

LOWER | WAIKATO ZONE PLAN

TE MAHERE Ā-ROHE
O WAIKATO KI RARO

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Executive summary

He kōrero whakarāpopoto

WELL MANAGED CATCHMENTS THAT ENHANCE ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY, RECOGNISE COMMUNITY AND CULTURAL ASPIRATIONS, WHILE MITIGATING NATURAL RISKS.

- LOWER WAIKATO ZONE VISION



The purpose of this *Lower Waikato Zone Plan* (“the zone plan”) is to provide direction for the implementation of Waikato Regional Council’s (“the council”) Integrated Catchment Management (ICM) directorate activities within the zone. The zone plan is focused on guiding the delivery of catchment and river management activities, biosecurity, biodiversity, sustainable land management and natural hazard management activities, where these support the achievement of the zone vision and objectives.

The zone plan supports *Te Ture Whaimana o te Awa o Waikato* (Vision and Strategy for the Waikato River) and guides the implementation of activities that give effect to the council’s key statutory and non-statutory policy documents, including the *Waikato Regional Policy Statement*, the *Waikato Regional Plan* and the council’s *Strategic Direction 2016-19*.

The zone plan includes the following interrelated 30-year goals to guide the implementation of ICM activities within the zone:

1. Provide and maintain sustainable flood protection to rural land and urban areas to the agreed level of service.
2. Contribute to improving water quality within the zone.
3. Contribute to ensuring that soils within the zone remain productive.
4. Manage the instream impacts of urban development and land use intensification in association with territorial authorities and other partners.
5. Promote and enhance indigenous biodiversity in both aquatic and terrestrial environments.
6. Support mana whenua and strengthen community partnerships.

The zone plan includes high level implementation actions grouped in focus areas that respond to the key matters and goals identified within the plan. All implementation actions included in this plan are either directly funded through the Lower Waikato Zone or funded as part of wider council activities. A number of the actions rely on the involvement (and funding) from other stakeholders and these key relationships are specified in relation to actions where relevant.

The implementation of the zone plan, and its effectiveness, will be monitored and reported on an annual basis to the community through the Lower Waikato Catchment Committee (through the status reports). Further reviews will be considered on a three yearly basis to ensure the plan is reviewed in conjunction with long term plan processes and that progress is being made towards the goals identified.



1. Introduction

He kupu whakataki

The Lower Waikato Zone is one of eight zones in the Waikato region. Each zone has a zone plan that guides the delivery of Waikato Regional Council's Integrated Catchment Management directorate activities. Catchment committees support the delivery of zone plan activities, with a specific focus on catchment and river management activities.

The Lower Waikato Zone consists of the Waikato River catchment area between Ngāruawāhia and the Tasman Sea. It covers an area of 283,757 hectares, approximately 20 per cent of the total Waikato River catchment area.

The Lower Waikato Zone is a challenging operating environment for the council, given the connection of many complex and interrelated natural, economic, social and cultural values and features. An ongoing challenge for the council over the life of this plan will be to prioritise and target limited resources into areas of greatest need for enhanced outcomes. An important consideration in this regard is continuing to maintain agreed levels of service with the community for flood control. Greater integration across council business areas and collaboration with iwi and the community will be essential to addressing the challenges ahead.



FIGURE 1: Waikato Regional Zone Map

1.1 Purpose

The purpose of this *Lower Waikato Zone Plan* is to provide direction for the implementation of the council's ICM activities within the zone.

The zone plan supports *Te Ture Whaimana o te Awa o Waikato (Vision and Strategy for the Waikato River)* and guides the implementation of activities that give effect to the council's key statutory and non-statutory policy documents, including the *Waikato Regional Policy Statement*, the *Waikato Regional Plan* and the council's *Strategic Direction 2016-19*.

The zone plan sets out the:

- overall vision for the zone
- 30-year goals for the zone
- implementation actions for the next 10-year period to meet the goals identified
- processes (and measures) for monitoring and reviewing the plan.

The zone vision and goals have been developed in response to the following matters identified as key challenges/ opportunities for the zone over the next 30 years:

- Management of the flood scheme, including significant infrastructure issues (such as natural hazard risks, climate change, development pressure, ageing assets, peat subsidence, regulatory expectations, economic conditions and affordability).
- Urbanisation and land intensification impacts.
- Management of flood scheme land.
- Management of water quality and quantity.
- Sustainable land management practices and implementation of catchment management activities.
- Management of peat soil.
- Management of indigenous biodiversity.
- Management of biosecurity (pest animals and pest plants).
- Developing and maintaining effective community partnerships, co-management and community expectations.

In relation to the implementation of this plan, the council is one of many organisations working to improve catchment health within the zone. Iwi, district councils, government departments, industry, non-government organisations (NGOs), community groups and landowners are all active in implementing initiatives to improve catchment health. The intention of the zone plan is to complement and support the work of these other agencies and individuals, and align programmes where opportunities arise.



1.2 Strategic fit

The council undertakes a range of activities to protect the region’s water, soil, air, geothermal areas and coasts. Its vision is “the Waikato cares locally, competes globally” and its mission is “working together to build a Waikato region that has a healthy environment, a strong economy and vibrant communities”.

The term sustainability or sustainable development is often used to capture the outcomes of the vision and is used throughout this plan. Sustainable development means development that meets the needs of the present without compromising the ability of future generations to meet their own needs. For sustainable development to occur, we need to balance economic prosperity and our needs for a good quality of life, while ensuring the quality of our environment.

Environmental quality, natural resource wealth, leisure time, working conditions, health and knowledge are attributes we value in our quality of life, but they are not easily measured. Therefore these valuable attributes are often not accounted for in decision making, unlike economics. Waikato Regional Council uses an ecosystem approach when managing the environment. This means we try to be aware of the links between the air, land, water and coast and the plants and animals which live there. We recognise the important role our environment plays in our local economy.

This zone plan is a non-statutory document that supports the council’s overall vision and mission and provides guidance for activities that are implemented primarily through the ICM directorate.

The council’s work, functions and priorities are guided by statutory and non-statutory requirements and decisions made by councillor representatives, and are implemented through five directorates: Community and Services, Finance, Resource Use, Science and Strategy and ICM:

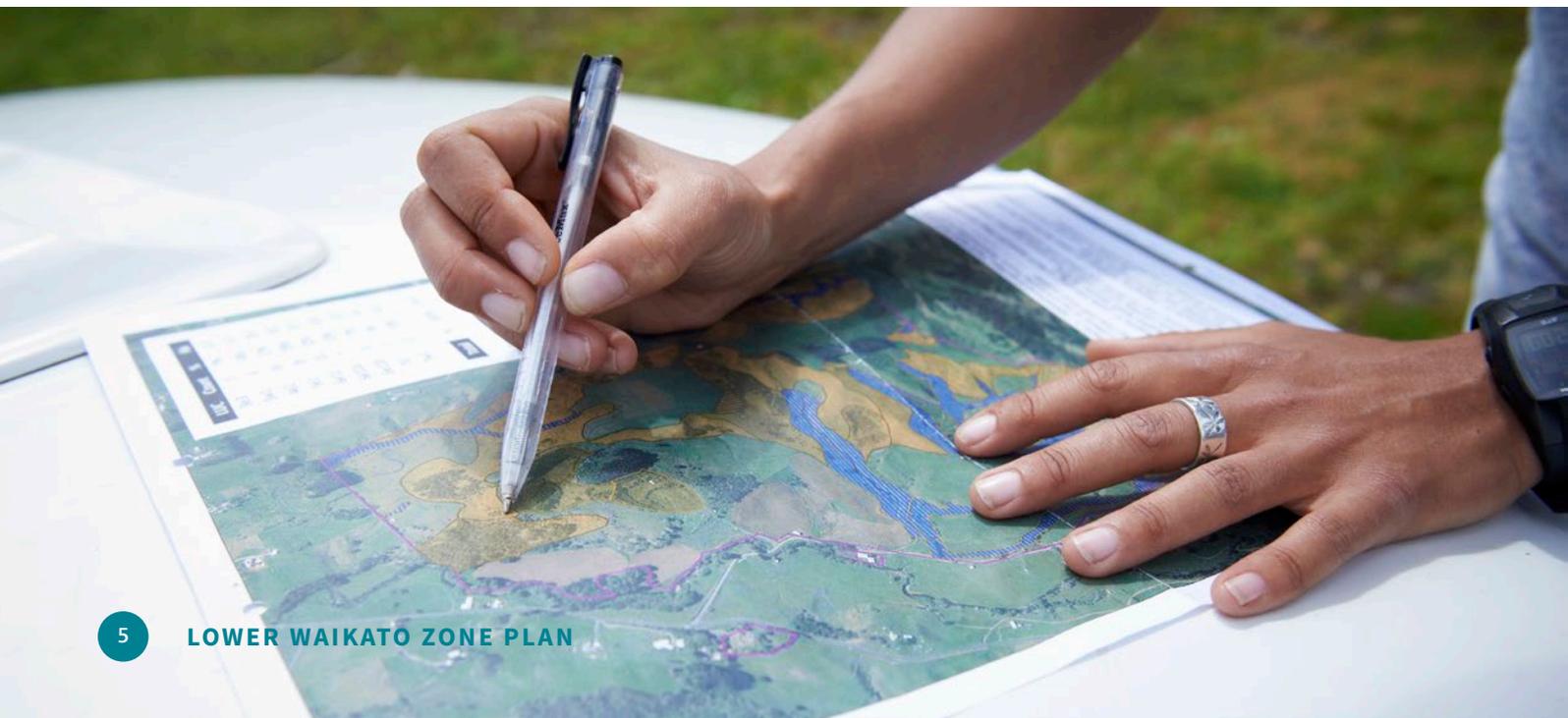
Community and Services – leads, enables and helps deliver community partnerships, customer services, education programmes, organisational excellence and internal support functions.

Finance – the council’s financial management, regional public transport responsibilities, and our corporate buildings, facilities and property and corporate planning (including the annual and long term plans).

Integrated Catchment Management (ICM) – focused on delivery of a range of activities in the areas of catchment management, flood protection, biodiversity, biosecurity, sustainable land management and hazard/emergency management.

Resource Use – consenting and compliance responsibilities and navigation safety functions.

Science and Strategy - gathers, analyses, interprets and translates information on Waikato’s natural resources, community and economy in order to achieve positive regional outcomes. Also includes consistent delivery of high quality policy advice.



1.3 Scope and services

The *Lower Waikato Zone Plan* is a strategic document with a focus on guiding the implementation of river and catchment management, flood protection and integrated services including animal and pest management, land management advisory, natural heritage and the interconnection with land drainage within the Lower Waikato Zone.

Council activities that are not within the scope of this zone plan include:

- implementing and monitoring compliance with the council's rules under the current *Waikato Regional Plan*, including resource consents held to undertake work within the scope of this plan

- monitoring and investigations on the state of the environment, unless utilised to measure performance on initiatives identified
- drainage services (with the primary purpose of land drainage), which are managed separately and will be captured in a proposed Drainage Management Plan. There is an interconnection and through implementing this plan, it is recognised there needs to be alignment with these functions.

A summary of the activities and related services to the zone is provided in Figure 2, and further commentary on the primary activities is provided in this section.

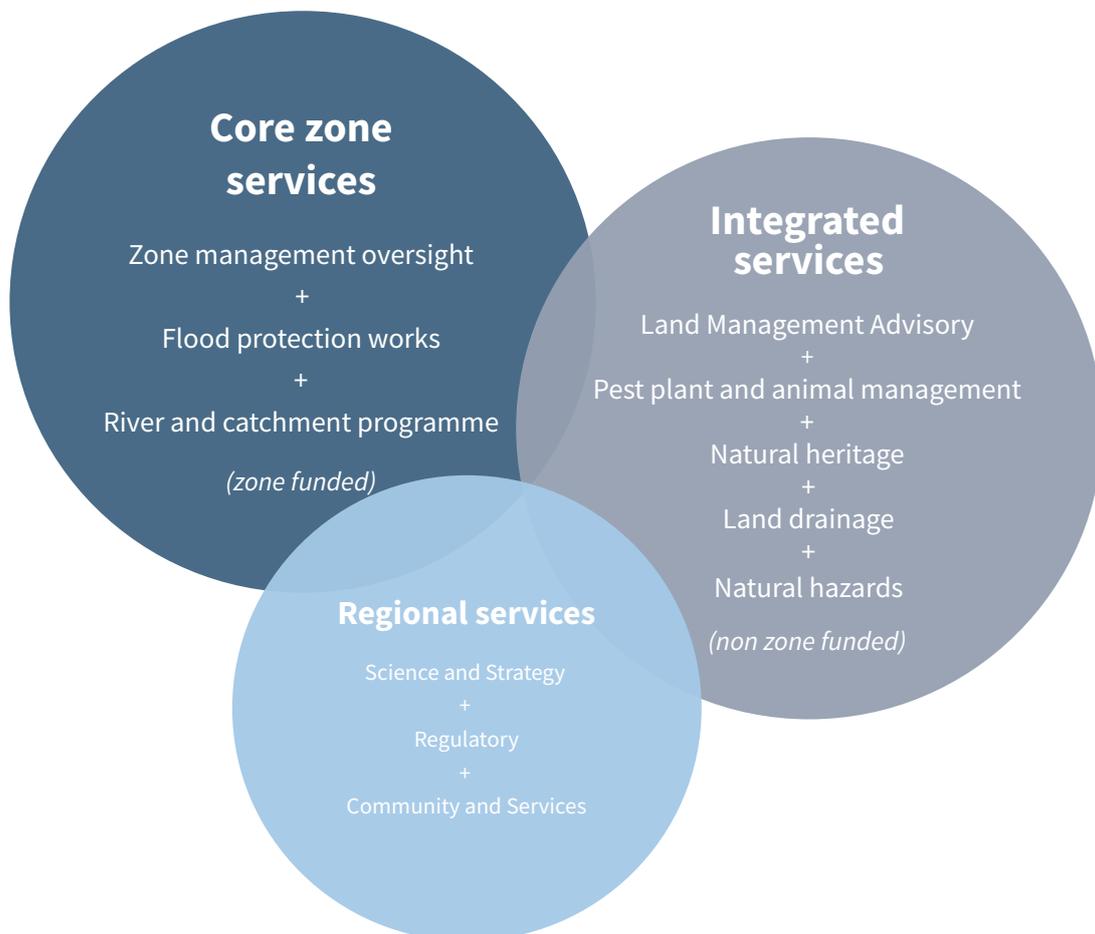


FIGURE 2: Lower Waikato Zone Plan – scope of activities and services

Zone management oversight (catchment oversight)

Through catchment oversight we provide support and servicing to stakeholders, which includes:

- a general overview of zone issues and overall management, monitoring and coordination of the zone activities and programmes, including collaborative projects with other agencies
- information and advice to enable responses to enquiries and provision of guidance and information on river and catchment management within the zone.
- management of zone works programmes
- budget preparation and financial management
- support to zone catchment committee and reporting to council
- community and other agency liaison
- contribution to development of the council long term plan
- preparation and review of zone and catchment management plans
- contribution to regional asset management plans
- support delivery of the capital renewals programme.

Flood protection works

The council is responsible for the provision and maintenance of the flood protection works throughout the zone under the Soil Conservation and Rivers Control Act 1941 and the Public Works Act 1981. The purpose of flood protection activities is to manage the risk of flooding to an agreed level of service and the management of other specific works as agreed with communities.

The flood protection works include large-scale structures that aim to reduce flood risks, such as stopbanks, pump stations, floodgates, control gates and detention dams. The works protect communities, schools, roads, farms and other vital resources, keeping land draining freely in specific geographic areas where schemes have been agreed with communities. Land has been acquired or easements established for the more significant flood protection structures and is referred to as 'scheme land'.

The land management team, which is part of the wider asset management team, manages the council's interests in land and ensures the necessary agreements, easements and encumbrances are in place and the portfolio is managed to the prescribed levels of service. Standards in place protect the interests of all parties involved, including iwi, Crown agencies, district councils, landowners and the general public and to meet the council's responsibilities under legislation, including health and safety impacts.

Catchment programme (maintenance and new works)

Catchment management works, including soil conservation and other enhancement works, provide considerable benefits in terms of land and water protection, biodiversity and general environmental enhancement. These projects focus on reducing the risk and severity of erosion, the loss of productive land and the protection and enhancement of biodiversity. These actions all contribute to preventing the decline in water quality and the overall catchment health.

Services and programmes promoted by the council in relation to catchment management include:

- engagement with landowners and the community to promote and provide information and advice on soil conservation, biodiversity and water quality protection initiatives
- preparation of environmental protection agreements (landowner agreements)
- management of existing protection works and soil conservation plantings and assets
- promotion of land use to capability and conservation planting of erosion prone land
- protection of high value indigenous vegetation
- installation of structures to control sediment and water run off
- 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. The council has an interest and role in ensuring these works are maintained as they provide both local and wider catchment benefits. All works on private land are voluntary and subject to agreement with the property owner.

River management

The purpose of river management activities is to maintain clear, stable waterways. The work includes reducing congestion of waterways, erosion control on river banks and putting stability structures in beds to address the adverse effects from normal to peak flows within rivers and streams. It also includes the management of land adjacent to the river or stream (to increase bank stability and reduce erosion) and retaining and developing fish habitats when clearing river blockages and fish passage barriers.

Typical river management works include:

- controlling bank erosion (by planting, fencing off river banks, construction of rock or other bank revetment works, or construction of groynes)
- removing blockages and obstructions
- river training (ensuring flow paths of rivers are stable and optimum channel widths are maintained)
- bed stability structures, such as weirs, to stabilise the river beds and gradients
- gravel and sand management.

Land management advisory

The Land Management Advisory Services (LMAS) team aims to achieve improvements in the environmental footprint of agriculture by working with farmers, industry bodies and stakeholders to facilitate changes on farms. LMAS is working to ensure systems are in place to help farmers meet the *Healthy Rivers/Wai Ora: Proposed Waikato Regional Plan Change 1* requirements and to develop sub-catchment plans as appropriate.

Pest animal and plant management

The animal and plant pest management team have a *Regional Pest Management Plan* which sets the work programme and deliverables. Focus is on management of pest plants and animals which can impact on biodiversity and agricultural production.

Natural heritage

The natural heritage team coordinates and facilitates a wide range of ecological management, restoration and monitoring projects in the region with a focus on priority natural areas, including lakes and wetlands.

Land drainage

The primary purpose of land drainage is to allow landowners to manage their ground water levels to support pastoral farming. It includes clearing any ponded water from paddocks within certain timeframes to avoid pasture damage. There are a number of land drainage areas within the Lower Waikato Zone that are represented by committees, including Waikato Central, Franklin Waikato and Aka Aka Otatau.

Regional hazards

Regional Hazards has primarily two functions: ensuring resilient development and having an emergency management capability for the council. For resilient development, the Regional Hazards team works with a number of internal and external stakeholders to undertake and provide hazard information. The information is used to ensure robust development decisions are made. The primary emergency management functions within the team are flood and marine oil spill events. The team also provides and leads the framework for other council emergency management obligations.



2. Lower Waikato zone description

Ngā kōrero mō te rohe o lower Waikato

2.1 Zone overview

The Lower Waikato Zone covers an area of 283,757 hectares, some 20 per cent of the Waikato River catchment area. The zone is located between Ngāruawāhia and the Tasman Sea, in the lower reaches of the Waikato River, and is the destination of all waters flowing into the Waikato River catchment. As a result, the zone is heavily influenced by activities that occur in the wider hydrological system, and, ultimately, land use and management in the upper reaches of the Waikato River have considerable impact on the lower Waikato River and the coastal marine area at Port Waikato.

The hydrology and land use within the zone are highly influenced by the Lower Waikato Waipā Flood Control Scheme (LWWFCS) and other flood protection works completed in more recent years (Figure 4). The large-scale modifications to the natural Waikato River environment have resulted in a number of environmental challenges.

The zone once consisted of vast indigenous wetlands bounded to the east and west by hill country. Since the early days of settlement, the land has been cleared and drained for agriculture, with a collection of isolated drainage and flood protection works being established as they could be afforded. Following a series of significant floods in the 1950s, the LWWFCS was promoted and approved by central government with construction occurring from the 1960s to the 1980s. The LWWFCS was a comprehensive suite of works in the main Waikato River channel to lower river flow levels, the manage flood ponding with control gates and spillways, and an improved standard of flood protection and drainage works to improve land productivity.

The scheme infrastructure modified the natural landscape through the drainage of wetlands and changes in flood water ponding areas, retention times and flow paths. In turn, the scheme has enabled communities to prosper, particularly through the improved security of State Highway 1 and main

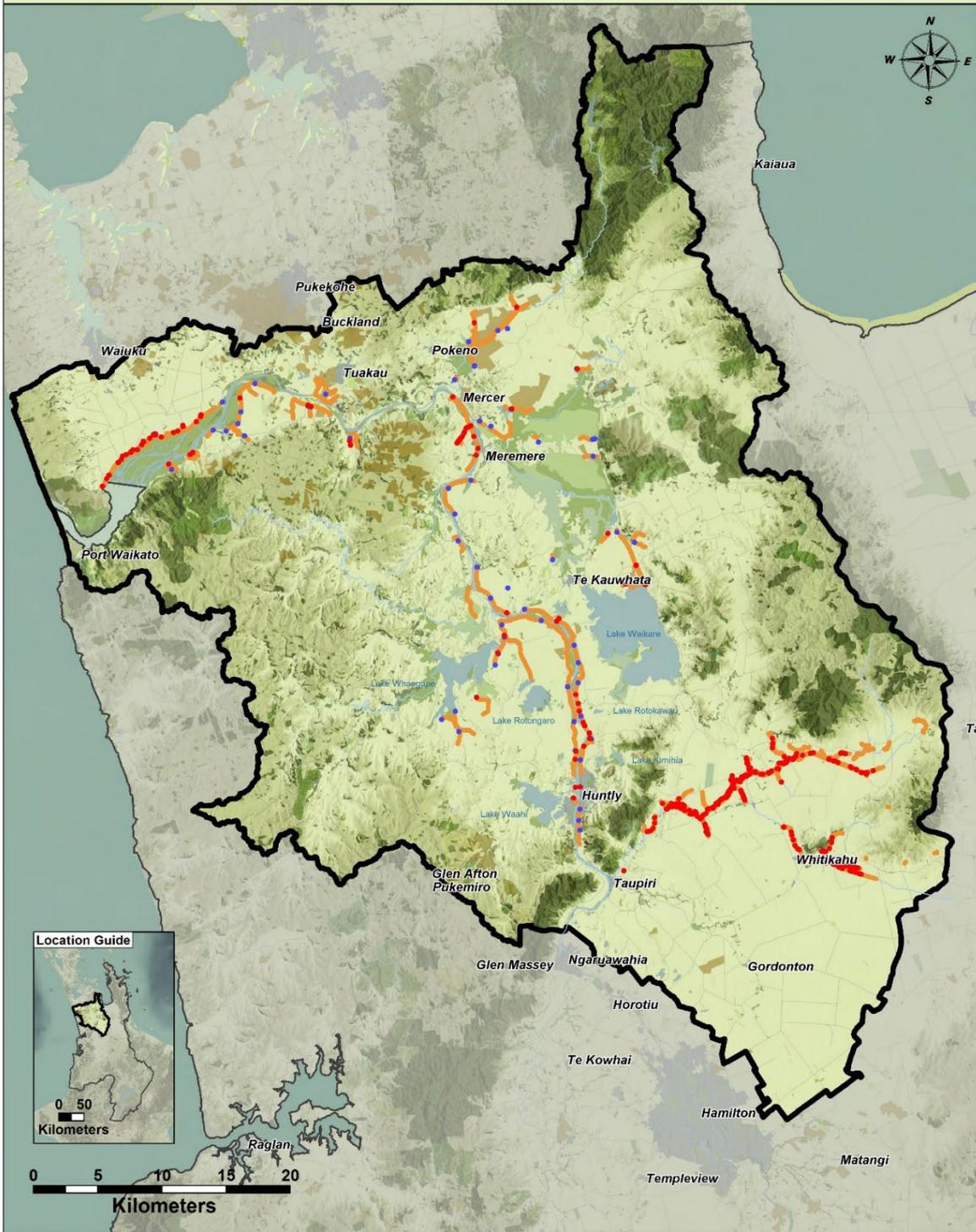
trunk rail corridors, plus increased agricultural and horticultural productivity.

Due to the flood control and drainage works, the zone has a vast range of flood management and drainage infrastructure that requires ongoing maintenance and is influenced by the Upper Waikato, Central Waikato and Waipā hydrological systems. Approximately 17,200ha of the floodplain is directly protected by the LWWFCS infrastructure and other works completed since.

The zone is a large geographic area with a rating base of approximately 16,000 ratepayers. It accommodates a range of small urban settlements including Taupiri, Huntly, Te Kauwhata, Mercer, Pokeno, Tūākau and Port Waikato. Recent urban expansion in Te Kauwhata and Pokeno has resulted in a change of land use from agricultural to urban, which has increased the need for wastewater and stormwater management. Land fragmentation from urban expansion and lifestyle blocks around some of these urban centres has also occurred.

Agriculture (dairy and dry stock farming) and horticulture sit alongside industrial activities including power generation, coal mining, quarrying and sand mining. These are dominant economic activities in the zone, and they also influence catchment management.

Lower Waikato Zone



Flood Protection and River Management Overview

Created by: G Langdon Status: Draft
 Projection: NZTM Request No.: 16009
 Date: 23/10/2013 File name: Current Maps \ Lower Waikato.gws

Legend

- Floodgate
- Pumpstation
- Embankment
- Lower Waikato Zone
- Waikato Region Boundary

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FIGURE 3: Lower Waikato Zone Map

2.2 Cultural heritage

The Lower Waikato Zone has a rich cultural heritage and has been a stronghold for Māori for many generations. Historically, the lower Waikato River was an important transport route for trade and the ability to access fertile areas contributed to the growth and importance of the Waikato region. Key iwi within the lower Waikato include Waikato-Tainui, Ngāti Haua, Ngāti Tamaoho, Ngāti Tipa,

Ngāti Te Ata, Te Akitai Waiohua and Hauraki iwi. Each iwi has its own rohe within the zone and significant ongoing interests in maintaining and restoring the health of the lower Waikato River. Iwi particularly associate the Waikato River with spiritual values, and regard the river as a source of their mana.

2.3 Key features

The Lower Waikato Zone contains a range of unique natural habitats, landscapes, ecosystems and infrastructure. A range of native plants and animals rely upon special and unique environmental conditions found in the remaining natural areas of the zone, including its waterways, hill country, floodplains, lakes, wetlands, estuaries and coast.

A summary of the key features of the zone is provided as context for the key matters identified in Section 4 of this plan. This summary is not exhaustive, rather it provides a “snapshot” of the complex operating environment of the zone.

The Waikato River

The dominant feature of the Lower Waikato Zone is the Waikato River and its associated tributaries, lakes, wetlands and estuary. The Waikato River and its associated wetlands, lakes and waterways support a diverse range of native and exotic fish communities, including 19 species of indigenous freshwater fish (Spiers, 2001). Many of the indigenous freshwater fish species present in the river are diadromous, needing to move to and from the sea during their life cycle. Recent work also indicates that connected riverine lakes, such as Waahi, Whangape and Waikare, are also crucial sources of recruitment to their own catchments and wider areas of the lower river for some iconic endemic fish species like banded and giant kōkopu.

While it is the largest system in the region, the Waikato River is also one of the most impacted in terms of fish habitat and nutrient enrichment. Loss of bush catchments due to farm and forestry development, heavy industry discharges (temperature, nutrients and heavy metals),

floodplain and wetland loss, heavy recreational and commercial harvest, flood protection and drainage have reduced the native fishery of this river. Of note, the lower Waikato has the highest pest fish biomass in New Zealand.

Hydro electricity generation is a significant feature of the Waikato River catchment. There are two aspects to the effects of hydro development on the lower Waikato. First, the Waikato hydro system stores water in Lake Taupō and the dams, and lowers the river’s natural flood peaks and discharges water over a longer period. Secondly, the Tongariro Hydro Scheme inputs additional water into the catchment, with an average increase of 10 per cent at Ngāruawāhia. A full assessment was done at the time of construction and it was concluded that the additional water wouldn’t affect flood peaks but would increase the duration of moderate floods. Offset works undertaken were aimed at strengthening stopbanks and improving the river channel to carry the additional water.

Floodplains and associated flood control scheme infrastructure

There is a substantial 36,400ha of floodplains and historically this comprised low lying wetlands and lakes. Since human settlement, agricultural production has increased in the zone and isolated flood protection and drainage schemes were implemented as they could be afforded. In the 1950s, constant inundation of the land within the lower Waikato emphasised its high susceptibility to flooding and the associated effects on

the agricultural and horticultural industry. In response to these effects, the LWWFCS was developed in the 1960s by the Waikato Valley Authority.

The services provided by the flood protection and land drainage schemes have a variety of quantifiable benefits which enables contribution to the region’s economy, including:

- protection of land and property, which reduces associated potential damage and increases the value of the land
- improving the productivity of land, which adds value to the regional economy
- protection of regionally and nationally important infrastructure associated with activities such as transport (e.g. roads including state highways and rail) and electricity transmission
- avoiding costs from flood damage that would otherwise result if the schemes were not in place (or maintained to the necessary standard).

The continuous development and improvement of flood protection and drainage assets has resulted in thousands of hectares of land being drained and then utilised for intensive agricultural or horticultural production. Approximately 17,200ha of the floodplain is directly protected by the LWWFCS infrastructure and other works completed since. This includes a network of 256 kilometres of stopbanks, 274 floodgates and 64 pump stations (Figure 4) aimed at protecting low-lying, flood prone land, and effectively disconnecting almost half of the lower floodplain from natural interaction with the river (Mulholland, 2010; Speirs et al., 2010).

Other works also included channel modifications, flood ponding management, spillways and detention dams as ways to manage flood flows throughout the zone.

The LWWFCS works reproduce the natural water storage functions of Lake Waikare and Whangamarino Wetland, but in a more controlled manner. A sluice gated culvert moves water from the Waikato River to Lake Waikare and a canal takes water directly from Lake Waikare to the Whangamarino Wetland.

Control gates at the western outlet of Whangamarino Wetland on the Whangamarino River prevent backflow from the Waikato River into the wetland during flood events. Management of the control gate only allows water to flow through once the peak of the Waikato River event has passed. Accordingly, the system lowers the flood peak in the Whangamarino Wetland by 40 centimetres to 60cm, reducing the chance of serious damage to surrounding land. The control scheme also has a spillway near Rangiriri which will spill peak flows from the Waikato River into Lake Waikare once the level of the river approaches its maximum capacity (Figure 5). Since its construction, the Rangiriri spillway has operated only once, in 1998.

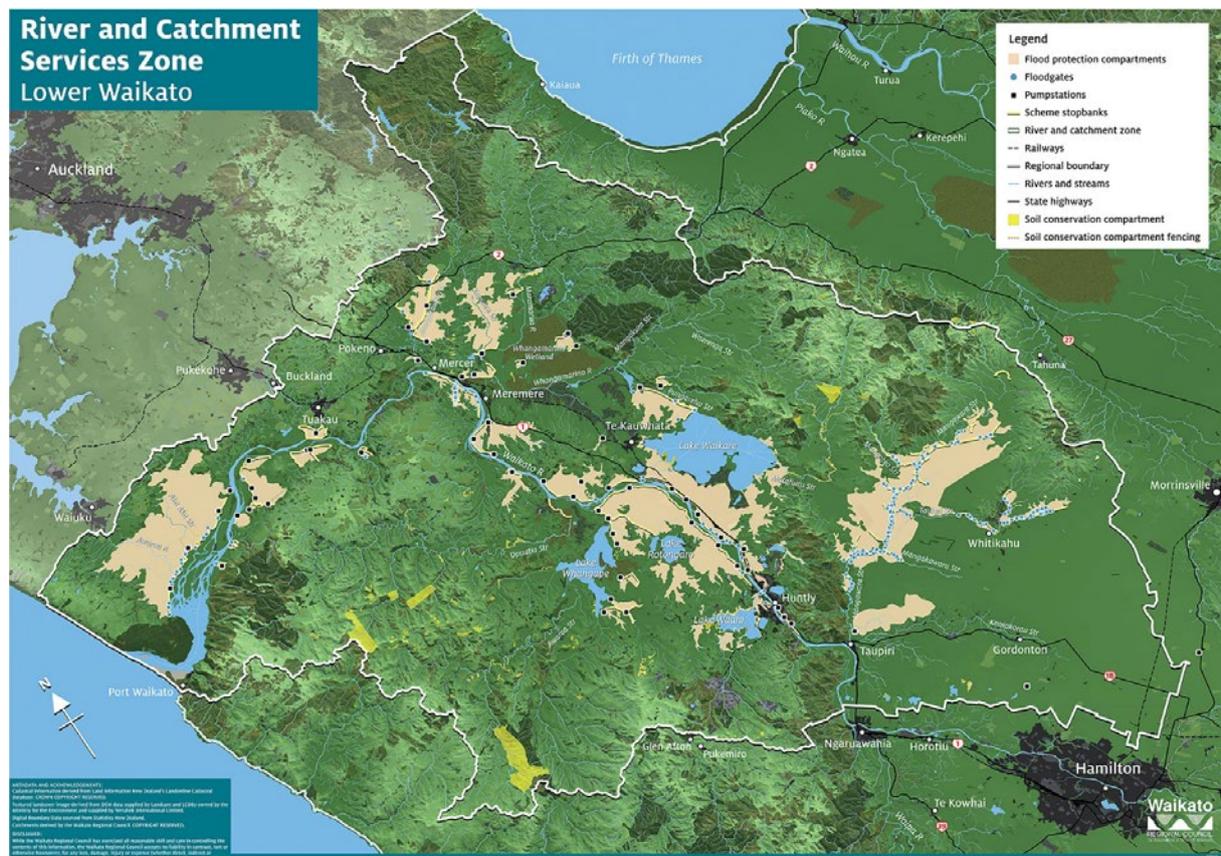


FIGURE 4: Key flood scheme and land drainage infrastructure within the Lower Waikato zone (indicative only)

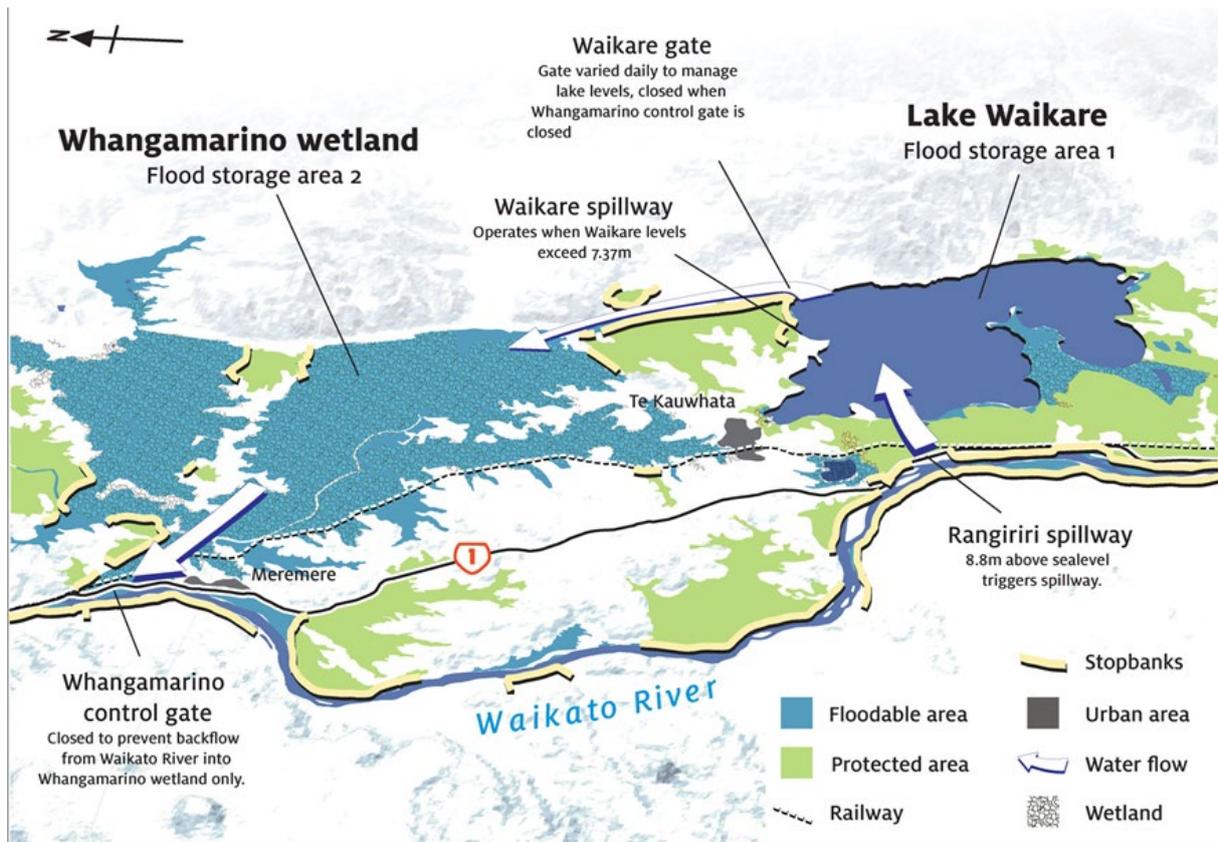


FIGURE 5: Lake Waikare and Whangamarino Storage Area

Water supply sources and infrastructure

Auckland's water supply is obtained from rainwater stored in dams, the Waikato River and an underground aquifer. Auckland's 12 water supply reservoirs are located in Waitakere (5), Hunua Ranges (4), Helensville (2) and Papakura (1). Water storage is augmented by a take from the Waikato River near Tūākau (Watercare, 2017).

Watercare's water takes from the Hunua Ranges

Two of Auckland's water reservoirs are within the Lower Waikato Zone: the Mangatangi and Mangatawhiri dams are located in the Hunua Ranges and are named after the headwater streams that feed them. The sub-catchment of the Mangatangi Dam is in native vegetation and is owned and administered by the Auckland Council. Constructed in 1977, the Mangatangi Dam has over double the capacity of the other Hunua dams, covering a lake area of 185ha and a capacity of 35.3 gigalitres.

The sub-catchment of the Mangatawhiri Dam is also in native vegetation and is owned and administered by the Auckland Council. Constructed in 1965, the Mangatawhiri Dam covers an area of 128.5ha and has a capacity of 16.2 gigalitres (Watercare, 2017).

Watercare is undertaking the Hunua regeneration project with the overriding objective to revert the area back to indigenous forest in order to protect the water quality in the downstream reservoirs. The acquisition of the forestry activities in the water supply catchments gives Watercare control in these areas. Replanting with indigenous vegetation removes the potential risks of pesticide contamination and sedimentation that may be associated with forestry activities, and which can result in the discharges of contaminants to water.

Auckland is growing by the size of Hamilton every four years (Waikato Regional Council, 2016) and consequently there is an ongoing demand for water – including that provided by the Mangatangi and Mangatawhiri dams. Therefore, these catchments directly support Auckland, being the largest contributor to the national gross domestic product (GDP).

Watercare's water take from the Waikato River

Over the next 25 years, Auckland's population is expected to double. Watercare built a water treatment plant to take water from the Waikato River to keep up with future demands. Located in Tūākau, the Waikato Water Treatment Plant opened in 2002. The treatment plant has been upgraded to increase supply from 75 million litres per day (MLD) to 125MLD. It will supply much of this additional water to the Auckland area.

Regional and national infrastructure

A number of regional and national infrastructure assets in the Lower Waikato Zone are protected by the flood protection and land drainage schemes. This includes 50-year flood protection of infrastructure associated with transport (e.g. roads, including state highways, and rail) and electricity transmission.

State highway network

The Waikato Expressway (part of State Highway 1) runs through the zone, has been identified as one of seven roads of national significance. Roads of national significance are identified as New Zealand's essential state highways which provide the main links between our major areas of economic activity, facilitating the efficient transport of goods and people (Saha International Limited, 2010).

North Island Main Trunk railway line

The North Island Main Trunk railway line connects Auckland with Wellington by rail, with the final section completed in early 1909. The railway is located west of the Lake Waikare and Whangamarino Wetland catchment area. Nearly 45 per cent of the national total of rail freight originates in, has a destination in, or passes through the Waikato region (New Zealand Trade and Enterprise, 2016).

The National Grid

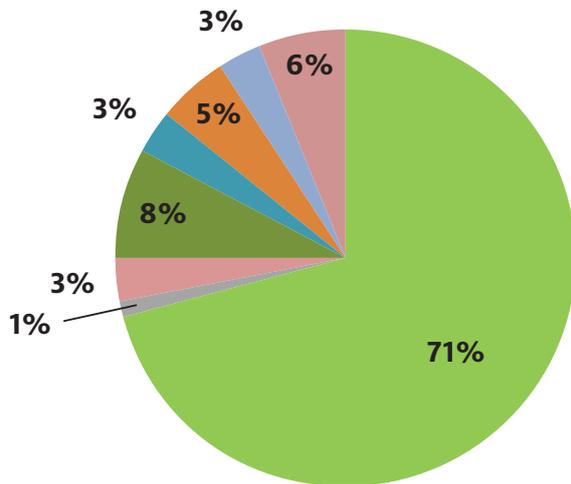
Transpower New Zealand Limited is the state-owned enterprise that owns and operates New Zealand's high voltage transmission network (the national grid) which carries electricity throughout the country. The national grid is vitally important due to New Zealand's ongoing expanding population, an economy that's becoming increasingly reliant on electricity, there being an expectation of a reliable supply, and the increasing amount of remote and intermittent (for example wind) generation being built (Transpower New Zealand Limited, 2017). The National Grid 220kv and 400kv transmission lines traverse the CMP catchment area, on the eastern side of Lake Waikare and Whangamarino Wetland.



Land cover and land use

Land cover is predominantly pasture (71 per cent) with smaller areas of native vegetation (11 per cent) (Figure 6). Land use is mainly sheep and beef farming (38 per cent) followed closely by dairy farming (32 per cent).

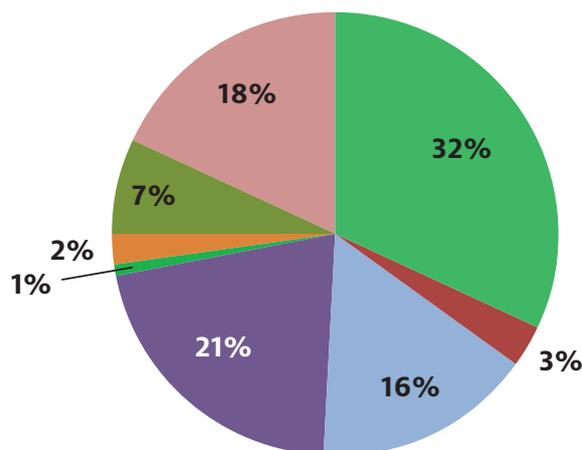
Smaller areas, mainly on the rolling volcanic land around Pukekohe and Pukekawa, are used for cropping and vegetable growing (Figure 7) (Singleton, 2017).



LAND COVER

- High producing exotic grassland
- Built-up area (settlement)
- Short-rotation cropland
- Indigenous forest
- Mānuka and/or Kānuka
- Exotic forest
- Lakes and rivers
- Other

FIGURE 6: Land cover in the Lower Waikato Zone



LAND USE

- Dairy cattle farming
- Lifestyle blocks
- Beef cattle farming
- Mixed sheep and beef
- Sheep farming
- Arable crops and vegetable growing
- Native bush
- Other

FIGURE 7: Land use in the Lower Waikato Zone

Geology

The prominent geology in the zone includes peat, sandstone, siltstone and mudstone, with basaltic and greywacke provinces in the northern extreme (Figure 8). The southern end of the zone is comprised of the Hamilton lowlands area. This area is a broad alluvial plain of pumice-dominated material deposited by the Waikato River, which covers the underlying ignimbrite deposits flattening the topography.

Along the length of the Waikato River, across the entirety of the zone, there are alternating sand, mud and silt deposits. These were deposited during the migration of the Waikato River throughout the quaternary, and are primarily pumice and ash dominated (predominantly originating from the voluminous Oruanui eruption). Peat bogs also formed in embayments created as the river migrated (notably in the Hamilton lowlands and to the east of Meremere).

Another evident feature of the zone's geology is the basaltic deposits to the north. These were emplaced

later than the Pliocene and sourced from a vent located approximately 5 kilometres from Tūākau. There is also a fault-bounded zone of uplift at the northeastern extent of the area where greywacke deposits are exposed.

Volcanic ash is a parent material of soil in the area, but it may be mixed with materials derived from the underlying andesitic rock. More recent pumiceous ash from the Mangaone, Kaharoa, and Taupō eruptions is also present as a fine, white sand distributed throughout the soil structure (Edbrooke, 2005).

Depending on the type of minerals present in the soil, clays can also be found along the slopes bounding the Waikato River. These materials are very responsive to changes in moisture content by swelling or cracking. In contrast, the ash soils have a high phosphate retention and low cohesion. This influences risk of debris flows and landslides in the district.



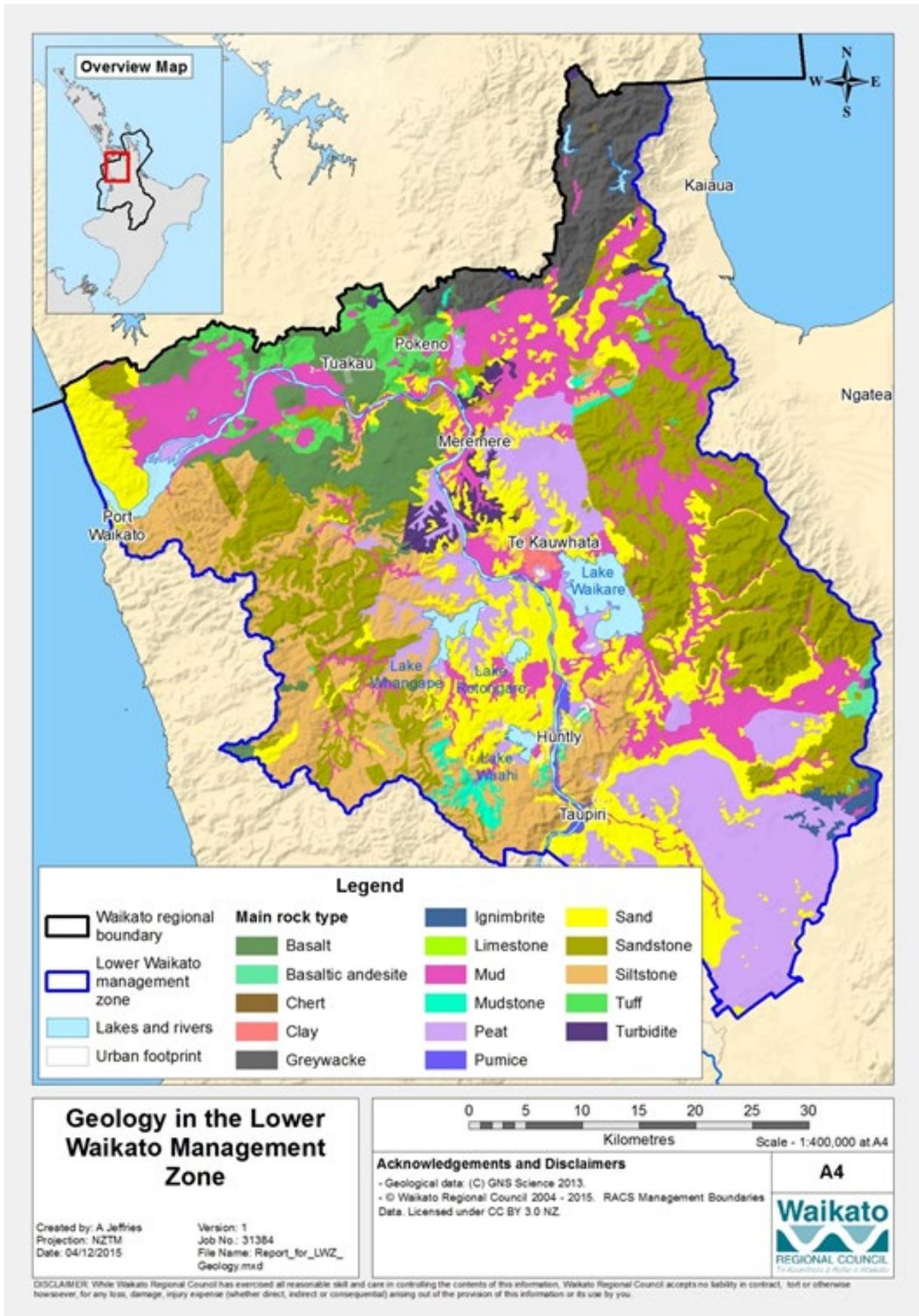


FIGURE 8: Geology in the Lower Waikato zone

Topography and landforms

The catchment is a mixture of terrain (Figure 9). Much of it is flat to rolling land (52 per cent) with moderately steep or steep hills (46 per cent), which in the west can have bluffs and rocky outcrops. Rolling land forms the hills at the base

of the steep land and also the low hills within the central catchment. Flat to undulating land covers lower areas of the central catchment and includes alluvial and peatland (41 per cent) (Singleton, 2017).

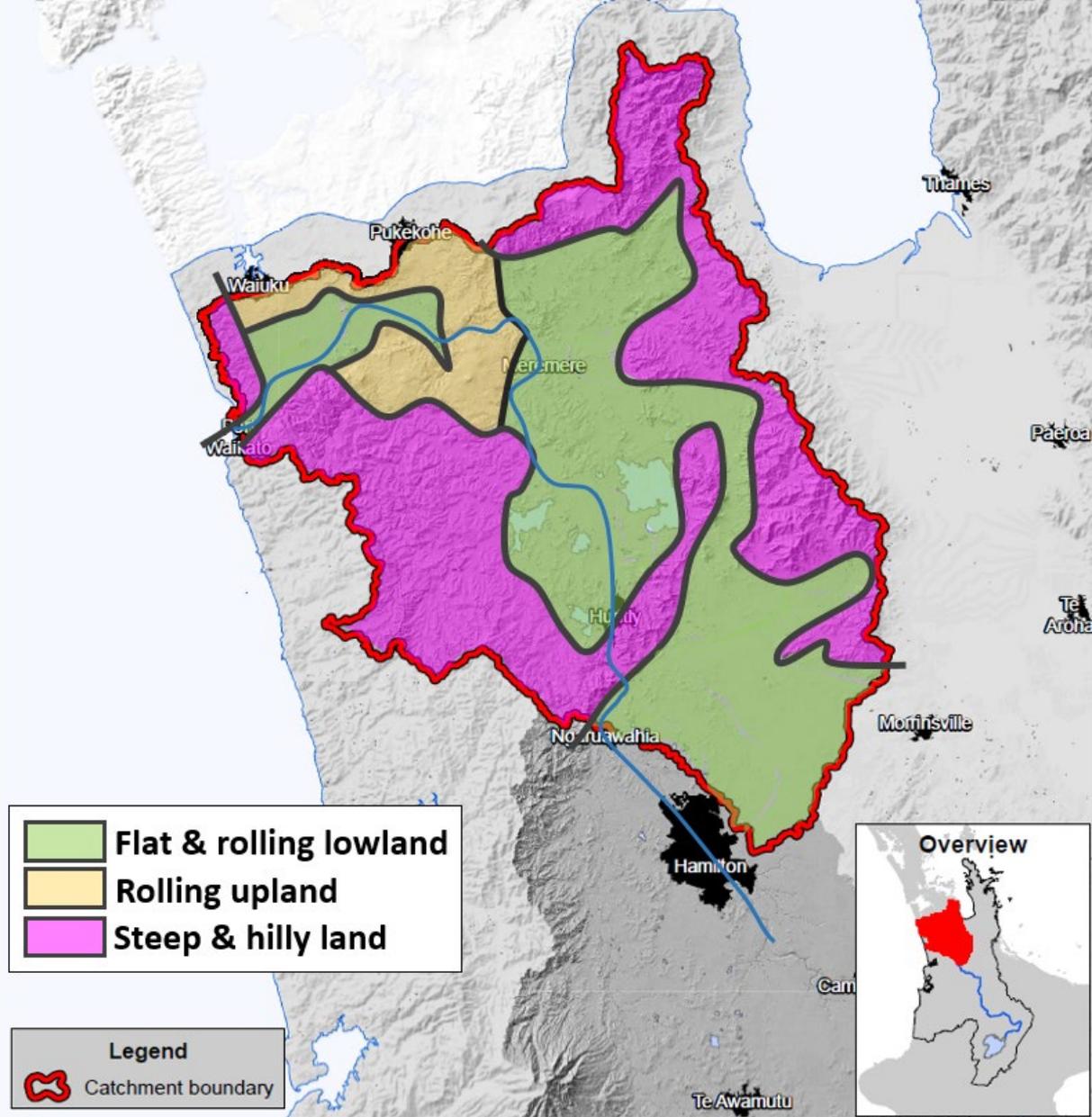


FIGURE 9: Landforms in the catchment

Peat soils

The Waikato region is home to half of New Zealand's peat. Waikato peat soils cover about 94,000ha (Waikato Regional Council, 2006) and the Lower Waikato Zone contains half of this with 47,000ha (Figure 8). It also has the most diverse range of peat soil types in the region, however, the extent and depth of the peat resource in the zone is not well defined due to limited comprehensive mapping and the nature of the peat deposits (see, for example, Palmer & Hainsworth, 2012).

The competing uses of peat soils in the Waikato have long been a source of conflict. Historically, the peat areas in the Waikato region represented unique wetland ecosystems but about 80 per cent of our peat soils have been drained, mostly for agriculture. The remainder is managed as conservation reserves for wildlife, and for flood protection. Drained peat, if properly managed, is a highly productive resource. However, drainage results in ongoing peat subsidence which has a range of land and drainage management consequences, many of which are not well understood.

Wetlands and forests

The floodplains were once clothed in wetlands and forests. Tōtara-mataī forests would have grown on the better drained soils, while kahikatea-pukatea forest would have been on more poorly drained alluvium. A mix of bog, fen and swamp wetlands shared the alluvial surfaces with these forests. The vast majority of the forests of the floodplains have been cleared, with less than 2 per cent remaining. Likewise, the more fertile wetlands have been preferentially cleared, while more of the less fertile fens and bogs remain. The remaining kahikatea forest, tōtara-mataī forests and wetlands are key biodiversity features requiring protection in the zone.

A distinct feature of the zone is the Whangamarino Wetland. This wetland is the largest wetland complex in the Waikato River catchment and possesses significant ecological values. It serves as an outstanding site for promoting the value of wetlands and species conservation.

Covering an area of approximately 7500ha, this internationally significant Ramsar wetland is a mosaic of swamps, fens and peat bogs dissected by the Whangamarino and Maramarua rivers. It is the second largest wetland complex in the North Island and an example of habitat that is significantly unrepresented in New Zealand. The Whangamarino Wetland is natural habitat on a landscape scale. This wetland promotes conservation of species such as the matuku (Australasian bittern), with 20 per cent of the New Zealand population of this species residing in the wetland. It is an important habitat for a range of other threatened species, including

grey teal, spotless crane, North Island fernbird, black mudfish, water milfoil, swamp helmet orchid and yellow bladderwort.

Shallow lakes

The Lower Waikato Zone contains 29 shallow lakes (peat, riverine and dune lake types), generally characterised by an average depth of less than 3 metres. Like most shallow lakes in the Waikato region, the riverine and peat lakes have been formed in association with the Waikato River system and its floodplains, and the formerly extensive peat bogs of the region (Dean-Speirs, et al., 2014). The function of shallow lakes is notably different to deep lakes, and they are more vulnerable to deterioration over time.

Lake Whangape, the zone's second largest lake, retains its natural water fluctuation range supporting a wide variety of significant wetland types, including the best remnant of floodplain kahikatea forest in the zone. Lake Otamatearua, a dune lake near Waiuku, has the highest biodiversity ranking of all lakes in the Lower Waikato Zone due to its high biodiversity values and excellent water quality. Lake Waikare is the largest lake in the Lower Waikato catchment and is extremely shallow. It is valued for a range of purposes including for flood protection storage (section 2.3.2 & 4.1.1). Waikare drains to the internationally recognised Whangamarino Wetland. A catchment management plan for Lake Waikare and Whangamarino has recently been developed.

Port Waikato and estuarine environment

Port Waikato and its associated coastal environment are considered to be a high value feature of the zone. Port Waikato is situated on the zone's only coastline, at the mouth of the Waikato River, and is the only estuary in the zone. It contains a varying mixture of fresh and salt water as the Waikato River flows into the sea and the tides rise and fall. This estuary is home to an assemblage of fresh and saltwater fish taking advantage of the rich resources of the Waikato River Delta. Pest fish present include koi carp, however, it appears the salt concentrations are a deterrent. Typical of river mouths, the estuarine vegetation is generally restricted to a fringe along the lower river banks. These fringing rush and sea meadow bands are compromised and threatened by invasive pest plants such as saltwater paspalum and alligator weed. Lower down in the tidal range are the most ecologically significant estuarine vegetation, the seagrass beds (Graeme, 2005).

The delta of the Waikato River is known for its whitebait fishery, providing a habitat, nursery and conduit for migrating freshwater species. The delta is also home to

various exotic and indigenous waterfowl, marshbirds, and shorebirds, which use the various mudflat, sandflat, saltmarsh and wetland habitats for feeding and breeding (Ryder et. al. 2016). Tidal effects in the river are evident upstream to at least Mercer, providing spawning habitat for īnanga and the other whitebait species. Maui dolphins (*Cephalorhynchus hectori maui*) are known to use the coastal waters near Port Waikato, whilst the river mouth also offers habitats for seals, dolphins and sharks.

Coastal erosion is currently affecting the open coast which has impacted the car park and surf lifesaving tower. The community has been well engaged in a collaborative approach with the council, Department of Conservation and led by Waikato District Council. A recent shoreline survey using aerial photographs has also identified erosion along the inner river mouth.

The sand dune system is important as a natural buffer for coastal erosion and a landscape feature, and includes a number of dune lakes, unique to the rest of the Waikato catchment. Sand mining (extraction for iron sands) occurs near Port Waikato, affecting the sand reserves in beaches

and dunes, as well as the dune ecosystems and habitats that existed prior to mining. This can make coastal environments vulnerable to storms as buffering capacity is reduced.

Coastal marine area

The Lower Waikato Zone includes a section of the west coast extending from Port Waikato township northwards to a point just south of Karioitahi on the Awhitu Peninsula. The coastal marine area extends from the mean high water springs along this coast to 12 nautical miles out in the Tasman Sea and covers a distance of approximately 8 kilometres up the Waikato River. It is the destination of all water flowing out of the 425km Waikato River – discharging into the Tasman Sea. There is very little information relating to biotic environment of the open coastline.



3. Legislative and policy framework

Te ture me te kaupapa here

This section outlines the legislative and policy (both statutory and non-statutory) framework that has informed the development of the vision, goals, focus areas and implementation actions set out in this zone plan.

Figure 10 provides an overall summary of the key legislative and policy framework for the zone plan, along with the key areas where the zone plan has influence over council plans and policies.

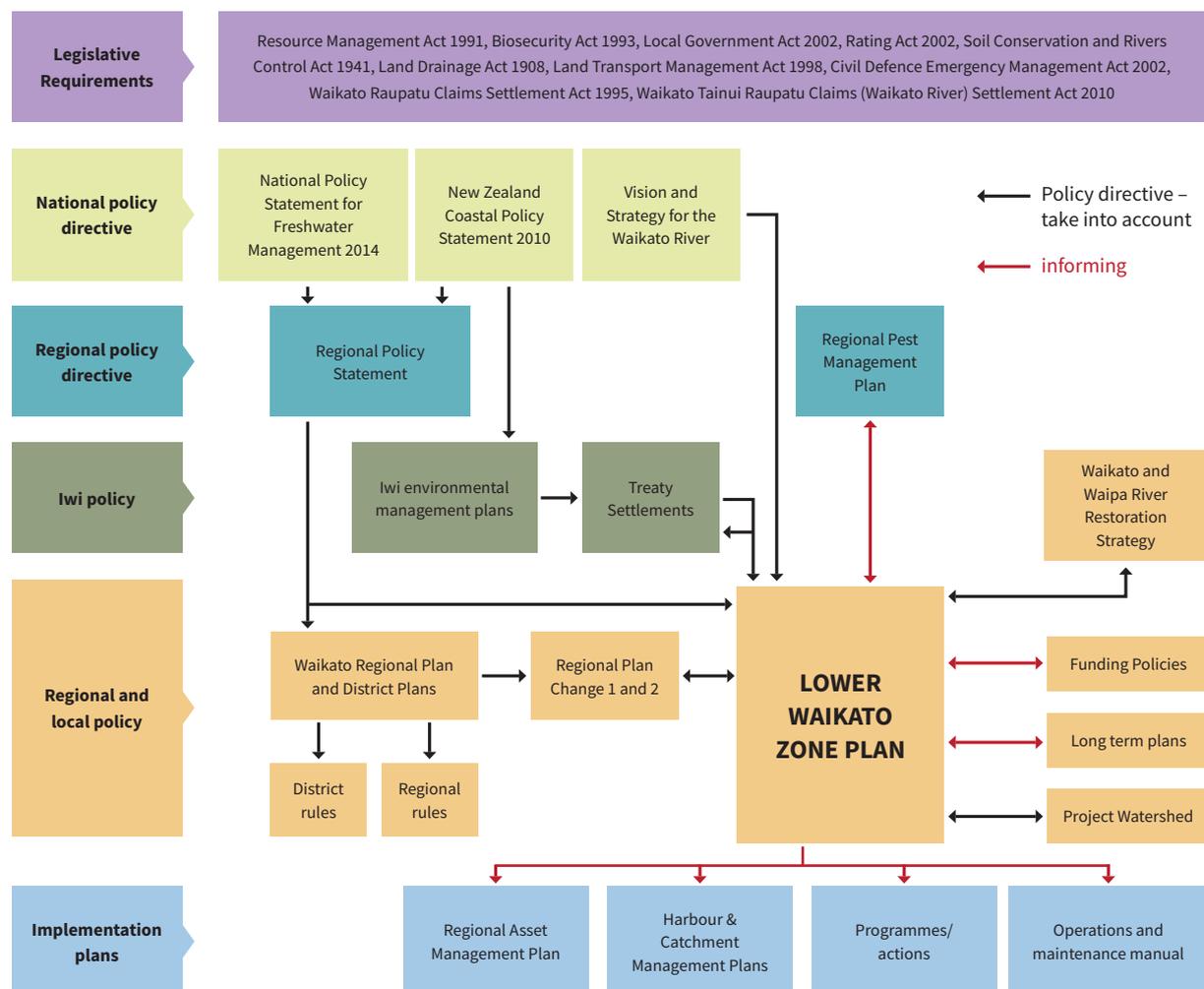


FIGURE 10: Key linkages between the zone plan and other key legislation and policy requirements

3.1 Legislation and statutory plans

The zone plan implements a number of the council's statutory responsibilities under a variety of statutes, including:

- Resource Management Act 1991 (RMA)
- Soil Conservation and River Controls Act 1941
- Local Government Act 2002
- Civil Defence Emergency Management Act 2002.

The key statutory policy documents and legislation that have guided the implementation activities proposed within this zone plan are summarised below.

Vision and Strategy for the Waikato River

The primary direction-setting document for the protection of the Waikato River and its catchments is Te Ture Whaimana o te Awa o Waikato (Vision and Strategy for the Waikato River).

Developed by the Guardian Establishment Committee (predecessor to the Waikato River Authority) in consultation with the Waikato community and as part of wider Waikato River Treaty Settlement co-management negotiations, the Vision and Strategy for the Waikato River is administered by the Waikato River Authority. It was initially given statutory recognition via the Waikato River Acts in 2010 and 2012.

The Vision and Strategy for the Waikato River is included in its entirety into the operative Waikato Regional Policy Statement (2016), therefore regional and district plans must give effect to it. Essentially, it is the community's vision for the Waikato River. If there are any inconsistencies between the Vision and Strategy and any Resource Management Act (1991) planning document, including any national policy statement, the Vision and Strategy prevails.

Fundamental to the vision are the following key principles:

- Commitment to the restoration and protection of the river in its widest sense (including iwi and community relationships).
- Adoption of a precautionary approach.
- Recognition given to cumulative effects.
- Application of a holistic, integrated approach to the management of resources.
- Recognition and application of two worlds of knowledge – mātauranga Māori and western science.

Waikato Regional Policy Statement (2016)

The Waikato Regional Policy Statement (RPS) has objectives for managing fresh water (3.14), riparian areas and wetlands (3.16), ecological integrity and indigenous biodiversity (3.19), natural hazards (3.24) and values of soils (3.25). It also has new policies regarding managing fresh water bodies (Chapter 8), indigenous biodiversity (Chapter 11), natural hazards (Chapter 13) and soils (Chapter 14). These objectives and policies are relevant to the implementation actions set out within this plan.

Waikato Regional Plan (2007) and Regional Coastal Plan (2010)

The Waikato Regional Plan (WRP) applies across the whole of the Waikato region (except for the "coastal marine area"), and provides the regulatory framework for resource management. The WRP implements the RPS, relevant national direction, and Treaty settlement legislation. The Waikato Regional Coastal Plan (WRCP) contains policies and methods to manage the allocation and use of coastal resources in the coastal marine area (the sea area below mean high water spring tide out to the 12 mile regional limit), and applies to the Port Waikato Estuary to approximately 8km offshore. The WRCP implements the RPS, the New Zealand Coastal Policy Statement, and other relevant legislation (e.g. parts of the Marine and Coastal Area Act).

A full review of the WRCP and WRP is currently being planned by the council. Ultimately, the two plans will be combined and replaced by one: the Waikato Resource Management Plan. Notification of the first phase of the plan review (most of the current coastal plan and priority topics for the regional plan) is expected in 2019/20, with adoption of the revised plan programmed for 2025.

Proposed Waikato Regional Plan Change 1 – (Waikato and Waipā River Catchments)

The council has notified and is in the process of implementing proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments (Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai). Plan Change 1 seeks to achieve reduction, over time, of sediment, microbial pathogens, nitrogen and phosphorus entering water bodies (including groundwater but excluding coastal waters) in the Waikato and Waipā River catchments.

Regional Pest Management Plan 2014-2024

The *Waikato Regional Pest Management Plan (RPMP)* sets out the strategic and statutory framework for managing plant and animal pests in the Waikato region. Objectives and the management approach for specific plant and animal pests present within the zone are contained in the plan. It is noted that the RPMP review is planned to commence in late 2018 starting with the release of a discussion document in early 2019. The actions in the zone plan can inform this process.

National Direction on Natural Resource Management

Central government, through the Ministry for the Environment, has a programme of national direction work that seeks to provide overall direction and consistency around management of natural resources. This involves either development, or review, of national environment standards, national policy statements and national regulation.

Key national directions that will affect catchment management in this zone (and all zones) include the National Policy Statement for Freshwater Management (Ministry for the Environment, 2017), Proposed National Policy Statement for Indigenous Biodiversity (Ministry for the Environment, 2018), national regulation around stock access to water and swimmability standards, and the National Environmental Standard for Plantation Forestry (Resource Management Regulations, 2017). This zone plan would need to be amended to give effect to any national direction which requires implementation through catchment management.

Waikato River Treaty Settlements

The council acknowledges the special position of tangata whenua within the region and recognises the need to work with iwi/hapū in river and catchment management.

The Waikato-Tainui Deed of Settlement was passed into law in May 2010 and is the key Treaty settlement for the Lower Waikato Zone. The agreement established a river management authority to oversee governance of the river (Waikato River Authority), and the *Vision and Strategy for the Waikato River* is input in its entirety directly into the RPS. This Treaty settlement has resulted in land ownership changes and many large areas of soil conservation and river control (SCRC) land being vested in the Waikato Raupatu River Trust.

Other relevant Treaty settlement legislation within the zone includes:

- Ngāti Tūwharetoa, Raukawa, Te Arawa River Iwi Waikato River Act (2010)
- Ngā Wai o Maniapoto (Waipā River) Act (2012)
- Pare Hauraki Collective Redress Deed
- Ngāti Haua Claims Settlement Act (2014)
- Waikato Raupatu Claims Settlement Act (1995)
- Māori Fisheries Act (2004).

Treaty settlements have resulted in a range of agreements between the council and river iwi. These agreements set out a co-management framework for managed properties; sites of significance (reserve sites for the purposes of section 70 of the *Waikato River Settlement Act*), and Waikato River related lands where applicable, and include:

- Co-management Agreement for Waikato River Related Lands – Waikato Raupatu River Trust and Waikato Regional Council (2012)
- Joint Management Agreement Waikato Raupatu River Trust and Waikato Regional Council (2013)

3.2 Key non-statutory policies and plans

Waikato Regional Council Strategic Direction 2016-2019

Waikato Regional Council's strategic direction guides work and sets priorities for the council's work up to 2019. It also reflects community desires and needs, and identifies key factors that will determine whether the council is successful in achieving its strategic direction.

Priorities under the council's strategic direction are:

- Support **communities** to take action on agreed outcomes.
- Forge and strengthen **partnerships** to achieve positive outcomes for the region.
- Positively influence future **land** use choices to ensure long term sustainability.
- Manage **fresh water** more effectively to maximise regional benefit.
- Increase communities' understanding of **risks and resilience** to change.
- Enhance the value of the region's **coasts and marine** area.
- Shape the **development** of the region so it supports our quality of life.

The zone plan will assist the council in delivering its strategic direction. The key connections from the zone plan to the strategic direction are summarised in Table 1. Further information on the zone goals is detailed in section 5.

		REGIONAL PRIORITIES							
		Communities	Partnerships	Land	Fresh water	Risks and resilience	Coastal and marine	Regional development	
ZONE PLAN GOALS	1	Provide and maintain sustainable flood protection to rural land and urban areas to the agreed level of service.	✓		✓	✓	✓		✓
	2	Contribute to improving water quality in the zone.	✓		✓	✓		✓	
	3	Contribute to ensuring that soils within the zone remain productive.	✓	✓	✓	✓			
	4	Manage the instream impacts of urban development and land use intensification in association with territorial authorities and other partners.	✓	P	P	✓	P		✓
	5	Promote and enhance indigenous biodiversity in both aquatic and terrestrial environments.	✓		✓	✓		✓	
	6	Support mana whenua and strengthen local community partnerships.	✓	✓	✓	✓			✓

TABLE 1: Lower Waikato Zone Plan connections with the strategic direction

Regional Asset Management Plan

The council has developed a *Regional Asset Management Plan* (RAMP) across all eight of its zones. Asset management planning enables the relationship between levels of service (LOS) and the cost of the service to be determined. The RAMP confirms the LOS for asset management planning across the region. Assets in the Lower Waikato Zone include the network of 256km of stopbanks, 274 flood gates and 64 pump stations.

LOS provides the link between the corporate and asset management objectives and the more detailed technical and operational objectives. Community outcomes are what a local authority aims to achieve through the provision of infrastructure services. They form the basis for the council's service delivery, thus determining the LOS provided to the community. The community outcomes for the council are set out in council's *Strategic Direction 2016-2019* and are reflected in the *2018-2028 Long Term Plan*.

The Waikato River and Waipā River Restoration Strategy

The Waikato River Restoration Forum was established in 2014 with a purpose of maximising opportunities to realise the *Vision and Strategy* for the Waikato River catchment. The forum is made up of representatives from the five river iwi, the Waikato River Authority, Waikato Regional Council, DairyNZ, Fonterra, territorial local authorities, Mercury, Genesis Energy and the Department of Conservation.

The first objective of the forum was to support the development of a strategic plan for river restoration initiatives to encourage a more integrated and coordinated approach to funding and non-regulatory catchment and river management. A 5-20 year action plan for the Waikato and Waipā rivers and their catchments was proposed, to be developed with wide stakeholder input.

The development of this plan, the *Waikato River and Waipā River Restoration Strategy* (WRRRS, 2017) was formally led through a partnership between Waikato Regional Council, DairyNZ and the Waikato River Authority.

The purpose of the WRRRS is to guide future on-the-ground activities for all organisations funding and/or undertaking river and catchment restoration through the identification of specific, technically achievable and prioritised actions. Key objectives of the WRRRS are to:

- inform decision making of River Restoration Forum members engaged in restoration activities
- act as a guide for all groups engaged in delivering restoration initiatives

- encompass an approach that allows groups much longer planning periods to prepare for funding applications and project implementation
- further build on the work carried out in 2010 developing the Waikato River Independent Scoping Study (NIWA, 2010) by focusing on non-regulatory actions and considering the likely available funding
- identify projects that are likely to make the greatest difference in improving the health and wellbeing of the Waikato and Waipā rivers, and reflect the values and goals of iwi and communities within the catchment.

The WRRRS is non-binding and does not in any way restrict the ability of any funding or management organisation to fund or undertake any project that meets their criteria. However, it provides direction for funders who are seeking to invest in effective projects, and to organisations, iwi, communities and individuals who undertake work and want to deliver high impact results.

The WRRRS covers a wide range of restoration and protection activities in the catchment and focuses on six core work streams: erosion and sedimentation, water quality, biodiversity, fish, access and recreation and iwi cultural priorities.

With the exception of the Franklin dune lakes, the entire Lower Waikato Zone is in geographical scope for the WRRRS. For the purpose of the WRRRS, restoration priorities were developed in conjunction with those for the Central Waikato Zone.

Priority catchments, streams and sites within the Lower Waikato Zone have been identified in the WRRRS. These priorities are detailed in Appendix 1 of this zone plan. The council has been one of the project leads for the development of the WRRRS and has been involved in the prioritisation process. As such, actions identified in the implementation table within this zone plan (Section 5.2) take account of and are integrated with WRRRS priorities (Waikato Regional Council 2018).

Waikato Region Shallow Lakes Management Plan

This shallow lakes management plan draws together information about the 71 shallow lakes of the Waikato region and the policy and legal framework for their management. The plan identifies the key management issues and actions for shallow lakes, with a specific focus on matters the regional council has responsibility for (i.e. water quality, lake water levels and biodiversity values).

Lake Waikare and Whangamarino Wetland Catchment Management Plan

Where there is significant community interest or complex issues, a catchment management plan may be developed to provide additional detail and direction.

The council, through its *2015-2025 Long Term Plan*, developed a catchment management plan (CMP) for Lake Waikare and the Whangamarino wetland. The draft had been completed at the time of publication. The plan's purpose has been defined as "conserve, enhance and, where appropriate, restore the river, land and wetland environment through effective land, water and resource planning across the Lake Waikare and Whangamarino wetland catchment; through a coordinated, collaborative approach". The plan is split into two parts: part one provides a catchment overview, including aims and objectives, while part two identifies actions to meet the aims and objectives.

The CMP forms part of a broader Lower Waikato Zone management planning and implementation work programme that guides future work programmes within the Lake Waikare and Whangamarino Wetland catchment. The CMP will be crucial in obtaining funding to deliver specific operational actions.

Waikato Freshwater Strategy

This strategy (2017) identifies a programme of action to achieve the best use of fresh water through time via better allocation systems using new methods based on better information. It recognises that freshwater management is a complex problem that has not been addressed in an integrated manner. The current state of the region's fresh water is the result of ad hoc management in response to disparate directions from central government and a preference for economic development that competes with an incomplete understanding of site specific environmental limits.

Waikato District Lakes and Freshwater Wetlands Memorandum of Agreement

Community, iwi and council concern led to the signing of the Waikato District Lakes and Freshwater Wetlands Memorandum of Agreement (MOA) on 7 June 2011. The MOA group – involving Waikato Regional Council, Waikato District Council, Waikato-Tainui, the Department of Conservation and Fish & Game – is working on projects to protect, enhance and restore shallow lakes and wetlands in the Waikato district. Working together means we may be able to achieve more. The group has already been successful in obtaining additional funding for restoring habitat and improving water quality at Lake Areare.



Addressing New Zealand's Biodiversity Challenge

This Willis Report (2017) is a collective focus on the future of biodiversity management in New Zealand. It was commissioned by regional council CEOs and has a particular focus on the role and work of regional councils in relation to biodiversity management. It establishes that biodiversity maintenance is a core function of regional councils, but acknowledges that biodiversity nevertheless continues to decline. The report recommendations for halting the continued decline in biodiversity comprise the need for:

- strong leadership and clarity of roles and responsibilities
- positive action, building on our existing active plant and animal pest management
- agreement on where we should focus our efforts at national, regional and local level
- understanding what success looks like, and how to measure it
- a plan and delivering joined-up action across all players
- modern, fit-for-purpose frameworks, including legislation, to help to achieve our goals.

Lower Waikato Zone Natural Hazard Management Plan

This report provides an overview of the significant natural hazards that currently affect and are likely to affect the Lower Waikato Zone and includes:

- a review and assessment of existing and potential natural hazard risks that affect the zone and how these may change over time
- an initial semi-quantitative risk assessment which identifies the risk to life and property in broad terms
- the identification of gaps, and priorities for further work
- a basis for developing effective district plan provisions regarding natural hazards.

This report presents an initial analysis for key natural hazards and provides guidance to the council for the prioritisation of natural hazard work programmes within the Lower Waikato Zone.

Climate Change Guideline: Integrated Catchment Management

The Climate Change Guideline is focused on climate change adaptation actions. Adaptation refers to addressing the impacts of climate change. Adaptation involves taking practical actions to manage risks from climate impacts, protect communities and strengthen resilience. Adaptation is required on one hand to consider long term changes to secure long term protection from climate change. On the other hand, it needs to deal with new or more often extreme events in the short term (hazard/disaster management).

Iwi Management Plans & Waikato Tainui Environmental Plan

An iwi management plan (IMP) is a term commonly applied to a resource management plan prepared by an iwi, iwi authority, rūnanga or hapū. An IMP is generally prepared as an expression of rangatiratanga to help iwi and hapū exercise their kaitiaki roles and responsibilities. An IMP is a written statement identifying important issues regarding the use of natural and physical resources in their area. An IMP may also include information on social, economic, political and cultural issues. An IMP provides guidelines for resource management strategies and may also inform an iwi planning document and will be considered by the council in the development of plans and the delivery of the zone programme.

Waikato-Tainui has an iwi management plan (*Waikato-Tainui Environment Plan, Tai Tamu, Tai Pari, Tai Ao*), that sets out aspirations for environmental, economic, social and cultural enhancements. The *Waikato-Tainui Environmental Plan* contains objectives to grow their tribal estate and manage natural resources, whilst providing guidance to external agencies regarding Waikato-Tainui values, principles, knowledge and perspectives on, relationship with and objectives for natural resources and the environment.



4. Key matters for the zone

Ngā kaupapa matua i te rohe

The following section sets out the key matters for the zone that informed the development of the goals and implementation actions within the plan. Key matters were identified through workshops and feedback received while developing the zone plan and take account of the policy context outlined in Section 3 and key social, economic, environmental and cultural considerations within the zone.

4.1 The flood scheme and significant infrastructure issues

There are significant infrastructure issues facing the council over the next 50 years. The *Waikato Regional Council 2018-2067 Infrastructure Strategy* identifies the issues, and approaches to address them. This will be further supported by the *2018-2020 Infrastructure Sustainability Work Programme Review*.

The significant issues that have been identified in the strategy are:

- risk of natural hazards and disasters
- climate change
- ageing of assets and impact on levels of service
- increasing environmental and regulatory performance expectations
- peat subsidence
- economic conditions and affordability
- growth and development
- business continuity.

The risks are outlined in more detail, as per what has been identified in both the infrastructure strategy and the hazards management plan.



Natural hazard risks

The Waikato is one of the most hazardous regions in New Zealand due to its geographical location. It's prone to severe storms and tsunamis, seismicity and volcanic risks. Extreme events such as tsunamis, coastal storm surge, land instability, earthquakes and volcanic eruptions pose significant threat to infrastructural assets and the services they provide.

Natural hazard risks have been identified in the *Lower Waikato Zone Hazards Management Plan*. The plan looks at:

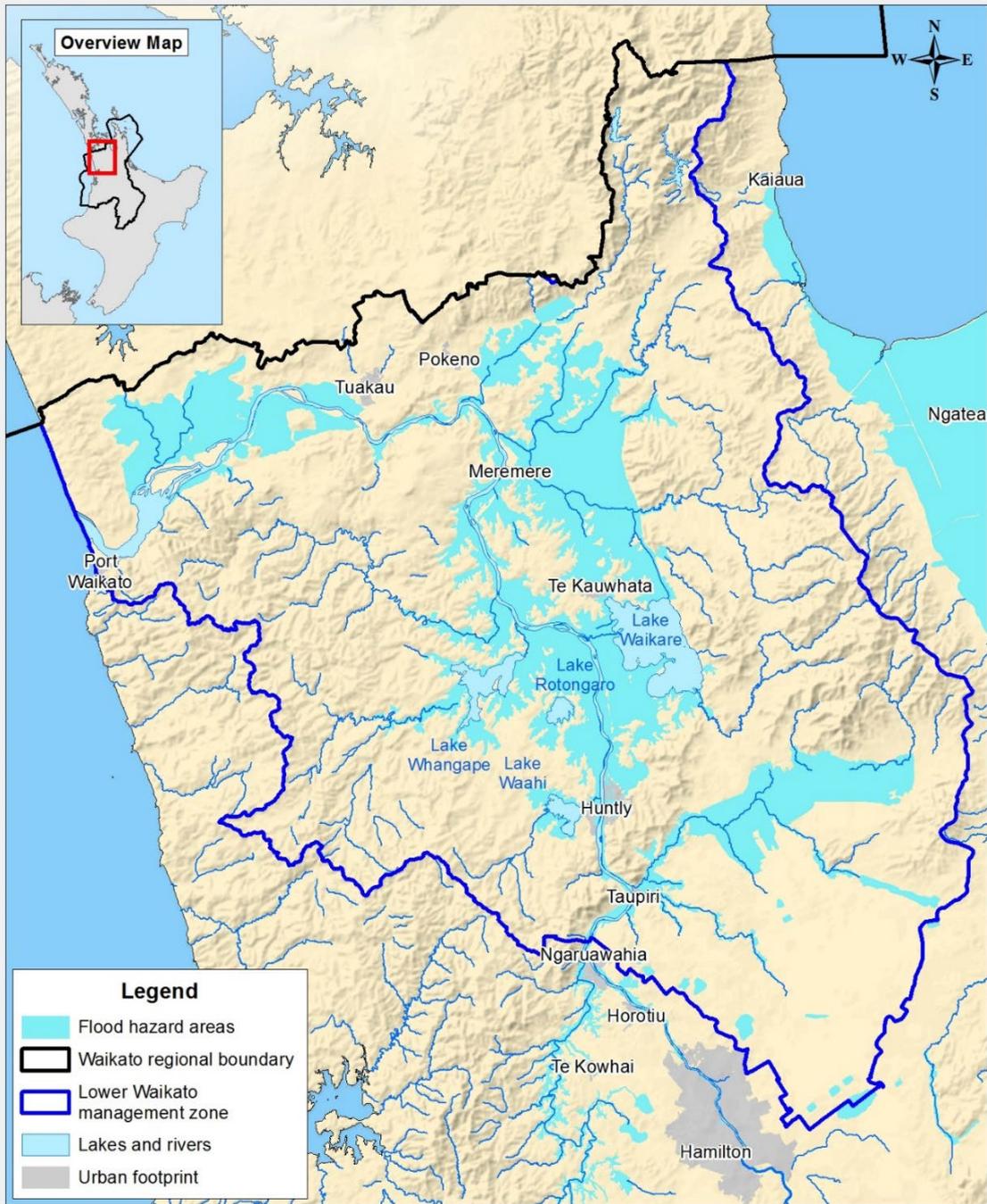
- natural hazards and resulting impact on zone assets caused by:
 - extreme weather events
 - earthquakes
 - tsunami
 - land instability
- climate change
 - rise in sea level and storm surges
 - increases in rainfall intensity and frequency
- increased adverse river behaviour caused by:
 - climate change
 - land use change
 - hydro-power and water supply changes (i.e. increased flows)
 - sedimentation and erosion
- river bank erosion caused by:
 - natural events/soil types and qualities
 - instability
 - land use
- sand and gravel management caused by:
 - accumulation of sand and gravel (bed level change)
 - upstream land use practice
 - erosion, degradation, or aggradation
 - hydro and/or water supply dams
 - natural processes.

A tsunami study (2015) funded by Waikato District Council, Waikato Regional Council and WEL Energy found that Port Waikato is at a low risk of inundation from a tsunami. The study concluded that wave heights would be relatively small, but inundation may affect low-lying areas. However, tsunami may produce strong surges and currents, particularly at the harbour entrance, making it dangerous to be on or in the water (Borerro & O'Neil, 2016).

The seismic/earthquake hazard threat to the zone is relatively unknown. The Lower Waikato Zone, like much of New Zealand, is geologically young and active, meaning many faultlines throughout the country remain unknown. Further work would be required to identify any active fault lines and ascertain any possible risk in more detail.

Flood protection asset risks during an event

Flooding has posed a considerable risk to the zone and is the most frequent natural hazard in the area. Mostly, flooding is as a result of high rainfall upriver in the extensive catchments of the Waikato and Waipā rivers. Sometimes, however, high intensity rainfall over a localised part of the zone can bring about flash flooding, land instability, debris flows, and erosion of stream banks, gullies and slopes. A large area of the zone is potentially impacted by flooding (Figure 11 displays the flood hazard areas). As a result of the reliance on the infrastructure to protect these, key risks with flood protection and drainage assets may be associated with power supply outages and inundation during an 'over design' event, leading to damage, failure or overtopping. A significant portion of the council's assets are sited on "liquefiable" soils, making them prone to damage in a major earthquake.



<h3>Flood Hazard Areas in the Lower Waikato Management Zone</h3> <p>Created by: A Jeffries Projection: NZTM Date: 03/12/2015</p> <p>Version: 1 Job No.: 31384 File Name: Report_for_LWZ_Flood_Hazard.mxd</p>		<p>0 5 10 15 20 25 30 Kilometres Scale - 1:400,000 at A4</p>
<p>Acknowledgements and Disclaimers</p> <p>- The presence of a hazard does not guarantee the existence of such a hazard, nor does the lack of information preclude the existence of a hazard or risk. Waikato Regional Council accepts no liability or otherwise resulting from hazards or knowledge of hazards. The information is correct at 1 June 2006. - © Waikato Regional Council 2004 - 2015. RACS Management Boundaries Data. Licensed under CC BY 3.0 NZ.</p>		<p>A4</p> <p>Waikato REGIONAL COUNCIL Te Kaitiaki o Pōhoro o Waikato</p>

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FIGURE 11: Flood hazards risks in Lower Waikato

Climate change and development pressure

Climate change is likely to increase flood hazard and risk due to sea level rise, more frequent and more intensive storm events, stream and cliff erosion/instability, increased adverse river behaviour and higher water tables. There is still uncertainty on the projected impacts of climate change, therefore regular review of the projected impacts is required along with possible management regimes for various climate change scenarios, in line with the *Climate Change Guideline ICM document*.

The council's strategic direction signals that it wishes to be more responsive to managing climate change impacts. The *Waikato Regional Council Infrastructure Strategy 2018-2067* captures the issues associated with climate change, along with approaches to managing the issue. Through the *2018-2028 Long Term Plan*, the council has committed to undertaking an infrastructure sustainability work programme review over a two year period. This review will take account of current approaches and respond to the changing environment (including climate change) to inform the council's continuous improvement approach to planning for the operation, maintenance and renewal of assets.

There is pressure to increase development through the Waikato River corridor between Auckland and Hamilton. Careful management is required to ensure any new developments are resilient. Climate change will place pressure on the council's assets and their services. The council must respond to projected climate change if current levels of service are to continue to be delivered. The council may also be asked by the community to consider new flood protection works in response to the impacts of climate change. The council is also assessing the utilisation of ecosystem services to manage flood events while reducing environmental impacts.

New flood schemes, or upgrading of existing flood schemes, is likely to result in increased capital and maintenance costs. As such, any new or upgraded scheme would require a comprehensive cost benefit assessment looking well into the future, taking into account climate change.

Ageing assets

Many of the council's assets were constructed between the 1960s to 1990s and will reach the end of their predicted life in the next 50 years. These assets are critical in ensuring people and property are safe from hazards associated with flooding. They also contribute to regional economic productivity and social wellbeing.

The options of allowing the level of service to decline, maintaining the same level of service or replacing to a higher standard will be considered in light of the demand, cost and risks.

Generally, the council expects to continue to undertake renewal programmes that ensure assets provide the level of service agreed with communities. This may, in some cases, lead to increased financial requirements. This is due to expected impacts of climate change, higher environmental performance requirements and regulatory compliance. The practice of replacing 'like with like' is to be continually evaluated and technological improvements incorporated where this may extend asset life or reduce life cycle costs. These matters will be incorporated into decision making processes conducted with communities and based on the best information available.

Peat subsidence

A number of council assets are located on peat. As peat in its natural state has a high moisture content (up to 90 per cent), any reduction in its moisture content through drainage, will reduce its volume irreversibly and proportionately, impacting on flood protection and drainage assets.

Every effort should be made to prevent the over drainage of peat and the management of water tables (including inputs and outputs), while still allowing for its use in agriculture and horticulture.

The subsidence of peat can impact on flood protection assets as follows:

- Impact on pump station performance, resulting in an inability to deliver the level of service. This can result in increased maintenance and energy costs.
- In drainage compartments, it may require more drainage improvement works, including the addition of supplementary pump stations and upgrades from gravity systems to systems requiring pumping.
- Result in an increased frequency for maintenance of stopbanks as levels will need to be topped up to ensure the design levels of protection are maintained.
- Impact on flood gate performance.

Increasing environmental and regulatory performance expectations

Community and central government expectations in relation to environmental outcomes continue to increase over time. There is a strong community focus on water quality. Flood protection infrastructure is often located in areas of high environmental, recreational or conservation value and these values may be impacted by that infrastructure. The council's strategy is to achieve multiple outcomes wherever possible. This will be progressed by actively managing scheme effects, full regulatory compliance and achievement of a range of outcomes, including those associated with Treaty settlements, biodiversity and recreational opportunities.

It is intended that improvements in environmental performance continue to be achieved. The preferred approach is to enhance current practice with a planned and targeted programme of environmental performance improvement.

Economic conditions and affordability

The region's economic conditions have an impact on the ability of communities to pay for the services provided. There are increasing pressures on the current level of funding to deliver more. In the future, there may be less funding available for flood protection. The affordability of the levels of service may be impacted by changes to the levels of natural risk, increased input costs, reduced returns from land use and changes to the cost of compliance. There is a strong link between social and economic trends. Trends such as an ageing population, urban drift and social inequality all have an impact upon the ability to fund infrastructure.

Given increasing pressures on affordability, it is appropriate to keep under review the full range of scheme beneficiaries to assess if current funding policies continue to be appropriate. The council will continue to improve its monitoring of economic indicators and trends in order to anticipate the responses needed. The development of improved criteria and methodology around this will better inform decision making.

Opportunities will be identified for cost efficiencies in the way work delivery programmes are procured. Earlier recommendations adopted by the council (2016) regarding market trends and cost escalations will be implemented. The preferred approach is to continue with current practice, but to increasingly apply improved methods of market analysis and forecasting.

4.2 Urbanisation and land intensification impacts

There are a number of urban areas within the zone, as detailed in the zone overview (Section 2). Greater urbanisation leads to increased stormwater volumes and peak flows as vegetation is removed and soils are compacted or covered by impervious surfaces such as roofing, asphalt and concrete, which do not absorb water (NIWA, n.d.). In the urban environments of the zone, this water is conveyed efficiently via underground pipe networks to streams and the Waikato River, which increases peak flows.

As areas become more urbanised, human activities, particularly industry and traffic, lead to the buildup of sediments and contaminants which are eventually washed off during rains and conveyed via stormwater networks to receiving environments. These contaminants have the potential to have a major effect on the ecological health of the zone's urban streams and rivers as well as on the economic, social and cultural value of these environments.

Impacts of urbanisation include:

- increased run off volumes leading to:
 - increased stream bank and bed erosion
 - increased deposition of sediments
 - increased local flood risk for urban flood plain.
- increased wastewater discharges
- contamination of receiving environments, either acute (following storm events), chronic (due to accumulation over time), or both
- loss of fertile land and a potential reduction in biodiversity as urban areas expand
- increased pressure on infrastructural assets, including land drainage networks in lower reaches of catchments.

An example of urbanisation in the zone is the proposed residential development in Te Kauwhata township with the addition of new residential properties. Stormwater and wastewater from this development will need to be well managed to control potential environmental impacts.

4.3 Management of flood scheme land

Council owned land in the vicinity of flood protection assets is commonly known as ‘scheme land’. There are 930 hectares of scheme land in the zone, split across 93 licence areas. Of this land, 50.3 hectares are owned by Waikato-Tainui and currently managed by Waikato Regional Council on behalf of Waikato-Tainui. The management of this land is to be in accordance with the Co-management Agreement for Waikato River Related Lands – Waikato Raupatu River Trust and Waikato Regional Council (2012).

Across the scheme land, there is a range of land use capability from areas which were once wetlands and are frequently inundated with water, through to areas which are suitable for grazing and cut and carry. Scheme land is typically licensed to adjacent landowners and managed through licence to occupy agreements, with a lesser portion having been retired.

In managing scheme land there are a number of challenges including low return on investment, inadequate adherence to licence agreement by licensee (resulting in damage to flood protection assets and pest plant issues), stock access to waterbodies, loss of biodiversity and pest plant control issues.

A number of areas of scheme land are of high value and included as areas of priority in the WRRS. Further, with changes to the *Waikato Regional Plan* through *Proposed Regional Plan Change 1*, new management requirements for scheme land are anticipated.

4.4 Water quality and quantity management

Water quality in the lower Waikato River and tributaries is degraded. This is represented by the majority of tributaries to the lower Waikato River not meeting the standard set out in the National Policy Statement for Freshwater Management 2017 (NPSFM), and the main-stem Waikato River monitoring sites (at Huntly, Mercer and Tūākau) not meeting the standards for total nitrogen, phosphorus and algae (as chlorophyll a).

The position of the zone at the lower reaches of the Waikato River catchment, and development of the flood protection schemes, has had a significant impact on water quality within the zone. Vast modification of the natural landscape has enabled communities to prosper through the likes of agricultural development. Drainage of land and conversion into intensive pastoral farming on peat

soils has proved consequential to water quality, resulting in high nutrient loads and loss of stream and drain bank gradient by peat subsidence. The loss of gradient and additional straightening of water courses has significantly altered catchment hydrology resulting in “peakier” delivery of nutrient rich, low dissolved oxygen water to subsided areas. Conversion of any land from forestry or bush to grazed pasture also results in increased run off and consequential transfer of nutrients, contaminants and pathogens to water, increased risk of flash flooding for tributaries and increased risk of erosion (Taylor, Mulholland, & Thornburrow, 2008). Intensive farming on other mineral soils is another main contributor to declining water quality. Collectively, poor water quality in rivers, streams and wetlands has led to extensive mortality of a wider range of desired flora and fauna species (microbial, plant, insect and fish).

As the zone is located in the lower Waikato River catchment, it is heavily influenced by land use and activities higher in the catchment. Collectively, the effects the hydro-electric dams, land use practices and land management in the Lake Taupō, Upper Waikato, Waipā, and Central Waikato zones have considerable impact on the current state of the Waikato River section (and tributaries) in the zone. Sediment from the Waipā River also contributes to high sediment loads in the lower Waikato River (Hill, 2011).

Shallow lakes are a high value feature of the Lower Waikato Zone and are also facing declining water quality. The majority are in a ‘degraded’ state with only two of the dune lakes being considered ‘slightly impacted’. Shallow lakes are particularly vulnerable to regime shifts where they change from a vegetated, clear water state to a turbid, phytoplankton dominated (devegetated) state (Dean-Speirs et al., 2014). Only the four dune lakes remain in a vegetated state. The combination of land drainage, managed water levels and catchment land use intensification, along with invasive species impacts, are major contributors to the highly enriched condition and low visual clarity of most of the shallow floodplain and peat lakes that typically no longer support macrophytes (Hamilton et al., 2010).

Over recent years, demand for water has also increased and this is likely to continue. Competing water uses can result in water shortages and conflicts, and can place significant pressure on river catchment, lakes and wetlands. Auckland is growing by the size of Hamilton every four years and consequently there is an ongoing demand for water, including that provided from the Waikato River and Mangatangi and Mangatawhiri dams.

4.5 Sustainable land management and implementation of catchment management activities

Land subject to the highest erosion and sedimentation throughout the zone is often in hill country terrain. Hill country is prone to shallow slips and sheet erosion, particularly where heavy livestock are grazed on steep land – creating slumping, earthflow, and gully erosion.

Land use change and agricultural development throughout the zone have also contributed to erosion and sedimentation issues. Some land practices also adversely affect soil health, versatility and productivity by compaction and reducing fertility. Stream bank erosion is another source of sediment within waterways across the zone. Whilst there is limited data available on the contribution of bank erosion to sediment budget in the Waikato catchment, Hughes (2015) suggests that, away from the main stem of the Waikato River, bank erosion may be an important contributor to suspended sediment (e.g. roughly 60 per cent). Climate change is expected to further exacerbate erosion and sedimentation issues by increasing the frequency of high rainfall events.

If soil is well managed it helps support continued productivity (and associated economic return) as well as minimising environmental impacts. Such impacts include erosion of soil, which results in sedimentation of waterbodies. High soil quality allows soils to provide services, such as filtering and nutrient and water retention, that mitigate the effects of land management on water.

It is estimated that 24,441ha is at risk of severe erosion within the Lower Waikato Zone, with a further 22,470ha considered a moderate risk. Nearly 550km of stream bank is considered to be an existing or potential erosion problem. Identified priority areas for soil conservation work in the Lower Waikato Zone include:

- Mangawara
- Mangapiko
- Matahuru
- Mangatawhiri
- Upper Whangape
- Mangatangi
- Opuatia
- Waahi.

Key management issues for the zone with respect to catchment management and sustainable land management practices include:

- stock access to waterways
- cropping near waterways
- erosion management of critical source areas
- nutrient management
- peat soil management
- increased stocking rates versus the capability of the land and soil
- riparian management
- impacts on indigenous biodiversity
- increase in plant and animal pests,
- pastoral productivity and community prosperity
- impacts on the habitats of taonga species
- loss of seeps and wet areas (pūna) adjacent to streams.

4.6 Peat soil management

Peat is the partially decomposed remains of wetland plants, often intermixed with various proportions of inorganic material, where a high water table has prevented the breakdown of dead plant material and allowed peat to form and accumulate. In the Waikato region, peat soils cover about 94,000ha (Waikato Regional Council, 2006) and the Lower Waikato Zone contains half of this with 47,000ha (Figure 7).

The competing uses of peat soils in the Waikato have long been a source of conflict. Historically, the peat areas in the Waikato region represented unique wetland ecosystems. Since the late 19th century, about 80 per cent of the original peat area has been drained, mostly to allow for agricultural land uses. The remainder is typically managed for conservation, with these remaining peat wetland areas typically having high ecological value. The drainage of peat in the Waikato region has dramatically altered its hydrology, stopped accumulation of vegetation (i.e. peat formation), and resulted in ongoing land subsidence. Even though these drained peat soils are degraded compared to their original state they are now important economically. Once drained, several key processes contribute to peat soil subsidence and these can be divided into two groups: those which result in a loss of soil volume but not mass (consolidation, shrinkage); and oxidation, which results in a loss of peat soil mass (Stephens, et. al., 1984). Through peat oxidation, carbon accumulated over many thousands of years and stored as organic matter in the peat is lost to the atmosphere as carbon dioxide (a greenhouse gas) (Campbell et al., 2015).

Following initial clearance and drainage, subsidence is typically rapid but slows over time (Pronger et al., 2014) as the land surface approaches the local drainage level. However, often drain deepening or other management in response to the effects of peat loss continuously draws down the water table, resulting in ongoing subsidence and drainage, compounding a drainage-subsidence cycle. If allowed, this process will continue until all the peat is lost. Contemporary rates of peat subsidence in the Waikato region have been estimated at about 1.9 centimetres per year (Pronger et al., 2014), however, these measurements were largely from bog peats. Arguably, rates of subsidence for some Lower Waikato Zone peats may be different due to different peat types and drainage management practices.

The consequences of peat subsidence include increased risk of flooding, prolonged high soil moisture, reduced wetland sustainability, reduction in drainage patterns and capacity, a requirement to prematurely upgrade, repair, or install drainage and other infrastructure and exposure of soil material post peat loss which could influence productivity.

As well as subsidence, drained peat soils in the Waikato region are recognised for a range of other characteristics which, when compared to mineral soils, make them difficult to manage for productive purposes. These include high organic matter content, low bulk density, low pH, and low nutrient levels. In addition:

- they experience water table fluctuations
- much of their water is held tightly so is unavailable to plants, making them drought prone
- they can be susceptible to phosphorus loss as some have low phosphate retention
- they can combust.

Like mineral soils, peat requires fertiliser input for sustained production.



4.7 Biosecurity – pest animals and plants

Pest plants and animals can adversely affect the health and yield of production animals, plantation forests and/or crops. The consequential decrease in production may result in reduced income for the primary sector and in certain circumstances may affect New Zealand's international trade and reputation. Long term management of pests of this nature is needed to ensure these pests do not adversely affect the economic base of the region.

Exotic organisms can invade habitats and displace, interfere with or infect indigenous species or ecosystems. The result is disturbed and depleted ecosystems or possibly even local extinction of individual species. Habitat loss and destruction by introduced pests are the two main reasons for the continuing loss of native biodiversity in New Zealand.

Pest plants

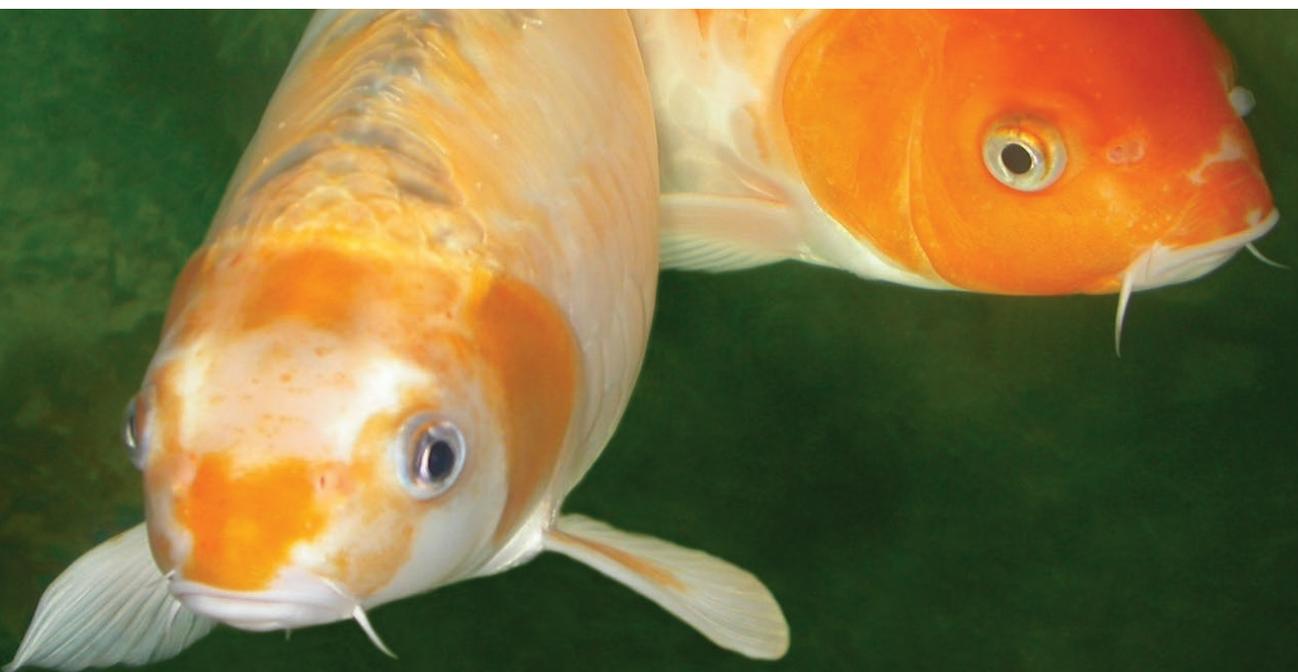
Throughout the zone there are a range of pest plants and animals which threaten indigenous species and habitats. Aquatic and wetland pest plants such as alligator weed, yellow flag iris, senegal tea, willow and alder grow rapidly in the Lower Waikato, outcompeting native plants and impacting available habitat. Agricultural pest plants which impact on cropping and pasture production include alligator weed, velvet leaf, and African feathergrass. The effects and severity of impact of pest species varies throughout the zone depending on the location of the site and the values that require protection.

Pest fish

Introduced fish species such as koi carp, brown bullhead catfish, gambusia and rudd threaten native fish species

and habitats in freshwater rivers, streams and lakes. All of these species are known to be present within the Lower Waikato and Waipā systems. Their presence threatens native freshwater indigenous biodiversity and adversely impacts water quality. There has been a dramatic increase in the spread and abundance of invasive pest fish in the region's waterways. Overtime, this has resulted in an increased community expectation on both the Department of Conservation (DOC) and Waikato Regional Council to implement more effective control measures against pest fish. DOC has overall legislative responsibility to manage pest fish populations in the zone and the council continues to seek opportunities to support DOC in this role.

Of the known pest species, koi carp is one of the most visible, abundant and problematic. This species was accidentally introduced to New Zealand in the 1960s and first noticed in the Waikato River in 1983 (Collier & Granger, 2015). Koi carp now dominate many areas of the lower river, and at times may represent over 80 per cent of the total fish biomass at some sites (New Zealand Geographic, 2015). Koi carp feed at the bottom of the water column, essentially sucking everything in as they go and spitting out anything they do not wish to eat. They eat a wide range of benthic organisms that our native fish species eat and survive in poor quality, turbid environments which they create through feeding. Their feeding behaviour stirs sediment making water murky, contributes to nutrient enrichment, uproots plants and damages the freshwater ecosystem, ultimately impacting on the diversity of native species. In addition to degrading habitat, they outcompete our native species. On average a female koi carp can produce 300,000-400,000 eggs annually and as they gather for spawning or feeding in the shallow margins of the Waikato river, koi biomass can reach 4000 kg/ha (Science Learn, 2018).



4.8 Indigenous biodiversity

Lower Waikato catchments are a mosaic of highly modified areas and highly significant indigenous ecosystems. These include freshwater streams and rivers, shallow lakes, wetlands, estuary and coastal ecosystems. The zone was once dominated by hill-country forests, swamp forests, lakes and wetlands, providing extensive habitats for a range of native species. However, today much of this land has been cleared, drained and converted to agricultural land. The zones historical swamps, wetlands, shallow lakes, and native forests, prior to clearance and drainage, would have provided excellent lowland habitats for a variety of native species (e.g. bats, birds, eels and all native fish species). Such clearance and drainage has led to a loss of over 92 per cent of wetland areas in the Waikato River catchment, and this decline continues today through fragmentation and isolation (Beard, 2010).

Factors such as climate change, species extinction and land use change contribute to indigenous biodiversity degradation. Some of the issues associated with modifications to the natural environment include:

- reduction, fragmentation and isolation of indigenous ecosystems and habitats
- loss of or disruption to migratory pathways in water, land and/or air
- the difficulty of restoring indigenous forest, wetlands and other ecosystems once they have been lost
- effects of water quality degradation, changes to water flows, levels and quantity on ecosystems
- an increased threat from exotic taxa (animal pests, plant pests and pathogens)
- loss of cultural values, amenity values and recreational opportunities.

The Lower Waikato Zone encompasses the Whangamarino Wetland, a Ramsar listed wetland recognised as containing internationally significant ecological values. The Whangamarino Wetland contains extensive mānuka-restiad wetlands, although has suffered extensive invasion by willow in more fertile areas (Leathwick, 2016). Remaining indigenous ecosystems of the zone, such as the Whangamarino Wetland, need to be protected from further reduction in quality and extent.

Given the decline of water quality in the zone's shallow lakes, the rich aquatic vegetation and animal species these lakes initially supported have also been impacted. Lake restoration has historically proven very complex, uncertain, practically difficult and expensive. Restoration programmes can improve shallow lakes by restoring their margins, protecting from increases in nutrient loads and by in-lake management, such as controlling exotic fish, plant removal and re-establishment of native species (Dean-Speirs, Neilson, Reeves, & Kelly, 2014). Such restoration is difficult to achieve in larger turbid lakes due to their highly modified hydrological regimes (e.g. Lake Waikare) and larger catchment sizes (e.g. Lake Whangape and Waahi).

Whilst indigenous biodiversity has substantially declined since the vast modification of the zone, ecosystems in the zone still support a wide range of species, including threatened species such as the matuku (Australasian bittern) and native fish such as shortfin and longfin eels and whitebait.

4.9 Community partnerships, co-management and community expectations

Communities are reliant on the healthy functioning of the natural and physical resources of the Lower Waikato Zone for their social, economic, cultural and environmental wellbeing. To achieve desired community outcomes, the council works with other councils, community groups, businesses, individual landowners, central government, iwi/hapū and non-governmental organisations. The council also partners (and co-funds) with various groups to undertake community and council led projects. Examples of these partnerships include Waikato-Tainui, Waikato RiverCare, the Waikato River Authority, Department of Conservation and Coastcare groups. Continuing to strengthen community/stakeholder partnerships and supporting iwi co-management practices are key opportunities to deliver more effective catchment management outcomes for the zone.

It is important the council continues to engage and partner with community sectors to identify opportunities to work collaboratively together, avoid duplication and add significant value where priorities are aligned – all key factors in the development of the WWRRS. This collaborative approach is at times challenging, but will assist in focusing resources into priority areas where the biggest gains can be achieved. Continuing proactive iwi, hapū and marae engagement, both within formal agreements and more informally, will be important to building enduring community partnerships and ensuring the goals of this zone plan are met.

Tangata whenua and co-management

Key iwi within the Lower Waikato Zone include Waikato-Tainui, Hauraki Collective, Ngāti Haua, Ngāti Tamaoho, Ngāti Te Ata and Te Akitai Waiohū. A significant component of enhancing community partnerships is enhancing resources with iwi and hapū. The council has prioritised working in partnership with iwi to implement Treaty settlement requirements and co-management agreements. The council has a joint management agreement with the Waikato Raupatu River Trust.

Waikato Regional Council acknowledges the special position of tangata whenua within the region and will continue to work with local iwi to ensure the traditional role of iwi and hapū as kaitiaki is respected and reflected

in the implementation of work programmes. Sections 3.1 and 3.2 outline key relevant legislation and policy including the *Te Ture Whaimana o te Awa o Waikato (Vision and Strategy for the Waikato River)*, which is the primary direction-setting document for the protection of the Waikato River and its catchments, the Waikato River Treaty settlements and iwi environmental management plans, including the *Waikato-Tainui Environmental Management Plan*.

The Treaty of Waitangi settlement agreement between the Crown and Waikato-Tainui reflects a commitment by both parties to enter “a new era of co-management over the Waikato River” for the overarching purpose of restoring and protecting its health and wellbeing for future generations. This recognises that for Waikato-Tainui, the river has its own life force, spiritual authority, protective power and prestige.

Waikato-Tainui has the authority to exercise control and management of the river in accordance with their values, ethics and norms. The focus of the settlement is on the health and wellbeing of the river, which aligns with the council’s responsibilities to protect and sustainably manage the region’s natural resources.

Co-management requires more than consultation and the settlement legislation requires a new approach. 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.

The co-management arrangements set out in the settlement legislation provide a foundation for relationships between Waikato-Tainui, the Crown, local authorities and other agencies but do not prevent the parties from entering into agreements beyond this scope. Co-management agreements were entered into on 4 September 2008 between the Crown and other iwi whose rohe includes the Waikato and Waipā rivers.





5. Plan implementation

Te whakatinanatanga o te mahere

5.1 Goals

The goals for the Lower Waikato Zone have been developed to address the key matters for the zone, as identified in Section 4:

GOAL 1: PROVIDE AND MAINTAIN SUSTAINABLE FLOOD PROTECTION TO RURAL LAND AND URBAN AREAS TO THE AGREED LEVEL OF SERVICE

The assets involved in flood protection and land drainage have long lives and are important to both the regional and national economy. In managing these assets it is key that decisions are aligned with the council's strategic direction and priorities. Issues, such as economic conditions and affordability, natural disasters, climate change, ageing assets, peat subsidence, growth and development, business continuity and increasing environmental and regulatory performance expectations, are taken into account.

GOAL 2: CONTRIBUTE TO IMPROVING WATER QUALITY WITHIN THE ZONE

Modification of the natural landscape, intensified land use, presence of pest fish and increased demand for water have adversely impacted water resources in the Lower Waikato Zone. Water quality in the zone is declining considerably. In particular, water quality in the lower Waikato River and the large lakes (i.e. Waikare, Waahi and Whangape) does not meet recreational standards for swimming and is often not good enough to sustain diverse and healthy populations of aquatic plants and animals. There is an opportunity to review the functioning of the Lower Waikato Waipā Flood Protection Scheme to improve water quality alongside encouraging more sustainable land use options to improve the quality of fresh water in the zone.

GOAL 3: CONTRIBUTE TO ENSURING THAT SOILS WITHIN THE ZONE REMAIN PRODUCTIVE

Effective soil conservation, sustainable land and river management is critical for maintaining the health of the Lower Waikato catchments. Soil conservation often requires upfront investment and long-term maintenance to realise environmental and production benefits. The challenge is to assist landowners in identifying sustainable land uses, successfully implementing long term strategies for soil conservation, maintaining soil quality, reducing peat loss, managing contaminants, and protecting productive land and elite soils from urban development. Funding and advice to improve catchment health (soil conservation, riparian management, etc.) is available to landowners, and there is an opportunity to leverage other funding and expertise to increase support to landowners.

GOAL 4: MANAGE THE INSTREAM IMPACTS OF URBAN DEVELOPMENT AND LAND USE INTENSIFICATION IN ASSOCIATION WITH TERRITORIAL AUTHORITIES AND OTHER PARTNERS

There are a number of urban centres in the zone which continue to develop, such as in Te Kauwhata and Pokeno. Urban development (urbanisation) puts pressure on our waterways, including the management of stormwater and contaminants and can also impact river management functions with deposition of gravels, blockages and restricted access for maintainance. Further developments can result in the loss of prime agricultural soils. There is an opportunity for the council to work closely with Waikato District Council and other agencies, such as the NZ Transport Agency, to provide support, advice and planning on these issues. This includes confirming and continuing to refine best practice and ensuring appropriate mitigation measures are applied and funding agreed.

GOAL 5: PROMOTE AND ENHANCE INDIGENOUS BIODIVERSITY IN BOTH AQUATIC AND TERRESTRIAL ENVIRONMENTS

Modifications to the zone from its natural state has led to the substantial loss of wetlands and other ecosystems and reduction in water quality and quantity. There is a challenge to protect indigenous ecosystems in the zone from further reduction in quality and extent. There is an opportunity to better define priorities for restoration and strategically co-ordinate funding and implementation of indigenous biodiversity enhancement work within the zone. Some progress towards this has already been made through the identification of biodiversity priorities associated with aquatic environments in the WWRRS. These are listed in Appendix 1. Further work is required to prioritise terrestrial sites. There is also an opportunity to explore land retirement where possible, so that land can be converted back to its original state or a more suitable land use than present.

GOAL 6: SUPPORT MANA WHENUA AND STRENGTHEN COMMUNITY PARTNERSHIPS

By working collaboratively with iwi partners and both internal and external stakeholders, projects and priorities within the zone can be progressed in an efficient and cohesive manner resulting in more effective outcomes. To ensure relationships are built effectively, this also requires engagement with council staff across directorates.

Collaboration between the council and territorial authorities, mana whenua and other key community stakeholders is key to achieving the vision and goals for the zone. In particular, partnering with iwi to restore and protect significant areas provides opportunities to share knowledge and resources for more effective outcomes.

5.2 Focus areas

This section describes how the council intends to achieve its goals for the zone at an operational level. The 10 focus areas identified are based on the key matters identified in Section 4, and they provide a basis for monitoring this plan and accompanying actions. It is noted that the proposed implementation action plans have a 10 year timeframe and will need to be reviewed through the 30 year term of this zone plan.

The focus areas and actions may respond to one or more of the zone plan's goals, and this reflects the interrelated nature of implementation activities undertaken by the council within the zone. For example, focus areas designed to address erosion will also assist the council in achieving the goals of maintaining and improving water quality and protecting indigenous biodiversity. The relationship between the key focus areas and goals is summarised in Table 2.

FOCUS AREA		GOAL 1: Flood protection	GOAL 2: Water quality	GOAL 3: Soil health	GOAL 4: Urban development	GOAL 5: Indigenous biodiversity enhancement	GOAL 6: Community partnerships
1	Maintain the integrity of existing flood protection schemes	✓			✓		P
2	New catchment management works to enhance soil conservation, water quality and biodiversity values	P	✓	✓		✓	✓
3	River management	✓	P	P	P	P	✓
4	Protecting and enhancing biodiversity	P	✓			P	✓
5	Sustainable land management and urban development	✓	P	✓	✓	P	✓
6	Scheme land – identify and prioritise areas for improvement	P	P			P	P
7	Collaborate with community groups and stakeholders to achieve the greatest value	P	✓	✓	P	P	✓
8	Biosecurity – pest plant and pest animal management					✓	P
9	Address natural hazard risks	✓	P		✓	✓	✓

TABLE 2: Relationship between each focus area and the zone goals.

5.3 Implementation action plans

Some implementation actions are ongoing, while others will have more effort directed to them in either the short or long term. The implementation of some actions is dependent on funding from the zone and internal and/or external sources. The timing of implementation is also subject to change

FOCUS AREA 1 – MAINTAIN THE INTEGRITY OF EXISTING FLOOD PROTECTION SCHEMES		
<p>Together, the Lower Waikato Flood Protection Scheme and its flood protection asset works provide protection to the Lower Waikato flood plains. It is important the scheme provides and maintains sustainable flood protection, which incorporates future proofing and ecological considerations.</p>		
IMPLEMENTATION ACTION		WHO/WHEN
<p>Maintenance works and inspections</p>	<ul style="list-style-type: none"> Keep accurate, up to date property files and asset records. Maintain design standards of current assets and ensure appropriate budget is available to continue the renewals programme. Maintain (or improve where required) land access to assets on both scheme land and private land. 	<p>ICM directorate (ongoing)</p>
<p>Consider ecological enhancement</p>	<ul style="list-style-type: none"> Alignment with the three year fish passage research and development programme, committed to through the 2018-2028 Long Term Plan, which will inform the 2021-2031 Long Term Plan, with recommended implementation options. Incorporation of ecological enhancement and better environmental outcomes when planning new works and projects. This includes incorporating new technologies such as fish friendly pumps or different infrastructure in order to achieve these outcomes. 	<p>ICM directorate (2018-2021 onwards)</p>
<p>Explore opportunities and supporting policy and plans</p>	<ul style="list-style-type: none"> Support the development and implementation of the Regional Asset Management Plan (RAMP), Regional Infrastructure Strategy 2018-2067 and the Infrastructure Sustainability Work Programme Review 2018-2020. Investigate how the management of the zone’s flood schemes can work towards slowing the rate of peat loss and ensure drainage infrastructure minimises any adverse effects on peat soils and subsidence of lakes (in accordance with Section 14.5 of the RPS). This will be undertaken as part of the Infrastructure Sustainability Work Programme (2018-2020) and the Peat Soil Research and Monitoring Programme (2018 – onwards), supported through the 2018-2028 Long Term Plan. 	<p>ICM directorate (2018 onwards)</p>
<p>Consider climate change</p>	<ul style="list-style-type: none"> The council preferred approach is to take a more planned and strategic approach to climate change based on a regionally developed standard to address climate change impacts on its infrastructure. A guidance document sets out considerations in relation to the management of river and flood protection infrastructure. This will: <ul style="list-style-type: none"> provide consistency on values, timeframes and scenarios in relation to climate change projections for the Waikato region provide guidance to project managers to assist in preparing forward work programmes and financial forecasts identify what likely effects climate change will have on our existing (and future) flood protection structures and associated levels of service. incorporate climate change impacts into asset management processes. 	<p>ICM directorate (2018 onwards)</p>

FOCUS AREA 2 – NEW CATCHMENT MANAGEMENT WORKS TO ENHANCE SOIL CONSERVATION, WATER QUALITY AND BIODIVERSITY VALUES.

Soil conservation and other enhancement works provide considerable benefits in terms of land and water protection, biodiversity and general environmental enhancement. These projects contribute to less erosion, reduced downstream sedimentation, protection of productive land and enhancement of biodiversity.

Significant work has recently been undertaken in the development of the *Waikato and Waipā Rivers Restoration Strategy (WWRRS)*, which identifies and prioritises specific areas across the region. See Appendix 1 for a summary of the prioritised areas.

In delivering catchment new works it is key that priority areas are identified, an action plan is developed, funding sources secured and incentives offered to landowners (to invest in soil conservation activities that provide protection beyond statutory or minimum requirements). It is important to ensure that completed soil conservation and catchment management works are maintained to ensure they continue to deliver on investment.

IMPLEMENTATION ACTIONS		WHO/WHEN
<p>Identify priority locations and develop action plan for implementation</p>	<p>Overlay priority locations identified in Proposed Plan Change 1, the WWRRS, the Regional Prioritisation Strategy, the Waikare and Whangamarino Wetland Catchment Management Plan and Waikato Regional Council biodiversity outputs to define potential priorities for zone funding.</p> <p>Develop a whole of zone action plan to deliver priority works with a focus over 2018-2028. The plan will include:</p> <ul style="list-style-type: none"> • Priority 1 and Priority 2 locations for attention • timelines for delivery of priority works • co-funding opportunities and goals • partnerships for implementation • alignment with other internal and external projects to maximise secondary benefits of works • an initial focus on existing priority catchments, particularly Matahuru, Mangapiko, Waerenga and Mangawara, and broadened following further identification of priority locations. 	<p>Zone and Catchment Management team (complete by June 2019)</p>
<p>Encourage uptake of new works</p>	<p>As part of a specific project focusing on priority areas:</p> <ul style="list-style-type: none"> • engage and inform landowners of the assistance available for new works • advise on the funding process and ongoing landowner responsibilities • outside of priority areas, respond to landowner requests for information and, if appropriate, funding for new works • where landowners are willing, facilitate opportunities to bring people together (e.g. farm field days) to: <ul style="list-style-type: none"> · build knowledge and capability · coordinate discussion groups on enhancing catchment health. 	<p>Catchment Management team / annual programme (ongoing)</p>
<p>Apply new funding framework for 2018-2028</p>	<ul style="list-style-type: none"> • Target funding of new works into priority areas so that by 2020, 80 per cent of zone catchment funding is spent in Priority 1 and 2 areas. • Refer to Section 7 of the zone plan for funding framework. • Consideration will be given to a wide range of external funding organisations including (but not limited to) Freshwater Improvement Fund, Waikato River Clean-up Trust, Afforestation Grant Scheme, Waikato Catchment Ecological Enhancement Trust, and Hill Country Erosion Fund. • Where there are several landowners within a catchment wanting to undertake priority catchment works, the council may consider: <ul style="list-style-type: none"> · applying on behalf of this group for external funding to support wider scale action · providing co-funding support to an external group acting on behalf. 	<p>Zone and Catchment Management team / (ongoing)</p>

FOCUS AREA 3 – RIVER MANAGEMENT

The purpose of river management activities is to stabilise river, stream beds and banks; and address the adverse effects created by peak flood flows within rivers and streams. This includes reducing congestion of waterways, modifying river paths and management of land adjacent to the river or stream (to increase bank stability and reduce erosion). Or to provide river management services to maintain priority river/stream channel capacity and stability while enhancing water quality, biodiversity and promoting the sustainable use of land and water.

IMPLEMENTATION ACTIONS		WHO/TIMING
Best practice	<p>Actions to implement best practice to manage bank erosion will include:</p> <ul style="list-style-type: none"> • responding to enquiries • annual inspections of the main Waikato River channel and priority streams • removal of blockages or obstructions on a prioritised basis where there is environmental impact • site specific erosion control measures, for example, rip rap, battering, gabion baskets • assisting with fencing of eroding portions of channels, at a distance that is in accordance with best practice • planting and maintaining vegetation to help prevent erosion • Vegetation control (where appropriate) • retaining and developing fish habitats when clearing river blockages and fish passage barriers • minor erosion control work to maintain channels in their present locality and to reduce the sediment input caused by streambank erosion • assessing river stream confluences and managing erosion issues • supporting proactive erosion mitigation. 	Operations team (ongoing)
Stream inspections	River and stream inspections are undertaken on an ongoing annual programme basis, and followup is completed in response to reports of damage and customer enquiries.	
Collaboration	Work with local iwi and hapū, Department of Conservation, other agencies and territorial authorities, providing stakeholders with the proposed river management programme and seeking feedback.	
Landowner agreements	Develop landowner agreements (EPA) for instream and riparian management such as erosion control, vegetation management, fencing, planting and other environmental and indigenous biodiversity enhancement opportunities.	
Project maintenance	Maintain past, current and future projects by way of spraying, form pruning, fence maintenance (where applicable), riparian plant maintenance and ongoing annual programme monitoring of erosion and channel behaviour.	
Environmental enhancement	Develop and implement initiatives for environmental enhancement, such as the installation of native woody debris and indigenous fish habitat work where appropriate.	

FOCUS AREA 4 – PROTECTING AND ENHANCING BIODIVERSITY

The Lower Waikato Zone contains a range of unique natural features and places of special cultural, economic, social and environmental significance. A key focus for the zone activities will be on protecting and enhancing these places of value.

IMPLEMENTATION ACTION		WHO/WHEN
Action planning	Develop a ‘Willis Report’ implementation plan for biodiversity management in the Lower Waikato Zone	Natural Heritage team (June 2019)
Indigenous biodiversity enhancements	<p>Enhancing indigenous biodiversity is critical for the zone and meets objectives set under the RPS. The following actions are proposed to enhance indigenous biodiversity in the zone:</p> <ul style="list-style-type: none"> • Support the regional biodiversity strategy and priorities, and review actions regularly. • Support inanga spawning habitat enhancement works. For example, projects undertaken with private landowners and/or in partnership with Waikato-Tainui, NIWA and the Waikato River Authority. These works include, where possible, removing barriers to inanga migration (and other migratory species). • Seek opportunities for biodiversity enhancement as part of the delivery of catchment new works programmes, including the implementation of biodiversity and fisheries priorities identified in the Waikato and Waipā River Restoration Strategy. • Review and promote best management practices for restoration. • Scope the potential for indigenous biodiversity enhancement initiatives on scheme land and promote complementary land use practices such as wetlands/pond inundation for flood management. • Monitor success of current biodiversity projects and programmes and incorporate knowledge to improve outcomes. • Retaining and developing fish habitats when clearing river blockages and fish passage barriers. 	Natural Heritage team (ongoing)
Coastal care (Coastcare) programme	<p>The Coastal Care programme addresses hazard mitigation through recovery post-erosion, in addition to enhancing natural character, amenity value and biodiversity value of restored sites. The following actions are supported:</p> <ul style="list-style-type: none"> • On request or as part of a focus on priority biodiversity areas, engage and inform landowners of the assistance available through the council’s Coastcare programme. • Provide support for the Port Waikato Coastcare group including provision/support for plants, material, pest control and guidance to restore a local coastal habitat, such as foredune, reardune or coastal forests. 	Natural Heritage team (ongoing)

FOCUS AREA 5 – SUSTAINABLE LAND MANAGEMENT AND URBAN DEVELOPMENT

Sustainable land management is key to ensuring that the productivity of land is maintained and environmental impacts are reduced. A range of services are provided by Waikato Regional Council to support sustainable land management. Land use management within the zone will be influenced by Proposed Waikato Regional Plan Change 1 (Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai).

Urban development typically leads to increased run off volumes, increased wastewater discharges, loss of contaminants, loss of fertile land and a potential reduction in biodiversity, increased pressure on infrastructural assets including land drainage networks in lower reaches of catchments, and impacts on river management.

IMPLEMENTATION ACTION		WHO/WHEN
<p>Support landowners and occupiers to adapt to the Proposed Waikato Regional Plan Change 1</p>	<ul style="list-style-type: none"> • Release consistent information on Proposed Waikato Regional Plan Change 1. • Prepare and distribute user guides on policies and rules and ensure the community remains informed of policy changes. • Work with agriculture industry stakeholder organisations to identify practical on-farm solutions to address non-point source contaminant discharges and support the development of farm environment plans. • Provide extension programmes in collaboration with stakeholder organisations as appropriate to ensure farmers and rural professionals have good information available on effective, practical, on-farm solutions. • Work with agriculture industry stakeholders to develop and implement support systems for landowners to ensure they are able to operate successfully within the required limits. • Support the development of sub-catchment plans to explore and confirm opportunities for multi property interventions to improve water quality. • Review current council policy with respect to scheme maintenance in response to changes in land use and the minimum standards applied to specific land uses. 	<p>Land Management Advisory Service team, Catchment Management team to support as appropriate</p> <p>Consistent with Proposed Waikato Regional Plan Change 1 timeframes</p>
<p>Work with landowners and land managers</p>	<p>Provide one-on-one advice and information in priority areas on sustainable land management practices/biodiversity protection, etc, including:</p> <ul style="list-style-type: none"> • appropriate land use that does not exceed the property's land use capability • setback distances between land use activities (agriculture and forestry) and waterways • stock exclusion from all waterbodies • ecosystem restoration techniques • soil management, including management of peat. 	<p>IC Services and Catchment Management team</p> <p>(ongoing)</p>

<p>Peat soil management and research</p>	<p>Support the proposed peat soil work (being led by Science and Strategy) in line with the 2018-2028 Long Term Plan. The work includes:</p> <ul style="list-style-type: none"> • compiling an inventory of existing peat soil resource information • development of a regional peat subsidence monitoring programme • investigations to better understand land management impacts on subsidence • identify the current issues associated with peat subsidence and starting to understand long term consequences. 	<p>Zone manager & Science and Strategy team (3-8 years and ongoing)</p>
<p>Work with prominent industries in the zone</p>	<p>Extend the council's ability to support landowners and facilitate change to meet RPS objectives by building capability within industries servicing the rural sector in the Lower Waikato Zone. This will be undertaken (council wide) by:</p> <ul style="list-style-type: none"> • facilitating the delivery of appropriate training programmes for rural professionals • developing extension programmes in collaboration with stakeholder organisations • undertaking joint research and extension projects where appropriate • developing and maintaining open, constructive relationships with staff working for key rural sector organisations. 	<p>WRC, community (ongoing)</p>
<p>Communication and education</p>	<ul style="list-style-type: none"> • Develop and implement strategies to inform and educate landowners and relevant industries about the characteristics of the zone and associated risks. In particular, there should be a focus on (the following council wide approach): <ul style="list-style-type: none"> · communicating the risks associated with the disturbance of soil and the intensity of localised weather events · making practical, targeted information easily accessible (for example, the menus of practices to improve water quality and advice on the control of plant and animal pests relevant to the zone) · preparing for changes in regulations. • Attend local events and other forums and utilise these opportunities to network with landowners, land managers and industry representatives. • Create opportunities for landowners to become educators, learning from each other's experiences – good and bad. • Identify champion farmers (modelling best practice) and facilitate mentoring. 	<p>Integrated Catchment Services (ongoing)</p>
<p>Manage the instream impacts of urban development and land use intensification</p>	<ul style="list-style-type: none"> • Work closely with Waikato District Council and other agencies, for example the NZ Transport Agency, to provide support, advice and planning on these issues. • Areas of focus includes continuing to refine best practice and ensuring appropriate mitigation measures are applied and funding agreed. 	<p>ICM directorate (ongoing)</p>

FOCUS AREA 6 – SCHEME LAND – IDENTIFY AND PRIORITISE AREAS FOR IMPROVEMENT

Scheme land associated with flood protection assets face a number of challenges including low return on investment, inadequate adherence to land licenses by leases (resulting in damage to flood protection assets and pest plant issues), stock access to waterbodies, loss of biodiversity and pest plant control issues. Further with proposed policy changes through Proposed Waikato Regional Plan Change 1, new management requirements for scheme land is anticipated. The areas need to be characterised and a plan for improvement developed.

IMPLEMENTATION ACTIONS		WHO/WHEN
Asset information, maintenance and inspections	<ul style="list-style-type: none"> • Maintaining accurate, up to date property files and asset records in the appropriate database • Undertake routine (typically annual) inspections and communicate maintenance requirements to leases • Ensure licensees are aware of their responsibilities under existing agreements and take necessary actions to address. 	<p>WRC Asset Management team</p> <p>(ongoing)</p>
Characterise scheme land	<p>Create a register (and associated documentation) which characterises and details the current condition, challenges and performance of scheme land (current and potential financial return, stock access, biodiversity, cultural value, asset management and land licence performance)</p>	<p>Multiple stakeholders</p> <p>(July 2019)</p>
Develop and implement action plan	<p>Develop and implement an action plan to improve the management of scheme land, including:</p> <ul style="list-style-type: none"> • increasing financial return on investment • funding of improvements • stock access to waterbodies • management of land under land licences • land defect management • biodiversity enhancement • cultural significance • Healthy Rivers/Wai Ora: Proposed Waikato Regional Plan Change 1 	<p>Zone manager and Land Management & Advisory</p> <p>(July 2018 - July 2025)</p>
Renewals	<p>At renewal, review agreements with landowners, ensure the assets are contributing to achieving the current purpose of the scheme and negotiate variations to agreements where required.</p>	<p>Zone manager and Asset Management team leader</p> <p>(ongoing)</p>
Co-management agreement for Waikato River related lands	<p>Work in partnership with Waikato Tainui to manage scheme land in accordance with the 'Co-management Agreement for Waikato River Related Lands'.</p>	<p>Zone manager and Asset Management team leader</p> <p>(ongoing)</p>

FOCUS AREA 7 – COLLABORATE WITH IWI, COMMUNITY GROUPS AND STAKEHOLDERS TO ACHIEVE THE GREATEST VALUE

Collaborate with agencies, iwi, landowners and community groups to deliver work programmes and to ensure comprehensive coverage, avoid duplication and add value where there is alignment with the goals of this zone plan.

IMPLEMENTATION ACTIONS		WHO/WHEN
<p>Build enduring relationships with mana whenua</p>	<p>Key actions to support mana whenua will include:</p> <ul style="list-style-type: none"> • developing council understanding of mana whenua objectives and priorities, including iwi cultural priorities developed by Waikato-Tainui as part of the Waikato and Waipā Rivers Restoration Strategy • identifying areas of common objectives and supporting associated initiatives • increasing staff training, resourcing and introductions to iwi collaboration (council wide). 	<p>WRC wide – across directorates (ongoing)</p>
<p>Partnerships with stakeholders</p>	<ul style="list-style-type: none"> • The council will look at opportunities to develop, support and implement projects in partnership with other stakeholders and community groups that focus on priority areas, catchments or issues. Key actions will include: <ul style="list-style-type: none"> • developing and implementing a stakeholder management plan • developing and implementing a communications plan. <p>Where common interests exist, the following are options:</p> <ul style="list-style-type: none"> • Partnership with stakeholders (including iwi) to develop project and funding proposals and deliver joint projects • Supporting applications for external funding, e.g. endorsing applications, providing part funding or in kind. • Providing contributions, and providing advice on the preparation of funding applications. • Facilitating or participating in workshops, forums and other networking opportunities that: <ul style="list-style-type: none"> • share information, knowledge and skills to address common interests • create opportunities to build capacity and capability within iwi and the community. 	<p>Integrated Catchment Management directorates (ongoing)</p>
<p>Support other initiatives within the catchment</p>	<p>Support security of water supply for farming, communities and the environment.</p>	<p>Integrated Catchment Management directorates (ongoing)</p>
<p>Work with others to increase economic wealth</p>	<p>Explore opportunities with other agencies, such as Te Waka – Regional Economic Development Agency – to support economic growth and development in the zone</p>	<p>Zone manager</p>

FOCUS AREA 8 – BIOSECURITY – PEST PLANT AND PEST ANIMAL MANAGEMENT

Biosecurity focus is on management of pest plants and pest animals which can impact on biodiversity and agricultural production.

IMPLEMENTATION ACTION	WHO/WHEN
<p>Animal and plant pest control (plus pathogens, fungi, etc.)</p> <p>The following activities are proposed for animal and plant pest control:</p> <ul style="list-style-type: none"> • Ensure landowners (including the NZ Transport Agency and TLAs) comply with rules set in the Regional Pest Management Plan (RPMP). • Review pest control of Waikato Regional Council lease land and scheme land. • Support DOC to manage pest plants on DOC managed land. • Support community led pest control on private land and land tenures. • Investigate opportunities with ICS and DOC for collaborative biodiversity/biosecurity programme for the Lower Waikato. • Develop a mitigation and monitoring process for pest management. <p>Key animal pest actions include:</p> <ul style="list-style-type: none"> • Support collaborative opportunities through Predator Free 2050. • Support DOC to implement regional pest fish priorities as identified in the Regional Pest Fish Management Plan • Continue to manage possums in priority possum control areas (PPCAs) where control is needed to: <ul style="list-style-type: none"> · protect and enhance biodiversity (including improving the stability of the catchments) · enhance farm production · maintain the gains of previous or existing possum control. <p>Key plant pest actions include:</p> <ul style="list-style-type: none"> • Undertake direct control projects for high threat pest plant species set out in the Regional Pest Management Plan (RPMP), including alligator weed, velvet leaf, yellow flag iris, African feather grass, senegal tea and kauri dieback. • Waikato Regional Council owned and managed land undertakes active pest plant control. • Support collaborative opportunities to enable on farm biosecurity and promote/implement biosecurity pathway management practices. • Surveillance of national interest pest plants and preparation for other invasive pests found elsewhere in the country. 	<p>Biosecurity team (ongoing + new initiatives)</p>

FOCUS AREA 9 – ADDRESS NATURAL HAZARD RISKS

There are a number of natural hazard risks in the zone, with corrective actions identified in the Lower Waikato Natural Hazard Management Plan. What is captured as focuses, excludes risks identified elsewhere (climate change and education) and risks being addressed with a regional approach.

IMPLEMENTATION ACTIONS		WHO/ WHEN
Review of flood modelling of the Waikato River	The current modelling of the Waikato River was last significantly updated in 2010 (to include the latest Rangiriri Spillway calculations; Doc #3005257). The modelling was a 1D model, with extrapolation used to convert to 2D. A new comprehensive model of the Lower Waikato is being undertaken through 2018. A section from Horotiu to Ōhinewai, including Ngāruawāhia and Huntly urban areas, is a full 2D model to comply with the provisions of the Waikato RPS with identification of high hazard areas with regard to climate change.	Regional Hazards (August 2018)
Monitoring information	<ul style="list-style-type: none"> Implement coastal hazard monitoring at Port Waikato to assist with management of issues due to coastal erosion and inundation. Review opportunities for additional telemetry, specifically rainfall gauges. 	Regional Hazards SAS directorate (ongoing)
Response plan	Develop a Flood Response Plan specific to the Lower Waikato Zone.	ICM directorate (July 2019)
Creation/ improvement of damage curves	These will show the impacts to structures and/or assets with the increase in severity of hazard.	Regional Hazards SAS directorate (ongoing)
Disaster recovery reserves	The council will regularly review its disaster funding provisions to ensure that it can respond following adverse natural events (refer to the council's Financial Strategy). Residual risk areas are to be identified and incorporated into the Regional Asset Management Plan.	Finance team (ongoing)

<p>Ensure community resilience and education</p>	<p>Improving community understanding of flooding risk and how the flood schemes work will ensure the Lower Waikato Zone is more resilient. This will be achieved by:</p> <ul style="list-style-type: none"> • Education on the likelihood and consequences of the impacts of a greater than design flood event. Engage the communities on these matters and provide advice for managing these risks (residual flood risks). This could be achieved through schools, newspapers, signboards and advertising. • Educate the local community on level of service provided so that public expectations are correct. • Promote development of a website tool to provide updates during flood events. • Develop scheme inundation maps (via website) to educate the public on 10 year, 50 year, 100 year flood events and their predicated impacts. • Collaborate with TA's to enhance district plan description of flood protection schemes, their benefits and limitations. • Work with Waikato District Council where appropriate, to ensure they are aware of required processes for activities undertaken on or in vicinity of embankments. • Ensure communities are aware of the natural hazard information and understand relevant management and preparedness strategies. Work with local CDEM through community resilience planning. 	<p>ICM directorate CAS directorate (ongoing)</p>
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6. Monitoring and review

Te aroturuki me te arotakenga

This plan will be reviewed in order to implement any statutory obligations (e.g. Treaty settlement legislation, national direction). A full review is required every six years and a limited review three years after each full review.

Monitoring of the goals will be ongoing and will focus on the following key aspects:

- Information is collated showing how the key goals, as listed in Table 3 below, are being achieved.
- Environmental outcomes demonstrating the effectiveness or otherwise of this zone plan.
- Completion of actions to measure the degree of implementation of this zone plan.

The results of monitoring will be reported annually to the Catchment Committee and the Integrated Catchments Management Committee.

		MEASURES
GOALS	GOAL 1: Provide and maintain sustainable flood protection to rural land and urban areas to the agreed level of service.	<ul style="list-style-type: none"> • The Lower Waikato flood scheme level of service (LOS) is maintained.
	GOAL 2: Contribute to improving water quality in the zone.	<ul style="list-style-type: none"> • New catchment and river management works undertaken. • Water quality monitoring results (where available) showing an improvement. • Monitor water allocation in the zone.
	GOAL 3: Contribute to ensuring that soils within the zone remain productive.	<ul style="list-style-type: none"> • Results from Waikato Regional Council five-year survey and catchment specific surveys of soil stability show that the area of soil instability is decreasing. • Catchment new works undertaken with a focus on protecting soils. • Provision of advice and information on soil management.
	GOAL 4: Manage the instream impacts of urban development and land use intensification in association with territorial authorities and other partners	<ul style="list-style-type: none"> • Outcomes which have been influenced by Waikato Regional Council. • Input into Waikato District Council district plans, guidelines and programmes. • Development, use and application of regional council regulations and guidelines.
	GOAL 5: Promote and enhance indigenous biodiversity associated with both aquatic and terrestrial environments.	<ul style="list-style-type: none"> • Number and area of successful biosecurity projects undertaken within the zone. • Positive success rate of restoration projects, monitoring and maintenance of projects. • Provision of advice and information on soil management.
	GOAL 6: Support mana whenua and strengthen community partnerships	<ul style="list-style-type: none"> • Three to four catchment committee meetings held per annum, including representation by community and mana whenua. • Stakeholder engagement plan in place. • Number and type of co-management activities occurring annually.

TABLE 3: Monitoring measures



7. Funding

Tahua pūtea

7.1 Overall zone funding

The council collects rates (general and targeted) for flood protection, river management and catchment management works based on areas of benefit and activities that contribute to the programmes being managed. The funding is outlined in Project Watershed, which was issued in 2002. The council initiated Project Watershed to work with the community to identify what type and level of flood protection, soil conservation and river management services were sought, along with funding to pay for those services.

The actions identified in this zone plan and funded by the council will be implemented under the current levels of service agreed with the community (as defined in the *Regional Asset Management Plan*). Work programmes and funding levels will be subject to review throughout the life of the plan. Further detail regarding the zone activity rates funding mix (which is derived from Project Watershed) is detailed in Appendix 2.

7.2 Catchment new works and biodiversity enhancement

Waikato Regional Council funding

Across the zone, the council will actively explore opportunities for co-funding of projects with partner agencies to deliver catchment new works. Catchment new works includes soil conservation and other enhancement works which provide benefits in terms of land and water protection, biodiversity and general environmental enhancement.

For catchment new works, the council will continue to incentivise landowners to invest in catchment management activities that provide protection beyond statutory or minimum requirements, and enhance the special values that characterise the Lower Waikato such as wetlands, rivers, and shallow lakes features.

The following funding framework will be applied following the confirmation of Priority 1 and 2 catchments and locations for the zone:

- The costs of implementing identified actions in Priority 1 locations will be funded by council up to 35 per cent, with the remainder being met by other funding partners and landowners, subject to availability of funding. Landowner share will include in-kind contributions such as assisting with fencing, planting and, in some cases, the land which is retired.
- Landowners implementing identified actions in Priority 2 locations will be eligible for up to 35 per cent funding contribution from the council upon application and subject to the availability of funding.
- Throughout the remainder of the Lower Waikato catchment landowners may be eligible for up to a 35 per cent funding contribution for restoration works if the project meets one or more of the following criteria:
 - Site containing isolated and severe erosion.
 - High existing biodiversity value, e.g. presence of threatened species, underrepresented ecosystem.
 - High potential for a flagship site for advocacy and education purposes.
- Throughout the Lower Waikato Zone, landowners and community groups will be able to receive information and advice on preventing and remediating erosion, maintaining and improving water quality, protecting and enhancing biodiversity and applying for restoration funding.

Other funding sources

There are a number of other funding sources available in the zone for undertaking catchment new works and other enhancement works. Details of funding organisations and opportunities are included in the WWRRS (Neilson, et al., 2018) as well as the council's website. The information from these sources has been summarised below (alphabetically), along with some brief information about their funding criteria and/or the types of projects they fund.

Afforestation Grant Scheme (AGS)

This funding programme is run by the Ministry for the Environment and is designed to help establish 15,000ha of new forest in New Zealand between 2015 and 2020. Up to \$19.5 million is available until 2020, and grants of \$1300/ha are available for growers to plant new small to medium-sized forests (5ha-300ha).

Ministry for the Environment – Community Environment Fund (CEF)

The Community Environment Fund empowers New Zealanders to take environmental action by funding projects that strengthen environmental partnerships, raise environmental awareness and encourage participation in environmental initiatives in the community.

Ministry for the Environment – Freshwater Improvement Fund

This national fund is for projects which improve the management of New Zealand's lakes, rivers, streams, groundwater and wetlands. The aim is to fund projects that will make the biggest difference with the available funding. The fund is therefore focusing on waterbodies in vulnerable catchments that are showing signs of stress but have not yet reached a tipping point, and \$100 million is available over 10 years through contestable funding rounds. The frequency of funding rounds is yet to be determined. However, \$44 million was allocated in year 1 (2017).

Ngā Whenua Rāhui

This national fund supports the protection of indigenous ecosystems on Māori-owned land while honouring the rights guaranteed to landowners under Te Tiriti o Waitangi. It provides protection for Māori landowners through the use of 25-year renewable kawenata (covenants). It also provides significant support for the landowners, including pest control programmes, monitoring and consequent operational support. Māori land authorities such as trusts and incorporations, organisations representative of whānau, hapū or iwi, and Māori owners of general land can apply.

Queen Elizabeth II National Trust

Queen Elizabeth II National Trust (QEII Trust) was set up in 1977 to “encourage and promote the provision, protection, preservation and enhancement of open space”. QEII Trust helps private landowners in New Zealand permanently protect special natural and cultural features on their land with open space covenants. The trust can contribute to fencing costs and covers the cost associated with covenanting a site (e.g. surveying and legal fees).

Trust Waikato

Trust Waikato provides donations to not-for-profit community groups and projects that improve the wellbeing of Waikato communities. The types of groups and projects supported is broad, including social services, education, sport, recreation, youth, art, culture, history and the environment. Trust Waikato is particularly interested in projects that target communities with the highest need. The trust awards around \$10 million per annum.

Waikato Catchment Ecological Enhancement Trust (WCEET)

The Waikato Catchment Ecological Enhancement Trust was established to foster and enhance the sustainable management of ecological resources in the Lake Taupō and Waikato River catchments. Funding awarded varies each year but is generally around half a million dollars.

Waikato Raupatu River Trust

At times, iwi authorities will have funding available to support environmental initiatives in their rohe. Iwi groups looking to undertake works should contact their iwi authority to see if funding and/or support is available.

Waikato Regional Council – Environmental Initiatives Fund (EIF)

The Environmental Initiatives Fund provides one-off grants up to \$40,000 for up to three years, to projects which directly enhance and/or benefit the environment or provide environmental education.

Waikato Regional Council – Natural Heritage Fund

This regional fund contributes to ecosystem restoration projects that aim to achieve “landscape scale” outcomes. The fund aims to protect and manage, in perpetuity, special places of ecological significance. The amount of funding available annually is expected to be in the range of \$40,000 to \$300,000.

Waikato Regional Council – Small Scale Community Initiatives Fund (SSCIF)

The Small Scale Community Initiatives Fund supports volunteer community groups and individual landowners undertaking ecological restoration through animal and plant pest control. The amount of funding available annually is \$150,000, with individual projects eligible for up to \$5000.

Waikato Regional Council – Enviroschools Fund

The fund provides one-off grants to projects that directly enhance and/or benefit the environment or provide environmental education. Up to \$25,000 annually can be applied for.

Waikato River Clean-up Trust (WRCuT)

The Waikato River Clean-up Trust provides funding for projects that improve the health and wellbeing of the Waikato and Waipā rivers and those who work towards the restoration and protection of the health and wellbeing of the rivers for present and future generations. The funding available is up to \$7 million per year.

Ministry for Primary Industries (MPI) – Hill Country Erosion Programmes (HCE)

The HCE Programme is a partnership between MPI, regional councils and landowners that aims to plan for and treat erosion-prone land and put sustainable management practices in place. The HCE programme is open to all regional councils and unitary authorities. Landowners are advised to make contact with the council's local catchment management officer to work directly with them.

HCE Boost is a one-off opportunity to access funds for projects to be completed by the end June 2019, with available funds of \$1.8 million. HCE Standard has a fund of \$34 million available over four years.





8. Glossary of terms

Te kuputaka

DOC	Department of Conservation
ICM	Integrated Catchment Management
LGA	Local Government Act 2002
LTP	Long Term Plan
LWCC	Lower Waikato Catchment Committee
PC1	Plan Change 1
PPCA	Priority Possum Control Areas
RMA	Resource Management Act 1991
RPMP	Regional Pest Management Plan
RPS	Regional Policy Statement
TLA	Territorial Local Authorities
WRC	Waikato Regional Council
WRP	Waikato Regional Plan
WRCP	Waikato Regional Coastal Plan
WWRRS	Waikato and Waipā Rivers Restoration Strategy

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Appendix 1

Kupu āpiti tuatahi

Priority locations, issues and works in the Lower Waikato Zone as identified in the Waikato and Waipā Rivers Restoration Strategy (Neilson et. al. 2018).

Works listed are those that fit within the general scope of Waikato Regional Council funding policies for catchment new works, biodiversity and lakes. Priorities were developed together with the Central Waikato Zone sites and therefore the priority ranking reflects the ranking amongst all sites for both zones.

CATCHMENT/LOCATION	FOCUS ISSUES	PRIORITY WORK IDENTIFIED	PRIORITY RANKING
Aka Aka catchment	Water quality	<ul style="list-style-type: none"> Fencing wetlands and ephemeral streams 	High
Waikato River margin – Tūākau to Te Puaha (habitat that is inundated between mean high water spring tide and highest astronomical tide)	Īnanga spawning habitat	<ul style="list-style-type: none"> Fencing Weed control Dense native planting 	Medium to high
Waikato River from Rangiriri and Port Waikato	Biodiversity	<ul style="list-style-type: none"> Increased control of yellow flag iris and alligator weed 	Very high
Opuatia catchment	Hill country erosion	<ul style="list-style-type: none"> Pole planting Revegetation with mānuka or pine Fencing existing indigenous vegetation 	Medium
Naike catchment	Hill country erosion	<ul style="list-style-type: none"> Pole planting Revegetation with mānuka or pine Fencing existing indigenous vegetation 	High
Middle Mangatawhiri Stream	Streambank erosion	<ul style="list-style-type: none"> Riparian fencing and native planting Riparian willow pole planting Erosion protection structures 	Very high
Northern Mangatangi Stream	Streambank erosion	<ul style="list-style-type: none"> Riparian fencing and native planting Riparian willow pole planting Erosion protection structures 	Very high
Whangamarino wetland	Biodiversity	<ul style="list-style-type: none"> Fencing and native planting 	High
Selected locations near Naike, Waerenga and Meremere	Protection of kahikatea fragments	<ul style="list-style-type: none"> Fencing and native planting Pest plant control 	High

CATCHMENT/LOCATION	FOCUS ISSUES	PRIORITY WORK IDENTIFIED	PRIORITY RANKING
Waerenga catchment	Hill country erosion Streambank erosion	<ul style="list-style-type: none"> • Pole planting • Revegetation with mānuka or pine • Fencing existing indigenous vegetation • Riparian fencing • Riparian willow pole planting • Native riparian planting • Erosion protection structures 	High
Matahuru catchment	Hill country erosion Streambank erosion	<ul style="list-style-type: none"> • Pole planting • Revegetation with mānuka or pine • Fencing existing indigenous vegetation • Riparian fencing and native planting • Riparian willow pole planting • Erosion protection structures 	High
Selected inflows to lakes Waahi and Puketirini	Banded kōkopu habitat	<ul style="list-style-type: none"> • Riparian fencing and native planting • Remediation of fish barriers 	High
Upper Awaroa (Waahi) catchment	Hill country erosion	<ul style="list-style-type: none"> • Pole planting • Revegetation with manuka or pine • Fencing existing indigenous vegetation 	High
Streams from the Hakarimata range	Fish habitat	<ul style="list-style-type: none"> • Riparian fencing and native planting • Remediation of fish barriers 	Very high
Mangatea catchment	Streambank erosion Fish habitat	<ul style="list-style-type: none"> • Riparian fencing and native planting • Riparian willow pole planting • Erosion protection structures • Remediation of fish barriers 	Medium
Upper Mangawara catchment	Hill country erosion Streambank erosion Fish habitat	<ul style="list-style-type: none"> • Pole planting • Revegetation with manuka or pine • Fencing existing indigenous vegetation • Riparian fencing and native planting • Riparian willow pole planting • Erosion protection structures • Remediation of fish barriers 	Medium
Middle Mangawara catchment	Water quality	<ul style="list-style-type: none"> • Fencing wetlands and ephemeral streams 	Very high
Tauhei catchment	Water quality	<ul style="list-style-type: none"> • Fencing wetlands and ephemeral streams 	High
Komakorau and Mangatoketoke catchments	Water quality	<ul style="list-style-type: none"> • Fencing wetlands and ephemeral streams 	High

CATCHMENT/LOCATION	FOCUS ISSUES	PRIORITY WORK IDENTIFIED	PRIORITY RANKING
Whole of zone	Iwi cultural priorities	<ul style="list-style-type: none"> Protection and restoration of puna Wetland enhancement Enhancement of mahinga kai sites 	High to very high
Lake Waikare	Tuna habitat	<ul style="list-style-type: none"> Provide woody habitat in lake shallows Riparian planting 	Medium
Lake Whangape	Biodiversity Water quality	<ul style="list-style-type: none"> Fencing and native planting Pest plant control including willow and alligator weed 	Very high
Lake Rotokawau	Biodiversity	<ul style="list-style-type: none"> Fencing and native planting Weed control Investigate and implement isolating the lake from surface flows 	High
Lakes Te Kapa and Waiwhata	Biodiversity	<ul style="list-style-type: none"> Fencing and native planting Willow and other plant pest control 	Medium
Lake Ohinewai	Tuna habitat	<ul style="list-style-type: none"> Provide woody habitat in lake shallows 	High
Lake Kimihia	Water levels	<ul style="list-style-type: none"> Site investigation and ground level surveys Design and construct weir and bund 	High
Lake Okowhao	Water quality Fish passage	<ul style="list-style-type: none"> Design and construct treatment wetland Exotic plant pest control Native planting Installation of fish friendly floodgate and pump 	High High
Lakes Hakanoa, Rotongaro, Rotongaroiti, Waahi and Waikare	Biodiversity	<ul style="list-style-type: none"> Fencing and native planting Control of willow and other exotic plants Bunding to improve hydrology at selected wetlands 	Very high
Lake Waahi	Water quality Biodiversity	<ul style="list-style-type: none"> Soil conservation measures in upper catchments Addition of flocculent to lake inflow Intensive pest fish removal 	Very high
Lake Areare	Water quality Biodiversity	<ul style="list-style-type: none"> Design and construct treatment wetland Native planting 	High
Horsham Downs peat lakes	Biodiversity	<ul style="list-style-type: none"> Fencing and native planting Control of willow and other exotic plants 	High

Appendix 2

Kupu āpiti tuarua

Lower Waikato Activity Rates Funding Mix

ACTIVITY	RATE TYPE							TOTAL
	General	Zone rates	Catchment rate	Contributor hydro rate	Contributor pastoral rate	Contributor urban industrial rate	Direct beneficiary rates	
Catchment oversight	26.0%	28.0%	28.0%	0.0%	14.0%	4.0%	0.0%	100.0%
Information and advice	26.0%	28.0%	28.0%	0.0%	14.0%	4.0%	0.0%	100.0%
Catchment maintenance	63.0%	22.0%	7.0%	0.0%	4.0%	4.0%	0.0%	100.0%
Catchment new works	53.0%	26.5%	9.5%	0.0%	5.5%	5.5%	0.0%	100.0%
River management	5.0%	60.0%	15.0%	0.0%	17.0%	3.0%	0.0%	100.0%
Flood protection main channel – main	4.0%	8.0%	2.0%	27.0%	15.0%	4.0%	40.0%	100.0%
Flood protection main channel – Managawara	14.0%	16.0%	10.0%	2.0%	14.0%	3.0%	41.0%	100.0%
Flood protection community works	14.0%	16.0%	10.0%	0.0%	15.0%	4.0%	41.0%	100.0%
Flood protection Aka Aka/Ohaua	15.0%	11.0%	10.0%	5.0%	15.0%	4.0%	40.0%	100.0%
Flood protection Mangawara	13.0%	13.0%	9.0%	6.0%	15.0%	4.0%	40.0%	100.0%
Flood protection WRC schemes	15.0%	11.0%	10.0%	5.0%	15.0%	4.0%	40.0%	100.0%
Flood protection Waikato District	15.0%	11.0%	10.0%	5.0%	15.0%	4.0%	40.0%	100.0%
Flood protection Franklin District	15.0%	11.0%	10.0%	5.0%	15.0%	4.0%	40.0%	100.0%
Zone funding and interest	15.0%	42.5%	42.5%	0.0%	0.0%	0.0%	0.0%	100.0%

Each property is charged:

- a general rate based on capital value
- a catchment rate based on capital value
- a contributor hydro rate based on land value (except for hydro properties, which are based on capital value)
- a management zone (zone rates) differential based on capital value depending on which management zone the property falls into – Lower Waikato, Middle Waikato, Upper Waikato, Waipā or Lake Taupō.
- if within a direct benefit area, a differential based on area or capital value based on the level of benefit it receives.

HE TAI AO MAURIORA

HEALTHY ENVIRONMENT

HE ŌHANGA PAKARI

STRONG ECONOMY

HE HAPORI HIHIRI

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