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Central Waikato zone management plan

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Waikato
REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

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Introduction

The Central Waikato zone consists of the Waikato River catchment between Karapiro Dam and Ngaruawahia and has an area of 64,000 hectares. The zone represents 4.5% of the total Waikato River catchment area. The zone is dominated by the Waikato River channel and associated rivers, streams and lakes and is unique in that it contains the major population centre for the region (Hamilton city) and contains two flood control assets (weirs).

Purpose

This plan is one of eight zone management plans that will cover the management of river and catchment activities across the Waikato region. This plan is supported by an overview document titled "River and Catchment Management in the Waikato region" (Doc# 1717271).

This plan complements the overview document by providing zone-specific detail on river and catchment management within the Central Waikato zone.

The purpose of this plan is to:

- Provide a document to convey the long-term strategic direction for The Waikato Regional Council (WRC) River and Catchment Services (RCS) within the context of a 50 year horizon.
- Provide an overview of the zone generally with specific focus on the work programmes and other activities of RCS within the zone.
- Provide a communication tool for staff, Council committees and sub committees, Iwi, key stake holders, including the general public and audit.
- Improve understanding of service level standards, options and costs to smooth peak funding demands, while improving customer satisfaction and organisational image.
- Manage the environmental, service delivery and financial risks of asset failure.
- Identify lifecycle costs to provide agreed level of service over the long term.
- Explain how the long term works programmes have been developed and how they will be funded.
- Provide a management tool that is live and adaptable with regard to the changing needs of RCS assets.

The Central Waikato zone

Regional context

The Waikato region comprises four primary catchment groups being:

- Waikato River catchment
- Waihou Piako catchments
- Coromandel
- West Coast.

For management purposes, the Waikato River catchment is divided into five separate sub catchments or management zones:

- Lake Taupo
- Upper Waikato
- Waipa
- Central Waikato
- Lower Waikato.
- Many of the issues facing the Central Waikato Zone are unique to the catchment, which is significantly more urbanised than other catchment zones in the region.

Zone overview

The Central Waikato zone contains two dominant features, these being the Waikato River main channel and the urban area that makes up the city of Hamilton.

Hamilton, New Zealand's fourth largest city, dominates the southern end of the zone. Smaller towns and communities whose primary function is servicing the agriculture industry within the zone include:

- Cambridge
- Ngaruawahia
- Ohaupo.

The total number of rateable properties within the Central Waikato zone is 67,795. Agriculture (dairy and dry stock farming) is the dominant economic activity however there are also significant industrial activities

including power generation, coal mining and quarrying.

A number of elements of nationally important infrastructure traverse through the zone including:

- State Highway 1, 1B, 3, 21, 26 and 39
- North Island Main Trunk Railway
- National electricity grid transmission lines.

Geologically the zone is diverse consisting of:

- Volcanic materials including tephra (20%)
- Alluvial and unconsolidated sediments (56%)
- Peat (9%)
- Sandstone/mudstone (9%)
- Greywacke or Argillite (5%)

Of the total zone area, 12% is urban, 78% in pasture, 1% is in production forestry, and 9% in native vegetation, scrub and other land uses.

Increasingly Council has sought to address catchment based issues within an integrated catchment management framework. A significant step toward the integrated catchment management approach occurred with the adoption of the Waikato River Catchment Services Project (Project Watershed) and the Peninsula Project. These projects seek to better integrate the range of activities that need to be considered in managing river and stream catchments in a sustainable way.

River and Catchment objectives in the zone

Council's mission and vision

Council adopted its strategic direction for the council triennium on 31 March 2011. This strategy sets out what we do, why we do it and the value provided to the community. Council's vision is:

'Competing globally, caring locally'

Council's mission is:

'To provide regional leadership to balance economic and environmental outcomes to enable the social, economic, environmental and cultural wellbeing for current and future generations'.

The strategy provides the framework to develop a zone specific vision. The zone vision will be implemented through specific objectives and goals.

Zone vision

The Central Waikato zone vision is:

'Well managed rivers and catchments, within a framework that recognises:

- community and cultural needs and aspirations
- natural risks
- economic and environmental sustainability

Zone goals and objectives

An integrated whole of catchment management approach is taken in managing the zone. Seven goals to achieve the zone vision have been established, each with a defined set of objectives. The goals and objectives for the Central Waikato zone are:

Goal 1: ***To manage flood risk to rural land and to the urban areas of Hamilton, Cambridge and Ngaruawahia.***

Goal 2: ***To reduce bank erosion and sedimentation of rivers and streams resulting from changes in land use practises, riparian vegetation and flows regimes within priority catchments.***

Goal 3: ***Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries.***

Goal 4: ***To maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes within the zone and across the whole zone***

Goal 5: ***Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.***

Goal 6: ***To foster sound working relationships with Iwi, regional communities and national infrastructure project planners***

Goal 7: ***To ensure that sound policy, practises and processes are in place to support the delivery of programmes within the zone.***

Zone issues, opportunities and actions

Stakeholder engagement identified a number of issues and opportunities. These have then been grouped under six themes:

- Flood hazard and flow management
- Urban development and land management
- River bank and bed erosion
- Protecting and promoting the health and wellbeing of the Waikato River
- Maintaining and enhancing biodiversity
- Zone management and stakeholder engagement.

Each of these issues reflects the goals set out above, and as such, were all considered priority issues.

Managing the zone

How the system operates in the zone

The Central Waikato zone is located entirely within the Hamilton Basin. The Hamilton Basin covers some 160,000 hectares and extends for about 60km north-south and 30km east-west. Hamilton lies at the centre, and it is almost completely surrounded by hills and ranges. The Waikato River enters through a narrow gap in the Maungatautari Range at Karapiro Dam and flows northwest to leave the basin through another narrow gap at Taupiri.

The Waikato River is regulated by a system of hydro-power generation dams, located between Lake Taupo and Karapiro. The Karapiro Dam is the last of the series of eight dams on the river. Compared to the storage in Lake Taupo there is not much storage in the system of dams.

The total Waikato River catchment upstream of the zone (Karapiro Dam) is 7,708 km^2, and the additional zone catchment to Ngaruawahia is 629 km^2. The zone therefore constitutes only 7.5% of the total catchment area to Ngaruawahia.

Under normal conditions flows in the Waikato River within the zone are largely determined by releases from Lake Taupo and fluctuations caused by utilisation of operational storage within the hydro lakes.

In flood flow conditions, the local zone can contribute significantly to Waikato River discharges within the zone. While the zone only contributes approximately 7.5% of the catchment area to Ngaruawahia, it is estimated that it contributes around 30% of flood peak discharges. This is based on analysis of historical data and reflects the influence of the storage capacity of Lake Taupo and the Waikato Hydro System upstream of Karapiro Dam versus the unconstrained catchment within the Central Waikato Zone.

Within the Central Waikato zone the main tributaries to the Waikato River are Karapiro Stream, Mangawhero Stream, Mystery Creek, Mangaone Stream, Mangaonua Stream, Mangakotukutuku Stream, Waitawhiriwhiri Stream and Kirikiriroa Stream.

The Waikato River through the Central Waikato zone is a transitional reach. Upstream of the dams the river is narrow with gorges and rapids and downstream of Ngaruawahia the river is wider with a floodplain. The Central Waikato reach is a transition between the two.

Overview of river and catchment management activities

The aims of river and catchment management activities are to:

- Manage issues in a ‘whole of catchment’ basis.
- Manage hazards and effects associated with soil erosion and flooding.
- Reduce sediment entering waterways.
- Improve water quality.
- Improve river stability.

- Improve river environments by creating better habitats for a wider variety of plants and animals.
- Maintain and manage existing river and catchment assets.

In the Central Waikato zone, river and catchment management activities include:

- Catchment oversight
- Information and advice.
- Catchment works programmes (maintenance, new works and lakes management.
- River management.
- Related Activities - Drainage works (not included within this ZMP) and Emerging practices (establishing connections and relationships, etc).

Central Waikato zone assets

Unlike other zones within the region the services included under this zone plan are based around catchment and river management activities rather than infrastructural assets. The zone contains two assets (timber weirs) which operate for the primary purpose of maintaining water levels within Lake Maratoto and Lake Rotomanuka.

The assets have a total replacement value of $36,817, a book value of $34,489 and an annual depreciation of $368. As these structures are in the early part of their life cycle they are in good condition and require minimal maintenance.

There are also 31 identified soil conservation assets covering 115 hectares of land and including 22,617 metres of fencing. The soil conservation assets within the Central Waikato zone are not owned by Council and are therefore not included in the valuation; they are formally owned by the respective property owners. They have been included because Council has ongoing obligations for monitoring and managing these works under the terms of the agreements with landowners. Council contributes funding towards catchment management programmes involving the promotion and maintenance of soil conservation assets. These assets are non-capital related assets.

Whole of catchment management

Council made progress with the 'whole of catchment' approach following the introduction of Project Watershed in 2002 and the Peninsula Project in 2003. These projects sought to provide a more integrated management and funding framework across the entire Waikato River Catchment and Coromandel Peninsula respectively. While this was an extension from the earlier approach, the primary focus remained the delivery of specific services (flood management, river management and soil conservation).

Further progress since 2003 as a result of changes to legislation and community demand, have resulted in wider consideration of related catchment activity (including biodiversity, biosecurity, natural hazards and planning) and a broader values base (cultural, environmental, economic and social). This zone plan seeks to identify where linkages are needed and promote stronger connections being made in the future.

For the Central Waikato zone, the whole of catchment approach means that consideration is needed of both the catchments within the zone as well as the upper reaches of the Waikato River catchment (that is, outside the zone) and the way in which these impact upon the zone.

The zone plan has identified the key zone sub catchments and the following matters will be considered within those catchments:

- Soil erosion and sedimentation.
- Riparian, river and channel management.
- Existing land protection measures.
- Water quality and quantity (including receiving waters – wetlands, lakes).
- Plant and animal pests.
- Natural hazards and risks.
- Policy and planning (urban growth, transportation, infrastructure).
- Biodiversity.
- Treaty settlements, co-management.
- Land use and development.

In regard to the upper Waikato River catchment upstream of the zone, the impacts and considerations include:

- Land use change and future forecasts of land conversion and intensification particularly within the Lake Taupo, Upper Waikato and Waipa zones.

- Impacts of future Treaty settlements within all Waikato River catchment zones.
- Climate change, which may lead to increased rainfall impacts and flood levels.
- Future governance and infrastructural arrangements.
- Flood management – particularly the operation of the Waikato River hydro system during flood events, when there is a need to balance conflicting interests.
- River and catchment work programmes in other zones particularly soil conservation works, which may have benefits to flood flows and lead to an improvement in water quality (nutrient and sediment reduction).

Key issues and strategies

A number of regionally significant issues and trends have been identified for river and catchment management activities including:

- Climate change
- Growth
- Treaty of Waitangi settlements
- Land use change
- Potential local government restructuring
- Infrastructure development and management
- Regional environmental issues.

The regional issues relating to the management of the Central Waikato zone are as follows:

Key Issue	Strategies to address key issues
Climate change (CC)	• Monitoring • Liaison with national agencies
Growth	• Involvement in planning and policy development • Liaison, networking and relationship building
Treaty settlements	• Liaison with iwi authorities and implementation of co-management arrangements. • Alignment of strategies may be required to fit tribal rather catchment boundaries • Relationships developed
Land use change	• Sustainable land management practices promoted in upper catchments (within and outside Central Waikato zone)
Local government re-organisation	• Monitoring of potential changes
Transportation networks	• Liaison with planning (local authorities) and transport agencies (road and rail)
Natural hazards	• Management of flood risks • Raise community awareness as to emergency procedure, response
Water quality and quantity	• Promotion of 'whole of catchment' management • Partnerships/liaison with other organisations and agencies (iwi, local authorities) • Future investigation/support for water harvesting strategies
Biodiversity/ecological effects	• Recognition of the biodiversity and ecological component of river and catchment, lake and wetland protection programmes • Appropriate mitigation measures applied
Community awareness	• Community education, promotion and engagement • Regular community targeted information / publicity
Community expectations	• Community engagement processes in place • Full evaluation and consideration of financial and management implications of increased (or changed) levels of service
River channel management	• Management programmes and strategies in place
Infrastructure change	• Liaison with other agencies
Sites of significance	• Liaise and partnerships with other agencies.
Land Improvement Agreements	• Management strategy in place and implemented by Land Management Officers
Zone governance and integration	• Prepare future management strategy with view to rationalisation of present governance arrangements
Soil erosion	• Promotion of soil conservation programmes and sustainable land use practices.

Additionally a number of zone specific issues have been identified; these are detailed in Table 3 of Section 3 of this ZMP and include:

- Flood hazard and flow management
- Urban development and land management
- River bank and bed erosion

- Protecting and promoting the health and well-being of the Waikato River
- Maintaining and enhancing biodiversity
- Zone management and stakeholder engagement

Legislative and policy requirements

Council has responsibilities under various acts of parliament. Those most relevant to this ZMP are:

- Local Government Act 2002 and Local Government (Rating) Act 2002.
- Soil Conservation and Rivers Control Act 1941.
- Civil Defence Emergency Management Act 2002.
- Resource Management Act 1991.
- Land Drainage Act 1906.

Council also has obligations under statutory documents; the key documents include:

- The Long Term Plan (LTP) 2012-2022
- Regional policy statement
- Regional plan
- District plans.

The most significant implication for the delivery of river and catchment services are the duties under the RMA to protect the natural resources of the region and to avoid, remedy or mitigate the effects of any activities being undertaken. RCS do this through their soil conservation activities, which protect and enhance the watercourses in the region, and through obtaining resource consents for any activities where there may be an adverse effect on the environment.

Bylaws

The majority of RCS services are governed by the above legislation; however there are regional and district council bylaws that have implications for these services including Council's Navigational Safety Bylaw 2009. The bylaws largely protect the assets of river and catchment services by restricting people from damaging structures or accidentally or deliberately blocking drainage channels.

Consents

Council currently holds 8 resource consents in relation to rivers and catchment services in the Central Waikato zone. RCS must carry out their activities in line with the resource consent conditions specified. It is therefore important to make sure that all staff and potential contractors are aware of these obligations. The implications of non-compliance can include fines, enforcement or abatement notices or legal action. Consent conditions are becoming more stringent as more accurate data is available of the effects of particular activities. It is likely that this trend will continue into the future and this could mean that the cost of compliance will increase over time.

Standards and guidelines

In addition to the legislative requirements, there are also a number of standards and guidelines that impact how river and catchment services are delivered in the zone. These include the National Policy Statement for Flood Risk Management and Managing Flood Risk – A process Standard, NZS9401: 2008.

Key stakeholders

To achieve the Community Outcomes, Council works in partnership with other councils, community groups, businesses, individual landowners, central government, iwi/hapu and non-governmental organisations. Key stakeholders include the community and direct beneficiaries, Central Waikato Zone Liaison Subcommittee, Tangata whenua, the landowners holding Land Improvement Agreements, the Territorial Authorities especially Hamilton City Council, Department of Conservation, Fish and Game New Zealand, Mighty River Power and the New Zealand Transport Agency.

Relationships with Iwi

As an agency acting under the authority of the Crown, all local government organisations have a responsibility to uphold the Treaty of Waitangi. This means considering and respecting the needs and values of Maori in all Council's activities. There are further statutory obligations under the Local Government Act 2002 and Resource Management Act 1991.

Strong relationships have been developed with local iwi and processes for involving Maori representatives in the decision making process. This includes memoranda of understanding with iwi, Maori representation on Council steering groups and consultation as part of the resource management process. This relationship has been strengthened through the settlement

legislation that will see Council and Waikato Tainui working together to manage the health and well being of the Waikato River.

Consultation and engagement with iwi

The planning of river and catchment services, such as the development of the zone plan, must have regard to the Memorandum of Understanding (MoU) which requires working with iwi groups taking iwi management plans into account, respecting the principles of the Treaty of Waitangi and developing joint initiatives. The relationships with particular iwi groups may change over the coming years as a result of settlements between iwi and the Crown. This may result in greater involvement in iwi in the management of rivers and other features, rather than just participating in consultation. Iwi outcomes are identified in the LTP with the main interest being the protection of, and respect for, the natural features in the environment, with recognition for their role as tangata whenua and kaitiaki. Specific outcomes were developed for the three MoUs.

Treaty of Waitangi settlement

Under recent legislation[1] Waikato Regional Council shares management responsibilities with Waikato and Waipā River iwi (Waikato-Tainui, Te Arawa River Iwi, Raukawa, Ngāti Tūwharetoa and Ngāti Maniapoto). The underlying purpose of the three Acts is to protect and restore the health and wellbeing of the Waikato and Waipā Rivers.

These Acts require co-governance and co-management, emphasising the need for Council to work together with iwi partners in the "spirit of co-operation and good faith" to achieve positive outcomes for a healthier river system. This should include:

- The highest level of good faith engagement
- Consensus decision making as a general rule
- A range of management agencies, bodies and authorities working at a number of different levels
- Processes for granting, transferring, varying and renewing consents, licences, permits and other authorisations for all activities that may impact on the health and wellbeing of the river
- Development, amendment and implementation of strategies, policy, legislation and regulations that may impact on the health and wellbeing of the river.

In this new environment, Council must ensure that its engagement and relationship management with iwi remains relevant.

This new approach requires the Council to work collaboratively with iwi to restore and protect the health and wellbeing of the Waikato and Waipā catchments. Joint Management Agreements with these iwi set out co-management arrangements in the areas of:

- Resource consent processes;
- Planning and policy development;
- Environmental monitoring and,
- Authorised customary activities.

A separate co-management agreement for Waikato River related lands with Waikato-Tainui has been developed. These and other co-management arrangements will significantly influence the approach to river and catchment management, and over time, must be fully considered within zone plans.

Deeds of settlement

Deeds of Settlement enacted for iwi with tangata whenua interests in the Waikato region include:

- Pouakani
- Te Arawa Lakes
- Affiliate Te Arawa hapu and iwi
- Maraeroa A and B Blocks
- Waikato-Tainui (Waikato Raupatu Lands)
- Waikato-Tainui (Waikato Raupatu River)
- Ngati Maniapoto (Waipa River)
- Te Arawa River iwi, Raukawa, Ngāti Tūwharetoa (Waikato River)

The following Deeds of Settlement are in the process towards enactment.

[1] Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010 and Ngā Wai o Maniapoto (Waipā River) Act 2012.

Raukawa signed deed of settlement
The Crown and Raukawa (Raukawa ki Waikato) signed a Deed of Settlement on 21 September 2011. The settlement remains subject to ratification and the passage of settlement legislation.

Ngāti Koroki Kahukura signed deed of settlement
The Crown and Ngāti Koroki Kahukura signed a Deed of Settlement on 20 December 2012. The settlement remains subject to ratification and the passage of settlement legislation.

Ngāti Pūkenga signed deed of settlement
The Crown and Ngāti Koroki Kahukura signed a Deed of Settlement on 7 April 2013. The settlement remains subject to ratification and the passage of settlement legislation.

Te Kotahi a Tuhoe initialled deed of settlement
The Crown and Te Kotahi a Tuhoe initialled a Deed of Settlement on 22 March 2013. The settlement remains subject to ratification and the passage of settlement legislation.

Ngāti Hauā Initialled deed of settlement
The Crown and Ngāti Hauā will sign a Deed of Settlement on 18 July 2013. The settlement will remain subject to ratification and the passage of settlement legislation.

Levels of service

The level of service provided by the zone was primarily established through the Project Watershed Funding document and reviewed through the statutory processes of Long Term and Annual Planning. Catchment liaison subcommittees are the primary mechanism for local consultation and engagement on river and catchment management outside of the Long Term Plan and Annual Plan processes. The Central Waikato liaison subcommittee was established as part of project watershed.

Linking levels of service to outcomes

Council outcomes
Community outcomes state what the council intends to achieve to maintain and improve the wellbeing of the region in the present and in the future. They form the basis for the council's service delivery, thus determining the levels of service provided to the community.

In 2011, the Waikato Regional Council reviewed the set of community outcomes it developed in 2004 in collaboration with 12 councils in the greater Waikato region as part of the Choosing Futures Waikato process. As a result of this review, these outcomes are now described as 'community aspirations'. They are overarching statements of the community's priorities for the region across five themes, including environment, economy, quality of life, culture and identity and participation and equity.

At the same time, WRC has also adopted four new community outcome areas – community partnerships, environmental quality, regional economy, and safe and resilient communities. These are aligned to the community's aspirations and closely mapped to the council's core business.

WRC's River and Catchment Service (RCS) contributes to all of the community outcomes.

The existing and proposed levels of service for the zone align with the community outcomes and customer values and activity strategic outcomes. The relationship between customer values and level of service outcomes are shown in the table below.

Customer value	Activity levels of service outcomes
Affordability quality	Costs for services are distributed equitably. Services provided perform to agreed levels and standards. Statutory requirements and legal obligations are met.
Safety	People and property are safe from hazards associated with flooding and erosion.
Sustainability (whole community benefits)	The net outcome of provision of RCS services is an enhancement of the environment. Services are managed for the social, cultural, economic and environmental wellbeing of current and future generations.
Community engagement	Decision-making processes are transparent and easily understood. Work with stakeholders to achieve mutual objectives. We will consult with all relevant iwi and specifically in regard to

	implementation of Treaty settlements and co-management arrangements.
Reliability/ responsiveness	Response to requests, complaints and events is timely and appropriate solutions are provided.

Each level of service statement is accompanied by one or more performance measures. The proposed levels of service and the accompanying performance measures are largely derived from a more formal definition of existing practice. This will provide enhanced ability for measuring performance and thus increase both the accountability and transparency of service delivery.

Risk management

WRC has recently (2011) developed a corporate risk policy and a Risk and Assurance team, which has an overview of all risk exposures within the organisation, including corporate, financial, customer, assets. Infrastructure Services staff contribute regularly to the work of this group. Each risk identified in the risk action plan of this ZMP should also be reflected within the corporate risk register.

Council policy and operation cannot influence all the factors contributing to these events. However, WRC has a responsibility to assess the risks in order to best manage the activity with the resources available to avoid and mitigate the effects of any event.

WRC has highlighted a number of key risk areas across the activity including:

Service level agreements not met or non-existent – between River and Catchment Services and other parties internal or external (i.e. Hamilton City services

- Climate change
- Conflicting objectives/aspirations /value systems (ie with Hamilton City Council)

All possible risks affecting the River and Catchment Services activity need to be identified. Risks can include financial, environmental, social, operational and health and safety considerations. Once identified, risks are entered into the risk register (see Appendix 4). The register is used to record and summarise each risk and to outline current mitigation measures and potential future management options.

Potential consequences of risk are wide-ranging in relation to activities. Those relevant to the river and catchment services activity are:

- Financial / economic
- Health and safety
- Reputation/Image
- Operational

The (abridged) Action Plan table below is compiled from the risk register and highlights the most significant residual risks faced by the RCS group within the Central Waikato Zone. The Residual risk is the actual risk that exists considering the effective measures implemented. The measures in place reduce either, or both, the consequence and the likelihood of a risk occurrence.

Risk No	Risk descriptor	Type of risk	Management options available	Pinpoint management actions
A-GR18	Climate change	Financial / economic operational health and safety	Continue current practice Upgrade assets to offset climate change effects	Monitor national climate forecasts (MfE) Undertake annual review of service levels and design standards incorporating any assessment of the potential effects of climate change Incorporate MfE information in service level reviews
A-GR19	Conflicting objectives/ aspirations /value systems	Financial / economic operational reputation / image	Better understanding of process, inter-connections, and benefits Mutually beneficial projects (win-win) Facilitation and agreement, mutually agreed outcomes Negotiated solutions	Develop and implement targeted communications plan to improve the process for communicating long term objectives with stakeholders
A-GR6	Service level agreements not met or non-existent – between River and Catchment Services and other parties internal or external (ie Hamilton City services)	Financial / economic operational reputation / image	Maintain and develop relationships with stakeholders Review if additional SLA's are required Improved monitoring and management of Service Level Agreements Need to develop and implement internal SLA's between zone and RCS programmes Develop and implement an external SLA with key stakeholders as appropriate	Work with stakeholders to put in place service level agreement(s), Have regular reviews in place to measure achievements as set out in Service level agreement(s),

Financial management

For Council to undertake a sustainable, long-term approach to the management of infrastructure assets within the catchment zones it is essential to prepare long-term financial forecasts.

Office of the Auditor General (OAG) criteria requires that Asset Management Planning (AMP) should translate the physical aspects of planned maintenance, renewal and new work into financial terms for at least the ensuing 10 years and in a manner that is fair, consistent and transparent.

The forecasts should include sufficient information to enable the decline in service potential (depreciation) of an asset to be measured. (Guidance on depreciation is included in the NZ Valuation and Depreciation Guidelines).

The majority of expenditure within the Central Zone is not related to the creation, maintenance or replacement of assets. There is currently no capital expenditure identified in the 2012-22 Long Term Plan, all of the activities in the zone are funded through an operational budget. The level of service and budgets set out in the LTP are similar to the existing levels. The zone reserve is also projected as being in credit for the full duration of the LTP.

Zone management assumptions

This zone plan has been prepared subject to the following limitations and assumptions:

- The plan is based on currently available information and data
- Effects of climate change are considered based on the Ministry for the Environment Guidelines
- Financial forecasts are limited to 10 years
- Land use within the protected compartments will remain the same
- Up to 55,000 ha of exotic forest in the Upper Waikato Catchment will be converted to pasture over the next 20 years
- Existing levels of service are to be maintained
- Consultation in the development of this plan has been focused on input from community representatives associated with the catchment liaison subcommittee
- There will be minimal change in applicable standards and technologies over the life of the plan
- This plan has not considered future budget constraints
- This plan has not considered changes to the Resource Management Act and the influence this will have in this activity area
- The plan has not made any specific provision for management and governance changes that may result from co-management.

Summary financial forecast

The Central Waikato zone services are provided on an annualised maintenance cost basis. While there are activities on specific types of assets that are not carried out each year, the work is spread as evenly as possible across each year.

The information on the following pages provides a summary of the 10 Year Financial Forecast for Central Waikato zone.

Budget figures

Maintenance	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	Actual	Actual	Actual	AP	LTP	LTP	LTP	LTP	LTP	LTP	LTP	LTP	LTP
Catchment oversight	134,291	99,383	218,907	109,457	110,516	112,984	116,728	115,507	127,556	125,157	133,928	135,848	141,573
Information & advice	24,291	18,275	28,994	35,077	52,078	48,101	49,411	47,773	44,111	45,375	47,003	48,152	49,765
Catchment maintenance	5,373	2,996	6,417	14,733	15,902	16,811	17,597	18,318	19,060	20,065	20,989	21,822	22,883
Catchment new works	35,286	58,533	46,134	53,456	53,238	55,259	56,880	58,221	59,751	61,465	63,603	65,073	67,222
River manage ment	767,469	738,854	707,430	604,890	638,881	660,319	669,615	686,975	750,026	720,872	740,913	760,598	781,967
River improvement	13,023	3,215	1,683	74,199	78,694	81,765	82,645	87,806	37,703	91,624	90,455	93,705	94,851
Flood protection													
Main channel													
Total maintenance costs	979,733	921,256	1,009,565	891,812	949,309	975,239	992,876	1,014,600	1,038,207	1,064,558	1,096,891	1,125,198	1,158,261
Depreciation[1]	-	-	369	-	-	-	-	-	-	-	-	-	-
Interest expense on reserve balance [2]	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)	-	-	-	-	-	-
Total operating expenditure	955,916	900,626	992,666	878,091	939,330	969,207	991,009	1,014,600	1,038,207	1,064,558	1,096,891	1,125,198	1,158,261
funded by													
General rate	142,051	132,815	134,278	119,406	131,660	134,733	138,528	140,739	145,246	148,294	154,204	157,957	163,397
Targeted rate	1,157,221	1,072,578	977,730	823,437	869,884	889,519	855,942	839,299	859,108	883,201	910,593	934,997	963,612

Less capital rates charged													
Less debt funding	(81,756)	(81,756)	(81,756)	(81,756)	(81,756)	(81,756)	(35,805)	-	-	-	-	-	-
Fees and charges	15,777	19,192	18,694	-	-	-	-	-	-	-	-	-	-
Interest income													
Interest income on reserve balance [2]	56,469	50,211	54,710	55,000	58,000	62,000	64,000	65,000	65,000	65,000	65,000	66,000	66,000
Total revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Transfer to / (from) Operating reserve	333,846	292,414	110,990	37,996	38,458	35,289	31,656	30,438	31,147	31,937	32,906	33,756	34,748
Operating reserve balance													
Opening balance	773,880	1,072,366	1,338,982	1,417,780	1,429,022	1,439,001	1,445,033	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902
Plus revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Less Operating expenditure	(955,916)	(900,626)	(992,666)	(878,091)	(939,330)	(969,207)	(991,009)	(1,014,600)	(1,038,207)	(1,064,558)	(1,096,891)	(1,125,198)	(1,158,261)
Transfer to disaster reserve [3]	(35,160)	(25,598)	(32,561)	(26,754)	(28,479)	(29,257)	(29,787)	(30,438)	(31,146)	(31,937)	(32,907)	(33,756)	(34,748)
Plus depreciation added back	-	-	369	-	-	-	-	-	-	-	-	-	-
Less budgeted depreciation funding transferred to capital reserve	(200)	(200)	-										
Closing balance / (deficit)	1,072,366	1,338,982	1,417,780	1,429,022	1,439,001	1,445,033	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902	1,446,902
Zone establishment loan													
Opening balance	(433,027)	(375,088)	(313,962)	(249,474)	(181,439)	(109,662)	(33,938)						
Plus loan repayment funded	81,756	81,756	81,756	81,756	81,756	81,756	35,805						

Less interest charged	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)						
Closing balance / (deficit)	(375,088)	(313,962)	(249,474)	(181,439)	(109,662)	(33,938)	-						
Zone reserve balance (total)													
Opening balance	340,853	697,278	1,025,020	1,168,306	1,247,583	1,329,339	1,411,095	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902
Plus revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Less Operating expenditure	(955,916)	(900,626)	(992,666)	(878,091)	(939,330)	(969,207)	(991,009)	(1,014,600)	(1,038,207)	(1,064,558)	(1,096,891)	(1,125,198)	(1,158,261)
Less Capital expenditure	-	-	-	-	-	-	-	-	-	-	-	-	-
Less interest on zone establishment costs	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)	-	-	-	-	-	-
Plus loan repayment funded	81,756	81,756	81,756	81,756	81,756	81,756	35,805	-	-	-	-	-	-
Transfer to disaster reserve [3]	(35,160)	(25,598)	(32,561)	(26,754)	(28,479)	(29,257)	(29,787)	(30,438)	(31,146)	(31,937)	(32,907)	(33,756)	(34,748)
Plus depreciation added back	-	-	369	-	-	-	-	-	-	-	-	-	-
Closing balance / (deficit)	697,478	1,025,220	1,168,306	1,247,583	1,329,339	1,411,095	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902	1,446,902

Notes for inclusion

1. No current capital programme
2. Depreciation relates to two assets Lake Maratoto Weir & Lake Rotomanuka Weir.
3. Interest on reserve calculated on an average of reserve balance.
4. Funding is put aside each year from the zone into a regional disaster recovery fund.
5. This table reflects actual figures in 2011/12
6. LTP 12-22 zone revenue and expenditure include inflation where applicable.

LTP – Long Term Plan

Improvement plan

Council is adopting a strategic management approach to improvement planning, continually developing ZMPs, and implementing improvement processes and practices. The Improvement Plan is integral to this approach, quantifying current business practice and measuring progress toward an identified future position. The table below indicates the improvement tasks/projects to be undertaken over the next 3 years.

Process	Current practice	Target practice (3 year focus)
Community engagement		
Awareness and information	Periodic media releases Limited information dissemination Catchment liaison subcommittee engagement EnviroCare	Regular media release Promotion within community of achievements made, milestones reached Three yearly scheme open days Zone information available on website Community newsletters
Asset Management		
OAG Criteria for core and advanced asset management	Self-assessment	To be undertaken on ZMP on completion
Data management	Fundamental asset management processes in place Unit rate information currently not included in plan. Limited linkage between processes Improve data confidence and reliability Development of LIDAR information in progress but unavailable Level of historical maintenance information held is limited	Improved robust process for data collection, condition assessment and reporting (Complete Tables 13 and 14) Connections made to financial planning and forecasting Improved measurement of data confidence and completeness Summary of unit rates for determining valuations is to be developed and included into ZMP (in accordance with Audit NZ recommendations). Completion of LIDAR survey, and usage of information in zone management Implement a programme to improve the collection and of historical maintenance data. This will provide a basis of assessing the reliability of forecast information and managing the risks of unplanned maintenance costs Defined a LoS related directly to bridges within the zone (once level status is confirmed) include within Los Tables Define and include performance grades for asset capacity and performance tables.

Process	Current practice	Target practice (3 year focus)
Information systems		
Customer inquiries	Customer enquiries not managed through a central call centre Calls/complaints/issues received by general staff member, operational staff or potentially reception KPIs to respond within particular timeframes	Review prospects for management of enquiries and requests through potential corporate system. Develop a robust process including flow diagrams to show how service requests/customer enquiries are to be tracked Document and flowchart the process for establishing an service request and the closeout loop Implement a mechanism for auditing responses in accordance with published service levels
Operations and maintenance		
River management guidelines	In development	Adopt a river management strategy for the main river channel. Introduce regional channel capacity guidelines
Service Level Agreement	SLA with HCC in place requires review and updating	Updated SLA in place and reviewed on a 3 yearly cycle
Demand analysis and strategic planning		
Optimised renewal and replacement of assets	Optimised decision making not yet implemented	Develop renewals and replacements programme and Optimised Decision making prioritisation process
Demand analysis	From an operation perspective service demand is analysed to include: Climate Change as required (draft climate change policy) Community Demand (resulting from land use changes and risk mitigation e.g. for businesses wanted increased protection) Options modelling	Develop and Implement demand strategy to include: Consultation Costs and options for flood protection Climate change
Drainage inclusion into zone plan	Drainage is currently dealt with as separate to the zone plan. Especially in the context of urban growth that encompasses drainage areas, this approach is not integrated	Revise the zone plan to integrate all WRC drainage responsibilities into the Central Waikato Zone Management Plan
Risk assessment	A risk register and framework has been developed Risk is based on NZ/AS 4360 which has been superseded by ISO 31000	Undertake actions as outlined in the risk management action plan Put critical areas onto GIS including level of risk Identify process and responsibility for updating the register. Review and maintain the risk register Implement management options/strategies to reduce risk

Process	Current practice	Target practice (3 year focus)
		Report regularly to the Council
Levels of Service (LoS) review	Development of LoS undertaken under ZMP Technical LoS are well established for each scheme	Levels of service to consulted on next LTP Consult with zone stakeholders on service level options and costs annually and for specific projects With potential increases in the cost of maintaining services levels, continue to develop costs and options
Organisational		
Funding strategy	Funding strategies are in place for most activities	Develop and confirm zone funding strategy to address : Repayment of debt Provision for depreciation Any implications arising from peat settlement investigation
Valuations	As from 2011 Council has undertaken external valuations with an internal peer review.	External valuation commissioned 2013/14 with internal review.
ZMP review / improvement	First ZMP developed in 2011 Benchmarked against OAG criteria Development of Improvement programme	Improvement programme implemented Annual review of ZMP Responsibilities assigned External assessment / peer review of ZMP against Schedule 10 and OAG criteria

1 Introduction and purpose

1.1 Overview

The Waikato region has more than 16,000 kilometres of rivers and streams. It is important that our waterways and catchments are managed in a way that minimises erosion and flooding and their associated damage. Sound river and catchment management assists to reduce natural risks and maintain stable rivers, streams and drainage systems and the objectives can only be achieved where there is recognition of the impacts and interdependencies across the entire catchment.

Environmental benefits of river and catchment management works include reduction in sediment entering waterways and the protection and enhancement of native vegetation and wetlands. Other issues such as recreational and cultural use of rivers and their environs, the enhancement of biodiversity and overall aesthetic improvement are all important for the community and region as a whole.

The Central Waikato zone consists of the Waikato River catchment between Karapiro Dam and Ngaruawahia and has an area of 64,000 hectares. The zone represents 4.5% of the total Waikato River catchment area. The zone is dominated by the Waikato River channel and associated rivers, streams and lakes and is unique in that it contains the major population centre for the region (Hamilton city) and contains two flood control assets (weirs).

1.2 Purpose

This plan is the primary tool for the implementation of all river and catchment management activities within the Central Waikato zone, and includes:

- A vision for the zone
- A strategy to achieve that vision
- Activities to implement the strategy
- A set of service levels and performance standards for the activities.

A key component of this plan is provision of detail on the long-term management of river and catchment management assets. This plan is intended to fulfil asset management planning requirements for river and catchment management assets and activities in the Central zone.

In summary, the purpose of this plan is to:

- Provide a document that sets out the long-term strategic direction for river and catchment management within the zone
- Provide an overview of the zone generally, with specific focus on the work programmes and associated activities within the zone
- Provide a communication tool for staff, Council committees and subcommittees, iwi, and key stakeholders, including the general public
- Improve understanding of service level standards, options and costs to smooth peak funding demands, while improving customer satisfaction
- Manage the environmental, service delivery and financial risks of asset failure
- Identify lifecycle costs to provide agreed level of service over the long term
- Explain how the long term works programmes have been developed and how they will be funded
- Provide a management tool that is live and adaptable, and that can address changing needs over time.

1.3 Relationship to overview of river and catchment management in the Waikato region

This plan is one of eight zone management plans that will cover the management of river and catchment activities across the Waikato region. This plan is supported by an overview document titled "*River and Catchment Management in the Waikato region*" (Doc# 1717271).

The "*River and Catchment Management in the Waikato region*" document provides an overview of:

- The nature of the region and the key issues we face in the future
- How river and catchment activities are managed across the region
- Responsibilities for river and catchment management
- How river and catchment management relates to other activities
- The legislative and policy requirements for river and catchment management
- How links with the community are developed and maintained.

This plan complements the overview document by providing zone-specific detail on river and catchment management within the Central Waikato zone.

2 The Central Waikato zone

2.1 Regional context

The Central Waikato zone consists of the Waikato River catchment between the Karapiro Dam and Ngaruawahia and has an area of 64,000ha. The zone represents 4.5% of the total Waikato River catchment area. The zone includes a section of main Waikato River channel and a number of tributaries.

The location of the Central Waikato Zone in relationship to the other management zones within the Waikato region is shown in Figure 1.

The Waikato region comprises four primary catchment groups being:

- Waikato River catchment
- Waihou Piako catchments
- Coromandel
- West Coast.

For management purposes, the Waikato River catchment is divided into five separate sub catchments or management zones:

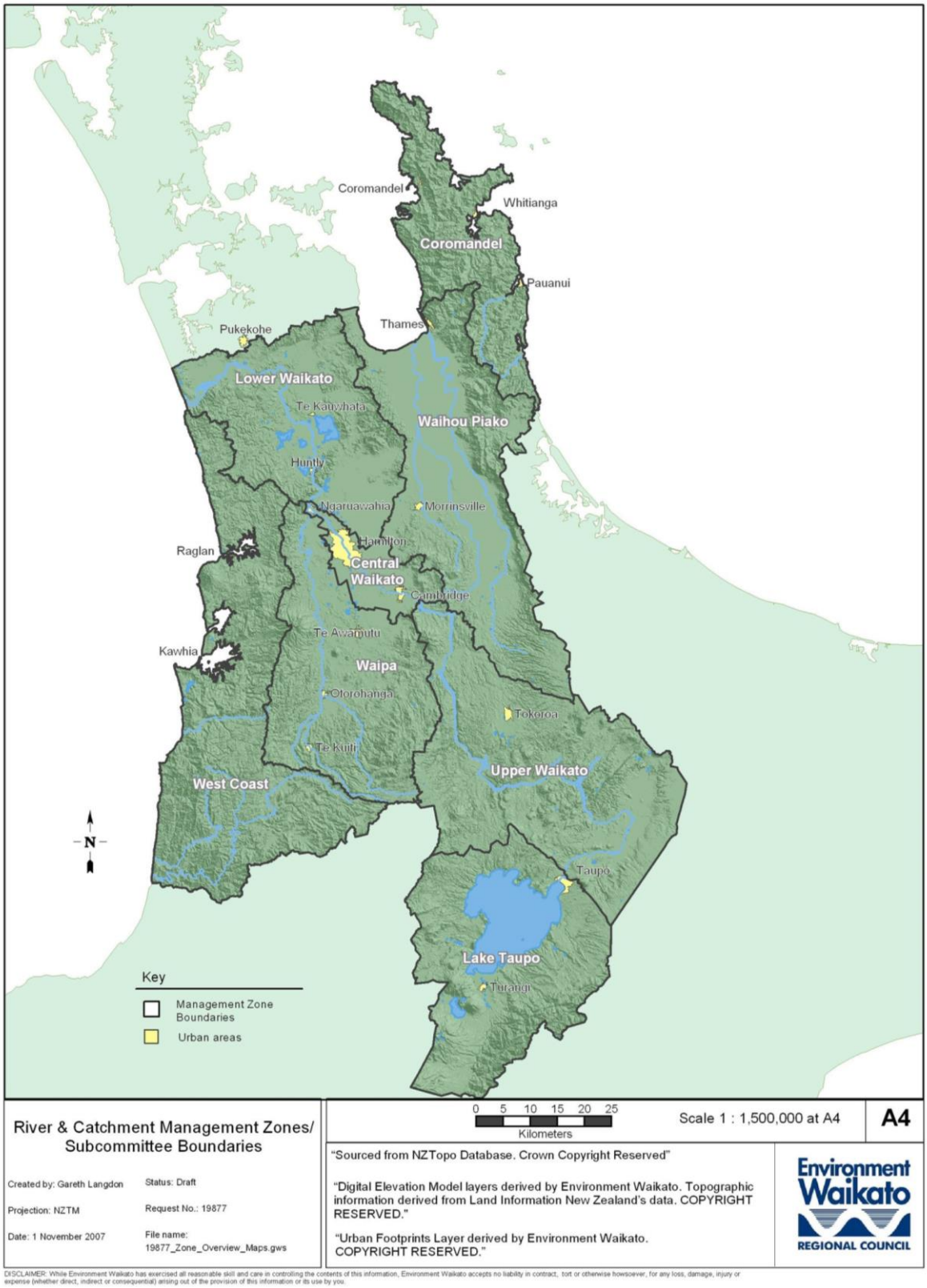
- Lake Taupo
- Upper Waikato
- Waipa
- Central Waikato
- Lower Waikato.

Many of the issues facing the Central Waikato Zone are unique to the catchment, which is significantly more urbanised than other catchment zones in the region.

Key river and catchment issues for this zone are as follows:

- Much of the zone consists of erodible soils derived from volcanic materials. This erosion is most pronounced on the river bed of the Waikato River, river banks, and river terraces
- Most of the focus in the Central zone is river and stream related as compared to land or catchment based. However, there are land management issues to be dealt with in the limited upper catchments (east of Cambridge) these mainly relating to soil erosion on steep land and the need for management of riparian areas in order to reduce the downstream impacts of land use
- The largest component of activity relates to the river management programme within the environs of Hamilton City. This work is carried out by Hamilton City Council under a Services Agreement with Waikato Regional Council and funded through the Waikato River Catchment Services Funding Policy (Project Watershed)
- A 50-year management strategy was completed in 2008 which resulted in a number of actions and interventions by the joint parties to the strategy. The main immediate action from this strategy was the identification of potential hazard zones along the banks of the main channel of the Waikato River. The strategy did not identify significant physical works intervention in the early years covered by the strategy.

Figure 1 Waikato region river and catchment management zones



2.2 Relationship to Project Watershed

Council has increasingly sought to address catchment based issues within a whole of catchment management framework. In the past, works related activities associated with land and rivers were often dealt with in isolation to related issues such as management of natural hazards and risks, water quality management and regional and district planning.

A significant step toward the whole of catchment approach occurred with the adoption of the Waikato River Catchment Services Project – also known as "Project Watershed" in 2002. Project Watershed seeks to integrate the range of activities that need to be considered in managing river and stream catchments in a sustainable way.

Formal work on Project Watershed began in 1999. It involved consideration of the whole catchment rather than the previous focus on separate historic catchment and river control schemes which differed widely in terms of levels of service, management and funding. Extensive consultation was undertaken across the entire catchment and the adoption of Project Watershed in 2002 resulted in a whole of catchment funding policy. (Refer Doc# 752002 Environment Waikato Policy Series 2002/12).

The land area covered by Project Watershed is geographically diverse. It comprises a range of geologies, soil types and unique features and includes geothermal areas, wetlands, hydro power generation infrastructure and peat lakes. Activities in one area of the catchment can directly impact another.

For example, land use in the upper Waikato catchment will have impacts on lower reaches of the catchment including the Central Waikato zone. In this case, these effects will be modified to some extent by the presence of the hydro power dams. A further example exists within smaller tributary catchments of the Waikato River where the way in which storm water is managed in an urban environment may have adverse impacts in the lower reaches of these streams.

The catchment covered by Project Watershed includes the Waikato and Waipa rivers as well as smaller steams in the Central Waikato zone such as the Karapiro, Mangaone, Mangaonua, and Mangawhero.

Project Watershed incorporates the existing Lower Waikato-Waipa Control Scheme, the Lake Taupo, Reporoa, Paeroa Range, Waitomo and Karapiro/Arapuni Catchment schemes.

The objectives under Project Watershed for this section of the catchment include management and maintenance of the Waikato River main channel for the purposes of maintaining the overall channel capacity and stability. This includes the objective of reducing surface flooding and control of erosion in the main channel and associated tributary streams.

An outcome of Project Watershed was that where territorial authorities had undertaken earlier river related work, the roles and responsibilities between the agencies were clarified and where appropriate, formal agreements entered into as to ongoing management and responsibility. In some cases assets were transferred to Waikato Regional Council.

The goals of Project Watershed are:

- Prevent deterioration of established flood protection assets so as to avoid loss of land productivity and a reduced level of flood protection
- Ensure within the limits of efficiency and fairness, that rating for flood protection within the Waikato/Waipa river catchment recognises all beneficiaries and all those whose actions or inactions contribute to the need for expenditure on flood protection systems
- Maximise the effectiveness and efficiency of water quality, soil conservation, flood control and land drainage activities within the Waikato and Waipa River catchments, and minimise inefficiencies caused by inappropriate actions or inaction. Project Watershed's primary objective is the management of sediment. However some activities will also contribute to improvements in water quality across the catchment
- Provide a consistent framework for landowners and communities to be protected from flood damage in the flood plains of the major rivers, to a

cost-effective standard agreed with the affected communities of the Waikato/Waipa catchment

- Achieve and maintain stable river and stream channels and banks and ensure that inappropriate drainage or tributary management activities do not compromise scheme standards
- Ensure effective control of accelerated erosion within the Waikato River catchment
- Ensure that where there are significant contributors and beneficiaries elsewhere in the catchment, Project Watershed activity is not hindered by an inequitable financial burden on individual landowners.

A significant programme of river and stream related work is undertaken on the tributary streams to the Waikato River within the Hamilton City boundary. This work is undertaken by the City Council and funded through Project Watershed. The arrangements in place are covered by a Services Agreement between Waikato Regional Council and Hamilton City.

In the case of the urban area of Hamilton, the City Council has management responsibilities for certain flood protection and erosion control assets within its boundaries. The works are directed at maintaining the capacity of tributary streams so as to avoid adverse effects from flooding etc., controlling erosion within the channels.

The city retains the ownership of all assets and manages the depreciation and replacement programmes associated with these assets.

2.3 Overview

2.3.1 Zone features

The Central Waikato zone contains two dominant features, these being the Waikato River main channel and the urban area that makes up the city of Hamilton.

Hamilton, New Zealand's fourth largest city, dominates the southern end of the zone. Smaller towns and communities whose primary function is servicing the agriculture industry within the zone include:

- Cambridge
- Ngaruawahia
- Ohaupo.

The total number of rateable properties within the Central Waikato zone is 67,795. Agriculture (dairy and dry stock farming) is the dominant economic activity however there are also significant industrial activities including power generation, coal mining and quarrying.

A number of elements of nationally important infrastructure traverse through the zone including:

- State Highway 1, 1B, 3, 21, 26 and 39
- North Island Main Trunk Railway
- National electricity grid transmission lines.

Geologically the zone is diverse consisting of:

- Volcanic materials including tephra (20%)
- Alluvial and unconsolidated sediments (56%)
- Peat (9%)
- Sandstone/mudstone (9%)
- Greywacke or Argillite (5%)

Of the total zone area, 12% is urban, 78% in pasture, 1% is in production forestry, and 9% in native vegetation, scrub and other land uses.

2.3.2 Catchment backgrounds

The key river and stream catchments in the zone are described as follows.

Karapiro Stream
Headwaters for this catchment arise south east of Cambridge in the vicinity of Whitehall extending northward toward Te Miro. Predominant land use in the upper catchment is dry stock farming with a mix of dairying and rural life style blocks through the lower sector. The topography is moderately steep to rolling in the upper reaches to undulating flats in the lower reaches. Throughout the catchment there are several isolated remnants of native vegetation.

Water for the Karapiro stream is mainly sourced from natural groundwater systems

in the upper catchment areas. Flows progressively increase as the stream meanders through to the confluence with the Waikato River adjacent to Cambridge Township.

The primary issues within this catchment are soil erosion on steep land and issues associated with progressive rural subdivision.

Catchment works activity is associated with advice, information and completion of work proposals to promote sustainable land use. These proposals promote soil conservation and riparian management practices. There are also issues to be addressed regarding vegetation management in the lower catchment.

Mangaonua Stream
This catchment arises adjacent to the Karapiro Stream flowing in a northerly direction and encompasses Matangi, Tauwhare and Fencourt settlements. Most of the catchment area is relatively flat and modified by development. The predominant land use is dairying also with industrial activities and subdivision development due to the proximity to Hamilton City.

Through historic land development practices the natural Mangaonua stream channel has been altered to facilitate land drainage. Therefore segments of the stream in the middle reaches are formed in straight drain configurations. After flowing through intensively farmed areas the stream enters a large gully network prior to flowing into the Waikato River on the north fringe of Hamilton City. Water quality is impacted by these various intensive land use activities.

Demand for river and catchment services are relatively low in this catchment but there is scope for increased riparian protection measures.

Mangawhero Stream
This catchment is located south west of Cambridge Township. The headwaters arise from the foothills of Maungatautari flowing through Pukekura, Monavale then fringing Roto-o-rangi before entering the Waikato River downstream of Cambridge. Land in the upper catchment is moderately steep and areas of soil erosion are evident. Land use in the lower catchment is mostly dairying although the area is increasingly subject to lifestyle block development near the fringes of Cambridge.

River and catchment works have been mainly focused in the hill country areas in the form of land retirement and riparian fencing. In the lower reaches some degree of stream bank erosion is apparent, and there are extensive areas of channel congestion mainly associated with willow growth.

Mangaone Stream
The stream flows between the Mangaonua Stream and State Highway 1 being mainly flat land intersected by deep gully features. Most land is developed for rural residential use.

Potential issues in this catchment are land drainage and willow/vegetation congestion.

Mystery Creek
Mystery Creek is situated south of Hamilton City extending toward Rukuhia and Ohaupo. Land use is residential/ small lifestyle blocks. The topography is mostly flat to rolling with incised gullies. Soils are a matrix of layered sands that are susceptible to erosion when exposed. Land terraces adjacent to the gullies and Waikato River are prone to erosion if disturbed or where drainage patterns are modified.

Some minor soil conservation and Catchment New Works projects have been undertaken in the catchment.

Peat lakes
Central Waikato Zone contains 2 very high priority lakes; namely Maratoto and Rotomanuka. Lake Serpentine also ranked as a high priority. Other lakes in the zone have lower biodiversity values but very high recreational values.

There are seven shallow lakes (less than 15 m deep) within the Central Waikato zone of the Waikato region. In addition, the Serpentine lakes complex lies just outside the south-western boundary of the zone (in the Waipa Zone), but drains through the Central zone into the Waikato River.

In 2010 WRC completed a project prioritising sites in the region for biodiversity management. River and catchment services are overseeing the prioritisation of lake ecosystems. To date the 50 lakes that lie within the Waipa District, Waikato District

and Hamilton City have been provisionally scored and ranked. Details of these lakes are shown in the following table. The remaining 50 lakes in the Region will be scored and adding to the ranking list over the next 6 months. The WRC ranking is determined by a lake score obtained over 18 categories relating to ecological significance, ecosystem condition, vulnerability and restoration potential; and indicates priority out of 50 Waipa, Waikato and Hamilton lakes.

Table 1 Shallow lakes of the central zone

Lake	Size (ha)	Max depth (m)	Tenure	WRC ranking
Maratoto	18	7.1	Private/ QEII	1
Rotomanuka	18	8.7	DOC	4
Rotokaeo	4	-	HCC	16=
Waiwhakareke	3	-	HCC	25
Cameron	3.3	1.5	Waipa DC	26=
Lake Rotoroa	55	6	HCC	30=
Te Ko Utu	6	1.5	Waipa DC	44
Serpentine	15.2	4.4	DOC/ Waipa DC	2

The table indicates that although there are only a small number of lakes in the Central Waikato zone, it contains two of the top five lakes within the Waipa/Waikato/Hamilton boundaries. It has a further top five lakes just outside the zone boundary.

WRC is currently involved in works at the two highest priority lakes:

Lake Maratoto

Lake Maratoto is the best remaining example of a peat lake in the region. The Southern end of the lake is legally protected by a greater than 50 m wide covenanted margin. The site has been identified by the Waipa Peat Lakes and Wetlands Accord Group as being a priority for land acquisition to secure a protective buffer at the northern lake end. Negotiations between Waipa DC and the landowner have not yet been successful. However RCS staff have worked with this landowner to retire a 30-40 m buffer on the north-eastern side of the lake. This area has been fenced and planted with native species. RCS staff have also been working with the landowners of the covenanted block to carry out weed control (particularly gorse) and planting to enhance the site and protect the good water quality in the lake. Works to date have been funded as follows (over both properties):

- WRC Wetlands on Dairy Fund $17,100
- Landowner contributions $6,081
- Catchment New Works $1,000

RCS also oversees the monitoring of lake levels at this and other sites. A weir was constructed in the outlet in 2004. However, data indicates that this is not effectively maintaining minimum water levels in the lake and drying of this very significant wetland is a major concern. In order to design a more effective structure or method of maintaining minimum summer water levels in the lake, it will be necessary to undertake a hydrological study and develop a full water budget for the lake. It is anticipated that this project will be initiated in 2012/13.

Lake Rotomanuka

Lake protection works are being led by Waipa District Council and Department of Conservation. This includes fencing, weed control and acquisition of esplanade reserve around the lake through sub-division. RCS staff have assisted with a drain diversion feasibility study being carried out by Waipa District Council. The aim of this is to divert nutrient enriched water around the side of the lake to the outlet. RCS staff constructed a weir in the lake outlet in 2006. On-going monitoring indicates that this has been successful in maintaining minimum lake levels although recent estimates suggest that water levels have declined by as much as 60cm since they were studied 16 years ago, and peat shrinkage of 70cm has occurred during this time. Most recently, DOC has funded the preparation of a whole farm system plan for the farm adjoining Lake Rotomanuka, which has identified future farming issues and improved management options for the lake margin.

Lake Serpentine

Lake Serpentine lies just outside the zone, but drains through it. Work associated with the Peat Lake Accord included construction of a weir governing the lake level for Lake Serpentine, this weir was completed in May 2009. Weirs are constructed with H5 timber

which is driven vertically down through the peat.

The Serpentine/Rotopiko lake complex is the focus of significant in-lake restoration efforts that are being led by DOC, involving regular plant monitoring and control of pest fish (rudd) that threaten the rare native submerged plant communities in the lakes. DOC is investigating the feasibility of eradicating pest fish from the lakes using rotenone, which would also involve the construction of a fish barrier in the drain that runs from the Serpentine/Rotopiko Lakes into Lake Rotomanuka. Other work at the Serpentine/Rotopiko lakes involves: (i) the acquisition of reserves around the lake through sub-division entitlements and/or outright purchase (led by Waipa DC); (ii) a catchment management project with a focus upon reducing nutrient (primarily P) and sediment losses to the lakes through farm system planning (jointly funded by Waipa DC, DOC and WRC through the Waipa Peat Lakes Accord) with concurrent monitoring of drain (undertaken by the University of Waikato); and (iii) the development of a Visitor Centre and interpretation at the site by the National Wetland Trust.

2.3.3 Historical background

Upon the establishment of the Project Watershed Funding policy in 2002, the Waikato catchment was separated into five management zones including the Middle Waikato zone. This zone extended from the Arapuni Dam downstream to the confluence with the Waipa River at Ngaruawahia. In 2008, following extensive land development upstream of Lake Karapiro, and recognition of the declining water quality issues over this part of the catchment, a decision was made by the council to change the boundary between the upper and middle Waikato zones. The effect of the change was to extend the boundary of the upper Waikato zone downstream to Karapiro thus reducing the extent of what was renamed the central Waikato zone.

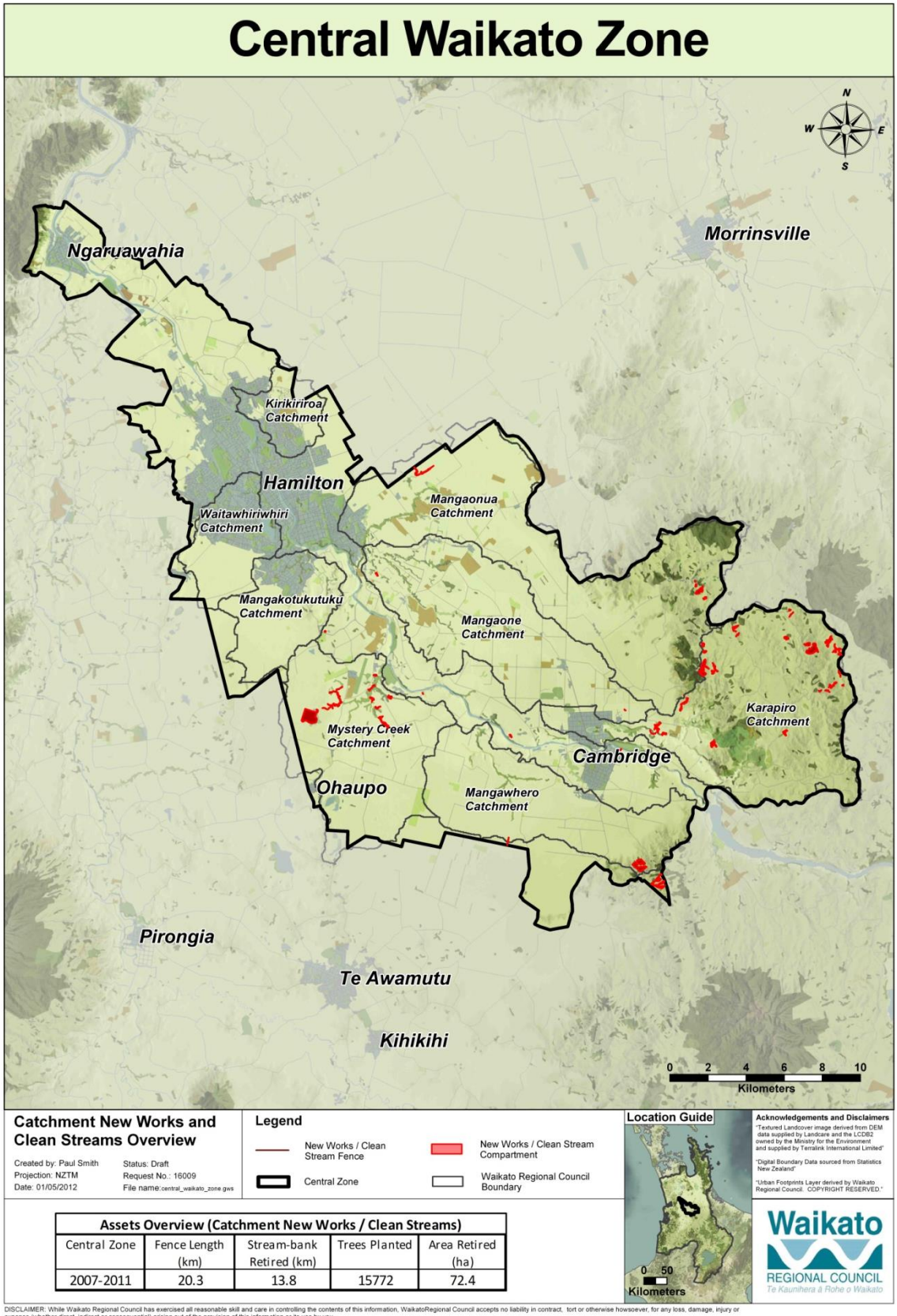
The rationale behind the adjustment was:

- There were benefits in addressing the water quality and land use issues in the upper catchment within a single zone.

- Below Karapiro, the issues were focused mainly on the main Waikato river channel and the urban based tributaries through Hamilton City. The revised Central Waikato zone would therefore be focused on these issues as compared to the extensive rural based issues present in the upper part of the zone.

The boundaries of the zone and key features are shown in Figure 2.

Figure 2 Central Waikato management zone



Assets Overview (Catchment New Works / Clean Streams)				
Central Zone	Fence Length (km)	Stream-bank Retired (km)	Trees Planted	Area Retired (ha)
2007-2011	20.3	13.8	15772	72.4

2.3.4 Economic considerations

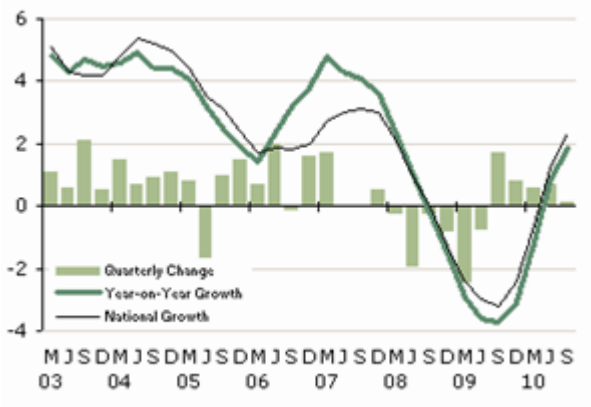
This section provides material to give some context to the value of the catchment and river management activities provided within the Central Waikato zone. In particular, the value of production on rural land and the value of property improvements (mainly buildings and other infrastructure) are considered. Assumptions are made to provide an indicative estimate of the value added by river and catchment management services. It is noted that this is a relatively constrained study, and does not quantify some of the wider economic, environmental and social effects. Further work will be required to identify and develop a full picture of these effects.

It is intended that, over time, additional information will be incorporated to allow assumptions to be replaced with actual data, and to enable the inclusion of the wider benefits of river and catchment management services to be incorporated into ZMPs over time.

The Waikato economy

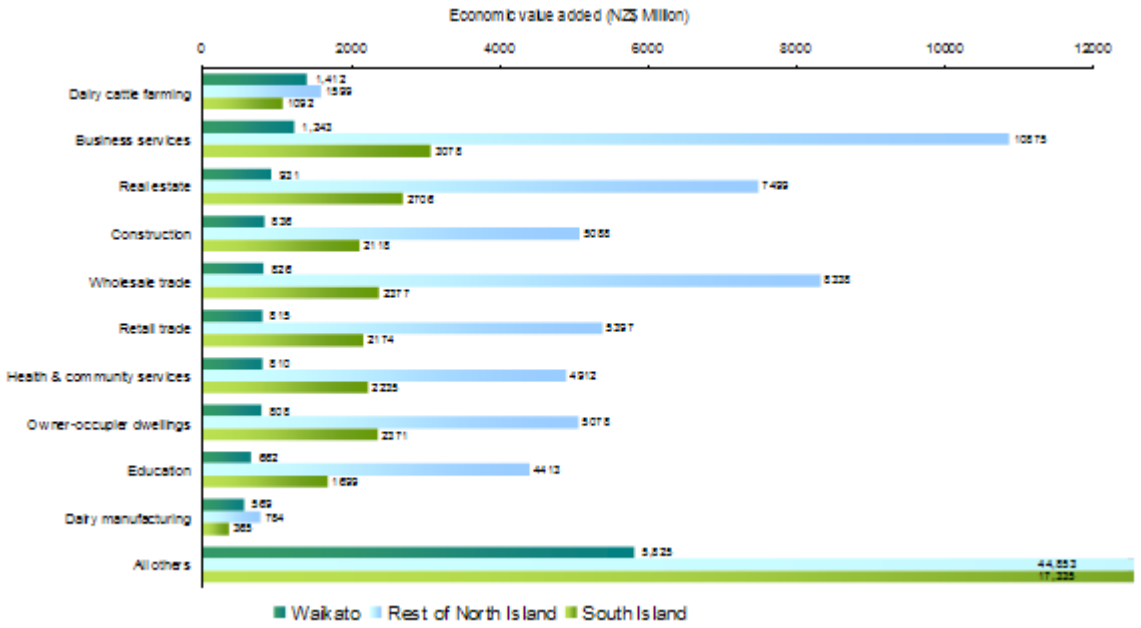
The Waikato region comprises the fourth largest regional economy in New Zealand, with the latest official estimates showing a gross regional product of $15.6 billion in 2007. In recent years, the factors driving the national economy (such as the availability of credit, and weaker international commodity markets) have also been key for the Waikato economy. The National Bank's Regional Trends report shows activity in the Waikato has followed a similar pattern to New Zealand as a whole through the recession of 2008-09 and subsequent recovery[2].

Waikato and New Zealand



The Waikato economy has traditionally been highly reliant on agriculture. Dairy farming is the largest industry in the Waikato, comprising 9 per cent of gross regional product (adding dairy manufacturing brings the wider dairy sector up to 13 per cent of gross regional product). The most recent available data indicates the business services is the next largest contributor to gross regional product (8 per cent), followed by the real estate and construction sectors (although these two sectors have been particularly hard hit by the recession, and may have declined in terms of their contribution in recent times). The next largest industries in the Waikato are the wholesale and retail trade, health and community services and education sectors.

[2] The National Bank estimates regional economic activity based on a composite index which includes business and consumer confidence, retail sales, house sales, building approvals, employment and new vehicle registrations.



Further factors to consider in relation to the Waikato economy are:

- Approximately 50 % of the region's existing population and over 90% of the region's forecasted population growth is anticipated to occur within or close to the Central Zone by 2061. The Future Proof sub-regional growth strategy, which has recently been embedded in the Proposed Waikato Regional Policy Statement (RPS), will guide the management of this growth with further details examined through district plans and more detailed structure plans
- There is significant forecasted economic development, including approximately 800 hectares of future industrial land at key strategic nodes such as Ruakura, Te Rapa / Horotiu, Hautapu and Rotokauri
- The existing Hydro-power schemes along the Waikato River help provide for increased demand for electricity in major economic growth areas
- The Government has committed to over $2b for construction of the Waikato Expressway to 2019
- The effects of bank instability may threaten important infrastructure lifelines such as roads, rail, and pipelines. Within the Central Zone, for example, there are 15 bridges and numerous public and private boat ramps and water and wastewater pipelines at threat.

2.3.5 Social considerations

Social considerations impacting on the zone include:

- Potential increasing demand for flood protection as the frequency and rainfall intensity increase due to climate change, and land use change increases population density in low lying and poorly drained catchment areas
- Access to rivers and streams for recreational purposes has increased along urban sections of the Waikato River, but still remains a challenge in rural areas
- Loss of amenity along riverbanks due to remnant bush decline
- High demand for residential developmental for sites adjacent to rivers, streams, and gullies.

2.3.6 Cultural considerations

Cultural considerations impacting on the zone include:

- Development of co-governance arrangements and appropriate responses to cultural concerns in policy and decision making

- Strong cultural connections between Waikato-Tainui and the Waikato River
- Concerns about the health and wellbeing of rivers and streams within the catchment
- Historical settlements within the Central Zone.

2.3.7 Environmental considerations

Environmental considerations impacting on the zone include:

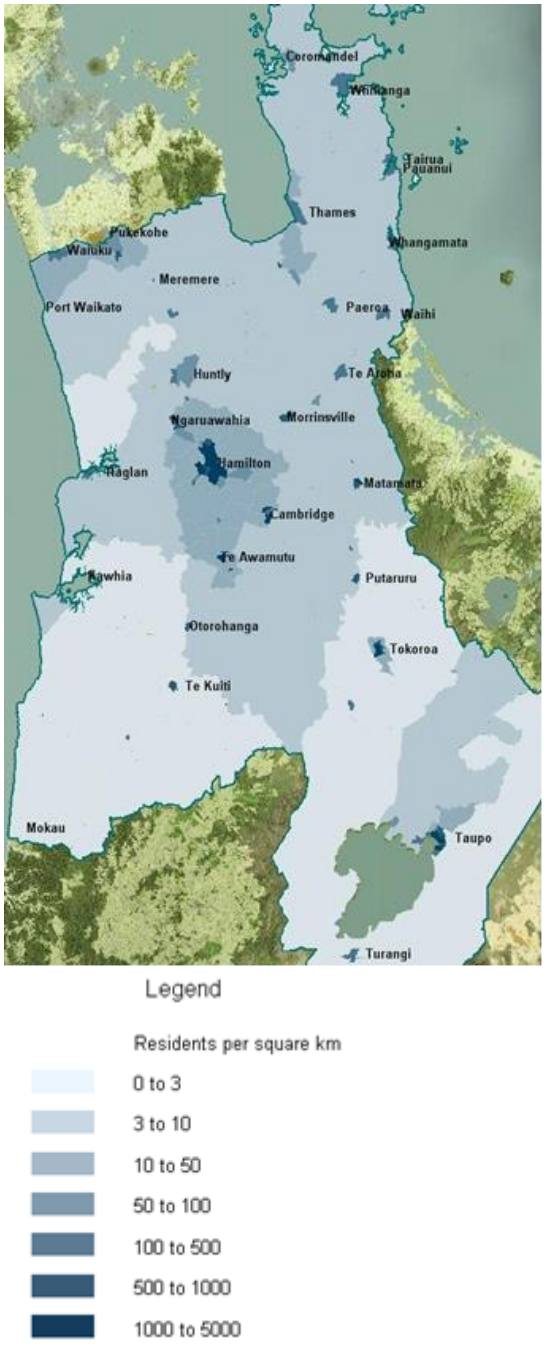
- Static or declining water quality in the last 10 years
- Habitats affected from land discharge and invasive species contributing to a reduction in biodiversity
- Expansion of invasive pest species and decline in native fish species
- Degraded habitats/loss of riparian vegetation
- Sedimentation from poor agricultural land management practises
- Increasing non-point source discharges from land use due to more intensive farming and expanding urban form.

2.3.8 Population

The population of the Waikato region at the time of the last census (2006) stood at 395,100. Statistics New Zealand estimates the current population of the region to be 416,600, and project more than 50,000 additional people (to 468,200) by 2031. The population in the Waikato region is most densely clustered around the Hamilton urban area. The northern part of the Waikato district (formerly part of the Franklin District) is also relatively densely populated. There are small pockets of density around other town centres, but most of the region is relatively sparsely populated, with less than 10 residents per square kilometre.

Those parts of the region that are more densely populated all tend to be the fastest growing. The most rapid growth projected by Statistics New Zealand is expected to occur in Hamilton City (an annual average growth rate of 1.2 per cent between 2006 and 2031), the former Franklin District (1.4 per cent), and the Waikato District (1.0 per cent). At the same time, Statistics New Zealand projects an ongoing decline in the population of the Hauraki, South Waikato, Otorohanga and Waitomo districts.[3]

Figure 3 Waikato region population distribution



[3] Much of this growth is likely to occur in the northern part of what was Franklin, which is now part of the Auckland Council, but it is expected that there will be a spillover into that part which was incorporated into the Waikato District

3 River and catchment objectives in the Central Waikato zone

3.1 Waikato Regional Council's vision and mission

Council adopted its strategic direction for the triennium on 31 March 2011. This direction sets out what we do, why we do it and the value provided to the community.

Waikato Regional Council's Vision is:

'Competing globally, caring locally''

Waikato Regional Council's mission is:

'To provide regional leadership to balance economic and environmental outcomes to enable the social, economic, environmental and cultural well-being for current and future generations'.

The organisational mission and vision provide a framework from which to develop a zone specific vision. Based on this a zone strategy has been developed which will be implemented through specific objectives and goals.

3.2 Central Waikato zone vision, goals and objectives

Vision
The Central Waikato zone vision is:

'Well managed rivers and catchments, within a framework that recognises:

- community and cultural needs and aspirations
- natural risks
- economic and environmental sustainability

Goals and objectives
An integrated whole of catchment management approach is taken in managing the zone. Seven goals to achieve the zone vision have been established, each with a defined set of objectives. The goals and objectives for the Central Waikato zone are:

Goal 1: ***To manage flood risk to rural land and to the urban areas of Hamilton, Cambridge and Ngaruawahia.***

This goal recognises that management of flood hazards is a core function of River and Catchment Services.

To be achieved by:

- Defining flood hazard extents within district plans to effectively manage exposure to flood hazard risks
- Working with local authority partners to develop catchment management plans for urban areas subject to expansion or intensification
- Maintaining the Waikato River channel substantially free of major obstructions and impediments to normal and flood flows
- Providing assistance to landowners to protect against erosion of the riverbanks in managed streams
- Continuing to be a part of the CDEM response team during periods of high flow.

Goal 2: ***To reduce bank erosion and sedimentation of rivers and streams resulting from changes in land use practises, riparian vegetation and flows regimes within priority catchments.***

To be achieved by:

- Being actively involved in land use decision making by providing advice and evidence on catchment management effects of land use change
- Treatment of erosion prone land in priority catchments to reduce sediment loss and maintain the productive capacity of land
- Implementing the priority actions from the Central Waikato River Stability Management Strategy 2008
- Promoting stock exclusion from waterways, wetlands and lakes
- Support and encourage the planting of appropriate species for erosion control and biodiversity enhancement
- Ensuring the hydraulic conveyance capacities of tributaries can

adequately accommodate design flood flows
- Removal of blockages from floodway channels to reduce the effects of erosion and flooding
- River management and land drainage works are undertaken in accordance with Waikato Regional Council best practise guidelines.

Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries.

The Vision and Strategy for the Waikato River has been embedded in the proposed Waikato Regional Policy Statement, and will guide improvements to the health and wellbeing of the Waikato River.

To be achieved by:

- Seeking opportunities to improve upon current catchment management practise
- Taking into account the opportunities and priorities identified within the Waikato River Independent Scoping Study to enhance or improve water quality of the Waikato River and its major tributaries.

Goal 4: To maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes within the zone and across the whole zone

To be achieved by:

- Promoting and incentivising stock exclusion from all water bodies including upper catchments, riparian areas, lakes and wetlands in order to reduce sediment and nutrient inputs and to protect the values associated with riparian margins
- Working with landowners and other stakeholders around priority lakes and wetlands to protect and enhance the function and values of these ecosystems
- Working with stakeholders to enhance biodiversity on publicly managed land.

Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.

This goal recognises that the Waikato River and gullies of the major tributaries have become a major public focal point for recreation, environmental enhancement and provide opportunities for tourism and economic development.

To be achieved by:

- Collaborating with zone management partners, stakeholder and volunteer groups on gully restoration, rivercare and riparian management programmes and public access initiatives within priority catchments of the zone
- Identifying issues and opportunities between catchment management zones that require collaboration
- Promoting opportunities to extend public access and enjoyment of our rivers and streams and linking with other programmes of work such as Waikato River Trails, Te Awa River trail, Hamilton City Waikato river paths and citywide walking and cycling routes.

Goal 6: To foster sound working relationships with Iwi, regional communities and national infrastructure project planners

Iwi

To be achieved by:

- Integrating Treaty settlements into Waikato Regional Council's river and catchment activities
- Where possible, aligning or partnering with tāngata whenua in undertaking river enhancement and related environmental projects
- To formally agree on Central Waikato Zone management arrangements with Waikato-Tainui within the scope of the Joint Management Agreement (JMA)
- Working with Iwi to develop better cultural and environmental outcomes.

Regional communities

To be achieved by:

- Effective consultation through the Long Term Plan process and the Central Waikato Catchment Liaison Subcommittee
- Information and education programmes to maintain awareness of key programmes that contribute to achieving the outcomes sought within the zone
- Preparation of newsletters and information being readily available on the Waikato Regional Council website
- Working with stakeholders to incorporate their aspirations on key projects
- Working with territorial authorities through Annual Plan and district planning processes
- Working with other agencies such as the Department of Conservation, NZ Fish and Game Council and NZ Transport Agency to provide better regional and local outcomes and to enhance the environment, provide better use of infrastructure, maintain water quality and flood emergency management.

Goal 7: ***To ensure that sound policy, practises and processes are in place to support the delivery of programmes within the zone.***

To be achieved by:

- Carrying out agreed investigations, assessments or surveys to support the promotion of new initiatives
- Continuing to seek operational and system efficiencies and improvements
- Cooperatively managing and planning integrated catchment management through tools such as the service level agreement between Hamilton City and River and Catchment Services
- Proactively promote and implement statutory processes across zone activities
- Implementing joint management agreements as they relate to the Central Waikato zone.

3.3 Catchment priority issues, opportunities and actions

Stakeholder engagement has to date included workshops with Hamilton City Council, Waikato District Council and Waipa District Council, and has:

- Identified a range of issues and opportunities within the zone
- Sought to identify priority issues and opportunities that will focus actions within the zone Management Plan.

The engagement processes with Mighty River Power and Waikato-Tainui are on-going and further views on issues, opportunities and priorities may emerge.

The identified issues and opportunities have then been grouped under six themes:

- Flood hazard and flow management
- Urban development and land management
- River bank and bed erosion
- Protecting and promoting the health and wellbeing of the Waikato River
- Maintaining and enhancing biodiversity
- Zone management and stakeholder engagement.

Each of these issues reflects the goals set out above, and as such, were all considered priority issues.

A record of the issues and opportunities identified by stakeholders under each theme is contained with Appendix 2 of this ZMP.

Table 2 provides a summary of the priority issues and opportunities and which zone objective each relates to.

Table 3 and identifies the theme, level of service, strategic response and potential actions for each issue.

Table 2 Stakeholder identified issues and opportunities relating to zone objectives

Priority issues and opportunities contribution to zone objectives	Goal 1: Manage flood risk to rural land and to the urban areas of Hamilton, Cambridge and Ngaruawahia.	Goal 2: Reduce bank erosion and sedimentation of rivers and streams	Goal 3: Enhancing and restoring the health and wellbeing of the Waikato River and its tributaries	Goal 4: Maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes	Goal 5: Maintenance and enhancement of streamside amenity, tourism, public access and cultural sites	Goal 6: Foster sound working relationships with Iwi and regional communities	Goal 7: Ensure that sound policy, practises and processes support the delivery of programmes within the Zone.
High flows in the Mangaone and Mangaonua Streams can result in flood hazards in the Annebrooke Road / SH1 area	✓	✓					
Mangaone and Mangaonua Streams may potentially have increased stormwater loads from urban development in Cambridge and Ruakura	✓	✓	✓				
Infrastructure, riparian margins and potential property loss along Waikato River due to bank and bed erosion		✓	✓				
Declining water quality of the Waikato River is a cumulative issue, with Waikato District on the receiving end of the most adverse effects			✓		✓	✓	
Cambridge wastewater treatment facility discharges into the Waikato River; there is potential for quantities to increase with Cambridge development			✓				
Potential to include streams within the Rototuna development into the WRC-HCC service level agreement.						✓	✓
Greater clarity may be required regarding the responsibilities and funding arrangements of stream, lake, and catchment management. Service level agreements between RCS and TLAs.						✓	✓
Peacockes' growth cell of Hamilton City surrounds a high value stream environment. There is potential to maintain the existing values and showcase urban stream management				✓	✓		
Potential for enhancing biodiversity connections from peat lakes, river management and other related biodiversity programmes (eg Project Halo, QEII, Peat Lakes Accord)				✓	✓		
Hamilton lake (Lake Rotoroa) is a high profile site in the zone with high recreational value. The opportunity to improve the health of Hamilton lake is seen as high priority. Hamilton lakes is a shallow peat lake and it may be appropriate to look to manage amenity values ahead of biodiversity			✓	✓	✓		

Table 3 Priority issues, opportunities, strategic response and actions

Issue	Explanation	Goal	Level of service	Opportunities and/or strategic response	Actions
Flood hazard and flow management	High flows in main river and streams result in flood hazards e.g. Mangaone and Mangaonua streams flooding in Annebrooke Road / SH1 area	Goal 1: Manage flood risk to rural and urban areas Goal 2: Reduce bank erosion and sedimentation of rivers and streams	Services are provided and perform to agreed levels and standards	Priority catchments and river systems are maintained to agreed standards and performance levels The capacity, stability and condition of the Waikato River channel and designated tributaries are maintained to the agreed performance levels Activities undertaken in accordance with best practice guidelines Maintaining channels free of obstructions or significant blockages on a prioritised basis and where practicable Introducing regional channel capacity guidelines	Identify and monitor priority at risk areas Engage in review of High Flow Management Plan
	Potential for increased stormwater loads from urban development: e.g. Mangaone and Mangaonua Streams in Cambridge and Ruakura	Goal 1: Manage flood risk to rural and urban areas Goal 2: Reduce bank erosion and sedimentation of rivers and streams Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries.	Services are provided and perform to agreed levels and standards	Priority catchments and river systems are maintained to agreed standards and performance levels The capacity, stability and condition of the Waikato River channel and designated tributaries are maintained to the agreed performance levels Compliant with high flow management strategy Activities undertaken in accordance with best practice guidelines Maintaining channels free of obstructions or significant blockages on a prioritised basis and where practicable Introducing regional channel capacity guidelines.	
Urban Development and Land Management	Urban growth contributing to accelerated run off and localised increased flood risk and erosion including: (a) Cambridge Wastewater treatment facility discharges into rivers can be intensified by urban development	Goal 1: Manage flood risk to rural and urban areas Goal 2: Reduce bank erosion and sedimentation of rivers and streams Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries.	Services are provided and perform to agreed levels and standards	Priority catchments and river systems are maintained to agreed standards and performance levels The capacity, stability and condition of the Waikato River channel and designated tributaries are maintained to the agreed performance levels Compliant with high flow management strategy Maintaining channels free of obstructions or significant blockages on a prioritised basis and where practicable Introducing regional channel capacity guidelines	ZMP is an effective part in relation to consent application Obtain agreement with RUG that RCS is an effected party within consent process and contribute to the process as such
	(b) Peacockes' growth cell of Hamilton City surrounds a high value stream environment. There is an opportunity to maintain the existing values and showcase urban stream management	Goal 4: To maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes within the zone and across the whole zone	Activities contribute to the enhancement of the catchment, the river, its natural resources and environment	Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders.	Enhance / Maintain public access (e.g. to Hamilton River Trails and Te Awa Waikato River Trails) Work with TLA to ensure implementation of Tamahere Catchment Management Plan Northgate Business Park Development
	(c) Other Cambridge development and impact on Waikato River Urban growth cells without identified storm water solutions Large Scale industrial development with stormwater disposal solutions yet to be identified (Ruakura)	Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.	Activities contribute to the enhancement of the catchment, the river and its tributaries and associated natural resources and environment	Conduct of physical works in accordance with best practice guidelines Provision of advice and incentives RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders. Reference to the Iwi Management Strategy	Collaboration with other agencies as appropriate

Issue	Explanation	Goal	Level of service	Opportunities and/or strategic response	Actions
River bank and bed erosion	Infrastructure, riparian margins and potential property loss along Waikato River due to bank and bed erosion, e.g.: Fluctuating river levels contributing to bank erosion and risks to property and infrastructure, removal of riparian vegetation without replanting of suitable species. Sedimentation of Karapiro – sediment starvation below Karapiro Dam	Goal 2: Reduce bank erosion and sedimentation of rivers and streams Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.	Services are provided and perform to agreed levels and standards Activities contribute to the enhancement of the catchment, the river, its natural resources and environment.	Priority catchments and river systems are maintained to agreed standards and performance levels The capacity, stability and condition of the Waikato River channel and designated tributaries are maintained to the agreed performance levels Maintaining channels free of obstructions or significant blockages on a prioritised basis and where practicable Introducing regional channel capacity guidelines Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders.	Implement long term monitoring Implementation of River Stability Strategy (2008) Actively participate and ensure River and Catchment Services are recognised as an affected party in any Mighty River Power consent review Continue and develop the relationship with Mighty River Power (for example regular joint sharing of monitoring results)
Protecting and promoting the health and wellbeing of the Waikato River	Declining water quality of the Waikato River is a cumulative issue, with Waikato District on the receiving end of the most adverse effects, including : land management practices contributing to decline in water quality and lake health Waikato River bed degradation contributing to bank erosion and risks to property and infrastructure.	Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries. Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites. Goal 6: To foster sound working relationships with Iwi and regional communities.	Activities contribute to the enhancement of the catchment, the river, its natural resources and environment.	Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders.	Maintain water quality and amenity for community through: Monitor the impacts of variation 6 to evaluate effectiveness and identify opportunities for improvement.

Issue	Explanation	Goal	Level of Service	Opportunities and/or Strategic Response	Actions
Maintaining and enhancing biodiversity	Enhancing biodiversity connections from peat lakes, river management and other related biodiversity programmes (e.g. Project Halo, QEII, Peat Lakes Accord) including: Maintaining biodiversity corridors e.g. within Hamilton gullies Fish passage obstructions in some urban streams Balancing amenity values with need to preserve biodiversity e.g. Hamilton Lake which has high recreational value Pest management, particularly aquatic weed management	Goal 4: To maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes within the zone and across the whole zone Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.	Activities contribute to the enhancement of the catchment, the river, its natural resources and environment	Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders	Maintain and showcase urban stream management and retain biodiversity and water quality Enhance biodiversity connections from peat lakes, river management and other related biodiversity programmes e.g. Project Halo, QEII, Peat Lakes Accord
	Hamilton Lake (Rotoroa) is a high profile site in the zone with high recreational value. The opportunity to improve the health of Lake Rotoroa is seen as high priority. It is a shallow peat lake and it may be appropriate to look to manage amenity values ahead of biodiversity. Horseshoe Lake is also of increasing interest and subject to a wider restoration programme.	Goal 3: Actively commit to enhancing and restoring the health and wellbeing of the Waikato River and its tributaries. Goal 4: To maintain and enhance the biodiversity associated with the Waikato River, its tributaries and wetlands and lakes within the zone and across the whole zone. Goal 5: Contribute to the maintenance and enhancement of streamside amenity, tourism, public access and cultural sites.	Activities contribute to the enhancement of the catchment, the river, its natural resources and environment.	Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) RMA and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders.	Actively contribute and work in partnership with other stakeholders in monitoring and restoring of both Horseshoe Lake and Lake Rotoroa.
Zone management and stakeholder engagement	Public awareness of what services are provided is limited. Understanding of catchment management within professional partners could be better supported.	Obj 6: To foster sound working relationships with Iwi and regional communities Obj 7: To Ensure that sound policy, practices and processes support the delivery of programmes within the zone	Decisions and activities are consistent with obligations contained within the Deed of Settlement and co management arrangements detailed with the Joint Management Agreement (JMA). Decisions and activities are consistent with the stakeholder strategy for the zone	Publishing information on the website and keeping the website up-to-date Maintaining a consultation register, including public meetings and submissions throughout the Long term Plan and Annual Plan process Council decisions publicly notified Subcommittee reporting 3 times per year Subcommittee and other stakeholder meetings as required WRC meeting co governance obligations Understand influences of stakeholders on Zone and decisions that need to be made	Develop stronger working relationships between RCS and TLAs Maintain Waikato District Lakes Accord Develop / utilise relationships with key stakeholder groups (targeted to get wins to enhance community engagement – the good news stories). Give effect to government policy on water. Ensure we work in an integrated fashion and work efficiently with other partners. consultation with regard to infrastructure changes, future capital / operational upgrades or downgrades

4 Managing the zone

4.1 How the system operates in the zone

The Central Waikato zone consists of the Waikato River catchment between Karapiro Dam and the confluence with Waipa River at Ngaruawahia and has an area of 64,000 hectares. The zone is dominated by the Waikato River channel and associated rivers, streams and lakes.

The Central Waikato zone is located entirely within the Hamilton Basin. The Hamilton Basin covers some 160,000 hectares and extends for about 60km north-south and 30km east-west. Hamilton lies at the centre, and it is almost completely surrounded by hills and ranges. The Waikato River enters through a narrow gap in the Maungatautari Range at Karapiro Dam and flows northwest to leave the basin through another narrow gap at Taupiri.

The main landform elements in the basin are:

- Low hills rising 20 – 50m above the basin floor;
- The main alluvial surface (Hinuera Surface) of the Hamilton Basin;
- The valley of the Waikato River;
- Terraces within the Waikato River valley; and
- The channel of the Waikato River and associated tributaries.

The Waikato River is lake-fed by Lake Taupo; hence the Waikato River's peak flood flows are significantly attenuated, while baseflow is higher than non-lake-fed rivers.

The Waikato River is regulated by a system of hydro-power generation dams, located between Lake Taupo and Karapiro. The Karapiro Dam is the last of the series of eight dams on the river. Compared to the storage in Lake Taupo there is not much storage in the system of dams.

Within the Central Waikato zone the main tributaries to the Waikato River are Karapiro Stream, Mangawhero Stream, Mystery Creek, Mangaone Stream, Mangaonua Stream, Mangakotukutuku Stream, Waitawhiriwhiri Stream and Kirikiriroa Stream.

There are several drainage districts located within the Central Waikato zone (Rotomanuka, Hautapu, Fencourt, Mangaonua and Ngaruawahia). Drainage districts are predominantly flat areas of land where there are minimal drainage outlets. Within drainage districts, a drainage standard applies to the design of waterway crossings, to ensure that any flooding is spread throughout the catchment. The drainage standard is generally based on conveying the 10 year ARI flow, and ensuring ponding does not last for more than three days. The presence of drainage districts in the zone would attenuate surface runoff before eventual discharge to the Waikato River or one of its tributaries.

The Waikato River catchment includes areas of peat including the peat area by Te Awamutu and Collins Road. These peat areas would contribute flows to the Waikato River.

There are a number of lakes in the Central Waikato zone that have been formed as Waikato River alluvium was deposited across the mouths of embayments and valleys in the hills and surrounding ranges. Most are between 18,000 and 22,000 year olds. Lakes within the catchment help to attenuate surface water runoff.

The Waikato River through the Central Waikato zone is a transitional reach. Upstream of the dams the river is narrow with gorges and rapids and downstream of Ngaruawahia the river is wider with a floodplain. The Central Waikato reach is a transition between the two.

From 1947, when the Karapiro Dam was completed, no sediment has been transported down valley from Karapiro Dam, and trends of aggradation of the river bed have been replaced with bed degradation. Through investigations it has been identified that degradation of the river bed is actively occurring with a predicted lowering of the river bed by 1.5m at Hamilton within the next 50 years. In response to this issue and other issues in the catchment the Central Waikato River Stability Management Strategy 2008 – 2058 has been developed.

The hydraulics of the Waikato River within the zone are dominated by the impact of the Waikato Hydro System and the Lake Taupo Control gates.

The total Waikato River catchment upstream of the zone (Karapiro Dam) is 7,708 km^2, and the additional zone catchment to Ngaruawahia is 629 km^2. The zone therefore constitutes only 7.5% of the total catchment area to Ngaruawahia.

Under normal conditions flows in the Waikato River within the zone are largely determined by releases from Lake Taupo and fluctuations caused by utilisation of operational storage within the hydro lakes. Flows exhibit both a diurnal and weekly trend which follows the variations in power demand.

In flood flow conditions, the local zone can contribute significantly to Waikato River discharges within the zone. While the zone only contributes approximately 7.5% of the catchment area to Ngaruawahia, it is estimated that it contributes around 30% of flood peak discharges. This is based on analysis of historical data and reflects the influence of the storage capacity of Lake Taupo and the Waikato Hydro System upstream of Karapiro Dam versus the unconstrained catchment within the Central Waikato Zone.

Other factors which influence flows are the Tongariro power Development diversions which increase mean flows by approximately 15%.

4.2 Overview of river and catchment management activities

Waikato Regional Council's river and catchment management activities include physical works and services, and advice and information provided to landowners and the wider community. The aims of river and catchment management activities are to:

- Manage issues in a 'whole of catchment' basis
- Manage hazards and effects associated with soil erosion and flooding
- Reduce sediment entering waterways
- Improve water quality
- Improve river stability
- Improve river environments by creating better habitats for a wider variety of plants and animals
- Maintain and manage existing river and catchment assets.

In the Central Waikato zone, river and catchment management activities include:

4.2.1 Catchment oversight

This involves the overall management and coordination of zone activities and programmes including implementation of the zone plan and development and implementation of the Main Channel River Management Strategy. Annual and forward programmes are considered by community representatives in the form of the zone catchment liaison subcommittee and reported to the wider community and the Council.

Catchment oversight also includes the maintenance of partnerships and relationships with key stakeholders across the zone. The objectives are to ensure the delivery of the zone programmes and activities as set out in the Annual Plan/Long term Plan (LTP).

4.2.2 Information and advice

This activity enables response to enquiries and provision of advice and information on river and catchment management in each zone. It also includes monitoring programmes to assess the environmental changes resulting from the activities undertaken. The findings of the monitoring are reported to the community via the catchment liaison subcommittees and Council.

4.2.3 Catchment works programmes

Land throughout the Waikato region is susceptible to soil erosion. Services and programmes promoted by Waikato Regional Council in relation to the stability and use of land include:

- Liaison with property owners as to land instability issues
- Preparation of land protection plans
- Management of existing protection assets, in the case of the Central Waikato zone this is limited to two assets (weirs)

- Promotion of retirement from grazing and conservation planting of erosion prone land
- Protection of indigenous vegetation in upper catchment areas
- Installation of structures to control sediment and water runoff
- Condition and monitoring programmes.

Catchment new works may involve the design, supervision and completion of soil conservation, erosion control and other catchment management measures. Assets associated with these programmes are usually under the ownership of individual property owners. However, Waikato Regional Council often has a role in their management due to the presence of registered agreements or covenants. All works on private land are subject to negotiation and agreement with the property owner.

Where existing catchment schemes are in place, programmes to maintain and manage these schemes are agreed with the owners. Community feedback indicates high value being placed on ensuring the existing protection measures are maintained to ensure that the benefits they provide continue into the future.

4.2.4 Catchment maintenance

Catchment maintenance contributes to the achievement of sustainable catchment management in the Waikato region. The purpose is to ensure that the scheme works continue to perform to the standards agreed with the community at the time of scheme adoption. The protection works in place contribute to the economic well-being of the region and in many cases underpin the continued productive use of that land and the wider catchment.

The works include the maintenance of conservation fencing, plantings and structures implemented under the catchment scheme. Maintenance works programmes are usually initiated by Waikato Regional Council in partnership with individual property owners. Compliance with legal agreements between the property owner and Waikato Regional Council (Land Improvement Agreements) is achieved through ground and aerial inspection on at least a 3 yearly inspection cycle.

During the period 1960-1980, soil conservation works were implemented on some properties within the area now covered by the Central Waikato zone, under the guidance of the then Waikato Valley Authority. These programmes were implemented using grants (of up to 75%) from central government (administered by the former National Water and Soil Authority (NWASCA) a division of the Ministry of Works and Development.

The erosion control measures promoted were largely based on maintaining the productive capability of land. Formal protection of these works was by way of Land Improvement Agreements (LIAs) a form of conservation covenant.

Central government grants for such soil conservation works ceased in 1988. Where applicable, the Project Watershed funding policy applied to the on-going management and maintenance of these earlier works.

There are only five known Land Improvement Agreements (LIAs) with the Central Zone registered on the property title.

4.2.5 Catchment new works

New catchment works are initiated to address cases of active or potential soil erosion and related land and catchment management issues. Works programmes may result from requests from property owners for assistance and subsequent agreement being reached. The works are also referred to as soil conservation works and may comprise the fencing of stock from erosion prone lands, the protection of indigenous vegetation on steep lands, the planting of conservation plant species and construction of erosion control structures.

The purpose is to promote the sustainable management of land and to address the problem of the deterioration of land through soil erosion. The activity promotes the soil conservation practices within the context of sustainable management of the land. Water quality and in-stream biodiversity benefit from sustainable land use practice. The catchment work promoted also contributes to integrated and sustainable catchment management.

4.2.6 Lakes management

There are seven (7) lakes in total in the Central Waikato zone, including the Rotomanuka lakes complex (of 2 lake

basins), that would historically have been a single lake. The regionally significant Serpentine/Rotopiko lakes complex is located just outside of the Central zone boundary but drains immediately into the zone and on to the Waikato River via the Rotomanuka lakes.

All of the lakes in the Central Waikato zone are classed as shallow lakes, with depths less than 10 metres. Six of the lakes are peat lakes that formed in association with formerly extensive peat bogs of the region that have mostly been drained. The Waikato peat lakes are nationally significant and represent the largest collection of the wetland type nationally. The remaining lake, Lake Te Koutu is a riverine lake that formed in an old oxbow of the Waikato River that was created when the Waikato River flowed down the Karapiro Stream.

The condition of these lakes varies considerably from very good through to substantially degraded. Several lakes are subject to substantial restoration and management programmes to preserve their natural values and condition, whilst others are prioritised and managed by TLAs for recreational purposes.

WRC works collectively with other agencies (DOC, Fish & Game, Iwi, and Waipa District Council) through the Waipa Lakes & Wetlands Accord to co-ordinate and align its management activities at lakes and wetlands within the Waipa district. This agreement was formulated to recognise the significance of the peat lakes in Waipa district and the substantial pressures that they face from drainage, nutrient enrichment, and introduced species.

In 2009, Waikato Regional Council undertook an exercise to score and rank all of the 95 lakes in the region on the basis of their priority for biodiversity management. The following table represents the results of this work and lists the ranking of each lake within the zone and on a regional basis.

Table 4 Lakes of the central Waikato zone and priority for biodiversity management

Zone priority	Regional priority	Lake name	District/city	Lake type	Lake area (ha)	Max depth. (m)
1	6=	L.Maratoto	Waipa	Peat	18	7.1
2	18	Rotomanuka Lakes North Lake South Lake	Waipa	Peat	 12.3 5.4	 8.7 4.8
3	54	L.Cameron	Waipa	Peat	3.4	1.5
4	55	L.Rotokaeo	Hamilton	Peat	3.1	?
5	56	L.Waiwhakareke	Hamilton	Peat	3.0	2-3
6	62	L. Rotoroa	Hamilton	Peat	55	6
7	73	L.Te Koutu	Waipa	Riverine	6.0	1.5

Hamilton City Council administers lakes Rotoroa, Waiwhakareke and Rotokaeo as recreation reserves for public enjoyment, and has taken the lead role in their management.

Lake Rotoroa (Hamilton Lake) is a key recreational asset for Hamilton City, and receives a high level of public (including in-lake) usage, so opportunities to improve the health of Hamilton Lake are viewed as a high priority for the zone. To date, Lake Rotoroa has been subject to a number of restoration and management projects with a view to re-establishing submerged native plants (that collapsed around 1990) and improving water quality. The lake's water quality improved significantly in the period between 1990 and 2000 and stabilised thereafter in a eutrophic state.

Lake Waiwhakareke (Horseshoe Lake) is another priority lake for Hamilton City Council, as it is the central feature of the Waiwhakareke Natural Heritage Park restoration programme that the City Council is undertaking. The lake is currently hypertrophic[4], although a management plan

[4] nutrient enriched, such that excessive phytoplankton growth occurs which contributes to poor water

has been prepared for the park, that includes a substantial revegetation programme for 50 ha (76%) within the catchment of Lake Waiwhakareke to create permanent native forest. The lake margin semi-swamp has been planted (in 2004-2006) with manuka-flax species as part of this programme. It is thought that water quality of Lake Waiwhakareke could improve in the next 10-20 years to a moderate (meso-trophic) trophic state as a result of this programme (Duggan 2012).

Lake Te Koutu is a degraded urban lake in Cambridge that is part of a public recreation reserve managed by Waipa District Council, and receives high public visitation for walking and picnicking. The lake receives urban stormwater and has poor water quality (including algal blooms) that makes it unsuitable for contact recreation. Managing stormwater inflows to the lake will be a key factor for future management of the lake, which is a high priority for Waipa District Council.

Lake Maratoto ranks as the best peat lake in the region. It is one of the few remaining lakes that retain a natural peat lake character, with heavily stained acidic water, and large areas of adjoining wetland. Lake Maratoto is in private ownership and the majority of the lake and surrounding peat land is subject to a QEII covenant. WRC has led a substantial wetland restoration programme on the south-eastern side of the lake (with funding from the Waikato Catchment Ecological Enhancement Trust), and a restoration plan has been prepared for the lake and its adjoining wetlands by the landowner to be implemented as part of a subdivision process. Nutrient enrichment, pest plants, and drainage/hydrological modification are the major threats to the lake. Despite having a weir constructed at the lake outlet, water levels in Lake Maratoto regularly fall below the minimum set level, and are thought to be inadequate to sustain the adjoining wetlands. It is a high priority for WRC to examine the reasons for this and assess options to effectively maintain lake levels at the intended (or higher) levels to protect the ecological values of the lake.

Lake Rotomanuka is made up of two open water areas that are hydrologically linked by a wetland area. Lakes Rotomanuka North and Rotomanuka South (Gin) are remnants of a once larger single lake that existed on the edge of the Moanatuatua peat bog prior to its drainage and conversion for agriculture. WRC has established a weir on the outlet of Lake Rotomanuka North in order to establish a minimum lake level for the lakes. Despite being located within an intensively farmed catchment, Lake Rotomanuka North has maintained a eutrophic state, whilst South Lake is substantially more nutrient enriched and is in hypertrophic condition. Project initiatives have been undertaken, and are underway to develop farm system and nutrient management plans for dairy farms within the catchment of the Rotomanuka and Serpentine lakes to reduce nutrient and sediment losses to the lakes and improve the use and management of peat soil in order to improve the lake wetland and water quality. Waipa District Council has also recently acquired a 7.1 ha area on the south eastern margin of Lake Rotomanuka South with Natural Heritage Fund funding from WRC, which will be progressively retired and replanted.

Lake Cameron/Kareaotahi is a small, nutrient enriched lake that adjoins the south-western margin of the Rukuhia peat bog. The lake has received significant attention in the last 10-15 year with the reserve land adjoining the lake being progressively planted, by the Lake Cameron Care Group. Esplanade reserves have also been acquired by Waipa District Council through subdivision processes to extend the vegetated margin of the lake.

Key issues affecting the lakes

A number of factors contribute to the condition of the lakes and limit restoration progress, including:

- Deteriorating water quality due to catchment inputs
- Drainage and hydrological modification (including reduced water levels and wetland loss)
- Presence of exotic fish species such as koi carp, catfish and rudd
- Peat subsidence

Future management

RCS is currently working on several key projects including:

- Completion of the WCEET funded restoration planting programme at Lake Maratoto (in 2012/13)

clarity, poor suitability for recreational uses, and restricts the habitat for desirable fish

- Undertaking hydrological investigations at Lake Maratoto to assess options to more effectively set and maintain a minimum level for the lake.
- Work with DOC and Waipa District Council on catchment management and lake restoration initiatives at the Rotomanuka lakes.
- Working with members of the Waipa Peat Lakes and Wetlands Accord to co-ordinate lake management activities at lakes and wetlands within the Waipa district.
- Regular water quality and shallow lake health monitoring at Lakes Rotomanuka, Maratoto, and technical assistance for HCC's lake monitoring programmes at Lake Rotoroa

The lakes in the Central Waikato zone face a number of issues and threats arising from:

- ongoing land drainage activities and peat shrinkage,
- catchment inputs arising from intensive agricultural land use in sensitive lake catchments;
- water quality and quantity issues arising from urban development and stormwater management
- loss of submerged aquatic plants.

Current funding opportunities within WRC for work relating to lakes includes catchment new works, RCS shallow lakes management and Biosecurity/Natural Heritage Group SNA funding. Lake projects are also a high priority for external funding from the Biodiversity Condition Fund, Waikato River Clean up Trust, and the Waikato Catchment Ecological Enhancement Trust. It is envisaged that the Waipa Peat Lakes Accord will provide a good platform for accessing funds for projects that are aligned between the agencies as inter-agency projects that address multiple threats to waterbodies are more likely to receive a level of funding that is consistent with the investment required to improve lake health and habitat values.

Hamilton Lake is a high profile site in the zone with high recreational value. The opportunity to improve the health of Hamilton Lake is seen as high priority for the zone due to this profile and recreational value but with the recognition that there are a number of other parties already working on this lake. Hamilton Lakes is a shallow peat lake and it may be appropriate to look to manage amenity values ahead of biodiversity.

4.2.7 River management

River management addresses issues such as instability of river and stream banks and beds, congestion of waterways and management of land adjacent to the river or stream. The purpose is to stabilize river and stream beds and banks and address the adverse effects created by peak flood flows within rivers and streams.

Typical river management works include:

- Controlling bank erosion (by planting and fencing off river banks, construction of rock or other bank revetment works or construction of groynes)
- River training works (ensuring the flow paths of rivers are stable and optimum channel widths are maintained)
- Removing blockages and obstructions
- Gravel and sand management.

River management achieves:

- Sustainable, stable and healthy rivers
- Integrated catchment management
- Management of flood waters
- Enhancement of the environmental values of river systems
- Liaison and integration with other Waikato Regional Council activities and programmes.

4.2.8 Flood protection

There are no flood protection schemes within the Central Waikato zone.

4.3 Central Waikato zone assets

4.3.1 Introduction

Unlike other zones within the region the services included under this zone plan are based around catchment and river

management activities rather than infrastructural assets. The zone contains two assets (timber weirs) which operate for the primary purpose of maintaining water levels within Lake Maratoto and Lake Rotomanuka.

The locations of these assets are shown in the following figures.

4.3.2 Work category definitions

Expenditure on infrastructure assets can be categorised into key areas, which are:

4.3.3 Operations and maintenance

Operations and maintenance expenditure is that required for the day-to-day operation of the zone whilst maintaining the current levels of service.

4.3.4 Renewals

Renewal expenditure includes rehabilitation and replacement of assets. The objective is to restore an asset to its original level of service as measured by for example, capacity or another required condition. Renewals expenditure forecasts cover the cost of asset renewal through its whole lifecycle through to disposal of the asset.

4.3.5 New capital works

New capital works involves the creation of new assets, or works, which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations.

Figure 7 illustrates the components of lifecycle management categories.

Figure 4 Lake Rotomanuka weir

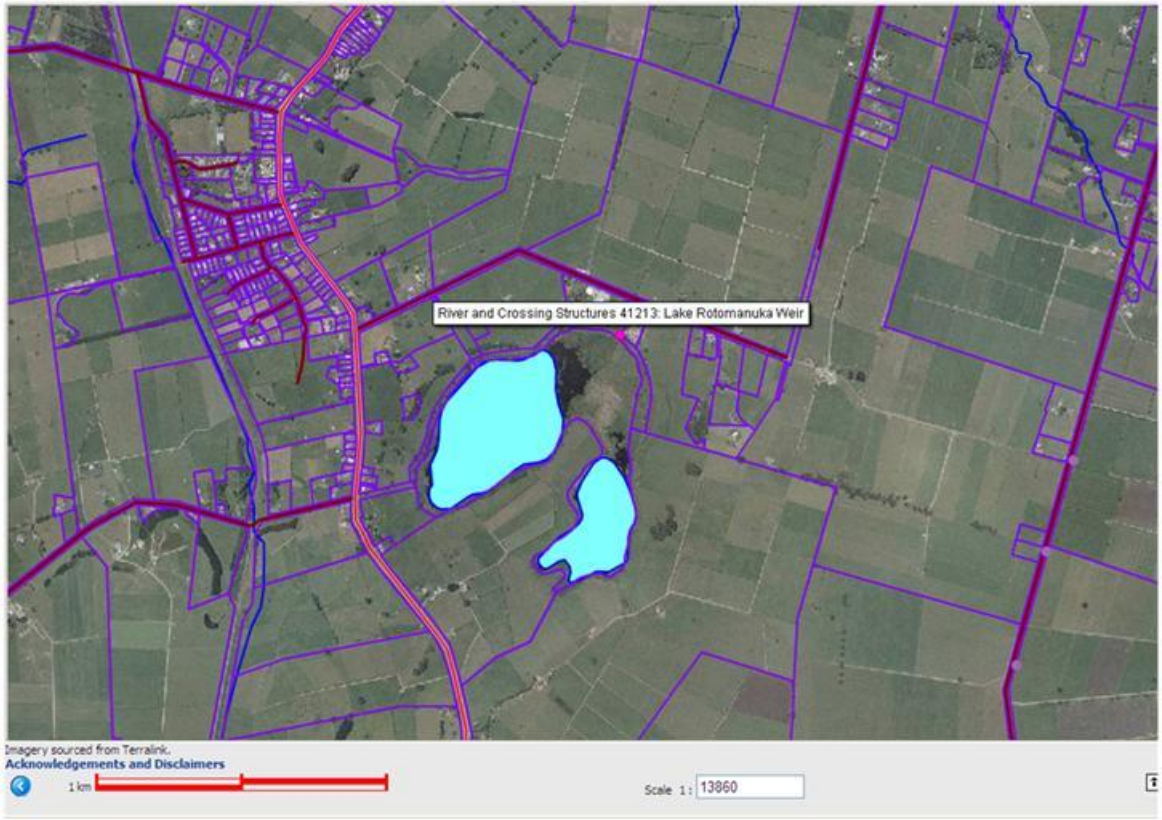


Figure 5 Lake Maratoto weir

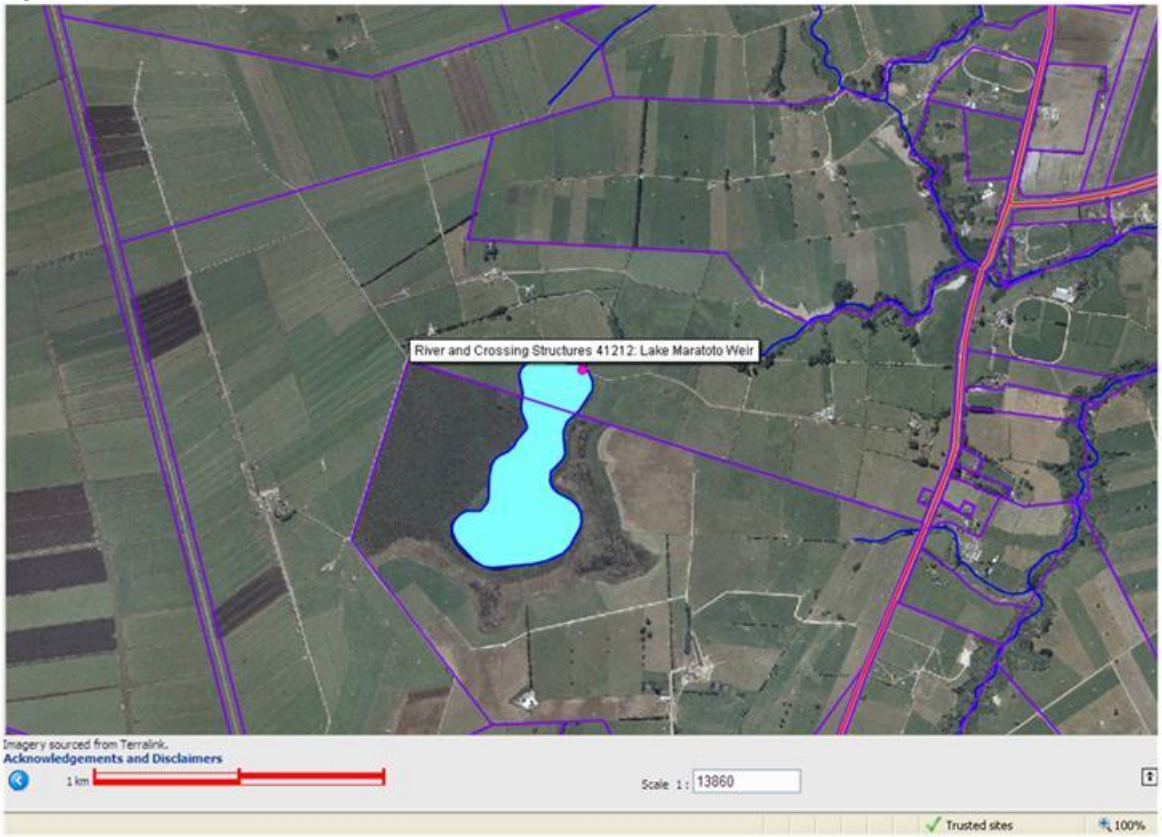
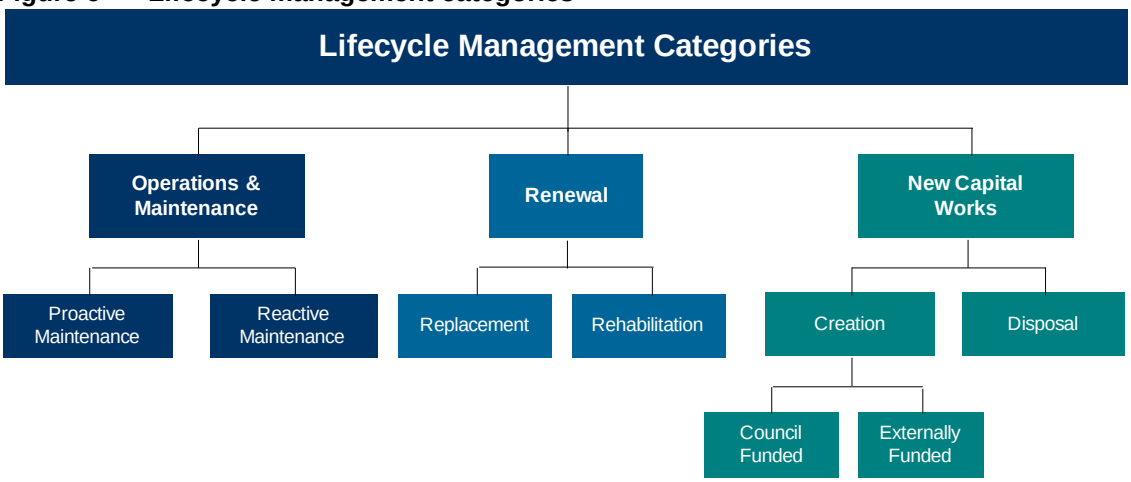


Figure 6 Lifecycle management categories



4.4 Overview of assets

4.4.1 Asset summary

All the assets associated with river and catchment services can be grouped under two service type categories, River management and flood protection and catchment management these are shown below.

Table 5 Asset categories

Service type	Asset category	Asset type
River management and flood protection	Embankments	Stopbanks
		Spillways
		Detention dams
	Structures	Floodgates
		Pump stations
		Control gates
		Culverts
		Bridges
	In river structures	River training groynes
		Weirs
		Boat ramps
		Fish pass
	Channels	Rivers and streams
		Channels
Catchment management	Soil conservation/Clean streams	Fencing
		Planting/retirement
		Water supply

The valued assets of the zone have a total replacement value of $36,817, a current book value of $34,489 and an annual depreciation of $368.

Table 6 Asset inventory

Service type		Asset type	Qty	Unit	Optimised replacement value (ORC)	Optimised depreciated replacement value (ODRC)	Annual depreciation
Flood protection and river management	In river structures	Weirs	2	No.	$36,817	$34,486	$368
	Other	Channels	Approx 262	km	NA	NA	NA
Total					36,817	34,486	368

4.4.2 Soil conservation

The soil conservation assets within the Central Waikato zone are not owned by Council and are therefore not included in the valuation; they are formally owned by the respective property owners. They have been included here, however, because Council has ongoing obligations for monitoring and managing these works under the terms of the agreements with landowners. Council contributes funding towards catchment management programmes involving the promotion and maintenance of soil conservation assets. These assets are non-capital related assets. The table below provides a summary of these assets for the Central Waikato zone.

4.4.3 Key issues – Catchment works (soil conservation)

Key issues relating to soil conservation include:

- Landowner change.
- Property subdivision.
- Changing land use

Table 7 Soil conservation asset summary

	Compart-ment type	Number of compart-ments	Area (ha)	Fence length (m)	Stream-bank retired (m)	Average fence age (yrs)	Area planted (ha)	Average planting age (yrs)
Soil con-servation	Indigenous retirement	9	40.18	7508	3901	17	4.29	4
	Riparian retirement	18	68.33	14554	10410	6	12.19	5
	Stream bank erosion control plantings	2	0.08	60	60	8	0.08	8
	Wetland	2	6.29	495	210	2	1.53	2
Total / average		**31**	**115**	**22617**	**14581**	**9**	**18.09**	**4**

Note: For on-going maintenance purposes, only a portion of these assets are eligible for maintenance funding that being Project Watershed and earlier works covered by LIAs. Clean Streams assets are included above but are not eligible for maintenance funding.

4.4.4 Data confidence and reliability

The table below provides the confidence framework from the New Zealand Asset Management Support International Infrastructure Management Manual (NAMS IIMM) used to determine the confidence in the asset data used in this ZMP.

Table 8 Asset data - confidence grades

Confidence grade	General meaning
Highly reliable	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment.
Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.
Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade highly reliable or reliable data is available.
Very uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.

Council has made an assessment of data completeness which is noted in the table below. Also noted is the reliability of condition and performance data. Where only condition is assessed, the rating is for condition only and where both condition and performance are assessed, the rating is a combined rating.

Table 9 Overall data completeness

Asset group	60%	70%	80%	90%	100%
In river structures (Weirs)					✓
Soil conservation/Clean streams				✓	
Channels	✓				

Table 10 Condition & performance for critical and non-critical assets

Asset type	Highly reliable	Reliable	Un certain	Very uncertain
In river structures		✓		
Soil conservation/Clean streams		✓		
Channels			✓	

4.4.5 Asset condition

Council has an asset register for all assets that contains:

- A definition of all assets including description and location
- Physical dimensions and capacity
- Age and replacement costs
- An assessment of asset condition.

The development and continued use of condition assessment data will allow preparation of verifiable predictive decay curves for particular asset types and hence permit informed prediction of remaining life.

4.4.6 Condition assessment & results

The condition assessment model in the table below should be the basis of assessing the condition of Council's assets in the Central Waikato zone.

Table 11 Typical condition rating model

Grade	Condition	Description of condition
1	Very good	Sound physical condition. Asset likely to perform adequately without major work for 25 years or more.
2	Good	Acceptable physical condition; minimal short-term failure risk but potential for deterioration in long-term (15 years plus). Minor work required
3	Fair	Significant deterioration evident; failure likely within the next 5 years but further deterioration likely and major replacement likely within next 15 years, Minor components or isolated sections of the asset need replacement or repair now but asset still functions safely at adequate level of service.
4	Poor	Failure likely in short-term. Likely need to replace most or all of assets within 5 years. No immediate risk to health or safety but works required within 3 years ensuring asset remains safe. Substantial work required in short-term, asset barely serviceable
5	Very poor	Failed or failure imminent. Immediate need to replace most or all of asset. Health and safety hazards exist which present a possible risk to public safety or asset cannot be serviced/operated without risk to personnel. Major work or replacement required urgently

Table 12 Asset condition and performance

Asset	Condition Grade
In-river structures (Weirs)	2.5
Channels	2
Totals	2

4.4.7 Asset capacity and reliability

Capacity
The following outlines the different design capacities (where applicable) of the RCS assets within the Central Waikato zone.

Table 13 Asset capacity

Asset group	Central Waikato zone
Structures	Maintained to capacity as designed
In river structures	Maintained to ensure they are functioning as designed
Channels	Maintained in order to achieve objectives
Soil conservation	Maintained in order to achieve objectives

Reliability (performance)
A small asset failure (namely in the stopbanks or erosion protection asset groups) can lead to inundation of a large area of the flood plain resulting in disproportionate damage to the initial failure. The erosion protection assets can also be subject to substantial damage themselves from flows less than design level.
Reactive maintenance is expended on repairing flood damage resulting from moderate sized floods.
Preventative maintenance, regular inspection, monitoring and hydraulic modelling all contribute to ensuring service reliability standards are met.

4.4.8 Related activities

Land drainage
Land drainage is not covered in this zone plan as the intention (as at February 2013) is to develop separate plans for this activity. However, land drainage is closely linked with river and catchment management and cannot be considered in isolation. This is especially applicable within the Central Waikato zone as urban growth and land use change are significant issues for the zone. As a consequence, the aspiration is to include the land drainage in a future revision of the Central Waikato Zone Plan. This has been included in the improvement plan section of this plan. For this version, the following is provided in order to briefly demonstrate where land drainage fits into the overall management of the zone.

Council is presently responsible for the maintenance of nine land drainage areas within the region. Territorial authorities are responsible for all other land drainage issues, which includes those other drainage areas that exist within the region. Typical activities include:

- Spraying
- Desilting
- Erosion control
- Removal of blockages.

Activities are aimed at ensuring efficient and stable drainage systems, to effectively maintain optimum groundwater levels and drain surface runoff. In this way, the productivity of land is maximised.

Where land drainage discharges to the river systems through flood protection assets such as stopbanks, floodgates and pumps, a close working relationship is needed between the agencies involved. Council maintains such a relationship with each of the district councils as much of their drainage relies on the river system works to be effective and some day to day roles are shared between the agencies.

4.4.9 Emerging practices

In order for Waikato Regional Council to manage the zone in an integrated manner other management practices are needed including:

- Establishing relationships with other Waikato Regional Council functions including policy development and implementation, hazard management, resource use and resource information
- Establishing and maintaining awareness of other influences within the zone including activities of utility providers, developers and territorial authorities or government agencies

- Establishing a culture that ensures strategic thinking and planning of zone activities
- Identification of linkages and impacts of other community or agency based groups within the zone.

4.5 Whole of catchment management

4.5.1 Background

Prior to the formation of the Waikato Regional Council in 1992, catchment authorities in the Waikato region (Hauraki Catchment Board and Waikato Catchment Board/Waikato Valley Authority) actively promoted catchment based planning and work programmes. This resulted in a number of comprehensive catchment schemes based on major catchments and sub catchments including the Lower Waikato Waipa Control Scheme, Lake Taupo Catchment Scheme, Paeroa Range Scheme, Waihou Valley and Piako River schemes.

This catchment based approach was further progressed by the Waikato Regional Council since 1992. While these earlier programmes were promoted over entire catchments they were largely limited in their focus being either river and flood protection or soil conservation based or a mix of both.

4.5.2 What is whole of catchment management?

In recent years, there has been increasing recognition of the range of issues which need to be connected in order to improve river and catchment management. The following matters have increasingly been recognised:

- Catchment processes are strongly interlinked
- There may be effects of specific catchment activities upon other activities and values. For example, river and catchment works programmes may impact on cultural, recreational and environmental values
- Traditional approaches to river and catchment management did not always recognise the inter-relatedness of the environment's components. In fact, problems may be created by managing resources in isolation from others
- Catchments as a whole provide a useful and functional unit for managing natural resources in a holistic way. A catchment area is bounded by natural features from which runoff drains to a common central point (river, wetland, sea). Areas within that catchment are 'linked' by the flow of water downstream. Linked processes include downstream transport of water, sediments, nutrients and contaminants from the upper catchment. Water quality and quantity throughout the catchment are influenced by management practices elsewhere in the catchment. Land use practices and vegetative cover influence run off characteristics and patterns in Central catchment areas. This may have significant effects on the management of flood protection and river management measures in Central catchment reaches
- Whole of catchment management seeks to ensure that natural resources are managed in a sustainable and equitable way. The transition from the traditional approach to the integrated, whole of catchment approach can often be challenging due to diverse and incompatible interests, activities and demands upon resources. A key is to achieve engagement and participation from across all key stakeholder groups.

Waikato Regional Council progressed the 'whole of catchment' approach with the introduction of Project Watershed in 2002 and the Peninsula Project in 2003. These projects provide integrated management and funding across the Waikato River Catchment and Coromandel Peninsula respectively.

Further progress made since 2003 resulting from changes to legislation and community demand have prompted broader consideration of a range of catchment activities (including biodiversity, biosecurity, natural hazards and planning) and a broader values base (cultural, environmental, economic and social). This zone plan seeks to identify where stronger linkages are needed in the future.

4.5.3 Principles

The **whole of catchment management principles** that Waikato Regional Council will consider in undertaking river and catchment management programmes will include[5]:

- A catchment vision is needed. There should be clearly defined goals, objectives, policies and strategies
- There is a need to monitor the effectiveness of catchment management by measuring against identified values and goals
- There is a need to take a holistic approach to catchment management. This is especially sought by iwi and can be expected to be increasingly applied through Treaty settlements and co-management arrangements
- There is a need to plan and manage land and water at a catchment scale. We need to be aware of the whole not just a segment of the catchment when making decisions within catchments
- Planning and management need to keep pace with land and water quality decline
- Consideration is needed as to how limits and standards applied to water quality also be applied to land based activities (requiring River and Catchment Services to be increasingly liaising with regulatory managers)
- Catchment management and planning need to be supported by sound up to date science. The community needs to have confidence in the science. The science needs to be easily understood and simply portrayed
- Trends occurring within the catchment should be monitored
- Community engagement needs to include all stakeholders. All key users/interests should be engaged in catchment planning. The team approach should be fostered
- Better approaches are needed in balancing diverse values in catchment planning
- Engagement of stakeholders needs continuity and planning. Long planning processes often do not lead to engagement; neither do tight timeframes encourage participation
- Regular and continuous communication is needed with stakeholders during planning and implementation
- There is a need to build flexibility into catchment plans and processes in order to respond to new pressures and developments and to achieve objectives
- Catchment plans should provide an accountability tool for the performance of the catchment managers
- There is a need to ensure that the costs of catchment management are equitably spread through robust and defendable funding and rating systems.

4.5.4 Relationship to integrated catchment management

Increasingly, Waikato Regional Council's standard operating practice has been to identify how the range of issues associated with catchment management might be considered in a holistic way. This includes identifying the linkages between the following which is often referred to as Integrated Catchment Management (ICM):

- Treaty settlements and iwi visions and strategy
- River and Stream management
- Flood protection
- Land management / Soil erosion / soil conservation
- Land use change
- Climate change
- Asset management
- Natural hazards
- Emergency management
- Risk management
- Biosecurity

[5] Adapted from 'Council Update Newsletter' Volume 1 July 2010 – Landcare Research.

- Biodiversity and ecological enhancement
- Water quality and quantity
- Sustainable agriculture
- Nutrient management
- Growth and development
- Infrastructural development (transportation networks, electricity generation)
- Regional and district planning.

It is expected that the incorporation of the above into river and catchment planning processes, including zone plans, will be progressively applied over time.

4.5.5 What this means for the Central Waikato Zone

For the Central Waikato zone, the whole of catchment approach means that consideration is needed of both the catchments within the zone as well as the upper reaches of the Waikato River catchment (that is, outside the zone) and the way in which these impact upon the zone.

The zone plan has identified the key zone sub catchments and the following matters will be considered within those catchments:

- Soil erosion and sedimentation
- Riparian, river and channel management
- Existing land protection measures
- Water quality and quantity (including receiving waters – wetlands, lakes)
- Plant and animal pests
- Natural hazards and risks
- Policy and planning (urban growth, transportation, infrastructure)
- Biodiversity
- Treaty settlements, co-management
- Land use and development.

In regard to the upper Waikato River catchment upstream of the zone, the impacts and considerations include:

- Land use change and future forecasts of land conversion and intensification particularly within the Lake Taupo, Upper Waikato, and Waipa zones. This is particularly pertinent in the Upper Waikato zone; where over the period 2004 – 2008 extensive areas of land were converted from pine plantations to pasture. This trend has since slowed and is not occurring to a significant extent since late 2008. However, large areas of land earlier identified for conversion has not been developed as at this time. Conversions have potential effects on the Central Waikato zone by increasing water quantity (increasing flood levels) and decreasing water quality (by adding additional nutrient loads to the Waikato River)
- Impacts of future Treaty settlements within all Waikato River catchment zones
- Climate change, which may lead to increased rainfall impacts and flood levels
- Future governance and infrastructural arrangements
- Flood management – particularly the operation of the Waikato River hydro system during flood events, when there is a need to balance conflicting interests between:
  - water levels in Lake Taupo (minimising lakeshore erosion)
  - water levels in the Central Waikato Zone (minimising flood risks)
  - ensuring the safe operation of hydro dams on the Waikato River.
- River and catchment work programmes in other zones particularly soil conservation works, which may have benefits to flood flows and lead to an improvement in water quality (nutrient and sediment reduction).

4.5.6 Biosecurity and biodiversity

Biosecurity and biodiversity are two key activities undertaken by Council. Managing pests and protecting natural biodiversity values have strong connections to the 'whole of catchment' management. For example, by removing pampas grass (which is exotic and shallow rooted) and planting native species (with deeper root systems) river bank stability can be greatly enhanced. There would be some net reduction

expected in erosion and sedimentation at such sites.

Biosecurity
Biosecurity in the Waikato region has four components:

- managing public health threats
- managing production threats
- managing environmental (biodiversity and catchment) threats
- managing potential pest threats.

The objective of the programme is to minimise the adverse effects associated with pests and increase pest management understanding through regionally co-ordinated responses. The goals are set out in the Operative Waikato Regional Pest Management Strategy (RPMS) developed under the Biosecurity Act 1993. Activities carried out to achieve these goals include:

- enforcement of pest plant control rules
- monitoring control work and property inspections
- surveillance for potential pest plants
- releasing biological control agents
- facilitating and undertaking direct control of high threat pests
- providing practical advice for controlling plant pests
- promoting education and awareness
- coordinating community initiatives.

Development of pest control rules, leverage of funding mechanisms and the ability to access land to carry out control work comes from powers available under the Biosecurity Act.

Biodiversity
Biodiversity management seeks to identify and work to protect and enhance significant indigenous habitats and vegetation (e.g. wetlands, geothermal, terrestrial forest remnants, dune lands and limestone areas). The Resource Management Act (section 6(c)) requires regional and district councils, as a matter of national importance, to recognise and provide for the protection of these significant natural areas (SNA's).

For many landowners having an SNA will serve mainly to confirm the ecological value of their property. Over time rate relief or restoration assistance from the councils may be offered. SNA identification helps the Councils with policy planning and operations. It will help guide the regional council where it should target resources – from building drainage structures to doing pest control. Knowing where SNA's are and the threats to them will assist in the whole of catchment management approach.

A summary of Biosecurity and Biodiversity activities within the zone are summarised in the table below.

Table 14 Biosecurity and biodiversity

Activity	Detail
Gullies project – pest plant control/stabilisation and planting (in collaboration with Hamilton City Council)	• WRC carries out pest plant control • HCC undertakes new plantings
Individual species control (the goal is eventual eradication):	• Alligator weed (new subdivisions and Cambridge/Ohaupo) – rivers, ponds and streams • Yellow flag (Hamilton gullies) • Japanese / giant knotweed • Evergreen buckthorn (Hamilton) • Vines (old man's beard, cathedral bells) • Manchurian wild rice (Karapiro/Cambridge) • Climbing spindleberry (Cambridge/Karapiro)

Activity	Detail
Compliance monitoring (RPMS rules):	• Privet (subject to valid complaints received) • Woolly nightshade • Moth plant/Madeira vine • Pampas
Surveys	• Waikato riverbank and road/rail corridors • Small scale riverbank control with HCC (wild ginger, pampas and woolly nightshade)
Significant Natural Areas projects	• Hamilton Halo project – bringing tui back to Hamilton City through intensive rat control at breeding sites within a 20km radius (Maungatautari, Maungakawa and Te Miro) • The Halo focus, over time, will shift to control of rats at SNA sites in the city where tui should breed in the future. • Bat monitoring and education at Hammond Park SNA, with local community groups. • SNA report written for Hamilton City identifying the key indigenous sites in Hamilton e.g. Jubilee bush

4.6 Issues and trends of significance to the zone

4.6.1 Regional issues and trends impacting the zone

A number of regionally significant issues and trends have been identified for river and catchment management activities[6] including:

- Climate change
- Growth
- Treaty of Waitangi settlements
- Land use change
- Potential local government restructuring
- Infrastructure development and management
- Regional environmental issues.

The following table provides a summary of the key of regionally significant issues and trends considered relevant to the central Waikato zone, the implications of these issues for river and catchment management and response that may be appropriate.

[6] Refer to "*River and catchment management in the Waikato region*" document.

Table 15 Regional issues and trends impacting the Central Waikato zone

Issue	Description of issue	Implications	Strategy to address key issues
Climate change (CC)	Sea level rise Increased rainfall Drought Economic effects	Higher water tables Levels of Service Flooding Reduced ability to pay	Monitoring Liaison with national agencies
Growth	Auckland growth influence Regional growth Urban development	Increased community expectations Pressures upon zone resulting from encroachment/development Pressures on local stormwater disposal, water supply, recreational use of river margins etc.	Involvement in planning and policy development Liaison, networking and relationship building
Treaty settlements	Clarity and understanding needed as to future directions and implications arising from settlements	Need to manage expectations Technical and expert capacity Understanding roles and responsibilities Operational relationships Partnering strategies developed Settlements within the zone (and adjacent zones) may impact on Council 's role and responsibilities	Liaison with iwi authorities and implementation of co-management arrangements. Alignment of strategies may be required to fit tribal rather catchment boundaries Relationships developed Development of Joint Management Agreement Development of co-management agreement regarding flood control, scheme land Involvement in development of Integrated River Plan
Land use change	Conversion of forest lands in upper catchment Change of land use, intensification of use	Increased run off, flooding Sedimentation and erosion Decline in water quality	Sustainable land management practices promoted in upper catchments (within and outside the Central Waikato zone)
Local government re-organisation	Future re-organisation of local government	Changes to governance, management and/or funding arrangements	Monitoring of potential changes Engagement at a political level to ensure influence
Transportation networks	Ongoing development	Potential impacts upon river and catchment management and asset management	Liaison with planning (local authorities) and transport agencies (road and rail)
Natural hazards	Flooding Volcanic eruption Earthquakes Storms	Flooding risks Animal welfare, safety issues Stability of protection structures	Management of flood risks Raise community awareness as to emergency procedure, response
Water quality and quantity	Decline in water quality Reduced water	Impacts on land use opportunities, recreational	Promotion of 'whole of catchment' management

Issue	Description of issue	Implications	Strategy to address key issues
	quantity, availability	use, cultural values	Partnerships/liaison with other organisations and agencies (iwi, local authorities) Future investigation/support for water harvesting strategies
Biodiversity/ ecological effects	Ecological effects resulting from development and catchment and river management – including those within specific catchments, riparian margins, wetlands and lakes	Loss of habitat and other ecological opportunities Loss of cultural values Loss of recreational opportunity	Recognition of the biodiversity and ecological component of river and catchment, lake and wetland protection programmes Appropriate mitigation measures applied
Community awareness	Decline over time in the level of understanding by the community of the presence, value and benefits catchment and river management	Loss of engagement with community Decline in support for river and catchment programmes Objection to the payment of rates	Community education, promotion and engagement Regular community targeted information / publicity
Community expectations	Increasing community demands as to services to be provided	Increased funding requirements	Community engagement processes in place Full evaluation and consideration of financial and management implications of increased (or changed) levels of service
River channel management	Issues associated with channel management, debris management.	Congested river channels Degradation of river bed	Management programmes and strategies in place
Infrastructure change	Changes to the roles and responsibilities of external infrastructure managers	Increased requirements upon Council in form of increased costs or transfer of responsibilities	Liaison with other agencies
Sites of significance	Need to identify and protection local sites of significance.	Loss of sites through work programmes Failure to protection and enhance known sites	Liaise and partnerships with other agencies.
Land Improvement Agreements	Need to maintain profile of these agreements and ensure they are resourced	Deterioration in works/assets due to inadequate maintenance and lack of landowner commitment	Management strategy in place and implemented by Land Management Officers
Zone governance and integration	Need for alignment between various management committees, including land drainage and catchment subcommittees	Misalignment, inefficiency, increased costs	Prepare future management strategy with view to rationalisation of present governance arrangements
Soil erosion	Erosion in upper catchments, stream bank erosion and	Loss of natural resource Reduced land use options	Promotion of soil conservation programmes and

Issue	Description of issue	Implications	Strategy to address key issues
	sedimentation	Sediment build up	sustainable land use practices

4.6.2 Zone specific issues the Central Waikato zone

Additionally a number of zone specific issues have been identified; these are detailed in Table 3 of Section 3 of this ZMP and include:

- Flood hazard and flow management
- Urban development and land management
- River bank and bed erosion
- Protecting and promoting the health and well-being of the Waikato River
- Maintaining and enhancing biodiversity
- Zone management and stakeholder engagement

4.7 Legislative and policy requirements

Waikato Regional Council has responsibilities for river and catchment management under various statutes the most important of which are:

- Local Government Act 2002
- Local Government (Rating) Act 2002
- Resource Management Act 1991 (RMA)
- Resource Management (Energy and Climate Change) Amendment Act 2004
- Soil Conservation and Rivers Control Act 1941
- Civil Defence Emergency Management Act 2002
- Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010.

An overview of the requirements under each Act are given within the overview document "*River and Catchment Management in the Waikato Region"*

There are three key requirements for asset management planning under the Local Government Act 2002, being:

- Compliance with Schedule 10 requirements
- Compliance with the Office of the Auditor General criteria for assessing the level of asset management
- LGA 2002 Significance Policy.

Details of these requirements are outlined below.

4.7.1 Compliance with LGA 2002 Schedule 10 requirements

The Local Government Act 2002 (LGA 2002) has prescribed that levels of service (LoS) must in future be developed from a community perspective. This is a fundamental change in the traditional approach.

Historically, levels of service have been expressed in a technical way that describes what Council has expected from its internal or external service providers (e.g. contractors). These need to be presented to the community in a clear, informed way as 'customer levels of service', and consultation used to obtain the 'community perspective'.

Specifically the LGA 2002 requirements for planning; decision-making, consultation and accountability which is inclusive of Waikato Regional Council's LoS and asset management planning;

- The LGA 2002 requires local authorities to consult their communities about funding and financial policies. It also requires consultation on the types and levels of services councils propose and how they will be paid for, and requires councils to explain to their communities the relationship between costs and levels of service provision
- When a local authority undertakes public consultation, it must do so in accordance with the principles of

consultation set out in Part 6, section 82. In brief, these principles require councils to:

- provide easy-to-understand summaries of proposals and plans
- identify who will be affected by decisions and encourage them to make their views known to the council - councils also must give reasons for their decisions
- find out what all the practical options are for dealing with issues and carefully assess them.

Council's service delivery activities must meet the requirements of Schedule 10 of the Local Government Act 2002, Appendices 1, 1a and 1b set out a list of the Schedule 10 requirements, including significant negative effects, and references to the section in this document where these requirements are addressed.

4.7.2 Office of the Auditor General criteria for asset management

The office of the Auditor General (OAG) has established a set of criteria for assessing conformity to "Core" and "Advanced" levels of asset management (NAMS, 2006). The "Core" AM planning criteria is recognised as a minimum standard for compliance with activity provisions in the Local Government Act 2002. The advanced criteria describe OAG expectations for the management of complex and high value infrastructure with high associated risks.

The assessed compliance of the provisions in this plan with the OAG "Core" and "Advanced" criteria is set out in Appendix 1b. Council currently achieves "Core" requirements plus steps towards achieving "Intermediate" criteria. Appendix 1b also sets out the steps needed to address the current gaps between existing practice and "Advanced" management planning. With adhering to the OAG criteria the Zone Management Plan (ZMP) takes a wider catchment view than the traditional Asset Management Plan (AMP), in doing so Asset Management is embedded in the newly formed ZMP document. Where gaps between the current and desired plan exist, these gaps will be identified and addressed as the ZMP moves from core to intermediate to an advanced level plan.

4.7.3 LGA 2002 Significance Policy

Section 90 of the Local Government Act 2002 requires each Council to adopt a policy on significance, which:

- Sets out that Council's general approach to determining the significance of proposals and decisions in relation to issues, assets or other matters
- Sets out any thresholds, criteria, or procedures that are to be used by the Council in assessing the extent to which issues, proposals, decisions or other matters are significant
- Lists the assets considered by the local authority to be strategic assets.

Section 97 of the Local Government Act 2002 requires that the significance policy shall identify all of the assets the Council considers to be strategic, as defined in Section 5 of the Local Government Act 2002.

Waikato Regional Council has determined the River and Catchment Services assets to be strategic in nature.

Any decision to transfer ownership or control of a strategic asset or a decision to construct, replace or abandon a strategic asset cannot be made unless it has first been included in the LTP (and in a statement of proposal relating to the LTP).

All such actions relating to a strategic asset are automatically significant and must meet the requirements relating to significant decisions with the LGA, specifically Part 6, section 90.

4.7.4 Statutory documents

Waikato Regional Council must fulfil its statutory requirements under the following statutory documents.

Long Term Plan (LTP)
The 2012 - 2022 LTP sets out nine Groups of Activities. River and catchment services fall within two of these, namely:

- Catchment management, and
- Flood control and protection works.

These groups include the sub activities of:

- Catchment services

- Harbour catchment management,
- Flood protection,
- Land drainage, and
- River management.

The Community Outcome identified in relation to these services being 'Safe and resilient communities'.

Regional Policy Statement (RPS)
The RPS sets the direction for the Council in terms of promoting sustainable development and managing the regions natural resources. It provides an overview of the resource management issues in the region with policies and methods to achieve integrated management.

In terms of river and catchment services, the key polices of the operative RPS are:

- Reducing the effects of accelerated erosion and avoiding these effects where possible
- Avoiding the discharge of contaminants onto land that may adversely affect the condition of the soil
- Protecting productive soils through moisture management
- Reduction in the adverse effects of river and lake bed instability on a catchment basis
- Managing extractions, structures, water level fluctuations and surface water activities
- Improvement of water quality through riparian management
- Protecting significant flow regimes and modifying flow regimes where necessary
- Protecting the mauri of water by minimising contaminants.

Waikato Regional Plan (WRP)
The Waikato Regional Plan contains policies and rules that enable the Council to meet its resource management objectives. The regional plan must be in accordance with the RPS and therefore contains similar policies.

The plan contains modules covering Matters of Significance to Maori, Water, River and Lake Beds, Land and Soil, Air, and Geothermal Resources. Those of particular relevance to river and catchment management are Water, River and Lake Beds and Land and Soil. Matters of Significance to Maori are also important.

The objectives identified in the relevant chapters of the WRP that have implications for river and catchment management include those relating to preserving the natural character of lakes, rivers and their margins, controlling the damming or diverting of water, erecting and maintaining structures in water bodies, disturbing the beds of lakes and rivers and managing erosion.

The rules within the WRP can also assist in the effective delivery of river and catchment services. These works and services need to be aligned with regional policy in order to apply rules to reduce soil erosion and avoid discharges of contaminants to watercourses. The rules may also permit activities that help to provide flood protection services and manage emergencies.

District plans
Waikato Regional Council must also comply with any relevant rules in district plans for each local authority when delivering their services. Applications may be required for resource consents for structures, earthworks or other activities.

Bylaws
Waikato Regional Council has the power to make bylaws under Section 145 of the Local Government Act. Bylaws are rules or regulations made by the Council to protect the public from nuisance, protect, promote and maintain public health and safety and to minimise the potential for offensive behaviour in public places. The majority of river and catchment services are governed by legislation, as set out in the previous section. However, the Navigation Safety bylaw and relevant District bylaws have implications for these services.

Bylaws protect river and catchment management assets by restricting people from damaging structures, or accidentally or deliberately blocking drainage channels, such actions indirectly effecting Waikato Regional Council in the efficient delivery of river and catchment services.

Consents
An important requirement of the Resource Management Act 1991 is the duty upon Waikato Regional Council as a service provider to avoid, remedy and mitigate the

adverse effects of its activities on the environment. This duty applies to all works and services, including river and catchment activities. In order to fulfil these obligations, Waikato Regional Council obtains resource consents for certain works and services activities as required under regional and district plans.

A Table showing the resource consents that are currently held by the Council in relation to river and catchment management activities in the Central Waikato Zone is shown in Appendix 1c. Resource consents stipulate a number of conditions, particularly those relating to monitoring and often the consent holder is required to report on compliance with those conditions.

Standards and guidelines
In addition to the legislative requirements, there are also a number of standards and guidelines that impact on how river and catchment services are delivered in the zone. Some of these standards are already used as part of the existing service delivery, while others provide a benchmark for future service delivery in the Council. These standards and guidelines are set out in Appendix 1d.

4.8 Key stakeholders

The key external stakeholders with an interest in river and catchment management activities in the Central Waikato zone are as follows.

4.8.1 Central Government

There is a need to ensure that delivery of zone related works is consistent with central government legislation and policy. Changes in Government policy such as climate change, should be incorporated into the decision making process to ensure future proofing of flood protection schemes and related programmes.

4.8.2 The community — direct or indirect beneficiaries

There are 68,333 rateable rating units (properties) within the Central Waikato Management Zone. Waikato Regional Council must work closely with the community, providing opportunity for involvement in local decision making processes.

The information gathered from local communities assists Waikato Regional Council in developing a range of planning and decision making tools and in ensuring the community is engaged in decision making. The catchment liaison subcommittee has an important role in this process.

4.8.3 Catchment liaison subcommittee

Waikato Regional Council has an adopted Terms of Reference in place for all subcommittees. Appointments are made on a three yearly cycle following the council's triennial elections. Subcommittee membership includes regional council constituent councillors, district councillors, and representatives from iwi, hydro power companies, Department of Conservation, forestry, community groups and property owners.

The primary purposes of the catchment liaison subcommittees are:

- To provide advice to Waikato Regional Council on river and catchment related activities, in particular
- To provide input and feedback in relation to Waikato Regional Council programmes and activities.
- To assist with the exchange of information between Waikato Regional Council and the community.

4.8.4 Tangata whenua

As set out elsewhere in this document, the relationship between Waikato Regional Council and Tangata whenua is an important one and is expected to develop and change as part of co-management.

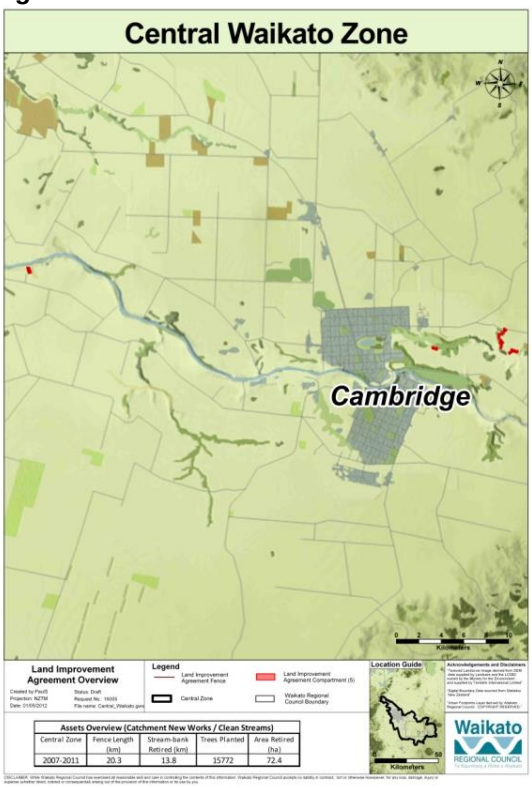
Waikato Regional Council will continue to work with local Iwi to ensure the traditional role of iwi and hapu as kaitiaki is respected and reflected in the implementation of work programmes. Waikato Regional Council will work to give effect to the vision and strategy for the Waikato River, implementing co-management through works on the ground. There is also a close association with local iwi in terms of representation on decision making forums, such as the Central Waikato Liaison Subcommittee, relationship development and capacity building through association with river and catchment works, resource consent processes and policy integration in implementation.

4.8.5 Landowners with Land Improvement Agreements

Earlier soil conservation works were subject to agreements entered into by the property owner and the Waikato Valley Authority. These agreements place obligations upon both parties in relation to the ongoing management and maintenance of the works in place. The agreements are in place in perpetuity (999 years) or 99 years unless altered by mutual agreement.

A total of up to 5 Land Improvement Agreements (LIA) registered on the property title exist in the Central Waikato zone. These property owners are important stakeholders in the ongoing protection of water and soil resources within the Waikato River catchment as a whole. Since 1992, no new LIA's have been entered into and have been replaced by a different form of agreement referred to as the Memorandum of Encumbrance (MoE).

Figure 7 LIA Locations within the zone



4.8.6 Territorial authorities

Figure 8 shows the location of territorial authorities (TA's) within the region. Territorial authorities with boundaries in the Central Waikato are the Waikato District Council (includes Franklin District Council as from boundary reorganisation changes); Hamilton City Council and Waipa District Council. Staff work with the district council in relation to the following:

- Obtaining district council resource consents where required, to maintain local protections works
- Through service level agreements, maintaining and managing local drainage networks
- Progressing issues relating to urban growth and increase intensification
- Representation on catchment liaison subcommittee
- Waikato Regional Council may be an affected party in terms of resource consents
- Input to local district planning processes.

4.8.7 Hamilton City service level agreement

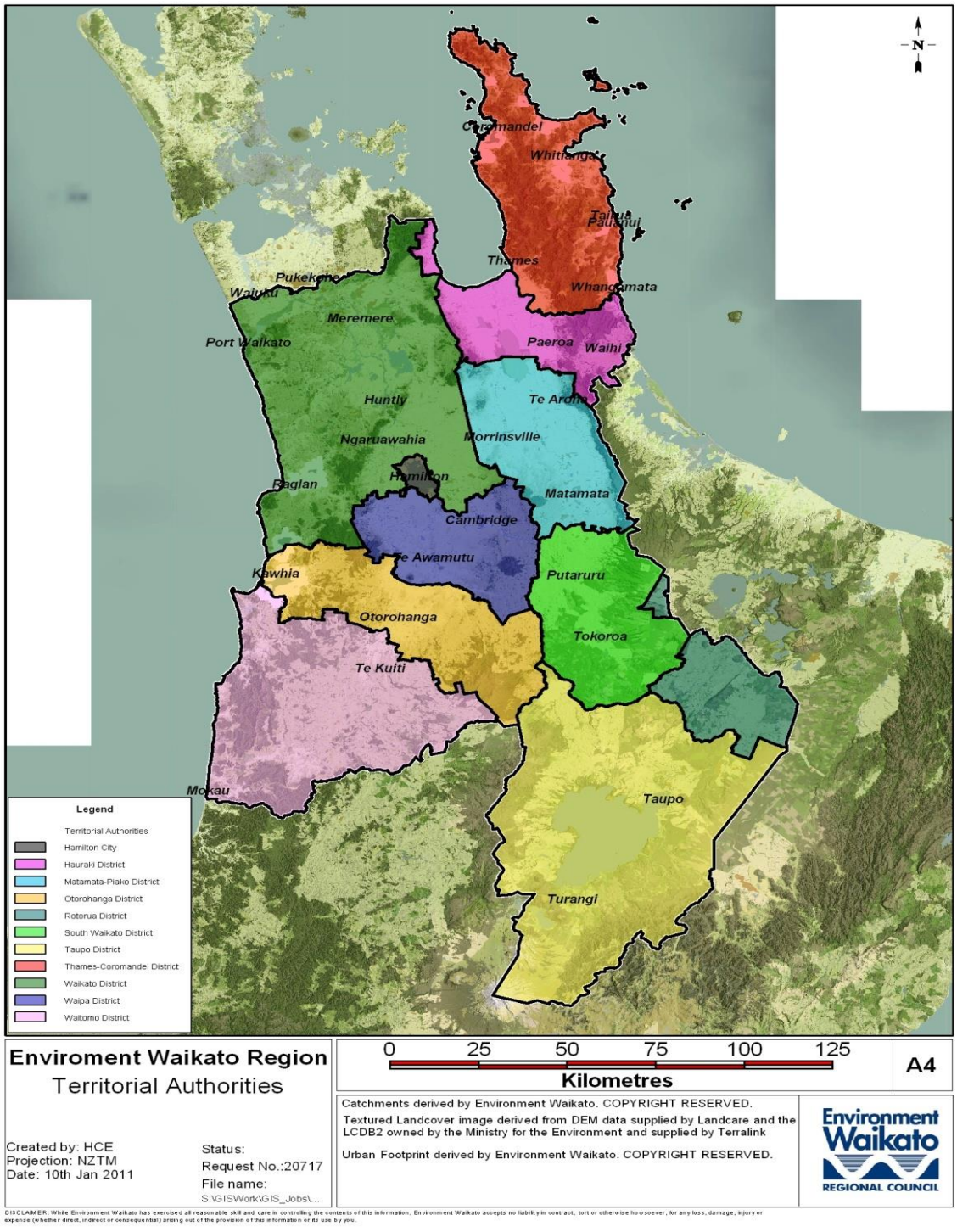
The Central Waikato zone includes a section of the Waikato River main channel that bisects Hamilton City and includes a number of tributaries within Hamilton City.

The objectives under Project Watershed for this section of the catchment include management and maintenance of the Waikato River main channel for the purposes of maintaining the overall channel capacity and stability. This includes the objective of reducing surface flooding and control of erosion in the main channel and associated tributary streams. Hamilton City Council (HCC) takes responsibility for maintaining riverbank protection measures in place and, for initiating new works.

WRC has agreed to provide funding to HCC from Project Watershed for river and catchment management which includes maintenance of HCC's flood protection and river control assets on the terms set out in the Service level Agreement (SLA).

The SLA is currently under review by the Waikato Regional Council and Hamilton City Council. Upon agreement being reached as to the final form of the SLA it will be referenced within this zone plan. This is expected to be concluded by mid 2013.

Figure 8 Territorial authorities locations



4.8.8 Department of Conservation

The Department of Conservation administers conservation land such as parks, reserves and stewardship land on behalf of the Crown. The conservation land network administered by DOC in the Waikato catchment includes a number of wetlands, lakes and marginal strips along the Waikato River and its tributaries. Public conservation land is typically managed by DOC for a mix of biodiversity, historic and recreational values.

Management activities on conservation land include the control of weeds and animal pests, fencing and planting, as well as the control of water levels for some wetlands and lakes on public conservation land. As part of its responsibility to manage for the benefit and enjoyment of the public, DOC develops recreational and educational opportunities and maintains access to public conservation land. The Department also monitors the condition of some lakes and wetlands as well as some of the threatened species that they support.

Threatened species recovery work is often focused on conservation land because these areas have a greater level of protection and ongoing security for these species is therefore more assured. Other activities managed by DOC include:

- Whitebait fishery
- Threatened and alien invasive species
- Permits, concessions and advocacy.

Staff work closely with DOC in terms of resource consent requirements, both as an affected party but also in discussion around the comprehensive consent process.

4.8.9 Fish and Game New Zealand

Regional fish and game councils manage sports fish and game birds. They have statutory responsibility *"to manage, maintain and enhance the sports fish and game bird resource in the recreational interests of anglers and hunters"* (Conservation Act 1987).

Fish and Game Councils are responsible to the Minister of Conservation, but are independent from central Government with funding solely from the sale of hunting and fishing licences. Councillors are elected every three years with voting rights restricted to adult licence holders. The Waikato River comes under the ambit of two Fish and Game regions. The Eastern Region manages the sports fish resource upstream of the Maraetai Dam, while the sports fish resources downstream of this dam are the responsibility of the Auckland/Waikato region. Much of Fish and Game's management activities are focused on advocacy, at both national and regional levels, to prevent deterioration of water quality.

Staff work closely with Fish and Game in regard to resource consent requirements, both as an affected party, but also in discussion around the comprehensive consent process.

4.8.10 Hydro power generators

Waikato Regional Council has long standing relationships with both primary hydro generators (Mighty River Power and Genesis Energy) as a result of needing to work closely on implementing the ”Agreed Principles of High Flow Management for the Taupo Waikato Catchment” during times of flooding.
Staff also work closely with Genesis Energy to implement riparian works on their land along the Waikato River and tributaries. Staff also input to resource consent processes of both companies, from a regulatory and advisory perspective.

Mighty River Power has representation on the Central Waikato Catchment Liaison Subcommittee and therefore has representation into the zone decision making processes.

4.8.11 New Zealand Transport Agency

Waikato Regional Council works closely with NZTA in a partnership role on such projects as the four laning project and future infrastructure type works, where resource consent in required and to ensure that roading works do not impede or impact on the performance of local flood protection schemes.

4.9 Business processes

Management of the zone involves a combination of consultation, processes, data and software applied to provide the essential outputs for effective zone management. The processes that relates to the Central Waikato Zone at different organisational levels are summarised in the table below.

Table 16 Business processes and actions

Strategic processes	• **Strategic direction** • **Business continuity**
Tactical processes	• **Consultation** • **Levels of service** • **Risk management** • **Demand management** • **Financial management** • **Zone management plan** • **Health and safety**
Operational processes	• **Asset condition and performance** • **Asset attributes** • **Annual work programme (capital & maintenance)** • **Environmental monitoring** • **Audits** • **Emergency and flood management**

4.9.1 Strategic processes

Strategic Processes involves the long-term planning processes of Waikato Regional Council and the organisation's processes of defining its strategy, or direction, and making decisions to pursue this strategy.

The following strategic documents and processes that relates to the Central Waikato Zone require regular review and monitoring. Details of the frequency, contents, requirement and responsibility are summarised in Appendix 2a and 2b.

Strategic direction

- LTP process
- Regional Policy Statement
- Waikato Regional Plan
- Whole of catchment management principals
- District plans etc.
- Local Government reform.

Business continuity

To achieve sound business continuance planning, Council is in the process of developing a Business Services Continuity Plan. This will provide a tool to effectively react and respond to a crisis in a manner that ensures that its activities, provision of services and staff well-being are not unduly affected.

This plan will be prepared to ensure the viability of Council in the event of an emergency or other event that significantly affects council's ability to deliver effective services to stakeholders.

The following Business Continuity related activities require regular review:

- Business services continuity plan
- Risk management funding.

4.9.2 Tactical processes

Tactical Processes involves the processes for updating the zone management goals, measures and plans.

The following tactical processes require regular review, updating and reporting and relates to the Central Waikato Zone. Details of the frequency, contents, requirements and responsibility are summarised in Appendix 2a and 2b.

Consultation

- Catchment liaison subcommittee newsletter
- Scheme liaison subcommittee reporting
- Liaison with iwi
- Website
- Consultation register.

Levels of service

The following Levels of Service related activities require regular review, monitoring and reporting:

- Level of service performance measures review
- Annual Report.

Risk management
The following risk related activities that relates to the Activity Risk (refer to section 8) requires regular review and monitoring:

- Risk action plan
- Risk register
- Risk management process including likelihood and consequence ratings.

Demand management
The following Demand Management related activities require regular review, monitoring and reporting:

- Growth and demand trends
- Capital works requirements associated with growth and demand
- Demand management plan.

Financial management
The following financial management documents require regular review and monitoring:

- Review valuations
- Base life assessments
- Financial forecast
- Peer review of valuations and forecasts
- Auditing depreciation
- Zone funding policy
- Zone level cost benefit analysis over a 20 year cycle
- Annual reporting of customer submission to Council.
- Contract records and documents

Zone management plan
This plan is a living document, which is relevant and integral to daily activity. The first Central Waikato Zone Management Plan was developed in 2012. This plan was reviewed in consideration of the Local Government Act 2002, Schedule 10 Requirements and benchmarked against Officer Auditor General (OAG) criteria.

To ensure the plan remains useful and relevant the following ongoing process of Zone management monitoring and review activity will be undertaken:

- Continuous tracking of minor updates to the zone management plan
- Continuous monitoring of improvements identified in zone management improvements plan
- Annual revision of zone management plan
- Three-yearly review of zone management plan
- Three-yearly review of Improvements plan
- Peer review of zone management plan
- Adoption of zone management plan and improvement plan.

The following table provides a summary of the reviews Central Waikato zone management plan.

Table 17 Peer, ZIP and full review schedule

Information reviewed	Latest review		Next review date
	Date	Reviewer	
Zone management plan - Full review	**2013**	**Internal and external**	**2016**
ZIP	**2012/13**	**Zone manager**	**2013/14**
Valuations and financial forecasts	**2010/11**	**Asset manager**	**2013/14**

Health and safety
The following health and safety requirements apply to the Central Waikato zone:

- Health and safety Incident reporting
- Annual health and safety audit

4.9.3 Operational processes

Operational Processes involves the processes for obtaining and analysing asset performance and condition, annual work planning and environmental monitoring and emergency and flood management within the zone. Details of the frequency, contents, requirements and responsibility are summarised in Appendix 2a and 2b.

Asset information management

Asset related data is collected and entered into the asset register. This data is under constant review with increasing accuracy being achieved though data validation by staff and contractors.

Council uses the Conquest II Asset Management System as the primary asset management information tool. Conquest is a hierarchical system that holds information on all assets and their components. Data held includes asset attributes, age, condition, values, estimated remaining life and expiry dates etc. Categorisation of assets into types is also hierarchical and fully customisable, including attribute fields. The asset type hierarchy developed by Council for flood protection assets is shown in Appendix 2d

Appendix 2c identifies the cornerstone applications by product and business function.

Council has developed its IT infrastructure around a number of key products that provide a platform for all IT applications.

Table 18 sets out the IT applications used by Council. The quality of management of a zone and improvement of asset management practices/plans is dependent on the accuracy of the underlying data used and the resulting assumptions.

Table 18 Information quality of Council applications

Data	Information source	Data quality (2010)
Asset attributes (size capacity, age etc.)	Conquest II	Fair-Good*
Asset location	Conquest II/GIS	Excellent
Condition data and history	Conquest II	Good
Performance data and history	Conquest II	Fair-Good
Asset valuation information (ORC, ODRC, depreciation etc.)	Conquest II*	Excellent
Historic maintenance activities	Manual records	Fair-Good
Historic maintenance costs	Financials	Fair

The business functions currently and potentially supported by the Conquest II system are set out in Figure 9.

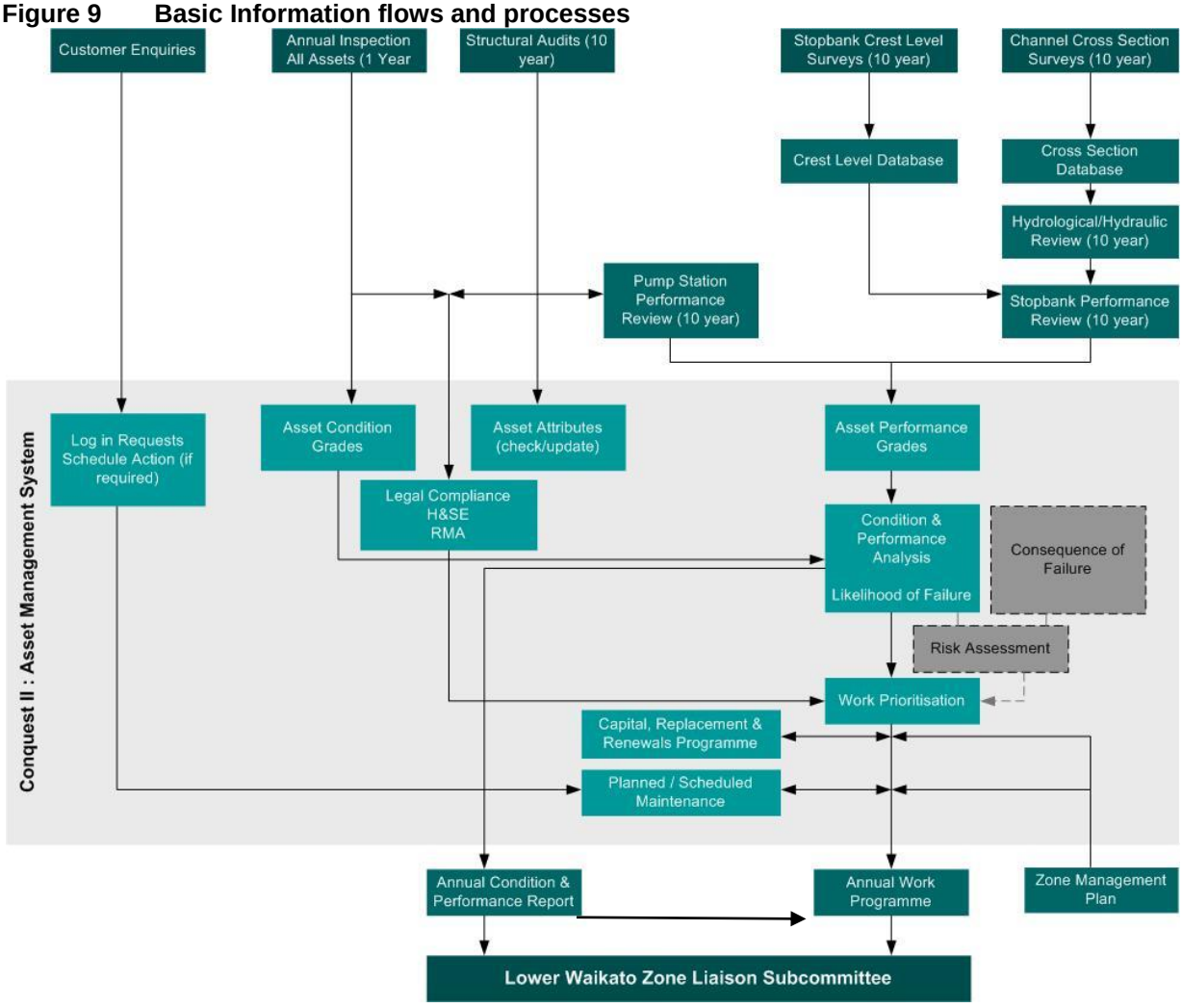
Asset condition and performance information is regularly updated with the following inspections, analysis and reporting:

- Underperforming pumps stations and flood gates
- Annual property inspection programme and property inspections
- Annual condition and performance reports
- Condition and performance analysis
- Annual Inspection of all assets
- Pumpstation performance review
- Stopbank performance review
- Hydrological/hydraulic review and monitor national climate forecast

Asset attributes information is regularly updated with the following inspections, analysis and reporting:

- Channel cross section surveys
- Stopbank crest level surveys
- Structural audits
- Capacity audits
- Dam safety inspection and audits
- Water level profile measurement
- Sand and gravel management
- Annual health and safety audit.

Figure 9 Basic Information flows and processes



Annual work programme

The following documents are reviewed and updated to compile the annual work programme.

- Customer enquiries record
- Monthly operational and failure reports
- Bi-annual failure logging.
- Annual work prioritisation
- Capital, replacement & renewals programme
- Planned/schedule maintenance programme

Maintenance plans have been developed for each of the zones operated by Council. These plans outline the maintenance activities that are required to ensure the agreed levels of service for each scheme are met and to meet the requirements for typical river flows.

A breakdown of all the major maintenance activities is shown in the following table. This table will be reviewed in line with the zone management plan review

4.9.4 Lifecycle activity summary

Table 19 Central Waikato scheme lifecycle management activities

Category	Activity	Description	Frequency
System monitoring	Condition assessment	Inspection of all catchments, river systems and assets, and assessment of the their overall condition and maintenance needs	1 year
	Aerial survey	Aerial observations and video record of main channel and key sections of tributaries	biennial
	Cross Section Surveys (or equivalent)	Survey of main river and tributary channel cross sections (or equivalent)	10 years
Waikato River maintenance	Obstructions and debris removal	Removal of debris and blockages in main river	As required
	Erosion control	Planting and layering of willow trees along eroded sections of river banks	As required
	Environmental enhancement	Fencing, native planting along the river and improving access at specific locations	As required
Tributary streams maintenance	Blockage and debris removal	Removal of debris and blockages taking account of environmental sensitivities (e.g. fish habitat)	As required
	Erosion control	Planting and layering of willow trees or native plants along eroded sections of stream banks	As required
Structures maintenance	General maintenance	Minor repairs of weirs	As required
	Replacement of weirs	Replacement of structures and components	100 years
Flood management	Flood response	Undertake continuous system monitoring during all events larger than the 5 year (20% AEP) which equates to a flow of (850 m3/s) at Ngaruawahia.	Ongoing
	System review	Following floods, compile information, review the system performance and update the maintenance works programmes	As required
Risk management	Zone reserves	WRC has a policy which makes provision for building zone reserves to cover any works as a result of an event up to the 5% AEP.	1 year
	Disaster recovery fund	WRC maintains a disaster fund to support system and assets maintenance in events exceeding 20-year (5% AEP).	1 year

4.9.5 Business continuity

To achieve sound business continuance planning, Waikato Regional Council is in the process of developing a Business Services Continuity Plan. This will provide a tool to effectively react and respond to a crisis in a manner that ensures that its activities, provision of services and staff well-being are not unduly affected.

This plan will be prepared to ensure the viability of Waikato Regional Council in the event of an emergency or other event that significantly affects council's ability to deliver effective services to stakeholders.

The key areas to be covered by the continuity plan include emergency management response for:

- Information services including customer services and records
- Databases and internet
- GIS
- Human resources
- Property & procurement
- Governance services
- IT operations.

4.9.6 Zone plan review and monitoring

To ensure Waikato Regional Council's zone plan remains useful and relevant the following on-going process of monitoring and review will be undertaken to ensure flexibility and responsiveness to strategic and operational needs. A process for monitoring the implementation of the plan and the achievement of planned improvements is also required:

- Formal adoption of the plan by subcommittee and council
- Complete an Improvement Plan annually
- Review and formally adopt levels of service to comply with community outcomes
- Revise plan three yearly prior to ten year Long Term Plan to incorporate and document changes to works programmes, outcome of service level reviews and new knowledge resulting from the zone plan improvement programme
- Quality assurance audits of asset related information to ensure the integrity and cost effectiveness of data collected
- Peer review and audits to assess the effectiveness with which this plan meets corporate objectives.
- Periodic audits to assess the adequacy of asset management processes, systems and data and external audits will be undertaken to measure asset management performance against 'best practice'.

The table below outlines the procedures and timetables adopted to achieve these objectives and community outcomes.

Table 20 ZMP and AMP monitoring and review procedures

Process	Time	Action	Responsibility
Central Waikato ZMP preparation	2011/12 2012/13 2012/13	ZMP development Adoption by liaison subcommittee (LSC) Adoption by Council	Division manager Central Waikato LSC Council
Zone programme planning and review	Annually	EOY confirmation that planned improvements achieved.	Zone manager
Zone management plan review	3 yearly	Explicit sign off on Improvement Plan targets Review Improvement Plan	Review author
Asset management team	Annually	Conquest II data quality assurance programme Data collection programme Implement process improvements Condition and performance monitoring and data entry EOY reporting on data completeness and accuracy Conquest II process improvements Process improvement implementation strategy.	Asset management programme manager Asset management programme manager

Environmental monitoring

The following environmental monitoring is undertaken that is relevant to the Central Waikato zone.

- Monitoring programmes to assess the environmental changes resulting from the activities undertaken

- Monitoring lake water quality and health indicators
- Resource consent monitoring and reporting requirements.

Periodic audits
Audit to assess the adequacy of the asset management processes are performed periodically.

Table 21 Periodic audits

Information reviewed	Latest review		Next review date
	Date	Reviewer	
Periodic audits of asset management processes, systems and data	**2011/12**	**Asset manager**	**2012/13**

Emergency and flood management
Council has responsibilities for flood management across the region. River and catchment management has strong links with flood management in the Waihou Piako zone, due to the zone covering two large catchment areas. Council is responsible for three interrelated flood management functions as outlined below.

Maintenance of the flood warning and telemetry system
The flood warning and telemetry system continuously monitors river revels and rainfall at over 50 automated recording sites throughout the region. Information from the system is used to warn landowners and communities about floods collect data to improve the accuracy of flood prediction, co-ordinate flood response, and maintain flood protection works.

There are 4 flood warning and telemetry sites relevant to the Central Waikato zone – 2 river level sites and 2 rainfall sites. Further flow information is obtained from the discharge from Karapiro Dam by Mighty River Power.

Flood response
During flood events, Council staff undertake a series of activities in response to the event. These include monitoring of flood levels, forecasting river flows and levels and providing information to the general public and key stakeholders. To do this Council provides regular updates of river levels, flow and rainfall measurements on the website.

On the ground, staff undertake inspections of the stopbanks and structures throughout the event. Performance of the assets is recorded, and actions to reduce risks of failure are carried out, which include sand bagging seepage areas and low spots in stopbanks, and ensuring that pumpstations are operating to remove local catchment runoff from protected areas.

Daily reports on the scheme performance, remedial actions and response to inquiries are documented. Key stakeholders are kept informed of all the operations and risks at all times from the early stages of the floods. The Emergency Management Officer (EMO) then acts according to a set of procedures as defined within the Flood Warning Procedures Manual. Providing warnings to district councils; land owners and key recipients' by telemetry radio links and supported by media releases to the public.

Within the Central Waikato zone, the response is focused around monitoring of the Waikato River and major tributaries for blockages and damage.

Civil defence emergency management
Council and TAs have responsibilities for planning and response to emergencies as members of the Waikato Civil Defence Emergency Management (CDEM) Group. Council plays a coordinating role by managing the CDEM Group, emergency management office and group emergency coordination Centre. In the event of a large, ongoing flood event, Council has CDEM coordination responsibilities as well as flood management responsibilities.

Lifelines utilities

Lifelines include services such as water, power, telecommunication and transportation networks. Plans need to be put in place to ensure damaged lifelines are restored quickly following unexpected emergency or natural hazard events.

Lifelines are the essential 'utility' services, which support the life of the community. These services include water, wastewater, stormwater, power, gas, telecommunications and transportation networks.

Flood protection and river management measures help to avoid damage to roads and closure that may isolate certain areas. They also help to avoid damage to other essential services such as power, gas and

telecommunications supply that can be affected by flooding.

4.10 Future demand

4.10.1 Demand forecast

The current levels of service are assessed as generally appropriate and largely meet the current needs of the beneficiaries of the zone services. There is however demand for upgrading the level of service in some areas and providing new works in other areas. These will be managed in accordance with the demand management plan for the zone, and in consultation with key stakeholders and the zone liaison subcommittee. There are currently no new works planned for the zone.

The key demand drivers which could potentially place additional demands on the Central Waikato zone are:

- Environmental factors
- Community expectations and perception of risk
- Urban development
- Legislation
- Increased awareness.

4.10.2 Environmental factors

Environmental factors which could impact on the levels of service include:

- Catchment land use change and changes in flood runoff patterns
- Climate change, increased heavy rainfall and rising sea levels
- Economic effects of climate change (carbon management etc)
- Wetland and stream restoration
- Biodiversity
- Natural hazard events.

4.10.3 Community expectations and perceptions of risk

Pressures can be expected to develop from a wide range of stakeholders with varying interests. In the longer term it is expected that the demands for services are likely to increase as use of protected land intensifies, additional factors include:

- Changing economic returns from land driving demand for changes in land use and changes in LOS
- Increasing demand from the community and environmental stakeholders for environmental mitigation
- Increased demand to maintain or increase access to wetlands, rivers and lakes
- Community perceptions of the risks associated with climate change and other environmental risks will be a key determinant of the degree of future proofing adopted to deal with these contingencies
- Increased community expectations driving a holistic approach to catchment management.

4.10.4 Legislation

Changes in legislation can have significant impacts on zone Levels of Service and the costs associated with these. In recent years the Resource Management Act, the Health and Safety in Employment Act and the Local Government Act have enhanced the Level of Service of the zone but have also added significant additional compliance costs.

It is not possible to envisage what additional legislative changes may occur over the life of this plan, but it is likely that the bar will continue to be raised.

4.10.5 Increased awareness

There is now increased awareness of the river and catchment management issues within the zone due to the initial asset management plan development, the 1998 flood, the Project Watershed funding review and the 2008-58 River Stability Strategy. This increase in public profile for the zone services has resulted in higher expectations from the community of the level of service, and it is expected that this trend will continue.

4.10.6 Changes in technology

Future changes in technology are expected to lower the costs of service delivery and to enable improvements in monitoring and decision-making processes. These changes may include the following:

- Increased efficiency and reduced costs of earthmoving machinery

resulting in reduced costs for capital, renewal, and maintenance activities. Increased fuel costs may however to some extent offset these cost reductions

- Use of computerised data loggers/ and or telemetry for collecting monitoring information
- Remote sensing of land and/or water related data. For example the use of LIDAR to obtain detailed ground level information
- Improved use of computer modelling for hydraulic assessments and flood forecasting
- Greater coverage of rainfall gauges and improved flow information as measurement technology becomes cheaper
- Improved understanding of the effects of climate change and the Southern Oscillation that affects La Niña and El Niño climate patterns
- Electronic equipment and telemetry for pump stations and floodgate monitoring allowing improved responsiveness to equipment malfunctions, and improved procedures for identifying and prioritising maintenance.

Advances in technology may therefore increase the reliability of assets, improve responsiveness to malfunctions and increase the cost effectiveness of maintenance and scheme management.

4.10.7 Demand management plan

The objective of demand management planning is to modify customer demand for services so as to maximise the use of existing assets and to avoid or defer the need for new assets or services. Community demand for catchment services is largely driven by economics, environmental considerations and changes in internal and external factors.

- As intensity of land use and the economic returns from protected land increases, the tolerance for flooding reduces, and there is therefore a demand for increased services. Increased returns from the land also provide a means for funding increased services
- Environmental considerations and the Resource Management Act place constraints on the ability to develop new services (i.e. develop unprotected land) and to increase the level of service for existing protected land
- Internal factors - there may be internal change (for example peat subsidence) which results in demand for increased levels of service
- External factors which may drive demand include changes in weather patterns (e.g. climate change), and changes in land use throughout the catchment which may result in increased runoff and flooding.

Non-asset solutions can include insurance and change of land use. It considered that the most effective way of managing future demand for both new services and increased levels of service is via a multi-faceted approach as set out in Table 22.

Table 22 Demand management instruments

Component	Tool	Description
Legislation and regulation	Resource Management Act 1991	Land use planning. Discourage/prevent development of flood and erosion prone areas. Control types of development within existing protected areas. Discourage/prevent environmentally unsustainable development.
Financial and economic	Funding policy	Costs of the works and services are borne by the beneficiaries in proportion to the degree of benefit received. Directly benefiting landowners required to fund 75% of the capital cost of new or upgrade works. Require new works to be economically and

		technically sustainable.
Education	Liaison subcommittee Customer service	Educate community in order to manage expectations for new or upgrade works. Encourage less intense land uses in some areas

4.10.8 Flood management

Waikato Regional Council has responsibilities for flood management across the region. River and catchment management has strong links with flood management in the Central Waikato zone due to the location of the zone, notably the zone is unique in nature in that it does not contain any flood protection schemes as do other zones.

Waikato Regional Council is responsible for four interrelated flood management functions as outlined below.

4.10.9 Maintenance of the flood warning and telemetry system

The flood warning and telemetry system continuously monitors river levels and rainfall at over 50 automated recording sites throughout the region. Information from the system is used to warn landowners and communities about floods collect data to improve the accuracy of flood prediction, co-ordinate flood response, and maintain flood protection works.

There are three flood warning and telemetry sites within the zone located at:

- Waikato River at the Hamilton Traffic Bridge
- Waikato River downstream of Ngaruawahia
- Mangaonua at Dreadnought Culvert (SH1)

In addition WRC has access to NIWA sites at Waikato River at Cambridge (Level/Flow) and Hamilton Rainfall at Ruakura.

4.10.10 Flood response

During flood events, WRC staff undertake a series of activities in response to the event. These include monitoring of flood levels, forecasting river flows and levels and providing information to the general public and key stakeholders. To do this WRC provides regular updates of river levels, flow and rainfall measurements on the WRC website.

On the ground, staff monitor and undertake inspections throughout the event. Daily reports on the scheme performance, remedial actions and response to inquiries are documented. Key stakeholders are kept informed of all the operations and risks at all times from the early stages of the floods. The Emergency Management Officer (EMO) then acts according to a set of procedures as defined within WRC's Flood Warning Procedures Manual. This includes providing warnings to district councils, land owners and key recipients' by telemetry radio links and supported by media releases to the public.

4.10.11 High flow management – the Waikato Hydro system

An important component of flood response is management of the Waikato hydro system. The Waikato River has a total of nine hydro power stations between Karapiro and Lake Taupo, and the reservoirs behind these power stations have some ability to retain flood waters for short periods of time.

The Waipa River has no hydro power stations, and therefore no ability to control water level peaks during flood events. Despite this, the Waipa River has a low gradient and large ponding areas, which leads to flood peaks occurring slowly over a period of several days.

High flow management involves monitoring of flood peaks in both the Waipa and Waikato Rivers and control of the peaks in the Waikato River if possible to prevent both peaks occurring at the same time at Ngaruawahia. Control of the flood peaks within the Waikato River must be balanced with two other areas of critical importance:

- The safety of the Waikato Hydro dams – once the water in the reservoirs reaches a critical level, it must be released

Guidance on the reservoir levels at which release of water must occur and guidance on the considerations for balancing the interests of communities across the Waikato River catchment are contained within the Agreed Principles of High Flow Management in the Taupo Waikato Catchment, the

resource consents that authorise the operation of the Waikato Hydro scheme, the Mighty River Power High Flow Management Plan and the Mighty River Power Flood Rules which both WRC and Mighty River Power are bound by, in managing flood events.

4.10.12 Civil defence emergency management

Waikato Regional Council and Territorial Authorities have responsibilities for planning and response to emergencies as members of the Waikato Civil Defence Emergency Management (CDEM) Group. Waikato Regional Council plays a coordinating role by managing the CDEM Group Emergency Management Office and Group Emergency Coordination Centre. In the event of a large, ongoing flood event, Waikato Regional Council has CDEM coordination responsibilities as well as flood management responsibilities.

4.10.13 Lifelines utilities

Lifelines include services such as water, power, telecommunication and transportation networks. Plans need to be put in place to ensure damaged lifelines are restored quickly following unexpected emergency or natural hazard events.

Lifelines are the essential 'utility' services, which support the life of the community. These services include water, wastewater, stormwater, power, gas, telecommunications and transportation networks.

Flood protection and river management measures help to avoid damage to roads and closure that may isolate certain areas. They also help to avoid damage to other essential services such as power, gas and telecommunications supply that can be affected by flooding.

5 Relationships with Iwi

5.1 Overview

Waikato Regional Council acknowledges the special position of tāngata whenua within the region.

There are numerous pieces of legislation that direct local government to work with iwi. Some of those most central to Waikato Regional Council roles are:

- Local Government Act 2002
- Resource Management Act 1991
- Co-management Legislation and Treaty Redress
- Iwi Planning Documents
- Statutory Acknowledgements
- National policy standards, reports and other relevant statutory drivers
- Deeds of Settlement

Drivers also arise from tangata whenua seeking ways to work with Waikato Regional Council to ensure taonga in their rohe are cared for appropriately. There is growing iwi capacity for this work as Treaty settlements increasingly enable iwi to focus on this area of central interest to them.

Of particular relevance to Waikato Regional Council are the Treaty settlement laws and Crown-iwi agreements introducing co-governance and co-management arrangements for the Waikato and Waipā catchments: the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, the Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Trust Waikato River Act 2010 and the Ngā Wai o Maniapoto (Waipā River) Act 2012. Similar arrangements for the Waihou-Piako, Coromandel and other catchment areas are expected, and Council will need to be ready to respond appropriately

Waikato Regional Council recognises the need to work with iwi/hapū in river and catchment management. Waikato Regional Council has undertaken and continues to undertake a number of processes aimed at recognising the role of tāngata whenua in river and catchment management within the region

There are numerous iwi and iwi authorities within the region including, but not limited to:

- Ngāti Tūwharetoa
  - Tūwharetoa Māori Trust Board
- Ngāti Maniapoto
  - Maniapoto Māori Trust Board
- Raukawa
  - Ngāti Hinerangi
  - Raukawa Charitable Trust
- Te Arawa
  - Ngāti Tahu - Ngāti Whaoa (Ngati Tahu - Ngati Whaoa Runanga Trust)
  - Ngāti Kearoa - Ngāti Tuara
  - Tuhourangi - Ngāti Wahiao
  - Te Arawa River Iwi Trust
  - Te Arawa Lakes Trust
  - Te Pumautanga o Te Arawa
- Waikato
  - Ngāti Koroki Kahukura
  - Ngāti Te Ata (Te Ara Rangatu o Te Iwi o Ngati Te Ata Waiohua Incorporated
  - Ngāti Tamaoho (Ngati Tamaoho Trust)
  - Ngāti Hauā (Ngati Hauā Trust)
  - Waikato-Tainui (Waikato-Tainui Te Kauhanganui Incorporated)
- Hauraki
  - Ngāti Hako (Te Kūpenga o Ngāti Hako)
  - Ngāti Rahiri Tumutumu (Tumutumu Marae Trustees Committee)
  - Ngāti Tara Tokanui (Ngati Tara Tokanui Tawhaki Management)
  - Ngāti Hei (Ngati Hei Trust)
  - Ngāti Porou (Ngati Porou ki Hauraki
  - Ngāti Pukenga (Ngati Pukenga ki Waiau Society Inc)
  - Ngāti Whanaunga (Ngati Whanaunga Incorporated)
  - Ngāti Maru (Ngati Maru Runanga Incorporated)
  - Te Patukirikiri (Te Patukirikiri Incorporated)
  - Ngāti Paoa (Ngāti Paoa Trust)
  - Ngāti Tamatera (Te Ruunanga a iwi o Ngati Tamatera)
  - Hauraki Māori Trust Board

5.2 Co-management legislation and Treaty redress

Under recent legislation[7] Waikato Regional Council shares management responsibilities with Waikato and Waipā River iwi (Waikato-Tainui, Te Arawa River Iwi, Raukawa, Ngāti Tūwharetoa and Ngāti Maniapoto). The underlying purpose of the three Acts is to protect and restore the health and wellbeing of the Waikato and Waipā Rivers.

These Acts require co-governance and co-management, emphasising the need for Council to work together with iwi partners in the "spirit of co-operation and good faith" to achieve positive outcomes for a healthier river system. This should include:

- The highest level of good faith engagement
- Consensus decision making as a general rule
- A range of management agencies, bodies and authorities working at a number of different levels
- Processes for granting, transferring, varying and renewing consents, licences, permits and other authorisations for all activities that may impact on the health and wellbeing of the river
- Development, amendment and implementation of strategies, policy, legislation and regulations that may impact on the health and wellbeing of the river.

In this new environment, Council must ensure that its engagement and relationship management with iwi remains relevant.

This new approach requires the Council to work collaboratively with iwi to restore and protect the health and wellbeing of the Waikato and Waipā catchments. Joint Management Agreements with these iwi set out co-management arrangements in the areas of:

- Resource consent processes;
- Planning and policy development;
- Environmental monitoring and,
- Authorised customary activities

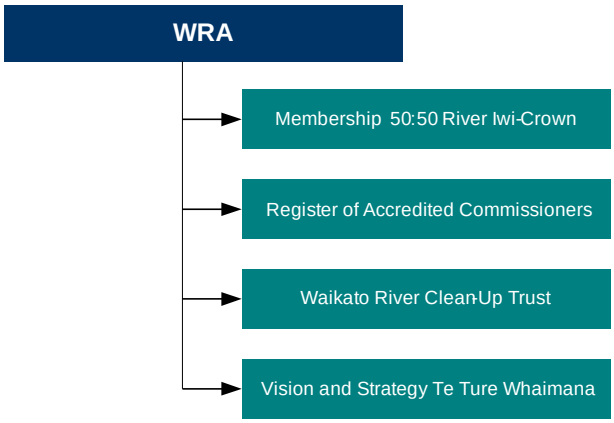
[7] Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010 and Ngā Wai o Maniapoto (Waipā River) Act 2012.

A separate co-management agreement for Waikato River related lands with Waikato-Tainui has been developed. These and other co-management arrangements will significantly influence the approach to river and catchment management, and over time, must be fully considered within zone plans.

The Treaty redress includes the establishment of the Waikato River Authority (WRA). The WRA is responsible for implementation of the vision and strategy, by providing direction to promote an integrated, holistic and coordinated approach to management of the river. The structure and key functions of the Waikato River Authority are shown below in the figure.

The settlement also provides for the Waikato River Authority to act as trustees for the Waikato River Clean-up Trust which is responsible for the restoration and protection of the health of the river. The Trust is given a lump sum on establishment and an annual amount to contribute to achieving this purpose.

Figure 9 Waikato River Authority



5.3 Iwi planning documents

An iwi environment management plan (EMP) is a term commonly applied to a resource management plan prepared by an iwi, iwi authority, rūnanga or hapū. EMP's are generally prepared as an expression of rangatiratanga to help iwi and hapū exercise their kaitiaki roles and responsibilities. EMP's are a written statement identifying important issues regarding the use of natural and physical resources in their area.

EMP's may also include information on social, economic, political and cultural issues. EMPs provide guidelines for

resource management strategies and may also form an iwi planning document.

S104 of the RMA requires that Council must have particular regard to iwi planning documents, such as the following planning documents received from:

- Hauraki Māori Trust Board – Whaia te Mahere Taiao a Hauraki
- Tūwharetoa Māori Trust Board – Ngāti Tūwharetoa Iwi Environmental Management Plan
- Maniapoto Māori Trust Board - He Mahere Taiao
- Ka Rū a Poutama Iwi Authority – Poutama Iwi Management Plan 2010
- Raukawa Charitable Trust - Raukawa Fisheries Plan 2012
- Motakotako Marae Hapū Management Plan

Iwi Environmental Management Plans developed by Ngāti Tahu Ngāti Whaoa, Waikato-Tainui, Raukawa Charitable Trust and Ngāti Tahinga are expected this year.

This zone plan will be updated to reflect iwi planning documents as they become available.

5.4 Statutory acknowledgements

Part 3 of the RMA requires that the Council must take in to consideration statutory acknowledgements for iwi in resource management decision making. Schedule 11 for this part of the Act currently shows statutory acknowledgements are in place for iwi interests in the Waikato region covered under the following Treaty Settlement Acts:

- Pouakani Claims Settlement Act 2000
- Te Arawa Lakes Settlement Act 2006
- Affiliate Te Arawa Iwi and Hapu Claims Act 2008
- Maraeroa A and B Blocks Settlement Act 2012

5.5 National policy standards and other relevant statutory drivers

A revised National Policy Statement (NPS)[8] for freshwater resources was released at the end of 2011, requiring local authorities to involve iwi and hapū in decision making around the management of freshwater.

Other influential high level policy documents and legislative changes such as the Land and Water Forum Reports (2011; 2012)[9], and the Marine and Coastal Area (Takutai Moana) Act 2011[10], will direct and shape how Council will work collaboratively with tangata whenua, central government, key stakeholder groups and the wider community.

5.6 Deeds of settlement

Deeds of Settlement enacted for iwi with tangata whenua interests in the Waikato region include:

- Pouakani
- Te Arawa Lakes
- Affiliate Te Arawa hapu and iwi
- Maraeroa A and B Blocks
- Waikato-Tainui (Waikato Raupatu Lands)
- Waikato-Tainui (Waikato Raupatu River)
- Ngati Maniapoto (Waipa River)
- Te Arawa River iwi, Raukawa, Ngāti Tūwharetoa (Waikato River)

The following Deeds of Settlement are in the process towards enactment.

Raukawa Signed Deed of Settlement
The Crown and Raukawa (Raukawa ki Waikato) signed a Deed of Settlement on 21 September 2011. The settlement remains subject to ratification and the passage of settlement legislation.

Ngāti Koroki Kahukura Signed Deed of Settlement
The Crown and Ngāti Koroki Kahukura signed a Deed of Settlement on 20 December 2012. The settlement remains

[8] NPS for Freshwater Management 2011 - http://www.mfe.govt.nz/rma/central/nps/freshwater-management.html

[9] Land and Water Forum 2nd and 3rd Reports 2011 and 2012 - http://www.landandwater.org.nz/

[10] Marine and Coastal Area Act 2011 - http://www.legislation.govt.nz/act/public/2011/0003/latest/DLM3213131.html

subject to ratification and the passage of settlement legislation.

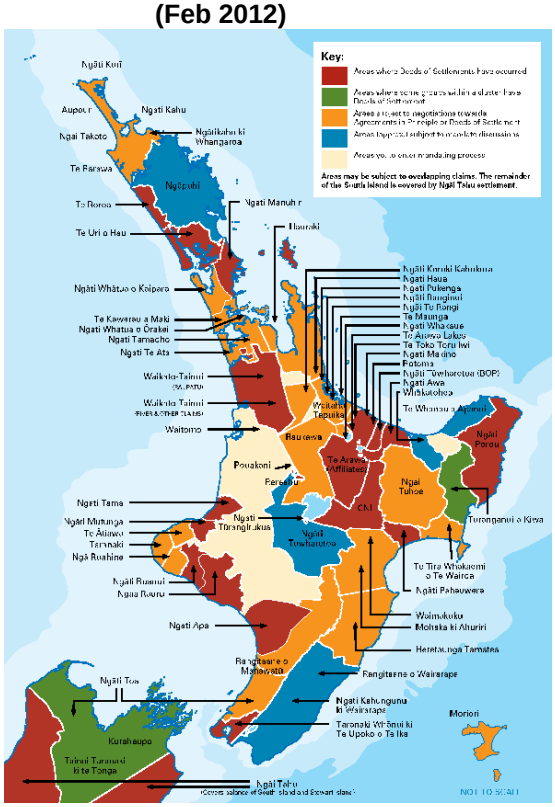
Ngāti Pūkenga Signed Deed of Settlement
The Crown and Ngāti Koroki Kahukura signed a Deed of Settlement on 7 April 2013. The settlement remains subject to ratification and the passage of settlement legislation.

Te Kotahi a Tuhoe initialled Deed of Settlement
The Crown and Te Kotahi a Tuhoe initialled a Deed of Settlement on 22 March 2013. The settlement remains subject to ratification and the passage of settlement legislation.

Ngāti Hauā Initialled Deed of Settlement
The Crown and Ngāti Hauā will sign a Deed of Settlement on 18 July 2013. The settlement will remain subject to ratification and the passage of settlement legislation.

The following figure shows the Settlement progress map as at February 2012 which is available on the Office of Treaty Settlements web site (www.ots.govt.nz).

Figure 10 Progress of settlements map (Feb 2012)



All of the settlements, negotiations and claims will change the way that Waikato Regional Council consults and engages with iwi over time.

5.7 Implications of settlements

The key implications of the settlement within the Central Waikato zone are therefore:

- The development and ongoing operation of joint management agreements with iwi.
- Opportunities to apply for funds from the Waikato Clean Up Trust to enhance work being undertaken by WRC
- Additional funding may impact on the activities that WRC undertakes and the use of rates in the zone
- The vision & strategy guiding policy direction for the Waikato and Waipā catchments
- Iwi commissioners on consent hearings for RCS works
- The development and operation of an integrated river management plan within three years of the settlement date with a conservation component, a fisheries component, and a regional council component, with provision for further components to be added in future
- A need to be aware of provisions relating to customary activities, cultural harvest of flora, regulations for the management of aquatic life, habitats, and natural resources managed under conservation legislation and customary fishing regulations and fishing bylaws for the Waikato River.

Planning documents prepared under the Resource Management Act, such as the Regional Policy Statement and Regional Plan, must have regard to iwi planning documents. All plans, including this zone management plan, must therefore reflect the goals and objectives of iwi planning documents and incorporate actions that will contribute to achieving these aims.

This plan reflects the new management structure and is consistent with the principles of the settlement.

Other considerations include:

- River enhancement education and training programmes are envisaged to roll out at marae clusters as early

as mid 2011. Requests from marae clusters to RCS seeking advice and support may be expected.

During the implementation phase of co-management, the river and catchment services group could potentially undertake work with tāngata whenua groups or marae and other agencies who wish to contribute towards the Vision and Strategy of the Waikato River as Kaitiaki to identify expectations and aspirations and to contribute to a planned, integrated and coordinated approach to works on the River.

5.8 Waikato Regional Council responses

WRC responses to the drivers described above include recognition of co-governance as a main thrust of the organisation's strategic direction, provisions in planning documents such as the Regional Policy Statement, and a history of building relationships through engagement with tangata whenua.

Internal strategic direction

The new era of co-governance is reflected in the internal strategic direction. This strategy is central to delivering on a flagship goal in the Strategic Direction for the Waikato Regional Council 2010-2013:

- *The Waikato Regional Council meets its legislative co-governance requirements by working together in good faith and a spirit of co-operation*.

Engagement with iwi will also contribute to the other two flagship goals:

- *The values of land and water resources are sustained across the Waikato region*
- *The people of the region collaborate to achieve a shared vision of the Waikato competing globally, caring locally.*

Good working relationships with iwi partners will contribute to Council objectives, Māori aspirations, and improved overall outcomes for the community as a whole.

Regional Policy Statement

On 25 November 2010, the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010 came in to force in its entirety. From this date the Vision and Strategy for the Waikato River was deemed part of the Waikato Regional Policy Statement.

Current iwi relationships and enablement processes

Rangatira ki te rangatira relationships and communications have been enabled through:

- Memoranda of understandings with three iwi authorities; Hauraki Māori Trust Board, Tūwharetoa Māori Trust Boards and Raukawa Charitable Trust
- Convening governance forums with Chairs from six of the larger iwi authorities to form a Council-iwi working party to develop the draft RPS document for consultation, and consider support for introduction of Maori seats and constituencies.
- The introduction of two new Māori seats for the next elected Council 2013-2016
- Crown appointment of Waikato Regional Council chair to the Waikato River Authority
- Partnership agreement with the Waikato River Authority

Enablement processes that serve to facilitate the inclusion of tangata values at the front end of decisions, planning and policy development include:

- The appointment of two tangata whenua representatives on each of the eight Sub-Catchment liaison sub-committees
- The appointment of a member to the Regional Land Transport Committee with expertise in matters of significance to tangata whenua
- Selecting candidates for hearings panels from list of names endorsed by as suitably qualified in understanding matters of significance to tangata whenua
- The development of an internal policy "Taking into account iwi/hapū management documents" DM#1542919; which provides Council with best practice guidelines on implementing and supporting the development of iwi environmental planning documents.

These relationships and enablement processes have provided opportunity for iwi to participate and share knowledge with staff and Councillors, convey messaging on

important issues and influence priorities and decisions. Council retains the regulatory, policy and operational functions, until such time as a decision may be taken to transfer regulatory powers under S33 of the RMA.

Waikato Regional Council also has formal Memoranda of Agreements (MoA) at the operational level when undertaking river and catchment management project works.

In the future, Waikato Regional Council will continue to build on improving relationships and engagement with tāngata whenua by actively pursuing joint river and catchment management initiatives with mutually beneficial outcomes.

6 Central Waikato zone assets

This information has been included in section 4 of the document since there are only two assets in the zone.

7 Levels of service

7.1 Overview

Asset management (AM) planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

Defined Levels of Service (LoS) can then be used to:

- Inform customers of the proposed LoS
- Develop AM strategies to deliver LoS
- Measure performance against defined LoS
- Identify the costs and benefits of services offered.
- Enable customers to assess core values such as accessibility, quality, safety, and sustainability.

In this context LoS define the quality of delivery for a particular activity or service against which service performance can be measured.

7.2 Linking LoS to community outcomes

7.2.1 Council outcomes

Community outcomes state what the council intends to achieve to maintain and improve the wellbeing of the region in the present and in the future. They form the basis for the council's service delivery, thus determining the levels of service provided to the community.

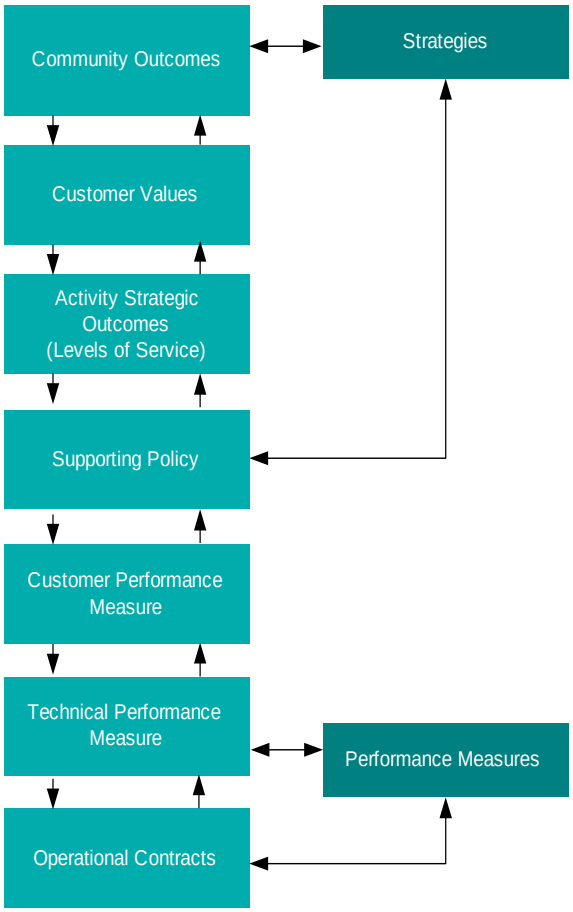
In 2011, the Waikato Regional Council reviewed the set of community outcomes it developed in 2004 in collaboration with 12 councils in the greater Waikato region as part of the Choosing Futures Waikato process. As a result of this review, these outcomes are now described as 'community aspirations'. They are overarching statements of the community's priorities for the region across five themes, including environment, economy, quality of life, culture and identity and participation and equity.

- **Sustainable environment** - The Waikato region values and protects its diverse, interconnected natural environments.
- **Quality of life** - The Waikato region is a great place to live, providing the services and opportunities we need to live well.
- **Sustainable economy** - The Waikato region balances a thriving economy with looking after its people, places and environment.
- **Culture and identity** - The Waikato region identifies with – and values – its land, air, rivers and waterways, mountains, flora, fauna and its people.
- **Participation and equity** - The Waikato region builds strong informed communities and has a culture that encourages people and communities to play their part.

At the same time, WRC has also adopted four new community outcome areas – community partnerships, environmental quality, regional economy, and safe and resilient communities. These are aligned to the community's aspirations and closely mapped to the council's core business.

WRC's River and Catchment Service (RCS) contributes to all of the community outcomes. The way in which the community outcomes link to levels of service is shown in Figure 11 below.

Figure 11 LoS linkages



- Internal staff
- External contractors (e.g. Hamilton City Services)
- Internal sections (e.g. information and technology services)
- Various consultants.
- Government and other agencies (eg DOC, NIWA, Fish and Game).

7.3 LoS delivery process

WRC has a number of key service providers for the delivery of the River and Catchment Services, they are:

7.4 LoS development process

As part of the Waikato Regional Council 2009 Long Term Plan (LTP) development process, and again as part of the current 2012 - 2022 LTP development WRC carried out a review of its LoS. The outcome defined a set of high level LoS statements and measures that were included in the 2012-2022 LTP.

7.5 Who are our customers?

7.5.1 Customer groups and their needs and wants

Zone services provide benefits to a wide range of customers at varying levels. Table 23 shows the breakdown of customer groups and their interests in zone services.

Table 23 Customer group and their needs and wants

Category	Group	Specific needs/wants
All customers		Value for money (leading to a willingness to pay) Consultation Recognition of problems Consultation about solutions Economic justification for proposals Commitment to achieving agreed outcomes
Urban	Householders potential buyers	No increases in existing flood risks to homes, basements, garages and sections[11]. Access maintained

[11] Homes, land etc. subject to existing flooding are identified with the Annual Plan

	Users of rivers and streams	A clean and healthy environment Access to, use and enjoyment of natural rivers, streams and wetlands Maximise economic opportunity from natural resources
	Road users	No significant road flooding which limits access to homes or businesses
Rural	Lifestyle block owners	No significant loss of production or damage due to flooding Productive capacity of land is maintained by reducing soil erosion Soil and contaminant runoff to waterways from pasture is minimised Access maintained
	Farmers	
	Recognised community groups	Access maintained
Businesses	Commercial users (shops/offices) Industrial users	No flooding of premises from rivers and streams Access maintained No significant impact from flooding
	Commercial river users	Maximum use of site or premises
Other stakeholders	Liaison subcommittee	Community engagement Responsiveness Appropriate risk management
	TLAs	
	Other authorities Central Govt NZTA DOC MRP	Appropriate risk management Minimum impact on state highway network from flooding Cooperation in mutually beneficial projects Water quality in streams and rivers maintained and enhanced
	Environmental groups Waikato River Care	Minimum impact on the environment Water quality in streams and rivers maintained and enhanced Consultation about activities with environmental impact
	Tangata whenua	Expectation of implementing the vision and strategy Consultation regarding cultural and environmental impacts

7.5.2 Consultation

There are a number of methods used by Council to engage with and consult the community. The type of engagement or consultation used depends on the level of involvement required from the community. The primary methods used are:

- **Surveys:** Council conducts surveys of Waikato residents related to either particular projects or general awareness and satisfaction with Council services. These surveys give an overview of public opinion, and relate to river and catchment management issues such as fencing, soil erosion and water quality.
- **Community groups:** Representative community groups are brought together to discuss particular issues and test potential solutions and opportunities for short-term projects. Liaison subcommittees provide community and stakeholder oversight and advice on river and catchment management issues.
- **Formal consultation on plans and policies**: As part of the responsibilities under the LGA, Council must consult on particular plans and policies in a formal manner outlined by the special consultative procedure. This applies to the Long Term Plan, the Annual Plan, bylaws and significant activities such as rating reviews.

- **Project based consultation and engagement:** The public are often consulted or engaged in response to a specific project or programme such as community soil conservation projects.
- **Direct engagement with key stakeholders:** The broad scale of river and catchment management means that partnerships with many groups and organisations are required for effective management. Council therefore directly engages with key stakeholders such as territorial authorities, the Department of Conservation, Fish and Game, electricity generators and the New Zealand Transport Agency.

Catchment liaison subcommittees are the primary mechanism for local consultation and engagement on river and catchment management. The Central Waikato liaison subcommittee was established as part of project watershed.

Appointments to the subcommittee are made on a three year cycle, based on the triennial election process. Representation is made up from the constituent councillors, key stakeholder organisations, community representatives, local iwi and property owners.

The scope of subcommittee activity is as follows:

- To consider and recommend on work programmes for river and catchment management.
- To be a local contact for river and catchment issues, including involvement with local groups.
- To facilitate the flow of information and communication between ratepayers, Council and other agencies.
- To provide input into catchment management plans, asset management plans and rating system reviews.
- To consider and provide feedback on other matters relevant to river and catchment management in the nominated area(s), including biosecurity, coastal and harbour management programmes.

7.6 Establishing core values

Core Values provide the cornerstone to the development of Levels of Service from both a customer and technical point of view. The "Developing Levels of Service and Performance Measures" Manual describes Customer (Core) Values for Council activities. It is important for the customers and the Council to consider which of these are most important as the priorities flow into the final required levels of service. (Source LTP).

- Affordability
- Quality
- Community engagement
- Safety
- Sustainability (whole of community benefits)
- Reliability/responsiveness

7.7 Linking customer values to community outcomes

The matrix in the table below has been developed to demonstrate how the customer values link to the community outcomes.

Table 24 Linkage of community outcomes & customer values

Customer (core) values	Afford-ability & quality	Safety	Sustain-ability	Community engagement	Reliability / responsive-ness
Sustainable environment	✓		✓		✓
Quality of life	✓	✓	✓		
Sustainable economy	✓		✓		✓
Culture and identity				✓	
Participation and equity				✓	
Community partnerships				✓	✓
Environmental quality	✓		✓		

Regional economy	✓		✓		
Safe and resilient communities	✓	✓	✓		

7.8 Activity levels of service outcomes

As part of this zone management plan, further work has been undertaken to develop Activity Levels of Service Outcomes for the RCS activity. These are described in the Table 26 to Table 30 below and are aligned with the customer values. The core values considered to be important for the RCS in activities are as follows:

Table 25 RCS customer values (NAMS) and activity levels of service outcomes

Customer value	Activity levels of service outcomes
Affordability quality	Costs for services are distributed equitably. Services provided perform to agreed levels and standards. Statutory requirements and legal obligations are met.
Safety	People and property are safe from hazards associated with flooding and erosion.
Sustainability (whole community benefits)	The net outcome of provision of RCS services is an enhancement of the environment. Services are managed for the social, cultural, economic and environmental wellbeing of current and future generations.
Community engagement	Decision-making processes are transparent and easily understood. Work with stakeholders to achieve mutual objectives. We will consult with all relevant iwi and specifically in regard to implementation of Treaty settlements and co-management arrangements.
Reliability/ responsiveness	Response to requests, complaints and events is timely and appropriate solutions are provided.

7.9 Levels of service – specific activities

7.9.1 Catchment management

Catchment management activities are catchment-wide by nature, with the benefits experienced both locally and downstream. They often span more than one territorial authority and for this reason, regional councils are deemed the most appropriate management agency for these public good services.

Overall, catchment management aims to achieve:

- more stable rivers and catchments
- reduced sedimentation of rivers, harbours and estuaries
- promotion of land and water sustainability
- improvement or maintenance of water quality
- improvement or protection of biodiversity.

The activities undertaken are consistent with achieving the outcomes sought by iwi through co-management settlements with the crown. In particular the enhancement of water quality and high potential biodiversity sites on land owned (and on the Waikato River, now subject to co-management requirements) by the council.

Activities provided within the Central Waikato zone include:

- monitor the condition and performance of the main Waikato River channel
- undertake new catchment protection and river improvement works in accordance with agreed works programmes
- routine maintenance of the main Waikato River channel and major tributaries
- implement the Waikato River Stability Strategy in conjunction with Waipa District Council, Waikato

District Council and Hamilton City Council.

7.9.2 River management

Rivers and streams are managed to reduce effects of bank erosion, channel instability and blockages on communities. Programmes are based on priority and the level of risk to people and property. River management include both routine river maintenance and river improvement activities.

7.9.3 Routine river maintenance

The intention of routine river maintenance is to ensure channels remain free of vegetation and obstructions so efficiency is maintained.

7.9.4 River improvement

River improvement involves works of a more significant capital nature. In some cases this will involve large-scale intervention. In most cases, the work aims to control bank erosion and stabilise the river channel. Proposed river improvement works are restricted to a few specific areas where major intervention is required. The type of intervention will depend on the requirements of the site, but could include:

- Willow revetment (the armouring of stream banks)
- • Rip rap (or large rock) revetment
- • Channel realignment
- • Construction of groynes
- • Gravel management
- • Sand Management.

River management activities within the zone are further defined into main channel and tributary activities.

7.9.5 Main channel

The objective of works within the Waikato River main channel are to ensure:

- the channel capacity is managed to accommodate flood flows within the agreed standard
- public access to the river is maintained and natural environmental values associated with the river are enhanced.

Currently little or no main channel river management activities are undertaken in the Central Waikato Zone, apart from some riverbank maintenance in Hamilton City and some other localised areas in improve stability.

Provision has been made for routine river maintenance within the management zone and activities would include channel maintenance, vegetative management and supervision within the main channels of priority waterways.

7.9.6 Tributaries

The objective of works with tributary streams and channels are to:

- Maintain priority tributary streams free of debris and blockages
- Ensure hydraulic conveyance capacities of tributaries and channels can adequately accommodate design flood flows
- Improve stability of the river system.

Provision has been included with the zone budget for maintenance of works on the Waikato and tributaries that directly affect Hamilton City. These works include flood protection, erosion and bank protection on the Waikato River and major tributaries, including the:

- Kirikiriroa Stream
- Mangaonua Stream
- Waitawhiriwhiri Stream
- Mangakotukutuku Stream.

These streams have historically been the priority however it is recognised that there are a number of influencing factors and that these priorities may change over time. A specific assessment criteria approach is being developed in association with HCC and changes will be incorporated in future reviews of the Zone plan or Service Level agreement as appropriate.

7.9.7 Soil conservation

Soil conservation is the management of land to maintain New Zealand's soil and water resources, to provide the widest range of sustainable benefits for the needs and aspirations of present and future generations. Soil conservation includes:

- maintenance of the productive potential of the nation's soil resources to retain sustainable land use options for present and future generations

- maintenance of catchments to provide high quality water resources for downstream users
- management practices that further enhance the protection of waterways from suspended sediments, nutrients, harmful micro-organisms and other pollutants
- reduction of the effects of land-related hazards including flooding, subsidence and erosion
- Maintenance of the aesthetic, scientific and cultural values of land and water.

7.9.8 Flood protection

There are no flood protection schemes within the Central Waikato Zone.

7.10 Levels of service, performance measures and reporting

Identifying and linking customer and technical levels of service

It is critical that from community outcomes to operational contracts, linkages need to be made clear.

The following tables are based on the NZ NAMS "Developing Levels of Service and Performance Measures" Manual. They have been developed to be presented for further community consultation. They group all the levels of service measures under the five main service levels, namely:

- Environmental levels of service
- Community engagement levels of service
- Reliability and responsiveness levels of service
- Affordability levels of service
- Service provision levels of service.

Each table provides the following:

- Definition of the level of service
- Linkage to Community Outcomes
- The customer value the service level aims to provide
- Customer measure (with targets if applicable)
- Technical measure (with targets if applicable)
- Description of how the service level will be achieved
- Description of how achievement of the service level will be measured.

Table 26 Environmental levels of service

Environmental levels of service					
Levels of service	Activities contribute to the enhancement of the catchment, the river, its natural resources and environment				
Links to community outcomes	Sustainable environment	Quality of life	Sustainable economy	Culture & identity	Participation & equity
Customer value	The core customer value this service aims to provide is: Sustainability				
Customer measure	Number of customer complaints related to the catchment and river environment				
Targets	Current performance	Year 1 target 2009/10	Year 2 target 2010/11	Year 3 target 2011/12	Years 4-10 target 2012-19
Adverse environmental effects reported	<10 per year	<8 per year	<8 per year	<5 per year	<5 per year
Technical measure	Constantly trend towards achieving guideline values: Bio diversity indices Water quality indices				
How we will achieve this level of service	We will achieve these service levels by: Conduct of physical works in accordance with best practice guidelines Activity influence the activities of others Seek to keep the main channel free of obstructions Provision of advice and incentives (clean streams) (RMA) and Regional Policy Statement (RPS) Maintenance of relationships and partnerships with stakeholders				
How we will measure if target is achieved	The following procedures will measure whether performance targets are achieved: Routine monitoring of key indicators Bank stability Riparian margins River water quality monitoring Ecological monitoring Environmental reporting to Council Annual performance reporting (Annual Report)				

Table 27 Community engagement levels of service

Community engagement levels of service					
Levels of service	Decisions and activities are consistent with obligations contained within the Deed of Settlement and co management arrangements detailed with the Joint Management Agreement (JMA). Decisions and activities are consistent with the stakeholder strategy for the zone.				
Links to community outcomes	Sustainable environment	Quality of life	Sustainable economy	Culture & identity	Participation & equity
Customer value	The core customer value this service aims to provide is: Community engagement				
Customer measure	Opportunity to provide input to Council through a process that is clear and easily understood Submissions on the Annual Plan and Long Term Plan are analysed, and written feedback is provided to submitters				
Technical measure	Not applicable				
How we will achieve this level of service	We will achieve these service levels by: Publishing information on the website and keeping the website up-to-date Maintaining a consultation register, including public meetings and submissions throughout the Long term Plan and Annual Plan process Council decisions publicly notified Subcommittee reporting 3 times per year Subcommittee and other stakeholder meetings as required WRC meeting co governance obligations				
How we will measure if target is achieved	The following procedures will measure whether performance targets are achieved: Annual performance reporting (Annual Report)				

Table 28 Reliability and responsiveness levels of service

Reliability and responsiveness levels of service					
Levels of service	Having the appropriate information readily available (in order to respond to requests and events allowing timely and appropriate solutions to be provided)				
Links to community outcomes	Sustainable environment	Quality of life	Sustainable economy	Culture & identity	Participation & equity
Customer value	The core customer values this service aims to provide is: Reliability / responsiveness Safety				
Customer measure	Enquiries and complaints dealt with promptly and to customer satisfaction				
Targets	Current performance	Year 1 target 2009/10	Year 2 target 2010/11	Year 3 target 2011/12	Years 4-10 target 2012-19
Reported customer complaints	< 10 complaints per year	< 8 complaints per year	< 8 complaints per year	< 5 complaints per year	< 5 complaints per year
Technical measure	Enquiries and complaints are dealt with in accordance with the WRC Customer Charter				
How we will achieve this level of service	We will achieve these service levels by: By complying with the customer charter Ensuring all flood warnings at predetermined levels are given in accordance with the flood warning manual Making river level and rainfall information and situation reports readily available on the WRC website and being able to respond effectively to flood events (LTP measure)				
How we will measure if target is achieved	The following procedures will measure whether performance targets are achieved: By maintaining a record of enquiries, resulting actions and response times				

Table 29 Affordability levels of service

Affordability levels of service					
Levels of service	Services provided achieve value for money and are managed for the benefit of current and future generations				
Links to community outcomes	Sustainable environment	Quality of life	Sustainable economy	Culture & Identity	Participation & Equity
Customer value	The core customer value this service aims to provide is: Affordability				
Customer measure	Customers are satisfied that charges for rivers and catchment services are fair				
Technical measure	Not applicable				
How we will achieve this level of service	We will achieve these service levels by: Allocating costs according to the funding policy Periodic review of the funding policy in relation to benefit allocation Compliance with council policy and standards relating to procurement				
How we will measure if target is achieved	The following procedures will measure whether performance targets are achieved: Contract records and documentation Annual reporting of customer submissions to Council Auditing of depreciation Monitoring and audit of council policies relating to funding and procurement				

Table 30 Service provision levels of service

Service provision levels of service					
Levels of service	Services are provided and perform to agreed levels and standards				
Links to community outcomes	Sustainable environment	Quality of life	Sustainable economy	Culture & identity	Participation & equity
Customer value	The core customer value this service aims to provide is: Quality				
Customer measure	Well managed river banks Erosion in critical[12] areas well managed Main channel keep clear of obstructions where practicable				
Technical measure	Priority catchments and river systems are maintained to agreed standards and performance levels The capacity, stability and condition of the Waikato River channel and designated tributaries are maintained to the agreed performance levels				
How we will achieve this level of service	We will achieve these service levels by: Activities undertaken in accordance with best practice guidelines Following-up any noncompliance with Land Improvement Agreements conditions within agreed process (WRC Doc 1421068) (LTP measure) Maintaining channels free of obstructions or significant blockages on a prioritised basis and where practicable Addressing river and stream bank erosion of critical areas on a prioritised basis and where practicable Introducing regional channel capacity guidelines (improvement plan) Maintaining the main channel systems to condition grade 3 or better				
How we will measure if target is achieved	The following procedures will measure whether performance targets are achieved: Monitoring main channels via cross section surveys on a 10 yearly basis Audits and inspections Prioritised reactive maintenance programme				

[12] Critical Areas are defined as those where there are risks associated with potential threat to people, assets or infrastructure.

8 Risk management

8.1 Overview

- This Waikato Regional Council (WRC) risk management policy provides the context and framework for how risks to WRC are to be managed.
- The objective of the risk management process is to identify realistic possible risks faced by Council and to analyse and evaluate these risks. The outcome of this evaluation is to be used to:
- Emphasize the importance of continuing to provide Council's core services and manage inherent risks
- Continually identify improvements required to Council services to avoid risk events, or minimise their impact or to realise identified opportunities
- This policy defines the responsibilities of Council managers and staff to form and maintain the framework, and use it to make sound decisions in alignment with business objectives.
- A risk is defined in AS/NZS ISO 31000:2009 – Risk management – Principles and guidelines, as:
  - ***Effect of uncertainty on objectives***
  - ***Effect:*** Deviation from the expected – positive or negative.
- **Objectives**: Can have different aspects (see Risk Types) and can apply at different levels (see Risk Hierarchy Levels).
- **Risks**: Often characterized by reference to potential events and consequences, and is often expressed in terms of a combination of the consequences of an event and the associated likelihood.
- **Uncertainty**: The state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.

8.2 Current situation

- WRC has recently (2011) developed a corporate risk policy and a Risk and Assurance team, which has an overview of all risk exposures within the organisation, including corporate, financial, customer, assets. Infrastructure Services staff contribute regularly to the work of this group. Each risk identified in the risk action plan of this ZMP should also be reflected within the corporate risk register.

8.3 Risk management objectives

- The main policy objectives of managing risk at WRC are to:
- Enhance WRC's ability to achieve business objectives
- Maintain the integrity of services
- Safeguard assets, people, finances and property
- Create a culture where all employees accept responsibility for managing risk
- Ensure that WRC can adequately and appropriately deal with risk and issues as they occur
- Demonstrate transparent and responsible risk management processes which align with and demonstrate governance
- Identify opportunities and promote innovation and integration
- Record and maintain a risk management framework aligned with the AS/NZS ISO 31000:2009 standard
- Utilise risk management process outputs as inputs into Council decision-making processes.

8.3.1 Risk management in the Zone

River and Catchment Services (RCS) risk management planning will provide the basis for future risk analysis and improvement planning within the zone.

This section covers the risk management implemented by WRC and how these apply to current and future river and catchment services activities. In addition, an overview of risk management is provided along with

suggested improvements to current practices.

The objective of risk management relayed to the zone is to identify the specific business risks, together with any possible risks associated with the ownership and management of the river and catchment services assets and provision of services. This can be used to determine the direct and indirect costs associated with these risks, and form a priority-based action plan to address them.

8.3.2 Putting the risks into perspective

Council policy and operation cannot influence all the factors contributing to these events. However, WRC has a responsibility to assess the risks in order to best manage the activity with the resources available to avoid and mitigate the effects of any event.

WRC has highlighted a number of key risk areas across the activity including:

- Service Level Agreements not met or non-existent – between River and Catchment Services and other parties internal or external (i.e. Hamilton City Services
- Climate Change
- Conflicting Objectives/ Aspirations /Value Systems (ie with Hamilton City Council)

These risks are discussed in further detail in the Risk Registers and the overall Risk Action Plan contained in this Section of the ZMP.

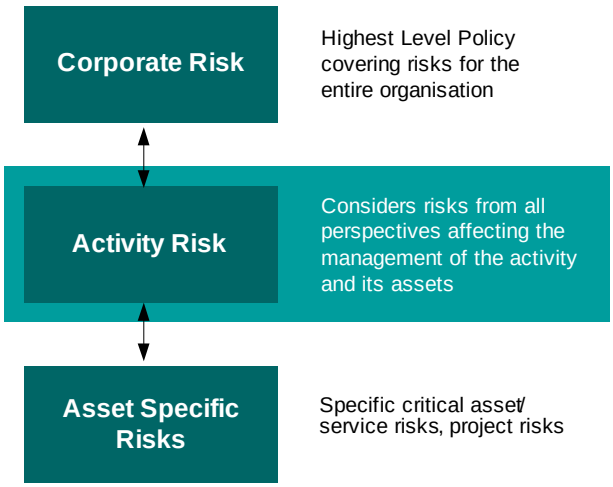
8.3.3 Level of risk

The purpose of the risk plan is to identify the risks associated with river and catchment services activities and assets. This requires approaching the risks from many perspectives - financial, operational and public health and safety.

These risks are pertinent to both a higher, corporate level, and to a more detailed asset – specific level, but do not substitute for more specific risk analysis at those levels (see diagram).

The next step beyond this risk analysis is to develop more detailed risk plans where the criticality of specific assets is assessed and an action plan developed as appropriate. The figure below shows the levels of risk.

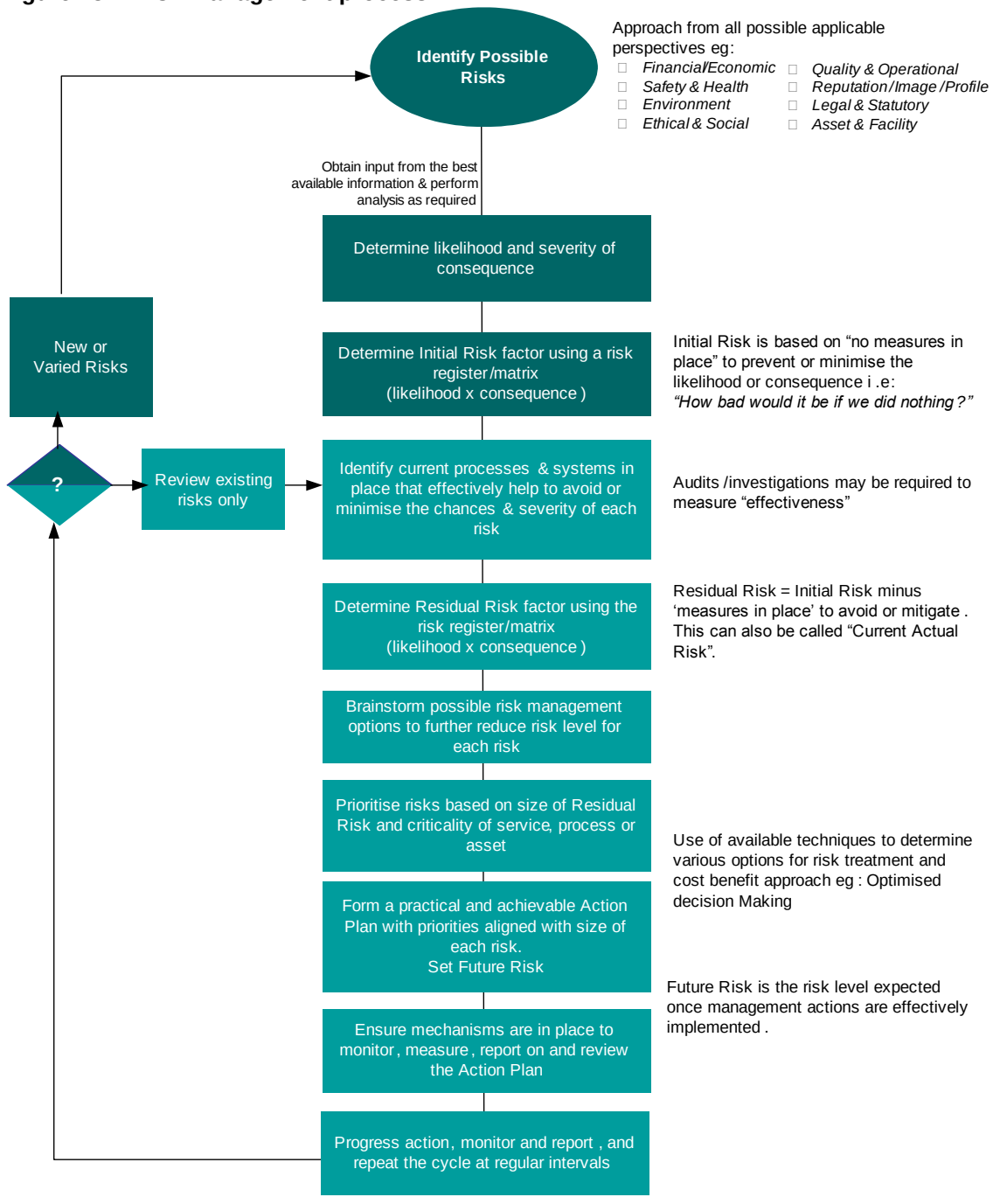
Figure 12 Levels of risk



8.4 Risk management process

The figure below details the key elements of the risk management process undertaken.

Figure 13 Risk management process



The following sections expand upon the risk management process as identified in the previous flowchart. The risk assessment process has been generally based upon the Australian New Zealand Risk Management Standard 4360:2004 to establish a Risk Matrix as shown in Table 33. While it is noted that AS/NZS 4360: 2004 has recently been superseded by ISO 31000 the process and outputs undertaken under AS/NZS 4360 align fully with ISO 31000. This matrix provides a tool to quantify a risk by identifying the likelihood of the risk occurring and the outcomes, or consequences should the risk occur. The first step in the process is to identify all possible risks.

8.4.1 Identify possible activity risks

All possible risks affecting the River and Catchment Services activity need to be identified. Risks can include financial, environmental, social, operational and health and safety considerations. Once identified, risks are entered into the risk register (see Appendix 4). The register is used to record and summarise each risk and to outline current mitigation measures and potential future management options.

Potential consequences of risk are wide-ranging in relation to activities. Those relevant to the river and catchment services activity are:

- Financial / economic
- Health and safety
- Reputation/Image
- Operational

8.4.2 Determine likelihood and consequence

Table 31 demonstrates the scales used to determine the likelihood and consequence levels, which are input into the risk calculation to consider the effect of a risk event.

The likelihood of occurrence and severity of consequences should be based on as much real data as possible, for example local knowledge or recorded events such as maintenance records, weather events etc. Some analysis may be required for verification.

The likelihood scales identify how likely, or often, a particular event is expected to occur, these are shown in the table below.

Table 31 Risk probability ratings table

Likelihood	Descriptor	Probability
Rare	May occur only in exceptional circumstances eg once in 10 years	1
Unlikely	Could occur only very occasionally eg 2-3 out of every 10 years	2
Moderate	Might occur from time to time eg 5 out of every 10 years	3
Likely	Will probably occur often eg 7 out of every 10 years	4
Almost certain	Is expected to occur in almost all circumstances eg 9 out of every 10 years	5

The consequence descriptors in the following table indicate the level of possible consequences for a risk.

Table 32 Risk consequence ratings table for WRC

Factor	Catastrophic	Major	Moderate	Minor	Insignificant
Score	**5**	**4**	**3**	**2**	**1**
Financial / Economic	Loss of $10 million or greater	Loss between $1 million and $10 million	Loss between $250,000 and $1 million	Loss between $50,000 to $250,000	Loss less than $50,000
Health and Safety	Loss of life	Injury with 3+ months time-off	Injury with 2 weeks to 3 months time-off	Injury with less than 2 weeks time-off	Nil
Reputation / Image	Insurmountable loss in community confidence Negative multi-media nation-wide coverage for 2 weeks + Nation-wide one week adverse political comment	Large loss in community confidence that will take significant time to remedy Negative multi-media nation-wide coverage for up to 2 weeks Nation-wide several days adverse political comment	Manageable loss in community confidence Negative multi-media nation-wide coverage for several days Regional several days adverse political comment	Loss of confidence among sections of the community Negative multi-media nation-wide coverage for 2 days Local 1 week adverse political comment	Negative feedback from individuals or small groups in the community Negative regional multi-media coverage for up to 2 days Local one day adverse political comment
Operational	Serious loss of critical operational capability for over 4 weeks and serious disruption to service levels	Serious loss of critical operational capability for over 2 weeks and major disruption to service levels	Serious loss of critical operational capability for over 1 week and disruption to service levels	Loss of critical operational capability in some areas and some disruption to service levels	No loss of critical operational capability or negative disruption to service levels

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the likelihood of occurrence and consequence rating together. Risk = the likelihood of an event occurring X the consequence of such an event. The final outcome is a risk rating. The risk rating enables definition between those risks that are significant and those that are of a lesser nature. Having established the comparative risk level applicable to individual risks, it is possible to rank those risks. Four risk categories have been used: extreme, high, moderate, and low.

Table 33 Risk assessment matrix

			Consequence		
Likelihood	**Insignificant (1)**	**Minor (2)**	**Moderate (3)**	**Major (4)**	**Catastrophic (5)**
Rare (1)	I	I	L	L	M
Unlikely (2)	I	L	M	M	H
Moderate (3)	L	M	M	H	C
Likely (4)	L	M	H	H	C
Almost Certain (5)	M	M	H	C	C

Once the impact has been ranked according to the relative risk level it poses, it is then possible to target the treatment of the risk exposure, by beginning with the highest risks and identifying the potential mitigation measures.

Table 34 Comparative levels of risk

I	Insignificant risk	Examine where un-needed action can be reduced
L	Low risk	Managed by routine procedures
M	Medium risk	Management responsibility must be specified and risk controls reviewed through AMP
H	High risk	Senior management attention to manage risk
C	Critical	Immediate action required to reduce risk

Initially, the Initial risk needs to be calculated, so likelihood and consequences need to be considered as if there were no measures in place to prevent or mitigate the risk occurrence. Essentially Initial risk is an exercise to determine "What is the worst that could happen?" Once the Initial risk is determined it is possible to investigate the current systems and processes to identify the Residual risk and then formulate an action plan to further reduce the likelihood or consequences of identified risks occurring.

8.4.3 Identify current systems and processes, and their effectiveness

Identifying current systems and processes are identified, and as far as resources allow, their effectiveness measured. It is often practical to identify these processes and systems initially, and rank the effectiveness conservatively until the audits and actual practice proves otherwise. Audits can be identified as part of the improvement process.

Effectiveness of existing systems and processes is expressed in the following categories:

Excellent	Fulfils requirements thoroughly, very robust and positive measurable effects
Very good	Fulfils requirements, robust and measurable, room for improvement
Good	Barely fulfils requirements, effects hard to measure (or haven't been audited or measured), improvement required
Inadequate	Not fulfilling requirements, little measurement or effect on overall risk
Unsatisfactory	Totally ineffective in avoiding or mitigating associated risk events

8.4.4 Determine residual risk

The Residual risk is the actual risk that exists considering the effective measures implemented. The measures in place reduce either, or both, the consequence and the likelihood of a risk occurrence. The revised factors are input into the same risk matrix to obtain the Residual Risk Factor.

8.4.5 Prioritise residual risks and formulate action plan for risk management

A priority order of issues to be addressed is obtained by sorting Residual Risk Factors by risk level. The most suitable actions are determined considering available options and resources. The costs and benefits of these actions need to be analysed. The best available techniques are required to analyse the options e.g. optimised decision-making (ODM).

Application of ODM applies a 'value chain' to the proposed actions rather than just working from the highest risk down regardless of cost, for example:

A high risk may have to remain due to the inhibitive costs associated with avoidance or mitigation.

A medium risk event could be easily and cost-effectively avoided within resources available

Do nothing	Accept the risk
Management strategies	Implement enhanced strategies for demand management, contingency planning, quality processes, staff training, data analysis and reporting, reduce the target service standard, etc
Operational strategies	Actions to reduce peak demand or stresses on the asset, operator training, documentation of operational procedures, etc
Maintenance strategies	Modify the maintenance regime to make the asset more reliable or to extend its life
Asset renewal strategies	Rehabilitation or replace assets to maintain service levels
Development strategies	Investment to create a new asset or augment an existing asset
Asset disposal/rationalisation	Divestment of assets surplus to needs because a service is determined to be a non-core activity or assets can be reconfigured to better meet needs

8.4.6 Monitor, measure, report, review plan and actions

The management structure needs to be in place to ensure that actions are monitored, reported on and reviewed regularly. It is important to identify and constantly review the following:

Responsibility	Nominated person responsible for ensuring the risks are managed and improvements carried out in accordance with the programme
Best appropriate practice	The practices that should ideally be carried out to manage risks to an acceptable level
Audit trail	Date of entries and revisions, target date for actions to be taken and actual task completion dates

In addition, management options should be ranked via benefit / cost analysis using Residual Present Value (NPV) calculations. The inputs considered in the NPV calculation are;

- Capital investment costs
- Changes in operating and maintenance costs
- Reduction in business risk exposure (BRE)
- Increase in effective asset life / value
- Increase in level of service.

All capital development projects should be ranked corporately for inclusion in the LTP/ Annual Plan consultation process using benefit / cost analysis plus the following additional criteria:

- Contribution to Council's LTP community outcomes
- Contribution to Council's business objectives
- Level of project commitment (contractual and legal issues).

The resulting action plan for risk treatment needs to be practical and achievable such that the necessary resources and time frames are realistically met. The actions also need to be able to be monitored and measured. Table 35 provides more detail with regard to future actions/tasks required for future stages of risk management, which include the ranking outlined above.

8.4.7 Review risks

Most of the time, the risks identified will remain the same and reviews will occur in the context of these risks. However, it will be important to recognise when a new risk arises, or an existing risk changes in nature. In the latter case, the initial risk also needs to be re-evaluated.

8.5 Risk register

The risk registers provided in the following tables for the current and future river and catchment services activities of WRC have been developed in consultation with key staff. The risk register is outlined within Appendix 4.

8.6 Risk action plan

Table 35 is compiled from the Risk Register and highlights the most significant residual

risks faced by river and catchment services within the Central Waikato Zone. The main risks are listed in order of severity (Residual risk) as assigned.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, Action tasks will detail timeframes for achievement, and responsibility for these actions.

8.6.1 Monitor, measure, report, review plan and actions

Management options listed in the risk tables have been refined into actions for each risk listed. These are the actions that are required to cost-effectively reduce the Residual risk by increasing Council's ability to minimise the chances of the risk event occurring, or minimising the consequences should it occur.

Actions should consider the overall management of the asset, not just the minimisation of risk. If possible, proposed actions should align with other initiatives to:

- Reduce capital investment costs
- Reduce operating and maintenance costs
- Reduce business risk exposure (BRE)
- Increase effective asset life / value
- Increase level of service.

The resulting action plan for risk treatment needs to be practical and achievable such that the necessary resources and time frames are realistically met. The actions also need to be able to be monitored and measured.

The monitoring/reporting column of the Risk Action Table specifies:

- Responsibility: Nominated person responsible for ensuring the risks are managed and those improvements are carried out in accordance with the programme
- Timeframe: Achievable target date to be monitored and reported against; and
- Method and Frequency of Monitoring: This entire Action Table will be monitored by the Asset Manager, but there will be certain actions that are being monitored and reported in other forums. These forums are to be specified and the frequency with which these actions will be reviewed.

The actions listed will be reported, monitored and reviewed regularly by the asset manager.

As necessary, the asset manager will need to revise timeframes, responsibility, and even the appropriateness of continuing with the proposed action, or adding new actions.

As actions are completed, the residual risk should reduce in most cases. The risk tables will need to be reviewed against these and updated to reflect these improvements.

Table 35 Zone management risk action plan – River and Catchment Services

Risk No	Risk descriptor	Type of risk	Initial risk	Residual risk	Management options available	Risk owner (name and title)	Risk appetite *Accept = Current Practice, P1 = Urgent, P2 = Routine*	Pinpoint management actions	Monitoring / reporting	Time frame	Costs / resources	Future risk
A-GR18	Climate Change	Financial / Economic Operational Health and Safety	C	H	Continue current practice Upgrade assets to offset climate change effects	Divisional Manager Group Manager	P2	Monitor national climate forecasts (MfE) Undertake annual review of service levels and design standards incorporating any assessment of the potential effects of climate change Incorporate MfE information in service level reviews	Zone Manager Assets Manager CDEM Manager	On-going	TBC	M
A-GR19	Conflicting Objectives/ Aspirations /Value Systems	Financial / Economic Operational Reputation / Image	C	H	Better understanding of process, inter-connections, and benefits Mutually beneficial projects (win-win) Facilitation and agreement, mutually agreed outcomes Negotiated	Group Manager, RCS Divisional Manger Zone Manager	P2	Develop and implement targeted communications plan to improve the process for communicating long term objectives with stakeholders	Divisional Manager Zone Manager Liaison sub committee	On going	TBC	M

Risk No	Risk descriptor	Type of risk	Initial risk	Residual risk	Management options available	Risk owner (name and title)	Risk appetite *Accept = Current Practice, P1 = Urgent, P2 = Routine*	Pinpoint management actions	Monitoring / reporting	Time frame	Costs / resources	Future risk
					solutions							
A-GR6	Service Level Agreements not met or non-existent – between River and Catchment Services and other parties internal or external (i.e. Hamilton City Services)	Financial / Economic Operational Reputation / Image	C	H	Maintain and develop relationships with stakeholders Review if additional SLA's are required Improved monitoring and management of Service Level Agreements Need to develop and implement internal SLA's between zone and RCS programmes Develop and implement an external SLA with key stakeholders as appropriate	Divisional Manager Zone Manager	P2	Work with stakeholders to put in place Service Level Agreement(s), Have regular reviews in place to measure achievements as set out in Service Level Agreement(s),	Zone Manager, Divisional Manager	April 2013, ongoing	TBC	M

9 Financial management

9.1 Overview

9.1.1 Introduction

In order to undertake a sustainable, long-term approach to the management of infrastructure assets within the catchment zones it is essential to prepare long-term financial forecasts. This allows a long term view of how assets will be managed, the associated costs and when additional funding may be required to meet expected service levels. These financial forecasts are a culmination of the previously discussed aspects of the zone plan such as:

- Community engagement and consultation
- Levels of service
- Demand management
- Lifecycle management
- Condition assessments
- Asset lives
- Asset valuation.

The above forms the basis of the long-term operations, maintenance and capital requirements. Funding requirements have also been included in the financial statements.

Office of the Auditor General (OAG) criteria requires that Asset Management Planning (AMP) should translate the physical aspects of planned maintenance, renewal and new work into financial terms for at least the ensuing 10 years and in a manner that is fair, consistent and transparent.

The forecasts should include sufficient information to enable the decline in service potential (depreciation) of an asset to be measured. (Guidance on depreciation is included in the NZ Valuation and Depreciation Guidelines).

Planning should translate the physical aspects of planned operational, maintenance, renewal and new works into financial terms;

- Generally over the timeframe in which the asset must deliver services
- In more specific terms, over the period for which the organisation has a strategic plan
- The assumptions underpinning financial forecasts should be disclosed in the organisations strategic plans and the asset management plans
- The compilation of financial forecasts should be consistent, reliable and provable.

The confidence in the underlying data upon which the financial forecasts are based is discussed in Section 4 Managing the Zone.

9.2 Expenditure

All costs incurred through the ownership of infrastructural assets and that directly relate to the running of those assets fall into two categories - capital/renewal expenditure or maintenance expenditure. Under the generally accepted accounting practice (GAAP) the following definitions need to be applied to the treatment of costs against infrastructure assets:

9.2.1 Operations and maintenance expenditure

Expenditure - “Costs which are repairs and maintenance should be expensed.”
Maintenance costs are generally subdivided into 3 groups; these are described in the table below.

Table 36 Maintenance types

Maintenance type	General meaning
Routine	Day to day maintenance which is required on an on-going basis and is budgeted for
Planned (proactive)	Non day-to-day maintenance which is identified in advance and is incorporated into a maintenance budget for a certain time period
Reactive	Maintenance that is unexpected and necessary to attend to immediately to continue operation of the service

All maintenance costs are written off in the year of expenditure.

9.2.2 Replacement/ renewal expenditure

"Costs which restore and sustain the intended service potential of the network is renewal expenditure and should be capitalised." An example of this work is the de-siltation of artificial channels to return them to the design standard.

Renewal expenditure is treated in the same way as capital expenditure. For accounting purposes, any work performed on an asset that has previously been classified as renewal costs will be subject to these guidelines and now be classified as capital expenditure.

9.2.3 Capital (new works) expenditure

Capital expenditure is "cost which add to the service potential of the network as a whole". These expenses should be capitalised and depreciated.

Currently there are no new capital works are programmed for the zone.

9.2.4 Zone management assumptions

This zone plan has been prepared subject to the following limitations and assumptions:

- The plan is based on currently available information and data
- Effects of climate change are considered based on the Ministry for the Environment Guidelines
- Financial forecasts are limited to 10 years
- Land use within the protected compartments will remain the same
- Up to 55,000 ha of exotic forest in the Upper Waikato Catchment will be converted to pasture over the next 20 years
- Existing levels of service are to be maintained
- Consultation in the development of this plan has been focused on input from community representatives associated with the catchment liaison subcommittee
- There will be minimal change in applicable standards and technologies over the life of the plan
- This plan has not considered future budget constraints
- This plan has not considered changes to the Resource Management Act and the influence this will have in this activity area
- The plan has not made any specific provision for management and governance changes that may result from co-management.

9.3 Summary financial forecast

The Central Waikato zone services are provided on an annualised maintenance cost basis. While there are activities on specific types of assets that are not carried out each year, the work is spread as evenly as possible across each year.

The information on the following pages provides a summary of the 10 Year Financial Forecast for Central Waikato zone.

Budget figures

Maintenance	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	Actual	Actual	Actual	AP	LTP	LTP	LTP	LTP	LTP	LTP	LTP	LTP	LTP
Catchment oversight	134,291	99,383	218,907	109,457	110,516	112,984	116,728	115,507	127,556	125,157	133,928	135,848	141,573
Information & advice	24,291	18,275	28,994	35,077	52,078	48,101	49,411	47,773	44,111	45,375	47,003	48,152	49,765
Catchment maintenance	5,373	2,996	6,417	14,733	15,902	16,811	17,597	18,318	19,060	20,065	20,989	21,822	22,883
Catchment new works	35,286	58,533	46,134	53,456	53,238	55,259	56,880	58,221	59,751	61,465	63,603	65,073	67,222
River manage ment	767,469	738,854	707,430	604,890	638,881	660,319	669,615	686,975	750,026	720,872	740,913	760,598	781,967
River improvement	13,023	3,215	1,683	74,199	78,694	81,765	82,645	87,806	37,703	91,624	90,455	93,705	94,851
Flood protection													
Main channel													
Total maintenance costs	979,733	921,256	1,009,565	891,812	949,309	975,239	992,876	1,014,600	1,038,207	1,064,558	1,096,891	1,125,198	1,158,261
Depreciation[1]	-	-	369	-	-	-	-	-	-	-	-	-	-
Interest expense on reserve balance [2]	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)	-	-	-	-	-	-
Total operating expenditure	955,916	900,626	992,666	878,091	939,330	969,207	991,009	1,014,600	1,038,207	1,064,558	1,096,891	1,125,198	1,158,261
funded by													
General rate	142,051	132,815	134,278	119,406	131,660	134,733	138,528	140,739	145,246	148,294	154,204	157,957	163,397
Targeted rate	1,157,221	1,072,578	977,730	823,437	869,884	889,519	855,942	839,299	859,108	883,201	910,593	934,997	963,612
Less capital rates charged													

Less debt funding	(81,756)	(81,756)	(81,756)	(81,756)	(81,756)	(81,756)	(35,805)	-	-	-	-	-	-
Fees and charges	15,777	19,192	18,694	-	-	-	-	-	-	-	-	-	-
Interest income													
Interest income on reserve balance [2]	56,469	50,211	54,710	55,000	58,000	62,000	64,000	65,000	65,000	65,000	65,000	66,000	66,000
Total revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Transfer to / (from) Operating reserve	333,846	292,414	110,990	37,996	38,458	35,289	31,656	30,438	31,147	31,937	32,906	33,756	34,748
Operating reserve balance													
Opening balance	773,880	1,072,366	1,338,982	1,417,780	1,429,022	1,439,001	1,445,033	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902
Plus revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Less Operating expenditure	(955,916)	(900,626)	(992,666)	(878,091)	(939,330)	(969,207)	(991,009)	(1,014,600)	(1,038,207)	(1,064,558)	(1,096,891)	(1,125,198)	(1,158,261)
Transfer to disaster reserve [3]	(35,160)	(25,598)	(32,561)	(26,754)	(28,479)	(29,257)	(29,787)	(30,438)	(31,146)	(31,937)	(32,907)	(33,756)	(34,748)
Plus depreciation added back	-	-	369	-	-	-	-	-	-	-	-	-	-
Less budgeted depreciation funding transferred to capital reserve	(200)	(200)	-										
Closing balance / (deficit)	1,072,366	1,338,982	1,417,780	1,429,022	1,439,001	1,445,033	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902	1,446,902
Zone establishment loan													
Opening balance	(433,027)	(375,088)	(313,962)	(249,474)	(181,439)	(109,662)	(33,938)						
Plus loan repayment funded	81,756	81,756	81,756	81,756	81,756	81,756	35,805						
Less interest charged	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)						
Closing balance / (deficit)	(375,088)	(313,962)	(249,474)	(181,439)	(109,662)	(33,938)	-						

Zone reserve balance (total)													
Opening balance	340,853	697,278	1,025,020	1,168,306	1,247,583	1,329,339	1,411,095	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902
Plus revenue	1,289,762	1,193,040	1,103,656	916,087	977,788	1,004,496	1,022,665	1,045,038	1,069,354	1,096,495	1,129,797	1,158,954	1,193,009
Less Operating expenditure	(955,916)	(900,626)	(992,666)	(878,091)	(939,330)	(969,207)	(991,009)	(1,014,600)	(1,038,207)	(1,064,558)	(1,096,891)	(1,125,198)	(1,158,261)
Less Capital expenditure	-	-	-	-	-	-	-	-	-	-	-	-	-
Less interest on zone establishment costs	(23,817)	(20,630)	(17,268)	(13,721)	(9,979)	(6,032)	(1,867)	-	-	-	-	-	-
Plus loan repayment funded	81,756	81,756	81,756	81,756	81,756	81,756	35,805	-	-	-	-	-	-
Transfer to disaster reserve [3]	(35,160)	(25,598)	(32,561)	(26,754)	(28,479)	(29,257)	(29,787)	(30,438)	(31,146)	(31,937)	(32,907)	(33,756)	(34,748)
Plus depreciation added back	-	-	369	-	-	-	-	-	-	-	-	-	-
Closing balance / (deficit)	697,478	1,025,220	1,168,306	1,247,583	1,329,339	1,411,095	1,446,902	1,446,902	1,446,903	1,446,903	1,446,902	1,446,902	1,446,902

9.4 Operations and maintenance planning

9.4.1 Introduction

WRC's maintenance strategies cover the policies that will determine how the river and catchment services activities will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of the asset. The work categories are defined as follows:

9.4.2 Routine (general) maintenance

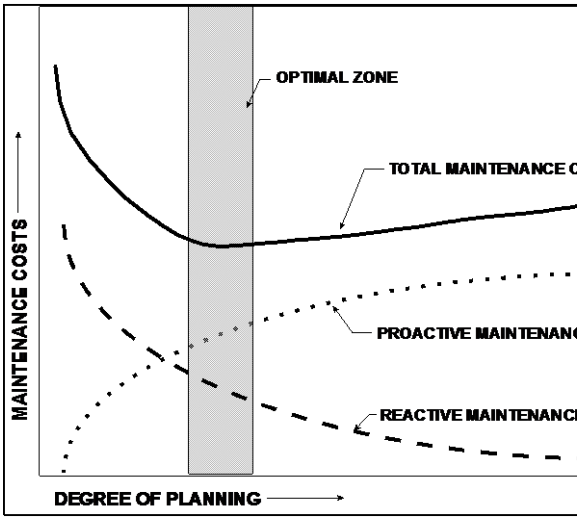
Routine maintenance is the regular ongoing day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. This work falls into two broad categories as follows:

9.4.3 Planned (proactive) - Proactive inspection and maintenance works planned to prevent asset failure.

9.4.4 Reactive

Reactive action to correct asset malfunctions and failures on an as required basis.
A key element of asset management planning is determining the most cost-effective blend of planned and unplanned maintenance as illustrated below.

Figure 14 Balancing proactive & reactive maintenance



The short-term maintenance strategy is intended to maintain the current levels of service standards. The long-term maintenance strategy will be modified to reflect the following factors:

- **Risk of failure** -The risk associated with failure of critical assets
- **Levels of service** - Changes in the current or agreed level of service
- **Economic efficiency** - Asset condition assessment
- **Extend the life of the asset component** - Asset improvements and development programme
- **Legislative compliance** – e.g. requirements of LGA 2002,

9.4.5 Operations & maintenance programme

The annual maintenance programme for the Central Waikato zone will be determined by the Service Level Agreement with HCC which is currently under review.

9.5 Capital and renewal planning

9.5.1 Renewal works

Renewal expenditure is work that restores an existing asset to its original level of service, ie capacity or the required condition. These broadly fit into the following work categories as follows:

Rehabilitation - Involves the repair of an existing asset, or asset component. Rehabilitation doesn't provide for a planned increase in the operating capacity or design loading. It is intended to enable the asset to continue to be operated to meet the current levels of service.

Replacement - Doesn't provide for a planned increase to the operating capacity or design loading. Some minor increase in capacity may result from the process of replacement, but a substantial improvement is needed before asset development is considered to have occurred.

9.5.2 Renewal strategy

Renewal strategies provide for the progressive replacement or rehabilitation of individual assets that have reached the end of their useful life. This is managed at a rate that maintains the standard and value of the assets as a whole. This programme must be maintained at adequate levels to maintain current levels of service and the overall quality of infrastructure assets.

The general renewal strategy is to rehabilitate or replace assets when justified by:-

9.5.3 Asset performance

Assets are renewed where it fails to meet the required level of service. The monitoring of asset reliability, capacity and efficiency during planned maintenance inspections and operational activity identifies non-performing assets. Indicators of non-performing assets include:

- Structural failure
- Repeated asset failure (breaks, faults)
- Ineffective and/or uneconomic operation
- Unsafe conditions for the public.

9.5.4 Economics

When it is no longer economic to continue repairing the asset (i.e. the annual cost of repairs exceeds the annualised cost of its renewal). An economic consideration is the co-ordination of renewal works with other planned works such as road reconstruction. Council actively researches the effectiveness of new technology, which may reduce the direct and social costs of repair works.

9.5.5 Risk

The risk of failure and associated environmental, public health, financial or social impact justifies proactive action (e.g. probable extent of flooding damage, health and safety risk). Where such assets are identified (critical assets), proactive inspection is undertaken to determine asset condition at a frequency appropriate to the risk and rate of asset decay.

9.5.6 Life cycle

The lifecycle expectation of the two assets within the zone is 100 years (for weirs)

9.5.7 Replacement (renewal) works summary

There is currently no capital or renewal works programmed for the zone.

9.6 Disposals

As part of the life cycle management of assets it is vital to consider the costs of asset disposal in the long-term financial forecasts for an asset. The cost of asset disposal is expected to be incorporated within the capital cost of new works, or asset renewals.

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

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

The formal process for disposal of zone assets is as follows:

- Asset identified as obsolete due to change in technology, change in site conditions, change in community demand, or failure of the asset to provide the service.
- Disposal options considered and a cost /benefit analysis carried out. The most cost-effective option to dispose of the asset will be undertaken:
    - input sought from liaison subcommittee as appropriate
    - Council approval sought according to Delegations Manual
    - disposal is undertaken including obtaining any consents for disposal works.

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount of the asset. Gains and losses on disposals are included in the statement of financial performance. When revalued assets are sold, the amounts included in asset revaluation reserves in respect of those assets are transferred to retained earnings.

Currently, there are no plans to dispose of any surplus scheme assets; however

planned replacement of some components will be undertaken as per the replacement/renewal plan. Salvage values of replaced assets are unlikely to be significant, and are therefore (conservatively) not included in financial forecasts.

At this time WRC has no plans to dispose of any of its river and catchment services assets.

9.7 Asset valuation

Introduction

WRC values its assets in accordance with the procedures and methods set out in the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines Edition 2 and New Zealand Equivalent to International Accounting Standard 16; Property, Plant and Equipment (NZ IAS 16) and the NZ local authority asset management practice (NZ Flood Protection Asset Valuation and Deprecation Guidelines.

An asset valuation is to be used for asset management (calculating long-term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes.

Revaluations are undertaken every three years on the basis of Depreciated Replacement Cost (DRC). The initial valuation was done as at 1 July 1998.

An asset valuation is undertaken on behalf of the WRC every three years. Key outputs from the report are:

- Optimised Replacement Cost (ORC)
- Optimised Depreciated Replacement Cost (ODRC)
- Assessment of Remaining Economic Life (REL)

Assets are fully maintained and depreciated, and therefore no significant changes in valuation are anticipated.

9.7.1 Accounting standard

Council adheres to the New Zealand International Accounting Standard 16 (NZIAS16) "Accounting for Property, Plants and Equipment" as this applies to relevant infrastructure assets considered in the scope of WRC valuations for the general purpose of financial reports.

9.7.2 Industry guidelines

Infrastructure assets should be valued in accordance with the rules and methodology as prescribed in the New Zealand Infrastructure Asset Valuation & Depreciation Guidelines Manual Edition 1.0 April 2001 (NZIAV) and in reference to earlier versions of these rules.

In addition the NAMS New Zealand Infrastructure Asset and Depreciation Guidelines, Edition 2.0. 2006 (NZIAVDG) and NZ Flood Protection Asset Valuation and Deprecation Guidelines are used regularly throughout local government and nationally as industry guidelines.

9.7.3 Valuation methodology

Council's latest revaluation of all infrastructural assets was undertaken as at 31st December 2010 (AECOM New Zealand Limited 2011.). The valuation process was performed in accordance with generally accepted accounting standards (NZ IAS 16) and with the NZ Flood Protection Asset Valuation and Depreciation Guidelines (NAMS, 2006b).

This asset revaluation was peer reviewed by WRC staff (Programme Managers Finance and Asset Management.)

Replacement values are generally calculated from a number of sources including:

- Recent contracts
- Consultant database
- Previous valuations adjusted using Capital Goods Index
- Rawlinsons
- Contractors, manufactures and suppliers

The unit rates used include the actual purchase and construction costs as well as establishment. These rates have been increased to account for professional fee's i.e. planning, investigation, design etc. A list of typical unit rates is shown in Appendix 6 (this Appendix is under development as part of the Improvement Plan).

The replacement value for the stopbanks was based on an equivalent component cost and included earthworks, topsoiling, fencing, royalties to landowners, design and construction supervision and administration.

The replacement value for all parcels of land owned by WRC for the Central Waikato Zone has been based on independent valuations. Replacement value is derived from the average value of the land immediately adjacent to the scheme plus a component for acquisition costs.

From the asset optimised replacement value (ORC), the optimised depreciated replacement cost (ODRC) is obtained as follows.

$$ODRC = \frac{\text{Remaining Life (Years)}}{\text{Economic Life (Years)}} * \text{Replacem}$$

Refer to Appendix 6 - Summary of Methodology and Assumptions for Infrastructure Assets of the 2008 Valuation of Flood Protection Assets, Waikato Regional Council, Asset Valuation Report (Opus International Consultants Limited, 2008) for a detailed description of typical unit rates used across the different asset groups, and the associated assumptions.

9.7.4 Base life assessments

Base life for the components within the pumping stations and floodgates were originally based on the recommendations within the NZIAMM. The base life for asset components are modified during the three yearly asset valuations based on historical condition monitoring and replacement frequencies.

Historical records of top up frequencies were used for the assessment of the stopbank base life. The frequency of the need to top up the crest level of a stopbank depends on the foundation material. For marine mud, the stopbank settles at a greater rate and requires more frequent top up. Therefore the base life of this type of stopbank is a function of stopbank height and the rate of settlement.

9.7.5 Remaining life

In all instances with the exception of drains, planting and vegetation the remaining life of the asset has been calculated from the condition rating.

9.7.6 Valuation overview

The valued assets of the zone have a total replacement value of $36,817, a current book value of $34,489 and an annual depreciation of $368 as of 31 December 2010. The soil conservation assets within the zone are not valued because they are formally owned by the respective property owners. WRC does however have on-going obligations for monitoring and managing these works under the terms of the agreements with landowners. Because of these commitments, the assets have been included under this plan. The breakdown of assets is shown Table 6.

9.8 Funding strategy

The funding for river and catchment works, and flood protection works in the Central Waikato Zone is set out in the LTP Section 9 'Finances'. The zone management programme provides both asset and non asset related river and catchment services, the main services and costs are however asset management related.

A Waikato catchment wide funding system (Project Watershed") provides the mechanism for funding all river and catchment works and services within the zone.

The costs of WRC services are funded through a combination of income sources including:

- Scheme lease income
- Participating landowners
- Ratepayers
- Internal borrowing
- Rental income from council owned buildings
- Investment income

The cost of Council's entire work programmes (cost of service statement) for all activities is projected to increase from $102.129 million in 2011/12 to $136.223 million (including inflation) in 2021/22. Rate revenue will fund 67-71 per cent of this expenditure. This amount varies as a result of the forecast revenue from passenger transport fares.

Over the period of LTP (2012 – 2022), projected rate increases to existing ratepayers are between 2.2 per cent and 4.3 per cent after allowing for inflation.

The council's investment fund, like others of its kind, has been affected by the financial crisis that impacted world markets over the last year.

In response to this, the council has amended its investment strategy by increasing the asset allocation of fixed interest investments compared to equities to help ensure a reliable income from the fund is available to offset rates requirements.

For the first three years of this plan, WRC is only budgeting on a return from the fixed interest investments that council will hold. During this period WRC expect the value of their equity holdings will start to recover some of the valuation losses of the last two years, however the timing of this is uncertain. A direct impact of this is that some programmes previously funded by income from the investment fund, such as Clean Streams, will be funded through rates. The budgeted income from the investment fund is treated as an offset to general rate and does not directly fund any work programme. This plan sees use of internal borrowing programmes in relation to river and catchment management zones. The cost of establishing the scheme works programmes was initially advanced from general council funds.

Specific debt repayment plans are in place with each affected catchment zone, funded from targeted rates, to ensure that this debt is repaid over an agreed time period (generally 10 years). Funds generated from the internal debt repayment will be added into the council's investment fund.

WRC's infrastructural capital expenditure programme of $52.356 million over the 10 years is funded by way of depreciation and capital rates. Internal borrowing is utilised to provide the initial capital financing. Capital rate revenue is then applied to the payment of interest and principle. These funding tools have been selected to ensure that the costs of these long term capital projects are spread over time to take account of intergenerational equity considerations. Operational capital expenditure is funded through depreciation.

The council is participating along with a number of other councils in a jointly developed computer software system. WRC's contribution to that project will be funded from internal borrowings and be repaid over five years.

9.8.1 Financial statements and projections

Financial projections for the zone are made over a ten year horizon commencing from the 2011/2012 financial year. While this long term forecast is necessarily uncertain, more detailed projections are made for the immediate 10 year period (yearly projections until 2021/2022). The projections made here are consistent with those in Councils 2012-2022 LTP.

An Annual Plan is prepared every year by WRC. This is developed within the Long Term Plan framework that is reviewed every three years. Both of these planning mechanisms are conducted within the legal requirements of the Local Government Act and after consultation with the wider community.

The Annual Plan ensures financial resources are available for the projects laid out for the coming period. The expenditure estimates are designed to include as detailed an estimate as possible with regards to future expenditure requirements for maintenance and depreciation. These costs are both fully expensed in the income statement for the period concerned.

Depreciation, non-cash transaction, is transferred to a Depreciation Reserve which in turn is used to fund Fixed Asset replacements.

9.9 Policies

9.9.1 Policy introduction

WRC has three policies that provide guidelines and procedures for dealing with treasury management activities; the determination of the significance of an issue, proposal, decision or other matter; how to perform in partnerships between council and the private sector. These three policies are:

- Treasury risk management policy
- Policy on significance
- Partnership and private sector policy
- Infrastructure assets – Accounting policies and guidelines.

9.9.2 Treasury risk management policy

The purpose of the Treasury Risk Management Policy is to outline approved policies and procedures in respect of all treasury activity to be undertaken by WRC. The formalisation of such policies and procedures will enable treasury risks within WRC to be prudently managed.

The objective of this Treasury Risk Management Policy is to control and manage costs and investment returns that can influence operational budgets and public equity. Specifically; all borrowing, investments and incidental financial arrangements (such as use of interest rate hedging financial instruments) will meet requirements of the Local Government Act 2002 and incorporate the Liability Management Policy and Investment Policy.

9.9.3 Policy on significance

'Significant' is defined as:

***Significant**, in relation to any issue, proposal, decision, or other matter, means that the issue, proposal, decision, or other matter has a high degree of significance.*

Section 90 of the Local Government Act 2002 ('the Act') requires all council to have a policy on significance which sets out:

- The council's general approach to determining the significance of proposals and decisions in relation to issues, proposals, decisions or other matters.
- Any thresholds, criteria or procedures that are to be used by the council in assessing the extent to which issues, proposals, decisions or other matters are significant.
- The assets considered by the council to be strategic assets.
- The significance of a decision helps to determine how rigorously the act's decision making requirements will be followed.

9.9.4 Partnership and private sector policy

Pursuant to Section 102(4) (e) of the Local Government Act 2002 (LGA 2002), Waikato Regional Council, ('the council'), must adopt a policy in respect of the commitment of council resources to partnerships between council and the private sector ('public private sector partnerships'). This policy must be established in accordance with Section 107 of the LGA 2002.

The purpose of this policy is to ensure that when the council enters into partnerships of a business nature with the private sector that it acts prudently to ensure the council's interests are protected and the desired outcomes are consistent with the council's strategic objectives. These partnerships can be quite diverse in nature and for this reason this policy is broadly based.

WRC may consider partnership arrangements with the private sector for the provision of infrastructure and services, where such a partnership is likely to deliver better value for money based on cost, time and financial arrangements than traditional delivery methods.

The council will consider partnerships with the private sector where:

- The partnership will contribute to the achievement of community outcomes in the council's Long Term Plan (LTP)
- It will promote the social, economic, environmental or cultural wellbeing of the region in the present and in the future
- It is a prudent, efficient and effective use of the council's resources
- A need has been defined in measurable output terms
- Outcomes for the community, measured on cost, quality and timeliness exceed any other provision
- The project is structured to optimise risk allocation in order to generate the incentives for cost effective, high quality services
- There is an identifiable market of bidders prepared to compete for the opportunity to undertake the project
- There is scope for the private sector to demonstrate particular skills and/or innovative capacity
- The project size justifies the transaction and ongoing management costs.

The financial management of assets in the Central Waikato zone must be consistent with these policies. The significance of RCS assets has been assessed in Part I and the financing of activities have been discussed earlier in this section. No RCS activities are currently carried out in partnership with the public sector though the policy demonstrates how this can be achieved.

9.9.5 Infrastructure assets – accounting policies / guidelines

The treatment of infrastructure assets is outlined in the WRC document Infrastructure Assets:

- Accounting Policies / Guidelines. The document is reviewed every year as part of the year-end financial report preparation
- The Scheme will be valued in accordance with the procedures and methods set out in the New Zealand Infrastructure Asset Management Manual. The Scheme will be revalued every three years and this will be based on the Optimised Depreciation Replacement Cost method
- The Optimised Replacement Cost model considers technology changes, over-design, redundancy and system configuration to identify a benchmark alternative asset that efficiently replicates the current asset, while providing the same level of service. ODRC equals this replacement cost, after deducting an allowance for wear/consumption to reflect the remaining economic cost

Currently the financial/accounting system is run within the finance department of WRC. Manual linkages exist between the Conquest Asset Management system and the financial management system. This is currently being automated.

9.10 Risk to significant forecasting assumptions

There are risks and uncertainties associated with future cost forecasts because it is not always possible to accurately predict the level of reactive maintenance required. Reactive maintenance is subject to a range of influences including the weather and river flows etc. Major disaster (floods and earthquake) risks are however provided for through self reserving and membership of the LAPP mutual disaster damage fund (refer to Appendix 5).

10 Improvement plan

10.1 Improvement process overview

Council is adopting a strategic management approach to improvement planning, continually developing ZMPs, and implementing improvement processes and practices. This Improvement Plan is integral to that approach, quantifying current business practice and measuring progress toward an identified future position.

The purpose of the Improvement Plan is to identify and develop implementation of ZMP processes. This includes:

- The cycle of ZMP monitoring, review, revision and audit to improve the effectiveness of ZMP outputs and compliance with audit criteria, legislative requirements and best appropriate practice.
- The definition of service standards reflecting community outcomes through public consultation. The ZMP is used to identify service level options and costs, and the delivery of services is a key objective of zone management planning.
- Identify and prioritise ways to cost-effectively improve the quality of the ZMP, and therefore decision making and service delivery.
- Identify indicative time-scales, priorities, human and financial resources required to achieve zone management planning objectives.

The development of this ZMP is based on existing levels of service, the best available current information and the knowledge of Council staff. It is intended that the development of this plan is part of an ongoing process and that the document will be reviewed and updated regularly. This review process involves using improved knowledge of customer expectations (community consultation) and information from Asset Management Systems and databases. This will enable Council to optimise decision-making, review outputs, develop strategies, improve risk management and extend the planning horizon. This section describes:

- The specific improvements proposed over the next three years.
- The procedures proposed to be implemented within the organisation for monitoring and review.

10.2 Improvement plan

The tables below contain the improvement projects/tasks to be undertaken over the next 3 years including levels of resources, funding, dependencies and priorities.

Table 37 Improvement plan

Process	Current practice	Target practice (3 year focus)	Owner / responsibility	Resource time (days)		Costs	Dependencies	Year	Project	ZMP Section
				Internal	External					
Community engagement										
Awareness and information	Periodic media releases Limited information dissemination Catchment liaison subcommittee engagement EnviroCare	Regular media release Promotion within community of achievements made, milestones reached Three yearly scheme open days Zone information available on website Community newsletters	Zone Mgr	6	4	$1,400	Comms	2012/13 ongoing		Managing the zone Relationships with Iwi
Asset management										
OAG Criteria for core and advanced asset management	Self-assessment	To be undertaken on ZMP on completion	Zone Mgr	2	0	$280	Resource	2013/14		Appendix 1b

Process	Current practice	Target practice (3 year focus)	Owner / responsibility	Resource time (days)		Costs	Dependencies	Year	Project	ZMP Section
				Internal	External					
Data management	Fundamental asset management processes in place Unit rate information currently not included in plan. Limited linkage between processes Improve data confidence and reliability Development of LIDAR information in progress but unavailable Level of historical maintenance information held is limited	Improved robust process for data collection, condition assessment and reporting (Complete Tables 13 and 14) Connections made to financial planning and forecasting Improved measurement of data confidence and completeness Summary of unit rates for determining valuations is to be developed and included into ZMP (in accordance with Audit NZ recommendations). Completion of LIDAR survey, and usage of information in zone management Implement a programme to improve the collection and of historical maintenance data. This will provide a basis of assessing the reliability of forecast information and managing the risks of unplanned maintenance costs Defined a LoS related directly to bridges within the zone (once level status is confirmed) include within Los Tables Define and include performance grades for asset capacity and performance tables.	PM AM PM AM	100+ 1	0 0	$14,000+ TBC	Finance -	2011/12 ongoing 2011/12		Financials & Appendix

Process	Current practice	Target practice (3 year focus)	Owner / responsibility	Resource time (days)		Costs	Dependencies	Year	Project	ZMP Section
Information systems										
Customer inquiries	Customer enquiries not managed through a central call centre Calls/complaints/issues received by general staff member, operational staff or potentially reception KPIs to respond within particular timeframes	Review prospects for management of enquiries and requests through potential corporate system. Develop a robust process including flow diagrams to show how service requests/customer enquiries are to be tracked Document and flowchart the process for establishing an service request and the closeout loop Implement a mechanism for auditing responses in accordance with published service levels	Division Mgr	30	5	$4,900	Resources Council / Groups Funding IT	2012/13		Levels of service
Operations and maintenance										
River management guidelines	In development	Adopt a river management strategy for the main river channel. Introduce regional channel capacity guidelines	Zone Mgr	20	5	$3,500	Resources Funding	2012/13		Levels of service
Service Level Agreement	SLA with HCC in place requires review and updating	Updated SLA in place and reviewed on a 3 yearly cycle	Division Mgr	15	120	$30,000	Funding	2012/13		Managing the zone Levels of service
Demand analysis and strategic planning										
Optimised renewal and replacement of assets	Optimised decision making not yet implemented	Develop renewals and replacements programme and Optimised Decision making prioritisation process	Division Mgr AM	TBC	TBC	TBC	Resources Funding	2011/12 ongoing		Managing the zone
Demand analysis	From an operation perspective service demand is analysed to include: Climate Change as required (draft climate change policy) Community Demand (resulting from land use	Develop and Implement demand strategy to include: Consultation Costs and options for flood protection Climate change	Division Mgr	40	10	$7,000	Resources Funding	2013/14		Managing the zone

Process	Current practice	Target practice (3 year focus)	Owner / responsibility	Resource time (days)		Costs	Dependencies	Year	Project	ZMP Section
	changes and risk mitigation e.g. for businesses wanted increased protection) Options modelling									
Drainage inclusion into zone plan	Drainage is currently dealt with as separate to the zone plan. Especially in the context of urban growth that encompasses drainage areas, this approach is not integrated	Revise the zone plan to integrate all WRC drainage responsibilities into the Central Waikato Zone Management Plan	Zone Mgr, Division Mgr	100	100	$28,000	Resource Funding	2014/15		All
Risk assessment	A risk register and framework has been developed Risk is based on NZ/AS 4360 which has been superseded by ISO 31000	Undertake actions as outlined in the risk management action plan Put critical areas onto GIS including level of risk Identify process and responsibility for updating the register. Review and maintain the risk register Implement management options/strategies to reduce risk Report regularly to the Council	Division Mgr	40+			Resources	2011/12 ongoing		Risk management
Levels of Service (LoS) review	Development of LoS undertaken under ZMP Technical LoS are well established for each scheme	Levels of service to consulted on next LTP Consult with zone stakeholders on service level options and costs annually and for specific projects With potential increases in the cost of maintaining services levels, continue to develop costs and options	Division Mgr Zone Mgr			TBC	Resources	2011/12 ongoing		Levels of service

Process	Current practice	Target practice (3 year focus)	Owner / responsibility	Resource time (days)		Costs	Dependencies	Year	Project	ZMP Section
Organisational										
Funding strategy	Funding strategies are in place for most activities	Develop and confirm zone funding strategy to address : Repayment of debt Provision for depreciation Any implications arising from peat settlement investigation	Division Mgr	20	TBC	TBC	CFO Resources	TBC		Financial management
Valuations	As from 2011 Council has undertaken external valuations with an internal peer review.	External valuation commissioned 2013/14 with internal review.	Division Mgr	5	15	30K	Resources Funding	2013/14		Financial management
ZMP review / improvement	First ZMP developed in 2011 Benchmarked against OAG criteria Development of Improvement programme	Improvement programme implemented Annual review of ZMP Responsibilities assigned External assessment / peer review of ZMP against Schedule 10 and OAG criteria	Zone Mgr	15	 5	TBC $2K	Resources Funding	2010/11 ongoing		Improvement plan

Acronyms

AEE	Assessment of environmental effects
AM	Asset management
AMIS	Asset management information system
AMP	Asset management plan
AP	Annual plan
ARI	Average recurrence interval
AS/NZS	Australia and New Zealand Standards
BAP	Best appropriate practice
BRE	Business risk exposure
CDEM	Civil Defence Emergency Management
CE	Chief executive
DOC	Department of Conservation
WRC	Waikato Regional Council
GRC	Gross replacement cost
H&S	Health and safety
IIMM	International infrastructure management manual
IMP	Iwi management plan
IPCC	Intergovernmental Panel on Climate Change
IT	Information technology
KPI	Key performance indicator
LAPP	Local Authority Protection Programme (Disaster Fund)
LCM	Life cycle management
LGA 2002	Local Government Act 2002
LIA	Land Improvement Agreement
LoS	Levels of Service
LTP	Long Term Plan
LWWCS	Lower Waikato Waipa Catchment Scheme
MFE	Ministry for the Environment
MFish	Ministry of Fisheries
NAMS	National Asset Management Steering (Group)
NIWA	National Institute of Water and Atmospheric Research
NZIAS16	New Zealand International Accounting Standard
NZTA	New Zealand Transport Agency
OAG	Office of the Auditor General
ODM	Optimised decision making
ORC	Optimised replacement cost
ODRC	Optimised depreciated replacement cost
ORDM	Optimised renewal decision making
QA	Quality assurance
RAMSAR	Ramsar Convention
RCS	River & Catchment Services Group
RIG	Resource Information Group
RMA	Resource Management Act 1991
RPS	Regional policy statement
RUG	Resource Use Group
RUL	Remaining useful life
SLA	Service Level Agreements
SNZ HB	Standards New Zealand Handbook (Risk)
TRW	Tai-ranga whenua (WRC's iwi liaison unit)
WRP	Waikato Regional Plan
WVA	Waikato Valley Authority
ZMP	Zone management plan

References

Gibbs M. 2007a. Best practice guidelines for vegetation management and in stream works. Environment Waikato Technical Report 2007/41. Hamilton East, Waikato Regional Council (Environment Waikato).

Local Government Amendment Act 2002.

Mighty River Power High Flow Management Plan

Moore J 2008. 2008 valuation of flood protection assets, Waikato Regional Council. Wanganui, Opus International Consultants Ltd.

Mullen B 2008. Climate change effects and impacts assessment : a guidance manual for local government in New Zealand. 2nd ed. Ministry for the Environment 2008.

Mulholland M. 2004: Disaster damage and risk management policy for infrastructural assets. Report to Operations Committee June 2004. Hamilton East, Waikato Regional Council (Environment Waikato) DM#919767.

National Asset Management Steering 2007. Developing levels of service and performance measures : creating customer value from community assets. Version 2. Thames, National Asset Management Steering Group / Ingenium

National Asset Management Steering Group 2006b. New Zealand infrastructure asset valuation and depreciation guidelines. Version 2.0. Wellington, National Asset Management Steering Group / Ingenium

National Asset Management Steering Group 2006a. International infrastructure management manual. 3rd ed. Wellington, National Asset Management Steering Group / Ingenium

Nooroa T. 2008a. Infrastructural assets accounting policies/guidelines. Rev.ed. Hamilton East, Waikato Regional Council (Environment Waikato). DM#601195

Opus International Consultants Ltd. 2009: 2009 valuation update of flood protection assets, Waikato Regional Council. Wellington, Opus International Consultants Ltd.

Resource Management Act 1991.

Standards New Zealand 2004. AS/NZS 4360. Risk management. Wellington, Standards New Zealand

Standards New Zealand 2000. SNZ HB 4360: Risk management for local government. Wellington, Standards New Zealand

Waikato Regional Council 2012. 2012-2022 long term plan. Hamilton East, Waikato Regional Council

Waikato Regional Council (Environment Waikato) 2008b. Central Waikato River stability management strategy : 2008-2058. Hamilton East, Waikato Regional Council (Environment Waikato). DM#1130137

Waikato Regional Council (Environment Waikato) 2009e. Condition and performance report 2008/09 : all zones. Hamilton East, Waikato Regional Council (Environment Waikato). DM#1462203

Waikato Regional Council (Environment Waikato) 2003. Environmental guidelines : Asset Management Group : soil conservation, river management, flood control, land drainage, hazard management.. Internal Series 2003/06. Hamilton East, Waikato Regional Council (Environment Waikato)

Waikato Regional Council (Environment Waikato) 2002. Project Watershed : Waikato River catchment services : level of service and funding policy. Environment Waikato Policy Series 2002/12. Hamilton East, Waikato Regional Council (Environment Waikato)

Waikato Regional Council (Environment Waikato) 2009a. River and Catchment Services : description of services incorporating Schedule 10/Service Level Requirements under the Local Government Act 2002. Waikato Regional Council (Environment Waikato). DM#1439351.

Waikato Regional Council (Environment Waikato) 2007b. Waikato regional plan. Environment Waikato Policy Series 2007/21. Hamilton East, Waikato Regional Council (Environment Waikato)

Waikato Regional Council (Environment Waikato) 2000. Waikato regional policy statement. Environment Waikato Policy Series 2000/30. Hamilton East, Waikato Regional Council (Environment Waikato)

Glossary of terms

Annual Plan (AP)	The Annual Plan provides a statement of the direction of Council and ensures consistency and coordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Aggradation	The accumulation of sediment in rivers and waterways due to sediment supply exceeding the waterways ability to transport sediment.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Asset renewal	Major work, which restores an existing asset to its original capacity or the required condition (stopbank top-up etc)
Auditor General	The Auditor General of the New Zealand Audit Office.
Capital expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Climate change	A long term significant change in the average weather.
Community outcomes	Outcomes developed with the community, which outline the community's vision.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.
Condition monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action
Critical assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non critical assets.
Depreciated replacement cost (DRC)	The replacement cost of an asset spread over the expected lifetime of the asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for the by historical cost (or re-valued amount) of the asset less its residual value over its useful life.
Disposal	Activities necessary to dispose of decommissioned assets.
Edge protection	Rockwork or planting to help maintain the integrity of stop banks or other flood defences structures.
Life cycle management	A process of managing an asset from initial construction through to disposal.
Long Term Plan (LTP)	Council's 10-year programme setting out the community outcomes sought, key activities, levels of service, performance measures and funding.
Reach	A defined section of a river, used for management purposes
Remaining useful	Remaining Useful Life of an asset or asset component. (Generally Useful or

life (RUL)	Effective life less age).
Stakeholder	A person or organisation who has a legitimate interest in an activity e.g. community, Iwi, etc.
Stopbank	An embankment adjacent to a river or watercourse, which retains floodwaters from flowing onto a floodplain.
Sustainability	The process of meeting the needs of the present community without compromising the ability of future generations to meet their own needs.

Appendices

Appendix 1 Legislative & policy requirements

LGA 2002 Schedule 10 requirement	LGA 2002 references	Section covered
Identify the rationale for delivery of the group of activities (including the community outcomes to which the group of activities primarily contributes)	LGA 2002 Schedule 10 – 2 (1) (b)	Overview document Sec 3.3.2.2
Outline any significant negative effects that any activity within the group of activities may have on social, economic, environmental or cultural well-being of the local community	LGA 2002 Schedule 10 – 2 (1) (c)	Zone plan Appendix 1a
Identify the assets or groups of assets required by the group of activities and identify, in relation to those assets or groups of assets,---	LGA 2002 Schedule 10 – 2 (1) (d)	Zone plan section 4 & 6
How the local authority will assess and manage the asset management implications of changes to demand for, or consumption of, relevant services;	LGA 2002 Schedule 10 – 2 (1) (d) (i) (A)	Zone plan sections 6 & 7
How the local authority will assess and manage the asset management implications of changes to service provision levels and standards	LGA 2002 Schedule 10 – 2 (1) (d) (i) (B)	Zone plan sections 7 - 9
What additional asset capacity is estimated to be required in respect of changes to each of the matters described in subparagraph (i):	LGA 2002 Schedule 10 – 2 (1) (d) (ii)	Zone plan section 9
What additional asset capacity is estimated to be required in respect of changes to each of the matters described in subparagraph (i):	LGA 2002 Schedule 10 – 2 (1) (d) (ii)	Zone plan section 9
How the provision of additional asset capacity will be undertaken:	LGA 2002 Schedule 10 – 2 (1) (d) (iii)	Zone plan section 9
The estimated costs of the provision of additional asset capacity identified under subparagraph (ii), and the division of those costs between each of the matters in respect of which additional capacity is required:	LGA 2002 Schedule 10 – 2 (1) (d) (iv)	Zone plan section 9
How the costs of the provision of additional asset capacity will be met:	LGA 2002 Schedule 10 – 2 (1) (d) (v)	Zone plan section 9
How the maintenance, renewal, and replacement of assets will be undertaken:	LGA 2002 Schedule 10 – 2 (1) (d) (vi)	Zone plan section 4& 9
How the costs of maintenance, renewal, and replacement of assets will be met:	LGA 2002 Schedule 10 – 2 (1) (d) (vii)	Zone plan section 9
A statement of the intended levels of service provision for the group of activities, including the performance of targets and other measures by which actual levels of service provision may meaningfully be assessed: and (i) in detail in relation to each of the first three (1-3) financial years covered by the plan; and (ii) in outline in relation to each of the subsequent financial years covered by the plan (4-10).	LGA 2002 Schedule 10 – 2 (2) (a) and 2 (1) (e)	Zone plan section 7
The estimated expenses of achieving and maintaining the identified levels of service provision, including the estimated expenses associated with maintaining the service capacity and integrity of assets: and (i) in detail in relation to each of the first three (1-3) financial years covered by the plan; and (ii) in outline in relation to each of the subsequent financial years covered by the plan (4-10).	LGA 2002 Schedule 10 – 2 (2) (b) and 2 (1) (e)	Zone plan section 9
A statement of how the expenses are to be met; and (i) in detail in relation to each of the first three (1-3) financial years covered by the plan; and (ii) in outline in relation to each of the subsequent financial years covered by the plan (4-10)..	LGA 2002 Schedule 10 – 2 (2) (c) and 2 (1) (e)	Zone plan section 9
A statement of the estimated revenue levels, the other sources of funds, and the rationale for their selection in terms of section 101 (3). And (i) in detail in relation to each of the first three (1-3) financial years covered by the plan; and (ii) in outline in relation to each of the subsequent financial years covered by the plan (4-10).	LGA 2002 Schedule 10 – 2 (2) (d) and 2 (1) (e)	Zone plan section 9

Appendix 1a Significant negative effects of this activity

Schedule 10 of the Local Government Act covers the information required to be included in the LTP. Part 2 (1) (c) states that a LTP must, in relation to each group of activities of the local authority:

> *(c) Outline any significant negative effects that any activity within the group of activities may have on the social, economic, environmental, or cultural well being of the local community*

This sub-section provides information in accordance with this legislative requirement. The purpose of identifying significant negative effects is to ensure that Council activities are conducted in accordance with the principles of sustainability. RCS activities have the potential to have negative effects on community well being. The possible negative effects are outlined in the table below.

Significant negative effect	**Cultural**	**Social**	**Economic**	**Environmental**	**Mitigation of negative effects**	**Addressed in…**
Some in-stream works may have minor negative effects on water quality and ecological values				✓	Compliance with consent conditions Compliance with Council's Engineering Code of Practice and Guidelines.	Zone plan section 4 Legislative and policy requirements and Appendices 1c and 1d
Increasing rates to fund works may create economic pressures for communities			✓		Consult with community on all costs and options for Levels of service through the LTP process	Overview document section 6 Consultation and engagement Zone Plan section 7 Levels of service
Aesthetic values may be impacted, for example losing river views because of stopbanks		✓			Consult with community on all costs and options for Levels of service through the LTP process	Overview document section 6 Consultation and engagement
Removal / relocation of properties in high hazard risk areas may effect individuals and communities		✓			Consult with community on all costs and options for Levels of service through the LTP process	Overview document section 6 Consultation and engagement
Previous identified sites containing taonga (artefacts) or koiwi (bones) may be disturbed in the process of works	✓				Consult with iwi regarding sites of significance during the works planning process	Overview document section 6 Consultation and engagement Overview document section 7 Relationships with iwi ZMP section 5 Relationships with IWi
Inadequacy of existing assets to cope with large rainfall events causing flooding, which could result in social and economic hardship.		✓	✓	✓	Compliance with consent conditions Compliance with Council's Engineering Code of Practice and Guidelines.	Overview document section 5 Legislative and policy requirements Zone plan section 4 Managing the zone Zone plan section 8 Risks Zone plan Appendices 1c and 1d
Health and safety risks associated with the operation, maintenance, or construction of infrastructure		✓	✓		Ensure compliance with legislation and Health & Safety Management Plans. Maintain an Incidents Register.	Zone plan section 8 Risks

Potential impacts on customer satisfaction due to service failure /delays /responsiveness		✓	✓		Monitor and report on Levels of Service and in Service provider contracts. Seek to resolve customer complaints “close the loop”	Zone plan section 7 Levels of service Zone plan section 10 Improvement Plan
Access to waterways		✓	✓		Monitor requirements for access and liaise with the community as appropriate	Zone plan section 7 Levels of service
Disruption to wildlife				✓	Programme works to minimise wildlife disruption avoiding fish spawning and bird nesting seasons	Zone plan section 4 Managing the zone Zone plan Appendices 1c and 1d

The significant negative effects identified above can be managed and/or mitigated by effective risk management, options assessments, asset management and operational procedures.

Appendix 1b Office of the Auditor General Criteria for core and advanced asset management

The following is an internal assessment against the OAG criteria to be completed as part of the ZMP Improvement plan

Key AMP criteria	Key points for achieving "Core" criteria	Key points for achieving "Advanced" Criteria	Covered In ZMP section	In Development	Basic	Intermediate	Advanced	Comments
Levels of service	Asset Management (AM) Planning should define the level of service or performance required of the asset, linked to the strategic/community outcomes of the organisation. The significant services (for which service levels should be subject to consultation and agreement) should be stated.	Community outcomes linked to LoS and customer and technical performance measures	Section 7 Levels of service					Customer charter yet to be prepared
		Evaluating LoS Options & Costs	Section 7 Levels of service					
		For each of those significant services; Undertaking consultation with the community and other relevant stakeholders, using consultation processes which meet industry recognised standards.	Section 4 managing the zone					
		Adoption by the Council or governing body of the levels of service and standards after consultation has taken place.	Section 7 Levels of service					
		Public communications of the levels of service and standards in a 'Customer Charter' or equivalent public document.	Section 7 Levels of service					
		Regular monitoring and public reporting of the organisations adherence to agreed levels of services and standards.	Section 4 managing the zone					
		Ensuring the AM plans of each significant service reflect and are based on the agreed levels of service, including technical performance targets and measures which underpin the customer-agreed levels of service and standards.	Section 7 Levels of service					

Key AMP criteria	Key points for achieving "Core" criteria	Key points for achieving "Advanced" Criteria	Covered In ZMP section	In Development	Basic	Intermediate	Advanced	Comments
Description of assets	An adequate description of the asset, both physically and in financial terms, with the ability to aggregate and disaggregate information. State the remaining useful lives of assets. A financial description of the assets that is linked to the physical description and meets the requirements of: Financial Reporting Standards Valuation Standards augmented by the NZ Depreciation and Valuation Guidelines A financial description of the assets that is linked to the physical description and meets the requirements of NZIAS 16. Augmented by the NZ Depreciation and Valuation Guidelines	A reliable physical inventory of assets at both an individual asset level and at a network level. This would include: Physical attributes such as location, material, age etc. Systematic monitoring and analysis of physical condition. Systematic measurement of asset performance (including utilisation / capacity).	Section 4 managing the zone					
Financial forecasts / recognise depreciation (Loss of service potential)	AM Planning should translate the physical aspects of planned maintenance, renewal and new work into financial terms for at least the ensuing 10 years and in a manner that is fair, consistent and transparent. The forecasts should include sufficient information to enable decline in service potential (depreciation) of an asset to be measured. Guidance on depreciation is included in the NZ Valuation and Depreciation Guidelines.	AM Planning should translate the physical aspects of planned operational, maintenance, renewal and new works into financial terms. Generally over the timeframe in which the asset network must deliver services. In more specific terms, over the period for which the organisation has a strategic plan. The assumptions underpinning financial forecasts should be disclosed in the organisations strategic plans and AM plans. The compilation of financial forecasts should be consistent, reliable and provable.	Section 9 Financial management					

Key AMP criteria	Key points for achieving "Core" criteria	Key points for achieving "Advanced" Criteria	Covered In ZMP section	In Development	Basic	Intermediate	Advanced	Comments
Planning assumptions & confidence levels	AM planning should: List all assumptions and provisos under which the plan and financial forecasts are prepared. Indicate the degree of confidence of the reliability of data underpinning the AM Plan, particularly: Data on asset condition Data on asset performance Accuracy of asset inventory Demand/growth forecasts On the basis of the preceding assumptions and confidence of underlying data, provide a level of precision or confidence on the expenditure forecasts for the asset network	As for 'core' plus: List all the assumptions and provisos in the AM Plans, and note key assumptions regarding AM Planning in the organisations strategic plans. Have degrees of confidence on the reliability of data as follows: Inventory data Grade 1 (critical assets) Grade 2 (non critical assets)	Section 4 managing the zone Section 4 managing the zone					Further work needed
		Condition data Grade 1 or 2 (critical assets) Grade 1, 2 or 3 (non critical assets) Performance data Grade 1 or 2 (critical assets) Grade 1, 2 or 3 (non critical assets)						
Outline improvement programmes	AM Planning should state what needs to be done to improve AM processes and techniques Improvement programmes should outline: The weak areas and how these will be addressed The timeframe over which the improvements will occur and The resources (human and financial) needed	As for 'core' plus: Improvement programmes should outline key performance indicators (KPIs) for monitoring AM improvement. The improvement plan should comment generally on achievements against the previous plan, and formally report against KPIs. As for 'core' AM Plan criteria.	Section 10 Improvement plan					

Planning by qualified persons	AM Planning must be undertaken by a suitably qualified person. A suitable qualification would be a Level 6 (Tactical) or Level 7 (Strategic) National Diploma in Asset Management or equivalent skill level. If plans are prepared by persons not suitably qualified, the plans should be independently assessed by a qualified person. The planning process should be peer reviewed.	As for 'core' AM Plan criteria. As for 'core' AM Plan criteria. As for 'core' AM Plan criteria.	Section 4 managing the zone Section 10 Improvement plan					
Commitment	The Asset AM Plan must be approved and adopted by the governing body, Board or Council. This includes approval of the improvement element of the plan. AM Plans must be seen as the key planning tool for infrastructure assets and/or significant physical assets which provide the inputs for Council's strategic plans (LTP).	As for 'core' AM Plan criteria. As for 'core' plus: The organisation must demonstrate that AM plan requirements are being implemented through operational plans and formally report discrepancies	Section 4 managing the zone					
Updating	AM plans must be regularly updated to reflect the most current future plans for the assets (it is expected that 'core' AM planning will be significantly revised in the light of action under improvement programme. In the first few years annual revisions of AM plans are likely).	AM Planning is seen as a constantly evolving process, with underpinning AM systems constantly providing better information. It is expected that formal asset management plans and overarching asset management strategies will be formally revised every three years, with the timing of revisions linked to the organisation's strategic planning cycles.	Section 4 managing the zone					

Risk management	Risk management to identify critical assets and associated risks and risk management strategies.	Management of assets must include recognition and application of the principles of integrated risk management. Specifically; Risk management should be consistent with AS/NZS4360, and industry good practice such as the NZ Local Government Handbook for risk management. Risk management for assets should be integrated with other corporate risk management processes. Asset risk management should encompass: Identification and risk management strategies for critical assets The link to maintenance and replacement strategies. Engineering lifelines based risk assessments and mitigation plans including reference to the organisations disaster recovery and business continuity plans	Section 8 Risk management					
Lifecycle (Optimised) decision-Making	Identify gaps between current service capability and the required service capability to meet future demand and target service levels and reflect these gaps in an asset development programme. Evaluation and ranking based on suitable criteria of options for significant capital investment decisions.	The ability to predict robust and defensible options for asset treatments that can assist in achieving optimal costs over the life cycle of the asset or network including: Applying appropriate economic evaluation tools (or other organisation endorsed prioritisation systems) in developing short term project lists. Using predictive modelling techniques to provide defensible long term financial forecasts.	Section 9 Financial management Section 4 Managing the zone					

Managing growth	Demand forecasts for each network or facility for a 10 year period are based on latest growth forecasts. Demand management strategies and demand drivers are understood and documented	Demand forecasts include analysis of the different factors that comprise demand. The sensitivity of asset development (capital works) programmes to demand changes is understood.	Section 9 Financial management					

Appendix 1cCentral Waikato zone consents

Consent No	WRC Asset	Description	Expiry
119807	61493	Consent No. 119807 Construct training lines & groynes up to 200m in length per kilometre of river bank, and associated bed disturbance & sediment discharge during the construction works. (Controlled Activity)	06 Nov 2039
119808	122988	Consent No. 119808 Construct erosion control structures up to 200m in length per kilometre of river bank, and associated bed disturbance & sediment discharge during the construction works. (Controlled Activity)	06 Nov 2039
121848	150500	Consent No. 121848 - River and stream works within the beds and floodplains of waterways - place, construct & use erosion control structures, gravel relocation, gravel/silt extraction, replacement on the floodplain, vegetation removal (Discretionary Activity)	30 Jun 2032
121849	150502	Consent No. 121849 - Diversions of river/stream flows associated with construction of erosion control structures, gravel/silt extraction & gravel relocation (Discretionary Activity)	30 Jun 2032
124998	150504	Consent No. 124998 - Undertake the removal of obstructions from the beds of rivers and their tributaries within the Lower Waikato, Central Waikato and Waipa River Management Zones (Discretionary Activity)	30 Jun 2047
108737	45170	Consent No. 108737 - Replace an existing outlet drain structure with a weir that will maintain lake Maratoto levels	26 Mar 2024
109909	90360	Consent No. 109909 - Replace, use and maintain a drain outlet structure with a weir that will maintain the minimum levels of Lake Rotomanuka	30 Jan 2026
113491	113992	Consent No. 113491 - Undertake construction of erosion protection works on the true left bank of the Waikato River downstream of the Narrows Bridge	27 Jun 2042

Appendix 1d Standards and guidelines

Standard or guideline	Description/use
International Infrastructure Management Manual (NAMS, 2006a)	General asset management
Environment Waikato: Stopbank Management Guidelines. (Environment Waikato, 1995)	Generic management of stopbanks
Environment Waikato: Floodgate Management Guidelines. (Environment Waikato, 1997a)	Generic management of floodgates
Environment Waikato: Environmental Guidelines. (Environment Waikato, 2003)	Guidelines for undertaking asset management activities to avoid/minimise environmental effects.
Environment Waikato: Infrastructure Assets Accounting Policies / Guidelines. (Environment Waikato, 2008a)	Policies/guidelines for accounting for infrastructure assets within Council
Environment Waikato: Infrastructure Assets Disaster Damage and Risk Management Policy (Environment Waikato 2004)	Risk financing for disaster damage to schemes
NZS 3910, Conditions of Contract for Building and Civil Engineering Construction	Standard conditions of contract for construction/maintenance work
AU/NZS 4360. Australian/New Zealand Standard for Risk Management.	Risk management framework.
Vegetation Management and Instream Works (Environment Waikato, 2007)	Best practice guidelines
Waterway Crossings (Environment Waikato, 2006)	Best practice guidelines
Land Drainage (Environment Waikato, 2006)	Best practice guidelines
Oil Spill Contingency Guidelines (Environment Waikato, 2006)	Operational guidelines
Erosion and Sediment Control Guidelines for Soil Disturbing Activities (Environment Waikato, 2002)	Operational guidelines
Environment Waikato Freshwater Fish Calendar (Environment Waikato, 2007)	Operational guidelines
Consent Requirements for Vegetation Removal (Environment Waikato, 2006)	Operational guidelines
National Policy Statement for Flood Risk Management (proposed)	National standard
Managing Flood Risk – A process Standard, NZS9401: 2008	National standard
River Flood Risk Management Strategy 2009	Council regional strategy

Appendix 2 Business process

Business functionality supported by Conquest II

Product/module	Business function	Comment	WRC status
Conquest II Asset register	Records information about the nature (type, material, dimensions, quantity and age) of assets Records information about the location of assets. Records information about the design capacity of assets and the areas serviced by assets. Fully customisable type hierarchy and user defined attributes	Data not regularly updated unless errors are found. Significantly complete some asset types still to be defined and added	Partially Implemented
Conquest II Valuation	Records ODRC, and ORC information. Estimated remaining lives and expected expiry date Depreciation tracking	Valuations updated every 3 years. Valuation history is retained.	Fully Implemented
Conquest II Inspections and performance	Records annual inspection and condition information. Performance grade	Condition information updated annually Inspection history is retained	Fully Implemented
Conquest II Requests	Customer requests recorded Actions can be loaded and programmed Provides audit trail of response times and actions.		Partially implemented
Conquest II Maintenance Management	Planned maintenance (standard actions/ actions) Unplanned maintenance ((standard actions/ actions) Standard procedures Works completion sign off Forward planning		Partially implemented
Conquest II Risk Management	Condition Performance Consequence of failure Probability of failure	Quantification of failure risk for prioritising maintenance works.	Not yet implemented

Appendix 3 Issues and opportunities

The following tables provide a record of Identified Issues and Opportunities that have been identified by stakeholders (with stakeholders to date).

Table 38 Flood hazard and flow management

	Issues and opportunities	Identified by
I.1.1	High flows in the Mangaone and Mangaonua Streams result in flood hazards in the Annebrooke Road / SH1 area in Riverlea Gully.	Waikato DC
I.1.2	Mangaone and Mangaonua Streams will have increased stormwater loads from urban development in Cambridge and Ruakura	Waikato DC, Waipa DC
I.1.4	High risk flood zones need to be mapped and identified within all districts plans – plans and studies have identified areas, but Council not aware of any spatial information being provided	Waikato DC, Waipa DC
I.1.5	Changing levels of Waikato River due to damming creates water take issues when intake structures are fixed above temporary shallow water line	Waipa DC
I.1.6	Waikato Expressway and associated bypasses could potentially restrict natural overland water courses	Waikato DC, Waipa DC
O.1.1	Events at Turangawaewae Marae are supported by Mighty River Power through raising and lowering of the Waikato River for specific occasions	Waikato DC

Table 39 Urban development and land management

	Issues and opportunities	Identified by
I.2.1	Development at Airport will increase stormwater runoff and contamination levels	Waipa DC
I.2.2	Mystery Creek Events Centre increasing frequency and size of activities	Waipa DC
I.2.3	Ruakura development alongside Hamilton could generate significant amounts of contaminated stormwater discharges due to the industrial nature of the development	WRC
I.2.4	HCC municipal water supply take is downstream from proposed discharges of Ruakura, Cambridge North, and the Airport Development; increasing strain on water treatment facility	Waipa DC
I.2.5	Land drainage and farming practices on peat soils in the Rukuhia area is consolidating peat and lowering lake levels, contributing to decline in water quality and health	WRC
I.3.6	High sediment loads in the Karapiro Stream resulting from inappropriate land use practices	WRC, Waipa DC
I.2.7	Projected growth at Te Awamutu will outpace water supply from its current source. Potential for Waipa DC to take from the Waikato River to supplement existing supplies.	Waipa DC
I.2.8	Rotokauri development does not yet have an identified stormwater management solution	WRC
O.2.1	Peacockes growth cell of Hamilton City surrounds a high value stream environment. There is an opportunity to maintain the existing values and showcase urban stream management	WRC

Table 40 River bank and bed erosion

	Issues and opportunities	Identified by
I.3.1	The presence of dams upstream of Cambridge contribute to riverbank and bed erosion which affects infrastructure, riparian margins and potential property loss along Waikato River to Ngaruawahia.	HCC, WRC
I.3.2	Drawdown from Karapiro Dam release contributing to bank instability and erosion of property and infrastructure	WRC, Waipa DC
I.3.3	Cambridge sewer bridge/pedestrian crossing is at risk due to potential erosion	Waipa DC
I.3.4	High level bridge in Cambridge subject to erosion and bank instability	Waipa DC
I.3.5	Existing active erosion at confluence of Karapiro Stream and Waikato River	WRC, Waipa DC
I.3.6	Erosion risks at 'The Point'; confluence of Waipa and Waikato Rivers in Ngaruawahia	Waikato DC
I.3.7	Sandy soils around Cambridge have the potential to create tomos and related hazards, such as liquefaction	Waipa DC
I.3.8	Removal of riparian vegetation without replanting of suitable species	WRC
I.3.9	Drawdown from Karapiro Dam release contributing to bank instability and erosion of property and infrastructure	WRC
I.3.10	The Narrows Bridge where SH21 crosses the Waikato River is at risk from erosion	WRC
O.3.1	The Waikato Bed Degradation Management Strategy contained many positive actions. While its status is currently unknown, this process is an opportunity to pick up this work again and advance it	Waipa DC

Table 41 Protecting and promoting the health and wellbeing of the Waikato River

	Issues and opportunities	Identified by
I.4.1	Declining water quality of the Waikato River is a cumulative issue, with Waikato District on the receiving end of the most adverse effects	Waikato DC
I.4.2	Cambridge wastewater treatment facility presently discharges into the Waikato River. Treatment standards unable to be met, but opportunities exist for improving standard or piping to Hamilton's Pukete treatment plant	Waipa DC
I.4.3	Ruakura stormwater disposal potentially discharging to the Mangaonua Strm upstream of HCC water takes, and eventually to the Waikato River.	Waipa DC
I.4.4	Urban stormwater discharge to Waikato River operating under comprehensive consents. How will these consents respond to the Vision and Strategy for the Waikato River which has the weight of a National Policy Statement which must be given effect to.	Waikato DC, HCC, Waipa DC
O.4.1	Northgate drainage area is currently polluted with solid waste and contaminated water; commercial real estate provides an opportunity to improve the area	Waikato DC
O.4.2	Streams, lakes, and overland flows external to the Central Zone may ultimately drain into the zone to affect water quality; Waikato DC has signed a Peat Lakes Accord to enhance the ecological qualities of these lakes	Waikato DC
O.4.3	Tamahere Catchment Management Plan includes actions to enhance gullies and the Mangaone and Mangaonua Streams	Waikato DC
O.4.4	Opportunity to enhance water quality of Hamilton Lake for amenity and community benefits.	WRC

Table 42 Maintaining and enhancing biodiversity

	Issues and opportunities	Identified by
I.5.1	Public access along the Mangaone Stream and Te Awa Trail is limited	WRC, Waipa DC
I.5.2	Public access along the Karapiro Stream near Cambridge is limited	WRC, Waipa DC
I.5.3	Poor water quality in lakes are leading to declining bird populations	Waipa DC
O.5.1	Enhancing biodiversity connections from peat lakes, river management and other related biodiversity programmes (eg Project Halo, QEII, Peat Lakes Accord)	Waikato DC
O.5.2	Council funded residential planting programmes in Tamahere are being implemented	Waikato DC
O.5.3	Opportunity to maintain biodiversity corridors within Hamilton City gullies	WRC

Table 43 Zone management and stakeholder engagement

	Issues and opportunities	Identified by
I.6.1	Streams within Rotouna development not subject to the RCS-HCC service level agreement; all major urban streams should be reflected	HCC, WRC
I.6.2	Service level agreements between RCS and TLAs over the responsibilities and funding of stream, lake, and catchment management is unclear	Waikato DC, Waipa DC
I.6.3	National Policy Statement on Freshwater needs to be given effect to in District and Regional planning tools	Waikato DC
I.6.4	The Waikato-Tainui Deed of Settlement was signed on 17 December 2009; its Vision and Strategy has the legal status of a NPS and therefore must be given effect to	Waikato DC
O.6.1	A proposed National Policy Statement on Indigenous Biodiversity is currently being evaluated and could contribute to the CZMP	Waikato DC
O.6.2	The definition of 'Climate Change' in Regional Council documents is currently too vague, and more guidance is required for District Councils to implement for flood hazard and stormwater disposal.	Waipa DC
O.6.3	The CZMP can help link existing programmes of work (e.g. district plans, stormwater discharge consents, catchment management plans, RPS, infrastructure works such as Southern Links and Project Watershed Risk Assessment)	HCC, Waipa DC

Appendix 4 Risk register

The risk registers provided in the following tables for the current and future River and Catchment Services activities of WRC and have been developed in consultation with key staff. Part A identifies general organisational level risks related to the zone. Part B includes zone specific risks. An explanation of the scoring and evaluation methodology can be found in section 8.4.2.

Appendix 4 - Part A - General (Organisational) risks

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
A - GR1	Lack of staff resources Caused by: Inability to attract key staff Inability to retain skilled staff Labour market Shortage of appropriately skilled staff Staff turnover Inadequate organisation structure / mix of skill levels Consequences: High cost of recruitment and training of new staff Increased staff stress Decreased productivity Limited skilled staff/ mainly unskilled staff appointed Decreased operational capacity Loss of knowledge Increased staff turnover Reduction in levels of service	Operational Financial / Economic Reputation / image Health and Safety	4	4	H	Dedicated HR staff, policies and guidelines Use of recruitment consultancies Monitor staff satisfaction, surveys Personal development plans Strategic planning (staff and organisation) Internal promotions/ career management Training & development processes Shared resourcing with other TLA's Secondment strategies with other organisations Study grants for staff Benchmarked salary levels / regular remuneration review Promoting positive	Very Good	2	3	M	Group Manager	Continue current practice Succession planning Cadetships Development training Mentorship programmes Group business plan including resource planning Targeted recruiting

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
						work environment – social, team building Good office accommodation/layout Flexible working hours						
A-GR2	Lack of Financial Resources Caused by: Economic climate Political climate/cycle Operational tempo Inadequate forward planning Consequences: Inability to deliver aspects of a programme of work Not meeting stakeholder expectations Political Level of Service	Operational Financial / Economic Reputation / Image Health and Safety	3	4	H	Financial Planning (6 monthly review, monthly basis zone programme level) Prioritised schedule of work Financial reserves Credit facilities Monitoring and reporting of economic climate	Very Good	2	2	L	Group Manager	Continue current practice Continue to train staff on financial management Improve financial forecasting
A-GR3	Inefficient use of resources Caused By: Inadequate project, programme and portfolio management Lack of training or qualified staff Lack of project planning or systems Projects, programmes and	Financial / Economic Operational Reputation / Image	4	5	C	Project Management training for key staff Reporting / monitoring processes Use of trained external resource Have access to internal specialists	Very Good	3	2	M	Divisional Manager Zone Manager CFO	Ensure on-going adequate (quality) training for key staff Project Closure/Reviews improved Reporting / monitoring processes Improved Project

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
	activities inadequately scoped, budgeted, managed and documented, and reviewed Inadequate consultation Inefficient consent process due to stakeholder objections Unrealistic expectations Lack of resources Lack of ownership Inadequate systems and processes Inadequate business planning Lack of an overall strategy or plan Consequences: Time & cost blowouts, Lack of quality outcomes, Loss of image, Impact on staff morale, Over/under spending of budgets, Failure to deliver on commitments e.g. LTP, Deferring of projects					Appropriate resources (e.g. software/information systems) Dedicated Project / Programme management staff/team Development and implementation of business and zone plans						Management (process and skills) Improved Financial Capability
A-GR4	Loss of Knowledge (information) Caused by: Inability to retain knowledge Insufficient systems in place to manage data/information, especially regarding asset	Financial Operational Reputation / Image	2	3	M	Information currently updated in conquest IT practices (backup, virus, security etc.)	Good	2	2	L	Divisional Manager Group Manager	Develop processes to ensure that asset knowledge is transferred, stored and accessible and audited (externally),

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
	performance and condition Loss of institutional knowledge IT failure and systems performance Inadequate transfer of knowledge (knowledge management) Lack of continuity (political process) Consequences: Operational loss Financial costs Loss of institutional knowledge Loss of image and credibility Reduced Levels of Service Poor planning Breakdown in stakeholder relationships Breakdown in political relationships											including maintenance information. Define mentors/coaches and successors Ongoing training for staff Improve asset data collection processes, data management skills and resources Constant review and improvement of systems Implement quality assurance programme for zone information
A-GR5	Failure to identify opportunities and developments Caused by: Lack of staff awareness and training Insufficient resources to implement	Financial Operational Reputation / Image	3	5	H	Local government networking e.g. national forums, conferences Access experienced staff and contractors Staff development and	Very Good	2	3	M	Group Manager	Continue and develop current practices Maintain awareness of current industry developments and research

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
	Lack of networking Lack of personal development Lack of research Lack of process to capture/ manage opportunities Consequences: Missed opportunity to gain efficiencies, reduce costs and maintain service levels Lack of increased knowledge Increased costs Lost productivity					training Use of external advice/resources Liaison with groups doing research Regular updates and attendance through NAMS Environment best practice development Exchange of information between regional council through working groups						Liaison with groups doing research Monitoring international best practice and research Improving capability/process to evaluate and implement recognised opportunities Internally develop best practice
A-GR6	Service Level Agreements not met or non-existent – between River and Catchment Services and other parties internal or external (i.e. Hamilton City Services) Caused by: Lack of process Lack of monitoring of the SLA's Budget Political change Lack of expertise Lack of knowledge	Financial / Economic Operational Reputation / Image	4	5	C	Current SLA's in place Regular meetings with other Councils and agencies Monitoring and Reporting	Good	4	3	H	Zone Manager	Maintain and develop relationships with stakeholders Review if additional SLA's are required Improved monitoring and management of Service Level Agreements Need to develop and implement internal SLA's between zone and RCS programmes

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
	Pressure of deadlines Lack of resource Consequences: Affects timing and quality of delivery of services Costs for work done on behalf of others not recovered Legal consequences Non-delivery of service Community expectations not met Loss of reputation											Develop and implement an external SLA with key stakeholders as appropriate
A-GR7	Inappropriate/inadequate Procurement Caused by: Lack of adequate policy and processes Lack of competitors in the market place Consequences: Cost inefficiencies Failure to meet levels of service Continuity of supplier	Financial / Economic Operational Reputation / Image Health and Safety	4	2	M	Procurement policy is in place Financial delegation levels in place Contract / Tender process including tenders board in place Probity process in place Financial Policy Annual audit	Very Good	4	1	L	Divisional Manager Zone Manager	Continue current practice Regular review Continue to develop and refine in line with best practice

A-GR8	Natural Hazards and resulting impact on zone assets Caused By: Extreme weather event Earthquakes Tsunamis Volcanic eruptions Land instability Coastal storm surge Consequences: Potential injury, sickness or loss of life Damage to Council-controlled/ owned land e.g. Slips, loss of land Liability / Claims against Council Loss of amenity value Negative Council image (perceived as Councils problem) Increased costs e.g. clean up Adverse environmental effects Damage to private / neighbouring property Financial cost through damage to assets	Financial / Economic Operational Reputation / Image Health and Safety	5	5	C	Reactive/Proactive approach to events Post event inspection/structural audit (as required) and renewals Engineering Code of Practice Communications strategy (flood warning system) Emergency/Hazard procedures manual Regional hazard mapping and identification Community feedback via EMO's Connections made with Civil Defence (Lifelines) Communications plan LAPP scheme Disaster recovery policy (EW) High-flow management plan (Waikato river system) National disaster recovery plan (government)	Excellent	4	2	M	Divisional Manager CDEM Asset Manager	Public education / Communication plan strategy Continue, improve, monitor current process Improve understanding of hazard events

A-GR9	Non-Compliance with Legislation and legal requirements Caused By: Inability or failure to comply with statutory and regulatory requirements, lack of awareness Legislative changes increases statutory obligations to a level where they are unable to be met with existing resources Impending changes in policy or legislation not identified Inadequate training Inadequate staff performance Consequences: Compromised health, safety and protection Legal implications and resulting in increased costs and claims for Council Negative Council image/reputation Financial implications Political consequences Prosecution Injury/death	Financial / Economic Reputation / Image Health and Safety	5	2	H	Local government networking e.g. National forums, conferences Standard processes in place with templates Asset management plan/ steering group Legal advice requested as required Asset Management reporting Training/ education programme for staff incl seminars/ conferences/ legislative education RMA updates Inter-departmental communication Conformance with industry standards and practices	Good	2	2	L	Group Manager	Ongoing training - key staff to keep updated on current legislation Regular communications to staff Continued review of Council procedures Communicating effects of legislative change to Council/ LTP process Improved communication of changes to legislation

A-GR10	Ineffective Governance or inability of elected members to fulfil roles and responsibilities or disregard for community/staff views. Caused by: Lack of communication with elected members Lack of understanding from elected members Poor planning and foresight Elections (Political cycles) Poor training of elected officials Consequences: Essential services under-resourced Decisions made on political grounds ahead of defensible decision making Ineffective leadership and decision making A lack of continuity of direction Operational inefficiencies	Financial / Economic Operational Reputation / Image Health and Safety	4	4	H	Councillors roles well defined and implemented Legislative requirements/ LTP process Procedures in place to ensure items presented to Council meet legislative requirements Clear, well prepared reports are presented to Council and Community boards to enable sound decision making Councillor induction/ handbook Councillor briefings / workshops CEO giving advice to Councillors	Very Good	3	2	M	CEO	Continue to manage process through CEO / workshops
A-GR11	Inability to utilise funding options – Both internal and external, including failure to acquire external subsidies and people not applying for funding on time or not identifying potential areas where funding is required. Caused by: Lack of staff training Lack of awareness of funding sources Organisational or process deficiencies Lack of clearly defined levels of service	Financial / Economic Operational Reputation / Image	4	5	C	Prioritising projects/ LTP and Annual Plan process Experienced staff submitting external applications and reporting internally to Council. Working closely with regional groups Staff knowledge and awareness Established robust levels of service Forecast likely scenarios regarding effects of budget changes including	Very Good	3	3	M	CFO Divisional Manager	Continued review of service levels Continue to utilise sustainable asset management practices Ongoing staff awareness of funding process, and changes

	Change in legislation Consequences: Funding not realised Loss of service levels Existing ratepayers fund growth					deferments						
A-GR12	Health and Safety Caused by: Poorly designed, built or maintained assets Lack of staff training Lack of staff support and systems Lack of preparedness Lack of formal processes Vandalism Accidental damage Consequences: Injury to residents / visitors / staff Damage to property Legal claims Loss of reputation Increased costs	Financial / Economic Operational Reputation / Image Health and Safety	5	3	C	Inspection, contract management, hazard identification Complaints Structure safety checks and audits Building code/standards / guidelines Specialised standards (e.g. Agrichemical) Condition assessments Programmes in place to identify areas, issues, risks that may impact on assets Fencing Signage ACC / Indemnity insurance Health and Safety Representative Corporate Auditing of Health and Safety Approved Contractor Health and Safety Plans Emergency response Training / Staff induction / manuals / Personal Protective Equipment / Incident Register (HR) Contractor inductions	Very Good	2	2	L	Group Manager H&S Coordinator Zone Manager	Continue current practice Improved systems and process (training, hazard id, etc)

A-GR13	Ineffective strategic planning (internal WRC) Inability to plan for and provide for change Caused by: Lack of integration between the different arms of Council pursuing objectives that are at odds with each other Lack of resources dedicated to planning Inability to forecast future trends and developments Consequences: Funding loss Loss of operational capability Decreased levels of service Negative Council image The councils strategic objectives, e.g. social, environmental & political not met Business Plan objectives not met Poor alignment of KPIs to objectives Failure to respond to change in demand in a timely manner Lack of optimised decision making Increased costs Inability to meet needs of community	Financial / Economic Operational Reputation / Image Health and Safety	5	4	C	Communication with Corporate Planning. Consultation within organisation on long term planning LTP process Asset Management process and updating Liaison with Community via sub committees Political Liaison Organisational wide input to district plan review Liaison with key stakeholders Strategic planning documents Increased liaison with Policy group Consideration to National forecasts, policies, standards, etc.	Very Good	4	2	M	Group Manager, RCS Divisional Manager Group Manager, Policy	Zone Plan Strategic Alignment with other corporate planning processes Improvement plan process Continue current practices Increased planning resources Up skilling staff
A-GR14	Inadequate business continuity planning Caused by: Infrastructure (communications, power, etc.) Essential Services (Transport,	Financial / Economic Operational Reputation / Image Health and	5	1	M	Manual work-around e.g. cell-phones, laptops Back -up systems Managers have staff/ contractors/other contacts contact numbers	Very Good	2	1	I	Group Manager RCS EMT	Maintain/develop business continuity plans

	etc.) Fire Damage, Water Damage, etc..... Consequences: Serious loss in public confidence Reduced public/ staff health and safety Damage to WRC infrastructure Damage to WRC property Loss of service Loss of information	Safety				Asset / Facility Management plans Communications Plan – e.g. contact numbers for staff and key contractors Insurances (PI, PL, H&S, etc)						
A-GR15	Inadequate Communications and PR Management - Poor communications with stakeholders (internal and external) Caused by: Increasing stakeholder expectations for information provided (both quality & quantity) Poor resourcing Lack of commitment Inadequate stakeholder comms and engagement strategies Consequences: Inefficient use of resources Political dissatisfaction with level of service Lack of political support Negative Council image Lack of buy-in Lack of community support and poor understanding	Operational Reputation / Image	3	4	H	Dedicated Communication team Improved electronic communications/ surveys/ displays Customer Service Call Centre & Charter Analysis of submissions on LTP and annual plan processes Management plans Community input/ Consultation/ Feedback from sub committees Meeting statutory requirements & guidelines Improved internal communication Iwi relations Improved customer relations Media updates Communications plans for projects	Very Good	2	2	L	Group Manager, RCS Manager, Comms Zone Manager	More communication/PR involvement at earlier stage of projects/ major events (i.e. adoption of plans and strategies, funding policies, etc.) Early internal liaison and with stakeholders Include communications/ customer service component in project brief and debrief process Learning from experience/ capture learning's Celebrate success / making known, demonstrating achievements Record and measure customer response/ inquiry

						Customer surveys						database monitor and analysis
A-GR16	Co Management Caused by: The Crown Treaty settlement with Waikato-Tainui incorporates a new co-management structure for the Waikato River. Consequences: Potentially transfers powers for the management of the Central Waikato River Details of settlement and its effects are still emerging	Financial / Economic Operational Reputation / Image	3	4	H	Seeking to be informed as to any developments on the treaty process Maintaining contacts with Waikato-Tainui and other iwi Actively seeking input in the development of the zone plan	Very Good	2	2	L	Deputy CEO Group Manager RCS	Continue current practice Develop practice as the details of the settlement become known
A-GR17	Local Government Reform Caused by: Restructure of local and regional government in the Waikato Region Consequences Transferral of responsibilities and powers Reconfiguration of boundaries which may impact upon work programmes, costs and funding Loss of institution knowledge relating to the zone Loss of continuity, consistence Loss of momentum Change in political direct Change in community support	Financial / Economic Operational Reputation / Image	4	5	C	Political liaison within and with adjacent councils Contact maintained with Central government	Good	3	3	M	CEO	Continue current practice

A-GR18	Climate change Caused by: Changes to global climate Consequences: sea level rise and more frequent and severe storms Requirement to replace assets earlier and / or more frequently Community expectation that service levels will be maintained Higher funding requirements Ability to pay Adverse environmental impact Higher risk of asset failure Reduced land use opportunities Disruption of community infrastructure’	Financial / Economic Operational Health and Safety	5	3	C	Monitor national climate forecasts (MFE) Review service levels and design standards Incorporating MFE information in service level reviews	Good	4	3	H	Divisional Manager Group Manager	Continue current practice Upgrade assets to offset climate change effects

A-GR19	Conflicting Objectives/ Aspirations /Value Systems (i.e. with Hamilton City Council) Caused by: Increasing environmental standards Treaty Settlements Environmental restoration projects Differing objectives Misaligned and/or competing priorities Lack of strong relationships Economic productivity v Land use and development Consequences: Changes in revenue streams Differing expectation of the Levels of Service provided Difficulty in renewing resource consents Increased maintenance costs Services not sustainable	Financial / Economic Operational Reputation / Image	4	5	C	Environmental Management Programme Stakeholder Engagement Plans Consultation Joint projects with Stakeholders Integrated planning Political input	Good	4	3	H	Group Manager, RCS Divisional Manger Zone Manager	Better understanding of process, inter-connections, and benefits Mutually beneficial projects (win-win) Facilitation and agreement, mutually agreed outcomes Negotiated solutions

Appendix 4 Part B - River management

Risk number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (name and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
B-RM1	Increased Adverse River Behaviour Caused by: Climate change Land use change Hydropower changes (i.e. increased flows) Sedimentation and erosion Consequences: Inability to effectively manage rivers Drainage schemes unsustainable Damage to property Damage to environment Health and safety incidents Increased costs to community Increased Flood Risks	Financial / Economic Operational Health and Safety	5	5	C	Flood protection measures River Management programmes Informing compliance with regulations, district plans, regional plans, etc. Flood monitoring and warning systems Education and emergency preparedness (output to Civil Defence) Sediment Management Plan Civil Defence Hydraulic modelling Inundation studies Flood manual – guideline to staff (warning levels etc.) Consideration of IPCC recommendations Monitor river conditions	Very Good	3	3	M	Divisional Manager Zone Manager Programme Manager, TS	Continue and monitor current practices Catchment monitoring and modelling (land use changes etc.) Consideration of options including possible retreat of at-risk dwellings and industry Consideration of Reduction in Standards/ Service Levels New capital works Increased awareness and education of river systems

B-RM2	Riverbank Erosion Caused by: Natural events / soil types and qualities Instability Land use Consequences: Increased flooding Loss of land Increased risk of breach and/or course change Increased sedimentation Threat to property and infrastructure Increased risk to existing assets	Financial / Economic Operational Reputation / Image	4	3	H	Edge Protection, vegetation, structural, rip rap, gabion walls. Buffer zones, fenced Financial Grants for riparian protection Renewal / upgrade programmes Maintenance regime Regular inspections Sediment Management Plan Riverbank trial protection works Trial native planting Willow protection research group contribution Environmental code of practice	Excel-lent	2	1	I	Divisional Manager, CM Zone Manager	As per current practice
B-RM3	Plant and animal pests Caused by: Proliferation of pest plants, plants, and fish Consequences: Blockage of Channels Poor Drainage Sediment disturbance Erosion Water quality degradation Increased costs and resource requirements Adverse effects on levels of service	Financial / Economic Operational Reputation / Image	3	4	H	Plant & animal pest control programmes Monitoring programmes	Good	3	3	M	Group Manager, BS&NH Zone Manager	More monitoring and research programmes Improved control methods (environmentally acceptable methods)

B-RM4	Sand and/or Gravel Management Caused by: Accumulation of Sand and Gravel Upstream land use practice Erosion / degradation Hydro-dams Natural processes Consequences: Loss of capacity Adverse impact on Service levels River instability	Financial / Economic Operational	4	4	H	Management of Sand and Gravel extraction Monitoring programmes Resource Consent processes	Very Good	2	2	L	Zone Manager Programme Manager, TS	Develop a stand-alone river management plan Current practices Examine relevance of financial contributions Sediment management plans (currently in development)
B-RM5	Waikato River Stability Caused by: Operation of the dam at Karapiro. Consequences: River bed and water levels lowering through a process of degradation Erosion through unstable river banks Expensive protection and/or remediation works Failure of key infrastructure (road/rail bridges, pipeline, wharves, jetties etc.) Public safety	Financial / Economic Operational Reputation / Image Health and Safety	5	4	C	Waikato River Stability Management Strategy	Very good	4	2	M	Group Manager Zone Manager	Current practice

B-RM6	Uncontrolled event in tributaries Caused By: Landowner actions Adverse weather events Consequences: Erosion Loss of capacity Channel instability Increased flooding Increased sedimentation Increased risk to existing assets	Financial / Economic Operational Reputation / Image Health and Safety	4	4	H	Enquiry response service Work programmes where agreed with property owners.	Good	2	4	M	Zone Manager	Current practice

Appendix 3 – Part C - Catchment management

Risk Number	Risk descriptor	Risk type	Initial risk			Current practices/strategies		Residual risk			Risk owner (NAME and title)	Management options available
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
B-CM1	Regional Intensification and Development Caused by: Increased need for Road and Rail Developments and Improvements Need for utility and infrastructure network developments Increased expectations for a higher level of service Auckland Expansion and Development Consequences: Higher risk of impacts on existing assets Conflicting objectives Need for balance of objectives	Financial Operational Economic Environment	4	4	H	Technical reviews of resource consent applications Submissions to District Plans Inter-regional planning and strategy development Liaison between TAs Liaison with Infrastructure networks owners Future Proof	Very Good	3	2	M	Group Manager, Policy Zone Manager	As per current practice

B-CM2	Landowner failure to manage soil conservation Caused by: Economic climate Lack of Interest Conflicting objectives Land use change Consequences: Deterioration of assets and levels of protection Soil erosion and land deterioration Noncompliance with Land Improvement Agreements	Financial Operational Economic Reputation / Image Environment Legal	3	4	H	Property Inspections and Monitoring Legal Enforcement	Good	2	2	L	Divisional Manager - Catchment Management Zone Manager	More intensive inspection programme More regular land owner contact Greater application of enforcement Regulatory processes

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Appendix 5 Risk to forecasting assumptions

Forecasting assumption	Risk	Likelihood of occurrence	Financial materiality	Reasons and financial effect of uncertainty
Projected price change factors Forecast financial information contained in this plan contains a provision for inflation. Council has used the price level change factors supplied by Business and Economic Research Ltd (BERL) in order to calculate the amount of inflation to include. Where expenditure is subject to inflation, the following cumulative rates have been applied. For 2009/10, the cost of inflation in relation to all costs except labour and passenger transport contracts has been absorbed into existing work programme budgets.	That actual price changes levels will vary significantly from the levels assumed.	Medium	Low (2009/10 – 2010/11) Medium (2011/12 – 2018/19)	Inflation is affected by external economic factors that are outside the control of council. Given the current economic climate, the actual inflation rates for both the short and long term are uncertain. While council believes it has taken a conservative approach by applying the rates supplied to the local government sector by BERL, it acknowledges that actual inflation rates may vary from these in any year of the plan.
Useful lives of significant assets The useful lives of council's significant assets are as disclosed in the notes to the accounts.	The actual life of an asset is shorter than that assumed. This may be the result of a significant weather event.	Low	Low	Council's most significant assets are its infrastructural assets comprising of flood protection works. The useful lives of these assets have been assessed by engineers and valuers.
Revaluation of non-current assets Provision has been made for a 3 yearly cycle of revaluations in relation to council's infrastructural assets. Estimates of changes in value have been based on the projected price change factors supplied by BERL.	That actual revaluation changes vary significantly from those forecast.	Low	Low	Council undertook revaluations of those property, plant and equipment assets that are subject to revaluation in June 2008. Council's accounting policies state that these assets should be re valued at least every 5 years, with an annual assessment of values carried out annually. Any change in value will impact the forecast financial statements through the funding of depreciation. No adjustment to the provision for depreciation has been made based on the value changes forecast. Because of the relatively long useful life of council's infrastructural assets which comprise the majority of its property, plant and equipment, this impact is thought to be minimal.
Depreciation rates on planned asset acquisitions New capital expenditure will be depreciated in line with the depreciation rates set out in council's accounting policies.	That further review of the nature of capital expenditure may alter the depreciation expense incurred.	Low	Low	Significant capital works are based on detailed asset management plans which specify the nature and timing of capital works. Due to the long-term nature of these capital works, any impact on depreciation will be minimal.
Emission Trading Scheme Due to the high level of uncertainty, no provision has been made for the cost of the government's Emission Trading Scheme (ETS).	That the implementation of this scheme impacts on the costs of council undertaking its business.	Medium	Low	The Council expects that there will be rising costs through the ETS but that these costs cannot yet be quantified or budgeted for. The council believes that these cost increases will not be significant and are not expected to be material.

Forecasting assumption	Risk	Likelihood of occurrence	Financial materiality	Reasons and financial effect of uncertainty
Regional growth Increases in the number of properties will be at a lower level than experienced over the last 3 to 5 years. Council has estimated that there will be 2,000 new properties in the region each year.	That growth will not be sustained at the level anticipated.	Low	Low	This growth assumption has only been used to project likely future revenue for those rates set on a per property charge (such as Natural Heritage). Council has the ability to re-size these work programmes based on actual revenue levels achieved.
Forecast return on investments Council's investment fund will achieve an average return of 5% per annum. In years 1 to 3, council has assumed a return will come from the fixed interest portion of the fund only. From 2012/13 onwards, council has assumed that its equity investments will start to make a return, with the whole fund achieving a 5% return by 2014/15.	That actual returns achieved by the fund will be lower than this average return.	Low	Low	Following a review of the investment fund and treasury policy, council is moving to a more conservative asset allocation mix aimed at achieving a consistent return on the funds invested. If returns do not achieve the budgeted level, the level of work projected to be undertaken will be reviewed.
Expected interest rates on borrowing Council will utilise the funds held in its investment fund for the purposes of internal borrowing. The interest rate applied to funds internally borrowed is 5.9%. This rate is based on the weighted average return on investments, plus a 1% borrowing margin. The interest rate applied to funds internally loaned is 4.9%. This rate is based on the weighted average return on investments.	That funds will not be available from the investment fund, resulting in council having to seek external borrowing at higher interest rates.	Low	Low	Internal borrowing from the investment fund is specifically provided for in council's treasury policy. Council's investment fund is valued at approximately $51.6 million (December 2008), which allows for significant borrowing levels to be met.
Council's share in associates Council includes a 33.3% equity share in the Lake Taupo Protection Trust in its financial statements. Because the timing and extent of activities undertaken by the trust are not determined by council, Council has not projected any change in the value of this investment over the period of this plan.	That the value of council's equity shares in the Lake Taupo Protection Trust either increases or decreases significantly from the current level of investment.	Medium	Low	The Lake Taupo Protection Trust has been established with the aim of reducing the Nitrogen levels in the soil and water of the Lake Taupo Catchment. It proposes to achieve this through the purchase of land, implementation of methods to retire the nitrogen from the land, and subsequent land sale. The funding for this is provided by the three trust partners: Waikato Regional Council, Taupo District Council and the Crown. If in undertaking these actions the value of the land decreases, this will lead to the Trust writing down the value of its assets and showing a book loss – a share of which would be reflected through Council's accounts. The financial consequence of this to council is low, as council's own financial plans are not influenced by the financial performance or position of the Trust and any book loss will not require further funding to the Trust from the partners. Trust agreements are in place that stipulates the contribution that council will make to the Trust.

Appendix 6 Valuation summary of unit rates

In development as part of the ZMP Improvement Plan.