorised as follows.

- **Preventative** – Schedule of planned maintenance aimed at preventing failures and breakdowns. This also includes predictive maintenance to determine condition of in-service assets in order to predict when preventative or corrective maintenance should be performed.
- **Corrective** – repair in order to bring back to original operating condition (reactive maintenance).

There is an optimal mix between preventative and corrective maintenance that will provide the maximum asset performance and hence reliability/safety/risk based and achieving the minimum cost of ownership. This is demonstrated in Figure 4.

Figure 4 Asset maintenance



A maintenance strategy is currently being developed which will include address the following areas.

- Definition of level of asset reliability is required.
- Risk and criticality assessment of assets to determine priority of maintenance activities.
- Definition of maintenance KPIs.
- Optimisation plans and tools e.g. Maintenance Task Analysis (MTA), Reliability Centred Maintenance (RCM).

A maintenance management plan is also being developed based on the strategy to include the following key elements.

- **Asset Inventory** – Records of all assets that require maintenance/inspection. Records include all required information about the asset to make maintenance/inspection planning effective.
- **Maintenance/Inspection Schedules** - A list of maintenance and inspection activities to be performed and their frequency for each asset or asset category.
- **Maintenance/Inspection Check Sheets** - A summary description and detailed list of tasks to be performed for each maintenance/inspection activity.
- **Annual Maintenance/Inspection Plan** – Detailed account of resources and budget information.
- **Maintenance Tracking Tool** - To measure the activity and cost of maintenance/inspections for each maintenance type. Trending data will measure effectiveness of maintenance strategy and any optimisation initiatives.
- **Critical Spares Management** – Risk and criticality assessment to advise spares required and how these should be managed/replaced etc.

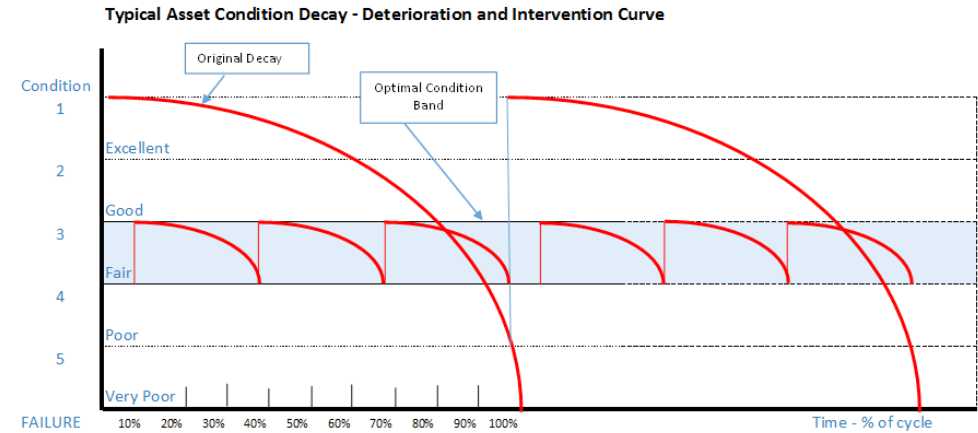
4.3 Renewal

Renewal strategies are based on assessing a number of factors to ensure the appropriate level of investment is targeted at the optimum time to ensure assets remain fit for purpose and that renewal plans are efficient and effective. The factors considered include the following:

- Criticality;
- Failure and maintenance history i.e. when does ongoing maintenance become uneconomic;
- Age;
- Expected life;
- Remaining useful life;
- Condition (where known);
- Condition prediction;
- Geographical grouping; and
- Timing in relation to linked asset renewal plans.

As a general principle the number and cost of repairs will determine the optimum timing to invest in the renewal of assets. Every time an asset is repaired it provides information about its condition deterioration rate and a prediction of the optimum time to renew. This is depicted in the diagram below where the condition of an asset is expected to deteriorate through time and the number of repairs that are required to maintain an asset in its optimal condition band. As the rate of repairs increase a prediction can be made about the optimum time to renew an asset to keep the cost of ownership at the optimum level as depicted in Figure 5.

Figure 5 Typical asset condition decay - deterioration and intervention curve



Our asset renewal strategies are based on assessing a number of factors to ensure the appropriate level of investment occurs at the optimum time to ensure assets remain fit for purpose for as long as possible.

4. ASSET LIFECYCLE MANAGEMENT

We use forecasting models to plan long-range renewal requirements. According to best practice we have adopted a risk based approach using criticality and condition assessments and failure mode analysis rather than age alone to prioritise what assets are to be renewed first. Prioritising replacement of critical assets reduces consequences of failure for the community, reserving money to pay for emergency renewals as they occur in less critical pipes. We then see less critical assets run to failure, achieving maximum life and value for money. Service disruption is limited to repair of less critical assets at the time of failure. We have also grouped renewals geographically to maximise opportunities for procurement efficiencies and to minimise disruption to the community.

We accept that prudent risk management is a key part of asset management. Risks are recorded, managed, escalated and monitored in accordance with the NPDC Corporate Risk Management Framework – Policy & Process

The renewal reserve is a cash reserve that is funded via rates for the renewal of assets, which is the funded depreciation component of operational expenditure. The reserve can be used to help recover from damage to infrastructure assets.

4.4 Disposal

Disposal is the retirement or sale of assets, whether surplus or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

- Under-utilisation
- Obsolescence
- Provision exceeds required level of service
- Replacement before end of predicted economic life
- Uneconomic to upgrade or operate
- Policy changes
- Service provided by other means (e.g. private sector involvement)
- Potential risk of ownership (financial, environmental, legal, social)

No significant issues have been identified in regard to the disposal of infrastructure assets. There is a biannual report completed that determines if land parcels are surplus and sold if they are. There is also a process to ensure any assets no longer required to meet a LOS are identified and disposed with good examples being sports parks, motor camps and recently a stopped road in Oakura.

Not all assets at the end of their life are sold or physically removed. Current practice for wastewater reticulation is to “reline” the old pipe with a new polyvinyl chloride pipe, which is more cost-effective than removing the old pipe and installing a new one. Water and Storm water pipes are often left in the ground when removed from service. This has had the additional benefit of providing a good corridor for fiber optic cabling and the government’s ultra-fast broadband rollout.

One of the underpinning principles of good asset management is the creation, maintenance and analysis of accurate asset data. Good quality asset data will enhance evidence based asset management planning and decision making but even if data is not fully accurate or complete it still contributes to the planning process. Asset data is stored in a number of systems including EAM, RAMM, ECM, GIS, Engineering Drawings and P&IDs.

We recently purchased and installed an Enterprise Asset Management (EAM) system from Technology1. The system has been installed across Water & Wastes, Parks and Property to enable and facilitate good asset management practices. The system is working well but is in need of optimising and the adoption of new/changed business processes to fully gain the benefits the system offers. The diagram below shows the key stages of asset management in relation to the functionality of the EAM. Capturing data about asset consistently on one platform will facilitate improved asset management decision making and provide improved data about asset performance. The overarching principle and asset data structure in EAM is depicted in Figure 6.

Figure 6 Enterprise asset management model



Asset Data Accuracy

Throughout the Asset Management Plans the accuracy/confidence grade of the data presented on the quantity, type (material), age, value, expected life, remaining useful life and performance is assessed and indicated in accordance with Table 3. The table is based on IIMM Section 2.4.5 on Maintaining and Improving Data Confidence.

Table 3 Asset data accuracy/confidence grades

Accuracy/Confidence	Description
A - Highly Reliable	Data based on sound records, procedures, inspections. Data recorded in well maintained system. Estimated accuracy $\pm 2\%$.
B - Reliable	Data based on sound records, procedures, inspections. A few records questionable or missing or extrapolated. Estimated accuracy $\pm 10\%$.
C - Uncertain	Data based on sound records, procedures, inspections which is incomplete. Some records questionable or missing with up to 50% extrapolated. Estimated accuracy $\pm 25\%$.
D - Very Uncertain	Data based on unconfirmed verbal reports or cursory inspections. Most data estimated or extrapolated. Estimated accuracy $\pm 40\%$.
E - Unknown	None or very little data held.

6. ASSET MANAGEMENT IMPROVEMENT PROGRAMME

Asset Condition Grades

Throughout the asset management plans the condition assessment for the assets has been summarised in accordance with Table 4. The table is based on IIMM Section 2.5.4 on Condition and Performance Rating Systems.

Table 4 Asset condition grades

Rank	Description or Condition
1	Excellent Condition
2	Good Condition – minor defects only
3	Average Condition – maintenance required to return to acceptable level of service
4	Poor Condition – consider renewal
5	Very Poor Condition – approaching unserviceable
6	Unknown

Asset Criticality Ratings

Throughout the asset management plans the condition assessment for the assets has been summarised in accordance with Table 5. The table is based on guidance in IIMM Section 3.2.4 on Identifying Critical Assets.

Table 5 Asset criticality ratings

Criticality Rating	Description
1	Non-Critical
2	Moderate
3	Important
4	Critical
5	Not Applicable
6	To Be Determined



6. ASSET MANAGEMENT IMPROVEMENT PROGRAMME

A multi-disciplinary Asset Management Steering Committee was formed in mid-2016 tasked with the delivery of the Asset Management Policy Statement:

“The Council’s asset management practices ensure the prudent stewardship and the efficient and effective use of its resources in the interests of the district, including planning effectively for the future management of its assets.”

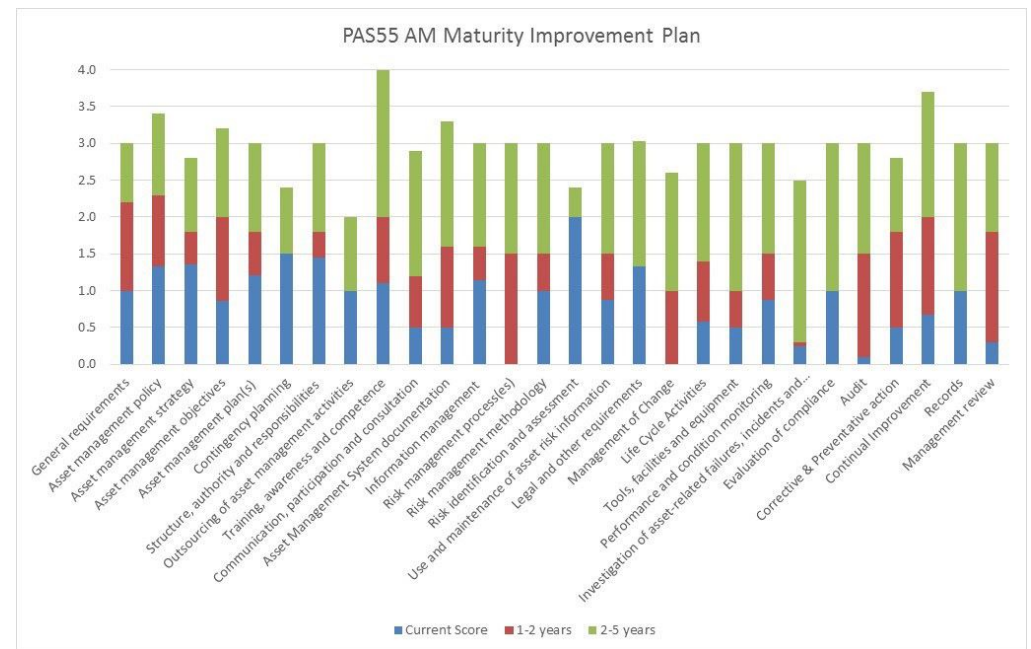
An internal assessment of our overall asset management maturity was conducted in late 2015 in using the maturity tool provided by the Institute of Asset Management. The assessment is based on the requirements of British Standards Institute (BSI) Publicly Available Specification (PAS) 55: 2008 – Optimised Management of Physical Assets. The assessment covers 28 key areas of the specification which recently formed the basis for BS ISO 55000 standard series – Asset Management. Each area attracted a score between 1 and 4 as depicted in the diagram below.

Figure 7 Asset management maturity ratings scale



The maturity scores in most areas were assessed as being in the 0.0 – 1.5 range indicating that some improvement is required (core competency is at a score of 2.5). Part of the assessment recognized that an Asset Management Policy was not formally adopted so this was developed, an improvement action plan put in place and an asset management steering group formed to guide the improvement plan. The medium term plan i.e. during 2016 and 2017 is increase maturity scores to into the 1.0 – 2.5 range and during 2018 – 2020 further increase the scores to 3.0 or above. The scores assessed for each of the 28 components and the aims to improve the PAS55 scores to take the organisation’s asset management practices from current ratings to core and optimised levels is shown in the graph below.

Figure 8 Asset management maturity ratings score



The AMPs produced to date have therefore been developed during a period of low-core asset maturity competence. There is an expectation that the next plans developed for the 2021 – 2031 Long Term Plan will be at a more advanced maturity level.

6. ASSET MANAGEMENT IMPROVEMENT PROGRAMME

The Asset Management Steering Group (AMSG) guides and leads the asset management improvement plan based on the PAS55 maturity assessment, scores and corrective actions and prioritises the action plan. Each of the identified actions are assigned to managers or leaders in the organisation and actions are reviewed at AMSG meetings. The current improvement actions are summarised in Table 6.

Table 6 Asset management improvement actions

Action #	PAS55 Clause	PAS55 Clause Name	Improvement Action
1	4.1	General requirements	Define and Document Asset Management System
2	4.2	Asset management policy	Develop New Asset Management Policy
3	4.3.1	Asset management strategy	Prepare Asset Strategy Document
4	4.3.2	Asset management objectives	Define Asset Management Objectives
5	4.3.3	Asset management plan(s)	Restructure Asset Management Plans
6	4.3.4	Contingency planning	Refresh Contingency/Emergency Plans and Processes
7	4.4.1	Structure, authority and responsibilities	Clearly Define Asset Management Responsibilities
8	4.4.2	Outsourcing of asset management activities	Improve the Definition/Requirements for Asset Management Services
9	4.4.3	Training, awareness and competence	Compile Asset Management Training Matrix
10	4.4.4	Communication, participation and consultation	Compile and Deliver Asset Management Communication Plan
11	4.4.5	Asset Management System documentation	Define Asset Management System Documentation
12	4.4.6	Information management	Develop Documented Data Catalogue
13	4.4.7.1	Risk management process(es)	Review and Update Risk Management Process
14	4.4.7.2	Risk management methodology	Review and Update Risk Management Methodology
15	4.4.7.3	Risk identification and assessment	Update Risk Identification and Assessments
16	4.4.7.4	Use and maintenance of asset risk information	Update and Use of Risk Register

6. ASSET MANAGEMENT IMPROVEMENT PROGRAMME

Action # (cont.)	PAS55 Clause	PAS55 Clause Name	Improvement Action
17	4.4.8	Legal and other requirements	Review and Update Legal Compliance Register
18	4.4.9	Management of Change	Implement Management of Change Process
19	4.5.1	Life Cycle Activities	Implement Capital Programme Performance Monitoring
20	4.5.2	Tools, facilities and equipment	Implement Tools & Equipment Management Plan
21	4.6.1	Performance and condition monitoring	Review and Implement Formal Performance & Condition Monitoring Schedule
			Implement Maintenance Strategy
22	4.6.2	Investigation of asset-related failures, incidents and nonconformities	Implement Improved Incident Investigation/Reporting Process
23	4.6.3	Evaluation of compliance	Implement Corporate Risk Management Framework
24	4.6.4	Audit	Implement Audit Programme for the AMS
25	4.6.5.1	Corrective & Preventative action	Introduce Incident Reporting and Investigation System
26	4.6.5.2	Continual Improvement	Include Continual Improvement Plan in AMS
27	4.6.6	Records	Develop AMS records system
28	4.7	Management review	Include Management Review Description in AMS Documentation

Our aim is to be leaders in asset management in contemporary local government meaning that we do what needs to be done, we do it well and we continuously improve our practices and performance. To achieve this aim we recognise that we need a consistent, fit-for-purpose and easy to understand framework that describes our asset management approach. Recently the AMSG have coordinated the development of a new framework designed to ensure that our asset management processes reflect best practice and can be applied to all areas of our organisation. The elements of the draft framework are based on guidance contained in the Institute of Asset Management (IAM) document entitled Asset Management – an anatomy Version 3 – December 2015. This document was produced by the IAM to assist organisations develop asset management systems based on the requirements of the ISO55000 series on asset management. When the framework has been finalised and launched, our overall asset management maturity will be reassessed using the maturity tool provided by the Institute of Asset Management that aligns with their document Asset Management – an anatomy Version 3 – December 2015. The results of the new maturity ratings will be used to further develop a prioritised improvement programme.

Our risk assessments are conducted, recorded, managed, escalated and monitored in accordance with ECM#1479536 – Corporate Risk Management Framework: Policy & Process. The risk management policy includes the following sections:

- Introduction
- Definitions
- Objectives
- Methods of implementation
- Risk management governance
- Structure and responsibilities

The risk management procedure includes following stages:

- Communicate and consult
- Step 1: Establish the context
- Step 2: Identify risks
- Step 3: Analyse risk
- Step 4: Evaluate risk
- Step 5: Treat risks
- Monitoring, reviewing and reporting

The document also includes guidance on the sources and types of risks and sources of risks and their consequences.

The risk register is maintained in our on-line Pinnacle health and safety management system and includes a full suite of reporting, review and reminder facilities.

Risks are reviewed at regular intervals according to their residual risk rating as show in Table 7.

Table 7 Risk monitoring and review

Rating		Action needed
E	Extreme	The risk owner immediately escalates new extreme risks to the Executive Leadership Team, and considers escalating it to the Audit and Risk Committee. These risks are to be monitored weekly.
H	High	The risk owner immediately escalates new high risks to the Group Manager, and to the Executive Leadership Team as applicable. These risks are to be monitored monthly.
M	Medium	Monthly the risk owner monitors and reviews the effectiveness of treatments and whether the risk rating has changed.
L	Low	Bi-monthly the risk owner monitors and reviews the effectiveness of treatments and whether the risk rating has changed.
I	Insignificant	Annually the risk owner reviews if the controls are necessary or could be reduced.

7. RISK MANAGEMENT

Risks are constantly changing due to our operating landscape. Therefore, risks must be monitored, reviewed and reported on a regular basis to ensure that they are current. The minimum requirements for this are shown in Table 8.

Table 8 Risk monitoring, review and reporting

Who	What	When
Managers/ Leads/ Co-ordinators/ risk owners	Review of risks (existing and new)	Risks are reviewed as prompted by Pinnacle, with frequency defined in line with Table 4
Risk Management Lead	Review of changes to the risk registers, ensuring escalations have happened when needed	Ongoing
	Reporting to the Audit and Risk Committee	Quarterly
Executive Leadership Team	Review of high and extreme risks	Bi-monthly, or as new high or extreme risks are identified
Audit and Risk Committee	Review of high and extreme risks	Quarterly

A list of all current extreme and high risks associated with our assets extracted from our risk register in August 2018 is included in Appendix 1.



Appendix 1 – Extract from Current Risk Register

Name	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_54	Financial	Inappropriate or inadequate procurement practices	The Wai Taatari programme costs more to deliver than is budgeted in the Long-Term Plan because of unplanned work, resulting in a need to reallocate funds from other projects or new funding.	H	Budget is monitored closely with the Project Board notified of deviations.	M
RISK_181	Operations and service delivery	Other	West Quay Pump Station	H	See http://npdm.co?7707858	H
RISK_32	Operations and service delivery	Poor operations or customer service (including poor contractor management and performance)	We are unable to meet planned levels of service because of increasing costs and budgetary constraints, resulting in community discontent and the potential for service disruption if key assets fail.	E	Ensure that the discussions with the community during the Long Term Plan and Annual Plan processes clearly outline the relationship between budgets (and rate increases) and Levels of Service.	M
RISK_137	Health and Safety	Other	A member of the public has an accident on our roading network because of a deficiency in our infrastructure, resulting in serious harm or death. Examples of deficiencies are things that do not meet current design standards or levels of service e.g. sharp corners with no signage or barriers, and a chip seal with insufficient skid resistance.	H	Reduce the likelihood and severity of crashes with the Minor Improvement Programme, speed controls, monitoring of crash data and behaviour change programmes.	M
RISK_183	Environment	Waste and refuse	The Council has to close its stock effluent treatment facility at Ahititi because it does not comply with its consent, resulting in an increased incidence of illegal spilling of stock effluent.	H	Make sure the current facility is as compliant as possible, and consider replacement options now, well before consent expiry in 2021. Options include a replacement facility at the existing site or another, or discontinuing the service altogether.	I

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_38	People and Knowledge	Inadequate human resource planning	Knowledge of core systems, processes and equipment is lost because reliance is placed on the skills and experience of key individuals, resulting in significant disruption when those individuals leave the organisation.	E	Have prepared Work Instructions for all plants. Induction and ongoing training although this requires improvement. AMS development underway.	M
RISK_49	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	Our procurement processes are challenged because of a flawed tender process, resulting in legal action and financial damage.	E	A Procurement Manual is in place. <ul style="list-style-type: none"> Procurement plans undertaken prior to tendering. project Managers receive training on developing and using procurement plans. Well-established documented approvals process. 	M
RISK_46	Property and assets	Other	We are unable to operate lifelines utilities during a Civil Defence and Emergency Management event because the necessary planning has not been completed, resulting in a delayed response to (and recovery from) that event.	E	The NPDC Crisis Management Plan has been re-written to reflect the realigned organisational structure. Crisis Management Plan training for key members of staff has been provided. A Crisis Management Response Room has been established in the Plymouth Room with associated resources (Radios, Satellite Phones, maps, etc) available.	M
RISK_135	Property and assets	Inadequate asset information and management	A key infrastructure asset fails because of inadequate preventative maintenance (including poor use of asset information to inform maintenance decisions), resulting in an inability to maintain levels of service, subsequent community discontent, and potentially prosecution.	H	Implementing an effective preventive maintenance programme. An Enterprise Asset Management system implemented and a maintenance role in the Asset Operations Team were both created in July 2016, and Asset Management Plans are being updated.	M

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_145	Governance, reputation, legislative compliance and control	Other	For natural disasters of longer duration, the Council is unable to continue operating its vehicle fleet because of insufficient fuel supplies, resulting in disrupted service delivery, slower response and recovery, and reputational damage.	H	The Utes for the Waste and Transportation teams are diesel powered so fuel availability will be slightly better than petrol during an emergency. There is a target of 3 days fuel supply at key infrastructure assets, such as the Water and Waste Water Treatment Plants, but this has not yet been tested.	H
RISK_48	Health and Safety	Failure to provide a safe work environment	A worker or a member of the public dies or suffers serious harm at a workplace due to our action or inaction, resulting in prosecution by WorkSafe.	H	Pre-tender Health and Safety plans developed for larger contracts. Tender Stage Safety Plans completed for smaller contracts during quotation stage. Project Manager training (but ad-hoc at present). Contractors' competency assessed in tender process. Contractors to be Health and Safety approved. Site inductions, inspections and auditing. Permit to work system at some sites.	M
RISK_141	Health and Safety	Failure to provide a safe work environment	A member of the public dies or suffers serious harm because they obtained unauthorised access to an asset e.g. tunnel, sludge ponds at the Water Treatment Plant, and the Inglewood oxidation ponds or to an active construction/project site.	H	Reviewing public access to operational sites. Installation of security fencing at the Water Treatment Plant and Inglewood oxidation ponds.	H
RISK_143	Planning and Strategy	Inadequate planning to meet future requirements (growth, renewals, changing levels of service) as documented in the Long-Term Plan, Annual Plan, and Annual Report	Our assets along the coast are damaged or lost because of the progress of coastal erosion, resulting in public expectation that we will implement measures (e.g. seawalls) to stop that erosion. NB - this risk is referred to in the Parks register too.	H	Undertaking robust strategic planning to future proof. A strategic planning team was established in 2015, and provides advice relating to growth areas, which is then incorporated into the District Plan.	M

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_178	Operations and service delivery	Other	<p>OAKURA WATER SAFETY PLAN</p> <p>CHEMICAL & MICROBIOLOGICAL CONTAMINATION REACHING AQUIFER.</p> <p>A public health outbreak is caused in Oakura because the aquifer supplying the Oakura drinking water system is not secure and contamination of the aquifer occurs due to surface water run-off, resulting in negative health effects for residents of that community.</p> <p>Indicators of contamination include: Colour, natural organics, taste and/or odour.</p> <p>Complaints or information provided by public about activities in catchment. Change in chlorine demand / drop in chlorine residual.</p> <p>Change in water pH / pH control requirements.</p> <p>Change in source water conductivity. Volcanic eruption / geothermal activity / erosion affecting aquifer catchment / recharge zone.</p> <p>Positive E. coli in bore water.</p> <p>Turbidity in bore water.</p> <p>Waterborne illness in community.</p>	H	<p>Fully secure ground water sources in use. Aquifer water age 40 years. Catchment is in bush clad national park area. Low risk of contamination in recharge area.</p> <p>Up to 2 days storage provided in the reservoirs.</p> <p>5 yearly programme in place for water age determination. DWSNZ compliance sampling in place for bore and treated water.</p> <p>Routine monitoring of bore water conductivity (grab sampling).</p> <p>Dosing & water quality trends monitored. Aquifer level monitoring & trending in place. W&W Incident Response Plan WS4C.</p> <p>Participation in TRC management of consents for abstraction from aquifers / land use.</p>	L

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_41	Planning and Strategy	Inadequate planning to meet future requirements (growth, renewals, changing levels of service) as documented in the Long-Term Plan, Annual Plan, and Annual Report	We are unable to keep up with the demand for water because of a fixed level of supply, resulting in shortages and the potential future need for rationing.	E	A consultant has been engaged to undertake a study into water supply and metering. The Water Strategy was approved by Council in July 2016. We have completed the Water Master Plan and are starting to implement this. Compulsory water conservation measures have now been introduced for the period 1 December to 30 March each year.	L
RISK_169	Health and Safety	Inadequate focus on Health and Safety, especially at high risk workplaces	The health and safety of workers at the Materials Recovery Facility (MRF) are endangered because of the contamination of recycled material by non-recyclable items (e.g. ashes, medical waste, sharps, gas cylinders), resulting in injuries to individuals or a fire risk to the facility itself.	E	EnviroWaste (contractor) MRF procedures and PPE; Contamination Management Plan; Solid Waste bylaw; bin audits; three warnings to properties found to be including contaminants in their recycling before collection ceases; education of the public (although this is intermittent); emergency response procedures at the MRF; increased face-to-face education with a dedicated bin auditor through the contractor (appointed?); and a fire hose installed in the loading area of MRF.	H
RISK_45	Property and assets	Other	There is reduced operating efficiency at the Waste Water Treatment Plant because of illegal dumping or high volumes of trade waste, resulting in breakdowns or unplanned maintenance to ensure continued service delivery.	H	Trade waste bylaw and officer. Both currently well implemented. Still some residual risk due to extent of network and opportunity for abuse. An additional scenario has also been added to the Incident Response Plan to outline how these situations will be dealt with.	M
RISK_43	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	We breach consent terms e.g. waste water discharge or non-compliance with regulations or standards (e.g. drinking water) because of our action or inaction, resulting in fines and/or revoked accreditation.	H	Robust compliance monitoring system, including a dedicated compliance team in Water and Wastes. Continually developing processes and controls. O&M manuals, work instructions, asset information (as built) and training. A training record matrix has been established in SharePoint. Training of staff in high risk areas has been undertaken (and will continue this year).	M

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_44	Governance, reputation, legislative compliance and control	Other	<p>A Public Health emergency occurs because of a service delivery failure at the Waste Water Treatment Plant or Water Treatment Plant caused by:</p> <ul style="list-style-type: none"> • severe weather; • a natural disaster; • a fire; • a chemical spill; or • malicious action; <p>resulting in poor health outcomes for individuals or groups in our community.</p>	H	Robust compliance monitoring system, including a dedicated compliance team in Water and Wastes. Continually developing processes and controls. O&M manuals, work instructions, asset information (as built) and training.	M
RISK_138	Planning and Strategy	Other	We allow building within an impoundment area because our Water and Wastes and Building Consent functions work in isolation, resulting in properties being flooded and potential claims against the Council.	H	Integrated working with other teams e.g. between Water and Wastes and Regulatory teams via regular development meetings.	M
RISK_144	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	There is an overflow from the Mangati pump station because there is little emergency storage (only around three to five minutes' worth) in the event the pumps fail for any reason, resulting in environmental damage from sewage and potential prosecution.	H	Construction of the Area Q pump station is underway. This will take some load off the Mangati pump station. A standby generator is also being installed.	H

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_42	Governance, reputation, legislative compliance and control	Other	Our storm water assets are unable to cope with significant weather events because their design and location are based only on high-level run-off assessments, resulting in potentially avoidable flooding, legal action, and insurance claims.	H	Improving information to better assess storm water management. Updating Storm Water Catchment Management Plans - completed for Waitara West (2016), while those for Waitara East and New Plymouth Central are underway.	M
RISK_142	Planning and Strategy	Other	Our detention dams and/or reticulation systems no longer meet design or environmental standards because the standards have changed, resulting in a need to upgrade those assets.	H	Undertaking robust strategic planning to (as far as possible) future proof. A strategic planning team was established in 2015. Continue to review subdivision plans as they become available.	M
RISK_22	Health and Safety	Failure to provide a safe work environment	Our workers are at risk of serious harm because of exposure to harmful building materials such as asbestos, or to sick building syndrome through legionella bacteria and toxic mould. This includes residential tenancies.	E	Code compliant buildings with regular maintenance and testing of HVAC systems. Buildings with asbestos are noted in the Asset Management System. Ongoing staff training and knowledge sharing. Observation and awareness. Health and Safety audits.	L
RISK_25	People and Knowledge	Inability to attract and retain skilled staff	Management of property assets is compromised because of reduced capacity and capability within the Council (e.g. of qualified property resources) resulting in missed opportunities to increase revenue from those properties.	H	Robust recruitment processes. Documented process and procedures, staff development and training to promote professional registration e.g. PINZ accreditation.	L
RISK_24	Property and assets	Other	Council services are disrupted because of the failure of a key asset, resulting in a prolonged shutdown, and financial and reputational damage.	H	Maintain or replace plant when due to maintain service levels. Ensure systems are in place in order to monitor and manage data and information on asset performance and condition e.g. emergency generator.	L

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_27	Health and Safety	Failure to provide a safe work environment	People are exposed to harm because of the potential poor performance of buildings assessed as earthquake prone or an earthquake risk, resulting in serious harm or death in the event of a damaging earthquake.	H	Strengthen earthquake prone buildings to ensure statutory compliance. Ensure insurance, emergency evacuation plan and business continuity plan are in place, and have Civil Defence (TEMO) alert. Regular earthquake preparedness audits and agenda on monthly team meetings, e.g. tie down of furniture.	M
RISK_155	Operations and service delivery	Other	Critical assets are lost or damaged for a prolonged period because of a severe natural event e.g. earthquake, volcanic, storm, resulting in significant disruption to service delivery and to the community.	H	Emergency spares and equipment in stock and available. Catastrophe insurance obtained.	H
RISK_167	Environment	Natural hazards	Trees of the Myrtacaceae species in the New Plymouth and Waitara CBDs are badly affected or lost because of Myrtle Rust, resulting in a significant impact on the aesthetics of those areas.	H	Staff from the Ministry of Primary Industries and NPDC are investigating the extent of this fungal disease throughout the district. Affected material is either being removed or sprayed.	M
RISK_66	Property and assets	Poor safety and security at public facilities: accidents, criminal activity, unacceptable behaviours, abuse	A worker or member of the public dies or suffers serious harm because of the failure of, or deliberate damage to, a Parks asset (e.g. bridges and other structures), resulting in prosecution.	H	Asset Management Systems, condition assessments (e.g. independent assessments for critical assets such as bridges like Poet	M
RISK_68	Health and Safety	Inadequate focus on Health and Safety, especially at high risk workplaces	A worker, volunteer, or a member of the public dies or suffers serious harm at a Parks workplace due to our action or inaction, resulting in prosecution by WorkSafe.	H	New agreement being developed for volunteer groups and external stakeholders (e.g. sports clubs). Staff training, policies and procedures, PPE, swift response to service requests, and regular condition assessments of our assets. Volunteer groups and new stakeholders currently receive a welcome handbook - ECM# 900919.	M

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_168	Health and Safety	Other	A member of the public has a slip, trip or fall in public spaces of the CBD due to our action or inaction, resulting in a fatality or serious injury.	H	The CBD streetscape is cleaned daily during catkin and leaf fall from the CBD trees. The bluestone paving is also deep cleaned twice yearly to mitigate slipping.	M
RISK_69	People and Knowledge	Inability to attract and retain skilled staff	We are unable to recruit appropriately qualified staff (mainly in the trades) because of known national skills shortages (e.g. turf, arboriculture and horticulture), resulting in difficulty maintaining facilities and services.	H	We have developed a leading practice apprenticeship programme, supplemented by ongoing internal training and succession planning for staff, and the maintenance of relationships with training providers (Primary ITO) and other Councils. Arb, Turf, and Zoo are areas of expertise we have to continually work on.	L
RISK_72	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	We are non-compliant with consent terms at the crematorium or new cemetery because of emissions and leachate levels respectively that exceed allowable levels, resulting in a breach notice from the Taranaki Regional Council.	H	Regular maintenance programme at the crematorium and bore monitoring at the new cemetery. The Newton Cremator was re-bricked December 2016.	M
RISK_74	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	A member of the public or a provider contracted to the Council illegally uses a drone over public land because of their ignorance of CAA and/or Council policy, resulting in injury and/or CAA prosecution.	H	A permission letter has been created for Parks, which has been adapted also for Events use. This spells out the responsibilities operators have when using drones over Council-owned land.	M
RISK_67	Planning and Strategy	Inadequate planning to meet future requirements (growth, renewals, changing levels of service) as documented in the Long-Term Plan, Annual Plan, and Annual Report	Our assets along the coast are damaged or lost because of the progress of coastal erosion, resulting in public expectation that we will implement measures (e.g. seawalls) to stop that erosion. NB - this risk is referred to in the Infrastructure Team register too.	H	The Council has adopted a Coastal Erosion Policy which sets out when we will intervene. Existing seawalls are managed in accordance with consent conditions and are inspected regularly and maintained as need. Erosion is occurring at East Waitara. Other walls at Onaero and Urenui are addressed in the 2015/25 Long Term Plan.	M

Name (continued)	Type of Risk	Sub Type of Risk	Description	Inherent Risk Rating	Current Treatment	Residual Risk Rating
RISK_75	Health and Safety	Failure to provide a safe work environment	A member of the public dies or suffers serious harm at a Council maintained facility e.g. a reserve because of an accident, resulting in the potential for prosecution based on any claim of poor maintenance or inaction on an issue despite it being brought to our attention.	H	Appropriate response to service requests that relate to maintenance received through existing communication channels e.g. the Contact Centre. Asset Management Systems identify maintenance requirements as supported by condition assessments (e.g. independent assessments for critical assets).	M
RISK_156	Governance, reputation, legislative compliance and control	Failure to comply with legislative requirements	The Council is unable to provide sufficient accurate records to meet statutory requirements under the Burial and Cremation Act (section 50) because the Cemetery Management System (Assure) fails, resulting in reputational damage and negative media publicity.	H	System supported by Apt Business Solutions through an annual support agreement.	M

A photograph of a water treatment plant with a large purple overlay. The plant features several concrete basins with metal railings and walkways. A blue motor is visible on the right side. The background shows a green, wooded area.

ASSET MANAGEMENT STRATEGY

HE RAUTAKI WHAKAHAERE RAWA