

Asset Management Planning Policy 2010

Hauraki District Council



Title:	<i>Asset Management Planning Policy 2010</i>		
Sponsor:	Approved By:		
<i>Mark Buttimore</i>	<i>Council</i>		
Adopted:	Review Date:	Version:	File Ref:
24/02/2010	2013	1	548953_v2

Property of Hauraki District Council

Contents

1. POLICY OVERVIEW AND CONTEXT	4
2. METHODOLOGY FOR DETERMINING ASSET MANAGEMENT LEVELS	6
3. AMP’S and COUNCIL BUSINESS PROCESSES	7
4. ASSET PLANNING ROLES AND RESPONSIBILITIES	10
5. ASSET PLANNING MANAGEMENT TEAM	10
6. ASSETS SUBJECT TO AMP’S	10
7. AMP TIMETABLES AND IMPROVEMENT PROCESSES	11
8. AUDIT AND REVIEWS	12
9. LINKS TO COUNCILS SUSTAINABILITY POLICY AND APPROACH	12
10. ASSET MANAGEMENT POLICY STATEMENTS	12
11. Land Transport	14
Objective of the Land Transport Asset Management Policy	14
Asset Management Policy Principles	14
Policy Linkages to Other Plans	15
Structured Assessment of Asset Management Practice	15
Implementation and Review of Policy	16
Asset Management Implementation Strategy	16
12. Utilities - Water Supply and Wastewater	17
Objective of the Utilities Asset Management Policy	17
Asset Management Policy Principles	17
Policy Linkages to Other Plans	17
Structured Assessment of Asset Management Practice	18
Implementation and Review of Policy	19
Asset Management Implementation Strategy	19
13. Solid Waste	20
Objective of the Solid Waste Asset Management Policy	20

Asset Management Policy Principles	20
Policy Linkages to Other Plans	20
Structured Assessment of Asset Management Practice	21
Implementation and Review of Policy	22
Asset Management Implementation Strategy	22
14. Land Drainage and Stormwater	23
Objective of the Land Drainage and Stormwater Asset Management Policy.....	23
Asset Management Policy Principles	23
Policy Linkages to Other Plans	24
Structured Assessment of Asset Management Practice	24
Implementation and Review of Policy	25
Asset Management Implementation Strategy	25
15. Community Facilities	26
Objective of the Community Facilities Asset Management Policy	26
Asset Management Policy Principles	26
Policy Linkages to Other Plans	26
Structured Assessment of Asset Management Practice	27
Implementation and Review of Policy	28
Asset Management Implementation Strategy	28
Appendix A	29
INITIAL RISK SCREEN – DISTRICT POPULATION.....	29
CONSIDERATION OF DISTRICT WIDE RISK FACTORS.....	32
DETAILED FACTOR ANALYSIS	36
APPENDIX B	41
Lifecycle Management of Assets	41

Asset Management Planning Policy

1. POLICY OVERVIEW AND CONTEXT

- 1.1. The Hauraki District manages its physical assets on behalf of its community to ensure that the assets are capable of delivering the agreed levels of service from that asset over the life of the asset in the most cost effective manner.
- 1.2. It also ensures that replacement or disposal of the asset forms part of its asset planning, management and financial planning.
- 1.3. To achieve this Council has had to consider how it can select the appropriate asset management level for the organisation. For some activities or asset types this may not need to progress beyond a core approach. For others a more advanced approach is required. It will depend on a number of factors, including:
 - The costs and benefits to the organisation
 - Legislative requirements
 - The size, condition and complexity of the assets
 - The risk associated with failures
 - The skills and resources available to the organisation
 - Customer expectations
 - Sustainability (additional to the IIMM list but incorporated as part of Councils sustainability approach).
- 1.4. The genesis of the thinking around appropriate asset management practice goes back to the New Zealand Infrastructure Asset Management Manual (June 1998), which was superseded by the International Infrastructure Management Manual (IIMM). Section 2.3 of the 2006 Edition covered the topic of Basic and Advanced Asset Management. This suggests suggested six stages of asset management improvement as follows:
 - Stage 1: Strategy Development
 - Stage 2: Basic Asset Register
 - Stage 3: Basic Technical Asset Management
 - Stage 4: Improved Maintenance Management
 - Stage 5: Introduce Advanced Asset Management Techniques
 - Stage 6: System Optimisation (fully optimised decision making and advanced asset management practice)
- 1.5. This approach anticipated graduated stages of improving asset management practice. 'Core Plus' asset management practice covers Stage 4 and 5 using this approach.
- 1.6. This policy introduces the concept of 'Core Plus' asset management practice. The IIMM (Section 2.2.4) identifies two levels of asset management practice; core and comprehensive (also referred to as advanced). For many asset owning authorities their desired practice levels, based on their infrastructure

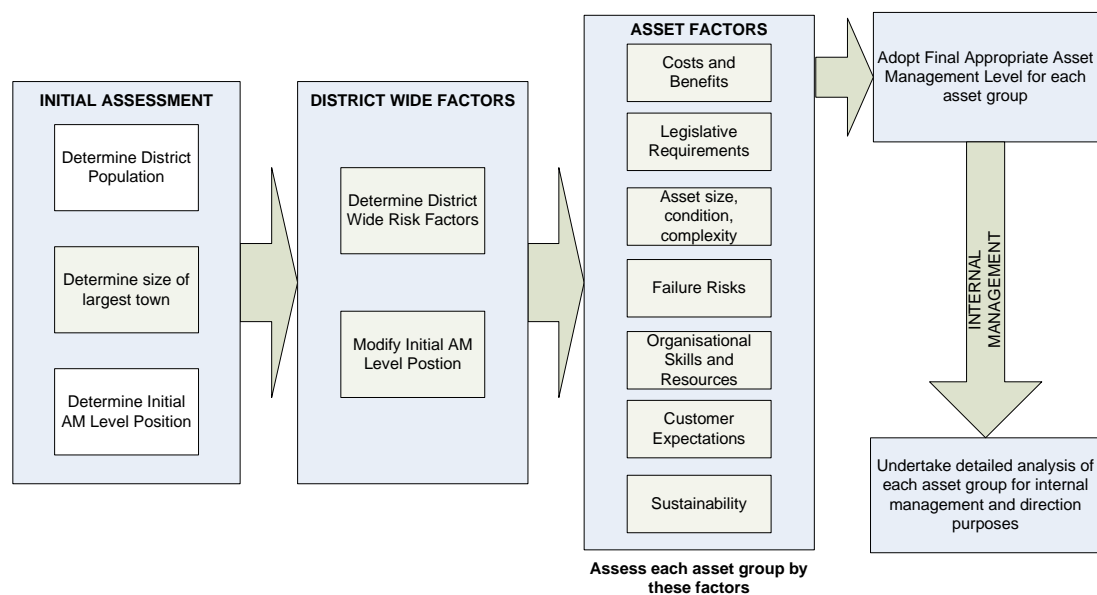
drivers will be above core practice (as defined in the IIMM) but may well be below comprehensive asset management practice.

- 1.7. For this situation the concept of 'Core Plus' asset management practice has been introduced.
- 1.8. Core Plus asset management practice could be any of the following:
 - Core, plus one or two advanced categories fully compliant.
 - Core, plus over 50% of advanced categories fully compliant
 - Core, plus some advanced categories substantially compliant
 - Core, plus most advanced categories. substantially or fully compliant
- 1.9. 'Core Plus' asset management practice is above core and below fully compliant with comprehensive practice.
- 1.10. Therefore, each asset owner has had to consider the appropriate asset management level on an activity basis, taking into account national, regional and local drivers of asset management practice for that asset.
- 1.11. The recommended methodology for assessing this is to use the Detailed Asset Management Practice Assessment Tables included in Section 6 of the Waugh report to assess appropriate practice levels for each activity or asset group. These tables cover detailed analysis of the following asset management practice areas:
 - Description of Assets
 - Levels of Service
 - Managing Growth, including sustainability strategies
 - Risk Management
 - Lifecycle Decision-making
 - Financial Forecasts
 - Planning Assumptions, Linkages, and Confidence Levels
 - Improvement Programmes
 - Planning Qualifications
 - Commitment by Asset Owner
- 1.12. For the asset owner where the overall practice has been set at 'Core Plus' there still could be variations of practice by asset or activity group.
- 1.13. The draft policies developed for each asset highlights that asset management practice for some activities is nearly at comprehensive practice (e.g. Land Transport), while the practice for others is nearer to core practice (e.g. Community Facilities).

2. METHODOLOGY FOR DETERMINING ASSET MANAGEMENT LEVELS

- 2.1. The assessment methodology used in formulating the recommended policies is as follows:
- a. A risk based approach using district population and largest town size as a proxy for risk and an initial screen
 - b. Determination of an initial position based on the population risk screening
 - c. Modification of the initial position based on the District wide risk factors
 - d. Examination of each asset group and conducting a further analysis based on the Section 2.2.4 factors:
 - i. Costs and Benefits
 - ii. Legislative Requirements
 - iii. Size, condition, complexity of assets
 - iv. Risks associated with failures
 - v. Organisational skills and resources
 - vi. Customer expectations
 - vii. Sustainability (additional to IIMM list)
 - e. Adopting a Final Appropriate AM Level position for each asset group based on the detailed factor analysis (part of this report)
 - f. Undertaking a detailed analysis table to plot the adopted position
 - g. Using the detailed analysis of asset groups to identify gaps between adopted appropriate practice and current practice

METHODOLOGY FOR DETERMINING APPROPRIATE ASSET MANAGEMENT LEVEL



- 2.2. The outcomes of the analyses as detailed in items (a) to (d) above are attached as **Appendix A**.
- 2.3. The outcomes of e) above are the individual asset management development policy statements recommended as part of this report.
- 2.4. With the adoption of this policy approach the outcomes of f) and g) above are work in progress for the asset managers as they develop the GAP analysis and improvement programmes for each asset.

3. AMP'S and COUNCIL BUSINESS PROCESSES

- 3.1. Local authorities have responsibility for or take responsibility for the delivery of many services to their communities. In general terms these are either activity based (eg: regulatory, community development) or asset based (eg: infrastructure assets, community facilities).
- 3.2. For asset based activities life cycle planning for the asset from construction to maintenance and eventual replacement is the key planning process and this forms the basis of all AMP's. These plans are the primary building blocks for delivery of all asset based activities and are reliant on a component level of understanding of each asset and network.
- 3.3. The objective of asset lifecycle planning is to look at the lowest long term cost rather than "short term" savings when making asset management decisions.
- 3.4. Various assets are at different stages in their asset life cycle and different funding and management strategies are required to manage them.
- 3.5. The lifecycle approach to asset management is attached as Appendix B.
- 3.6. AMP's are generally expected to cover the following key matters:
 - Councils rationale for involvement in and the parameters of the activity
 - Forecasting assumptions, uncertainties and risks
 - Description of the asset (based on comprehensive asset data)
 - Levels of service
 - Performance measures and targets
 - Demand Management
 - Life Cycle analysis
 - Maintenance and operating costs over the planning period
 - Capital expenditure over the planning period
 - Renewal expenditure over the planning period
 - Policy on depreciation of the asset (and its component parts) and funding of this cost
 - Valuation of the asset (re-valuation generally every 3 years)
 - Improvement programme for the AMP
- 3.7. Each AMP provides the base data for the Council's Long Term Plan in relation to the items listed above. AMP's therefore have a key role in and key relationship with all Council's long term planning.

3.8.

INPUTS TO AMP'S

Statutory Requirements
By-law Requirements
District Plan
Resource Consents
Council Policies
Community Outcomes (91, 92)
Assumptions
Service Levels
Significance Policy (90, 278)
Assessment of Water and Sanitary Services
(125-129, 285, 286)
Job Descriptions
AMP Improvement Plans
Required Manuals (e.g. Transit)
Constraints (policy, financial, etc.)

OUTPUTS FROM AMP'S

Asset descriptions (history, age, location, etc.)
Demand forecast
Risk analysis/ Risk management strategies
Levels of Service
Maintenance strategies and programmes
Renewal strategies and programmes
Capital strategies and programmes
Operational Plans
Business Plans
Annual Plan (95, 281, 294, S10 Part 2)
Assumptions
Improvement programmes

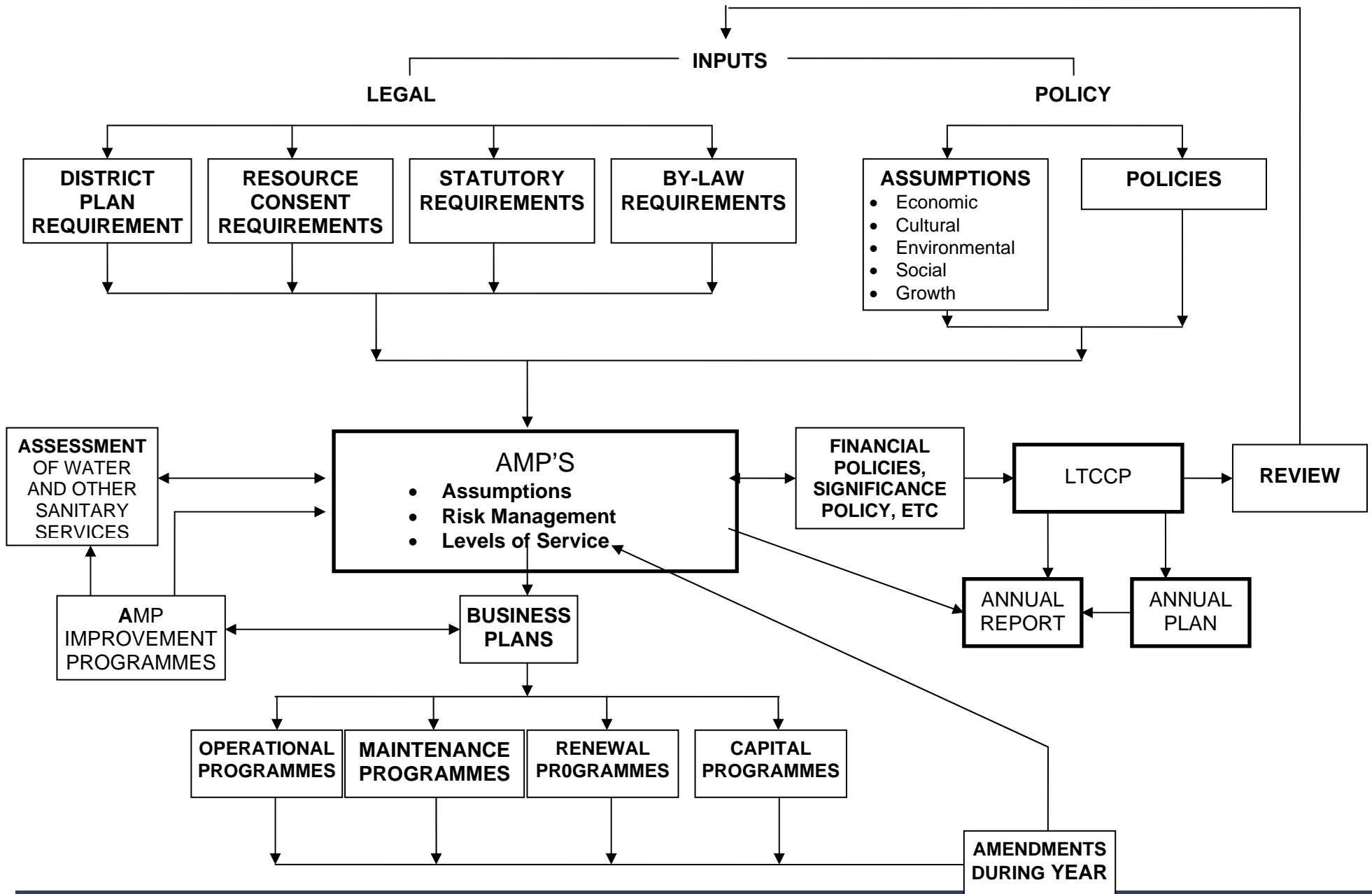
DEVELOPED WITH AMP'S

LTCCP
Service Level Agreements
Operational manuals
Funding and Financial Policy
Revenue and Financing Policy
Liability Management Policy
Investment Policy (105)
Development Levies (106, 201)
DISP calculations

REPORTING FROM AMP'S

LTCCP
Annual Report
Assessment of Water and Sanitary Services
Reports to Council/MT
- Policy
- Operational
- Monitoring
Improvements required to AMP's
Performance Assessment

This is illustrated as follows.



4. ASSET PLANNING ROLES AND RESPONSIBILITIES

- 4.1. The Chief Executive is responsible for the production and presentation of all AMP's.
- 4.2. Clearly this responsibility is delegated down through Departmental Managers and individual asset managers and staff.
- 4.3. The Development and maintenance of these plans will continue to be a corporate approach through the Corporate Asset Management Development Team (CAMPT).
- 4.4. While each individual Asset Manager is responsible for the development of their AMP, the team approach brings the benefit of co-ordination, common approaches, common timetables, training, and the ability to share experiences and have a team approach to issues of concern.
- 4.5. Outside expertise is used as required and utilised from time to time at an asset management development team, departmental or individual asset manager level to assist with matters as identified at those levels. This can be for peer review, specialist knowledge, resourcing and other identified matters.

5. ASSET PLANNING MANAGEMENT TEAM

- 5.1. The Asset Management Planning Team shall consist of the following members with other staff and advisors co-opted as required.
 - Chief Executive
 - Departmental Managers
 - Asset Managers
 - Finance Manager
 - Information Services Manager
 - Asset Administration Manager
 - Strategic Planner
- 5.2. The Team shall be chaired by the Strategic Planning Projects Manager
- 5.3. The Team shall meet as agreed but generally on a two monthly regular cycle.
- 5.4. The Team is not responsible for the production of individual asset management plans but rather is a team to bring the benefits of co-ordination, common approaches, common timetables, training, and the ability to share experiences and have a common approach to issues of concern.

6. ASSETS SUBJECT TO AMP'S

- 6.1. Council's present Groups of Activities and Activities as detailed in the Hauraki Community Plan 2009 – 19 defines which activities are subject to asset management planning. These are:
 - Network Services
 - Land Transport
 - Utilities
 - Water
 - Wastewater

- Solid Waste
- Drainage
 - Land Drainage
 - Stormwater
- Community Facilities
 - Parks and Reserves
 - Libraries
 - Community Halls
 - Property (Overhead activity but asset based)
 - Public Toilets
 - Swimming Pools
 - Cemeteries

7. AMP TIMETABLES AND IMPROVEMENT PROCESSES

7.1. The process for developing successive AMP's is generally as follows in a 3 year cycle (to co-ordinate with the development of each successive LTCCP):

- Ensure that the Improvement Programmes identified in the AMP's as adopted through the LTCCP process are implemented as timetabled through the 3 years until the adoption of the next LTCCP
- Include the finalised results of the Improvement Programmes into the adopted (now working draft) AMP's
- Ensure AMP's are updated to include any new legislative requirements
- Add vested assets and asset data to the AMP's as Council constructs or takes responsibility for it (generally through subdivision)
- To prepare for input to the draft LTCCP:
 - Proposed changes to service levels
 - Analyse demand drivers that may impact on consumption and use of services
 - Identify and manage risks that may impact service delivery
 - Updated Operational requirements and costings
 - Proposed capital works programmes and justification/options for these
- To annually ensure all asset data is able to be valued for the Annual Report
- To triennially ensure that all assets are re-valued for the Draft LTCCP to ensure financial planning takes into account current values (e.g. depreciation)
- Consultation and customer satisfaction survey

8. AUDIT AND REVIEWS

- 8.1. AMP's have, since the new approach was taken in 2004, have been subject to a number of Peer Reviews – both individually and collectively.
- 8.2. An overall peer review and commentary on all plans was undertaken by Maunsell in September, 2006.
- 8.3. The land transport plan has been the subject of reviews by OPUS, Transit and the New Zealand Transport Agency
- 8.4. The stormwater and land drainage plans have been reviewed and further developed by Waugh Consultants
- 8.5. The Audit Office has reviewed AMP's for a number of years but with the development of the Long Term Council Community Plan process it has, for the last two LTCCP's, undertaken full audits of the land transport, water and solid waste AMP's using specialist asset/risk auditors. In general terms these audits have shown a good basic level of Asset management planning with more advanced planning evident in the land transport plan.
- 8.6. If the proposed TAFM principles referred to in the covering report (#507299) are passed into legislation we can expect that the Audit Office will place a higher priority on the Audit of AMP's both at the LTCCP/Annual Plan time and also at each Annual Report. The AMP's are the base document for all Councils asset decisions and should form the basis of the LTCCP/Annual Plan in terms of asset operational and capital expenditure.
- 8.7. Peer Reviews of asset plans will continue to occur from time to time as part of the good practice approach of ensuring independent review and benchmarking of current practice.

9. LINKS TO COUNCILS SUSTAINABILITY POLICY AND APPROACH

- 9.1. Sustainability has been taken into consideration at every stage of Asset Management Planning.
- 9.2. A process has been adopted through the significance policy called a 'decision-making flowchart'. This ensures that the legal considerations from the LGA have been taken into consideration when making 'significant' decisions.
- 9.3. As part of this process, the four well-beings are considered and the implications of the project are given a score against them. These results are then charted to give a visual representation of the 'balancing' of the well-being. At this stage the options available for a project can be charted against their effects on the well-being and consideration can be made on mitigation. This process is called the 'sustainability tuner'.
- 9.4. Council also has an adopted policy stance on sustainability which commits it to 'walking the talk' on sustainability, whilst trying to encourage the community to do so also. It is likely that this stance will become an adopted policy in the near future.
- 9.5. In Councils public documents, it incorporates a sustainable theme and highlights specific projects which Council is undertaking which are pro-actively sustainable in their nature.

10. ASSET MANAGEMENT POLICY STATEMENTS

- 10.1. The Asset Management Policy Statements for the Assets are assessed below.

10.2. For the purposes of these policies, and further to the information set out in the report, levels of asset management practice are defined as follows:

10.3. **‘Core’ Asset Management Practice**

‘Core’ asset management practice is basic technical Asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. ‘Core’ practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.

10.4. **‘Core Plus’ Asset Management Practice**

‘Core Plus’ asset management practice is undertaken at a level between ‘Core’ and ‘Comprehensive’ practice. The focus is to build on the basic technical Asset management planning of ‘Core’ practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques.

10.5. **‘Comprehensive’ (Advanced) Asset Management Practice**

‘Comprehensive’ asset management practice is system optimisation planning undertaken to optimise activities and programmes to meet agreed current and future service standards. This is achieved through the development of management tactics based on the collection and analysis of key information on asset condition, performance, demand for service, lifecycle costs, risk costs and asset lifecycle treatment options.

11. Land Transport

11.1. The Hauraki District Council Asset Management Policy Statement for the Land Transport Activity is outlined below. It is intended that this Policy Statement be added to the introduction of the Activity Management Plan, to set the direction of the Land transport Asset Management process.

Objective of the Land Transport Asset Management Policy

- 11.2. The objective of the Hauraki District Council's Asset Management Policy for the land Transport Activity is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire lifecycle of the service delivery, using appropriate assets as required.
- 11.3. The Asset Management Policy requires that the management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets.
- 11.4. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.
- 11.5. This Asset Management Policy sets the appropriate level of asset management practice for Council's land transport Activity as 'Core Plus' practice.
- a. Definition: 'Core Plus' asset management practice is undertaken at a level between 'Core' and 'Comprehensive' practice. The focus is to build on the basic technical Asset management planning of 'Core' practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques.

Asset Management Policy Principles

- 11.6. The following principles will be used by Council to guide Asset management planning and decision making:
- Effective consultation to determine appropriate Levels of Service
 - Ensuring service delivery needs form the basis of asset management
 - Integration of asset management with corporate, financial, business and budgetary planning using activity management plans and Council's LTCCP to demonstrate this
 - Integration with neighbouring authorities and other agencies including NZ Transport Strategy, National Land Transport Programme, and the Regional Land Transport Strategy
 - Integration of asset management within Council's strategic, tactical and operational planning frameworks
 - Informed decision making taking a lifecycle management and inter-generational approach to asset planning
 - Transparent and accountable asset management decision making
 - Sustainable management providing for present needs whilst sustaining resources for future generations

Policy Linkages to Other Plans

11.7. This Asset Management Policy links to Council's LTCCP, the Waikato Regional Land Transport Strategy, and land transport AMP. New Zealand Transportation Agency asset management requirements form this Policy's minimum asset management practice requirements.

Structured Assessment of Asset Management Practice

11.8. Council has undertaken a structured assessment of the appropriate level of asset management practice for the land transport assets. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual. The results of this assessment are shown in Table 1 Land Transport Activity Factor Assessment Results below.

Table 1 Land Transport Activity Factor Assessment Results

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'.
District Wide Risks	Core Plus	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified.
Costs and Benefits	21% of rates - More risk	The land transport budget is the largest in Council and represents higher risks if AM practice is not at an appropriate level. These budgets also allow more scope to develop asset management practice as appropriate. The New Zealand Transport Agency requires three-year programmes to be submitted.
Legislative Requirements	Meet minimum	Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach.
Size, Condition, Complexity of Assets	Normal	The size and complexity of assets is normal for a rural authority with small towns. The land transport network as a whole in good condition reflecting sustained long term investment There are some patterns of drought and flood restoration cycles but these cycles can't be proactively managed Flooding affects portions of the network from time to time and contingency planning is required.
Risks Associated with Failures	Average	The risk of failure of funding or project implementation within the land transport activity requires a pro-active management approach integrating with neighbouring authorities and other agencies. Any reduction in the Financial Assistance Rate from the New Zealand Transport Agency poses an economic risk. Overall risks associated with asset failure have been assessed to be average. Network interconnection is generally good and the network is not a spinal network. The State Highway at the gorge is a key linkage. All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered.
Organisational Skills and Resources	Normal	Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Succession planning has been identified as an issue and is being managed. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Council considers its approach and ability to deliver asset management in

Criteria	Assessment	Commentary
		terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans.
Customer Expectations	Average	Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community. Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy.
Sustainability	Corporate sustainability policy	Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach Council is also following the sustainability regimes of the Land Transport Management Act 2003, NZTS and RLTS requirements (including subsequent amendments and revisions) for land transport.
Final AM Level	Core Plus	Analysis of factors suggests that asset management practice should be more sophisticated than Core and nearer to comprehensive approach in line with national guidelines and NZTA requirements.

Implementation and Review of Policy

- 11.9. This Asset Management Policy will be implemented in conjunction with the 2009 AMP's and 2009 LTCCP.
- 11.10. This next full review of this Asset Management Policy shall be completed in June 2011 (3 years) prior to completing asset plan updates to support the 2012 LTCCP.

Asset Management Implementation Strategy

- 11.11. Council staff have completed a detailed analysis of appropriate asset management practice within the guidance offered by this Policy. This analysis has examined asset description, levels of service, managing growth, risk management, asset lifecycle decision making, financial forecasts, planning assumptions and confidence levels, improvement programmes, use of qualified persons and Council commitment to Asset management planning.
- 11.12. From this detailed analysis Council's level of achievement and any gaps in appropriate asset management practice were identified.
- 11.13. Asset management practice gaps that were noted have been transferred to the Asset Management Improvement Programme for action.

12. Utilities - Water Supply and Wastewater

- 12.1. The Hauraki District Council Asset Management Policy Statement for the Utilities - Water Supply and Wastewater Activity is outlined below. These Utilities comprise Urban and Rural Community Water Supplies, and Wastewater systems.

Objective of the Utilities Asset Management Policy

- 12.2. The objective of the Hauraki District Council's Asset Management Policy for the Utilities - Water Supply and Wastewater Activity is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire life cycle of the service delivery, using appropriate assets as required.
- 12.3. The Asset Management Policy requires that the management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets.
- 12.4. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.
- 12.5. This Asset Management Policy sets the appropriate level of asset management practice for Council's Utilities - Water Supply and Wastewater Activity as 'Core' practice
- a. Definition: 'Core' asset management practice is basic technical Asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. 'Core' practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.

Asset Management Policy Principles

- 12.6. The following principles will be used by Council to guide Asset management planning and decision making:
- Effective consultation to determine appropriate Levels of Service
 - Ensuring service delivery needs form the basis of asset management
 - Integration of asset management within the Utilities communities of interest and across Council utilising corporate, financial, business and budgetary planning using activity management plans and Council's LTCCP to demonstrate this
 - Integration of asset management within Council's strategic, tactical and operational planning frameworks
 - Informed decision making taking a lifecycle management and inter-generational approach to asset planning
 - Transparent and accountable asset management decision making
 - Sustainable management providing for present needs whilst sustaining resources for future generations

Policy Linkages to Other Plans

- 12.7. This Asset Management Policy links to, Council's LTCCP, Utilities AMP's and the Water and Sanitary Services Assessment. An approach where planning is based

around communities of interest is favoured, as this aims to promote an integrated management regime and encourage efficiencies across the district's water schemes.

Structured Assessment of Asset Management Practice

- 12.8. Council has undertaken a structured assessment of the appropriate level of asset management practice for the Utilities - Water Supply and, Wastewater assets. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual. The results of this assessment are shown in Table 2 Utilities - Water Supply and Wastewater Factor Assessment Results below:

Table 2 Utilities - Water Supply and Wastewater Factor Assessment Results

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'.
District Wide Risks	Core Plus	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified.
Costs and Benefits	49% of rates - More risk	The Water and Wastewater budgets are large and represent higher risks if AM practice is not at an appropriate level. These budgets also allow more scope to develop asset management practice as appropriate.
Legislative Requirements	Meet minimum	Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach.
Size, Condition, Complexity of Assets	Normal	The size and complexity of assets is normal for a rural authority with small towns. The assets are generally in good condition with the exception of high inflow and infiltration into wastewater reticulation in Waihi and Paeroa due to the poor condition of pipes. Assets are fit for purpose and generally not of unusual size or complexity. Flooding affects portions of the network from time to time and contingency planning is required.
Risks Associated with Failures	Average +	Failure of water systems (particularly the plains area) would lead to a range of issues including economic risk, and wastewater system failure has public health and environmental consequences. This suggests a higher level of risk management practice for water and wastewater. Public Health risk management is already legislatively mandated. All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered.
Organisational Skills and Resources	Normal	Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Identified resource gaps in technical expertise (Water and Wastewater) need to be managed. There is a lack of documented Standard Operating Procedures and Quality Plans. Council considers its approach and ability to deliver asset management in terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans.

Criteria	Assessment	Commentary
Customer Expectations	Average	Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community. Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy.
Sustainability	Corporate sustainability policy	Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach Legislative changes currently being considered, and changes to regional and national standards may impact the activity.
Final AM Level	Core (risk management 'Core Plus')	Analysis of factors suggests that asset management practice should be Core with a more comprehensive 'Core Plus' approach to risk management.

Implementation and Review of Policy

- 12.9. This Asset Management Policy will be implemented in conjunction with the 2009 AMP's and 2009 LTCCP.
- 12.10. This next full review of this Asset Management Policy shall be completed in June 2011 (3 years) prior to completing asset plan updates to support the 2012 LTCCP.

Asset Management Implementation Strategy

- 12.11. Council staff have completed a detailed analysis of appropriate asset management practice within the guidance offered by this Policy. This analysis has examined asset description, levels of service, managing growth, risk management, asset lifecycle decision making, financial forecasts, planning assumptions and confidence levels, improvement programmes, use of qualified persons and Council commitment to Asset management planning.
- 12.12. From this detailed analysis Council's level of achievement and any gaps in appropriate asset management practice were identified.
- 12.13. Asset management practice gaps that were noted have been transferred to the Asset Management Improvement Programme for action.

13. Solid Waste

- 13.1. The Hauraki District Council Asset Management Policy Statement for the Solid Waste Activity is outlined below.

Objective of the Solid Waste Asset Management Policy

- 13.2. The objective of the Hauraki District Council's Asset Management Policy for the Solid Waste Activity is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire life cycle of the service delivery, using appropriate assets as required.
- 13.3. The Asset Management Policy requires that the management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets.
- 13.4. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.
- 13.5. This Asset Management Policy sets the appropriate level of asset management practice for Council's Solid Waste Activity as 'Core' practice.
- 13.6. Definition: 'Core' asset management practice is basic technical Asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. 'Core' practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.

Asset Management Policy Principles

- 13.7. The following principles will be used by Council to guide Asset management planning and decision making:
- Effective consultation to determine appropriate Levels of Service
 - Ensuring service delivery needs form the basis of asset management
 - Integration of asset management with corporate, financial, business and budgetary planning using activity management plans and Council's LTCCP to demonstrate this
 - Integration of asset management within Council's strategic, tactical and operational planning frameworks
 - Informed decision making taking a lifecycle management and inter-generational approach to asset planning
 - Transparent and accountable asset management decision making
 - Sustainable management providing for present needs whilst sustaining resources for future generations

Policy Linkages to Other Plans

- 13.8. This Asset Management Policy links to Council's LTCCP, Solid Waste AMP, and Waste Management Plan 2002.

Structured Assessment of Asset Management Practice

- 13.9. Council has undertaken a structured assessment of the appropriate level of asset management practice for the Solid Waste assets. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual. The results of this assessment are shown in Table 3 Solid Waste Factor Assessment Results below.

Table 3 Solid Waste Factor Assessment Results

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'.
District Wide Risks	Core Plus	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified.
Costs and Benefits	3% of rates	The Solid Waste budgets are minor in the context of Councils total expenditure.
Legislative Requirements	Meet minimum	Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach.
Size, Condition, Complexity of Assets	Normal	Solid Waste assets are simple and in generally good condition.
Risks Associated with Failures	Average	Service delivery is contracted at a defined level of service All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered.
Organisational Skills and Resources	Normal	Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Identified resource gaps in technical expertise (Water and Wastewater) need to be managed. There is a lack of documented Standard Operating Procedures and Quality Plans. Council considers its approach and ability to deliver asset management in terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans.
Customer Expectations	Average	Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community. Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy.
Sustainability	Corporate sustainability policy	Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach Solid Waste sustainability may be influenced by legislative changes currently being considered.
Final AM Level	Core	Analysis of factors suggests that asset management practice should be Core.

Implementation and Review of Policy

- 13.10. This Asset Management Policy will be implemented in conjunction with the 2009 AMP's and 2009 LTCCP.
- 13.11. This next full review of this Asset Management Policy shall be completed in June 2011 (3 years) prior to completing asset plan updates to support the 2012 LTCCP.

Asset Management Implementation Strategy

- 13.12. Council staff have completed a detailed analysis of appropriate asset management practice within the guidance offered by this Policy. This analysis has examined asset description, levels of service, managing growth, risk management, asset lifecycle decision making, financial forecasts, planning assumptions and confidence levels, improvement programmes, use of qualified persons and Council commitment to Asset management planning.
- 13.13. From this detailed analysis Council's level of achievement and any gaps in appropriate asset management practice were identified.
- 13.14. Asset management practice gaps that were noted have been transferred to the Asset Management Improvement Programme for action.

14. Land Drainage and Stormwater

- 14.1. The Hauraki District Council Asset Management Policy Statement for the Land Drainage and Stormwater Activities is outlined below.

Objective of the Land Drainage and Stormwater Asset Management Policy

- 14.2. The objective of the Hauraki District Council's Asset Management Policy for the Land Drainage and Stormwater Activities is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire life cycle of the service delivery, using appropriate assets as required.
- 14.3. The Asset Management Policy requires that the management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets.
- 14.4. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.
- 14.5. This Asset Management Policy sets the appropriate level of asset management practice for Council's Land Drainage Activity as 'Core Plus' and Stormwater Activity as 'Core' practice.
- 14.6. Definition: 'Core' asset management practice is basic technical Asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. 'Core' practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.
- 14.7. Definition: 'Core Plus' asset management practice is undertaken at a level between 'Core' and 'Comprehensive' practice. The focus is to build on the basic technical Asset management planning of 'Core' practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques.

Asset Management Policy Principles

- 14.8. The following principles will be used by Council to guide Asset management planning and decision making:
- Effective consultation to determine appropriate Levels of Service
 - Ensuring service delivery needs form the basis of asset management
 - Integration of asset management with corporate, financial, business and budgetary planning using activity management plans and Council's LTCCP to demonstrate this
 - Integration of asset management within Council's strategic, tactical and operational planning frameworks
 - Informed decision making taking a lifecycle management and inter-generational approach to asset planning
 - Transparent and accountable asset management decision making

- Sustainable management providing for present needs whilst sustaining resources for future generations

Policy Linkages to Other Plans

14.9. This Asset Management Policy links to Council's LTCCP, Land Drainage and Stormwater AMP's and the Water and Sanitary Services Assessment.

Structured Assessment of Asset Management Practice

14.10. Council has undertaken a structured assessment of the appropriate level of asset management practice for the Land Drainage assets. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual. The results of this assessment are shown in Table 4 Land Drainage and Stormwater Factor Assessment Results below.

Table 4 Land Drainage and Stormwater Factor Assessment Results

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'
District Wide Risks	Core Plus	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified
Costs and Benefits	12% of rates	The Land Drainage and Stormwater budgets are smaller but there are large economic impacts in the case of Land Drainage system failure, and represent higher risks if AM practice is not at an appropriate level
Legislative Requirements	Meet minimum	Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach
Size, Condition, Complexity of Assets	Normal	The size and complexity of assets is normal for a rural authority with small towns. The assets are generally in good condition. Assets are fit for purpose and generally not of unusual size or complexity. Integration of land drainage systems with regional assets is a factor adding some complexity Flooding affects portions of the network from time to time and contingency planning is required
Risks Associated with Failures	Average +	Failure of Land Drainage and Stormwater systems would lead to a range of issues including economic and property risks. There are public health risks associated with the mixing of stormwater and wastewater during flood events. This suggests a higher level of risk management practice All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered

Criteria	Assessment	Commentary
Organisational Skills and Resources	Normal	<p>Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Succession planning has been identified as an issue and is being managed. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Identified resource gaps in technical expertise (Water and Wastewater) need to be managed. There is a lack of documented Standard Operating Procedures and Quality Plans</p> <p>Council considers its approach and ability to deliver asset management in terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans</p>
Customer Expectations	Average	<p>Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community</p> <p>Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy</p>
Sustainability	Corporate sustainability policy	<p>Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach</p> <p>Legislative changes currently being considered, and changes to regional and national standards may impact the activities</p>
Final AM Level	Land Drainage - Core Plus Stormwater - Core	<p>Analysis of factors suggests that asset management practice should be 'Core Plus' for Land Drainage due to the economic impacts of failure, and 'Core' for Stormwater</p>

Implementation and Review of Policy

- 14.11. This Asset Management Policy will be implemented in conjunction with the 2009 AMP's and 2009 LTCCP.
- 14.12. This next full review of this Asset Management Policy shall be completed in June 2011 (3 years) prior to completing asset plan updates to support the 2012 LTCCP.

Asset Management Implementation Strategy

- 14.13. Council staff have completed a detailed analysis of appropriate asset management practice within the guidance offered by this Policy. This analysis has examined asset description, levels of service, managing growth, risk management, asset lifecycle decision making, financial forecasts, planning assumptions and confidence levels, improvement programmes, use of qualified persons and Council commitment to Asset management planning.
- 14.14. From this detailed analysis Council's level of achievement and any gaps in appropriate asset management practice were identified.
- 14.15. Asset management practice gaps that were noted have been transferred to the Asset Management Improvement Programme for action.

15. Community Facilities

- 15.1. The Hauraki District Council Asset Management Policy Statement for the Community Facilities Activity is outlined below.

Objective of the Community Facilities Asset Management Policy

- 15.2. The objective of the Hauraki District Council's Asset Management Policy for the Community Facilities Activity is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire life cycle of the service delivery, using appropriate assets as required.
- 15.3. The Asset Management Policy requires that the management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets.
- 15.4. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.
- 15.5. This Asset Management Policy sets the appropriate level of asset management practice for Council's Community Facilities Activity as 'Core' practice.
- 15.6. Definition: 'Core' asset management practice is basic technical Asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. 'Core' practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.

Asset Management Policy Principles

- 15.7. The following principles will be used by Council to guide Asset management planning and decision making:
- Effective consultation to determine appropriate Levels of Service
 - Ensuring service delivery needs form the basis of asset management
 - Integration of asset management with corporate, financial, business and budgetary planning using activity management plans and Council's LTCCP to demonstrate this
 - Integration of asset management within Council's strategic, tactical and operational planning frameworks
 - Informed decision making taking a lifecycle management and inter-generational approach to asset planning
 - Transparent and accountable asset management decision making
 - Sustainable management providing for present needs whilst sustaining resources for future generations

Policy Linkages to Other Plans

- 15.8. This Asset Management Policy links to Council's LTCCP and Community Facilities AMP.

Structured Assessment of Asset Management Practice

- 15.9. Council has undertaken a structured assessment of the appropriate level of asset management practice for the Community Facilities assets. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual. The results of this assessment are shown in Table 5 Community Facilities Factor Assessment Results below.

Table 5 Community Facilities Factor Assessment Results

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'
District Wide Risks	Core Plus	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified
Costs and Benefits	19% of rates – moderate risk	The Community Facilities budgets are moderate in terms of Council expenditure and represents moderate risks if AM practice is not at an appropriate level
Legislative Requirements	Meet minimum	Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach
Size, Condition, Complexity of Assets	Normal	The size and complexity of assets is normal for a rural authority with small towns. The assets are generally in good condition. Assets are fit for purpose and generally not of unusual size or complexity
Risks Associated with Failures	Low	Overall risks associated with asset failure are well understood and have been assessed as low with the exception of playgrounds, which have higher associated risks All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered
Organisational Skills and Resources	Normal	Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Succession planning has been identified as an issue and is being managed. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Identified resource gaps in technical expertise (Water and Wastewater) need to be managed. There is a lack of documented Standard Operating Procedures and Quality Plans Council considers its approach and ability to deliver asset management in terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans
Customer Expectations	Average	Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy
Sustainability	Corporate sustainability policy	Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach Legislative changes currently being considered may impact the activity

Criteria	Assessment	Commentary
Final AM Level	Core (asset description and monitoring 'Core Plus')	Analysis of factors suggests that asset management practice should be Core with a more comprehensive 'Core Plus' approach to description of assets and monitoring of assumptions, confidence levels and improvement programmes

Implementation and Review of Policy

- 15.10. This Asset Management Policy will be implemented in conjunction with the 2009 AMP's and 2009 LTCCP.
- 15.11. This next full review of this Asset Management Policy shall be completed in June 2011 (3 years) prior to completing asset plan updates to support the 2012 LTCCP.

Asset Management Implementation Strategy

- 15.12. Council staff have completed a detailed analysis of appropriate asset management practice within the guidance offered by this Policy. This analysis has examined asset description, levels of service, managing growth, risk management, asset lifecycle decision making, financial forecasts, planning assumptions and confidence levels, improvement programmes, use of qualified persons and Council commitment to Asset management planning.
- 15.13. From this detailed analysis Council's level of achievement and any gaps in appropriate asset management practice were identified.
- 15.14. Asset management practice gaps that were noted have been transferred to the Asset Management Improvement Programme for action.

Appendix A

INITIAL RISK SCREEN – DISTRICT POPULATION

Overview of New Zealand City and Town Populations

In order to undertake an initial assessment on the District Population, Waugh Infrastructure Management Ltd extracted the New Zealand city and town populations from the WINZ data base. Analysis of this data shows that New Zealand is a nation of few metropolitan areas, a range of large towns and small cities and many small towns. From this analysis it is suggested an initial determination of Core and Comprehensive AM Levels can be made.

It is acknowledged that while populations provide a guide for community activities, it is less appropriate for broader activities such as Land Transport.

Table 1: Extraction of New Zealand City and Town Populations from WINZ Database

Number Towns	Population	WIML Suggested Initial AM Level	Notes
10	90,000 and above	Comprehensive (Advanced)	Auckland split by Councils
34	10,000 – 90,000	Core Plus	
31	5,000 – 10,000	Core	
559	Less than 5,000	Core	

Compiled from: <http://www.drinkingwater.org.nz/supplies/Suppliescompliance.asp> 16 July 2008

New Zealand Main and Secondary Urban Areas

The Table below contains an analysis of New Zealand's main and secondary urban areas, as defined by Statistics NZ. It can be seen that there are **no communities within Hauraki District** listed within the main and secondary urban areas identified by Statistics NZ. This suggests that based on a population risk screen Hauraki's urban areas should be aiming for Core as an appropriate level of asset management practice.

Table 2: 2006 Census Main and Secondary Urban Areas

Main and Secondary Urban Areas for the Census Usually Resident Population Count Main/Secondary Urban Areas			
Main Urban Areas		Population	WIML Assessed Initial AM Practice Level
Total New Zealand		4,027,947	
Total Main Urban Areas		2,892,831	
Total Secondary Urban Areas		243,081	
Other		892,029	
UA 004 Central Auckland Zone	Main Urban Areas	395,982	Comprehensive
UA 005 Southern Auckland Zone	Main Urban Areas	371,658	Comprehensive
UA 022 Christchurch	Main Urban Areas	360,768	Comprehensive
UA 002 Northern Auckland Zone	Main Urban Areas	248,112	Comprehensive
UA 003 Western Auckland Zone	Main Urban Areas	192,339	Comprehensive
UA 020 Wellington Zone	Main Urban Areas	178,680	Comprehensive
UA 006 Hamilton Zone	Main Urban Areas	155,262	Comprehensive
UA 023 Dunedin	Main Urban Areas	110,997	Comprehensive
UA 009 Tauranga	Main Urban Areas	108,882	Comprehensive
UA 018 Lower Hutt Zone	Main Urban Areas	97,149	Comprehensive

Main and Secondary Urban Areas for the Census Usually Resident Population Count Main/Secondary Urban Areas			
Main Urban Areas		Population	WIML Assessed Initial AM Practice Level
UA 016 Palmerston North	Main Urban Areas	76,032	
UA 013 Hastings Zone	Main Urban Areas	62,118	
UA 021 Nelson	Main Urban Areas	56,364	
UA 012 Napier Zone	Main Urban Areas	56,286	
UA 010 Rotorua	Main Urban Areas	53,766	
UA 014 New Plymouth	Main Urban Areas	49,281	
UA 001 Whangarei	Main Urban Areas	49,080	
UA 019 Porirua Zone	Main Urban Areas	48,396	
UA 024 Invercargill	Main Urban Areas	46,773	
UA 015 Wanganui	Main Urban Areas	38,988	
UA 025 Kapiti	Main Urban Areas	37,347	
UA 017 Upper Hutt Zone	Main Urban Areas	36,402	
UA 011 Gisborne	Main Urban Areas	32,529	
UA 110 Blenheim	Secondary Urban Areas	28,527	
UA 113 Timaru	Secondary Urban Areas	26,886	
UA 101 Pukekohe	Secondary Urban Areas	22,515	
UA 103 Taupo	Secondary Urban Areas	21,291	
UA 109 Masterton	Secondary Urban Areas	19,494	
UA 107 Levin	Secondary Urban Areas	19,134	
UA 104 Whakatane	Secondary Urban Areas	18,204	
UA 112 Ashburton	Secondary Urban Areas	16,836	
UA 007 Cambridge Zone	Main Urban Areas	15,192	
UA 008 Te Awamutu Zone	Main Urban Areas	14,454	
UA 106 Feilding	Secondary Urban Areas	13,890	
UA 102 Tokoroa	Secondary Urban Areas	13,530	
UA 114 Oamaru	Secondary Urban Areas	12,681	
UA 105 Hawera	Secondary Urban Areas	10,776	Core
UA 111 Greymouth	Secondary Urban Areas	9,672	Core
UA 115 Gore	Secondary Urban Areas	9,648	Core

Source: <http://www.stats.govt.nz/census/census-outputs/default.htm> 19 August 2008

Analysis by Community Population

The reality of New Zealand local authority asset management practice is that it is conducted at a Council level in a similar manner. The requirements of the largest population centre in the Council tends to set the appropriate practice level. Hauraki District Council's town population is shown in the table below. Waihi is the largest town, and based on the initial determination in 2.1 suggests a 'Core' asset management practice level is appropriate.

Table 3: Hauraki District Council

Rank	Town/Scheme Name	WINZ Population	WIML Assessed Initial AM Practice Level
65	Hauraki Plains	5,535	Core
84	Waihi	4,450	Core
92	Paeroa	4,000	Core
227	Ohinemuri	600	Core
310	Waikino	340	Core
428	Karangahake	140	Core

Rank	Town/Scheme Name	WINZ Population	WIML Assessed Initial AM Practice Level
429	Mackaytown	140	Core
471	Kaimanawa	100	Core

Source: <http://www.drinkingwater.org.nz/supplies/Suppliescompliance.asp> 25 June 2009

As some water supplies include rural and urban areas the community populations may be overstated in the WINZ database.

Analysis by District Total Population

Analysis of the 2006 Census results of Council total population gives the following results for the following sample Councils. The sample set has been selected to illustrate a range of different sized Councils.

Table 4: Total District Population

Council	2006 Population	Council Size Rank (72 Authorities)	AM Practice Level Indicated by Size (WIML Estimated Assessment)
Rodney	85,845	11	Core Plus, effectively comprehensive in some areas/activities
Timaru	42,000	25	Core Plus, with near comprehensive in some areas/activities
Gore District	11,763	58	Core
Hauraki District	16,650	51	Core
Mackenzie District	3,696	71	Core

Source: <http://www.stats.govt.nz/census/census-outputs/default.htm> 19 August 2008

The mix of total District population and the size of the largest population centre provides a good initial screen for the risks associated with asset service delivery. It is acknowledged that Land Transport is managed on a network and regional basis and the relevance of population is lower than for other activities. This initial screen will be modified by consideration of the other factors as detailed in Section 3.

Initial Risk Screen - Conclusion

Based on this initial screen of urban areas, all council population centres and total district population the suggested level of appropriate asset management practice for Hauraki District Council is 'Core'.

CONSIDERATION OF DISTRICT WIDE RISK FACTORS

Identification of District Wide Factors

Following the initial population screen based on appropriate practice for the largest population centre in Hauraki District, further consideration needs to be given to other District Wide Risk Factors that may affect the initial assessment of Core.

The District Wide Risk factors identified in a workshop of Hauraki District Council's Asset Managers on 11 June 2009 include:

The relative importance of these factors was considered as high, medium or low in terms of Hauraki District, the results are shown below.

Table 5: Identification of District Wide Risk Factors

Factors	Impact*			Score	Likelihood Assessment	Rank
	High	Medium	Low			
Flooding risks	7	0	0	21	High	1
Ground settlement, peat settlement on plains	3	4	0	17	High	2
Climate Change	4	1	2	16	High	3
Legislative changes impact	4	1	2	16	High	3
Sea level rise	2	4	1	15	High	5
Rural sector commodity changes	6	1	0	20	Medium	6
National/Regional land transport initiatives	1	4	2	13	High	7
Economic influence of Waihi mine	0	7	0	14	Medium	8
Pressure on Water Resources	0	7	0	14	Medium	8
Sustainability	1	4	2	13	Medium	10
Changing Demographics	1	3	3	12	Medium	11
Aging population	1	3	3	12	Medium	11
Less younger people	1	3	3	12	Medium	11
Karangahake gorge road links	0	5	2	12	Medium	11
National designation changes	1	2	4	11	Medium	15
Regional policy changes	0	4	3	11	Medium	15
Employment - opportunities, affordability	0	5	2	12	Low	17
Rural technology, land use changes	0	5	2	12	Low	17

* Number of activity managers who assessed this factor as high, medium or low impact

Flooding risks and impacts of changes to the rural sector economy, flowing on to demand for services and subsequent ability to pay were listed as the biggest risks. These risks will require more careful management for some infrastructure, as is reflected in the more detailed analysis that follows.

By way of comparison, the Table below outlines the assessed District-wide risk factors for the sample Council's listed in Table 5 above.

Table 6: Examples of District-Wide Risk Factors

Council	Population	Other Factors	Appropriate AM Determination (WIML Estimated Assessment)
Rodney	Core Plus, effectively comprehensive	Rapid growth, heavily influenced by Auckland dynamics Dispersed urban areas Tourism/holiday destination	Comprehensive
Timaru	Core Plus	Geraldine – International Visitors; Major industries (Fonterra Clandeboye); Regionally significant freight hub; Primary industry growth and subsequent transportation network impacts	Core Plus
Gore	Core	None	Core
Hauraki	Core	Flooding risks and impacts of changes to the rural sector economy, potential climate change impacts within this context	Core' with some extension of practice around risk management
Mackenzie District	Core	Tourism development and increase in holiday homes	Core

Through the 2009-2019 Long Term Community Council Plan, Council had identified three key areas of debate that Elected Members felt were the most important strategic issues facing the District in the medium-long term.

These topics were:

- Sustainability – The right approach for Hauraki District
- Climate Change - The right approach for Hauraki District
- The Changing Demographics of Hauraki District

(Source: Hauraki Community Plan 2009-19: Volume 1 page 18)

These strategic issues are consistent with the district wide risks identified.

In adopting an appropriate level of asset management it is essential that the approach taken is commensurate with the risks and strategic issues that the district faces.

The impact of district wise risks on assets and the asset management planning is summarised in the following table:

Table 7: District-Wide Risk Factors and Impact on Assets and AM Planning

Factors (Ranked order)	Assets/Activity Groups most affected					Comments	Influence on AM Planning
	Land transport	Water Supplies & Wastewater	Solid Waste	Land Drainage & Stormwater	Community Facilities		
Flooding risks	✓	✓		✓			Specific attention required to risk management planning and response required for Land transport, Water Supplies & Wastewater, Land Drainage & Stormwater
Ground settlement, peat settlement on plains	✓	✓					Robust approach lifecycle management planning of road pavements
Climate Change	✓	✓		✓			Long term risk management approach required
Legislative changes impact	✓	✓	✓	✓	✓		Part of normal AM practice
Sea level rise	✓	✓		✓			Long term risk management approach required
Rural sector commodity changes						General impact on funding	Robust financial planning should consider the impact of funding uncertainty
National/Regional land transport initiatives	✓						Part of normal AM practice
Economic influence of Waihi mine						Possible closure in future may impact significantly on funding and rate paying ability of the town	Robust financial planning should consider the impact of funding uncertainty
Pressure on Water Resources		✓				Sustainability of resources at current abstraction levels under threat. Increased demand from dairy industry to provide additional water	Part of normal AM practice

Factors (Ranked order)	Assets/Activity Groups most affected					Comments	Influence on AM Planning
	Land transport	Water Supplies & Wastewater	Solid Waste	Land Drainage & Stormwater	Community Facilities		
Sustainability						Broad impact across planning approach	Part of normal AM practice
Changing Demographics	✓				✓	General impact across planning approach	Part of normal AM practice
Aging population	✓				✓	General impact across planning approach	Part of normal AM practice
Less younger people	✓				✓	General impact across planning approach	Part of normal AM practice
Karangahake Gorge Road links	✓						Risk management planning and response required for Land transport (combined with NZTA)
National designation changes						General impact across planning approach	Part of normal AM practice
Regional policy changes						General impact across planning approach	Part of normal AM practice
Employment - opportunities, affordability						General impact across planning approach	Part of normal AM practice
Rural technology, land use changes	✓			✓			Ensure demand management approach includes demand composition within the rural sector

These issues have been reflected in the Analysis of Hauraki District Council Asset Groups in and the Policy Statements.

Consideration of District Wide Factors - Conclusion

Based on the identified District Wide risk factors the suggested level of appropriate asset management practice for Hauraki District Council is 'Core' with some extension of practice around the risk management issues identified.

Note: Staff have added a tick to Water Supplies for sea level rise as they believe sea level rise could affect water supply intakes on the Waihou River through potential salt water intrusion. Sea level rise would also obviously increase the effects of tidal surge

(Section 2.2.4 of IIMM) DETAILED FACTOR ANALYSIS

Following the initial population screen and assessment of District wide risks, a more detailed screening was developed for each individual asset group for the District.

Detailed Analysis Hauraki District Council Asset Groups

A more detailed analysis of where the sophistication of Hauraki District Council asset management should be uses the criteria outlined in Section 2.2.4 of the IIMM as a basis.

Table 8: Detailed Analysis Hauraki District Council Asset Groups

Criteria	Land transport	Water Supply & Wastewater	Solid Waste	Land Drainage & Stormwater	Community Facilities
Population	Core				
District Wide Risks	'Core' with some extension of practice around the risk management issues identified				
Costs and Benefits	CAPEX 43m	CAPEX 41m W 11m WW	CAPEX 1m	CAPEX 2m LD 4m SW	CAPEX 4.5m
(Source 2009 LTCCP – 10 year estimates. OPEX includes DISP and Interest. CAPEX includes renewals)	OPEX 81m	OPEX 73m W 40m WW	OPEX 12m	OPEX 11m LD 9m SW	OPEX 43m
	RATES (% of District) 21.3% - excludes subsidy	RATES (% of District) 22% Water 16.8% WW	RATES (%of District) 2.7%	RATES (% of district) 7.3% LD 4.9% SW	RATES (% of district) 19.3%
Legislative Requirements	Compliance approach	Compliance. Health Amendment Act driving changes RMA changes will impact	Compliance approach	National Environmental Statements Govt. Policy Statements on climate change	Compliance

Criteria	Land transport	Water Supply & Wastewater	Solid Waste	Land Drainage & Stormwater	Community Facilities
Size, Condition, Complexity of Assets	Network as a whole in good condition reflecting sustained long term investment. Flooding affects portions of the network from time to time and contingency planning is required. Some drought and flood restoration cycles but can't be proactively managed	Water - Average complexity of treatment, High risk assets identified Wastewater – High inflow and infiltration into reticulation in Waihi and Paeroa due to poor condition of pipes Flooding affects portions of the network from time to time and some contingency planning is required	Simple assets	Land Drainage – good condition, fit for purpose. Integration with regional assets is a factor. Stormwater – ok. Low detailed knowledge base. Nothing complex. Flooding affects portions of the network from time to time and some contingency planning is required	Good condition assets, that are fit for purpose. No unusual size or complexity
Risks Associated with Failures	State Highway at gorge is the key linkage. Network interconnection is generally good, and not a spinal network Changes in landuse affect the demand composition	Water – economic risk plains water failure. Need for speedy reinstatement of supply. Treated water storage being addressed. High implications of failure Wastewater – discharge risks from reticulation overflows	Contracted to defined level of service	Land Drainage – economic and property Stormwater – economic and property, wastewater mixing and ponding create health risks	None
Organisational Skills and Resources	Internal and external resources have been maintained. Operational knowledge has been retained by the organization, succession planning is an issue. Staff resourcing levels stable, longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Resource gaps in technical expertise (Water and Wastewater) needs to be managed. Lack of documented SOPs and quality plans				

Criteria	Land transport	Water Supply & Wastewater	Solid Waste	Land Drainage & Stormwater	Community Facilities
Customer Expectations	Maintenance of current service levels is important to the community	Water – plains customers expect high response Urban water quality improvement expectations	Currently being met	Land Drainage – maintenance of current service levels, no reduction Stormwater – maintenance of current service levels, climate change issues considered in design standards	Maintenance of current service levels is important to the community
Sustainability	Council sustainability policy will be applied to all assets and management. Potential impacts of climate change and sea level rise require a long-term risk management approach				
	Influenced by NZTA, GPS and RLTS	Influenced by current legislative changes Regional and national standards and changes impact on activity	Influenced by current legislative changes	NES Economic sustainability Land Drainage on plains. Stormwater usage of detention ponds	Influenced by current legislative changes
Appropriate AM Level	Core Plus	Core (risk management Core Plus)	Core	Land Drainage – Core Plus Stormwater - Core	Core (asset description and monitoring core plus)

Final Appropriate Asset Management Level Determination

The initial population screen for Hauraki District Council, using urban area, all township populations, and total district population showed that asset management practice should be 'Core' across the activities.

The examination of individual factors is summarised in Table 8: Detailed Analysis Hauraki District Council Asset Groups above and commentary on these factors is as follows:

Costs and Benefits

The Land transport and Water & Wastewater budgets are the largest in Council and represent higher risks if AM practice is not at an appropriate level. These budgets also allow more scope to develop asset management practice as appropriate. The Land Drainage budget is smaller but successful management of land drainage is crucial to the Districts economic prosperity. Community Facilities also represents significant areas of expenditure, but are associated with less risk exposure. The Solid Waste budget is minor in comparison with other areas.

Legislative Requirements

Hauraki District Council policy is to meet minimum legislative requirements, or exceed requirements where deemed appropriate and cost effective through levels of Service Consultation. The asset management response to legislative requirements is a compliance based approach.

Size, Condition and Complexity of Assets

Hauraki District Council assets are generally in good condition with the exception of the high inflow and infiltration into reticulation in Waihi and Paeroa due to poorer condition wastewater reticulation assets. Assets are fit for purpose and generally not of unusual size or complexity. Integration of Land Drainage assets with regional assets is a factor that adds some complexity.

Risks Associated with Failures

Overall risks associated with asset failure have been assessed to be average apart from water, wastewater and land drainage. Failure of water systems (particularly the plains area) would lead to a range of issues including economic risk, and wastewater system failure has public health and environmental consequences. Failure of the land drainage system would have economic and property risk consequences. This suggests a higher level of risk management practice for water, wastewater and land drainage. Public Health risk management is already legislatively mandated. The risk of flooding is high and the district's stormwater drainage systems are essential to the well-being of the community.

All activities are affected by funding risks, and any uncertainty around the district economy and funding from third parties should be considered.

Organisational Skills and Resources

Hauraki District Council is a small sized local authority ranked 51/72 in population size as detailed in Table 2.4. Internal and external resources have been maintained as required to deliver services. Operational knowledge has been retained by the organization. Succession planning has been identified as an issue and is being managed. Staff resourcing levels are stable, although there are longer term issues around recruitment and retention of suitable resources. Elected representatives knowledgeable and engaged in community decisions. Identified resource gaps in technical expertise (Water and Wastewater) need to be managed. There is a lack of documented Standard Operating Procedures and Quality Plans.

Council considers its approach and ability to deliver asset management in terms of its wider business approach. A regular self-assessment of Council's asset management processes assists to ascertain focus and areas for improvement. The organisational skills and resources applied to achieve the asset management objectives are outlined through Councils LTCCP, AMPs, Human Resources and Business Plans.

Customer Expectations

Council has developed and maintained assets to a good standard. Maintenance of current service levels is important to the community

Overall customer expectations are judged to be typical of a rural and small communities – that is stable but with high expectations of maintaining and / or restoring service that have economic impacts on rural production and the district economy.

Sustainability

Hauraki District Council has a sustainability policy as outlined in the LTCCP that will be applied to all assets and management. Council is also following the sustainability regimes of the Land Transport Management Act 2003, NZTS and RLTS requirements (including subsequent amendments and revisions) for Land transport.

Conclusion

Having considered all these factors, for each asset / activity group it is apparent that Hauraki District Council should be managing its assets at the following levels:

Table 9: Appropriate level for Hauraki Asset Management Plans

Activity	Land transport	Water Supply and Wastewater	Solid Waste	Land Drainage and Stormwater	Community Facilities
Final Appropriate AM Level	Core Plus	Core	Core	Land Drainage – Core Plus Stormwater – Core	Core
Comment	More sophisticated and nearer to comprehensive approach in line with national requirements	Risk Management Practice at 'Core Plus' level to manage identified issues		Land Drainage more sophisticated and nearer to comprehensive approach to recognise key economic impact and risk issues	Asset description and monitoring to be managed at 'Core Plus' in line with operational management requirements

APPENDIX B

Lifecycle Management of Assets

Background

The economies of most districts and communities are underpinned by infrastructure networks such as roads, water, wastewater, stormwater, telecommunications, energy and power networks etc. Large parts of the infrastructure belong to district councils and the provision, operation, maintenance and upkeep of these networks are the responsibility of councils and their personnel.

It is therefore of utmost importance that councils develop, manage and maintain these networks in a transparent, sustainable and cost effective manner to ensure that these networks remain stimulated drivers of local economies and not act as constraints to the expansion of these economies.

The reasons for implementing best practice asset management principles for the organisation are:

- Infrastructure networks provide the platform for economic and social development.
- Infrastructure and property assets increasingly meet recreational and other needs of the community.
- Good quality infrastructure is the cornerstone of public health and safety.
- Good quality infrastructure mitigates potential adverse environmental impacts of society.
- Asset management practises advance the sustainability of infrastructure services.
- Benchmarking condition and performance promotes innovation and efficiencies.

The goal of infrastructure asset management is to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers.

The key elements of infrastructure asset management are:

- Taking a life cycle approach
- Developing cost-effective strategies for the long-term
- Providing a defined level of service and monitoring performance
- Understanding and meeting the impact of growth through demand management and infrastructure investment.
- Managing risks associated with asset failures
- Managing and operating the asset to deliver the required levels of service
- Sustainable use of physical and other resources
- Improving information, data and knowledge on assets and business processes to reach optimum business decisions
- Implementing new technology solutions for improved decisions and operations.
- Continuous improvement in asset management practises

Life Cycle Management

Taking the life cycle of an asset into consideration and managing the asset through that life cycle, developing suitable strategies and making optimum business decisions through that life is fundamental to good strategic asset management.

The life cycle of an asset is defined¹ as:

• _____
¹ International Infrastructure Management Manual - Ver 3, 2006 – P1.10

The time interval that commences with the identification of the need for an asset and terminates with the decommissioning of the asset or any liabilities thereafter.

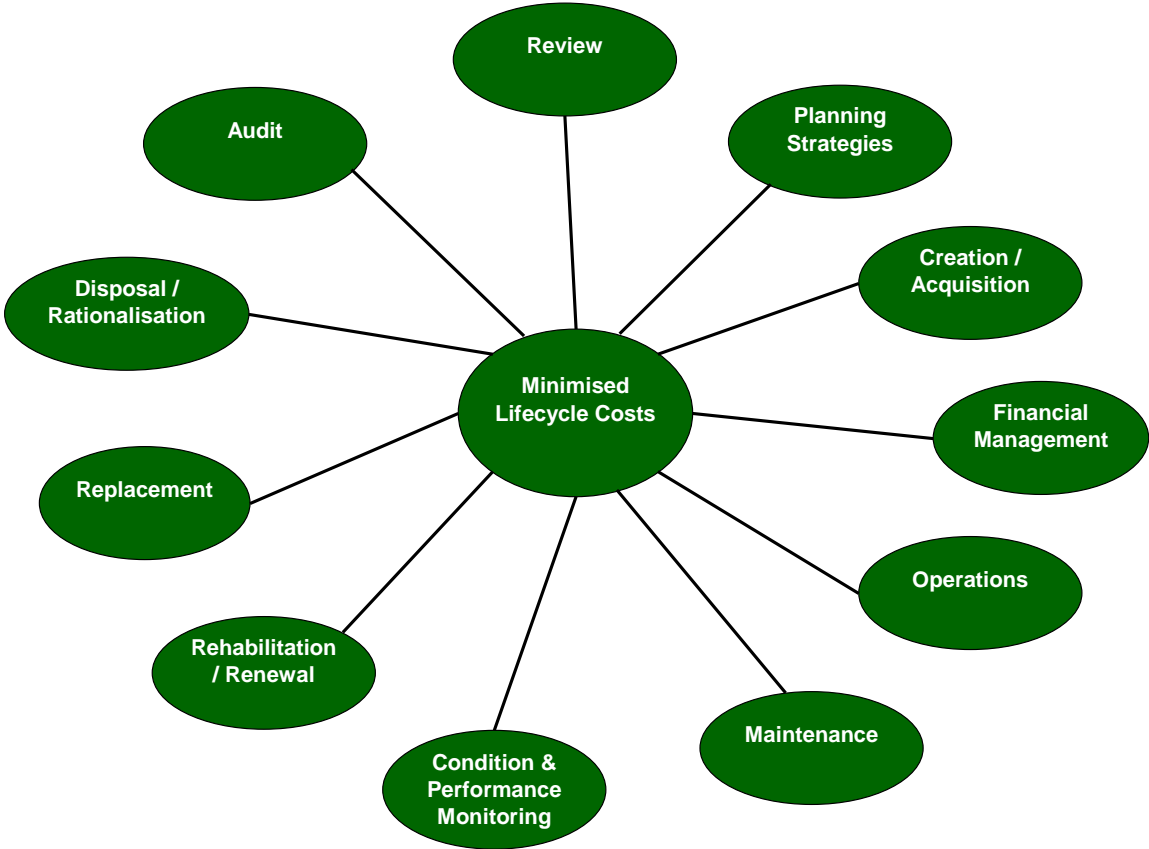
Life cycle asset management means considering all management options and strategies as part of the asset lifecycle, from planning through to disposal. The objective is to look at lowest long-term cost (rather than short term savings) when making asset management decisions.

The life cycle management approach allows for decision-making relating to an asset at any stage in the life cycle to be made understanding the effects to the life cycle of the asset.

The figure below provides an overview of life cycle asset management processes:

It is important to identify at what life cycle stage an asset is, in order to minimise the life cycle cost relevant to the asset. Analysis of the assets' life cycle is the backbone of effective asset management. All expenditure activities are included within the life cycle process from creation/acquisition of an asset through the major stages of operation, maintenance, rehabilitation/renewal up to the eventual disposal of the asset.

The asset life cycle framework includes all the knowledge relevant to the asset throughout its life cycle, seeking to optimise both the level of service and cost.



The diagram above show all the phases that may occur in the life cycle of an asset e.g. a water pipe, a wastewater pump or a park bench.

Asset Planning

The cycle normally starts with the establishment of the planning strategies. The planning stage involves the confirmation that a service is required by the customer. At this stage it is

determined that the acquisition or creation of the asset is the most effective solution to meet the customer's need. The planning strategies normally aim to create or to acquire a specific asset or group of assets e.g. a water treatment plant, play equipment for a play area, a new intersection or roundabout etc. Issues like demand and risk will be thoroughly analysed during this phase.

Asset Creation / Acquisition

This stage covers the provisioning, creation, acquisition or development of an asset, or improvement to an asset where the outlay can reasonably be expected to provide benefits beyond the year of outlay. Acquisitions may be made via direct purchases, tender processes, construction, development etc.

Financial Management

Sufficient funding is required to operate the asset and to ensure that the appropriate maintenance regime for that type of asset is implemented. All costs associated with the ownership of assets are included to ensure cost effective decision-making e.g. creation or acquisition, operations, maintenance, rehabilitation, renewals, depreciation and disposal.

Asset Operations & Maintenance

This stage relates to the day-to-day running and upkeep of assets. Actions and initiatives may include planned and preventive maintenance programs as well as adequate funding provision for corrective or unplanned maintenance.

Asset Condition/Performance

Condition and performance monitoring must be performed through the lifecycle of the asset. Asset performance relates to the ability of the asset to meet target levels of service and condition reflects the physical state of the asset. Condition and performance monitoring enable identification of underperforming assets or assets that are about to fail. This stage will include the implementation of systems and processes to monitor condition and performance. For some assets this require sophisticated measuring and monitoring equipment e.g. SCADA and Telemetry technology

Asset Rehabilitation/Replacement

When the condition has deteriorated and the asset can't deliver the levels of service it is supposed to it may be time for replacement, renewal or rehabilitation. This stage involves the significant upgrading or renewal of an asset to its required functional condition and performance.

If the condition has deteriorated substantially or can't satisfy the required level of service the replacement must be considered. The optimum long-term solution must be identified through a formal decision-making process.

To decide on the appropriate treatment selections and renewals for infrastructure systems like roading networks and reticulation networks advanced modelling and treatment selection systems like dTims etc. is required to make the correct decisions.

Asset Disposal/Rationalisation

If the asset is no longer required or becomes uneconomical to maintain or replace, disposal or rationalisation must be investigated. It creates the opportunity to review the configuration, type and location of assets, and relevant service delivery processes.

Asset Management Audit/Review

The last stage involves regular internal and independent audits to be carried out to ensure that a continuous asset management improvement cycle is performed and appropriate industry practices are maintained.

Financial impacts during asset life cycle

The figure below shows the accepted cost profiles related to an asset through its lifecycle. It proves the necessity to monitor life cycle costs from creation right through to the disposal of the asset and to get an understanding of direct and cumulative costs involved in the operation and management of an asset.

The figure shows the proportion of costs at creation/acquisition (Capital cost represented by the orange/first bar). The second or purple bar represent the actual cost when the asset is refurbished or rehabilitated and the last bar (green bar) represents the cost when the asset is disposed of and full replacement or renewal is performed. The costs displayed in the figure are consistent with the level of expenditure relevant to most assets at the particular point in the life of an asset e.g. creation, rehabilitation or renewal.

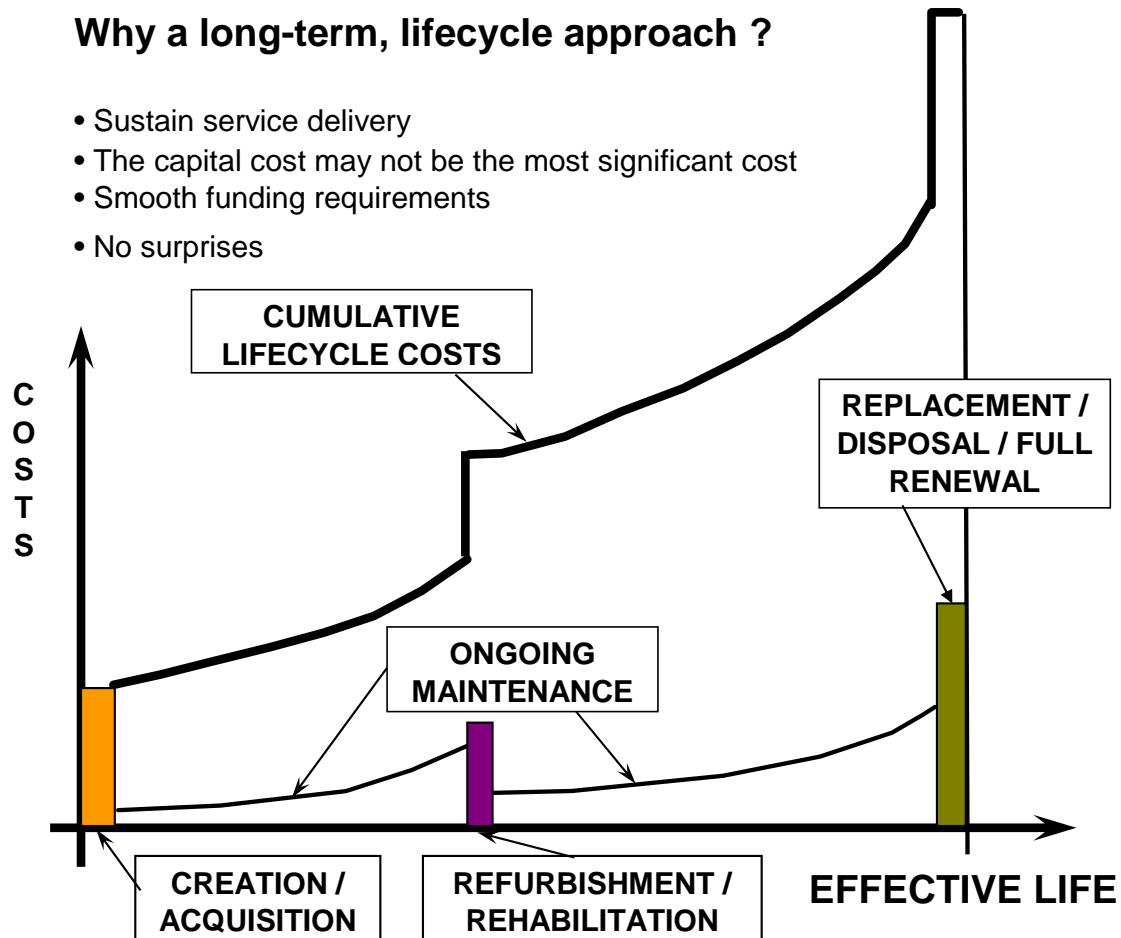
The lower line between the bars (labelled ongoing maintenance in the figure) represents the direct operations and maintenance cost relevant to the management of the asset. The escalation of direct operation and maintenance cost through the life of the asset are illustrated and normally increase substantially just prior to rehabilitation or replacement (due to the deterioration of the condition and performance of the asset).

The direct capital, operation and maintenance costs are only part of the story. The cumulative lifecycle costs e.g. financial costs (interest or cost of capital), depreciation, management overheads etc. is normally quite substantial. The cumulative costs are represented by the upper or top line in the figure, labelled "cumulative lifecycle costs". The proportions of the direct and cumulative indirect costs are clearly illustrated by the figure below and the huge variance between these two categories of expenditure is distinctly visible in the figure.

The main objective of the figure is to illustrate that cumulative lifecycle costs e.g. financial costs, depreciation provisioning, overheads and other costs form a substantial part of any asset life cycle costs in future. To achieve a smooth funding profile for the management and operation of the asset over its total life cycle, a good understanding of lifecycle costs and adequate provisioning for funding is required to prepare for the hidden and unaccounted for costs that may occur at any time.

Why a long-term, lifecycle approach ?

- Sustain service delivery
- The capital cost may not be the most significant cost
- Smooth funding requirements
- No surprises



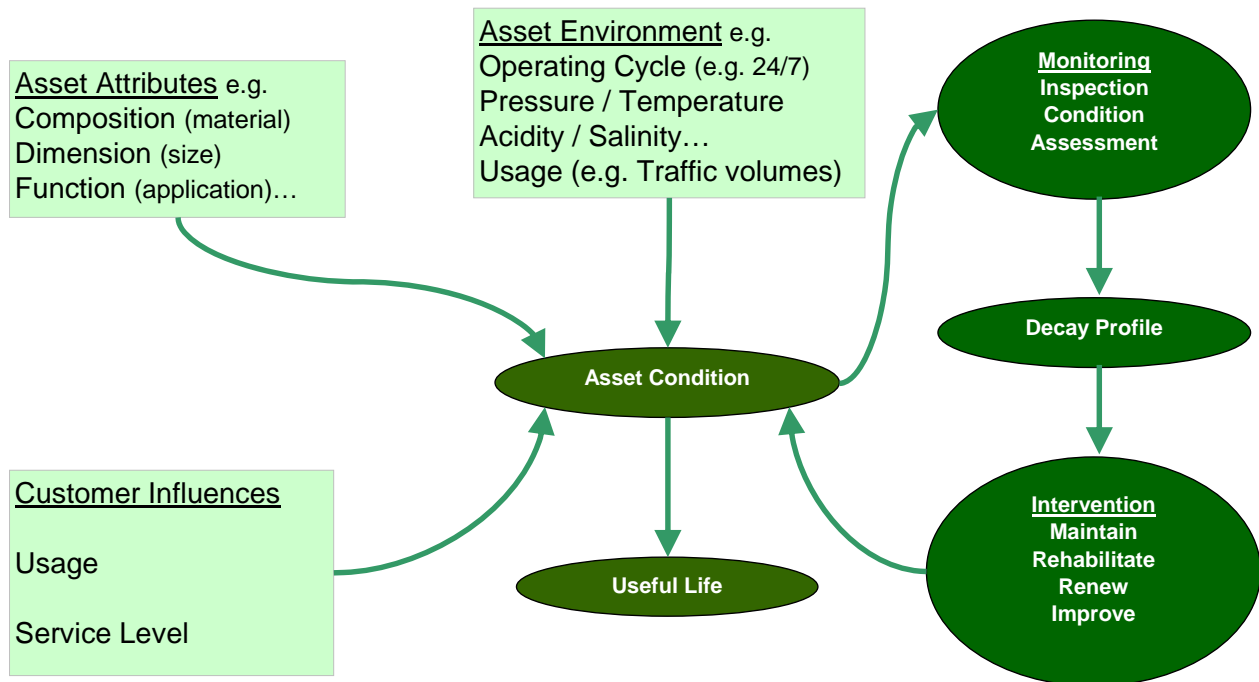
At this stage LGA requirements for the LTCCP and Asset Management Plans determine that a ten year estimate of financial expenditure for assets and groups of assets must be performed. If the life cycle approach is followed the financial forecasts for the entire useful life of the asset should be estimated. Only then the true financial implication of creating or acquiring an asset can be determined.

Asset Deterioration

It is important that the issue of asset deterioration is understood in relation to total life cycle management of an asset. It is due to the use and deterioration of an asset that the various life cycle stages are identified and that provision for renewal is made by depreciation of the asset over its total useful life.

Whole-of-life, or life-cycle asset management acknowledges that an asset is always in a state of decay.

The monitoring of the performance, utilisation and cost of an asset through all its life cycle stages is crucial to understanding the issues relevant to the total life cycle of an asset. The figure below elaborate on the issues impacting on the condition and the processes required to manage the condition and performance of the asset



The useful life of an asset is primarily influenced by its:

- physical characteristics (e.g. material, size, application)
- operating environment, (e.g. operating cycle, pressure, temperature, acidity, usage etc.) and
- customer requirements (e.g. usage, service level requirements)

The issues listed above are some of the factors that may contribute to the current condition and ultimately the useful life of the asset. Monitoring of the condition of an asset will provide the information for the decision of what stage of deterioration an asset has reached.

The current condition level and to what extent the asset still delivers on the required level of service will determine what intervention will be performed to improve the condition and/or performance of the asset.

The options available for intervention are:

- Maintain the asset
- Rehabilitate the asset
- Renew the asset
- Improve or upgrade the asset

Timely intervention is therefore required to ensure that asset deterioration and decay is prevented and to ensure that the asset condition and performance is adequate to provide the required level of service.

Asset Information Systems

In the previous sections the life cycle approach to asset management and the deterioration of assets have been discussed. In order to capture and maintain all the data, information and to facilitate all the business processes required to analyse the various life cycle stages and to facilitate optimum business decisions, an asset management information system is required.

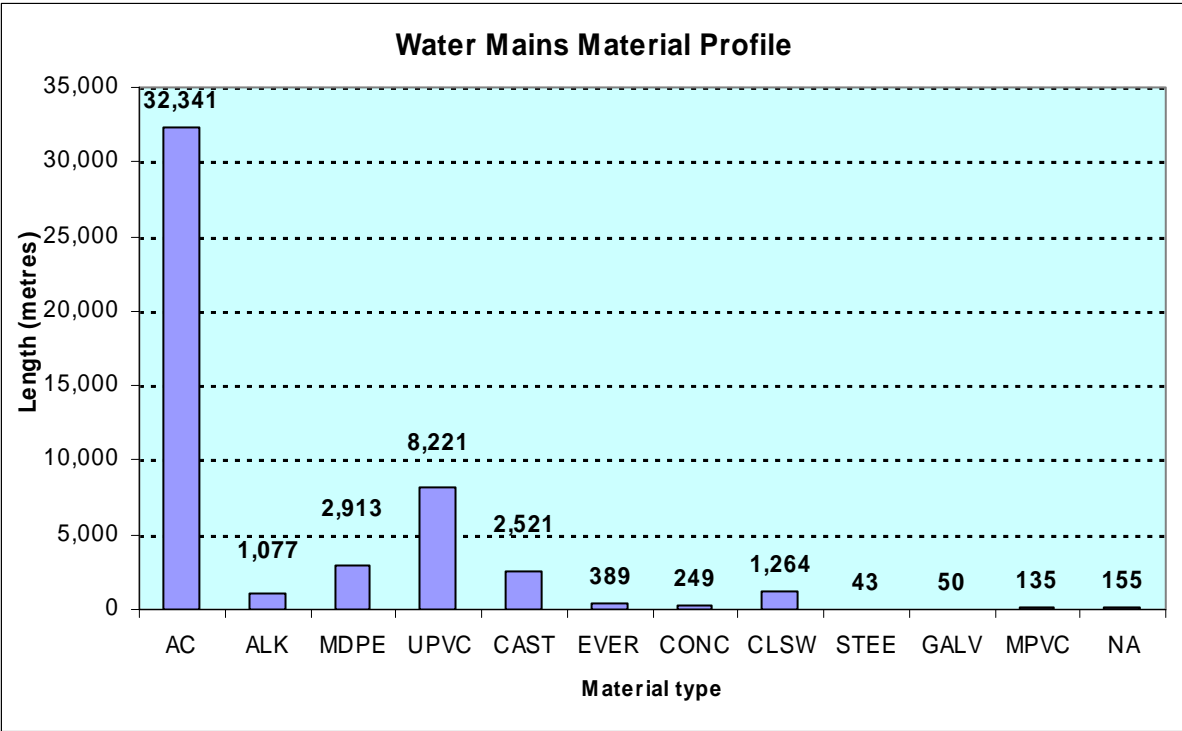
An asset information system is defined as:

“a combination of processes, data, software and hardware applied to provide the essential outputs for effective AM such as reduced risk and optimum infrastructure investment”

A core AM information system will meet the basic needs of an organisation implementing AM strategy and the life cycle approach to asset management. The asset register will store primary asset attributes (type, material, dimensions, quantity, construction date) and record key data related to each asset such as condition, performance, criticality and maintenance records.

An advanced AM system will expand core functionality, introducing tools to assist with risk management, predictive modelling, optimised decision-making, financial modelling and works management. The asset register may expand to allow the assigning of information to the lowest component level that requires replacement or maintenance.

The use of an information system enables asset managers to develop reports and figures that contain information on numerous assets displayed in one snap shot (e.g. the figure below) in order to make decisions on what actions to take to manage an asset or a group of assets.



The figure provides the material profile for a water supply system. Material type is one of the drivers of asset age and this profile will provide some background information what the approximate age of a network is going to be and when the renewal of most of the network will be due. This will enable asset managers to determine when funding will be required to replace the section of the network approaching the end of its useful life. In the example the asset manager may be faced with a big spike in expenditure if the total section of AC pipes, has to be replaced in one year. It may be possible to smooth the expenditure across a number of years to soften the financial impact of the replacement or to collect sufficient depreciation reserves to fund the replacement.

In order to make a decision on which sections of AC pipe to replace first, a good condition monitoring regime and system will be required. The performance of corrective maintenance (normally an expensive option) on pipe breaks will be minimised and the pipes in worst condition will be replaced first.

The basis for the decision-making of this nature and scale is to have a good asset management information system available.

Conclusion

The benefit of making decisions about an asset or a group of assets taking the total life cycle into consideration is to minimise any financial and other surprises that may occur later in the life of managing the assets. It is complex to manage a group of assets that forms an infrastructure system as it consists of various assets with different issues, constraints and influences impacting on the assets.

The rationale for the existence of an asset or group of assets is normally to deliver a required level of service to the customer that is paying for the service.

The most cost effective way to manage such assets is to follow a life cycle approach making use of asset information systems to reach optimal business decisions about interventions required to operate, maintain and replace assets developed to deliver a required level of service.

