

UPPER | WAIKATO ZONE PLAN

Te mahere ā-rohe o
Waikato ki runga

Waikato



REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

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Executive summary

He kōrero whakarāpopoto

UPPER WAIKATO ZONE VISION:

Collaboratively managing the Upper Waikato's natural capital for better catchment and community health.

The Upper Waikato Zone Plan ("the zone plan") provides the broad direction for the implementation of Waikato Regional Council's ("the council") Integrated Catchment Management (ICM) directorate activities within the Upper Waikato Zone ("the zone").

The council undertakes a range of activities to protect the region's water, soil, air, geothermal areas and coasts, and its mission is to work with others to build a Waikato region that has a healthy environment, a strong economy and vibrant communities.

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

The Upper Waikato Zone Plan provides the broad direction for the implementation of activities undertaken by ICM within the Upper Waikato Zone. The ICM directorate is primarily focused on delivery of river and catchment management, and flood management activities. These activities are undertaken alongside supporting activities which are delivered regionally and include hazard management and community safety activities, biodiversity and natural heritage operations, biosecurity operations and land management advisory services.

The zone plan is guided by Te Ture Whaimana o Te Awa o Waikato (Vision and Strategy for the Waikato River) (Waikato River Authority, 2011) and Waikato Regional Council's Strategic Direction 2016-19 (WRC, 2017). It also assists the implementation of operational programmes identified in the council's key statutory documents, including the Operative Waikato Regional Policy Statement (WRC, 2016) and the Waikato Regional Plan (WRC, 2007).



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

1. Work with iwi co-management partners to give effect to the Waikato River co-management legislation, including Te Ture Whaimana o Te Awa o Waikato.
2. Contribute to maintaining and improving the water quality of the Upper Waikato Zone.
3. Stability and long term functionality of the zone's soils is protected and enhanced.
4. Wetlands and geothermal biodiversity are protected and enhanced.
5. Comprehensive ecological networks encourage indigenous biodiversity to thrive and improve ecological health.
6. Riparian margins are protected to promote stream stability and improve habitats and water quality.

The 30-year goals have been developed in response to the following key matters identified for the zone as part of the development of this plan:

- co-management
- water quality
- accelerated erosion and the intensification in the use of the zones soils
- indigenous biodiversity
- soil conservation scheme management.

The zone plan includes a high-level programme of implementation actions, grouped in focus areas that respond directly to the goals identified. These actions will inform the preparation of a more detailed annual works programme for the zone that is to be monitored through the Upper Waikato Zone Catchment Committee. All actions included in this plan are either directly funded through the zone or funded as part of wider council activities. Many of the actions rely on the involvement of (and funding from) other stakeholders.

The implementation of the zone plan and its effectiveness will be monitored and reported on an annual basis to the Upper Waikato Zone Catchment Committee. Further reviews will be considered on a three-yearly basis to ensure the plan is reviewed in conjunction with the long term plan process and that progress is being made towards the goals identified.

1. Introduction

He kupu whakataki

1.1 Purpose

The Upper Waikato Zone Plan (“the zone plan”) provides the broad direction for the implementation of Waikato Regional Council’s (“the council”) Integrated Catchment Management (ICM) directorate activities within the Upper Waikato Zone (“the zone”).

The zone plan includes:

- an 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 implementation actions proposed within the plan give effect to aspects of the Waikato Regional Policy Statement (WRC, 2016) and the council’s Strategic Direction 2016-2019 (WRC, 2017) and also assists with the implementation of the council’s non-regulatory responsibilities under a variety of other statutes.

The zone contains a range of distinctive environments with significant natural, economic, social and cultural value and forms part of a wider hydrological system. Being in the upper reaches of the Waikato River catchment, it is recognised that catchment management activities undertaken in the zone will impact on the Lower Waikato Zone and the coastal marine area. Therefore, an ongoing annual programme challenge for the council over the life of the plan is to prioritise and target limited resources into areas of greatest priority, whilst being mindful of flow on effects for the downstream zones.

Making progress towards the zone goals will rely on an ongoing annual programme and successful collaboration with a range of stakeholders. This is a key focus area for implementation. Greater integration with and effective advocacy across a range of council business areas, will also be important in delivering the actions within the plan.

1.2 Strategic fit

The zone plan supports the wider council mandate of protecting the region’s water, soil, air, geothermal areas and coasts. The ICM directorate is one of five directorates that work together to achieve a range of outcomes for communities within the zone:

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

1. Finance: 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).
2. Integrated Catchment Management: focuses on catchment management (including land management, biosecurity and biodiversity), river and flood management and natural hazard management.
3. Resource Use: consenting and compliance responsibilities and navigation safety functions.
4. 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.

The ICM directorate is focused on delivery of a range of activities in the areas of catchment management, flood control and protection, biodiversity, biosecurity, sustainable land management and hazard/emergency management. ICM’s functions provide services that achieve multiple and significant benefits for the regional community. ICM manages the provision of its services on a regional basis and through geographic areas known as catchment zones. There are eight zones in the region, each with its designated zone manager responsible for oversight of operational budgets, relationships, planning and priorities to deliver on agreed community level of services.

1.3 Scope

The Upper Waikato Zone Plan is one of eight zone plans that are part of the strategic framework for the delivery of ICM activities within the zone.

Figure 1 illustrates the overall scope of the activities undertaken within the zone. The activities that are the primary focus of the zone plan are shown in blue, alongside the supporting activities which are delivered regionally (green). The Upper Waikato Zone Catchment Committee holds budgetary power or considerable influence in determining the work programme for primary focus areas of the zone plan. Regarding supporting activities, the role of the catchment committee is to provide local feedback to inform the regional programme with the intention of raising the effectiveness of the programme.

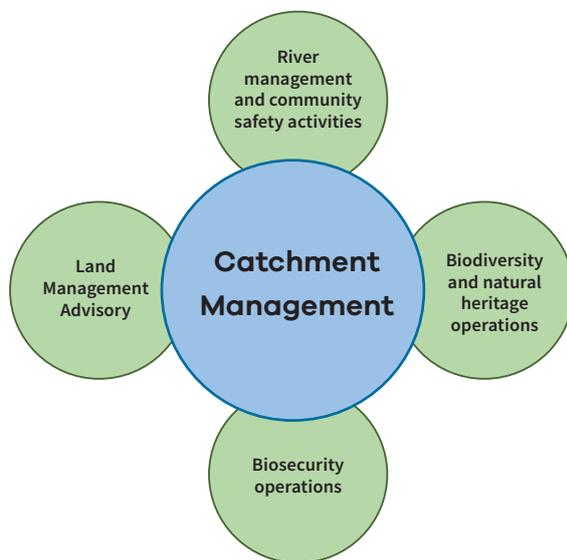


Figure 1 - Upper Waikato Zone Plan scope of activities.

The implementation of the zone plan will be monitored by the Upper Waikato Zone Catchment Committee, and therefore the primary focus of the plan is on activities that are funded directly through the Upper Waikato Zone. In addition to physical works, this may include environmental monitoring to assess the outcomes achieved and monitoring the compliance of resource consents held within the zone.

The council is one of many organisations working to improve catchment health within the zone. The council's river and catchment works typically include land retirement, including stream or wetland fencing, planting projects and slip or bank erosion management undertaken in partnership with landowners. Iwi, territorial authorities, government departments, industry, community groups and individual landowners are also active in implementing initiatives to improve catchment health. The council also manages various biosecurity and biodiversity improvement projects throughout the Waikato region.

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. Since the adoption of the zone plan in 2015 there has been a focus on targeting sediment loss in the Whirinaki catchment. The Waikato River Authority has provided two years of funding to undertake improvement works within this catchment. Whilst the current focus is on Whirinaki, it is intended to move into the Pokaiwhenua catchment once resources and processes are in place.

Other works the council is carrying out, that are out of scope for this zone plan, include:

- monitoring the council's rules under the current Waikato Regional Plan (except where specific resource consents apply)
- monitoring the general state of the environment
- developing and implementing new resource management policies and rules to address environmental issues.

1.4 Zone overview

The Upper Waikato Zone stretches from the Kaingaroa Plateau in the east to the Pureora and Rangitoto ranges in the west, and from Karāpiro in the north to Taupō in the south. Covering 436,000 hectares, the dominant geological features of the zone include the Waikato River, eight hydro dams and lakes – Aratiatia, Ohakuri, Ātiamuri, Whakamaru, Maraetai, Waipapa, Arapuni and Karāpiro – several natural lakes, and the steep land of the Paeroa Range, Horohoro Bluffs and northern Hauhungaroa Range.

The zone largely encompasses the South Waikato District and partially covers the Taupō and Rotorua districts. Several towns and communities service the electricity, forestry, agriculture and burgeoning tourism industries that are prevalent within the zone, the most prominent including Putaruru, Tokoroa, Mangakino and Reporoa.

There are an estimated 28,000 people living in the Upper Waikato Zone. Figure 2 shows the location of the Upper Waikato zone in relation to other zones in the Waikato region.

Situated in the south east of the region, the Upper Waikato Zone comprises 53 per cent pasture, less than 1 per cent urban, 32 per cent production forestry, 13 per cent native vegetation and 1 per cent open water. Forestry, agriculture, energy production (hydroelectricity and geothermal) and the tourism industry are the dominant economic activities within the zone. Forestry and pastoral farming are the predominant land uses, but in recent years there has been a marked increase in dairy conversions and intensification. The zone is developing as an outdoor adventure destination with features such as Pureora Forest Park, Maungatautari Ecological Island and the Waikato River Trails.

Figure 3 provides a more detailed overview of the catchments which make up the zone, including the following priority catchments which have been identified in Waikato and Waipā River Restoration Strategy (WRRS) (Neilson et al., 2018):

- Maraemānuka catchment
- Okama catchment
- Uanui catchment
- Upper and Lower Pokaiwhenua catchments
- Little Waipā catchment
- Upper Tahunātara and Pokaitu Stream catchments
- Whirinaki catchment
- Whakapanake, Waitakahi and Wharekaka catchments
- Wai-O-Tapu catchment
- Pueto catchment.

This zone plan focuses primarily on the Whirinaki and the upper and lower Pokaiwhenua catchments which have been identified as a priority due to declining water quality and accelerated erosion. The development of a project plan in the Whirinaki catchment has commenced and it is anticipated the upper and lower Pokaiwhenua catchments will also be implemented once the Whirinaki is established and running smoothly.

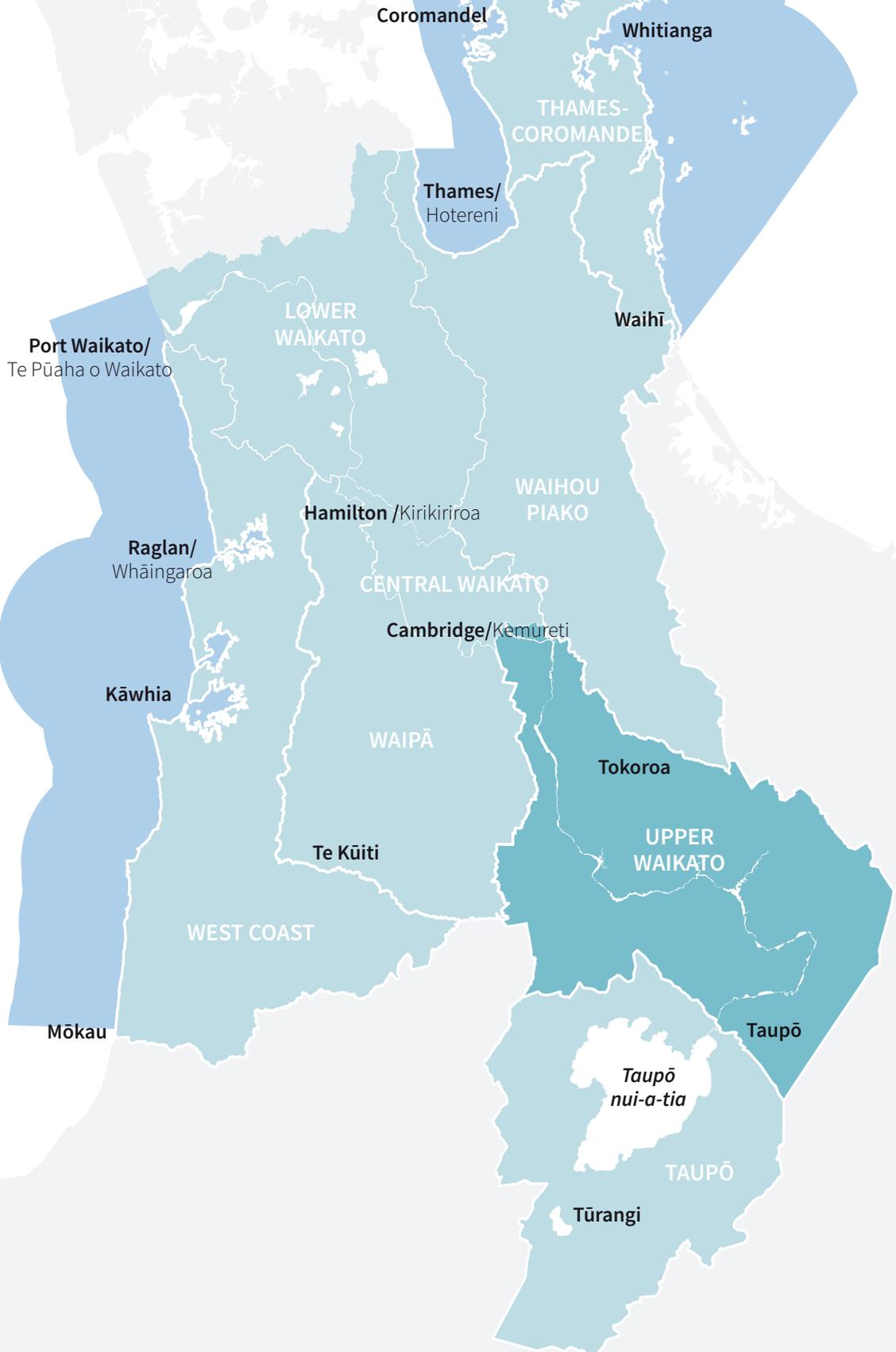


Figure 2 - Upper Waikato Zone relative to other zones in the Waikato region.

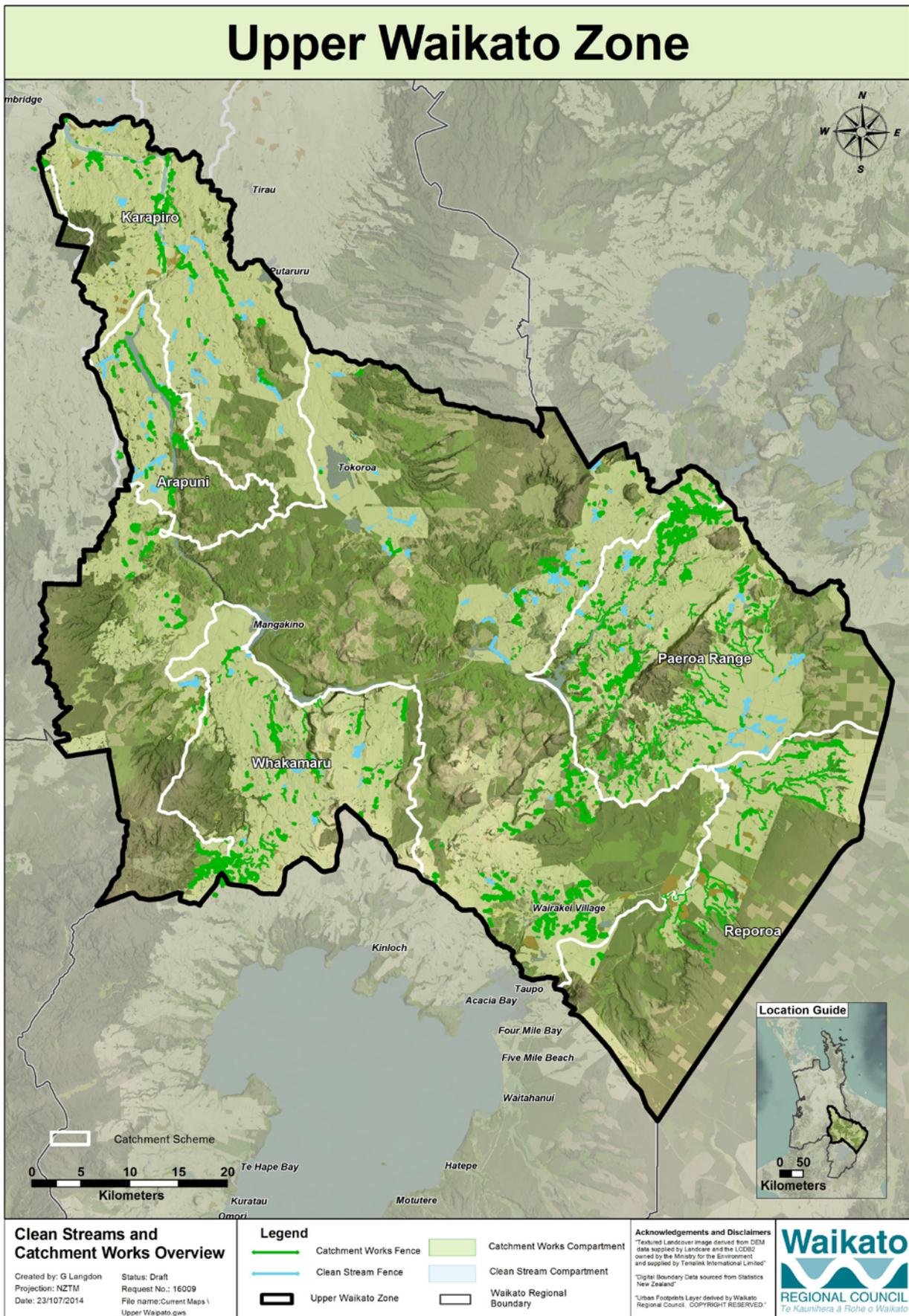


Figure 3 - Map of the Upper Waikato Zone.

1.5 Key features

The zone contains a range of natural habitats, landscapes, ecosystems, social, cultural and economic values. A summary of these key features is provided below and provides context for the key matters identified in Section 4 of this plan. It is noted that the summary below is not exhaustive, rather it provides a “snapshot” of the complex operating environment of the zone.

Cultural heritage

The upper Waikato River and its catchment is of immense cultural, historical, traditional and spiritual significance to the people of Waikato-Tainui (Ngāti Koroki-Kahukura, Ngāti Hauā), Raukawa, the Te Arawa river iwi affiliates (Ngāti Tahu-Ngāti Whaoa, Ngāti Kearoa-Ngāti Tuarā and Tuhourangi-Ngāti Wāhiao) and Ngāti Tūwharetoa, who have lived along its banks for many centuries (Neilson et al., 2018). For these iwi, the restoration and protection of the health and wellbeing of the Waikato River is a guiding principle. The expectation is that work cannot be undertaken in isolation and a collaborative approach is essential if the goals of Te Ture Whaimana o Te Awa o Waikato is to be achieved¹.

Tangata whenua historically used the river (and nearby wetlands) for spiritual and material needs, sustenance, a source of cleansing and healing, and a network for trade, travel and communication. The river was also an abundant source of food such as tuna (eel), kanae (mullet), pōrohe (smelt), īnanga (whitebait), kōura (freshwater crayfish) and watercress (Neilson et al., 2018). Each iwi mentioned above has rohe within the zone and a significant ongoing annual programme or priorities and works focused on maintaining and restoring the health of the Waikato River.

1 More detail available at www.waikatoregion.govt.nz/Community/Your-community/iwi/Tangata-Whenua-Management-Plans/

The Waikato River and hydro system

The Waikato River receives inflows from all the rivers and stream catchments in the zone. A rock type dominated by tephra deposits characterises the development of the Upper Waikato Zone soils. These soils are prone to accelerated erosion, increasing the risk of sedimentation to the Waikato River, especially where areas have undergone land use change that have intensified the use of the zone’s soils (such as dairy conversions). In addition, intense weather events have increased.

The major streams feeding the Waikato River include the Wai-O-Tapu Stream, Pueto Stream, Tahunaatara Stream, Whirinaki Stream, Waipapa Stream, Little Waipā Stream and the Pokaiwhenua Stream. To reduce potential and accelerated erosion, catchments such as the Whirinaki Arm of Lake Ohakuri and the Pokaiwhenua had historical catchment management and soil conservation works that are still being maintained by the council.

Hydro-electricity development and the operation of the hydro scheme is a major feature of the Waikato River environment. The first dam on the Waikato River at Horahora was constructed in the early 1900s and, from that time, another eight dams were built to form the hydro-lakes present today: Aratiatia, Ohakuri, Ātiamuri, Whakamaru, Maraetai, Waipapa, Arapuni and Karāpiro. The dams have transformed the river and the lakes have become a recreational asset for the communities surrounding them.

Prior to the development of the hydro dams, it took water in the Waikato River approximately six days to flow from Lake Taupō to the sea. It now takes several weeks due to the water retention in the lakes. This increased retention time contributes to the growth of algae which makes the water appear greener and reduces visual clarity (WRC, 2017a as cited in Neilson et al., 2018).

Dams block the natural passage of fish and, as a result, an elver trap and transfer programme operates from Karāpiro dam to populate these hydro-lakes for a customary and commercial fishery. Liberations of trout in other lakes provide recreational opportunities for anglers. The development and operation of the hydro system and management of the hydro lakes are undertaken in accordance with resource consent conditions to ensure any environmental effects are adequately mitigated.

Native fish species presently recorded in the upper Waikato River and tributaries include kōaro, kōkopu, piharau, pōrohe (smelt), common bully, Cran's bully and tuna (eel), although the presence of tuna is dependent on the elver transfer programme past the Karāpiro Dam (Neilson et al., 2018). Kōura are also found within the Upper Waikato catchment and were once common in tributary streams, as well as the main stem of the Waikato River and hydro lakes, although in recent years they have experienced a major decline in abundance.

Significant natural areas

The Waikato region contains limited, but important, natural areas that provide habitats for native plant and animal species and provide ecosystem services to the region. Some of these natural areas contain threatened species or rare types of habitat that make them more important relative to other natural areas without these features. These areas are called significant natural areas (WRC, 2018).

The zone encompasses a wide area and includes the eastern slopes of Maungatautari Ecological Island, Pureora Forest Park and the Rangitoto Range. These and other fragmented significant natural areas within the zone include a range of native species that rely on the retention of these remaining areas.

Hill country slopes and erosion prone soils

Geologically the zone is dominated by the physiographic features of the western ignimbrite plateau and the Taupō volcanic zone. The predominant rock type of the zone is 68 per cent Taupō pumice. The remainder of the zone consists of volcanic materials, including tephra and muds from the Okataina Volcanic Centre and the Rotorua Caldera. Much of the zone is characterised by young, unconsolidated soils and regolith prone to accelerated erosion. The Upper Waikato Zone experiences many heavy rainfall events, and the short steep slopes within catchments in the zone are prone to exacerbated erosion and soil loss. This has increased the sedimentation of streams and rivers in the zone (modified from WRC, 2014b as cited in Neilson et al., 2018).

Geothermal fields and wetlands

Eighty per cent of New Zealand's geothermal systems are located within the Upper Waikato (and Taupō) areas and have unique ecosystems and ecological features associated with them (Ngati Tahu-Ngati Whaoa, 2013 as cited in Neilson et al., 2018). Examples include Te Kopia reserve, which comprises 10 per cent of the remaining geothermal vegetation present in the Waikato region, and Lake Rotokawa, which is a site of national significance due to its nationally uncommon habitat types including fumaroles, geothermally heated dry ground, geothermal stream margins and a wetland on the lake shore (Ngati Tahu-Ngati Whaoa Runanga Trust, 2013 as cited in Neilson et al., 2018).

The Upper Waikato Zone also has many wetlands, most of which are not legally protected (WRC, 2017a) (e.g. through Department of Conservation reserves, QEII covenants (private protected land), Ngā Whenua Rāhui Kawenata (protected Māori-owned land), or other areas protected by territorial authorities or state owned land) (WRC, 2017b). These wetlands are at risk of degradation as they are often in areas that are very desirable for farming, urban development or other land uses (WRC, 2017c). Hill country wetlands, which are unique ecosystems within the region, are also located within the Upper Waikato Zone.

Forestry conversions

During the period from 2002 to 2008, around 29,000 hectares of land in the Upper Waikato Zone was converted from forestry to pasture. In the last 10 years, conversion of this scale continued; however, Healthy Rivers: Plan for Change/Wai Ora: Proposed Plan Change 1 has impacted this recently. This change in land use has placed pressure on indigenous fauna and many tributary streams have been converted from shaded channels to open channels and exposed to higher light levels, resulting in warmer water and increased aquatic plant growth (WRC, 2014b as cited in Neilson et al., 2018). More intensive use of the zone's soils and increased dairying has also resulted in higher amounts of nitrogen being leached to groundwater and rivers, which is also impacting on water quality. To ensure long term sustainability, it is important land use is matched to land use capability and suitable land use and effective soil management practices are encouraged.

Figure 4 shows the scale of forestry conversion on an area located on State Highway 5 between Taupō and Rotorua over a 10 year period.

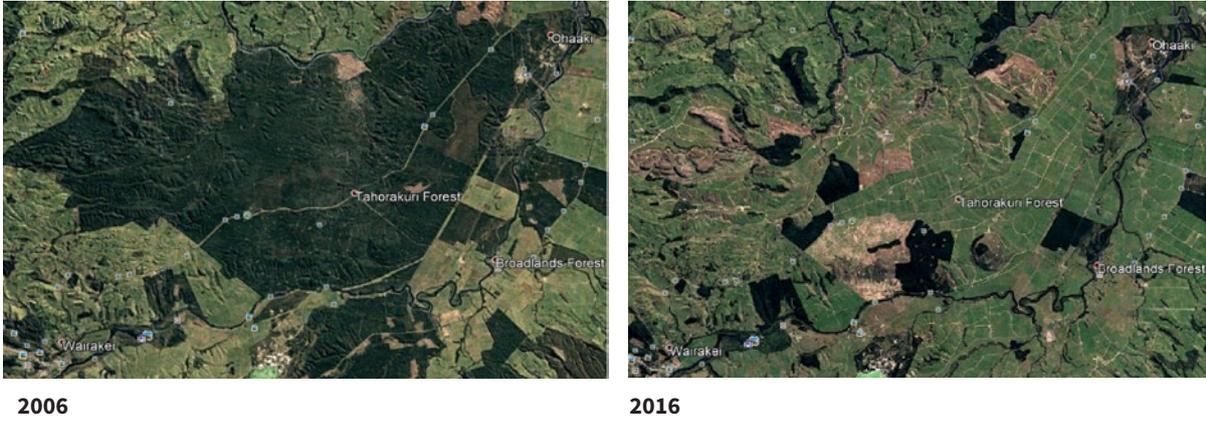


Figure 4 - The first satellite photo taken in 2006 shows an area of forestry on State Highway 5 between Taupō and Rotorua. The second satellite photo taken in 2016 of the same area demonstrates the scale of forestry conversion and the rapid change in the landscape. Source: Google Earth

2. Legislation and policy framework

Te ture me te kaupapahere

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

Figure 5 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.

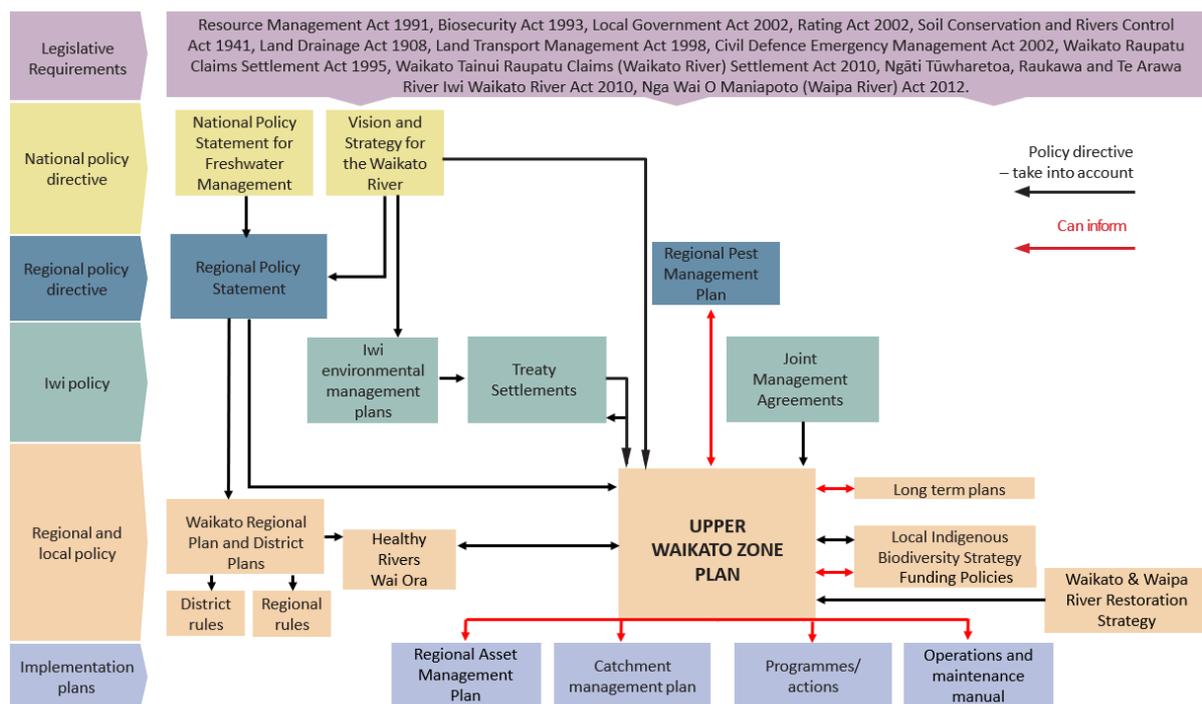


Figure 5 - Key linkages between the zone plan and other key legislative and policy requirements.

2.1 Legislation and statutory plans

The key statutory documents of most relevance to the activities set out within this zone plan are summarised below. It is noted that this plan also assists the implementation of a number of Waikato Regional Council's non-statutory responsibilities under the Resource Management Act (1991), Soil Conservation and River Controls Act (1941), Local Government Act 2002 and other Acts.

Waikato Regional Policy Statement

The Regional Policy Statement (WRC, 2016) has objectives for managing fresh water (3.14), riparian areas and wetland (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 freshwater 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.

Te Ture Whaimana o Te Awa o Waikato – Vision and Strategy for the Waikato River

Te Ture Whaimana o Te Awa o Waikato is the primary direction-setting document for the restoration and protection of the Waikato and Waipā Rivers and their catchments which include the lower reaches of the Waipā River.

Te Ture Whaimana o Te Awa o Waikato is given statutory recognition and is set out in schedules in the following Acts:

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

Under the Acts, Te Ture Whaimana o Te Awa o Waikato is deemed, in its entirety, to be part of the Regional Policy Statement. The Regional Policy Statement cannot be inconsistent with Te Ture Whaimana o Te Awa o Waikato. If there is any inconsistency, Te Ture Whaimana o Te Awa o Waikato prevails over that part of the Regional Policy Statement. This also applies to any future reviews of the Te Ture Whaimana o Te Awa o Waikato.

Fundamental to Te Ture Whaimana o Te Awa o Waikato are the following four issues:

- The degradation of the Waikato River and its catchment has severely compromised Waikato River iwi in their ability to exercise mana whakahaere or conduct their tikanga and kawa.
- Over time, human activities along the Waikato River and land uses through its catchments have degraded the Waikato River and reduced the relationships and aspirations of communities with the Waikato River.
- The natural processes of the Waikato River have been altered over time by physical intervention, land use and subsurface hydrological changes. The cumulative effects of these uses have degraded the Waikato River.
- It will take commitment and time to restore and protect the health and wellbeing of the Waikato River.

Waikato Regional Plan

The Waikato Regional Plan (WRP) (WRC, 2007) 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.

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

Healthy Rivers/Wai Ora: Proposed Waikato Regional Plan Change 1 (Waikato and Waipā River Catchments)

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

Regional Pest Management Plan

The Waikato Regional Pest Management Plan (RPMP) (WRC, 2014) 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 a review of the RPMP is planned for 2018. The actions in the zone plan will help to inform this process.

National Direction

Central government, through the Ministry for the Environment, is undertaking a programme of work that seeks to provide national 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), the 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 Settlement Arrangements

Treaty settlements relating to the co-management of the Upper Waikato Zone include the Waikato Raupatu Claims Settlement Act (1995), Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010) and the Ngāti Tūwharetoa, Raukawa, Te Arawa River Iwi Waikato River Act 2010. .

Other relevant related legislation includes:

- Raukawa Claims Settlement Act (2014)
- Ngāti Tūwharetoa Claims Settlement Act 2018
- Ngāti Koroki Kahukura Claims Settlement Act (2014)
- Ngā Wai o Maniapoto (Waipā River) Act (2012)
- Ngāti Hauā Claims Settlement Act (2014).

Treaty settlements have ushered in a new era of Crown-iwi co-management of the Waikato River catchment. Co-management provides iwi with mechanisms to manage the river in partnership with central and local government. The co-management arrangements include joint management agreements between iwi and local authorities and set our obligation and duties in relation to RMA planning documents, resource consents and monitoring and enforcement.

2.2 Iwi management plans

Like Waikato Regional Council, each of the river iwi has a framework that informs and directs their approach to co-management of the Waikato River. Elements of these frameworks include:

- objectives for the river based on tribal visions and values
- accords with Crown Ministers
- joint management agreements with councils
- environmental plans
- other planning documents.

Collectively this framework provides the mandate for the direction, and recognition of the rights and responsibilities (mana whakahaere), of respective iwi in matters relating to the river. Waikato Regional Council needs to have regard to the mana whakahaere of the different river iwi when carrying out its work in the Upper Waikato Zone.

Iwi management plans must also be considered. For the Upper Waikato Zone, the following are relevant:

Ngāti Tūwharetoa Environmental Management Plan

The Ngāti Tūwharetoa Environmental Iwi Management Plan (Ngāti Tūwharetoa EIMP) is based on Ngāti Tūwharetoa tikanga and kawa and builds upon the foundation established by 'Ngā hapū o Ngāti Tūwharetoa Environmental Strategic Plan 2000' (Ngāti Tūwharetoa Māori Trust Board, 2002). The Ngāti Tūwharetoa EIMP establishes Ngāti Tūwharetoa environmental base lines and provides tools that will help hapū/whānau and the tribe as a whole to achieve and protect those base lines. The Ngāti Tūwharetoa EIMP is driven by all relevant tikanga and kawa to protect Lake Taupō and all tribal taonga, as a holistic view of the environment is at the very core of Tūwharetoa resource management.

Goals that the Ngāti Tūwharetoa EIMP seeks to achieve are:

- Exercise kaitiakitanga in accordance with the kawa and tikanga o ngā hapū o Ngāti Tūwharetoa.
- Promote and protect the mātauranga held by kaitiaki for the benefit of current ngā hapū o Ngāti Tūwharetoa.

That external parties recognise the ownership that Ngāti Tūwharetoa have e.g. ownership of the bed, water column and air space of Lake Taupō, 13 tributaries flowing into the lake and the Waikato River main stem from the Taupō Control gates to the base of Huka Falls.

Te Arawa River Iwi Trust Environmental Management Plan

Te Arawa River Iwi Trust (TARIT) represents the interests of the three Te Arawa River Iwi located within the Upper Waikato River catchment area. The Te Arawa River Iwi are:

- Ngāti Tahu-Ngāti Whaoa (represented by Ngāti Tahu-Ngāti Whaoa Rūnanga Trust)
- Ngāti Kearoa-Ngāti Tuarā (represented by Te Rūnanga o Ngāti Kearoa-Ngāti Tuarā Trust)
- Tuhourangi-Ngāti Wāhiao (represented by the Tuhourangi Tribal Authority).

The purpose of this plan is to articulate the strategic direction of TARIT in supporting Te Arawa River Iwi in their role as kaitiaki of the Waikato River, its tributaries and the wider environment and to assert mana awa, mana whenua and mana whakahaere (TARIT, 2015). The issues, policies and actions within this plan pertain to the health and wellbeing of the Waikato River, including its tributaries within the TARIT area of interest.

This plan should be read in conjunction with the iwi planning documents prepared by Te Arawa River Iwi. These include:

- Ngāti Kearoa-Ngāti Tuarā Strategic Plan (2010)
- Ngāti Kea-Ngāti Tuarā Iwi Environmental Plan 2016
- Ngāti Tahu-Ngāti Whaoa Iwi Environmental Management Plan "Rising above the mist – Te aranga ake i te taimahangatanga" (2013)
- Tuhourangi Tribal Authority Enhanced Iwi Environmental Resource Management Plan (Scoping Report, 2011)
- Tuhourangi Tribal Authority Iwi Management Plan (planned).

Te Arawa River Iwi aspirations are to rejuvenate and restore the mauri of the Waikato River, to be progressive and innovative in their approach, to work collaboratively, and to hold steadfast to those things that are important and make the Te Arawa River Iwi unique.

Te Arawa River Iwi Trust Fisheries Plan

Te Arawa River Iwi Trust (TARIT) has developed a fisheries plan to represent the fishing interests of their three river Iwi (Ngāti Tahu-Ngāti Whaoa, Ngāti Kearoa-Ngāti Tuarā, and Tuhourangi-Ngāti Wāhiao). The plan has three primary aims:

- Capture and record Te Arawa River Iwi mātauranga and fishing practices.
- Describe the issues affecting fisheries and customary gathering.
- Set performance measures for the long term sustainable use of fresh water taonga species.

Within this plan, the term “upper Waikato River” refers to TARIT’s legislative boundaries, from Ātiamuri Dam to Huka Falls, including all the tributaries within this section (TARIT. n.d).

Te Rautaki Taiao a Raukawa – Raukawa Environmental Management Plan

Te Rautaki Taiao a Raukawa is a statement of Raukawa issues, aspirations and priorities in relation to the environment. The purpose of the plan is two-fold. First, it provides a statement of Raukawa values, experiences and aspirations pertaining to the use and management of our environment. Second, the plan is a living and practical document that assists Raukawa to proactively and effectively engage in and shape current and future policy, planning processes and resource management decisions.

Raukawa Fisheries Plan

The purpose for the fisheries plan is to enable Raukawa to exercise mana whakahaere and effectively participate in the management of freshwater fisheries for present and future generations.

Maniapoto Ko Tā Maniapoto Mahere Taiao – Environmental Management Plan

The Maniapoto Environmental Management Plan is a high level direction setting document that describes issues, objectives, policies and actions to protect, restore and enhance the relationship of Maniapoto with the environment, including their economic, social, cultural and spiritual relationships (Maniapoto Māori Trust Board, n.d).

Other iwi management plans

The following iwi and hapū planning documents (WRC, n.d) are also relevant to catchment management activities within the zone:

- Ngāti Kearoa-Ngāti Tuarā Strategic Plan (2010)
- Ngāti Kearoa-Ngāti Tuarā Iwi Environmental Plan 2016
- Ngāti Tahu-Ngāti Whaoa Iwi Environmental Management Plan “Rising above the mist – Te aranga ake i te taimahangatanga” (2013)
- Tuhourangi Tribal Authority Enhanced Iwi Environmental Resource Management Plan (Scoping Report, 2011)
- Tuhourangi Tribal Authority Iwi Management Plan (planned).

The following iwi, hapū and organisations also play an important role within the Upper Waikato Zone, and their goals and aspirations are taken into consideration when managing the zone:

- Ngāti Hauā
- Ngāti Koroki Kahukura
- Ngāti Tahu-Ngāti Whaoa
- Ngāti Kearoa-Ngāti Tuarā
- Tuhourangi-Ngāti Wāhiao.

2.3 Key non-statutory policies and plans

Waikato Regional Council Strategic Direction 2016-2019

Waikato Regional Council's strategic direction (WRC, 2017) guides work and sets priorities for the council's work. 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.

Tables 1 -Upper Waikato Zone Plan connections with the strategic direction. *Note: The coasts and marine priority area is not included due to it not being within the zone.

		REGIONAL PRIORITIES*						
		Communities	Partnerships	Land	Fresh water	Risks and resilience	Regional development	
ZONE PLAN GOALS	1	Work with iwi co-management partners to give effect to the Waikato River co-management legislation, including the Te Ture Whaimana o Te Awa o Waikato.	✓	✓	✓	✓	✓	✓
	2	Contribute to maintaining and improving the water quality of the Upper Waikato Zone.	✓	✓	✓	✓	✓	✓
	3	Stability and long term productive capacity of the zone's soils is protected and enhanced.	✓	✓	✓	✓	✓	✓
	4	Wetlands and geothermal biodiversity are protected and enhanced.	✓	✓	✓	✓	✓	✓
	5	Comprehensive ecological networks encourage indigenous biodiversity to thrive and improve ecological health.	✓	✓	✓	✓	✓	✓
	6	Riparian margins protected to promote stream stability and improve habitats and water quality.	✓	✓	✓	✓	✓	✓

The Waikato and Waipā River Restoration Strategy (WRRS)

The Waikato River Restoration Forum was established in 2014 with the purpose of maximising opportunities to realise Te Ture Whaimana o Te Awa o Waikato. The forum is made up of representatives from the five River Iwi, the Waikato River Authority, Waikato Regional Council, DairyNZ, Fonterra, territorial authorities, Mercury, Genesis and the Department of Conservation. One of the forum's objectives is to support the development of a medium-term strategic plan for river restoration initiatives that will encourage a more integrated and coordinated approach to funding and non-regulatory catchment and river management. This 5-20 year strategic action plan is known as the Waikato and Waipā River Restoration Strategy (WRRS) (Neilson et al., 2018) and has been developed with wide stakeholder input.

The purpose of the WRRS (Neilson et al., 2018) is to guide future 'on the ground' activities for all organisations that fund or undertake restoration, through the identification of specific, technically achievable and prioritised actions. Key objectives of the strategy are:

- To inform decision making of River Restoration Forum members engaged in restoration activities.
- To act as a guide for all groups engaged in delivering restoration initiatives.
- To encompass an approach that allows groups much longer planning periods to prepare for funding applications and project implementation.
- To 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.
- To 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 WRRS 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 appropriate projects to invest in, and to organisations, iwi, communities and individuals who are keen to undertake work and want to deliver high impact results.

The WRRS covers a wide range of restoration and protection activities in the catchment and focuses on six core workstreams: erosion and sedimentation, water quality, biodiversity, fish, access and recreation, and cultural importance.

The entire area of the zone is in geographical scope for the WRRS and several priority catchments, streams and sites have been identified. Appendix 1 outlines those projects that have been identified as high and very high priority for the Upper Waikato Zone.

The existing work programmes for the zone are generally aligned with the priorities identified within the WRRS, while noting the specific criteria applicable to the WRRS.

Waikato Freshwater Strategy (WRC, 2017d)

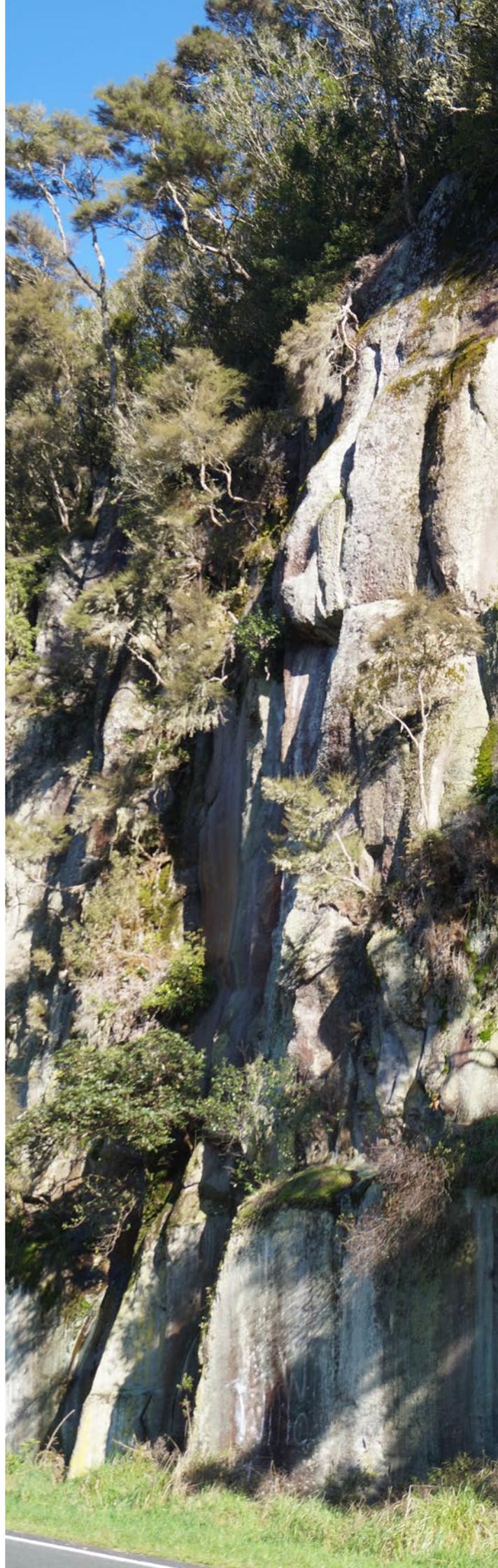
This strategy identifies a programme of actions to achieve the best use of fresh water through time via better allocation systems using new methods based on better information. It recognises that freshwater management is a complex problem that has not been addressed in an integrated manner. The current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

Addressing New Zealand's Biodiversity Challenge (Willis, 2017)

The 'Willis Report' is a think piece on the future of biodiversity management in New Zealand. It was commissioned by regional council CEOs around New Zealand and has a particular focus on the role and work of regional councils in relation to biodiversity. It establishes that biodiversity maintenance is a core regional council function, but acknowledges that biodiversity nevertheless continues to decline. The recommendations to come out of this report for halting the continued decline in biodiversity are:

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

Waikato Regional Council is drafting a plan for biodiversity which will incorporate these recommendations by setting a pathway for implementation. This plan will include details of what we will accomplish in the first three years of the 2018-2028 Long Term Plan. A key relevant priority being put forward is working with the Upper Waikato Zone to develop a restoration strategy.



3. Key matters for the zone

Ngā kaupapa matua i te rohe

The following sections set out the key matters for the zone that have informed the development of the goals and implementation actions within the plan. Key matters have been identified through the process of developing this zone plan and take account of the policy context outlined in Section 3 alongside wider social, economic, environmental and cultural considerations within the zone.

3.1 Co-management

As set out in the co-management deeds, the agreements between the Crown and the River Iwi reflect a commitment by the parties to enter “a new era of co-management over the Waikato River”. The overarching purpose is to restore and protect the river’s health and wellbeing for future generations, which aligns with Waikato Regional Council’s responsibilities to protect and sustainably manage the region’s natural resources. This recognises the fact that for Māori, the river has its own life force, spiritual authority, protective power and prestige.

Raukawa, the Te Arawa River Iwi Affiliates, Maniapoto, Tūwharetoa and Waikato-Tainui (Ngāti Koroki-Kahukura) have the authority within their rohe to exercise control and management of the river in accordance with their values, ethics and norms (tikanga and kawa). Co-management requires more than just consultation, and the co-management deeds signal a new approach. This includes:

- 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 deeds provide a foundation for relationships between the River Iwi, Crown, local authorities and other agencies, but do not prevent the parties from entering into agreements beyond this scope. Waikato Regional Council is in a transitional phase to a new collaborative approach to working on the ground with its iwi partners. This has been recognised in the council’s strategic direction and the goals of this plan.

To iwi, some of the biggest impacts in the Upper Waikato Zone include that of the hydro dams, which have altered the relationship of tangata whenua with the Waikato River. The direct impact of the hydro dams in the Upper Waikato was immediate and created cultural impacts by severing the ‘veins’ of the river, altering the natural flow of its waters and impacting migration of tuna where natural barriers had not previously existed. Other catchment development issues, including clearance of native vegetation and other land use changes, have also affected access of iwi to the river, degraded water quality, desecrated sites of significance and greatly impacted taonga fisheries (Neilson et al., 2018). Working with iwi to identify potential impacts when undertaking catchment works will be an important step towards co-management.

Communities are reliant on the healthy functioning of the natural and physical resources of the zone for their social, economic, cultural and environmental wellbeing. To achieve desired community outcomes, the council works with territorial authorities, community groups, businesses, individual landowners, central government, iwi/hapū and non-governmental organisations. The council also partners with (and co-funds) various groups to undertake community projects. Examples of these partnerships include the Waikato River Authority, the Department of Conservation, and community groups working under the umbrella of the Waikato Biodiversity Forum.

Building and maintaining relationships with iwi, territorial authorities and community groups, and establishing new relationships with other groups and organisations who have an interest in works undertaken within the zone, will help in defining projects and aligning catchment works (particularly in relation to long term plan priorities) to achieve value for money.

The WWRRS contains significant projects identified by hapū and marae for identifying, restoring and protecting wāhi tapu and sites of significance from Lake Taupō to Karāpiro. These include the physical protection of sites, along with the development and installation of

cultural symbolism such as carved pou that represent the history and stories of these places. These initiatives and opportunities are key examples of where partnerships can be developed and specific projects can be delivered to reconnect people with the waterways of the zone and other key sites. The council's expertise in defining, scoping, gaining funding and delivering projects is useful for encouraging collaboration, building iwi capacity, and coordinating efforts and expenditure to ensure the best possible outcomes are achieved for these and other strategies throughout the zone.

3.2 Water quality

Water quality in the rivers, tributaries and lakes within the zone is declining. The majority of nutrient and sediment inputs into the upper Waikato River come from diffuse sources (e.g. land run off). Council data identifies an important deterioration in turbidity which is indicative of higher levels of sedimentation. The continuing increase in nitrogen also contributes to turbidity by promoting the growth of algae. Some sites along the river are also showing deterioration in biological oxygen demand.

Changes in land use and the increased intensity of agricultural activity on the soils in the Upper Waikato, highlighted by the change from forestry to pastoral farming, have contributed to the downward trend in water quality indicators for this area (WRC, 2014b as cited in Neilson et al., 2018). In addition, the geothermal nature of this catchment (for example, Wai-O-Tapu Stream) is also a natural contributor to the reduction in quality as the river travels from its relatively pristine upper reaches to the lower receiving waters, contributing to heavy metal loading as well as elevated water temperatures in small tributaries (WRC, 2014b as cited in Neilson et al., 2018).

Key matters for the zone relating to water quality are:

- Increase volumes of in-stream sediment levels – a pulse of sediment will accelerate an in stream erosion cycle which are difficult to manage.
- Proliferation of stream plants and algae in open, low gradient channels.
- Loss and deterioration of ecologically significant springs and seepages.
- Loss of submerged plant communities which help maintain a clear-water state in lakes.
- Increased prevalence of algal blooms in lakes (this can happen very rapidly and is difficult to reverse).
- Reduced recreational enjoyment and eco-tourism opportunities.
- Reduced opportunities for River Iwi to enjoy customary and traditional relationships with the waters of the catchment.

Healthy Rivers/Wia Ora: Proposed Plan Change 1 (PC1) is in progress and sets an 80-year timeframe for the Waikato and Waipā rivers and their tributaries to be swimmable and safe for food collection along their entire lengths. The primary goal is achieving the requirements of Te Ture Whaimana o Te Awa o Waikato. In achieving this outcome, it sets a higher bar than the National Policy Statement for Freshwater Management 2014 (which was recently amended in 2017) that requires freshwater bodies to be suitable for primary contact, including swimming.

PC1 has assigned key sub-catchments within the zone priorities based on timeframes when improvement works need to commence. These works identified in the plan change must be completed by 2023 in priority one sub-catchments and by 2026 in priorities 2 and 3. An opportunity exists to demonstrate leadership by example in the zone priority catchments of Whirinaki and Pokaiwhenua – where work with landowners is already underway – by continuing to promote non-regulatory catchment management measures in line with the WWRRS. This ensures existing momentum and progress made with these landowners can be accelerated and funded through partnerships.

3.3 Accelerated erosion and changes in land use

Sheet erosion is the most common type of erosion in the zone. However, gully erosion has historically been identified as one of the major (and most visual) contributors of sediment to the Waikato River in the Upper Waikato catchment, with land conversion from native forestry to pasture causing significant increases in sediment loads (Hicks and Hill, 2010 as cited in Neilson et al., 2018).

Large soil conservation schemes established in the 1970s and 1980s addressed much of the gully and stream bank erosion issues at that time. However, changes in land use in the last decade, and the associated re-contouring of this land, has increased the risk of new gullies developing following high rainfall events (Palmer et al., 2015 as cited in Neilson et al., 2018) and also increased the potential for sheet erosion.

In areas of extensive conversion, erosion processes such as rilling are being observed, which increase the likelihood of further sheet, tunnel gully and gully erosion. Soils on steep slopes within these areas are especially vulnerable to accelerated erosion under a pure pasture scenario (modified from Palmer et al., 2015 as cited in Neilson et al., 2018) and major soil erosion issues are now emerging.

(Comms please add in photos here of erosion)

The initiation of accelerated erosion processes contributes to widespread sedimentation in waterways, resulting in aggradation in the upper reaches of the hydro lakes. Climate change is expected to result in more frequent extreme rainfall events, further exacerbating this problem. Use of the land and the management of soils is a major contributor to catchment health, and management practices need to consider the zone's unique geology and climate. Land use and soil management must also be adapted to reflect future needs and conditions.

In the last 10 years there has been a significant amount of land in the Upper Waikato Zone which has been converted from forestry to pasture. Changes from forest to pasture land cover have significant impacts on hydrology by reducing evaporative loss from vegetation, soil infiltration

rates, and uptake of water from the soil. These effects are significant within small catchments (10 to 100km²) that are converted to pasture. Small to medium rainfall events (5 to 20 year return period) cause 5 to 50 per cent more flooding, depending on the extent of conversion. The impact is greater under larger events, with 100 year events producing over 50 per cent more flooding and 500 year events producing more than double the amount of flooding.² This is compounded by the re-contouring of the land that can occur during conversion. Smoothing the contour of the surface increases the rate at which surface run off reaches ponding areas and channels, resulting in more localised flooding and higher peak flows.

With dairy conversions now requiring resource consent under the Waikato Regional Plan, the council expects the rate of conversions to slow. However, the economics of dairying are expected to drive further intensification on existing pastoral land.

Key matters for the zone with respect to sustainable land management practices are:

- loss of sensitive and rare fish species which live in cool, forested, headwater habitats
- stock access to waterways and lower order streams and the lack of effective riparian management
- the loss or mismanagement of small scale seeps and wet areas adjacent to streams
- steep land management and the potential for additional soil conservation plantings
- retention and effective management of existing areas of indigenous vegetation
- conversion of pine to pasture, particularly on susceptible soils such as Land Use Capability 6-8 soils without soil conservation measures
- nutrient management and soil organic matter levels, particularly in relation to increased stocking densities and the ability of soil to filter excess nutrients
- accumulation of cadmium and fluoride in soils from current fertilisers and their application and use
- soil compaction and deterioration of key soil health indicators
- cropping practices, and specifically practices relating

2 Environment Waikato Technical Report 2009/21, "Summary of the effects of land use change between Taupō and Karāpiro on the flood hydrology of the Waikato River Catchment"; and Sinclair Knight Merz (2009), "Impact of Land Use Change on Floods in the Upper Waikato: Phase 2: Model Calibration and Flood Hydrograph Generation".

to deterioration of key soil indicators

- encroachment of lifestyle residential development into high-class pastoral land
- declining effectiveness of subsidised soil conservation works on private land
- sheet erosion and its association with steep land soils.

In response to the current land use changes, there is a focus on supporting Upper Waikato farmers and others to maintain profitability while reducing the environmental footprint of doing business. Common themes are emerging from the work being undertaken in the zone, and there are opportunities to ensure individual efforts are coordinated for greater effect.

3.4 Indigenous biodiversity

The Upper Waikato Zone is a highly modified productive environment. Large remnants of native vegetation now only exist within the Pureora Forest Park and Maungatautari Ecological Island (WRC, 2014b as cited in Neilson et al., 2018). Except for the summit of Pureora (1165 metres) on the western catchment boundary, all of the Upper Waikato Zone lies below the regional tree-line and would therefore have historically been a predominantly forested landscape (Leathwick, 2018).

Extensive deforestation of the Upper Waikato Zone occurred both prior to and after the arrival of Europeans in New Zealand (King & Toa 2015 as cited in Leathwick, 2018). West of the Waikato River, extensive primary forests are now largely confined to the western boundary of the zone, with only small stands surviving around Mokai and in the dissected terrain that lies between Wairakei and Ātiāmuri. Even less forest survives north of the Waikato River, with larger stands limited to those along the Paeroa Range and its surrounding hill-country and to the Mamaku Plateau (Leathwick, 2018).



Restored Wetland



Fernbird Photo: Ormond Torr

Because of the substantial losses of the original ecosystem cover that have occurred since human settlement of the zone, only 8.5 per cent of the reconstructed primary forest cover of the Upper Waikato still survives. A further 3.9 per cent of the zone supports secondary indigenous ecosystems, mostly on sites that were once forested, and a further 0.2 per cent of the zone supports wetlands of varying character (Leathwick, 2018).

Losses have been most severe on the extensive, lower elevation ignimbrite landforms – much of the surviving indigenous forest is located on public conservation land, mostly in the Pureora Forest Park, but with smaller areas in the Horohoro Forest on the southern end of the Mamaku Plateau, in the Te Kopia Scenic Reserve on the Paeroa Range, and in a cluster of scenic reserves and conservation areas distributed from the Waikite Valley east to Maunga Kakaramea (Rainbow Mountain).

Additional areas of mostly cutover but now protected indigenous forest areas are in two blocks of covenanted land adjacent to Orākei Kōrako. Other areas of indigenous forest on private land, but mostly lacking formal legal protection, occur on the eastern slopes of Maroanui, and about and to the west of Oruanui (Leathwick, 2018).

Ngāti Tahu-Ngāti Whaoa iwi recall that in the past there was an abundance of native flora and fauna within their rohe, with tī kōuka, mānuka, flax and raupō being very common plants, and podocarp forest being widespread. Along the river, wetland plants and animals were common and there were many geothermally active areas where geothermal vegetation could be found (Neilson et al., 2018).

Nearly one quarter of the original wetlands still survive, with three of the four identified wetland ecosystems still having c. 30 per cent survival. By contrast, swamp-fen mosaics, which once covered 758 hectares, are now reduced to just 2.3 per cent of their former extent. Geothermal sites have fared reasonably well since human settlement, with nearly 70 per cent of their former extent still dominated by indigenous species (Leathwick, 2018).

Wetlands are an important storehouse of indigenous biodiversity. Native plants and animals, and the wetland ecosystems they form, are valued for their unique genetic diversity, cultural and spiritual importance, scientific interest, recreational opportunities and intrinsic values. In addition, wetlands provide many environmental services, improving water quality, storing carbon and reducing the effects of floods (WRC, 2017e).

Areas of wetland have historically been undervalued and mismanaged due to clear objectives for restoration not being set. Their vital role in naturally controlling flood flows and sedimentation is now apparent, as are their high biodiversity and ecological values. People's activities in and near wetlands can cause changes, such as lowering the water table and increasing the amounts of nutrients in the soil and water. These, in turn, can alter vegetation (for example, the replacement of native sedges with willow) (WRC, 2017f). Weeds, pests, stock grazing and pollution continue to be a threat to wetlands (WRC, 2017c).

Conversions from forestry to pasture have also increased the pressure on indigenous fauna. Many tributary streams have been converted from shaded channels receiving inputs of wood and leaves important for invertebrate life, to open channels exposed to higher light levels, resulting in warmer water and increased growth in aquatic plants. Channel banks, often consisting of unconsolidated pumice, are easily eroded once the roots of riparian trees have decomposed.

Loss of habitat is a significant threat to native fish populations and can be caused by a range of factors both within waterways and on adjacent land. Such factors include drainage of wetlands, clearance of riparian vegetation, physical modification of waterways, pest plant invasion and land use that impacts water quality (Raukawa Charitable Trust, 2012 as cited in Neilson et al., 2018). The Te Arawa River Iwi Trust Fisheries Plan (2015) also mentions heavy metals, pest fish and fluctuations in river levels as potential contributors to declining numbers of native fish.

Kōura are also found within the Upper Waikato catchment and were once common in tributary streams, as well as the main stem of the Waikato River and hydro lakes. Like many of the fish species, they are important traditional kai species for local iwi. The species has experienced a major decline in abundance (Clearwater et al., 2014; Hawes et al., 1999 as cited in Neilson et al., 2018) and although little is known about the reasons for this decline (NIWA, 2010 as cited in Neilson et al., 2018), eel predation as the result of the trap and transfer programme may be an important contributor among other factors (Clearwater et al. 2014; Hawes et al., 1999 as cited in Neilson et al., 2018). This programme involves the transfer of elvers into parts of the river where they may not have been present in such numbers historically (Ngāti Tahu-Ngāti Whaoa Runanga Trust pers. comm., 2017 as cited in Neilson et al., 2018).

Most of New Zealand’s geothermal systems are located within the Taupō and Upper Waikato zones and have created unique ecological features. Many of these surface features of geothermal systems have been lost or damaged as a result of track building, stock damage, draining of geothermal springs, wetlands and seeps, plantation forestry operations, and extraction of geothermal fluids. A number of the remaining features are still under threat (WRC, 2014b as cited in Neilson et al., 2018).

Some of the issues associated with the modifications to the environment include:

- reduction, fragmentation and isolation of indigenous ecosystems and habitats
- loss of corridors or connections linking indigenous ecosystems and habitats
- loss or disruption to migratory pathways in water, land or air
- effects of changes to water flows, levels and quality on ecosystems
- an increased threat from animal and plant pests.

In the past, catchment management works carried out by councils were typically undertaken to improve water quality and soil conservation. They would sometimes have beneficial effects on indigenous biodiversity, despite this not being the primary focus. Now the maintenance of indigenous biodiversity has been recognised as a core function of regional councils and a direct focus is being placed on managing biodiversity and on providing for it when other works are carried out.

The Regional Policy Statement has signalled a move towards a strategic, proactive and coordinated indigenous biodiversity management approach with landowners, mana whenua and other agencies. In addition, Waikato Regional Council has embarked on a comprehensive information gathering project to complete a biodiversity inventory and to improve internal coordination of the biodiversity programme across the council. This approach is consistent with the recommended shifts in the Willis Report (Willis, 2017) which Waikato Regional Council is a signatory to.

In addition to the above, there is currently a programme to identify areas of significant indigenous vegetation and significant habitats of indigenous fauna. Waikato Regional Council administers several funds, such as the Environmental Initiatives Fund. The council also undertakes indigenous biodiversity restoration and offers funding incentives to fence priority sites, among other projects.

3.5 Soil conservation scheme management

Within the Upper Waikato Zone, Land Improvement Agreements (LIA) or Memorandum of Encumbrance (MoE) with landowners are grouped into five schemes: Karāpiro, Arapuni, Paeroa Range, Reporoa and Whakamaru. Table 3 provides an overview of the total current investment in works across all five schemes.

WORKS	
Soil conservation fencing	1562 kilometres
Conservation planting	59,713 plants over 3354 hectares
Retired land	6103 hectares
Structures	71
Water supply systems	16

Tables 2 -Summary of soil conservation works in the Upper Waikato Zone.

Historically, these soil conservation schemes have focused on both gully erosion and limited riparian protection. These schemes have provided considerable benefits in

terms of land and water protection, biodiversity protection and general environmental enhancement. There is demand for new works to capitalise on these historical works and provide additional benefits. The LIAs and MoEs are a contract between the landowner and council, typically for 99 years although it does vary. Generally, it is expected that the existing scheme works will be owned, maintained and replaced by the landowner in accordance with the agreement. Some funding assistance will be provided for maintenance if fiscal constraints and the soil conservation compartment is still addressing its original objectives.

The most important role of council staff is providing advice and specifying management practices that protect the zone's natural resources. Staff monitor compliance with the conditions set out in these agreements to ensure the soil conservation compartments are still integral and functioning in line with their original objectives.

Efforts are now starting to be reprioritised to focus on sheet and tunnel gully erosion, which is often associated with inappropriate land use. Protecting the integrity of the existing schemes is an important component of the overall health of the catchment and this is recognised in the council's long term plans. Strategies for the maintenance of these schemes and prioritisation of new works are included in this plan and associated staff documents.



4. Plan implementation

Te whakatinanatanga o te mahere

4.1 Zone goals

The goals for the Upper Waikato Zone are:

Goal 1: Work with iwi co-management partners to give effect to the Waikato River co-management legislation, including Te Ture Whaimana o Te Awa o Waikato.

EXPLANATION

In time, working with iwi co-management partners will become normal practice for Waikato Regional Council, but during this transitional phase this is included as a goal for the plan. Each of the Ri Iwi has framework that informs and directs their approach to co-management to the Waikato River (refer 2.4). Waikato Regional Council needs to have an understanding of this framework, including the mana whakahaere (rights and responsibilities) of the different River Iwi, when carrying out its work in the Upper Waikato if it is to effectively work with its iwi co-management partners and to give effect to Te Ture Whaimana o Te Awa o Waikato.

Goal 2: Contribute to maintaining and improving the water quality of the Upper Waikato Zone.

EXPLANATION

Water quality in the Upper Waikato Zone is declining and there is an opportunity to undertake works that will contribute to improvements in water quality before emerging issues become more difficult to deal with.

Goal 3: Stability and long term functionality of the zone's soils is protected and enhanced.

EXPLANATION

Land clearance and development has resulted in significant changes in run off patterns and major soil erosion problems are beginning to re-emerge. These erosion problems threaten the long term productive capacity of the soil. Management of land within the catchment needs to match its use to its land use capability (recorded in the Land Resource Inventory). The current condition of soil conservation schemes is generally satisfactory. Protecting the integrity of the existing schemes is an important component of the overall catchment health.

Goal 4: Wetlands and geothermal biodiversity are protected and enhanced.

EXPLANATION

There are reducing numbers of wetlands and seeps in the sub-catchments of the zone, including hill country wetlands that are unique in the region. Many geothermal features, such as geysers, hot springs and associated ecosystems, have been lost and those remaining are under threat. Contributors to this include extraction of geothermal water, building tracks over geothermal features, allowing stock access, planting and harvesting plantation forests, pesticide spraying and draining hot springs and the surrounding land.

Wetlands make an important contribution to maintaining water quality, regulating flows and preventing stream bank erosion. They also provide for biodiversity. In addition to protection, opportunities for wetland enhancement, restoration and reinstatement are also important for this zone.

Goal 5: Comprehensive ecological networks encourage indigenous biodiversity to thrive and improve ecological health.

EXPLANATION

While the landscape is highly modified and changing, there are opportunities to retain or reinstate areas that make a difference to ecological health. Controlling plant and animal pests and improving habitat connectivity will enhance the surviving areas of significant indigenous vegetation and habitat.

Goal 6: Riparian margins are protected to promote stream stability and improve habitats and water quality.

EXPLANATION

Conversion from forestry to pasture places additional pressure on the stability of stream channels. Within this zone, stream banks are often comprised of unconsolidated pumice and are easily eroded. Many tributary streams are spring-fed, resulting in stable flows that are unable to flush sediment deposited on the streambed from land conversion practices or subsequent stock damage. Riparian planting will restore shade to the streams and control weed infestations with consequential biodiversity benefits.

4.2 Focus areas and implementation actions

This section describes how the council intends to achieve its goals for the zone at an operational level. The seven focus areas identified provide a basis for monitoring this plan and the accompanying actions detail proposed implementation activities over a 10-year timeframe.

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

Upper Waikato Zone goals and focus areas.

ZONE GOALS						
<ol style="list-style-type: none"> 1. Work with iwi co-management partners to give effect to the Waikato River co-management legislation, including Te Ture Whaimana o Te Awa o Waikato. 2. Contribute to maintaining and improving the water quality of the Upper Waikato Zone. 3. Stability and long term functionality of the zone's soils is protected and enhanced. 4. Wetlands and geothermal biodiversity are protected and enhanced. 5. Comprehensive ecological networks encourage indigenous biodiversity to thrive and improve ecological health. 6. Riparian margins are protected to promote stream stability and improve habitats and water quality. 						
1	2	3	4	5	6	7
Catchment new works in priority catchments	Maintain the integrity of existing soil conservation scheme	Preparing for change	River management	Landowner, stakeholder and community engagement	Collaboration and partnerships	Protecting, actively managing and enhancing valued places and species

Some implementation actions are ongoing, whilst 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, and the timing of implementation is also subject to change.

It is noted that the implementation actions described in this plan that are directly funded through the Upper Waikato Zone are at current levels of funding and are subject to review.

FOCUS AREA 1: CATCHMENT NEW WORKS IN PRIORITY CATCHMENTS

The focus of catchment new works will be on working with landowners in the priority catchments of Whirinaki, Tahunaatara, Pokaiwhenua, Little Waipā and Whakamaru, as well as other key locations identified in the Waikato and Waipā River Restoration Strategy (see Appendix 1). The catchments deliver high loads of sediment to the Waikato River due to the presence of erosion prone soils and the impacts of land use. There are opportunities throughout the zone for works to protect wetlands and seeps and to reduce nutrient loading to streams. Prioritisation is necessary to target limited resources in areas of degraded water quality and where the greatest benefits can be achieved.

IMPLEMENTATION ACTIONS		WHO/TIMING
Landowner assistance	<p>Raise landowner awareness within priority catchments of the support available to undertake erosion control and soil conservation measures. Activities may include:</p> <ul style="list-style-type: none"> property inspections and advice preparation of Environmental Property Agreements (EPA), agreement as to a staged work programme support to landowners in undertaking best practice management at farm and catchment scale advice and assistance in preparing funding applications to complement new works projects agreement as to funding arrangements utilising Waikato Regional Council and/or other funding sources/partners agreement as to ongoing annual programme maintenance and management programmes legal security over works put in place within council policy. Where there are numerous landowners within a catchment that are wishing to undertake priority catchment works, the council may consider applying on behalf of this group for external funding (for example, to the Freshwater Improvement Fund, Waikato River Authority, Afforestation Grant Scheme etc.) to support wider scale action or providing co-funding support to an external group acting on behalf of landowners. 	Zone and Catchment Management team/Annual Programme
	<p>Outside of priority catchments, respond as appropriate to landowner requests. This may include the following actions:</p> <ul style="list-style-type: none"> Engage with landowners to increase their understanding of catchment management. Address and manage incidents of accelerated erosion. Support landowner and other initiatives – especially where there is potential for collaboration with other landowners. Provide technological knowledge and guidance to catchment health projects. Provide advice on preparing applications for funding to complement new works projects, and information on alternative funding sources from other external organisations. Provide access to appropriate and cost-effective trees through existing WRC schemes/process. 	
Funding	<p>Target funding of new works into priority areas so that:</p> <ul style="list-style-type: none"> by 2019 60 per cent of funding continues to be spent in priority areas by 2020 80 per cent of funding is spent in priority areas. Annually reassess the budget and resourcing needs in the zone to support an effective programme for new catchment works. 	Zone and Catchment Management team/June 2019
Ongoing annual programme development	<ul style="list-style-type: none"> Continuing refinement of recommended best practice. Ongoing annual programme development of targeted environmental monitoring programmes. Development of appropriate performance measures and reporting. 	

FOCUS AREA 2: MAINTAIN THE INTEGRITY OF EXISTING SOIL CONSERVATION SCHEMES

Existing schemes have made a significant difference to erosion, subsequent downstream sedimentation and protection of productive land. For this reason, it is important the existing works are retained in good working order and they are regularly assessed to determine whether the intended benefits are being achieved. Maintaining positive engagement and interactions with landowners will be key to achieving this focus area.

IMPLEMENTATION ACTIONS		WHO/TIMING
Record keeping	<p>Maintain accurate, up to date property files and asset records in the appropriate database.</p> <p>Liaise with new property owners to ensure they are aware of and meet their responsibilities under LIAs or MOEs.</p> <p>Maintain areas of biodiversity within the parameters of council asset base to ensure they are achieving catchment health criteria and are offered long term protection through EPAs.</p>	Catchment Management team/Annual Programme
Asset inspections	<p>Regularly inspect programme assets using a risk based approach, as appropriate.</p> <p>Confirm maintenance programmes in consultation with landowners and:</p> <p>follow-up any maintenance landowners are required to carry out</p> <p>ensure landowners are aware of and meet their responsibilities under existing agreements and make landowners aware that Waikato Regional Council will take action if the obligations in agreements are not being met.</p>	
Renewals	<p>Promote the implementation of best management practices – involving further development and review of current practices.</p>	
Policy development	<p>Support implementation of the Upper Waikato maintenance policy.</p> <p>Once the Healthy Rivers/Wai Ora: Plan Change 1 process is complete, recommend a review of 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>	Catchment Management team/Ongoing Annual programme

FOCUS AREA 3: PREPARING FOR CHANGE

Land use management within the zone will be affected by Healthy Rivers/Wai Ora: Proposed Regional Plan Change 1. Ensure consistent messaging regarding the links between the zone plan works and the on-farm work being undertaken through Healthy Rivers.

(Note: This focus area will be reviewed once the plan change is complete).

IMPLEMENTATION ACTIONS		WHO/TIMING
<p>Help landowners adapt to new expectations and the rules of Plan Change 1</p>	<p>The Land Management Advisory Services (LMAS) team aims to work with landowners to achieve improvements in the environmental footprint of agriculture. LMAS is helping to design strategies to allow for efficient and consistent implementation of the proposed plan change.</p> <p>Actions will include:</p> <ul style="list-style-type: none"> • CMOs to support farmers to prepare them for Plan Change 1 • developing and implementing a sustainable agriculture extension programme in collaboration with industry in the area • building capacity within the agriculture industry to support farmers in adapting to farming within limits • ensuring Waikato Regional Council and agriculture industry and community initiatives that support sustainable agriculture are aligned, consistent and effective in bringing about on-farm change. 	Land Management Advisory team, Catchment Management team/Annual Programme

FOCUS AREA 4: RIVER MANAGEMENT

Implement best practice to manage erosion and maintain channel capacity in Waikato River tributaries in response to monitoring and storm events.

IMPLEMENTATION ACTIONS		WHO/TIMING
Best practice	<p>Actions to implement best practice to manage 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 • planting and maintaining vegetation • vegetation control (where appropriate) • 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 • supporting community initiatives with sound technical guidance and, where appropriate, financial support. 	River Management team/Annual Programme
Stream inspections	River and stream inspections are undertaken on an as required basis, and follow-up is completed in response to reports of damage and customer enquiries.	
Collaboration	<p>When opportunities arise, work with other agencies such as local iwi and hapū, Department of Conservation and territorial authorities (where applicable) on:</p> <ul style="list-style-type: none"> • response and resolution from public enquiries • providing information and advice on river enquiries. 	
Landowner agreements	Develop landowner agreements 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	Incorporate and support environmental enhancements, such as the installation of native woody debris and indigenous fish habitat work, where appropriate.	
Iwi cultural values	Through working with local iwi, seek opportunities to incorporate protection of sites of significance and enhancement of mahinga kai as part of river management activities.	

FOCUS AREA 5: LANDOWNER, STAKEHOLDER AND COMMUNITY ENGAGEMENT

Working collaboratively with landowners, stakeholders, care groups and the wider community to improve public knowledge of council services. Contribute to the wellbeing and improvement of catchments, through education, knowledge sharing and partnerships. The following actions will enable collaborative opportunities.

IMPLEMENTATION ACTIONS		WHO/TIMING
Education	<p>Improve understanding and education of catchment management activities and the benefits of landowner partnerships.</p> <p>Support Waikato Regional Council's existing work with local schools to enhance indigenous biodiversity through plantings and other environmental enhancement initiatives.</p> <p>Where relevant, liaise and support community groups to improve their knowledge, skills and awareness of catchment health initiatives.</p> <p>Support appropriate applications to funding, internally and externally, to facilitate environmental education.</p>	Zone and Catchment Management team/ Completed by June 2019
Staffing	Ensure staff are available to allow a collaborative approach to increasing community engagement.	
Collaboration	<p>Develop strong landowner agreements for works such as fencing, planting and maintenance work.</p> <ul style="list-style-type: none"> Where landowners are willing, facilitate opportunities to bring people together (for example, a farm field day) to: <ul style="list-style-type: none"> build knowledge and capability coordinate discussion groups on enhancing catchment health encourage thinking beyond property boundaries. 	Zone and Catchment Management team/Annual Programme

FOCUS AREA 6: COLLABORATION AND PARTNERSHIPS

Work collaboratively with territorial authorities, agencies, iwi, hapū, industry and with other directorates within council. This also includes collaboration with landowners and community groups to coordinate work programmes and to ensure comprehensive coverage, avoid duplication and add value where there is alignment with the goals of this plan.

IMPLEMENTATION ACTIONS		WHO/TIMING
Relationships with iwi	<ul style="list-style-type: none"> Build trust and credibility by strengthening relationships with mana whenua (at iwi and marae level). Support mana whenua coordination (where appropriate) to ensure greater integration and efficiency. Be responsive and adaptable to Treaty settlement outcomes. 	Zone and Catchment Management team/Ongoing
Integration across council	<ul style="list-style-type: none"> Building relationships within and across council to support zone goals. Draw upon the skills of staff both within the Integrated Catchment Management directorate and other directorates of council. 	Zone and Catchment Management team/Ongoing
Leverage existing relationships and develop new stakeholder relationships	<p>It is important for the council to continue strengthening existing relationships with other organisations to realise a range of community benefits by:</p> <ul style="list-style-type: none"> exploring further opportunities to leverage partnerships and co-funding initiatives ensuring the council is viewed as a valuable partner that other organisations want to work with building a stronger relationship with territorial authorities promoting biodiversity through other initiatives. <p>It is also important the council continues to identify opportunities to build new relationships with key stakeholders within the zone where these relationships require further work. For example, working with South Waikato District Council and Hancock Forestry Management on a Forestry Biodiversity Strategy.</p>	Zone and Catchment Management team/Ongoing

FOCUS AREA 6: COLLABORATION AND PARTNERSHIPS

<p>Support iwi involvement in projects</p>	<ul style="list-style-type: none"> Understand mana whenua objectives and priorities, including those developed as part of the WWRRS, and incorporate into catchment new works and other biodiversity projects. Collaborate with iwi when undertaking catchment scale works and projects to enhance amenity, public access to and experiences of the Waikato River and its tributaries, cultural sites, wetlands and lakes. Recognise that iwi have significant knowledge to offer regarding pre and post European culture and location of historic cultural sites, and that restoration options and works should be undertaken (where appropriate) in line with the River Settlement Deed. <p>Supporting existing initiatives or projects including:</p> <ul style="list-style-type: none"> the Whirinaki project (10 flagship projects and 5 river management projects) identifying and implementing mana whenua goals and aspirations (where appropriate), including those set out within their iwi management plans or other strategic plans as part of catchment activities Waikato River Authority projects or those noted as priorities in the WWRRS (see Appendix 1) identifying cultural knowledge and values of rivers and streams – this may include, for example, historic food gathering areas Through the Natural Heritage team at council, which works directly with iwi landowners by directly funding projects and supporting landowners applications for funding of regional, national and international significance in areas within the zone. 	<p>Zone and Catchment Management team/Ongoing</p>
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FOCUS AREA 7: PROTECTING, ACTIVELY MANAGING AND ENHANCING VALUED PLACES AND SPECIES

The Upper Waikato catchment contains a range of unique natural features and places of special cultural, economic and social significance. A key focus for the plan activities will be on protecting, actively managing and enhancing these places of value.

IMPLEMENTATION ACTIONS	WHO/TIMING
<p>Action planning</p> <p>Implement recommendations from the Biodiversity Roadmap Implementation Plan that are relevant to the Upper Waikato Zone.</p> <ul style="list-style-type: none"> Active support for the Waikato and Waipā River Restoration Strategy focus area of biodiversity management. Active support for community based biodiversity projects undertaken where relevant. 	<p>Natural Heritage team/ Completed by June 2020</p>
<p>Indigenous biodiversity enhancements</p> <p>The following actions are proposed to protect and actively manage indigenous biodiversity:</p> <ul style="list-style-type: none"> Support regional biodiversity initiatives and priorities, and review actions regularly. Seek opportunities and support projects to apply for funding from the Natural Heritage Partnership Programme. 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. Undertake a gaps analysis to review and prioritise other projects outside of the Waikato and Waipā River Restoration Strategy. Review and promote best management practices for restoration. Monitor success of current biodiversity projects and programmes and incorporate knowledge to improve outcomes. When undertaking soil conservation and river management works, the council will seek to maintain and, where possible, enhance biodiversity values. For example: <ul style="list-style-type: none"> retain/replace fish habitats when clearing river blockages create additional native fish habitat as part of design of asset and river management structures include native plant species in river management programmes. Work with territorial authorities during district plan reviews to ensure maintenance of indigenous biodiversity and protection of significant natural areas. Also, work with territorial authorities to develop and implement local indigenous biodiversity strategies. 	<p>Natural Heritage team/Ongoing</p>

FOCUS AREA 7: PROTECTING, ACTIVELY MANAGING AND ENHANCING VALUED PLACES AND SPECIES

<p>Animal and plant pest control</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 territorial authorities) comply with rules set in the Regional Pest Management Plan (RPMP). <ul style="list-style-type: none"> - Support DOC to manage pest plants on DOC-managed land. - Support community-led pest control on private land and land tenures. - Investigate opportunities with ICM and DOC for a collaborative biodiversity/biosecurity programme for the catchment. - Support MPI in incursion management as required e.g. myrtle rust. <p>Key animal pest actions include:</p> <ul style="list-style-type: none"> • Support collaborative opportunities through Predator Free 2050. • 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 that are set out in the RPMP. • Support collaborative opportunities to promote biosecurity and implement biosecurity pathway management practices. • Surveillance of national interest pest plants and prepare for other invasive pests found elsewhere in the country. • Promote on farm biosecurity and weed hygiene best practice. 	<p>Biosecurity Team/Ongoing</p>
<p>Protection and restoration of Upper Waikato geothermal features and wetlands</p>	<p>The following actions are proposed for protection and restoration of Upper Waikato geothermal features and wetlands:</p> <ul style="list-style-type: none"> • Continue engaging actively with landowners to protect and restore the internationally and nationally significant geothermal ecosystems that lie outside public conservation land. These are Wai-o-tapu South, Craters of the Moon, Orakei Korako and Red Hills. • Investigate the possibility of engaging LINZ in the restoration of Waihunuhunu, a small, diverse geothermal area of national significance and high restoration potential, which supports high numbers of threatened geothermal ferns. • Continue expanding the restoration programme for regionally significant geothermal ecosystems by proceeding with the wilding pine control proposed for Te Kiri O Hine Kai Stream Catchment (Wairoa Hill, Alum Lakes). Assess the other 10 regionally significant geothermal ecosystems that are considered to be a high priority for restoration and select projects for ongoing action. 	<p>Natural Heritage and Catchment Management teams/Ongoing</p>

5. Funding, monitoring and review

Tahua pūtea, aroturuki me te arotakenga

5.1 Funding

The council collects rates (general and targeted) for flood protection, river management, soil conservation works, biosecurity, biodiversity, catchment management and new works, based on areas of benefit and activities that contribute to the programmes being managed. 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. Work programmes and funding levels will be subject to review throughout the life of the plan.

The council will also actively explore opportunities for co-funding of projects with partner agencies. The zone has already been successful in some recent funding applications, and opportunities for further funding will be explored and actioned as appropriate.

5.2 Review and monitoring

The plan will be reviewed, as required or as mandated, in order to implement any statutory obligations (for example, Treaty settlement legislation, National Direction). A full review is required every six years and a limited review every three years in line with long term plan cycles. This ensures it remains relevant and effective and includes considerations of:

- water quality change
- climate change
- Plan Change 1 outcomes
- scientific outcomes and new technology
- relevant national, regional, district or iwi plan and/or policy review
- other unforeseen circumstances.

Monitoring of the goals will focus on the works carried out in the annual programme and will focus on the following key aspects:

- 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 outcomes of the information gathered in respect of Table 3.

The results of monitoring will be reported annually to the catchment committee and the Integrated Catchment Management Committee. The following monitoring measures will assist in reporting the outcomes through the catchment committee meetings and highlight where further work could be initiated.

Tables 3 -Table 3: Monitoring measures.

		MEASURES
GOALS	<p>Goal 1: Work with iwi co-management partners to give effect to the Waikato River co-management legislation, including Te Ture Whaimana o Te Awa o Waikato</p>	<p>Facilitate and record an annual meeting with iwi partners to discuss proposed work programmes.</p> <p>Collaborate with iwi partners to develop and implement specific annual programme of works.</p>
	<p>Goal 2: Contribute to maintaining and improving the water quality of the Upper Waikato Zone</p>	<p>Record and report annually to the catchment committee the contribution of council projects to water quality improvements that are initiated and maintained.</p> <p>Summary of suspended sediment data collected within the zone as part of the council's regular water quality monitoring.</p> <p>Target funding of new works into priority areas so that by: 2018, 60 per cent of funding is spent in priority areas 2020, 80 per cent of funding is spent in priority areas.</p>
	<p>Goal 3: Stability and long term functionality of the zone's soils is protected and enhanced</p>	<p>Land Improvement Agreements are inspected in accordance with the Upper Waikato Maintenance Programme, and subsequent maintenance programmes are developed and levels of compliance are reported.</p> <p>Deliver the Whirinaki project outcomes as per project briefs.</p> <p>Continue to support the implementation of the Waikato and Waipā River Restoration Strategy outcomes for soil stability through existing relationships.</p>
	<p>Goal 4: Wetlands and geothermal biodiversity protected and enhanced</p>	<p>Evidence of collaborative arrangements in place.</p> <p>Report annually to catchment committee on linkages between soil conservation and biodiversity to improve catchment health outcomes.</p>
	<p>Goal 5: Comprehensive ecological networks encourage indigenous biodiversity to thrive and improve ecological health.</p>	<p>Report annually the linkages and integration to work plans regarding biosecurity and the regional pest management strategy.</p>
	<p>Goal 6: Riparian margins protected to promote stream stability and improve habitats and water quality.</p>	<p>Annually record and report on the relevant riparian management activities.</p> <p>Annually allocate catchment new works workstream.</p>

6. Glossary of terms

Te kuputaka

DOC	Department of Conservation
EPAs	Environmental Property Agreement
ICM	Integrated Catchment Management
LMAS	Land Management Advisory Services
LIAs	Land Improvement Agreements
LMAs	Land Management Agreements
LTP	Long term plan
MoE	Memorandum of Encumbrance
MPI	Ministry for Primary Industries
NIWA	National Institute of Water and Atmospheric Research
NZTA	New Zealand Transport Agency
PC1	Plan Change 1
PPCAs	Priority Possum Control Areas
RMA	Resource Management Act (1991)
RPMP	Regional Pest Management Plan
RPS	Regional Policy Statement
TARIT	Te Arawa River Iwi Trust
TLAs	Territorial local authorities
WRA	Waikato River Authority
WRC	Waikato Regional Council
WRP	Waikato Regional Plan
WWRRS	Waikato and Waipā River Restoration Strategy
Biodiversity	In this document when referring to biodiversity, the reference should be read as indigenous biodiversity.

Membership of the Upper Waikato Zone Catchment Committee:

- Regional councillor (3) (including Chair of Integrated Catchment Management Committee, and Chair or Deputy Chair of Waikato Regional Council).
- Taupō District Council (1).
- Rotorua District Council (1).
- South Waikato District Council (1).
- Department of Conservation (1).
- Mercury (1).
- DairyNZ (1).
- Local community representatives (4).
- Tūwharetoa Māori Trust Board (1).
- Raukawa Settlement Trust (1).
- Waikato Tainui (NKK Trust) (1).
- Ngāti Tahu-Ngāati Whaoa/Te Arawa River Trust (1).
- Forestry representation (1 Tokoroa, 1 Kaingaroa).



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* n.d. = no date specified.

8. Appendix 1

Kupu āpiti tahi

8.1 Waikato and Waipā Restoration Strategy – Upper Waikato Priorities

Priority workstreams and locations in the Upper Waikato Zone as identified in the Waikato and Waipā River Restoration Strategy.

WORKSTREAM	HIGH PRIORITY (WRRS)	VERY HIGH PRIORITY (WRRS)
Erosion and sedimentation	<ul style="list-style-type: none"> • Waione Stream Erosion Protection and Riparian Enhancement. • Upper Tahunātara Stream erosion protection and riparian enhancement. • Whirinaki integrated catchment programme. 	<ul style="list-style-type: none"> • Upper Pokaiwhenua streambank erosion protection and riparian enhancement. • Hill country erosion protection and remediation in the Maraemānuka, Okama and Uanui catchments.
Water quality	<ul style="list-style-type: none"> • Water quality improvement in the Lower Pokaiwhenua catchment³. • Water quality improvement in the Little Waipā catchment. 	
Biodiversity	<ul style="list-style-type: none"> • Biodiversity enhancement at Forest Road Wetland. • Biodiversity enhancement of Kapenga Wetland and nearby Hamills Wetland. 	<ul style="list-style-type: none"> • Biodiversity enhancement of Jack Henry Wetland. • Kōura habitat rehabilitation on Uanui Stream. • Kōura habitat rehabilitation in Waipapa, Mokautuere and Ongarahu streams. • Restoration of Wai-o-tapu south geothermal area. • Biodiversity enhancement at Orākei Kōrako and Red Hills.
Fish	<ul style="list-style-type: none"> • Fish habitat rehabilitation within the Waiteti Stream catchment, Arapuni. 	
Recreation	<ul style="list-style-type: none"> • Development of Aniwaniwa Reserve (Lake Karāpiro). • Cycleway/walkway along the Waikato River between Ātiamuri and Orākei Kōrako. 	
Cultural importance⁴	See page 119 onwards of the WRRS for cultural priorities of relevant iwi.	

³ Projects in the lower and upper Pokaiwhenua are the next priority for this zone plan following works in the Whirinaki catchment.

⁴ As identified in the WRRS, cultural priorities of iwi that have rohe within the Upper Waikato Zone will be considered when undertaking works.

HE TAIAO MAURIORA

HEALTHY ENVIRONMENT

HE ŌHANGA PAKARI

STRONG ECONOMY

HE HAPORI HIHIRI

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