Waikato Regional Council Policy Series 2019/14

Land Drainage Management Plan

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Te Kaunihera ā Rohe o Waikato

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- Franklin Waikato
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- Thames Valley

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Summary

The purpose of land drainage is to manage water tables and clear ponded water. The land drainage service is an additional layer of service provided by the Waikato Regional Council ("the Council") to specific rural geographical areas called drainage areas. Drainage areas are located within the Lower Waikato, Waipa, Central Waikato, West Coast and Waihou-Piako zones and they normally cover relatively flat land where a community managed drainage network is essential to allow landowners to sustain pastoral farming. The Councils drainage network manages water from the land and its surface to the river channels.

The Council's land drainage programme provides benefit to 172,000 hectares of land, some 7% of the region's area. The capital value of the properties benefitting from the land drainage programme is $16.7 billion, some 27% of the capital value of rural properties within the region (ref. WRC's land rating database, February 2019).

The land drainage service is provided through a partnership with landowners where the Council has a stewardship responsibility to maintain a primary network of drains on private land for, and on behalf of, the various communities of landowners located within each of the drainage areas so the landowners can drain their own land for farming purposes.

The service is entirely funded by targeted land drainage rates in addition to the other zone and specific targeted rates for catchment, flood protection, biosecurity and natural heritage works. The Council manages some 1,493 individual drains totalling 2,063 km in length within 84 separate drainage areas or subdivisions of drainage areas and has 92 separate funding systems that allow the necessary work programmes to be completed.

The purpose of this Land Drainage Management Plan ("drainage management plan") is to provide context and direction for the implementation of the Council's Integrated Catchment Management Directorate (ICM) activities within the various drainage areas that are the responsibility of the Council.

The **Vision** for land drainage management is:

Effective and affordable rural drainage networks

The drainage management plan includes a high level programme of implementation actions that respond to the issues identified within the plan. The key issues include:

1. Management of the drainage networks and increasing costs.
2. Development and maintaining of effective community partnerships
3. Management of the impacts of urban development, rural land subdivision and land use intensification.
4. Sustainable land management practices and implementation of catchment management activities.
5. Improvement of water quality and quantity.
6. Management of indigenous biodiversity and effective pest management.

The implementation of the drainage management plan, and its effectiveness, will be monitored and reported on an annual basis to the community through the Status Reports provided to the four drainage advisory subcommittees. Further reviews will be considered on a three yearly basis to ensure that the plan is reviewed in conjunction with Long Term Plan processes and that progress is being made towards managing the issues identified.

1 Introduction and Scope

The drainage management plan is a strategic document with a focus on guiding the implementation of the rural land drainage service and its scope is:

- To describe how land drainage is interconnected with river and catchment management, flood protection and other integrated services that includes natural heritage, animal and pest management, land management advisory and civil defence and emergency management (which are provided from within the Integrated Catchment Directorate), within the catchment management zones where the land drainage service is provided.
- To provide a single document that contains all of the key points and information regarding the drainage programme including detailed budget information that feeds into the Long Term Plan (LTP)
- To enable the reader to be directed to the appropriate repositories should more detailed information on other documents be required. Some of those documents contain information that will be revised and updated at regular intervals (such as annually in the case of Annual Plans, Annual Reports etc., three yearly in the case of LTP, and as appropriate in the case of other documents such as asset management guidelines). All supporting information has either been placed into appendices or source documents referenced in the text of this plan.

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

- Implementing and monitoring compliance with Council's rules under the current Waikato Regional Plan, including those resource consents that are held to undertake work within the scope of this plan;
- Monitoring and investigations on the state of the environment, unless utilised to measure performance on initiatives identified;
- Zone functions – zone related services are managed separately and will be captured in the relevant zone management plans. There is an interconnection and through implementing this plan, it is recognised that there needs to be alignment with these other functions.

It must be noted that the land drainage programme is provided within rural areas only to support pastoral farming. Land drainage is a completely separate activity from stormwater management that is undertaken by territorial authorities in urban, commercial or industrial areas.

The requirement for the land drainage service is to a large degree the result of activities that are currently permitted and/or accepted within any catchment and is only one part of many complex and interrelated natural, economic, social and cultural values and features. An ongoing challenge for the Council over the life of this plan will be to review land use practices and rules that currently result in the need for many of the activities required to provide the land drainage service. An important consideration for the Council will be the funding systems that support the work programmes, particularly as the cost of mitigation for the sediment removal activity is fully realised.

1.1 Purpose

The purpose of this Land Drainage Management Plan ("the drainage management plan") is to provide direction for the implementation of the Council's ICM drainage service within the region. The management plan presents in a single document the information required, in addition to the Regional Asset Management Plan information, necessary for the management, operation, maintenance, and renewal of the drainage infrastructure that collectively makes up the Council drainage areas. This will enable appropriate management practices and financial provisions to be made over the long term to ensure the service provided by the assets can be maintained in perpetuity.

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

The drainage management plan sets out:

1. Overall vision for the drainage programme (Section 1.3)
2. The land drainage objectives (Section 1.2.2)
3. The purpose of land drainage (Section 1.4)
4. The levels of service (Section 6)
5. The obligations, procedures and operating practices used in implementing the drainage programme (Section 7)
6. Key issues the programme currently is managing (Section 10)
7. Implementation actions related to the key issues (Section 10)
8. Processes for monitoring and reviewing the plan (Section 11)

The drainage programme vision has been developed in response to the following matters identified as key issues in Section for the activity over the next 30 years:

1. Management of the drainage networks and increasing costs.
2. Development and maintaining of effective community partnerships
3. Management of the impacts of urban development, rural land subdivision and land use intensification.
4. Sustainable land management practices and implementation of catchment management activities.
5. Improvement of water quality and quantity.
6. Management of indigenous biodiversity and effective pest management.

In relation to the implementation of this plan, the Council is one of many organisations working to improve catchment health within the region. Iwi, district councils, government departments, industry, non-government organisations (NGOs), community groups and landowners are all active in implementing initiatives to improve catchment health.

The need for the land drainage activities (vegetation control and sediment removal) is a consequence of the land use activities within the catchment that are largely permitted or managed through resource consents. The better the health of the catchment and the less sediment and nutrient inputs there are into the drainage network, the less the drainage service activities are required.

One intention of the drainage management plan is to complement and support the work of these other agencies and individuals, to help reduce the inputs into the drainage network and align programmes where opportunities arise.

1.2 Strategic fit

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

This drainage management plan is a Policy Series, non-statutory document that supports the Council's overall vision and mission and provides guidance for activities that are implemented primarily through the ICM directorate.

1.2.1 Fit with Regional and Integrated Services

The Council has statutory functions and provides services across the entire region. Those services include collecting resource and state of the environment information to inform strategies and policies, managing the regions resources through the RMA, providing a regional navigation safety function and regional transport responsibilities.

The Council also has catchment, biosecurity, natural heritage and natural hazard functions that require a more integrated approach to providing the services. To simplify the management and retain some local communities of interest with these services, the region has been divided into eight geographical management zones, largely based on catchments or defined subcatchments. Within each of these zones the catchment, river and flood protection services are provided, and while the biosecurity and natural heritage service is provided regionally it is reported through the zone subcommittees.

The land drainage programme provides an additional layer of service to rural areas that is necessary due to catchment characteristics, landowner activities and land use. The land drainage programme is directly connected to and overlaps with the river management activities and is closely aligned to the flood protection activities. Land drainage is provided in several zones, generally where land is flat and a community based maintenance of a primary rural drainage network is necessary to support farming by managing water from the land and its surface to the rivers and streams.

A summary of the Council's related services and the ICM activities is provided in Figure 1 and further commentary on the land drainage activities is provided in Section 2.3 on page 9.

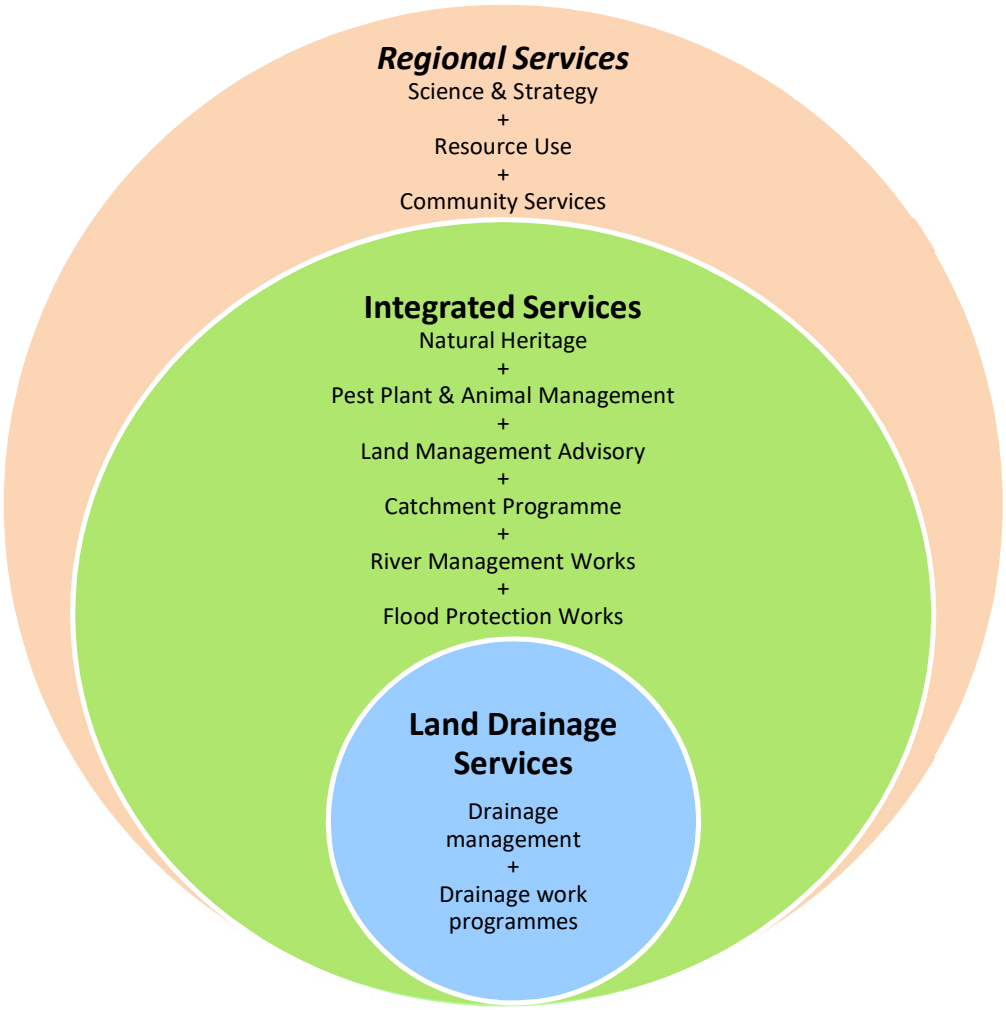

Figure 1: Drainage management Plan - Scope of Activities & Services

1.2.2 Land drainage objectives

The Council's LTP includes land drainage within the flood protection and control works group of activities. Under land drainage the following is described:

"***What we do***

Waikato Regional Council manages a system of natural and built infrastructure to provide adequate land drainage to support productive pastoral (and other) farming. The Council has oversight of 92 land drainage schemes which were set up based on a historic network of drains. Each scheme is fully funded under its own targeted rate.

Why we do it

Land drainage services safeguard the economic wellbeing of the region by maintaining the drainage network to provide landowners the ability to manage the water table on their properties, reducing surface flooding resulting from rainfall events and maintaining water levels to support healthy pasture. Without these drainage networks, these areas of land would be less productive."

Land drainage is noted as contributing to the following Community outcomes

- Strong economy; Primary focus
- Healthy environment; Contributes to

1.3 Land drainage vision

Taking into account the Council's vision and mission plus the land drainage objectives and purpose, the following vision has been developed for land drainage management:

"Effective and affordable rural drainage networks"

1.4 Purpose of land drainage

Land drainage essentially has two purposes;

1. The primary purpose of land drainage is to allow landowners the ability to manage the water table within their properties to support pastoral farming.
2. The secondary purpose is to clear ponded water within an agreed timeframe to limit pasture damage.

To achieve this, the Council maintains a primary network of drains to an agreed standard that is fair to all ratepayers. Within a property it is the landowners' responsibility to drain their water to the Council drainage network where the Council manages the water to the rivers and streams where it freely drains to the sea. A performance target has been adopted to clear ponding from rainfall events up to a 10 year return period (10% AEP) within a 3 day period where gravity drainage and receiving water levels allow.

2 Land drainage overview

2.1 Drainage history

Land drainage has a long and complex history within New Zealand. Drainage has been implemented by individual landowners, by territorial authorities, by historic autonomous drainage boards and directly by Central Government. An outline of that drainage history relevant to the Waikato Region is provided in Appendix 1 on page 64.

2.2 Background

In the Waikato Region there are rural areas of flat land that have limited natural drainage outlets. Over time, as the land has been developed, networks of drainage channels have been constructed within these areas to provide adequate land drainage to support farming and to alleviate flooding. Many of these channels are modified river or stream channels and most are completely artificial channels excavated historically to drain wetlands or areas with high water tables.

Within the region there are many thousands of kilometres of drainage channels and those that are the responsibility of the Council are only a small proportion of the total number drainage channels. Without these drainage networks, the areas of land involved would be much less productive and in some places completely unproductive and inaccessible. To keep the land productive the drainage channels need to be maintained and that responsibility primarily sits with the landowners where the channels are located, be it private land or public land.

Many of the developed areas of flat land have been formalised to constitute land drainage areas, some managed by the Council, some managed by territorial authorities (TAs) and some are self-managed. Within these drainage areas a primary network of drainage channels is maintained to a consistent standard by the Council on behalf of the landowners so that any individual landowner does not have to rely on downstream landowners for channel maintenance in order for them to adequately drain their land, where gravity drainage and receiving water levels allow.

The Local Government Act 1974 (LGA), Part 29, Land Drainage and Rivers Clearance is the relevant legislation that sets out how land drainage is to be managed. Under the LGA the broader responsibility for managing land drainage clearly sits with the TA's, although the Council, as a local authority, has some powers under the more historic Land Drainage Act 1908 (LDA). The LGA Part 29 only provides TA's with the ability to manage drainage and isolated river works throughout their respective districts and regional councils are specifically excluded from operating under this part of the LGA, except for those specific drainage areas that are the regional council's responsibility.

As part of the local authority restructuring, the Orders in Council for Local Government Reform 1989 (OCLGR) gave the Council the responsibility for nine autonomous land drainage boards within the WRC boundaries. Those areas are:

- Thames Valley,
- Taupiri,
- Eureka,
- Te Rapa,
- Aka Aka/Otaua,
- Fencourt,
- Hautapu,
- Rotomanuka and
- Ohaupo/Ngaroto

Since 1989 the Council has reviewed its catchment, river and flood protection responsibilities and established funding and work programmes within 8 catchment zones across the entire region. This process has resulted in a number of TA's transferring their drainage district responsibilities to the Council over time for both the flood protection and drainage activities. Those transfers have included:

- In 2002 the project Watershed funding system was established by the Council over the Waikato River catchment. Within the Project Watershed process Otorohanga District Council divulged its drainage area responsibilities to the Council. Most of the areas involved were established over rivers and streams and the activities in these areas are now managed within the Waipa Zone river management programme.
- In 2009 the Council reviewed the funding policies for the Waihou Piako zone that included extending the river management services within the Piako catchment. This extension of service included that the Piako River management works maintain stream channels within many of the Matamata Piako District Council drainage areas reducing the need for these drainage areas to remain operational.
- In 2010, Franklin District Council transferred its responsibilities for 16 of its land drainage areas to the Council. The exceptions were, Ohairoa, Whiskey Flats, Horseshoe and Punga Punga that all wished to be privatised, and Taramaire in the Firth of Thames which was transferred to Hauraki District Council.
- In 2010 as part of the Auckland Super City amalgamation, the drainage areas that did not transfer to the Council became the responsibility of Waikato District Council.
- In 2011 Waikato District Council transferred its responsibilities for 22 rural drainage areas that drained to Lower Waikato zone pumpstations to the Council.
- In 2012 Waikato District Council transferred its responsibilities for its remaining 21 drainage districts that drained directly to rivers and streams to the Council (excluding Travers Road and Tamahere as the land use within these areas was proposed to become residential or lifestyle rather than rural).

A summary of the drainage area and subdivision responsibilities adopted by the Council or given to the Council through the OCLGR and the later transfer of responsibilities from TA's is provided in Table 2 on page 70.

Waipa District Council historically had 25 drainage areas and in the early 90's it took the approach of disestablishing the individual areas and turned the whole of the Waipa District into a drainage area. The intention was to put the responsibility for drain maintenance back to individual landowners and a small rate was established over the rural areas within the district to monitor the landowners' activities and undertake as required maintenance across the main channels within the district.

Waipa District staff have advised that they would like to transfer their drainage responsibilities to the Council.

Through responsibilities given to the Council under OCLGR and transfers of responsibility from TA's, the majority of drainage areas within the Waikato Region are now the responsibility of the Council (84 drainage areas or subdivisions of drainage areas and 2,063km of drains). Of the eleven TA's within the Waikato Region, five manage their own drainage areas with Hauraki District having a substantial drainage programme as much of the Hauraki Plains that sits within Hauraki District requires drainage to support farming.

The Council is only responsible for maintaining that primary network of drainage channels within drainage areas. All other drainage channels within drainage areas and outside of these drainage areas are considered to be "private" drains and are the responsibility of the landowners to manage. The exception to this is those river channels that are the responsibility of the Council through its river management works.

Figure 2 below illustrates the areas in the Waikato region where drainage areas are currently managed by the Council and TA's. The following sections provide a brief description of the drainage area responsibilities and management for WRC and each of the TA's.

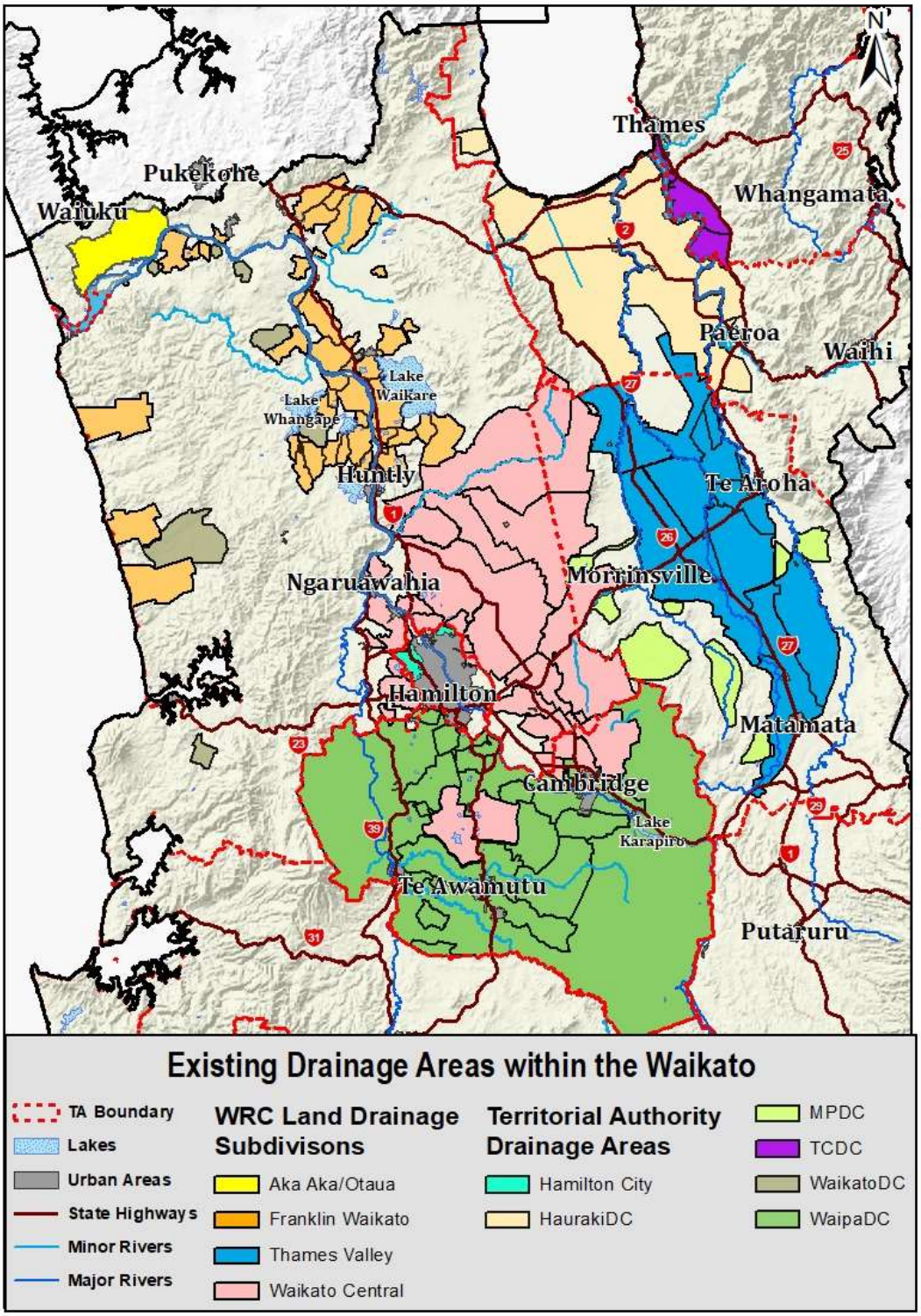

Figure 2: WRC and Territorial Authority drainage areas

2.3 Regional Council land drainage services

The land drainage service is only provided in specific drainage areas that are the responsibility of the Council. It includes the maintenance of a primary network of drains that allows landowners to manage their ground water levels to support pastoral farming where receiving water levels allow. It also includes clearing any ponded water from paddocks within certain timeframes, where gravity drainage and receiving water levels allows, to avoid pasture damage.

The land drainage activities are managed and reported to Council through four land drainage advisory subcommittees that are made up of representatives from the drainage areas. Those four subcommittees are:

Subcommittee	Number of drainage areas or subdivisions	Number of individual drains	Total length of drains involved (km)	Benefitting area (hectares)
Waikato Central	25	764	963.7	92,700
Franklin Waikato	49	178	255.9	13,725
Aka Aka Otaua	1	46	83	4,838
Thames Valley	9	505	760	60,877
TOTALS	**84**	**1,493**	**2062.6**	**242,426**

An alphabetical list of all of the Council's drainage areas and subdivisions, what authority they were previously managed by and which current relevant subcommittee they report to is provided in Table 1 in Appendix 2 on page 68.

2.3.1 Drainage advisory subcommittees

As the land drainage programme is implemented through a partnership with landowners there is very strong landowner input to the work programmes and to the administrative structure that oversees the management of the drainage areas. The current WRC land drainage administrative structure is summarised below in Figure 3.

Figure 3: WRC land drainage administration structure

The subcommittees are made up of representatives from the drainage areas and subdivisions appointed by the Council, the constituent councillors for the relevant subcommittee areas and the relevant Chair of ICMC. Where the drainage areas or subdivisions are relatively large there is one representative on the subcommittee and where the drainage areas are small, one representative will represent two or more drainage areas.

The Chair of the drainage advisory subcommittees is also a voting member of the relevant zone catchment committees. e.g. the Chair of the Franklin Waikato Drainage Advisory Subcommittee is a member of the Lower Waikato catchment committee.

In addition to the subcommittee representation, each drainage area or subdivision has a local drainage contact person who is the person that WRC staff initially communicate with when preparing and implementing work programmes. This drainage contact person is the local voice for the drainage ratepayers to WRC staff and the drainage advisory subcommittee members. In some instances the local contact person is also the drainage advisory subcommittee representative. The physical location of the drainage areas reporting to each of the drainage advisory subcommittees is shown in figure 4 below.

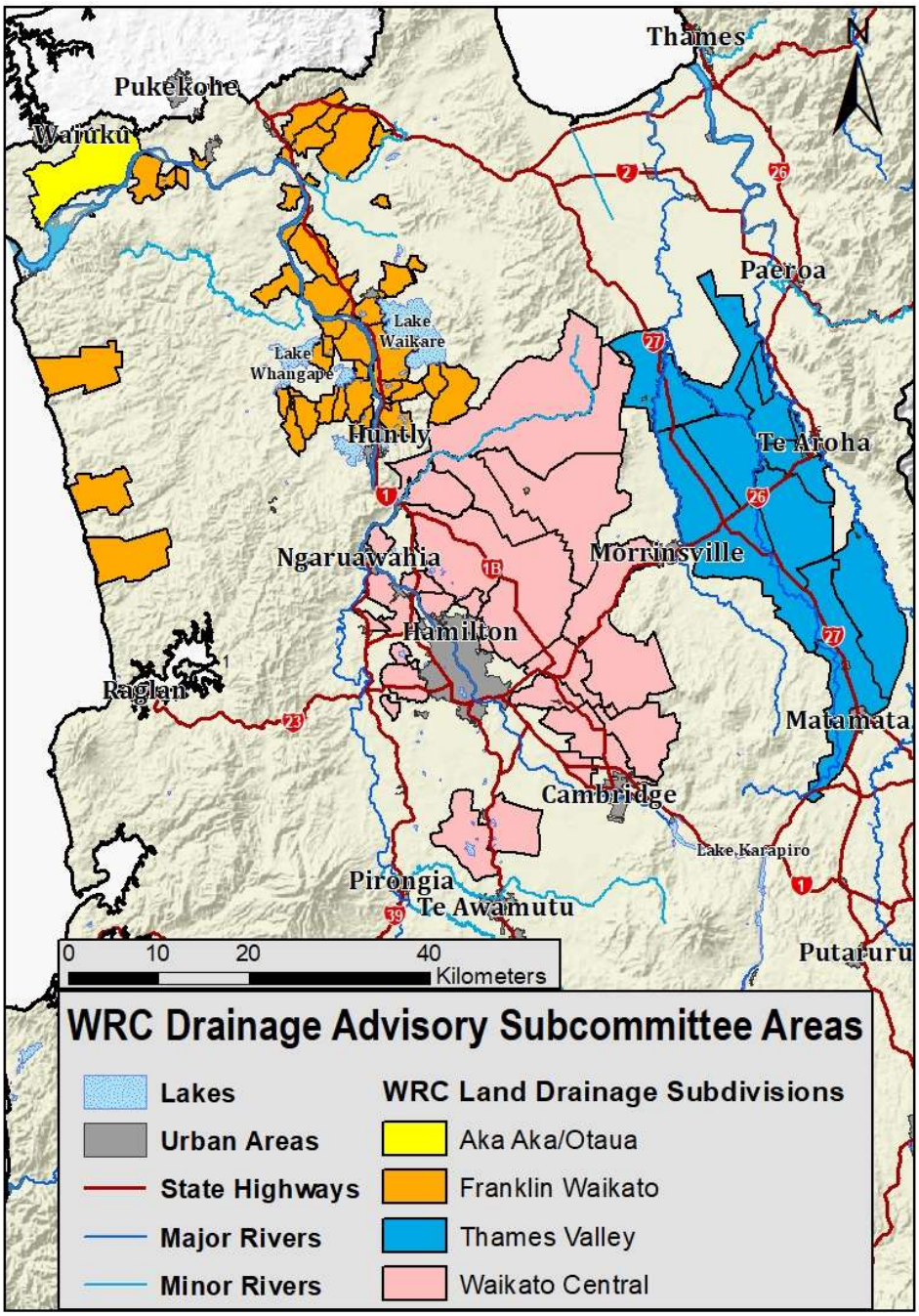

Figure 4: WRC drainage advisory subcommittee areas

2.3.2 Drainage area descriptions

A brief overview of the drainage areas reporting to the four drainage advisory subcommittees is provided below. A more detailed description of the individual drainage areas and their subdivisions is provided in Appendix 2, commencing on page 72.

Many of the larger drainage areas are divided into a number of subdivisions and the smaller areas are drainage areas within their own right. The drainage area or subdivision boundaries are the legally described boundaries of the areas within which the drainage service is provided. The drainage areas are generally based on 'communities of interest' or areas where the drainage service is required and are parts of catchments, as that is the historic approach to establishing the drainage areas, and the considerations at the time were only of areas or properties that directly benefitted from the drainage work. The Taupiri drainage area is the exception to this as the formation of the former Taupiri Drainage and River Board area included the entire watershed that drained to the Mangawara River.

2.3.2.1 Waikato Central

The Waikato Central drainage advisory subcommittee oversees the drainage programme for the areas in the Hamilton Basin, or all of the areas in the Waikato and Waipa catchments south of Taupiri (pink in Figure 4). This subcommittee meets four times each year.

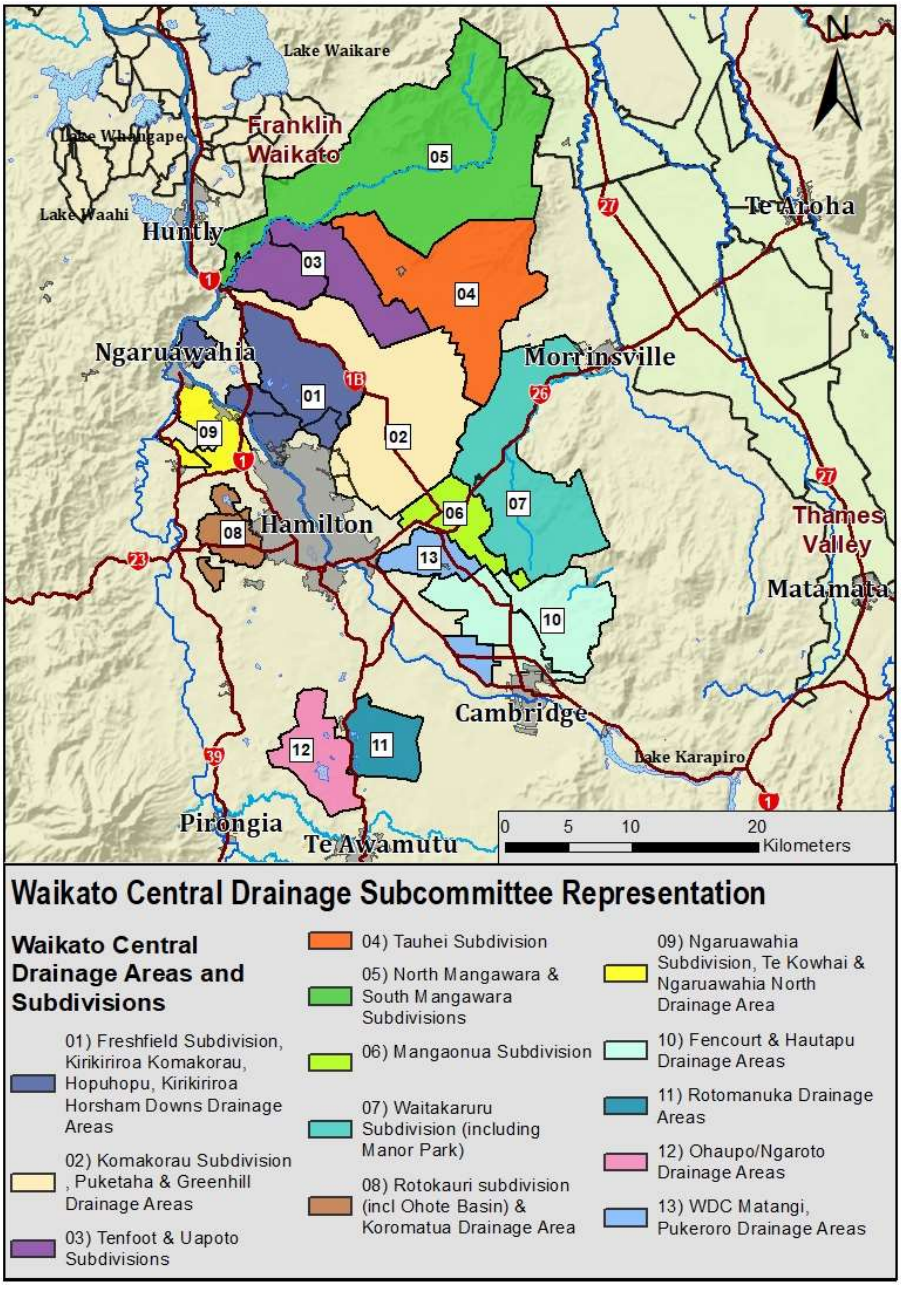

Figure 5: Waikato Central drainage areas, subdivisions and subcommittee representation

The subcommittee area includes seven of the former drainage board areas plus ten of the areas transferred from Waikato District that drain directly to rivers or streams. Figure 5 above shows the locality of the drainage areas and subdivisions within the Waikato Central area and each colour highlights the collection of drainage areas or subdivisions that have a representative on the drainage advisory subcommittee.

WRC staff carry out the day to day management and maintenance of most of the drainage systems and report to the subcommittee who in turn report to the Council's ICM Committee.

The Rotomanuka and Ohaupo/Ngaroto drainage areas have their work programmes organised and implemented by the local drainage area representatives in consultation with WRC staff, who approve payments to contractors. These two drainage area representatives are paid an annual gratuity for undertaking this work.

The Matangi drainage area is self-administering in that the work programme is prepared and implemented by the local drainage contact person, who is also the subcommittee representative. (See Section 2.3.2.5 on page 16)

The Tamahere drainage area was not transferred to the Council but kept by WDC as they considered that the issues in that area are more of an urban nature and are managed directly by WDC.

2.3.2.2 Franklin Waikato

The Franklin Waikato Drainage Advisory Subcommittee oversees the management of the drainage areas transferred to the Council that lie within the Lower Waikato north of Taupiri and those along the West Coast (orange in Figure 4). This subcommittee meets twice each year.

Figure 6 below shows the locality of the drainage areas and subdivisions within the Franklin Waikato subcommittee area and each colour highlights the collection of drainage areas that have a representative on the drainage advisory subcommittee.

The Waikato and former Franklin District drainage areas within the Franklin Waikato subcommittee total 49 and include 16 areas from Franklin, 21 areas from WDC that drain to LWWCS pumpstations and 12 areas that drain directly to lakes, rivers or the West Coast. The FDC drainage areas were transferred to the Council in 2010, the WDC areas that drain to LWWCS pumps were transferred in 2011 and the remaining areas were transferred in 2012.

WRC staff carry out the day to day management of the drainage systems and report to the subcommittee who in turn report to the Council's ICM Committee.

The Meremere East and Churchill drainage areas are self-administering in that the work programme is prepared and implemented by the local drainage contact person. (See Section 2.3.2.5 on page 16)

The Travers Road drainage area near Te Kauwhata was not transferred to the Council but kept by WDC as they considered that the issues in that area are more of an urban nature and are managed directly by WDC.

The present funding system maps and rating lists were inherited from the respective TA's and the Council adopted a funding policy for each of the three groups of areas transferred.

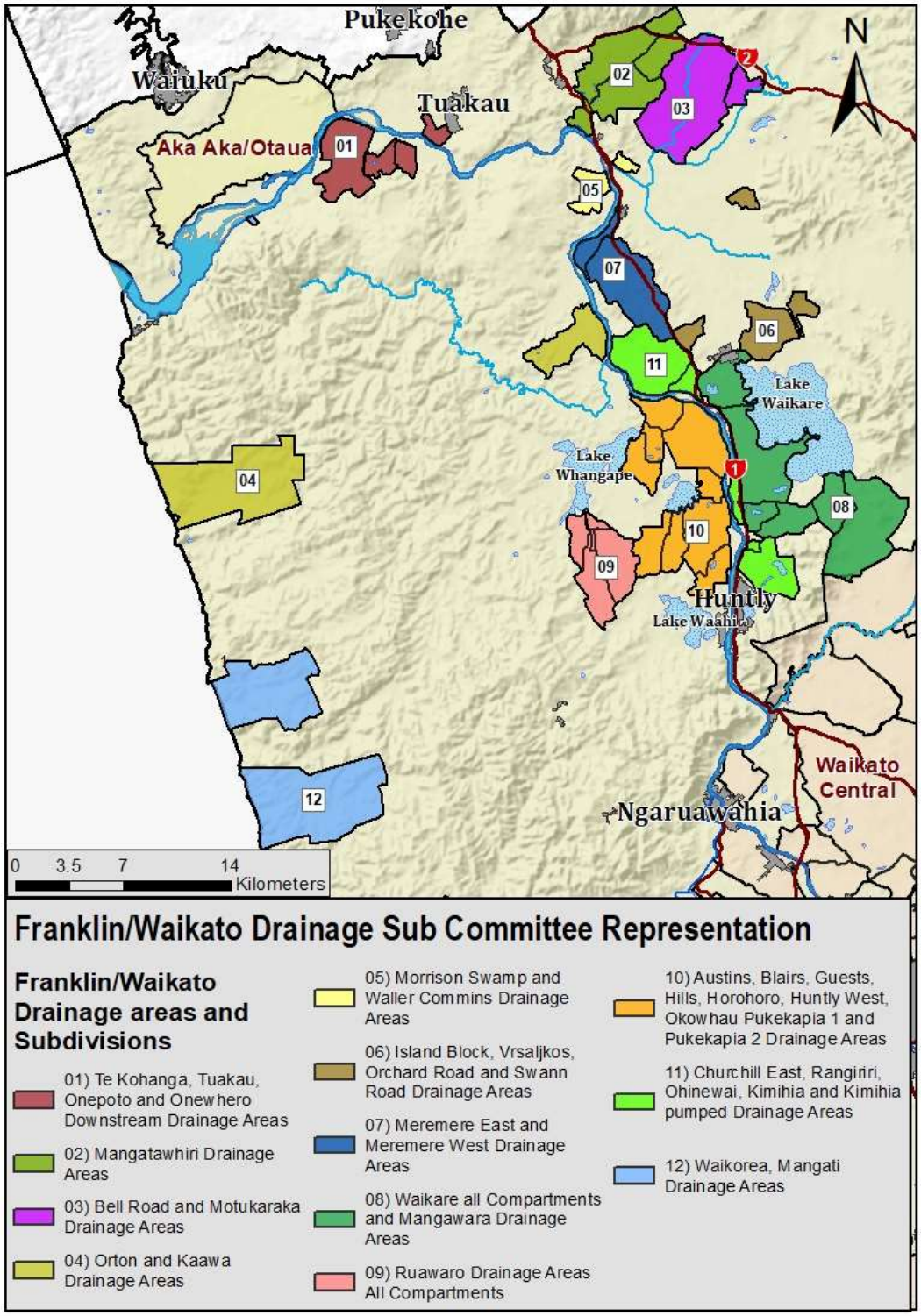

Figure 6: Franklin Waikato drainage areas, subdivisions and subcommittee representation

2.3.2.3 Aka Aka Otaua

The Aka Aka Otaua Drainage Advisory Subcommittee oversees the work programmes in the Aka Aka/Otaua drainage area that covers the flat land adjacent to the Waikato River southwest of Pukekohe (yellow in Figure 4). This subcommittee includes 7 local landowner representatives and meets monthly.

In this area the subcommittee members are active as volunteers supporting WRC staff to implement the work programme through monitoring the area, being involved in directing the spray contractor and completing minor maintenance work within the area. This Subcommittee liaises with Council staff on a regular basis, and reports to the Council's ICM Committee.

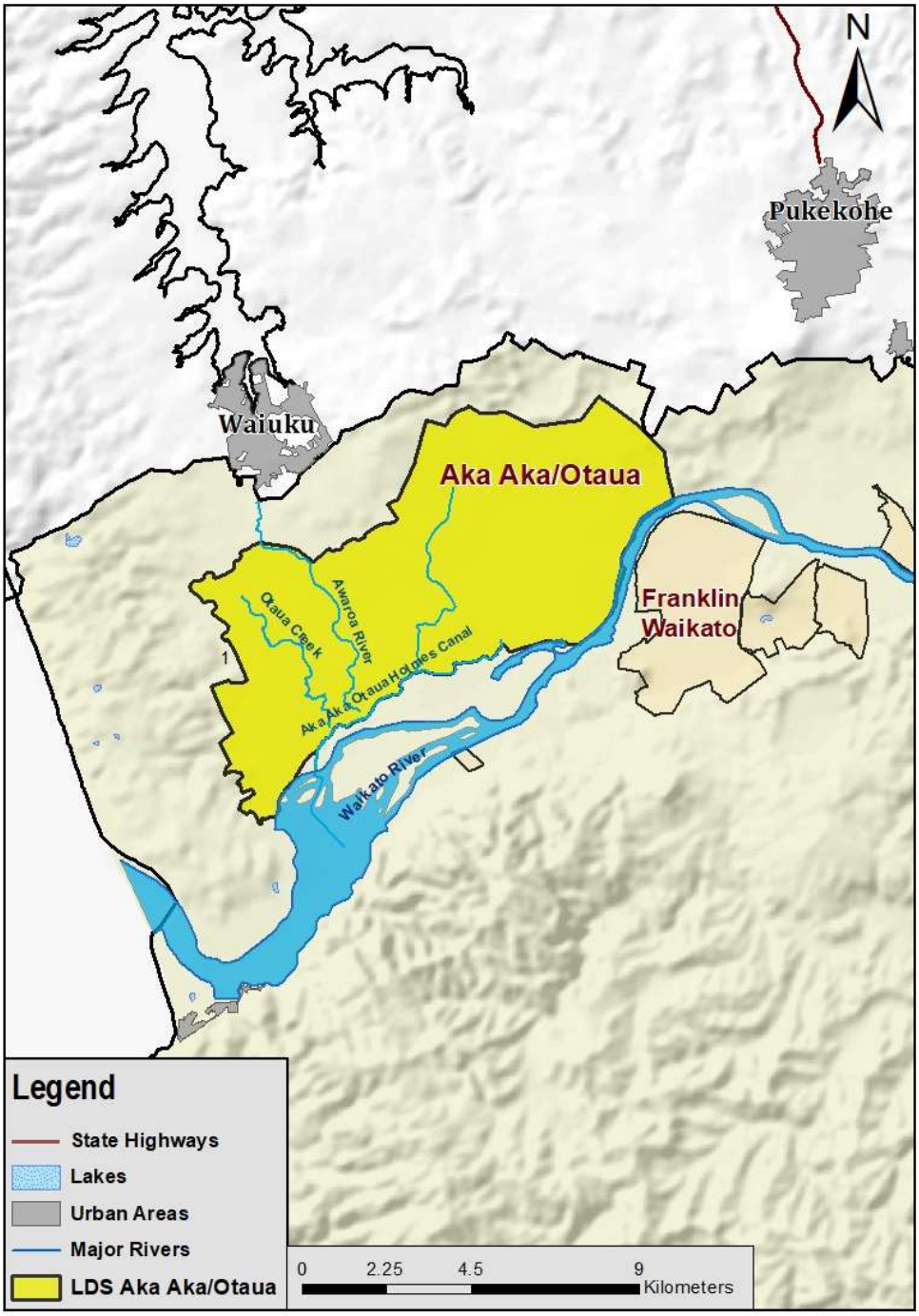

Figure 7: Location of Aka Aka/Otaua drainage area

2.3.2.4 Thames Valley

The Thames Valley Drainage Advisory Subcommittee oversees the work programmes within the Thames Valley drainage area (blue in Figure 4) that covers an area from Tahuna and Tirohia in the north to Matamata in the south. This subcommittee meets four times each year.

The drainage area ultimately sheds water into three rivers; the Piako River, the Waitoa River (the major tributary of the Piako River), and the Waihou River.

The drainage area is divided into nine subdivisions and also has four additional funding systems to fund the running and operating of the relevant Waihou and Piako scheme pumpstations. The drainage advisory subcommittee is made up of 9 local representatives, one from each of the subdivisions and figure 8 below shows the locality of the drainage area and its subdivisions.

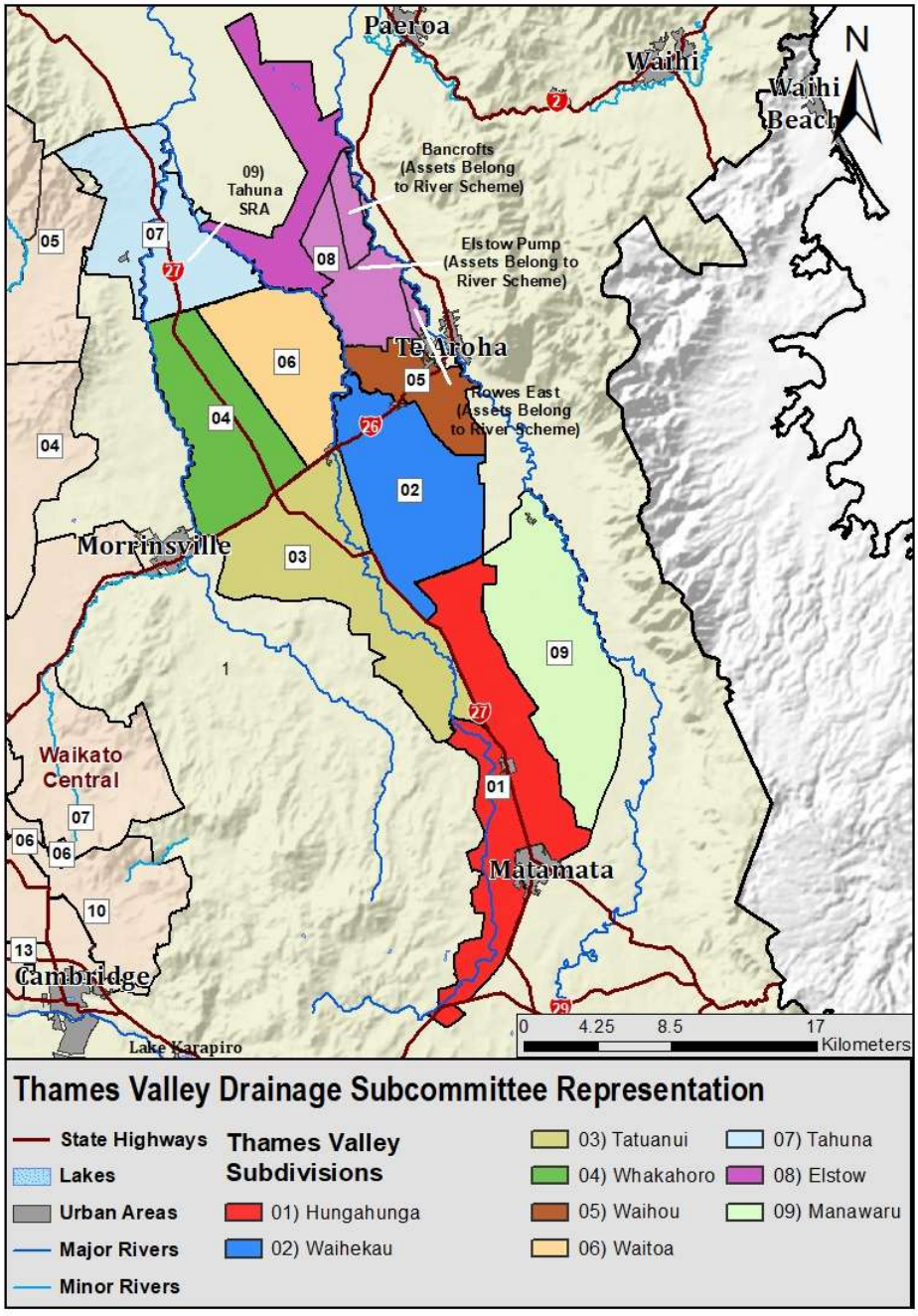

Figure 8: Thames Valley drainage area subdivisions and subcommittee representation

WRC staff carry out the day to day management of the drainage systems. Staff report to the drainage advisory subcommittee who in turn report to the Council's ICM Committee.

The effectiveness of most of the Thames Valley drainage system relies largely on the Waihou and Piako river schemes. The lower lying areas within Waihou, Elstow and Tahuna subdivisions are protected from river flooding by the Waihou and Piako river scheme stopbanks and floodgates, and drainage in times of high river levels is provided by pumps. Much of the remaining areas freely drain to the main rivers and rely on those channels being adequately maintained. For this reason, most of the drainage ratepayers also pay separate rates to one or both of the river schemes.

2.3.2.5 Self-administered drainage areas

Four drainage areas that are the responsibility of the Council are self-administering. For each of these areas there is an agreement between the Council and the drainage areas that sets out obligations and responsibilities of both parties (Template Document #3037240). Within these areas there is a local drainage contact person who, on behalf of the ratepayers, is responsible for providing the drainage service in the area. The representative decides on the work programme, arranges for the contractors to undertake the work and makes the payments directly to the contractors. The Council collects the rates from the area and transfers an annual amount to a separate bank account for the drainage area from which the costs of the work are paid.

The Council holds any necessary resource consent for the work in these areas and the local representative is responsible for abiding by the conditions of those resource consents.

The areas that are currently self-administering are:

- Churchill East Franklin Waikato
- Meremere East Franklin Waikato
- Orton Franklin Waikato
- Matangi Waikato Central

2.3.3 Drainage responsibilities under the act

Prior to local government reorganisation in 1989 the former drainage boards were established and managed under the Land Drainage Act 1908 (LDA) and the Taupiri Drainage and River District Act 1929. Territorial authorities established and managed drainage districts under the LGA. Local government reorganisation in 1989 resulted in the constitution of the Waikato Regional Council and the Council was given nine former drainage boards in its region to manage, amongst many other roles. The nine areas were deemed to be constituted under the LGA, and therefore they are to be managed in accordance with the LGA. The LGA was reviewed in 2002 but Part 29, Land Drainage and Rivers Clearance, was not repealed and effectively remains part of the LGA 2002. Since 1989 the Council has accepted responsibility for a further 59 drainage areas from Waikato District Council and the former Franklin District Council and they are all managed by the Council under the LGA, Part 29.

The introduction of the Resource Management Act 1991 (RMA) changed the way that natural resources were managed and resulted in amendments and repeal of most of the former acts that the regional councils operated under. The roles and responsibilities of the regional councils regarding river and drainage management are now detailed in the following statutes:

- Land Drainage Act 1908 (LDA)
- Taupiri Drainage and River District Act 1929 (TDRDA)
- Soil Conservation and Rivers Control Act 1941 (SCRCA)
- Public Works Act 1981 (PWA)
- Civil Defence Act 1983 (CDA)

- Orders in Council for Local Government Reorganisation 9 June 1989 (OCLGR)
- Resource Management Act 1991 (RMA)
- Local Government Act 2002 (LGA), includes Part 29 of the LGA 1974
- Local Government (Rating) Act 2002 (LGRA)

The funding provisions and decisions about how the drainage systems are financed are provided within the Local Government (Rating) Act 2002 (LGRA).

In addition to the legislation there are also a number of key statutory policy documents that have guided the implementation activities proposed within this drainage management plan. The relevant legislation and policy documents are summarised in Appendix 3 on page 88.

2.4 WRC Drainage activities

The activities that are included in the land drainage programme are primarily related to maintaining drainage channels within the specific drainage areas that are the responsibility of the Council. It does not include the management of district council drainage areas, the wider general drainage management responsibilities outside of drainage areas or urban stormwater as those responsibilities sit with the territorial authorities (TA's). The maintenance of private drains within properties is the responsibility of each landowner.

The drainage general budgets provide the support and servicing to ratepayers. See Section 6.3.1 on page 40 for the detailed activities and tasks involved in the drainage general budgets.

2.4.1 Drain maintenance

The maintenance of the network of Council drains is undertaken to allow landowners to manage their own water tables by maintaining their own network of private drains, to support pastoral farming. The work includes maintaining the Council drainage channels to a depth and size that allows gravity drainage and the removal of ponded water from rainfall events up to a 10 year return period (10% AEP) within 3 days, with the intent of avoiding pasture damage.

Typical drain maintenance work includes:

1. Removing isolated blockages and obstructions.
2. Spraying vegetation that obstructs flow and accumulates sediment.
3. Mechanical removal of aquatic weeds and vegetation.
4. Mechanical removal of accumulated sediment.
5. Repairing or controlling channel erosion.
6. Re-laying culverts to improved inverts.
7. Bed stability structures, such as weirs, to stabilise the channel beds and gradients.

2.4.2 Flood protection work

The flood protection work includes stopbanks, floodgates and detention dam structures that aim to reduce flood risks. The stopbank works protect the adjacent farms from flooding from upper catchment runoff but the local catchment water still ponds behind the stopbanks until the main stream water levels recede. The detention dams manage peak runoff flows from the upper catchment and release the water in a more controlled manner to reduce downstream flooding.

Typical flood protection work includes maintenance to ensure the structures will operate as expected and periodic renewals to replace worn out components and bring the assets back up to design levels.

The land drainage programme is responsible for three small flood protection schemes and two detention dams. The schemes are:

Kaawa
The Kaawa scheme over the lower reaches of the Kaawa River that drains to the West Coast some 12km south of Port Waikato. This scheme provides flood protection to three properties near Limestone Downs.

Ohote
The Ohote flood protection scheme in the Rotokauri subdivision of the Te Rapa drainage area. This scheme is in the upper reaches of the Ohote Stream, upstream of Laxon Road, and is designed to cope with increased runoff from urban development in the Western Heights area of Hamilton City.

Zig Zag
The Zig Zag flood protection scheme in the lower reaches of the Zig Zag drain in the Elstow subdivision of the Thames Valley drainage area. This scheme provides flood protection to two properties in the lower reaches of the Zig Zag drain that suffer from flood ponding due to high water levels in the Waitoa River.

Fullerton Green detention dam
Fullerton Green detention dam is in the Rotomanuka drainage area and is designed to manage peak flows from a south west catchment of the Moanatuatua peat area that drains into Mystery Creek within the Central Waikato zone.

Kite Road detention dam
Kite Road detention dam is also within the Rotomanuka drainage area and is designed to manage peak flows from a northwest catchment of the Moanatuatua peat area that drains into Mystery Creek within the Central Waikato zone.

2.4.3 Pumpstations

The Council is responsible for the maintenance and operation of 118 pumpstations with all but three of these pumpstations being the responsibility of the various zone flood protection programmes. The zones are responsible for the maintenance and refurbishment of the pumpstations.

In the Lower Waikato zone, the drainage areas that are associated with the zone flood protection pumpstations are responsible for maintaining the pumpstation weed screens only and any associated costs are met by the drainage area directly. Much of this work is undertaken by the landowners themselves as volunteers with routine checks and tidying up the sites undertaken by Regional Council staff. Power costs are paid for by the zones.

In the Waihou Piako zone the drainage areas that are associated with the zone flood protection pumpstations are responsible for maintaining the pumpstation weed screens plus paying for the power used by the pumpstation. This work is undertaken by Regional Council staff in the Thames Valley area and by Hauraki District Council staff within Hauraki District.

The land drainage programme is responsible for maintenance and operation of three pumpstations and the operation only of five other pumpstations.

The three pumpstations fully funded by the drainage programme are:

1. Freshfield pumpstation in the Freshfield subdivision of the Taupiri drainage area.
2. Manor Park pumpstation in the Waitakaruru subdivision of the Eureka drainage area
3. Arnet pumpstation in the Tahuna subdivision of the Thames Valley drainage area

There is a separate targeted rating system to fund the Freshfield and Manor Park pumps and maintain their catchment feeder drains. This rate is in addition to the normal drainage subdivision rate that maintains the downstream drains.

The Arnet pump is funded through the Tahuna Separate Rating Area (Tahuna SRA) funding system that also funds the operation of the two Piako pumpstations described below.

The Thames Valley drainage area includes the five pumpstations where the drainage programme funds their operation. The pumpstations are:

Waihou

1. Rowes East pumpstation
2. Ahikope pumpstation
3. Bancroft pumpstation

Piako

4. North Road pumpstation
5. Steiners pumpstation

There are three SRA funding systems to operate the three Waihou pumpstations, Rowes East, Ahikope and Bancroft. The operation of the North Road and Steiner pumpstations is funded by the Tahuna SRA. Operation costs for running the Waihou and Piako pumpstations includes paying for the power used by the pumps, keeping the weed screens clear of debris and managing the debris removed.

2.5 Territorial Authorities drainage responsibilities

All TA's have the primary responsibility for land drainage under the LGA Part 29, Land Drainage and Rivers Clearance. This part of the LGA is specifically for TA's, which excludes regional councils. The Council is only able to manage drainage within the specific drainage areas that are its responsibility through the OCLGR and the transfers of responsibilities from TA's.

The following sections outlines the drainage work that is undertaken by each of the TA's within the Waikato Region.

2.5.1 Waipa District Council

Waipa District has the second largest drainage programme of all TA's within the region, after Hauraki. Historically Waipa managed 25 drainage districts but in the early 1990's it disestablished the individual areas and established the entire district as a drainage area. The intention was to put the responsibility for drain maintenance (approximately 240km) back to the landowners and undertake liaison and enforcement to ensure the maintenance work happened. A small rural drainage rate was established from the entire district to fund the monitoring and a small amount of direct work undertaken.

In 2014/2015, Waipa initiated a review of drainage services due to numerous drainage issues it was experiencing. Their current service includes spraying all community drains if necessary and cleaning approximately 24km of the community drains. Their 2017/18 rate for rural drainage is approximately $530k.

Waipa District has advised that it is aiming to achieve the same level of service as provided by WRC and that they would like to transfer their drainage responsibilities to the Council. In Oct 2014, WRC advised Waipa DC that it would need to re-establish a maintenance programme in their drainage districts, agree on levels of service, establish the channels to a good condition, gain consents if necessary and agree on rates or method of funding. Once all these parameters are agreed on and the assets assessed to be in good shape, then the Council may consider a transfer of responsibility.

2.5.2 Hamilton City

Hamilton City is surrounded by drainage areas, particularly on its west, north and east sides. As the City has grown in area the drainage responsibilities within the expanded City boundaries that were previously within a drainage area have become the responsibility of the City. The areas where these responsibilities have changed are:

- Te Rapa
    - Exelby Road to Baverstock Road area
    - Ngaruawahia subdivision, Ruffell Road and Onion Road area
- Kirikiriroa Horsham Downs, area south of Kay Road
- Freshfield pump catchment, a small area near Borman Road
- Greenhill

Parts of Hamilton City do not drain to the Waikato River but instead drain into rural drainage networks. Much of the expanding parts of the City in the north and west are encroaching into or having an effect on the rural drainage network and this issue is further discussed in Section 7.3 on page 47.

2.5.3 Waikato District Council

Waikato District and its predecessors have historically had a strong involvement in both land drainage and flood protection. The area covered by Waikato District includes most of the land benefitting from the LWWCS works and its associated drainage areas. Historically each of the drainage areas associated with the river included flood protection works and the drainage rate funded both aspects. The TA's of the time also became involved in many isolated river works that were not necessarily associated with drainage areas as they were seen as one off works to be maintained by the landowners once completed.

Section 2.2 above outlines the process that transferred the responsibilities for the drainage area assets from Waikato District and the former Franklin District to the Council and that process separated the flood protection assets from the land drainage assets as the Council manages and funds the two functions separately. In total, between 2010 and 2012 responsibilities for 59 separate areas were transferred to the Council along with each of their funding systems.

Within the former Franklin District area six areas did not transfer to the Council.

- The Taramaire area was transferred to Hauraki District as it was within the Kaiaua coast area that became Hauraki's responsibility.
- It is understood that Ohairoa was privatised by Franklin District Council.
- Four areas, Whiskey Flat, Horseshoe, Onehwero Upstream and Punga Punga indicated to the former Franklin District Council that they would like to be privatised but as that process was not completed with the Auckland Super City reorganisation, those areas became the responsibility of Waikato District Council.

Waikato District retained two small operating drainage areas, Travers Road near Te Kauwhata and Tamahere, south of Hamilton City as these two drainage areas were seen to have potential to become residential rather than rural in terms of predominant land use type. The Waimai drainage area drains to the West Coast and appears to be no longer operational.

Waikato District does not have a rural rate to manage any drainage issues that might arise outside of formal drainage areas and drainage activity is limited to that associated with the roading corridor.

2.5.4 Matamata Piako District Council

Matamata Piako District Council (MPDC) has 8 drainage areas that are no longer actively managed as most of the areas include stream maintenance that has become the responsibility of the Council through the Piako and Waihou scheme reviews. Those areas are:

- Maungahaumia; The Maungahaumia is a catchment north of Morrinsville and is a tributary of the Piako River. Its main outlet is included as a channel within the Piako river management programme. The Tauhei subdivision in the Taupiri area also has some responsibility for maintenance of a section of this drain downstream of Hangawera Road through consents it obtained to prevent flood overflows from the Maungahaumia from entering the Tauhei catchment.
- Kuranui; this area is west of Morrinsville and drains into the Waitakaruru Stream tributary of the Piako River and is no longer active.
- Mangatapu; this area is southeast of Morrinsville that drains rolling hill land and is a tributary of the Piako River. It is no longer active as landowners appear to be maintaining the channels.
- Tonepi-Topehaehae; this is a larger area south of Morrinsville near Kiwitahi and includes the lower reaches of the Toenepi and Topehahae Streams. The main outlets from this area are also now within the Piako River management programme and the area is no longer active.
- Piakoiti; this area includes the Piakoiti River which is now included in the Piako river management programme.
- Norfolk Downs; this area is southwest of Matamata and drains land on the west side of the Waitoa River. The main outlet for this area is also part of the Piako river management programme and the area is no longer active.
- Manawaru; this area lies between Manawaru and Te Aroha West townships and is between the Thames Valley, Waihekau and Manawaru subdivisions. It includes flat land and artificial watercourses that drain to the Waihou River. Most maintenance work today is undertaken by the landowners and the targeted rate is no longer collected.
- Shaftesbury; This area include the maintenance of streams from the Kaimai Ranges that are mostly now maintained by the Waihou river management programme.

MPDC has advised that it would like to transfer its drainage areas to the Council.

MPDC does not have a rural rate to manage any drainage issues that might arise outside of formal drainage areas and drainage activity is limited to that associated with the roading corridor.

2.5.5 Hauraki District Council

Hauraki District Council provides a significant, established land drainage service to the Hauraki Plains and Kaiaua areas and has strong political support for that to continue. The services are managed and reported through four drainage committees that report directly to Hauraki District Council, establishing levels of service and recommending annual or ongoing works programme. HDC then sets the rates to be collected on their behalf to fund these works.

Hauraki's land drainage programmes have an annual value of approximately $1.1million and are funded 15% by the district's general rate and 85% by targeted drainage rates. The targeted rates are applied through land value as that was seen as the fairest way of higher value, smaller area properties paying a higher level of rate as they contributes to higher costs associated with land intensification. HDC believes this is an equitable system that works well for their district.

Most of HDC's drainage districts lie within catchments covered by the Piako River or the Waihou Valley Schemes, which are operated by the council. The associated structures (floodgates and pumpstations) provide the outlets to the rivers for HDC's drainage districts. Drainage of the Hauraki Plains depends entirely on WRC's river scheme assets for protection from tidal and river flooding and for discharging runoff through outlets.

WRC and HDC cooperate closely. HDC appoints a representative to the WRC Waihou-Piako Zone Liaison Subcommittee. Staff at both councils share routine monitoring, inspection and minor

maintenance of the pump stations. In times of flood, staff and contractors from both councils work closely together.

It is understood that HDC is satisfied with the status quo in terms of the governance and provision of drainage services.

2.5.6 Thames Coromandel District Council

Thames Coromandel District Council (TCDC) has two active drainage areas associated with flat land in two areas along the east bank of the lower Waihou River, the Matatoki and Hikutaia/Wharepoa drainage areas. A third area did exist at Kopu but that area is now largely industrial land so is managed as stormwater.

Both remaining areas are still active with a small targeted rate to fund works in each area. There has been some historic interest from TCDC staff in transferring these areas to the Council but no progress has been made in this regards.

TCDC does not have a rural rate to manage any drainage issues that might arise outside of formal drainage areas and drainage activity is limited to that associated with the roading corridor.

2.5.7 Other Territorial Authorities

Of the remaining six TA's, five do not mention rural drainage in their annual plan and have no targeted rates for rural drainage. The exception is Waitomo District where a small targeted rural stormwater rate is applied for managing rural stormwater on the outskirts of towns and the work is undertaken as part of the urban stormwater programme.

3 Level of Service

This part of the drainage management plan states the Level of Service (LOS) provided, and details the operational requirements and design standards that have been adopted within the various areas to meet that LOS.

The level of service for land drainage as stated in the 2018-2028 LTP is:

"To provide reliable water table management on land within drainage schemes for the purpose of maintaining pastoral production"

The Assets LOS, Performance Measures and Targets set out in Table 6 of the Regional Asset Management Plan (RAMP) are:

Alignment	Requirement	Measure
Land Drainage		
System Adequacy	Reliable water table levels to ensure pastoral growth	Ponding from a 10% AEP rainfall event takes less than 3 days to remove surface water.
	Control effect of rain events	System designed to handle events with up to a 10% annual exceedance probability
System Maintenance	Land drainage assets maintained, repaired, and renewed	% of planned maintenance achieved each year, as agreed within each scheme

Figure 9: RAMP Performance Measures and Targets for Land Drainage

3.1 Operational Requirements

The operational requirements must not only meet the levels of service objectives but must also be within a sustainable management funding base (Section 6 on page 38).

The drainage network is required to operate so that the drainage objectives can be achieved. The operational requirements are:

- Provision and maintenance of an effective land drainage network that allows landowners the ability to manage the water table within their properties where gravity drainage and the receiving water level allows.
- Provision of the land drainage service to an agreed standard.
- Provision of a fair and equitable land drainage service to all ratepayers.
- Reduction of surface flooding resulting from rainfall events.
- The clearance of water from the land to avoid damage to pasture where gravity drainage allows.

3.1.1 Key Operational Issues

The key operational issues for the various drainage system assets are as follows:

a) Drain channel depth, capacity and stability
   - managing water levels
   - weed control
   - debris removal
   - sediment removal
   - erosion control

b) Culvert hydraulic capacity.
   - Correct culvert size and invert
   - Debris removal.

c) Stopbank design height and security.
d) Floodgate security.
e) Pumpstation serviceability.

3.2 Design Standards

The design standards for the drainage systems have been developed over a number of years by a mixture of hydrological design and experience. The standards have been adopted as those that have been observed to meet the drainage objectives, levels of service and operational requirements when applied. In some circumstances the nature of a subcatchment (catchment shape, porous subsoils) is such that the objectives can be met with a different standard and in those circumstances a different standard may be applied.

The adopted design standards for the different types of assets in the individual drainage areas are set out in the following sections. The standards are generally used for design purposes but where the objectives and level of service can be met by a different standard, the different standard may be applied after specific investigation.

Generic performance criteria for particular types of assets are set out in the Generic Guidelines for each type of asset (e.g. stopbank management guidelines, pump station management guidelines etc.).

3.2.1 Drain depths

Drain depths are generally the result of upstream and downstream drain invert levels, drain gradients, the ground levels along the drainage path and the water levels that are to be achieved to meet the drainage objectives. The critical area for having an adequate drain depth for land drainage is normally at the upstream end of the drain where the drain needs to be deep enough for the landowner to adequately drain their property into the council drain.

The most upstream drain in a network may be a Council drain or a private drain. In either circumstance the ideal depth of aerated soil to support pastoral farming is widely acknowledged to be 300mm to 500mm below the pasture surface. The WRC publication “For Peat’s Sake” in Section 4.2, managing your drains well states “drainage can be optimised by maintaining water levels at an average of around 0.5 metres below the surface”. Therefore, for a paddock to effectively drain it is reasonable to assume that the normal water level in a drain adjacent to a paddock should be a minimum of 600mm below the lowest ground level within that adjacent paddock for drainage to occur. This is not the water level during times of surface runoff or immediately after rain, but is the day to day water level that allows for water table management within the land or adjacent paddock.

Hence, where Council drains are the most upstream drain in a network they shall be a minimum depth of 600mm below the lowest ground level within the upstream property where this is achievable. (e.g. some drain bed foundations are sand and excavation below the water table can result in erosion of the bed material causing drain bank instability.)

3.2.2 Drain, culvert and floodgate capacity

The drainage system is designed to provide a consistent standard of drainage throughout the individual drainage areas. The drainage standard relates to removal of surface water only. The adopted standards have been observed to remove ponding from a storm with a 10% probability of occurrence in any one year (the ‘10 year storm’) within three days. The intention of this standard is to prevent significant pasture damage.

It is important that maintenance of the drainage system results in the same standard throughout the entire system as the intention is that ponding is shared throughout the entire system when runoff rates exceed the drainage system capacity. A variation in standard would result in ponding clearing from land that has a higher drainage standard and accumulating on land that has a lower drainage standard.

The following discussion sets out a simple logic for a design standard for drainage;
The worst storm for runoff in the drainage catchments, which tend to be relatively small catchments, is generally the 24 hour storm. The rainfall depth-duration-frequency tables for the drainage areas generally have a 10 year, 24 hour rainfall depth ranging from 90mm to 160mm, with most in the lower range and only those areas associated with the Coromandel and Kaimai Ranges having the higher intensities. If we use a typical 10 year, 24 hour storm rainfall depth of 120mm and 50% of the rainfall runs off, we have 60mm of runoff from the catchment. If we discharge 60mm over a 3 day period we have to discharge 20mm of runoff each day, or 20mm depth of water from the entire catchment over a 24 hr period.

Because of the different catchments and characteristics of each drainage area, the adopted runoff design standard for each drainage area varies. The following design daily runoff standards (runoff to be cleared within 24 hours) have been adopted for each drainage area and they are used when designing the upgrading of drains and culverts:

Drainage area	Design standards (depth of runoff per day)
Taupiri, Eureka and Te Rapa	**38 mm. (1 $^1/_2$ “)**
Thames Valley	**38 mm. (1 $^1/_2$ “)**
Fencourt, Hautapu, Rotomanuka, Ohaupo/Ngaroto	**25 mm. (1”)**
Aka Aka/Otaua	**10 mm. ($^3/_8$ “)**
Franklin areas	**Various but eventually 19mm from flat land and 38mm from hill land.**
Waikato District areas	**Various but generally 20mm**

Figure 10: Land drainage design standards

3.2.2.1 Taupiri, Eureka, Te Rapa and Thames Valley standards

The high standard for design within the Waikato Central and some Thames Valley areas essentially allows for some deterioration of the channels between cleaning. These areas contain a large number of council managed channels and they are not all maintained through mechanical cleaning every year, hence the higher standard they are constructed to allows for deterioration over a period of years before they require cleaning again to bring them back up to their constructed design standard. With more fencing of channels, improved land use practices and an improved spray programme, the frequency of cleaning for most gravity drained channels with the higher design standard ranges from 5 yearly to 20 yearly and is averaging approximately once every 10 years.

3.2.2.2 Aka Aka Otaua standard

The standard within the Aka Aka Otaua area is quite low but this area discharges into the Waikato River in its tidal reach so the design capacity will be considered at high tide where low gradients exist. This standard is then obviously, much higher at low tide when receiving water levels are low and steeper gradients will exist, resulting in higher discharge rates. Due to the relatively low standard adopted and the low gradients within the internal drainage network, little deterioration of the drain capacity can be tolerated. As such the network is machine cleaned frequently with most drains being machine cleaned up to three time each year.

3.2.2.3 Franklin and Waikato standards

In the Franklin and Waikato District areas the standards have varied and changed over the years as the earlier standards were reviewed and amended. In addition the standards adopted for pumpstation design are the same as those used for drain design. In this case it is therefore important that the drains are well maintained as a deterioration of the drain's capacity would mean that the drains could not deliver the design flows to the downstream pumps and floodgates. In these areas the frequency of drain cleaning ranges from annually, for some of the larger pump feeder drains, to up to 5 yearly for some of the more minor tributary drains.

The Franklin area includes all of the Waikato River tributaries and their drainage areas downstream of Mercer and includes the Maramarua River. In the Franklin area the standards in the past have been:

- 1961 - 1967 standard; 6.4mm (1/4") runoff per day from flat land and 25.4mm (1") runoff per day from hill land: ref. Motukaraka Swamp Drainage report 27 November 1961 and Flood protection and reclamation Mangatawhiri Swamp, 10 March 1967.
- 1972 standard; 19mm (3/4") runoff per day from flat land and 38mm (1.5") runoff per day from hill land.

The Waikato District area includes all of the Waikato River tributaries and drainage areas from Huntly to Mercer. In Waikato District the standards in the past have been:

- 12.7mm (1/2 ") runoff per day over the whole catchment area: ref. Letter re. Huntly West, Mr. H.C.C. Jones (Chief Engineer), 26/03/59
- 20mm runoff per day over the whole catchment area: ref. Memo – WDC, 12/12/00
- 25mm runoff per day over hill areas, plus 12mm runoff per day over flat land: ref. Memo – WDC, 12/12/00

3.2.3 Pumpstation capacity

Where sufficient gravity drainage cannot be achieved in a catchment due to the level of the receiving water that the drain discharges into, additional service through pumping may be provided. As outlined in Section 2.4.3 on page 18, most pumpstations are the responsibility of the various zone flood protection programmes with three pumpstations being the full responsibility of the land drainage programme.

The pumping capacity that has been provided was designed to augment any gravity drainage to such an extent as to clear ponding from a storm with a 10% probability of occurrence in any one year (the '10 year storm') within three days. In the Thames Valley area, for example, the pumping capacity was generally provided to clear 19 mm (3/4 of an inch) of runoff from the catchment area within 24 hours. The reason that this standard is less than that of the drain capacities in some areas is that a well maintained pumpstations will always discharge this rate, assuming that the delivery channels to pumpstations are up to standard, whereas in some areas the drains have an allowance for deterioration between cleanings.

Individual investigation is normally required for any proposed pump station, as specific standards have not been adopted in all drainage areas and rainfall depth and runoff rates vary throughout the region.

4 Obligations and operating practices

This part of the drainage management plan sets out the basic methodology that will ensure the drainage system continues to provide its benefits and retain its value. The overall objectives and operational performance criteria for the systems have been defined in previous sections of the plan. The specific drainage obligations, management practices and operating practices relevant for managing and maintaining the system to achieve these objectives and performance criteria are set out in the following sections.

General principles and strategies for the ongoing management of specific types of assets (i.e. drains, erosion protection works, fencing, stopbanks, pumpstations, and floodgates) are being developed within separate 'Management Guidelines' documents to define standard practices across all Council's drainage and flood protection systems.

4.1 Primary Obligations

The Council's primary obligation is to provide the land drainage service to the standards that have been agreed with the community in a fair and equitable manner. The level of service provided to ratepayers is to be consistent with the level of benefit that is determined, and is detailed within the funding systems.

The standards adopted within the drainage schemes and detailed in Section 3.2 on page 24, are broadly set out within some of the various funding system reports, historic investigation reports and operating manuals. The Council has the obligation and direct responsibility for ensuring that the benefits and objectives set out in the various reports are delivered. This is achieved through routine maintenance, refurbishment, and upgrading of the Council maintained drains and other associated assets.

4.2 Drainage Management Practices

4.2.1 Management Needs

In order that the drainage systems can continue to provide benefits and retain value, three major functions need to be performed. These functions can be identified as:

a) Owner or manager of the assets
b) Quality assurance or auditor of asset performance
c) Physical maintenance of the asset.

4.2.2 Owner/Manager

The Council has a stewardship role in that it is the overall 'owner' of the responsibility to provide the drainage system benefits and to retain their value to the standards agreed with the community. For the Council's drainage responsibilities, the functions, duties and powers are provided by the LGA. The role requires that the overall performance standards for the drainage systems are continuously being reviewed, analysed and amended where appropriate through agreement with the community.

An unusual characteristic of the drainage system is that very few of the assets are actually 'owned' by the Council. The land that the drains, fencing, culverts and other assets are built on is generally owned privately, or by Railways, District Councils or NZTA. However, to achieve the objectives of the drainage system, ownership of the assets is less important than how the assets are managed and that management and maintenance is very much a partnership between the Council, the landowners, the TA's and the other agencies that own land where assets and drainage infrastructure are located.

This also means that the drainage network is not depreciated as we do not technically own the asset. However we record the value of capital works on our asset register to be written off if we transfer "stewardship" to another party in the future.

4.2.3 Monitoring and reporting

The Council staff and resources are currently used for the bulk of all operational monitoring and inspection work in the Thames Valley, Waikato Central and Franklin Waikato areas. Some one-off type work (such as Health & Safety and RMA compliance auditing etc.) has been contracted out in the past where in-house resources have not been available. In the Aka Aka Otaua area much of the operational monitoring is undertaken by the drainage advisory subcommittee members as volunteers.

The partnership with landowners is important as landowners have a vested interest in the maintenance of the system as their pastoral production can be affected if the system is not maintained adequately. Landowners therefore provide information to staff or drainage representatives on the condition of their part of the drainage network, especially if they consider that the drainage objectives are not being met.

Routine monitoring and inspection work is carried out in-house using Council resources together with information provided by landowners or farmers. One-off jobs for which the Council does not have adequate resources or which require specialist expertise not available in-house will continue to be contracted out. It is envisaged that current mechanisms for service delivery will continue in the immediate future.

4.2.4 Maintenance work

Almost all of the drainage assets require annual maintenance work to keep the system operating to meet the drainage objectives and level of service. The management strategy for this work shall be to undertake the regular routine work (spraying and machine cleaning) at the most suitable time of the year where that is practical. The more reactionary, one off activities such as obstruction and blockage removal is undertaken as required.

An important aspect of the drainage programme is to encourage and support initiatives that will reduce the need for the drainage maintenance activities to be required. Such initiatives are fencing of drains and managing land to keep sediment and nutrients out of the drains.

Maintenance of the drainage network includes the following activities:

- Blockage removal
    - Removal of isolated fallen trees and shrubs
    - Removal of slips
    - Removal of accumulated debris
    - Clearing culverts
- Spraying
    - Management of surface weeds
    - Management of aquatic weeds
- Mechanical cleaning
    - Removal of vegetation
    - Removal of sediment
- Erosion control
    - Bank stabilisation
    - Bed stabilisation
    - Planting

Council staff undertake emergency response, minor maintenance activities, some of the spraying and work with private sector contractors where labour and machinery is required.

Private sector contractors currently carry out most of the maintenance work requiring heavy machinery and spraying. It is envisaged that the use of external contractors for significant portions of the maintenance works will continue. The implementation of competitive contracting, tendering policies and practice guidelines, and the monitoring of contractor performance will aid in ensuring the most cost-effective delivery of services.

In the Aka Aka/Otaua drainage area much of the monitoring work is carried out by the drainage advisory subcommittee members as volunteers and a limited amount of the labour content of some types of maintenance works (apart from drain cleaning and spraying) is also carried out voluntarily. The Aka Aka Otaua area has a Council owned hydraulic excavator that is used throughout the year to maintain the drains in that area.

4.2.5 Capital work

Some drainage assets, such as stopbanks, are treated as having an indefinite life span. The management strategy for these types of assets shall be aimed at regular cyclic capital expenditure to continuously bring them up to optimal condition. It is not envisaged that these types of assets will ever require replacement.

Some assets deteriorate with time and can be expected to need complete refurbishment or replacement at some time in the future (i.e. pumpstations, floodgates and other items of mechanical and electrical plant). Where possible, asset replacement and refurbishment will be planned and programmed to balance income and expenditure cash flows and avoid the need for either funding shortfalls from loans or building up large reserves. The asset management system is where this planning takes place

The types of assets that require capital work within the drainage programme are:

- Culverts
- Bridges
- Retaining walls
- Extensive erosion control structures
- Pumpstations
- Floodgates
- Stopbanks (these should be zone flood protection assets)

4.2.6 Work Planning

Regular monitoring, inspection, auditing, and reports from ratepayers will identify in more detail, specific necessary future work and its urgency. For the purpose of programming, works identified as being necessary shall be classified within the following categories:

a) Maintenance work programme

This work is normal maintenance, is routine work and response work of a minor nature that is normally carried out within one financial year. The activities or tasks identified shall be ranked in order of priority. The routine work will be included within the budget and the non-routine, non-urgent work shall be undertaken when appropriate as the budget allows. Those of lower priority that cannot be undertaken within existing budgets shall be programmed within following financial years. The maintenance work programme and budgets is approved through the LTP process.

b) Capital work programme

These works comprise refurbishment works that are budgeted for and funded through depreciation. They are not necessarily urgent in that they do not constitute an immediate threat to the integrity of the drainage system but are necessary to keep the system up to the agreed standards. These works are prioritised and programmed based on meeting their level

of service, availability of funds and resources. The capital work programme is approved through the LTP process.

Capital new works are a special capital project to create a completely new asset and require agreements with the beneficiaries as to funding prior to commencement. The drainage programme does not normally have new capital work.

c) Unplanned remedial works

These will be capital or maintenance repair works which are urgent and which have not been foreseen in the normal budgeting rounds. They are urgent in that they constitute a significant immediate threat to the integrity of the drainage system. Depending on the event that has caused the need for the work they are unlikely to have been signalled within the annual plan process. The work shall be approved through the drainage advisory subcommittees and shall be programmed to proceed as soon as is practicable. Any shortfall in funds above that available from the particular year budget shall be funded from drainage reserves.

4.2.7 Decision making process for drain cleaning

The decision to clean a drain is the responsibility of the relevant work supervisor for the particular areas involved. The decision is based on the condition of the drain, or its ability to provide the LOS required. If the drain is meeting the LOS then drain cleaning is not required and if it is not meeting the LOS then the drain needs cleaning.

Information to consider when deciding on the drain cleaning work programme comes from several sources:

- Asset database record of when a drain was last cleaned and its cleaning frequency
- Staff inspections/observation of drain condition
- Feedback from spray contractors on drain condition
- Enquiries from landowners about poor performance
- Information from landowners on their activities, such as re-sowing paddocks or planting crops

All of the information is considered, the drains are prioritised and a programme is checked against available budgets. The full decision making process worked through in preparing a drain cleaning work programme is detailed in Appendix 4 on page 107.

4.2.8 Landowner consultation

The drainage programme can only be achieved through a partnership and agreement with landowners as almost all of the work is completed on private land. Each party has its responsibilities but a large part of achieving the programme of work relies on good communication and liaison. The Council communicates with landowners in several ways:

- Through an annual brochure providing information about the drainage programme and its practices
- Through the drainage representatives and/or drainage contact person within each area
- Through staff responding to enquiries
- Through staff directly contacting landowners before undertaking the following:
    - Blockage removal
    - Tree removal
    - Erosion control
    - Drain cleaning (sediment and vegetation removal)

Landowners are presently not directly contacted over the spray programme unless they have specifically requested that they be notified prior to contractors or staff going onto the properties for spraying. This is set out in the annual brochure that is sent to every ratepayer within every drainage area. With the present resources and budgets, and due to the changeable weather

patterns, it is not possible to know which drains or which particular properties are going to be sprayed on any given day. Hence, specific notice is not given to landowners before the Council drains are sprayed unless the landowners specifically request they are notified. This is generally accepted and understood within drainage areas and is notified each year to ensure new landowners and farm workers are aware of this practice and have an opportunity to be added to the list of those to be specifically notified.

4.3 Operating practices

The Council maintains the drainage networks for and on behalf of the landowners. If the Council did not maintain the drainage systems the landowners would have to undertake the maintenance work themselves, and the consequences of that maintenance would remain within each property involved, including meeting regulatory requirements.

The maintenance programmes for the drainage networks includes spraying, hand cleaning, machine cleaning, and erosion control. The service is provided through a partnership between the Council and the landowners and each party has responsibilities to ensure that the service is provided consistently and in a manner that is fair to all ratepayers. In order to provide the service in a fair and equitable manner the Council has debated and adopted various operating procedures to clearly identify what is provided by the Council, what the landowners' obligations are and where the responsibilities lie.

Operating practices have been developed for the following activities and issues and are expanded in more detail with explanations in Appendix 5 on page 108.

Maintenance work practices

- Where drains are cleaned from
- What happens to drain cleanings
- Responsibility for access through private properties
- Responsibility for access through property boundaries
- Responsibility for culverts in Council drains
- Responsibility for road and rail culverts
- Responsibility for access culverts and bridges in road reserves

Upgrading work practices

- Disposal of spoil
- Compensation

Service practices

- Annual review of the extent of the service
- Inclusion of new isolated drains
- Responsibility for floodgates
- Organic farming
- Funding system approach

Damage to drains

- Landowners to protect drains from damage and siltation. Issues are:
  - Stock access to drains
  - Spraying of the drain banks and adjacent pasture
  - Cultivation and silt laden runoff
  - Heavy machinery operating too close to the drain

Emergency response and recovery

- Early warning systems
- Emergency procedures
- Disaster recovery and insurance

5 Operating within the RMA

Control of activities that may adversely impact on the environment is achieved via the Resource Management Act of 1991 (RMA). The RMA is aimed at promoting the sustainable management of natural and physical resources (land, air and water). The key mechanisms provided in the RMA for controlling activities that may potentially impact on the environment are regional and district plans. Within plans, activities are defined as being permitted as of right, or requiring consent through a hierarchy of rules (e.g. controlled, discretionary, etc.).

5.1 Waikato Regional Plan

The Council has an operative Regional Plan (WRP) for the whole Waikato region that contains policies and methods to manage the natural and physical resources of the Waikato Region. The plan implements the Waikato Regional Policy Statement. A change to the Regional Plan is currently underway to give effect to the National Policy Statement for Freshwater Management 2014 (NPSFM) and the Vision and Strategy, for the Waikato/Waipa River Catchment.

The Regional Plan change involves two work streams, Healthy Rivers and Healthy Environments. Healthy Environments has two phases. Phase 1 is the Waikato Regional Coastal plan review, and The Lake Taupo Chapter of the Waikato Regional Plan. Phase 2 is the remaining Waikato Regional Plan plus the Hauraki/Coromandel Plan Change, and West Coast Plan Change. Phase 1 will be notified in 2020/21, Phase 2 of Healthy Environments will be notified in 2022/23. The programme is for a fully operative Waikato Regional Plan and Waikato Regional Coastal plan to be implemented between 2025-2030 in accordance with the provisions under the NPSFM.

The rules in the Regional Plan that relate to rural drainage need to be considered in terms of what powers they provide WRC and TAs to manage the effects of activities on the drainage areas/districts that they administer. In addition there are rules that drainage service providers need to adhere to when undertaking drainage activities such as the maintenance of rural drains.

5.2 Relevant RMA definitions and rules

The activities undertaken within the land drainage programme in the Waikato Region are mainly undertaken within watercourses and as such are either permitted or require resource consent. The following outlines the main rules that relate to rural drainage activities. A brief summary only is provided based on the Regional Plan rule requirements at the time of writing. Site specifics should be considered and regulatory advice sought as required.

5.2.1 RMA definitions and application of watercourse types

The applicability of the rules in the Waikato Regional Plan varies according to the status of the watercourse, be it an artificial watercourse, a modified watercourse or a river or stream. The RMA and the Waikato Regional Plan include definitions of the terms used to help decisions on the types of channels that are maintained within the drainage programmes. The following definitions are relevant:

> **"River:** defined by the Resource Management Act, 1991
> A continually or intermittently flowing body of fresh water, and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)."
>
> **"Modified watercourse:** An artificial or modified channel that may or may not be on the original watercourse alignment and which has a natural channel at its headwaters."

> **"Artificial watercourse:** A watercourse that contains no natural portions from its confluence with a river or stream to its headwaters and includes irrigation canals, water supply races, canals for the supply of water for electricity power generation and farm drainage canals."

A modified watercourse and stream is included in the definition of a river under the RMA and WRP, and, with some permitted exceptions, consent is required for disturbing the bed of a river or stream.

While these definitions assist in deciding the type of watercourse being considered, there remains some complexity in applying these definitions. The following tables were developed by WRC staff to help clarify the application of these definitions (Document #10549053) and are being used by ICM and RUD staff to promote a common understanding:

(a) Artificial

Description of Watercourse	WRP Definition & Rationale
Usually very flat topography within or beyond the contributing catchment, no natural forms, very typical of peat drains, 100% manmade.	Artificial – They have no natural portions and no natural channel at its headwaters.
Waterways that start as a boggy seep but have no formed channel until they reach a manmade drain which is located within what was previously wetland.	Artificial – They have no natural portions and no natural channel at their headwaters. A boggy seep was not deemed to be a natural feature.
Waterways that start as a boggy seep but have no formed channel except for a man made drain which has been dug through the middle of them. They flow into a manmade drain which is located within what was previously peat wetland	Artificial – They have no natural portions and no natural channel, only a manmade drain, at their headwaters.

Figure 11: Artificial watercourse clarification table

(b) Natural or Modified

Description of Watercourse	WRP Definition & Rationale
Waterways that start within hill country with a big enough flow to form a flowing body of water within a natural channel and then join into a dug waterway through what was once a wetland	Modified – They have a natural channel at their headwaters.
Waterways that start as manmade drains on land that was once wetland but then congregate into natural gully systems	Modified – The gully portion of these waterways is not artificial, as they have natural portions.
Waterways that have natural headwaters but go through urban areas where they are piped for several hundred metres.	Modified – They have a natural channel at their headwaters and still retain some natural portions.
Waterways that start as manmade drains in peat or pre-existing wetlands but then gradually flow into rolling country and have portions where the topography is such that it may have once been a naturally flowing channel.	Modified – The portion of these waterways that flow within a natural depression is not artificial. The fact that they have "natural portions" means they are not considered artificial.
Artificial or modified watercourse, but has a definite natural feature at its headwaters (e.g. lake).	Modified – They have a natural portion at its headwaters.

Figure 12: Modified watercourse clarification table

In terms of managing activities, the Regional Plan mainly covers modified watercourses, rivers and streams. Activities in artificial watercourses are generally permitted but some activities such as damming and diverting, and activities within wetlands, or within 200 metres of a listed wetland are restricted. Most activities in artificial watercourses are therefore deemed to be an activity on land and as such do not need a resource consent but they do need to comply with the sediment discharge limits where they join a river or stream. This can make it difficult to manage activities that a third party may undertake in an artificial watercourse that is managed by the Council that could lead to flooding problems and hence additional maintenance requirements and associated costs.

5.2.2 Drainage water discharges

'Permitted Activity Rule 3.5.10.1 – Take, Diversion and Discharge of Water Pumped from Drainage and Flood Control Schemes', enables the take, diversion and discharges associated with rural drainage schemes lawfully established or authorised before the date of the Regional Plan subject to various conditions. If these conditions can't be met then there is a Controlled Activity Rule 3.5.10.2 which requires a Resource Consent be sought for these activities.

5.2.3 Diversions and discharges

There are a number of rules in the Regional Plan relating to the damming and diversion of water and associated structures in the bed of ephemeral watercourse, perennial water bodies and artificial watercourses that may relate to rural drainage activities. These include 'Permitted Activity Rule 3.6.4.4 – Small Dams and Damming Water', 'Permitted Activity Rule 3.6.4.5 – Existing Lawfully Established Damming of Perennial Water Bodies', 'Permitted Activity Rule 3.6.4.8 - Diversions and Discharges in Artificial Watercourse and Drainage Systems', and the associated Controlled Activity Rules that are outlined in the same section of the Regional Plan. There are a range of conditions outlined that need to be complied with to meet the various rules.

Generally small dams and the associated diversions are permitted in any off-stream area or ephemeral river or stream or artificial watercourse where:

- The catchment area is less than one square kilometre, and
- The maximum retained water depth in the pond is less than three metres, and
- The dam retains not more than 20,000 cubic metres.
- And other conditions outlined in Rule 3.6.4.4 are met.

Existing lawfully established damming of perennial water bodies are permitted where:

- The catchment area is less than one square kilometre, and
- The maximum retained water depth in the pond is less than three metres, and
- The dam retains not more than 20,000 cubic metres.
- And other conditions outlined in Rule 3.6.4.5 are met.

Diversions and discharges in artificial watercourses and drainage systems are generally permitted where:

- The catchment area above the diversion is less than two square kilometres.
- And other conditions outlined in Rule 3.6.4.8 met.

5.2.4 Culverts

The Regional Plan includes rules to manage the use of culverts in rivers streams and modified watercourses, not artificial watercourses or drains. 'Permitted Activity Rule 4.2.9.1 - Catchment Not Exceeding Five Hectares' authorises the use of culverts in catchments less than five hectares subject to certain conditions being met. 'Permitted Activity Rule 4.2.9.2 – Culvert for Catchments Not Exceeding 100 Hectares' applies to larger catchments and has some additional conditions that need to be met when compared to Rule 4.2.9.1. For catchments greater than 100 hectares but less than 500 hectares Controlled Activity Rule 4.2.9.3 applies to culverting proposals, i.e. a resource consent is required.

When installing culverts it is recommended to locate the pipe invert below the existing bed level of the watercourse to allow for fish passage and likely future degrading of the bed level. The depth the pipe is located below the bed level shall be proportional to the size of the culvert.

5.2.5 Drainage activities near wetlands

The WRP includes rules to ensure that land drainage activities do not adversely impact wetlands that are areas of significant indigenous vegetation and or significant habitat of indigenous fauna, or immediately adjacent to wetlands identified in Table 3.7.7 (Table of Wetlands in the Waikato Region) in the WRP.

'Discretionary Activity Rule 3.7.4.6 - Creation of New Drains and Deepening of Drain Invert Levels', requires that resource consents be sought for the following activities if being undertaken within 200 metres of a wetland listed in Section 3.7.7 of the Regional Plan, except where the location is hydrologically isolated from the wetland:

- The creation of new drains for the purposes of managing water tables, or
- The deepening (relative to the wetland level) of the invert level (bed) of lawfully established or authorised drains constructed prior to the date of notification (28 September 1998) of the Regional Plan.

All existing drain maintenance activities are undertaken to not deepen the Council drains within 200 metres of the listed wetlands and survey of the drain inverts is undertaken initially to determine the bed level and post cleaning to confirm that the drains have not been deepened.

5.2.6 Clearance of vegetation from a river, stream or modified watercourse

Under s13(2) of the RMA the clearance of vegetation from the bed of a river or lake is allowed unless a rule in a regional plan provides otherwise.

The Regional Plan includes a Permitted Activity Rule (not requiring resource consent) relating to clearance of vegetation: 'Rule 4.3.9.2 – Clearance of Vegetation In, On or Under the Beds of Rivers and Lakes' permits the removal of vegetation subject to certain conditions. Refer to the rules for the key conditions that apply to meet this permitted activity rule.

5.2.7 Silt removal within a river, stream or modified watercourse

A modified watercourse is treated the same as a river or stream under the RMA and WRP. There are no applicable Permitted Activity Rules that authorise silt removal within a modified watercourse or river or stream channel, therefore, a resource consent is required for this activity. Refer to 'Discretionary Activity Rule 4.3.4.4 – Bed Disturbance Activities'. However, refer to rule 4.3.6.1 which allows this activity where associated with the maintenance of a lawfully established structure.

5.2.8 Silt removal within an artificial watercourse

There are no Regional Plan rules associated with the excavation within artificial watercourses. Therefore resource consent is not required. There is a permitted activity rule (not requiring resource consent) that relates to deposition of silt removed from within an artificial watercourse. Refer to 'Rule 5.2.5.7 – Discharge of Small Volumes of Sediment and Vegetation from Within or Surrounding Lawfully Established Structures or Artificial Watercourses'.

5.2.9 Drain spraying

The Regional Plan includes Permitted Activity Rules (not requiring resource consent) relating to vegetation spraying: 'Rule 6.2.4.8 – Spot Spraying Using Hand Held Spray Equipment' and 'Rule 6.2.4.9 – Widespread Application of Agrichemical(s)'. These rules apply to all waterways, irrespective of status. Refer to the rules for the key conditions that apply to meet these permitted activity rules.

5.2.10 Maintenance of access

Whilst fencing and planting is encouraged, it is important that the access to the Council drains, that are part of a Council or TA administered drainage network, for maintenance is not compromised by landowner activities such as fencing, planting or erection of buildings.

'Discretionary Activity Rule 4.2.18.1 – Maintaining Access for Maintenance Purposes' requires landowners who are within a WRC or TA drainage scheme to obtain a resource consent from WRC if they wish to do any of the following within 10 metres of a drainage scheme drainage (except in the Aka Aka Otaua and Hauraki DC area where a 15m distance shall apply):

- Plant trees, shrubs and / or construct any structure, or
- Place fences perpendicular to a scheme drain without a gate, or
- Place fences greater than 1,200mm high parallel to scheme drains, or
- Place fences parallel to scheme drains that prevents access for maintenance, or
- Place an artificial watercourse without a culvert perpendicular to a scheme drain.

5.3 Existing resource consents

When the drainage activities to be undertaken are not covered by the Permitted Activity rules, a resource consent is required. The ICM Directorate holds several resource consents to undertake those activities and Appendix 6 on page 119 schedules those resource consents. Each resource consent is identified and a brief description is provided. For the full description of conditions and requirements, each of the individual consent certificate documents should be read.

5.4 Environmental guidelines

The council has the responsibility for managing and maintaining the assets of the region's flood control, drainage and soil conservation works. In this capacity, the council undertakes a wide range of works activities both within and adjacent to natural and artificial waterways. There is a requirement today that the management of the drainage system will consider environmental issues when the work programmes are implemented. This requires not only compliance with statutory requirements, but also the establishment of acceptable standards and best management practices (BMP's) as examples to other local resource users.

As both maintenance and capital works can potentially have adverse effects on the environment, the Council has developed a suite of Environmental Guidelines to set out the BMP's which ensure that the environmental consequences of activities undertaken are avoided, minimised or mitigated. The Council's Environmental Guidelines can be found at: http://www.waikatoregion.govt.nz/services/publications/technical-reports/tr/tr200606r).

A key objective of the Environmental Guidelines is to achieve good environmental outcomes while managing the assets irrespective of whether the activity is permitted through a resource consent or not. The guidelines are designed to achieve this objective by establishing BMP's that will minimise adverse environmental effects resulting from ICM's activities.

The development and implementation of the Environmental Guidelines is a proactive step by ICM to attempt to address environmental concerns through the use of BMP's. The consents that the land drainage programme operates under require maintenance activities undertaken to be made with reference to the guidelines.

While the guidelines are presently aimed at activities undertaken by the council in regard to management and maintenance of infrastructural assets, it is considered that they will also be useful in promulgating increased awareness of BMP's amongst private individuals and organisations undertaking similar activities throughout the region.

5.5 Capability

To ensure that staff (and contractors where applicable) are capable of understanding the complexities of operating under the RMA, training is required on an ongoing basis. That training should include the following:

- An awareness of the WRP requirements,
- The consents that are in place to allow the work,
- The potential environmental effects of undertaking the drainage activities,
- The BMP's for the relevant activities, and
- Other possible mitigation measures, and
- That the BMP's are implemented in a consistent manner.

5.6 Environmental awareness

Many of the adverse environmental effects associated with infrastructural assets are the result of the development and intensification of land use which is enabled through improved flood protection and drainage. Environmental education is a wider responsibility of the Council, but staff involved in drainage activities have specific opportunities and responsibilities when dealing with individual ratepayers to make them aware of potential adverse environmental effects of their activities and to encourage the adoption of more environmentally sound practices. The best management practice guidelines discussed above are a useful resource in advising landowners on undertaking works which may impact on the environment.

An outcome of environmental awareness is better land use practices that will result in:

- Less sediment in the drainage network
- Less nutrients gaining access to the drainage network
- A reduction in the need for the activities involved in providing the land drainage service
- Less disturbance to the aquatic environment
- Less disruption to the adjacent land and
- A reduction in the costs of providing the service

6 Funding

The Councils main source of funding for the provision of services is through rates and the Local Government (Rating) Act 2002 (LGRA) provides local authorities with flexible powers to set, assess and collect rates. Each of the drainage areas or subdivisions that are managed by the Council has its own separate funding system to provide the rating income required to undertake the service provided. The drainage programme includes a total of 92 separate funding systems.

The Council's revenue and financing policy for land drainage is that "Each scheme is fully funded under its own targeted rating." That means there is no regional contribution to land drainage.

6.1 Existing land drainage funding policies

The existing land drainage funding systems are largely based around historic legislation that was relevant at the time the various systems were adopted. Legislation originally required systems to consider direct benefit only, was changed at some time to require systems to assess both direct and indirect benefits and limited the number of categories of rateable land (formerly called classification classes) to 6, plus the non-rateable category. Those categories are named by the letters A to F, with G being the non-rateable category.

The Rating Powers Act 1988 (RPA) required funding systems to consider the direct beneficiaries, the indirect beneficiaries and those who contributed to the need for the work. Those considerations were also included in the Local Government Amendment Act 1996 (LGAA) that repealed the RPA, and has since been repealed itself by the LGRA. The LGRA is the current statute under which funding systems are developed and adopted. The LGRA includes Section 146, Savings for rates made in accordance with classification or differential systems, which essentially allows the historic funding systems to continue to be used for the levying and collection of rates.

The Council has continued with the area based (per hectare rate) funding policies and has maintained the continuation of the 6 categories of land when reviewing its funding policies. The funding policies, considerations made when developing them and the 6 categories adopted are described in Appendix 10 on page 135.

A full schedule of all of the land drainage funding policies is also provided in Appendix 10, commencing on page 142, that identifies the date the system was adopted, lists the document references for the original physical maps (where they exist) and documentation plus schedules the proportions between the various categories of land (classification classes) for each of the policies. Each of the 92 land drainage funding systems has its own application of the relevant funding policy and its own schedule of the categories of land that are applied to each property within the drainage area or subdivision to determine the level of rates to be paid each year to fund the delivery of the land drainage service. All of these funding systems are maintained by the Council's Spatial Information and Data Management Department of the Science and Strategy Directorate.

6.2 Funding Agreements

The following sections provide information on the various specific funding arrangements and agreements that are in place within the drainage programme that are additional to or differ from the normal targeted rate income.

6.2.1 Matamata Urban Rate

The Matamata Urban targeted rate under the Thames Valley drainage programme is essentially a rate over the upper catchments within the Matamata urban area that drain into the Thames Valley drainage area that provides a contribution to the maintenance of the downstream

channels through the Hungahunga and Waihekau subdivisions. The amount of rates after costs is split 50/50 and contributed as income to the two downstream subdivisions.

6.2.2 Suburban Outlet, Te Aroha

Suburban Outlet has a catchment that starts within the Te Aroha urban area and Waihou subdivision of the Thames Valley drainage area to discharge into the Elstow subdivision of the Thames Valley drainage area. Within the Te Aroha urban area, the Suburban Outlet channel runs along the Waihou subdivision boundary. Maintenance of the entire length of Suburban Outlet up to Aroha View Avenue, within the urban area, has historically been undertaken by the Council with costs recovered from MPDC.

There is an agreement made in 1954 between Thames Valley Drainage Board and the Te Aroha Borough Council as to sharing the costs of maintaining this drain as follows:

- MPDC funds 20% of the actual costs between the river and Te Kawana Road, and
- MPDC funds 73% of the actual costs above Te Kawana Road.

This contribution has only occasionally been sought and there have been some discussions in recent years that MPDC should take over full responsibility above Pooles Road and nothing below that point. To date nothing has been finalised on this issue.

6.2.3 Whakahoro Canal funding

The Whakahoro canal was constructed to provide an improved outlet for much of the Whakahoro subdivision of the Thames Valley drainage area through the adjacent Tahuna subdivision to discharge into the lower reaches of the Waitoa River instead of the historic drainage outlet directly into the mid reaches of the Piako River. Because the Whakahoro subdivision is the main beneficiary of the Whakahoro Canal, the canal maintenance within the Tahuna subdivision area is funded by the Whakahoro subdivision.

6.2.4 Ohote Basin Funding

The Ohote Basin funding system was adopted to fund the maintenance of the Ohote channel and flood protection works constructed in 1994 and 1996, specifically to offset the downstream effects of urban development within the Western Heights area of Hamilton City. A targeted rate funding system was adopted by the Council in June 2001 (Doc #697857) that included the entire catchment of the Ohote Basin draining beneath Laxon Road.

The funding policy covers the entire catchment which includes the rural land within the catchment plus the area within Hamilton City. The area within Hamilton City was determined to fund 44% of the required funding. Council requested further information in regards the administrative efficiency of collecting the 44% from 750 rate payers within Hamilton City and resolved to not collect that portion of the targeted rate but instead to provide the required income to the Ohote Basin funding from General Rate contributions collected from Hamilton City (Document #664022). Later Council resolutions about funding drainage from the General Rate removed that contribution and it has since been replaced by an equivalent contribution from the Central Waikato zone for the Hamilton City portion of the required income.

6.3 Funding requirements

For management and reporting purposes the drainage areas have been grouped together to report to the Council through the four drainage advisory subcommittees. Each of the subcommittees has a number of drainage areas or subdivisions reporting to it so each subcommittee is responsible for managing several separate budgets. The exception is the Aka Aka Otaua subcommittee that includes only one drainage area and budget.

The funding required for each drainage area or subdivision includes the entire cost of managing and providing the drainage service for each area, plus managing the operational reserves (See Appendix 5, disaster recovery and insurance on page 116). Those costs include the following:

- General and management costs
- Costs of operating under the drainage resource consents, where required
- Depreciation of assets and plant
- Any interest costs
- Rate collection costs
- Monitoring and inspections
- Liaison with landowners and contractors
- Direct cost of undertaking the maintenance activities

Each of these activities is explained further in the following subsections

6.3.1 General costs

General subdivision costs are accumulated costs of general activities that cannot easily be charged directly to any individual drainage area or subdivision. They typically include drainage manager time, subcommittee management and operations staff time for undertaking duties of a general nature.

The types of activities include:-

- Staff time for –
    - Governance and general overview of drainage issues, overall management, planning, coordination and monitoring of the drainage activities and programmes.
    - Input to Annual Plan and LTP, mainly budget preparation.
    - Financial management
    - Information and advice to enable responses to enquiries and provision of guidance and information on drainage management within the various drainage areas.
    - Support to Drainage Advisory Subcommittees and Reporting to Council.
    - Community and other agency liaison.
    - Managing wider issues associated with the drainage programmes.
    - Preparation of work programmes.
    - Administration and recording e.g. timesheets, vehicle running sheets, work instructions.
    - Meetings (for subcommittees, cluster groups).
    - Contribution to the Regional Asset Management Plan.
    - Preparation and review of drainage management plan.
    - Compliance and audit (preparation, documentation and on the ground).
    - Support delivery of any capital renewals work.
- Legal opinions
- Insurance
- Communications e.g. drainage brochure
- Health and Safety, clothing and safety equipment
- Purchase and maintenance of tools and equipment specifically used within the drainage programme.
- Materials that can't be charged directly to a particular job e.g. miscellaneous wire, staples, alkathene joiners etc.
- Vehicle running.
- Telecommunications.
- Contributions to other ICM projects e.g. LIDAR, asset management system, national river managers group.

All of the General Subdivision costs are accumulated into a separate account for each subcommittee area and the costs are recovered from the individual drainage area budgets proportionally, based on their 'operating expenditure' levels. The General subdivision account should therefore have a zero balance at any time.

6.3.2 Drainage consent costs

Separate comprehensive drainage consents are held that cover activities in natural and modified watercourses within the Aka Aka Otaua, Franklin Waikato and Waikato Central subcommittee areas. The costs associated with operating under these consents are accumulated in a separate drainage consent account and the costs are recovered from the relevant drainage area and subdivision budgets proportionally, based on the total length of modified watercourses involved. The Drainage consent account should therefore have a zero balance at any time.

6.3.3 Depreciation

Depreciation is charged to drainage assets based on their current asset value and assessment of their remaining asset life. Depreciation is a maintenance cost and is accumulated in a separate infrastructure depreciation account that is used to fund future capital work required to refurbish or replace the relevant assets.

The Aka Aka Otaua excavator is also managed through depreciation with those charges accumulating in a 'fixed asset' account associated with the Aka Aka Otaua area to help fund any future replacement excavator.

6.3.4 Interest

Each drainage area budget has its own operational reserve balance and that balance receives interest if it is in credit or is charged interest if it is in deficit. The same rate of interest is paid or charged.

Appendix 5, disaster recovery and insurance, page 116, outlines the reason for each drainage area or subdivision to have a positive reserve and the target level for that reserve.

6.3.5 Rate collection costs

Rate collection costs are for the cost associated with collecting and managing the rate income that funds the drainage programmes. The level of cost is currently at 1.82% of the value of the rates collected.

6.3.6 Labour costs

Labour costs within drainage areas and subdivisions are for all WRC staff costs associated with directly implementing the work programmes. Those activities include:-

- Monitoring and inspections
- Responding to enquiries
- Preparation of work programmes
- Liaison with landowners and contractors
- Supervision of contractors
- Keeping records
- Staff spraying
- Assisting machinery in cleaning/fish recovery
- Managing blockages
- Weed screen cleaning
- Other labouring activities

Budgeted labour hours are based on recent annual averages of hours spent within the subdivisions for each relevant staff member.

6.3.7 Direct costs

The direct costs associated with undertaking the maintenance activities include the following:-

- Material costs
- Vehicle running
- Plant running
- Heat light and power costs
- Contracted services

Material costs are for spray chemical, culverts, fences etc. that are necessary to complete the relevant tasks.

Vehicle and plant running are for the actual costs associated with operating staff vehicles and plant within the various areas and subdivisions.

Heat light and power is only relevant for operating pumpstations so is attached to each of those budgets.

The contracted services cost are the most significant portion of the total expenditure. The activities involved in these costs are mostly the routine spraying and machine cleaning costs but they also include erosion control, relaying of culverts and removal of blockages where contractors become involved.

6.3.8 Contracted Services cost review

A review of the drainage maintenance activities, their frequencies and their typical costs has been undertaken for each drainage area as a check that the current annual budget allowance for Contracted Services (CS) for each drainage area is adequate to support the work requirements. This has involved information from records of actual activities, average costs per metre for spraying and machine cleaning and the frequencies of the activities for each drain.

The summary information for the subcommittee areas is presented below:

Drainage subcommittee	Current CS budget	Assessed CS requirement	Difference
Waikato Central	$266,922	$290,422	(23,500)
Franklin Waikato	$169,598	$160,022	$9,576
Aka Aka Otaua	$53,400	$53,453	($53)
Thames Valley	$181,950	$310,049	($128,099)

Figure 13: Drainage advisory subcommittee contracted services summary information

The figures in brackets in the difference column indicates a shortfall in funding between the assessment and the current CS budget.

The review has confirmed that the current level of budget for contracted services for most areas is adequate. The exception is Thames Valley where current costs for spraying and machine

cleaning indicate that there is insufficient budget to undertake the required work at the frequencies observed.

The current machine cleaning rates for Thames Valley are higher than historic machine cleaning rates for Thames Valley and slightly higher than other areas, so further analysis of the rates used is required prior to amending budgets within the LTP process.

Within each subcommittee area there are some drainage area budgets where the CS amount is significantly different from the assessed CS requirements. Those details are presented in tables in Appendix 11 on pages 145 to 147.

7 Key issues and actions for Land Drainage

The following section sets out the key issues for the land drainage programme and the implementation actions. The key issues include current known issues and the changes that can be expected within drainage areas that require management now and/or will continue in the future and take into account the policy context outlined in Appendix 3, page 88, alongside the key social, economic, environmental and cultural considerations within the drainage areas.

Those key issues include:

- Maintenance and increasing costs (affordability)
- Community partnerships
- Managing and preventing the effects of urban expansion
- Intensification of land use through
    - Land subdivision
    - Property amalgamation
    - Land use changes
- Peat soil and land consolidation
- Climate change
- Water quality and quantity
- Biosecurity
- Biodiversity
- Additional drainage responsibilities through
    - Altering drainage area boundaries
    - Transfer of responsibilities from territorial authorities

7.1 Maintenance and increasing costs

It is important that the drainage networks continued to be maintained consistently to achieve the agreed LOS that allows landowners to effectively farm their land. To achieve this, monitoring, maintenance, keeping records, maintaining good relationships with landowners, ecological considerations and environmental compliance are all important.

The drainage programme has a history of providing an improved service while reducing overall costs and rates. Work undertaken in 1999, 10 years after local government amalgamation, demonstrated that significant improvements had been made within the drainage programme and that costs had reduced by 20% (example was within Thames Valley) in real terms. Much of this was due to:

- Providing a service to every property
- Improved funding systems
- Fencing of Council drains
- Increased spraying and reduced machine cleaning
- Use of biological control
- Education programme (brochure)

Since then the Council has accepted responsibility for many more drainage areas through transfers from Waikato and Franklin Districts, where improved maintenance programmes are being implemented, particularly through increased spraying, improving access and encouraging landowners to fence their drains.

7.1.1 The problem: – Costs are increasing

In spite of this good work, costs are increasing. The main drivers of those increases in recent years has been the following:

Increased costs

- Increased costs associated with asset management
- Increased costs associated with managing a large number of small drainage areas
- Increased costs associated with managing contractors
- Increased costs of contractors
- Increased costs of materials
- Increased level of land subdivision requiring management

Additional work

- Costs associated with input to the Waikato Expressway project
- Costs associated with managing Hamilton's urban expansion
- Involvement in the fish passage project

Health and Safety

- Additional costs of documentation
- Annual costs of monitoring for compliance

Resource consents

- Costs of obtaining resource consents
- Annual resource consent management fees
- Annual costs of preparing detailed work programmes for consents
- Annual costs of monitoring for compliance
- Annual cost of reporting on compliance.
- Involvement in habitat enhancement projects within drainage areas

Future likely cost increases:

- Cost of mitigation work associated with consents
- Cost of input to Hauraki Coromandel Plan Change process
- Increased urbanisation and management and oversight of mitigation

All of these additional costs are currently being funded through the land drainage funding policies.

In some instances the need for the drainage programme to be involved is not strictly related to providing the drainage service but is more of an overview role or a regional responsibility.

In other instances the cost of the work involved might be more attributed to catchment related activities (e.g. mitigation work)

7.1.2 Action: – Maintain the land drainage networks

The various land drainage networks allow the benefitting landowners to manage the watertables within their own properties so they can farm the land. It is important that the drainage programme provides and maintains a sustainable drainage network, which incorporates future proofing and ecological considerations. The implementation actions are:

Develop and implement maintenance work programmes	• Maintain design standards of current assets and ensure appropriate budget is available to continue the renewals programme. • Maintain (or improve where required) access to the drainage network assets. • Complete funded work programmes. • Maintaining accurate, up to date asset records in asset management database. • Monitor the costs of the various maintenance activities.

Continue with communication and education	• Develop and implement strategies to inform and educate landowners and relevant industries about the characteristics of the drainage programme, the best management practices and how landowner activities and practices can influence the amount of maintenance work required. - Continue with the drainage brochure and add information educating landowners on best practices and how to reduce sediment and nutrient inputs to reduce the drain cleaning frequency. - Making practical, targeted information easily accessible - Preparing for changes in regulations and regional and district plans • Identify champion farmers who are modelling good practices and facilitate mentoring.

7.2 Community partnerships

The drainage programme is achieved through a partnership with the landowners. Almost all of the drainage network is located on private land and for work to be undertaken, landowner agreement is required. For the continued successful implementation of the drainage programme it is imperative that the partnership with landowners continues positively and the existing communication processes continue and are improved.

7.2.1 Issue: – Increased stakeholder management

The number of stakeholders interested in the drainage programme activities has increased through more awareness, increased iwi engagement, the resource consent processes and the requirement to be more open and communicative in routine planning and funding processes.

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

7.2.2 Action: – Foster and maintain relationships

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

Maintain relationships with landowners	• Work with landowners when preparing work programmes. • Provide information annually to all targeted land drainage ratepayers (brochure). • Contact landowners prior to undertaking any work on their properties other than spraying. • Maintain a database of landowners who wish to be contacted prior to any spraying on their properties. • Respond to enquiries from drainage ratepayers about programmes of work and any issues identified.

Build enduring relationships with mana whenua	• Identifying areas of common objectives and supporting associated initiatives in relation to drain development and management.
Maintain relationship with territorial and other roading authorities	• Establish and maintain relationships with district council roading staff to ensure issues related to drains and road culverts can be managed and resolved • Establish and maintain relationships with district council and Hamilton City planning staff to facilitate the outcomes sought through the land subdivision and urban development processes. • Establish and maintain relationships with LTNZ so the issues encountered with the implementation and maintenance of the Waikato Expressway can be managed and resolved

7.3 Urbanisation

There are a number of urban areas within or adjacent to the council managed drainage areas, as detailed in the drainage overview (Section 2). This type of land use change brings its particular issues that require management and the issues and management options are set out below.

7.3.1 Issue: – Changing hydrological impacts within catchments

Greater urbanisation leads to changes to peak flows and increased stormwater runoff volumes as vegetation is removed and soils are compacted or covered by impervious surfaces such as roofing, asphalt and concrete, which do not absorb water (NIWA, n.d.). In the urban environments this water is conveyed efficiently via swales or underground pipe networks and is mostly discharged directly into rivers or streams. In some circumstances (e.g. some catchments around Hamilton City, Matamata township, urban villages such as Waharoa and Waitoa), the discharge is directly into the rural land drainage network.

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

Impacts of urbanisation can include:

a) Increased runoff rates leading to:
    - Reduced time to peak flows
    - Increased peak flows, particularly in upper catchment
    - Increased local flood risk
b) Increased runoff volumes leading to:
    - Increased duration of flooding
    - Increased stream bank and bed erosion
    - Increased deposition of sediments
    - Reduced ability for tributary drains to drain effectively
c) Increased wastewater discharges
d) Contamination of receiving environments, either acute (following storm events), chronic (due to accumulation over time), or both
e) Loss of fertile land and a potential reduction in biodiversity as urban areas expand

f) Increased pressure on infrastructural assets including land drainage networks in lower reaches of catchments

An example of urbanisation affecting a drainage area is the expansion of Hamilton City in the Te Rapa and Rotokauri catchments. The City is directly encroaching into the Rotokauri subdivision of the Te Rapa Drainage Area with the following issues requiring management:

- Transfer of responsibility for land drainage from the Council to Hamilton City for those areas that are within the expanded boundary of Hamilton City
- Adjustment of the drainage network and funding systems to match the transfer of responsibility
- Raising of issues associated with catchment development
- Promoting preferred solutions, such as:
    - Headwater diversions
    - Detention of runoff
    - Downstream channel work
    - Downstream flood protection
    - Environmental enhancement
- Involvement in Catchment Management Plans that are developed for the catchments involved
- Involvement in the resource consent processes required for the developments
    - Land drainage is an affected party where discharges occur into the council's drainage network
    - Reviewing the technical aspects of the development and the modelling of changes and proposed mitigation
- Involvement in the implementation of mitigation requirements
- Agreements on future maintenance and funding of the systems that have had mitigation work implemented.

All of this additional work requires resourcing and funding. As the drainage programme is an affected party within any resource consent process it cannot recover costs from the applicant so has to bear the costs within its respective drainage area.

Some of these costs can be recovered through implementation project cost agreements and/or targeted funding systems for implementation or ongoing maintenance of the completed mitigation works. But in the interim, without separate agreements or established targeted rate funding systems, all of the costs are absorbed within the drainage targeted funding systems.

To date two targeted funding systems have been adopted to provide funding towards the maintenance of drainage systems coping with urbanised areas. They are:

1. The Ohote Basin funding system established in July 2001 to maintain the mitigation works implemented in the Ohote Basin when the Western Heights area was developed within Hamilton City in the 1990's.
2. Matamata Urban rate established in July 1996 to provide funding from the expanded urbanised upper catchment of the Waihekau drainage network that receives the discharges from the Matamata urban area. Prior to this funding system being established, the former Matamata Borough Council made direct financial contributions to the Thames Valley drainage area for receiving their urban discharges.

7.3.2 Action: – Manage urban development

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

Manage the impacts of urban development	• Work closely with Hamilton City, Waikato District Council, Matamata Piako District Council and other agencies, for example the NZ Transport Agency, to provide support, advice and planning on these issues. • Areas of focus includes: o Continuing to refine good practices o Ensuring designs are adequate and allow for future land consolidation o Ensuring appropriate mitigation measures are agreed and implemented o Ensuring that funding for the implementation of mitigation is agreed and applied. o Ensuring that maintenance of the mitigation is resourced and funded

7.4 Intensification of land use

7.4.1 Issue: – Rural subdivision requiring expansion of drainage network

Rural property is continually being subdivided to create additional small lots and/or boundaries are shifted to change the areas of existing lots. The flat land within drainage areas requires drainage and therefore most new lots on flat land also require drainage. This results in small adjustments to the drainage network as the Council maintained network needs to change to provide the new or adjusted lots with a drainage outlet.

The council has input to the subdivision process through the land surveyors and the district councils and that input includes ensuring that drainage for new lots is adequate, or is brought up to the required standard by the property subdivider within the resource consent process that is managed by the TA's. The drainage operating practices include that each property that requires drainage shall be provided with access to a Council maintained drain, and the drainage systems are reviewed annually to allow private drains to become Council maintained drains if necessary. While it is intended to provide every property that requires drainage with access to a Council maintained drain, there are no assurances that this can be provided for all proposals to subdivide.

The above process results in additional drains being included in the drainage network as a result of land subdivision. The inclusion of additional drains also results in a change to the funding system to ensure that those that benefit from the service fund the cost of the work.

The overall process for managing land subdivision within WRC drainage areas is quite complex due to the number of parties involved and the number of processes that need to be completed. The entire subdivision process can take some time (years) from the initial enquiry for land drainage comment until the land is sold and the funding system is changed. The land subdivision process is set out in Appendix 7 on page 122. An additional complication is that the inclusion of the Council's input to the subdivision process is currently only through verbal agreement with the TA's, so on occasion some subdivisions within drainage areas go through the process without any input from the Council.

Currently the Council does not have a policy or process that allows the cost of input to these subdivisions to be recovered.

7.4.2 Issue: – Property amalgamation requiring review of drainage network

Farming units may also become larger through the amalgamation of adjacent properties. When amalgamation occurs the upstream end of an existing council maintained drain may end up within a property or farming unit and it should be shortened to the downstream boundary. The regular review of the drainage network provides the opportunity to also shorten council maintained drains to reflect property amalgamation and the need to only maintain up to the most upstream property or farming unit boundary.

The above process results in a reduction in the length of drains being included in the drainage network as a result of property amalgamation. The reduction in the length of drains also results in a change to the funding system to ensure that the reduction in benefit from the service results in a reduction in costs and therefore rates.

7.4.3 Issue: – Change in land use, cropping and market gardening

Intensification of land use is happening through cropping and the more intensive market gardening. These intensified farming practices can have an impact on the drainage service delivery in several ways:

LOS expectations

- Crops generally require a lower water table than pasture
- Crops generally do not tolerate water on the land for up to 3 days

Damage to drains

- Spraying paddocks invariably kills the vegetation over the existing drains
- Heavy machinery too close to drains results in drain bank collapse
- Cultivation too close to drains results in sediment input directly into the drains

Maintenance issues

- Crops planted too close to drains limit access for spraying
- Drain cleaning is often programmed between crops for landowner convenience, and may not be at the optimum time for effective vegetation control.

Land consolidation

- Cultivation increases the rate of land subsidence, particularly in peat areas

7.4.4 Action: – Manage intensification of land use

Intensification of land use has two parts to it:

- Land subdivision or amalgamation that typically results in changes to the drainage network and a greater number of landowners to deal with when implementing the work programmes
- Cropping, where the expectations are higher than for pastoral farming, damage to drains can occur and access and timing of the work requirements are different from pastoral farming

Implement the documented rural land subdivision process	• Provide the land subdivision process documentation (Appendix 7) to territorial authorities so they are aware of the importance of managing the impacts of subdivision and the process involved.

	• Obtain written agreement from relevant TA's to include WRC drainage requirements within proposed subdivision processes in WRC drainage areas. • Work with territorial authorities to ensure that WRC drainage comment or a WRC approved drainage plan is provided by developers within their land subdivision consent applications. • Work with territorial authorities to ensure that their consent process does not sign off the 224 certificate until WRC has confirmed that any drainage plan has been implemented to WRC's satisfaction. • Follow the steps outlined in the process when requests for input to rural land subdivision are received • Educate the relevant surveying companies to allow them to prepare any drainage plans to meet the WRC requirements when land is being subdivided. • Ensure changes to drainage network are reported to the Drainage Manager and Senior Data Analyst.
Implement the annual drainage network review process	• Undertake and annual check of all drains that need to be added to the WRC system and also the drains that need to be shortened. • Prepare an annual report for the drainage advisory subcommittees on adjustments to the drainage network, seeking a recommendation to Council on those changes. • Ensure adopted changes are mapped accurately and appropriate adjustments are made to the drainage funding systems
Manage the impacts of cropping	• Develop and implement strategies to inform and educate crop farmers about the characteristics of the drainage programme, the best management practices and how landowner activities and practices can influence the amount of maintenance work required. - Continue with the drainage brochure and add information educating crop farmers on best practices and how to reduce sediment and nutrient inputs to reduce the drain cleaning frequency.

7.5 Peat soil and land consolidation

Peat is the partially decomposed remains of wetland plants, often intermixed with various proportions of inorganic material, where a high water table has prevented the breakdown of dead plant material and allowed peat to form and accumulate. In the Waikato region, peat soils cover about 94,000 (EW 2006) hectares.

The competing uses of peat soils in the Waikato have long been a source of conflict. Historically, the peat areas in the Waikato region represented unique wetland ecosystems. Since the late nineteenth century, about 80% of the original peat area has been drained, mainly to allow for agricultural land uses. The remainder is typically managed for conservation, with these remaining peat wetland areas generally having high ecological value.

7.5.1 Issue: – Oxidation of peat soils leading to lower land levels

The drainage of peat soils has dramatically altered its hydrology, stopped accumulation of vegetation (i.e. peat formation), and resulted in ongoing land subsidence. Although there is a negative environmental effect this practice is important to the region economically.

Many of the drainage areas within the Waikato Region are associated with peat soils that have been fully developed into farmland, except for some small isolated areas.

This land is continuing to be drained and is further consolidating with the following consequences:

- reduction in drain capacity
- a requirement to upgrade or install alternative drainage
- reduction in the efficiency and effectiveness of existing pumpstations
- a requirement for other infrastructure e.g. pumping
- increased risk of flooding,
- change in drainage patterns
- reduced wetland sustainability

In some areas land consolidation has resulted in lower land levels that are no longer sustainable as pastureland. Landowners have changed their land use as a result and some areas are no longer being farmed.

The RPS includes Section 14.5 on peat soils and the policy is to:

> *"Manage the adverse effects of activities resulting from use and development of peat soils, including by slowing the rate of subsidence and the loss of carbon by oxidation from peat soils".*

In some drainage areas where peat does not, or no longer exists, the mineral soils can also consolidate with cultivation and use. The outcome in these areas is similar for peat in that the nature of the drainage and the ability for the land to drain by gravity may change over time.

7.5.2 Action: – Manage land consolidation

The consolidation of peat and some mineral soils is a consequence of farming practices resulting in the loss of the peat soil, lowering of ground levels and changing of the drain gradients. These changes can reduce the ability of the land to effectively drain.

Peat Soil Management & Research	• Support the proposed peat soil study (being led by Science as Strategy) in line with the 2018 – 2028 Long Term Plan.

The RPS also states that regional plans shall control activities on peat soils but currently there are no rules to control or prevent cultivation and cropping on peat soils or any other soil types throughout the region. This will be addressed in the future as part of the Healthy Environments process.

The Council is in a position to prevent the over drainage of peat in the drainage areas it is responsible for as it manages the main arterial network of drains within its drainage programme and operates pumpstations associated with many drainage areas through its zone flood protection programmes.

The drainage networks are currently being managed to prevent the over drainage of peat through the Council's maintenance practices while still allowing for pastoral use. The Council has other options to manage water levels within the main drainage arterial networks to regulate peat drainage but currently there are no such controls in place.

7.6 Climate change

Climate change is likely to increase flood hazard risks due to sea level rise, more frequent and more intensive rainfall events, increased adverse river behaviour, more groundwater management being required and loss of equity value. There is still uncertainty on the projected impacts of climate change, therefore the regular review of the projected impacts is required

along with possible management regimes for various climate change scenarios, in line with the Climate Change Guideline for ICM document (Technical Report 2017/06, Document #10822085).

7.6.1 Issue: – Increased reliance on drainage networks

There is ongoing pressure within drainage areas for subdivision of land and more intensive land use. Careful management is required to ensure any new developments are resilient. Climate change will place pressure on the Council's assets and their services. The Council must respond to projected climate change if current levels of service are to continue to be delivered.

The Council may also be asked by the community to consider new drainage or flood protection works in response to the impacts of climate change. The Council is also assessing the utilisation of eco-system services to manage flood events while reducing environmental impacts.

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

7.6.2 Action – Prepare for climate change

Most drainage areas are low lying, with some areas being below the normal high tide level. If climate change and sea level rise occurs as predicted, there is an increased risk of high intensity rainfall events and flooding. The drainage programme needs to prepare for potential changes as a result of climate change.

Consider Climate Change	• Provide guidance to project managers to assist in preparing forward work programmes and financial forecasts • Identify what likely effects climate change will have on our existing (and future) drainage systems and associated levels of service. • Incorporate climate change impacts into asset management decision making.

7.7 Water quality and quantity management

The position of many drainage areas in the lower reaches of larger catchments and the development of the flood protection schemes has resulted in a significant change in water quality within drainage areas. Vast modification of the natural landscape has enabled communities to prosper through the likes of agricultural development. Drainage of land and conversion into intensive pastoral farming has proved consequential to water quality, resulting in high nutrient loads and loss of stream and drain bed gradient where there has been peat subsidence. The loss of gradient and additional straightening of water courses has significantly altered catchment hydrology resulting in "peakier" delivery of nutrient rich, low dissolved oxygen water to subsided areas.

The Waikato Regional Plan Change 1 (Healthy Rivers) has a purpose to improve water quality in the Waikato River catchment, primarily by requiring landowners to farm in a way to reduce their sediment input and leaching losses.

Conversion of any land from forestry or bush to grazed pasture also results in increased runoff rates and volumes plus consequential transfer of nutrients, contaminants and pathogens to water, increased risk of flash flooding for tributaries and increased risk of erosion (Taylor, Mulholland, & Thornburrow, 2008). This activity is now being restricted under WRC's Plan Change 1.

Intensive farming on other mineral soils is another main contributor to declining water quality. Collectively, poor water quality in rivers, streams and wetlands has led to extensive mortality of a wider range of desired flora and fauna species (microbial, plant, insect and fish).

7.7.1 Issue: – Increased sediment and nutrients causing increased maintenance and costs

As most drainage areas are located in the lower reaches of their catchment, they are heavily influenced by land use and activities higher in the catchment. Collectively, the effects of land use practices, land management, permitted activities and consented activities have a considerable impact on the current state of the flow regimes, nutrient and sediment loads in the lower reaches of any river or drainage system.

Another issue is that mechanical desilting (cleaning) results in the release of sediment that has become stored on the bed and banks. While a large proportion is removed as drain cleanings there is still a significant water quality effect within the drain. Best practice guidelines can help minimise this but best approach is through intercepting sediment before it reaches the drains, as covered by Section 5.1 of the Best Practice Environmental Guidelines for land drainage.

Over recent years, demand for water has also increased, and is likely to continue to increase in the future. Competing water uses can result in low flows, water shortages and conflicts, and can place significant pressure on drainage and river catchments, lakes and wetlands.

The lower reaches of catchments that are within drainage areas generally have low gradients so sediment deposits within channels, water temperatures increase and weeds grow prolifically within the channels during spring and summer.

7.7.2 Action: – Support the improvement of water quality and quantity

Existing and future co-management arrangements, future regulatory policy, Plan Change 1 – Waikato and Waipa River Catchments (Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai) and Waihou-Piako and Coromandel Catchments Plan Change are all part of improving water quality through changing to the way land is managed in the future. Waikato Regional Council is committed to supporting the community with the implementation of these changes.

Support landowners and occupiers to adapt to the Proposed Waikato Regional Plan Change 1 & 2	• Support the implementation of the proposed Waikato Regional Plan Change 1. • Review current council practices and the minimum standards applied with respect to drain maintenance in response to changes in land use and requests to review LOS within specific drainage areas.
Support the work with landowners and land managers	Support the provision of one on one advice and information in priority areas on sustainable land management practices/biodiversity protection etc., including: • Appropriate land use that does not exceed the property's Land Use Capability. • Setback distances between land use activities (agriculture and forestry) and waterways. • Stock exclusion from all water bodies. • Ecosystem restoration techniques. • Soil management, including management of peat.

7.8 Biosecurity – Pest animals and pest plants

Protecting the Waikato's biodiversity and economy from the impacts of invasive pests is important to the Council, industry and the drainage schemes. If pests are not managed well, this will lead to severe impacts on the very farms the drainage scheme is trying to keep productive.

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

7.8.1 Issue: – Pest plants causing increased maintenance costs

For the land drainage programme, managing the biosecurity threats to the land supported by the drainage scheme means being proactive by incorporating biosecurity protocols while undertaking the maintenance of the schemes. If biosecurity is not managed well the presence of pest plants will increase the amount of maintenance work required and can change the way that maintenance is undertaken due to restrictions related to the management of some plant types. In addition the drainage network provides a conduit for some species to spread downstream.

There is also a lack of understanding amongst some landowners of the severity that alligator weed poses to animal health of young stock and impacts on pasture loss.

7.8.2 Issue: – Invasive fish impacts on biodiversity and water quality

Introduced fish species such as koi carp, brown bullhead catfish, gambusia and rudd threaten native fish species and habitats in freshwater rivers, streams and lakes. All of these species are known to be present within the drainage systems. Their presence threatens native freshwater indigenous biodiversity and adversely impacts water quality. In the last 20 years, there has been a dramatic increase in the spread and abundance of these invasive fish in the region's waterways (Invasive Fish Management Handbook). Over time, this has resulted in an increased community expectation on both the Department of Conservation (DOC) and Waikato Regional Council to implement more effective control measures against pest fish. DOC has overall legislative responsibility to manage pest fish populations in the region and the Council continues to seek opportunities to support DOC in this role.

Of the known pest species, Koi Carp are one of the most visible, abundant and problematic. Koi carp now dominate many areas of the lower Waikato River, are present in the Piako and Waihou Rivers and at times may represent over 80% of the total fish biomass at some sites (New Zealand Geographic, 2015). Koi carp are opportunistic feeders that feed at the bottom of the water column, essentially sucking everything in as they go and spitting out everything they do not wish to eat. Their feeding behaviour stirs sediment making water murky, contributes to nutrient enrichment, uproots plants and ultimately damages the freshwater ecosystem.

7.8.3 Action – Support animal and plant pest initiatives

Pest plants can increase the amount of maintenance work required and pest fish increase turbidity and erosion within the drainage network.

Animal and Plant pest control	• Ensure landowners, staff and contractors comply with rules set in the RPMP. • Ensure landowners, staff and contractors follow biosecurity protocols to include machinery hygiene practices. • Support DOC to manage pest plants on DOC managed land. • Support community led pest control on private land and land tenures. • Support DOC to implement regional pest fish priorities as identified in the Regional Pest Fish Management Plan.

7.9 Indigenous biodiversity

Drainage areas are highly modified areas. Some drainage areas include or are adjacent to highly significant indigenous ecosystems that include: freshwater streams and rivers, shallow lakes, wetlands, estuary and coastal ecosystems.

The region was once dominated by hill-country forests, swamp forests, lakes and wetlands, providing extensive habitats for a range of native species. However today much of this land has been cleared, drained and converted to agricultural land. The historical swamps, wetlands, shallow lakes, and native forests prior to clearance and drainage would have provided excellent lowland habitats for a variety of native species (e.g. bats, birds, eels and all native fish species). Such clearance and drainage has led to a loss of over 92 percent of wetland areas in the Waikato River catchment, and this decline continues today through fragmentation and isolation (Beard, 2010).

7.9.1 Issue: – Maintenance of the drainage network can affect indigenous biodiversity and result in native fish mortality

The maintenance of the existing drainage network can affect the habitats of indigenous biodiversity that inhabit these drains. The less frequently the drains are the maintained the higher the biodiversity values that are likely to be present.

Desilting using mechanical excavators is known to potentially result in significant numbers of native fish becoming stranded on banks where they will often die. Fish can also be injured or killed after being struck by excavator buckets or suffocate due to acute water quality deterioration.

7.9.2 Issue: – Drainage network design is not optimal to support indigenous fish and native bird habitats

Whilst indigenous biodiversity has substantially declined since the vast modification of the region, ecosystems in the region still support a wide range of species, including threatened species such as the Australasian Bittern / Matuku and native fish such as short and longfin eels and whitebait. The drainage network has become the habitat and/or corridor for these bird and fish species. The nature of the drainage channels and the maintenance activities can continue to have an impact on them.

7.9.3 Issue: – Infrastructure acts as barriers to migratory fish passage

Pumps, flapgates and culverts used in the drainage of land have been identified as potentially significant barriers to the passage of migratory fish species, particularly long and shortfin eel species. Fish entrained into pumps can also be injured or killed and this is a significant issue for adult eels migrating downstream to breed.

7.9.4 Action: – Support indigenous biodiversity initiatives

The multitude of drainage areas contain a range of unique natural features and places of special cultural, economic, social and environmental significance. A key focus for the drainage programme will be on supporting the protection and enhancement of these places of value.

Minimise impacts of maintenance	• Undertaking activities in accordance with best practice guidelines (Integrated Catchment Management Directorate - Environmental Best Practice Guidelines, Document # 8814325) including minimising extent and frequency of maintenance, avoiding sensitive periods and conducting fish recovery work.
Consider ecological enhancement	• Incorporation of ecological enhancement and better environmental outcomes when planning maintenance works and projects. • Consider remediation options when upgrades or replacement is undertaken. • Alignment with the national efforts to ensure fish passage.
Indigenous biodiversity enhancements	• Support the development and implementation of the regional biodiversity strategy and priorities, and review actions regularly. • Support inanga spawning habitat enhancement works. • Water levels of shallow lakes and associated wetland margins are adequate to support hydrological and ecological processes and functions, and maintain or enhance the values associated with these. • The hydrology of shallow lakes (and their associated wetland margins) is protected from the effects of further wetland drainage.

7.10 Additional drainage responsibilities

Drainage is currently managed under Part 29 of the LGA and that legislation sets out how drainage areas may change, new drainage areas be established or the responsibility for drainage may be transferred. The following sections set out those processes.

The LGA 2002 has changed the way that communities can have the services they want delivered. It is possible that some communities may wish to change the way their present drainage service is provided. Those changes may include:

- The community may want the drainage service provided in a different way
- The community may want a different level of service to that currently provided
- The council provides a new drainage service that does not presently exist
- The council provides a drainage service instead of a district council
- The community may want the drainage service provided by a different provider

7.10.1 Issue: – Change in service provider or level of service

The Council currently has responsibility for 4 drainage areas where the drainage programme is independently implemented (Meremere East, Churchill, Orton and Matangi), and two drainage areas where the local drainage representative implements the work programme through consultation with Council staff (Rotomanuka and Ohaupo/Ngaroto). Any of these drainage areas may decide to change this method of delivering the work programmes. Such a change will result in additional resourcing being required to implement the work programme plus a change in the level of funding to support the change in the way the service is provided.

If additional or new drainage areas asked the Council to provide the drainage service that request would need to be considered by the Council. If the Council and the community agreed that the Council provide the service then the area would be added to the present drainage asset list. The service levels and funding requirements would be agreed with the community, and

responsibility for management and maintenance delegated to relevant staff and/or representatives of the community.

7.10.2 Issue: – Amalgamating drainage areas or changing boundaries

The LGA, Part 29, Sections 504 and 505 sets out the processes for declarations in relation to drainage areas. As Part 29 is only relevant for territorial authorities, the declarations that the Council may do for the areas it is responsible for are:

- To amalgamate contiguous drainage areas, and
- Alter the boundaries of a drainage area.

The process to undertake these declarations is set out in Appendix 8 on page127.

The Council currently has 92 separate funding systems covering 84 drainage areas or drainage subdivisions. Many of these drainage areas are small with some only including a few properties. For simplification of management it makes sense to consider the amalgamation of some of these areas, particularly where the rating levels are similar.

7.10.3 Issue: – Establishing new drainage areas

The Council cannot establish new drainage areas within its region under the LGA as Part 29 is only relevant for territorial authorities. If landowners wanted a new drainage area to be established and the Council to be responsible for managing it, the area would need to be established by a TA and the responsibility for that area would then need to be transferred to the Council.

7.10.4 Issue: – Transfer of responsibilities

The LGA 2002, Part 2, Section 17 details the requirements for transferring LGA responsibilities. Essentially a transfer of responsibilities must be made by agreement between the local authorities concerned and may be on the terms and conditions agreed between them. There does not appear to be any requirement for public input to any such proposal to transfer responsibilities.

Waipa District Council staff have advised they would like to transfer their drainage responsibilities to the Council. In October 2014, the Council advised Waipa that it would need to re-establish a maintenance programme in their drainage districts, agree on levels of service, establish the channels to a good condition, gain consents if necessary and agree on rates/method of funding. Once all of these parameters are agreed on and the assets assessed to be in good shape, then the Council may consider a transfer of responsibilities.

Hauraki District Council is the other territorial authority within the Waikato region with a significant land drainage programme. To date there have been no approaches from Hauraki regarding transferring its land drainage responsibilities to the Council and it is understood that Hauraki is satisfied with the continued governance and provision of their land drainage service.

7.10.5 Action – Manage changes in drainage responsibilities

Since Local Government amalgamation in 1989 there have been many changes to legislation associated with land drainage and there has been significant changes to the responsibilities for the many drainage areas within the region. Those changes are likely to continue and the Council needs to be sufficiently informed, strategic, resourced and agile to be involved in the processes to do the following:

- Identify that change for long term improvement is necessary
- Be involved in or drive the decision to change
- Be involved in or lead the process allowing those changes and
- Implement the changes

A key focus for the land drainage programme would be in providing the information and resources needed to support any proposed changes requested or agreed.

Change in service provider or LOS	• Identify communities wanting to change their service provider or LOS • Provide support to work through process to allow change
Amalgamation of drainage areas or change of boundaries	• Identify drainage communities that would benefit from amalgamation or would like to change boundaries • Understand and communicate the processes involved • Complete the processes involved
Establishment of new drainage areas	• Identify communities wanting to establish new drainage areas • Support the TA to complete the process to establish any new areas • Complete the transfer of responsibility process if appropriate
Transfer of drainage responsibilities	• Identify areas where transfer of responsibilities might occur • Support TA's in achieving conditions of any transfer • Complete the transfer of responsibility process

8 Monitoring and Review

The plan will be reviewed periodically in order to include any additional statutory obligations or changes in drainage requirements.

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

- Information is collated showing how the key actions, as listed in the previous section are being achieved.
- Reporting on the outcomes of any environmental monitoring within the drainage areas
- Reporting on significant milestones, achievements or changes in any of the issues being supported
- Reporting on completion of any of the actions

All reporting will be undertaken through the drainage advisory subcommittees and the Integrated Catchment Management Committee.

Glossary of Terms

BMP	Best Management Practice
DOC	Department of Conservation
ICM	Integrated Catchment Management Directorate
LDA	Land Drainage Act 1908
LGA	Local Government Act 2002
LGAA	Local Government Amendment Act 1996
LGRA	Local Government (Rating) Act 2002
LOS	Level of Service
LTP	Long Term Plan
LWWCS	Lower Waikato Waipa flood control scheme
NIMT railway line	North Island Main Trunk railway line
NPSFM	National Policy Statement for Freshwater Management 2014
OCLGR	Orders in Council for Local Government Reform 1989
PC1	Plan Change 1
PPCA	Priority Possum Control Areas
RMA	Resource Management Act 1991
RPA	Rating Powers Act 1988
RPMP	Regional Pest Management Plan
RPS	Regional Policy Statement
the Council	Waikato Regional Council
TA	Territorial Authority
WDC	Waikato District Council
WRC	Waikato Regional Council
WRP	Waikato Regional Plan
WRCP	Waikato Regional Coastal Plan

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Appendix 1 – Drainage history

As early European settlers arrived in New Zealand they generally arrived by ships into harbours and moved up the river valleys to settle the land and clear it for farming. Many of the catchments and river valleys were mostly forested with the larger valley floors comprising extensive wetlands. In conjunction with clearing the land, drainage was necessary for farming and within river valleys, river works and flood protection works were also established. Early work was undertaken from 1868 onwards by river boards and drainage improvements naturally followed.

Photo 1: Drain excavation, Aka Aka

The Government established legislation to allow the larger community based drainage networks to be established by local drainage boards through the Land Drainage Act 1893 that was later consolidated into the Land Drainage Act 1908 (LDA). The first drainage board in New Zealand was established in the Aka Aka area in November 1895. Drainage boards were autonomous local authorities that included a board of elected members that undertook work through a separate land drainage rate.

Photo 2: Stripping Maukoro Canal

The Government also directly implemented drainage work in the Hauraki area through the Hauraki Plains Act 1908 and the Waihou and Ohinemuri River Improvement Act 1910. The Hauraki Plains Act was specific to the development of the Hauraki Plains and work was implemented by the land drainage branch of the Department of Lands and Survey. The river and drainage infrastructure was established, the land was prepared for settlement and local drainage boards were established to maintain the works.

The LDA helped the development of many areas through the establishment of land drainage boards that were empowered to make changes and improvements to rivers and streams as well

as drain the land. The Government also provided funding towards these drainage works in the form of subsidies or grants as it saw these works as having a benefit to the country in increasing its primary production and wealth. As a result drainage boards were of a variety of sizes and once the initial improvement work was completed the amount of maintenance work was small, so many former drainage boards amalgamated or were disbanded.

In parallel with the LDA, the Counties Act 1886 (CA) provided the former county councils with powers to establish drainage districts for the purpose of the construction of drainage works that included making new drains and/or altering the course of streams and rivers. The CA was consolidated and amended in 1920 that allowed for existing drainage works to be brought under the CA, so former drainage boards could become drainage districts that became the responsibility of the former county councils. The Counties Act was further consolidated and amended in 1956.

In the Taupiri area there were eight separate drainage and river boards that amalgamated in 1929 under the Taupiri Drainage and River District Act 1929 (TDRDA) to make better provision for the drainage of land and the protection of the land from damage by floods. The Taupiri drainage and river district included the entire watershed of the Mangawara River.

In 1941 the Government introduced the Soil Conservation and Rivers Control Act (SCRCA) after some particularly damaging flood events throughout the country that highlighted the need to better manage catchments holistically rather than continue to only have the smaller ad-hoc developments that were occurring in isolated areas through drainage boards and territorial authorities. This Act allowed for the formation of a further local authority, (Catchment Boards), whose operational areas were based on whole catchments and who were empowered to undertake works to rivers and catchments across the territorial authority boundaries. Catchment boards were also given an oversight role for those works that were undertaken by drainage boards and TA's and all Government subsidy money was channelled through catchment boards for the drainage board and territorial authority works.

In the Waikato catchment the flood protection and drainage works established in the earlier years were relatively fragmented and compartmentalised so the TA's argued that a catchment board was not required. Following the devastating floods during the early 1950's, the Waikato Valley Authority Act 1956 allowed for the formation of the Waikato Valley Authority (WVA) that essentially was the vehicle that oversaw and managed the implementation of the Lower Waikato Waipa Control Scheme (LWWCS) that included the various land drainage, river and flood protection works throughout the Waikato and Waipa Rivers. All of the works were designed and implemented by the TA's and drainage boards with the standards set, approvals and Government subsidy funding provided by the WVA. The main Waikato River channel works, the Waipa River channel works and the Community Works were implemented by the WVA. The WVA became a catchment board in 1988, just prior to the 1989 local government reform.

The Local Government Act 1974 (LGA) essentially superseded the CA and includes Part 29 titled "Land Drainage and Rivers Clearance" that has not been repealed to date. This part of the LGA is only applicable to TA's, which means that the establishment of new drainage areas under the LGA can only be undertaken by a TA. Many of the drainage areas managed through the LGA by TA's included river works and flood protection works in the form of stopbanks, floodgates and pumpstations.

The local government reform of 1989 was the most significant reform of local government in New Zealand in over a century. The Orders in Council for Local Government Reorganisation, 9 June 1989 (OCLGR) resulted in some 850 local bodies being amalgamated into 86 local authorities, made up of regional councils and TA's. The responsibility of catchment boards under the SCRCA became the responsibility of the Council and the responsibility for land drainage remained split with drainage boards becoming the responsibility of regional councils and all drainage areas remaining with the TA's. As part of the local authority restructuring, the OCLGR

gave the Council the responsibility for nine autonomous land drainage boards within the WRC boundaries. Those areas are:

- Thames Valley,
- Taupiri,
- Eureka,
- Te Rapa,
- Aka Aka/Otaua,
- Fencourt,
- Hautapu,
- Rotomanuka and
- Ohaupo/Ngaroto

Since 1989 the Council has reviewed its catchment, river and flood protection responsibilities and established funding and work programmes within 8 catchment zones across the entire region. This has resulted in a number of TA's transferring their drainage district responsibilities to the Council over time for both the flood protection and drainage activities. The following has been the process:

- In 1996 Waikato District Council transferred its responsibility for the management of its rural stopbanks to the Council.
- In 2002 the project Watershed funding system was established by the Council over the Waikato River catchment. This provided a funding mechanism for all of the catchment works, river works and flood protection works undertaken by the Council and the TA's within the Waikato and Waipa catchments and included:
    - Lake Taupo, Reporoa, Paeroa Range, Waitomo and Karapiro/Arapuni Catchment Control Schemes
    - Lower Waikato Waipa Flood Control Scheme that included all of the "local" flood protection works that were managed and funded by TAs where the ratepayers opted to be funded through Project Watershed.
    - Waipa River, Waikato River Main Channel and main tributaries that were part of the LWWCS works.
- Within the Project Watershed process Otorohanga District Council divulged its drainage area responsibilities to the Council. Most of the areas involved were established over rivers and streams and the activities in these areas are now managed within the Waipa Zone river management programme.
- In 2007 the responsibility for the Waikato District floodgates and pumps, including its Huntly urban works were transferred to the Council.
- In 2008 the former Franklin District Council transferred its responsibility for most of its flood protection works to the Council.
- In 2009 the Council reviewed the funding policies for the Waihou Piako zone that included extending the river management services within the Piako catchment. This extension of service included that the Piako River management works maintain stream channels within many of the Matamata Piako District Council drainage areas reducing the need for these drainage areas to remain operational.
- In 2010, Franklin District Council transferred its responsibilities for 16 of its land drainage areas to the Council. The exceptions were, Ohairoa, Whiskey Flats, Horseshoe and Punga Punga that all wished to be privatised, and Taramaire in the Firth of Thames which was transferred to Hauraki District Council.
- In 2010 as part of the Auckland Super City amalgamation, the drainage areas that did not transfer to the Council became the responsibility of Waikato District Council.
- In 2011 Waikato District Council transferred its responsibilities for its 22 rural drainage areas that drained to LWWCS pumpstations to the Council.
- In 2012 Waikato District Council transferred its responsibilities for 21 drainage districts that drained directly to rivers and streams to the Council (excluding Travers Road and

Tamahere as the land use within these areas was proposed to become residential or lifestyle rather than rural).

Waipa District Council historically had 25 drainage areas and in the early 90's it took the approach of disestablishing the individual areas and turned the whole of the Waipa District into a drainage area. The intention was to put the responsibility for drain maintenance back to individual landowners and a small rate was established over the rural areas within the district to monitor the landowners' activities and undertake as required maintenance across the main channels within the district.

Within the Waikato Region many historic wetland areas and river valley floodplains were altered and developed to reduce flooding and drain land for the purpose of establishing farming. Many of the historic drainage areas that were established to manage river channels are no longer operational but much of the larger areas of flat or relatively flat land have remained within a drainage area that continues to be managed and provides a valued service. Figure 14 below shows the existing and historic areas within the region that have been developed or improved under a constituted drainage area.

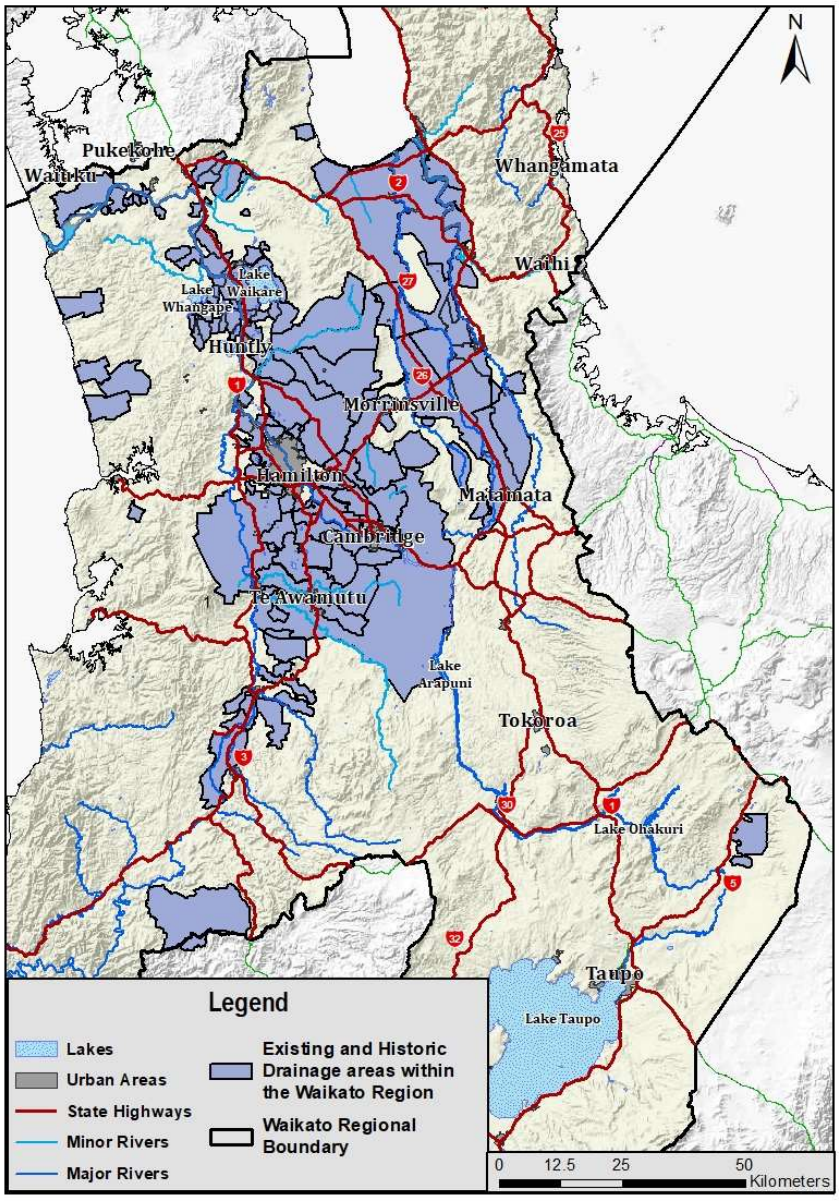


Figure 14: Existing and historic drainage areas within the Waikato Region

Appendix 2 – Detailed drainage area descriptions

The drainage areas described in Appendix 2 are grouped under each of the drainage advisory subcommittees. The areas have become the responsibility of the Council through the OCLGR or through transfers from the Waikato and former Franklin District Councils.

The following Table lists the drainage subdivisions and drainage areas alphabetically. It schedules the authority that previously managed the area and also the drainage advisory subcommittee that the subdivision or area currently reports through to the Council.

Table 1: Alphabetical list of drainage subdivisions, areas and SRA's

Drainage subdivision	Drainage area	Former authority	Current subcommittee
Ahikope SRA	Thames Valley	Thames Valley Drainage Board	Thames Valley
Aka Aka Otaua	Aka Aka Otaua	Aka Aka Otaua Drainage Board	Aka Aka Otaua
Austins	Huntly West	Waikato District Council	Franklin Waikato
Bancrofts SRA	Thames Valley	Thames Valley Drainage Board	Thames Valley
	Bell Road	Franklin District Council	Franklin Waikato
Blairs	Huntly West	Waikato District Council	Franklin Waikato
	Churchill East	Waikato District Council	Franklin Waikato
Elstow	Thames Valley	Thames Valley Drainage Board	Thames Valley
	Fencourt	Fencourt Drainage Board	Waikato Central
Freshfield	Taupiri	Taupiri Drainage and River Board	Waikato Central
Freshfield Pump	Taupiri	Taupiri Drainage and River Board	Waikato Central
Golf Course	Huntly West	Waikato District Council	Franklin Waikato
	Greenhill	Waikato District Council	Waikato Central
Guests	Huntly West	Waikato District Council	Franklin Waikato
	Hautapu	Hautapu Drainage Board	Waikato Central
Hills	Huntly West	Waikato District Council	Franklin Waikato
	Hopu Hopu	Waikato District Council	Waikato Central
Horohoro (Patterson's)	Huntly West	Waikato District Council	Franklin Waikato
Hungahunga	Thames Valley	Thames Valley Drainage Board	Thames Valley
	Island Block	Waikato District Council	Franklin Waikato
	Kaawa	Franklin District Council	Franklin Waikato
Kimihia drainage	Kimihia	Waikato District Council	Franklin Waikato
Kimihia pumped	Kimihia	Waikato District Council	Franklin Waikato
	Kirikiriroa Horsham Downs	Waikato District Council	Waikato Central
	Kirikiriroa Komakorau	Waikato District Council	Waikato Central
Komakorau	Taupiri	Taupiri Drainage and River Board	Waikato Central

	Koromatua	Waikato District Council	Waikato Central
Manawaru	Thames Valley	Thames Valley Drainage Board	Thames Valley
Mangaonua	Eureka	Eureka Drainage Board	Waikato Central
Mangatawhiri C1	Mangatawhiri	Franklin District Council	Franklin Waikato
Mangatawhiri C2	Mangatawhiri	Franklin District Council	Franklin Waikato
Mangatawhiri C3	Mangatawhiri	Franklin District Council	Franklin Waikato
Mangatawhiri C4	Mangatawhiri	Franklin District Council	Franklin Waikato
Mangatawhiri C5	Mangatawhiri	Franklin District Council	Franklin Waikato
	Mangati	Waikato District Council	Franklin Waikato
	Mangawara	Waikato District Council	Franklin Waikato
Manor Park	Eureka	Eureka Drainage Board	Waikato Central
Matamata Urban	Thames Valley	Thames Valley Drainage Board	Thames Valley
	Matangi	Waikato District Council	Waikato Central
	Meremere East	Waikato District Council	Franklin Waikato
	Meremere West	Waikato District Council	Franklin Waikato
	Morrison Swamp	Franklin District Council	Franklin Waikato
	Motukaraka	Franklin District Council	Franklin Waikato
Ngaruawahia	Te Rapa	Te Rapa Drainage Board	Waikato Central
	Ngaruawahia North	Waikato District Council	Waikato Central
North Mangawara	Taupiri	Taupiri Drainage and River Board	Waikato Central
	Ohaupo/Ngaroto	Ohaupo/Ngaroto Drainage Board	Waikato Central
	Ohinewai	Waikato District Council	Franklin Waikato
Ohote Basin	Te Rapa	Te Rapa Drainage Board	Waikato Central
Okowhau	Huntly West	Waikato District Council	Franklin Waikato
	Onepoto	Franklin District Council	Franklin Waikato
	Onewhero Downstream	Franklin District Council	Franklin Waikato
	Orchard Road	Waikato District Council	Franklin Waikato
	Orton	Franklin District Council	Franklin Waikato
Pukekapia 1	Pukekapia	Waikato District Council	Franklin Waikato
Pukekapia 2	Pukekapia	Waikato District Council	Franklin Waikato
	Pukeroro	Waikato District Council	Waikato Central
	Puketaha	Waikato District Council	Waikato Central
	Rangiriri North	Waikato District Council	Franklin Waikato
Rotokauri	Te Rapa	Te Rapa Drainage Board	Waikato Central
	Rotomanuka	Rotomanuka Drainage Board	Waikato Central
Rowes East SRA	Thames Valley	Thames Valley Drainage Board	Thames Valley
Ruawaro East	Ruawaro	Waikato District Council	Franklin Waikato
Ruawaro No1, Central	Ruawaro	Waikato District Council	Franklin Waikato
Ruawaro No1, Furniss	Ruawaro	Waikato District Council	Franklin Waikato
Ruawaro North	Ruawaro	Waikato District Council	Franklin Waikato
Ruawaro West	Ruawaro	Waikato District Council	Franklin Waikato

South Mangawara	Taupiri	Taupiri Drainage and River Board	Waikato Central
	Swan Road	Waikato District Council	Franklin Waikato
Tahuna	Thames Valley	Thames Valley Drainage Board	Thames Valley
Tahuna SRA	Thames Valley	Thames Valley Drainage Board	Thames Valley
Tatuanui	Thames Valley	Thames Valley Drainage Board	Thames Valley
Tauhei	Taupiri	Taupiri Drainage and River Board	Waikato Central
	Te Kohanga	Franklin District Council	Franklin Waikato
	Te Kowhai	Waikato District Council	Waikato Central
Tenfoot	Taupiri	Taupiri Drainage and River Board	Waikato Central
	Tickles	Franklin District Council	Franklin Waikato
	Tuakau	Franklin District Council	Franklin Waikato
Uapoto	Taupiri	Taupiri Drainage and River Board	Waikato Central
	Vrsaljkos Road	Waikato District Council	Franklin Waikato
Waihekau	Thames Valley	Thames Valley Drainage Board	Thames Valley
Waihou	Thames Valley	Thames Valley Drainage Board	Thames Valley
Waikare Frost	Waikare	Waikato District Council	Franklin Waikato
Waikare Nikau	Waikare	Waikato District Council	Franklin Waikato
Waikare Ohinewai	Waikare	Waikato District Council	Franklin Waikato
Waikare Rangiriri	Waikare	Waikato District Council	Franklin Waikato
Waikare West	Waikare	Waikato District Council	Franklin Waikato
	Waikorea	Waikato District Council	Franklin Waikato
Waitakaruru	Eureka	Eureka Drainage Board	Waikato Central
Waitoa	Thames Valley	Thames Valley Drainage Board	Thames Valley
	Waller Commins	Franklin District Council	Franklin Waikato
Whakahoro	Thames Valley	Thames Valley Drainage Board	Thames Valley

The Councils land drainage responsibilities came from the OCLGR in 1989, from transfers from WDC and the former FDC that were transferred in stages over time to Council and the Council adopting new responsibilities and funding systems within its drainage areas. The following table summarises the dates that the various areas became the responsibility of the Council, highlighting the relevant WRC drainage advisory subcommittee that the areas report through.

Table 2: Sequential dates for drainage areas becoming the responsibility of Council

Date	Relevant WRC Subcommittee	Drainage districts transferred	
1989 (OCLGR)	Waikato Central	Freshfield	Waitakaruru
		Freshfield pump	Mangaonua
		Komakorau	Rotokauri
		North Mangawara	Ngaruawahia
		South Mangawara	Fencourt
		Tauhei	Hautapu
		Tenfoot	Rotomanuka
		Uapoto	Ohaupo/Ngaroto

	Aka Aka Otaua	Aka Aka Otaua	
	Thames Valley	Hungahunga	Waihou
		Manawaru	Elstow
		Waihekau	Tahuna
		Tatuanui	Ahikope SRA
		Whakahoro	Tahuna SRA
		Waitoa	
1996 (new funding systems)	Thames Valley	Bancrofts SRA	Matamata Urban
		Rowes East SRA	
2001 (new funding systems)	Waikato Central	Manor Park	Ohote Basin
July 2010 (transferred)	Franklin Waikato	Bell Road	Onepoto
		Kaawa	Orton
		Mangatawhiri C1, 2, 3, 4 & 5	Te Kohanga
		Morrison Road	Tickles
		Motukaraka	Tuakau
		Onewhero Downstream	Waller Commins
July 2011 (transferred)	Franklin Waikato	Austins	Meremere West
		Blairs	Ohinewai
		Churchill East	Okowhau
		Guests	Orchard Road
		Hills	Rangiriri
		Horohoro	Ruawaro Central
		Huntly West	Ruawaro Furness
		Island Block	Ruawaro North
		Kimihia Pumped	Swan Road
		Kimihia	Vrsaljkos
		Meremere East	
	Waikato Central	Greenhill	
July 2012 (transferred)	Franklin Waikato	Waikare Frost	Mangawara
		Waikare Nikau	Pukekapia 1
		Waikare Ohinewai	Pukekapia 2
		Waikare Rangiriri	Ruawaro East
		Waikare West	Ruawaro West
		Mangati	Waikorea
	Waikato Central	Hopuhopu	Ngaruawahia North
		Kirikiriroa Horsham Downs	Pukeroro
		Kirikiriroa Komakorau	Puketaha
		Koromatua	Te Kowhai
		Matangi	

Waikato Central

The Waikato Central Drainage Advisory Subcommittee includes all of the WRC drainage areas located within the Hamilton Basin area that covers the area bordered on the west by the Waipa and Waikato Rivers north of Pirongia to Taupiri, the Taupiri ranges, the Upper Mangawara and Tauhei catchments to the north and east, the hills south of Morrinsville to Te Miro and French pass, and the areas north of Cambridge and Te Awamutu. There are 25 separate drainage areas or subdivisions within the Waikato Central area, two funding systems to run and maintain pumps, one funding system to maintain stopbanks and 764 drains totalling 964km.

The following describes each of the drainage areas and their subdivisions within the Waikato Central Drainage Advisory Subcommittee area.

Taupiri drainage area

The Taupiri drainage area covers an area bounded approximately by Ruakura, Taupiri and Tahuna and includes the entire catchments draining to the Mangawara River which then discharge into the Waikato River at Taupiri. The Taupiri drainage area comprises seven subdivisions that are mainly based on subcatchments draining to the Mangawara River:

Freshfield subdivision

This comprises land that drains to the Mangatoketoke Stream and is bounded by Kainui Road, Horsham Downs Road and Gordonton Road.

The subdivision comprises 40 drains totalling 59.2km.

Freshfield pump subdivision

This area is within the Freshfield subdivision and comprises land between Horsham Downs Road and Boyd Road that drains to the Freshfield pump. The Freshfield pump discharges into the Ballard Road drain which is a drain within the Freshfield subdivision.

The subdivision comprises 4 drains totalling 5.2km.

Komakorau subdivision

This comprises land east of Gordonton Road as far south as Ruakura that drains to the Komakorau Stream.

The subdivision comprises 87 drains totalling 175.4km.

North Mangawara subdivision

This includes the drainage subcatchments along the north side of the Mangawara River from Taupiri to Hoe-O-Tainui.

The subdivision comprises 16 drains totalling 13.8km.

South Mangawara Subdivision

This includes the drainage subcatchments along the south side of the Mangawara River, east of the Tauhei Stream, from Orini to Waiti.

The subdivision comprises 25 drains totalling 33.2km.

Tauhei subdivision

Includes the drainage subcatchments that drain to the Tauhei stream, a major tributary of the Mangawara River, from Orini to near Mangateparu.

The subdivision comprises 36 drains totalling 81.3km.

Tenfoot subdivision

This includes the drainage subcatchments that drain to the Mangawara River via the Tenfoot drain.

The subdivision comprises 27 drains totalling 48.1km

Uapoto subdivision

This includes the Uapoto peat area and Whangamaire Stream that drain to the Mangawara River upstream from Taupiri.

The subdivision comprises 16 drains totalling 23.8km.

The totals for the Taupiri drainage area are some 251 drains totalling 440km of drains.

The effectiveness of much of the Taupiri drainage system relies on the Mangawara River flood protection works. The lower lying areas within North Mangawara, South Mangawara, Tauhei, Tenfoot and Uapoto subdivisions are protected from river flooding by the river stopbanks, floodgates and the Whangamaire pumpstation. The areas freely drain to the main river and streams and rely on those channels being adequately maintained. For this reason, most of the drainage ratepayers also pay separate targeted rates to the Lower Waikato zone for flood protection and river management.

The drainage funding systems within the Mangawara catchment were reviewed in 2002, and the Freshfield and Freshfield pump subdivisions had their funding systems reviewed in 2004.

Grass carp have been introduced into the pump feeder drains in the Freshfield, and Whangamaire pump catchments. There is an associated floodgate screen to contain the fish at Whangamaire that is maintained as a drainage asset.

Eureka drainage area

The Eureka drainage area is located in the vicinity of Eureka, 15 km east of Hamilton, and covers land along SH 26 between Hamilton and Morrinsville. The area consists of two subdivisions and a separate rating area to run the Manor Park pump and maintain the associated drains at Eureka Township. The present funding systems were adopted in 1999 and replaced five former small subdivisions with the two new ones that are based on the two catchments within the Eureka drainage area.

Waitakaruru subdivision

This includes land that drains to the Waitakaruru Stream along its true left bank, upstream of Morrinsville. The Waitakaruru Stream is a tributary of the Piako River.

The subdivision comprises 100 drains totalling 113.8km.

Mangaonua subdivision

This includes land associated with the lower reaches of Mangaonua Stream between Newstead and Pukemoremore. The Mangaonua Stream discharges to the Waikato River south of Hamilton.

The subdivision comprises 54 drains totalling 47.9km.

Manor Park

This includes land that drains to the Manor Park pump in Eureka Township and is located in the Waitakaruru subdivision.

The subdivision comprises 2 drains totalling 1.3km and the Manor Park pumpstation.

The drainage assets in the Eureka drainage area consist of 156 drains totalling 163km, one pumpstation at Manor Park in the Eureka Village and 8 drop structures within the Mangaonua Stream channel. There are no stopbanks or floodgates managed as drainage assets.

Te Rapa drainage area

The Te Rapa drainage area is located to the north west of Hamilton, extending between Ngaruawahia and Temple View. The area includes two distinct parts, one drainage system based on the Ohote Stream that discharges into the lower reaches of the Waipa and the second has several outlets to the Waikato River at Horotiu and into gully systems draining into the Waipa River upstream of Ngaruawahia.

The present funding systems were adopted in 1996 and the seven former small subdivisions were replaced with two new subdivisions based on subcatchments. An additional new funding system was adopted in 2002 to fund the maintenance of the Ohote basin flood protection works, after the capital works were constructed.

Rotokauri subdivision

This includes land in the Ohote Stream catchment and has two subcatchments. The first is land in the Ohote basin upstream of Laxon Road, and the second includes land in the Lake Rotokauri catchment that is not within Hamilton city. The area is characterised by a high number of rural residential properties.

The level of Lake Rotokauri as controlled by a weir that is the Council's responsibility. Both basins drain to the Waipa River via the Ohote Stream.

The subdivision comprises 56 drains totalling 41.4km.

Ngaruawahia subdivision

This includes land between the Te Rapa/Te Kowhai Road and Ngaruawahia that drains to the Waikato River at Horotiu, and the Waipa River upstream of Ngaruawahia. The area is characterised by a high number of rural residential properties.

The subdivision comprises 59 drains totalling 50.6km.

Ohote basin funding system

This is to fund the Ohote basin flood control works that were constructed specifically to offset the increased discharges coming from the urban development of the Western Heights area within Hamilton City. The work includes the upgraded main Ohote Stream channel plus other channels discharging from the City, the Ohote stopbank, 6 associated floodgates and the Laxon Road culvert floodgates.

The subdivision comprises 4 channels totalling 9.0km, the Ohote Stopbank and 7 floodgates.

Hamilton City

This includes all the land within the Te Rapa drainage area that is within the Hamilton City boundaries. Hamilton City provides the service in this area through a transfer of responsibility that occurred in 1991. The council presently does not collect any rates from or provide a service in this area.

The Te Rapa drainage area has a total of 119 drains totalling 101km. There is 2.2 km of stopbanking along the Ohote Stream within the Ohote basin, with six associated floodgates, and a large floodgate structure on the outlet of the culvert beneath Laxon Road. There is also an outlet weir within the lake outlet drain that drains from Lake Rotokauri.

Fencourt drainage area

The Fencourt drainage area covers the area to the northeast of Cambridge that is centred on the upper reaches of the Mangaonua Stream, which drains to the Waikato River at the southern end of Hamilton City. The drainage area borders both the Eureka and Hautapu drainage areas. The Fencourt drainage area differs from many of the other drainage areas in that it receives runoff from a hilly upper catchment. The present funding system was adopted in 1999.

The Fencourt drainage area comprises some 47 drains totalling 49.7km. There are no stopbanks, floodgates or pumps managed within the drainage area.

Hautapu drainage area

The Hautapu drainage area covers an area to the north of Cambridge. The drainage area borders the Fencourt and Eureka drainage areas and drains the upper catchments of the Mangaone, Mangaharakeke, and Mangaonua Streams. The area is characterised by a high number of rural residential properties. The present funding system was adopted in 1997.

The Hautapu drainage area comprises 84 drains totalling 79.8km. There is one small floodgate in the Hautapu drainage area (the Brinkworth floodgate), and no stopbanks or pumps.

Rotomanuka drainage area

The Rotomanuka drainage area covers an area to the east of SH 3 near Ohaupo that drains from the west side of the Moanatuatua peat dome. The area includes Lakes Serpentine and Rotomanuka. The majority of the drainage area drains northwards to Mystery Creek and the Waikato River, while the remainder drains southwards towards the Mangapiko Stream that flows through Te Awamutu to the Waipa River. The present funding system is an historic one that was adopted in 1976.

The Rotomanuka drainage area comprises 14 drains totalling 27.8 km, two detention dams and four rock weirs (or drop structures). There are no floodgates, stopbanks or pumps.

Ohaupo/Ngaroto drainage area

The Ohaupo/Ngaroto drainage area covers an area to the west of SH 3, southwest of Ohaupo, and includes Lakes Ngaroto, Ngarotoiti and Ruatuna. The drainage area drains to the Mangaotama Stream and then to the Waipa River.

The drainage area comprises 16 drains with a total length of 23.6 km. There are no stopbanks, floodgates or pumps.

Waikato District drainage areas

The Waikato District drainage areas within the Waikato Central subcommittee area are ten of the separate areas that drain directly to rivers or streams. These drainage systems ultimately discharge into the Waipa and Waikato Rivers.

The present rating system maps were inherited from WDC and the Council adopted a funding policy for the areas in 2012.

Greenhill

This includes land that drains from a subcatchment of the Kirikiriroa Stream in Hamilton City east of Gordonton Road, based around the Greenhill Road catchment. The main outlet for the area runs along the north side of Greenhill Road to enter the City beneath Gordonton Road. The area between Greenhill Road and Radiata Street is now within Hamilton City and it is likely that all of this drainage area will become urbanised in the future. The drainage area comprises 3 drains with a total length of 2.5 km.

Puketaha

This area is immediately north of the Greenhill drainage area and includes land east of Gordonton Road that drains to another subcatchment of the Kirikiriroa Stream within Hamilton City, based on Puketaha Road.

The drainage area comprises 9 drains with a total length of 6.7km.

Hopuhopu

This includes rural land between Hopuhopu village and Ngaruawahia that drains to the Waikato River beneath Old Taupiri Road near Hopuhopu.

The drainage area comprises 10 drains with a total length of 9.0km.

Ngaruawahia North

This includes a small catchment of urban and lifestyle blocks that drains to the Waikato River beneath Old Taupiri Road downstream of Ngaruawahia. The area covers land between SH1 and the Waikato River as far as Jacobs Lane.

The drainage area comprises 5 drains with a total length of 2.2km.

Kirikiriroa Horsham Downs

This includes land that drains to the Waikato River from an unnamed catchment between Horsham Downs Road and the Waikato River in the Kay Road and Osborne Road area. The area south of Kay Road to Flagstaff is now within Hamilton City and has been urbanised.

The drainage area comprises 6 drains with a total length of 7.3km.

Kirikiriroa Komakorau

This includes land that drains to the Waikato River downstream of the Horotiu Bridge from an unnamed catchment draining west from Horsham Downs that passes beneath the new Waikato Expressway, Lake Road and River Road.

The drainage area comprises 3 drains with a total length of 4.7km.

Koromatua

This includes land within the Koromatua Stream catchment, between Barret Road and Walsh Road, which is prone to flooding. The Koromatua Stream drains to the Waipa River upstream of Whatawhata.

The drainage area maintains one channel, essentially the Koromatua Stream, over a total length of 3.1km.

Matangi

This area includes land that drains small catchments to the Mangaonua and Mangaharakeke Streams north and west of Matangi Village. The area extends from the Mangaonua Stream at the Hamilton City boundary to the Mangaonua subdivision boundary along Tauwhare Road and the Hautapu drainage area boundary at Bellevue Road. The area is characterised by a high number of rural residential properties.

The drainage area is self-administered and comprises 33 drains with a total length of 31.2km.

Pukeroro

The Pukeroro drainage area straddles Waipa and Waikato Districts at Pukeroro, northwest of Cambridge. The area within Waipa District is maintained by Waipa District Council and the area within Waikato District is managed by the Council. The land is within the upper reaches of the Mangaomapu Stream, a tributary of the Mangaone and Mangaonua Streams that drains to the Waikato River at the southern end of Hamilton City. The area managed by the council is in the Discombe Road and Hautapu Road area.

The drainage area comprises 3 drains with a total length of 4.4km.

Te Kowhai

This includes land north of Te Kowhai Village that is adjacent to the southwest Ngaruawahia subdivision boundary in the Horotiu Road area. The area covers a subcatchment of the Mangaheka Stream that drains to the Waipa River near Saulbrey Road.

The drainage area comprises 4 drains with a total length of 7.7km.

Franklin Waikato

The Franklin Waikato Drainage Advisory Subcommittee includes all of the WRC drainage areas located between Taupiri and Port Waikato (excluding the Aka Aka Otaua area) and those that drain to the West Coast. There are 49 separate drainage areas or subdivisions within the Franklin Waikato area and a total of 178 drains totalling 256km of drains

The descriptions of the various drainage areas and their subdivisions within the Franklin Waikato drainage advisory subcommittee area are:

Huntly West drainage area

The Huntly West drainage area was established by the former Raglan County Council and is located along the west side of the Waikato River, extending from the Huntly power station to Lake Whangape. All of the drainage systems within the subdivisions rely on the LWWCS stopbanks for protection from Waikato River floods and discharge to the river through pumpstations. There is no gravity drainage from any of these area except for the Okowhau area where a floodgate exists.

The present funding system maps were inherited from WDC and a funding policy document was adopted by the council when these assets were transferred in 2011.

Okowhau subdivision

This includes land that is the catchment of Lake Okowhau. The area drains to the Waikato River some 2.4km north of the Huntly power station through a floodgate and twin pumpstation. The area has historically been modified through coal mining that has resulted in land subsidence within some parts of the area that cannot be provided with drainage.

The drainage area comprises 8 drains with a total length of 6.73 km.

Golf Course subdivision

This area is also known as Huntly West. It includes land in the next catchment north of Okowhau that drains to the Waikato river through the Golf Course pumpstation located immediately south of the Huntly Golf Course.

The drainage area comprises 7 drains with a total length of 10.2 km.

Hills subdivision

This is a small 2 property drainage area that drains land east of Lake Rotongaro to the Waikato River through Hills pumpstation.

The drainage area comprises 1 drain with a total length of 490 metres.

Horahora subdivision

This is the largest drainage area within Huntly West and drains land north of Lake Rotongaro to discharge to the Waikato River through Pattersons pumpstation some 600 metres west of Rangiriri Bridge

The drainage area comprises 11 drains with a total length of 16.34 km.

Austins subdivision

This drainage area is located in the southeast corner of the confluence of the Lake Whangape outlet and the Waikato River and extends back to Glen Murray Road. It discharges through Austin's pumpstation to the outlet from Lake Whangape.

The drainage area comprises 4 drains with a total length of 5.16 km.

Blairs subdivision

This area drains the outlets from three small lakes immediately west of Rotongaro Road that includes Lakes Te Kapa, Waiwhata and the third unnamed lake to discharge through Blairs pumpstation to the outlet from Lake Whangape just downstream from Glen Murray Road.

The drainage area comprises 3 drains with a total length of 4.01 km.

Guests subdivision

This area drains land west of Rotongaro Road and north of Beaverland Road and discharges through Guests pump to Lake Whangape.

The drainage area comprises 6 drains with a total length of 4.09 km.

Pukekapia drainage area

The Pukekapia drainage area is located some 5 kilometres west of Huntly and the drainage system discharges in a northerly direction into Lake Rotongaro. The area is located north of Hetherington Road and sits between Rotongaro Road and Pukekapia Road and there are 2 subdivisions.

Pukekapia 1

Pukekapia 1 area covers a subcatchment east of Rotongaro Road that drains directly to Lake Rotongaro.

The drainage area comprises 4 drains with a total length of 5.95 km.

Pukekapia 2

Pukekapia 2 covers an adjacent subcatchment west of Pukekapia Road that also drains directly to Lake Rotongaro.

The drainage area comprises 3 drains with a total length of 3.68 km.

Ruawaro drainage area

The Ruawaro drainage area is located some 9 kilometres west of Huntly and the drainage system discharges in a northerly direction into Lake Whangapae. There are 5 subdivisions, three associated with flood protection work and two draining directly into the Waikokowai Stream.

Ruawaro Furniss subdivision

This area is on the east side of the Waikokowai Stream in its lower reaches and drains to Lake Whangapae through the Furniss Downstream pumpstation.

The drainage area comprises 2 drains with a total length of 2.28 km.

Ruawaro Central subdivision

This area is on the east side of the Waikokowai Stream immediately downstream of Furniss Road. The area drains to the Furniss Upstream pump which discharges into the Waikokowai Stream.

The drainage area comprises 1 drains with a total length of 720 metres.

Ruawaro North subdivision (Harvey's)

This area is on the west bank of the Waikokowai Stream in its lower reaches and drains to Lake Whangapae through Harvey's pumpstation

The drainage area comprises 2 drains with a total length of 2.84 km.

Ruawaro East subdivision

Ruawaro East includes the eastern tributary of the Waikokowai Stream that lies east of Furniss Road and extends back to Rotongaro and Waikokowai Road.

The drainage area comprises 1 drains with a total length of 3.84 km.

Ruawaro West subdivision

Ruawaro East includes the upper Waikokowai Stream from Furniss Road, south to Waikokowai Road.

The drainage area comprises 2 drains with a total length of 5.07 km.

Kimihia

The Kimihia area is based on the Lake Kimihia catchment that drains to the Waikato River beneath the Main Trunk Railway line and SH1 north of Huntly. The area is floodgated from the Waikato River beneath the Huntly to Kimihia stopbank. The area has historically been significantly modified through the formation and operation of the Huntly East open cast coal mine and the subsequent underground mining and land subsidence within the area between the Huntly oxidation ponds and SH1. This area is currently being impacted by the construction of the Waikato Expressway that cuts across the drainage area.

Kimihia drainage area

The Kimihia drainage area drains land upstream from Lake Kimihia around the historic lake margins and conveys drainage to the Waikato River.

The drainage area comprises 2 drains with a total length of 3.61 km.

Kimihia SRA

Kimihia SRA is a small tributary catchment of the lower Kimihia, north of Fisher Road that is stopbanked from the Kimihia Stream and drains into the Stream via the Kimihia

pumpstation. This area is being severed by the Waikato Expressway and a new pumpstation is being constructed upstream of the expressway embankment to serve the two upstream properties. The existing pumpstation is to be decommissioned.

The drainage area comprises 1 drain with a total length of 270 metres.

Ohinewai drainage area

The Ohinewai drainage area includes land between the Waikato Expressway and the Waikato River at Ohinewai. The area is protected from Waikato River flooding by the LWWCS stopbank and drains to Halls pumpstation that discharges to the Waikato River.

The drainage area comprises 2 drains with a total length of 2.22 km.

Rangiriri North drainage area

The Rangiriri drainage area includes land adjacent to the Waikato River between Rangiriri Village and Plantation Road to the northwest. It is protected from Waikato River flooding by an LWWCS stopbank and drains to the Waikato River through the Rangiriri North pumpstation.

The drainage area comprises 4 drains with a total length of 4.49 km.

Island Block drainage area

The Island Block drainage area straddles the north and south side of Island Block Road at its eastern end. The area is protected from flooding from the Whangamarino Wetland by LWWCS stopbanks and drains to the north and south to discharge through the Island Block North and Island Block South pumpstations.

The drainage area comprises 5 drains with a total length of 3.70 km.

Orchard Road drainage area

The Orchard Road drainage area is located some 2.5km northwest of Te Kauwhata and sits over the valley between Paddy Road and Vineyard Road. It is protected from flooding from the Whangamarino Wetland by a stopbank along an old railway formation and is drained by the new Orchard Road pumpstation.

The drainage area comprises 2 drains with a total length of 1.53 km.

Swan Road drainage area

The Swan Road drainage area is located east of Te Kauwhata and north of Waerenga Road and sits between Swan Road and the Northern Outlet Canal. The area is protected from flooding from the Whangamarino Wetland by LWWCS stopbanks along the Northern Outlet Canal and facing the Whangamarino Wetland and is drained by the Swan Road pumpstation.

The drainage area comprises 6 drains with a total length of 10.94 km.

The Swan Road drainage area has an appointed 'pumpstation superintendent' whose role is to monitor the pumpstation and keep the weed screens clean. To recognise this input, the pumpstation superintendent is able to claim an annual gratuity.

Vrsaljkos Road drainage area

The Vrsaljkos Road drainage area is located on the east side of the Northern Outlet Canal off the ends of Vrsaljkos Road and Kelly Road. It is protected from flooding from the Whangamarino Wetland by an LWWCS stopbank and drained by the Vrsaljkos Road pumpstation. The drainage area comprises 2 drains with a total length of 1.96 km.

Churchill East drainage area

The Churchill East drainage area is located adjacent to the Waikato River northwest of Rangiriri. The area is bordered by the Waikato River, Churchill East Road, Hall Road, Rodda Road and Plantation Road. The area is protected from flooding from the Waikato River by an LWWCS stopbank along Churchill East Road. The area is drained by the Holmes pumpstation at the downstream end of the stopbank and an internal pumpstation lifts water from a low lying internal valley up to the main drainage to the Holmes pumpstation. An elevated subcatchment draining directly to the Waikato River is drained by the Watts pumpstation.

The drainage area comprises 6 drains with a total length of 9.87 km.

Meremere East drainage area

The Meremere East drainage area is located some 2km southwest of Meremere Village and covers the catchment west of SH1 that drains to the Waikato River beneath Drag Way, or Gregory Road. The area is protected from Waikato River flooding by an LWWCS stopbank adjacent to Gregory Road and is drained by the Meremere Main pumpstation.

The drainage area comprises 6 drains with a total length of 9.67 km.

Meremere West drainage area

The Meremere West drainage area is located off the end of Gregory Road and runs along the Waikato River to Hampton Downs Road. The area is protected from Waikato River flooding by a continuous LWWCS stopbank along the river and is drained by the Peters pumpstation at the northern end and the Henrys pumpstation at the southern end.

The area is covered by a single farming unit so is currently not operative.

Mangawara drainage area

The Mangawara drainage area is located some 9km east of Ohinewai and drains a subcatchment of the Matahuru Stream beneath Tahuna Road.

The drainage area comprises 6 drains with a total length of 8.55 km.

Waikare drainage area

The Waikare drainage area is based on the subcatchments draining directly to Lake Waikare along the west and southern margins. The area has been subdivided into subdivisions based on groups of subcatchments and natural features.

Rangiriri subdivision

The Rangiriri subdivision covers the subcatchments along the west lake margins between Te Kauwhata and the Te Onetea Stream and includes the Lake Kopuera catchment.

The drainage area comprises 3 drains with a total length of 5.23 km.

West subdivision

The Waikare West subdivision includes the area east of SH1, from the Te Onetea Stream, south to Tahuna Road and includes the Black Lake or Lake Rotokawau catchment.

The drainage area comprises 10 drains with a total length of 13.28 km.

Ohinewai subdivision

The Ohinewai subdivision covers the Lake Ohinewai catchment and its outlet, which sits east of the NIMT railway line and south of the Tahuna Road. The drainage area comprises 4 drains with a total length of 2.31 km.

Frost subdivision

The Frost subdivision covers the subcatchment between Frost Road and Tahuna Road. The area historically drained through Lake Rotokawau (Black Lake) but now drains to Lake Waikare via a diverted drain excavated through DoC land.

The drainage area comprises 2 drains with a total length of 2.97 km.

Nikau subdivision

The Nikau subdivision covers the subcatchment between the Frost subdivision and the Mangawara drainage area and it drains directly to Lake Waikare.

The drainage area comprises 1 drain with a total length of 1.97 km.

Mangati drainage area

The Mangati drainage area is a West Coast area located some 15km north of Raglan. The area is based on the lower 10km reach of the Mangati Stream at Te Akau, and is the main tributary of the Waimai Stream that drains to the West Coast.

The drainage area comprises 1 stream with a total length of 13.03 km.

Waikorea drainage area

The Waikorea drainage area drains directly to the West Coast and is located some 23km north of Raglan. The area is based on the lower 7km reach of the Waikorea Stream and 2km of its main tributary, the Matira Stream, near Matira.

The drainage area comprises 2 streams with a total length of 6.64 km.

Bell Road drainage area

The Bell Road drainage area is based on a small subcatchment on the right bank of the Maramarua River east of Bell Road near Maramarua.

The area is protected from flooding from the Whangamarino Wetland by a stopbank starting along the Maramarua River and turning west to join high ground near the south end of Bell Road. The area does become flooded from the Maramarua River when flows downstream of SH2 exceed the existing channel capacity and flow over its right bank.

The drainage area comprises 2 drains with a total length of 2.98 km.

Motukaraka drainage area

The Motukaraka drainage area covers the Kopuera Stream subcatchment of the Maramarua River, immediately south of Mangatawhiri and between Koheroa Road and Bell Road. The area is protected from flooding from the Whangamarino wetland by an LWWCS stopbank and is drained via the Motukaraka pumpstation.

The drainage area comprises 13 drains with a total length of 22.80 km.

The local drainage area representative has significant involvement in the management of this drainage area and the associated stopbank and pumpstation. To recognise this input, the representative is able to claim an annual gratuity.

Mangatawhiri drainage area

The Mangatawhiri drainage area is located over the lower reaches of the Mangatawhiri River and extends from Pendergrast Road down to the Waikato River near Mercer. The drainage area consists of seven compartments along both banks of the Mangatawhiri River, 5 of which include a drainage network that is managed by the Council.

Compartment1 subdivision

Mangatawhiri Compartment 1 is the compartment upstream of SH2 that is bordered by Pendergrast Road and Lyons Road.

The area is protected from flooding by LWWCS stopbanks along the Mangatawhiri River and Pouraureroa Stream. The land behind the stopbanks is a detention area utilised when Mangatawhiri River flows exceed the 5 year event.

The drainage area comprises 2 drains with a total length of 2.42 km.

Compartment 2 subdivision

Mangatawhiri Compartment 2 is located immediately downstream of SH2 along the left bank of the Mangatawhiri River and extends to the high ground off the end of King Road.

The area is protected from flooding by a 2.3km LWWCS stopbank along the Mangatawhiri River and the area drains to the Mangatawhiri River through a combination floodgate and pumpstation structure.

The drainage area comprises 4 drains with a total length of 5.12 km.

The local drainage area representative has significant involvement in the management of this drainage area and the associated stopbank and pumpstation. To recognise this input, the representative is able to claim an annual gratuity.

Compartment 3 subdivision

Mangatawhiri Compartment 3 is also located along the left bank of the Mangatawhiri River and extends from the high ground at King Road to high ground at the end of McIntyre Road.

The area is protected from flooding by a 3.7km LWWCS stopbank along the river that turns to run south to the high ground at the end of McIntyre Road. The area is entirely drained by the Mangatawhiri Compartment 3 pumpstation.

The drainage area comprises 3 drains with a total length of 4.12 km.

Compartment 4 subdivision

Mangatawhiri Compartment 4 is located along the right bank of the Mangatawhiri River downstream of SH2 extending for some 4.5km to Ryburn's Lagoon off the end of Serpell Road.

The area is protected from flooding by a 5km LWWCS stopbank along the Mangatawhiri River and the area is entirely drained by the Mangatawhiri Compartment 4 pumpstation.

The drainage area comprises 6 drains with a total length of 11.98 km.

Compartment 5 subdivision

Mangatawhiri Compartment 5 is located over a small right bank tributary of the Mangatawhiri River in the vicinity of Miller Road, immediately downstream of SH1.

The area is protected from Mangatawhiri and Waikato River flooding by the LWWCS, Miller Farlane stopbank and is entirely drained by the Mangatawhiri compartment 5 pumpstation.

The drainage area comprises 1 drain with a total length of 0.72 km.

Waller Commins

Waller Commins drainage area is located over a small right bank tributary of the Whangamarino River adjacent to Oram Road, some 2km southeast of Mercer.

The area is protected from Whangamarino River flooding by the LWWCS, Waller Commins stopbank and is entirely drained by the Waller Commins pumpstation.

The drainage area comprises 1 drain with a total length of 0.66 km.

Tuakau

The Tuakau drainage area is located adjacent to the Waikato River south of Tuakau Township. The area comprises two compartments, one on each side of the Kairoa Stream.

The area is protected from Waikato River flooding by the LWWCS, Tuakau west and east compartment stopbanks and is drained by a combination floodgate and pumpstation structure located in the west compartment. The two compartments are joined together by a pipeline that passes beneath the Kairoa Stream.

The drainage area comprises 3 drains with a total length of 3.04 km.

The local drainage area representative has significant involvement in the management of this drainage area and the associated stopbank and pumpstation. To recognise this input, the representative is able to claim an annual gratuity.

Orton drainage area

The Orton drainage area covers a subcatchment adjacent to the left bank of the Waikato River some 8km southeast of Pukekawa, between Otuiti Road and Chapman Road.

The area is protected from Waikato River flooding by an LWWCS stopbank adjacent to Churchill Road that links two areas of high ground and the area is entirely drained by the Orton pumpstation.

The drainage area comprises 5 drains with a total length of 7.48 km.

Morrison Swamp

The Morrison Swamp drainage area is located over the lower reaches of a left bank tributary of the Waikato River immediately north of Morrison Road.

The area is protected from Waikato River flooding by a Lower Waikato zone stopbank between two points of high ground adjacent to the Waikato River and the tributary drains to the river through a floodgate. The main drain through the lower part of the catchment is also stopbanked along both sides to help push smaller catchment flows through to the river without flooding the low land.

The drainage area comprises 2 drains with a total length of 2.51km.

Onewhero downstream drainage area

The Onewhero Downstream (West) drainage area is located adjacent to the right bank of the Waikato River some 3km west of the Tuakau bridge.

The area is protected from Waikato River flooding by an LWWCS stopbank along the Onepoto Stream, the Waikato River and the small stream along the east boundary of the drainage area. The area is drained by a floodgate and the Onewhero pumpstation.

The drainage area comprises 2 drains with a total length of 1.25 km.

Onepoto drainage area

The Onepoto drainage area is located over the Onepoto Stream, a small left bank tributary of the Waikato River immediately to the west of the Onewhero Downstream drainage area and extends west to Frost Road.

The drainage area comprises 2drains with a total length of 3.70km.

Te Kohanga drainage area

The Te Kohanga drainage area is located adjacent to the left bank of the Waikato River between Te Kohanga and Frost Road.

The area is protected from Waikato River flooding by LWWCS stopbanks associated with 3 separate compartments. The Johannsen's compartment is located on the left bank of the Te Kohanga Stream downstream of Tuakau Bridge – Port Waikato Road and is entirely drained by the Johannsen's pump. The Te Kohanga main compartment extends from the Te Kohanga Stream along the Waikato River to high ground near the end of Frost Road and is entirely drained by Muir's, Massey's and Sharpe's pumpstations. The Airey compartment extends from the high ground along the Waikato River to the north end of Frost Road and is drained by Airey's pumpstation.

The drainage area comprises 5 drains with a total length of 5.06km.

Tickles drainage area

Tickles drainage area is located between Tuakau Bridge - Port Waikato Road and the Waikato River some 8.5km northeast of Port Waikato.

The area is protected from the Waikato River flooding by an LWWCS stopbank that extends around the drainage area boundary from Tuakau Bridge - Port Waikato Road and is drained by a floodgate and the Tickles pumpstation.

This area includes only one property is currently not operative.

Kaawa drainage area

The Kaawa drainage area is located over the lower reaches of the Kaawa Stream on the West Coast near Limestone Downs, some 10km south of Port Waikato. The area includes flood protection provided by stopbanks along both sides of the Kaawa Stream that include floodgates.

The drainage area comprises 7 drains with a total length of 8.44km, 4.38km of stopbanks and 1 floodgate.

Aka Aka Otaua

The Aka Aka Otaua drainage area is located on the Right bank of the Waikato River south of Waiuku and extends upstream along the river from Maioro Bay to Puni. The land within the drainage area is very low lying and generally below high spring tide level and drains to the Waikato River.

The characteristics of the Aka Aka/Otaua drainage area are described in the Waikato Valley Authority Aka Aka/Otaua Drainage Study Report (WVA Technical Report Number 34, dated February 1986).

The drainage area is protected from Waikato River flooding by 14.1km of LWWCS stopbanks 27 floodgates and 4 pumps.

There are 46 drains with a total length of 83 km, 9 internal floodgates, 1 bridge and 13 culverts managed by the Aka Aka/Otaua drainage area. Grass carp are used for weed control in the Mangawhero pump feeder drain.

Thames Valley

The Thames Valley drainage area covers the land from Tahuna and Tirohia in the north to Matamata in the south. The drainage area ultimately sheds water into three rivers; the Piako River, the Waitoa River (the major tributary of the Piako River), and the Waihou River. The drainage area is divided into nine subdivisions.

Hungahunga subdivision

This includes land draining to the upper Waihekau system between Matamata Township and Diagonal Road.

The subdivision comprises 60 drains totalling 83.6km.

Manawaru subdivision

This includes land that drains to the Waihou River between Matamata Township and Manawaru Township, generally east of Alexandra Road.

The subdivision comprises 59 drains totalling 121.5km.

Waihekau subdivision

This includes the lower Waihekau and Piraunui systems that drain to the Waitoa River, north of Diagonal Road.

The subdivision comprises 96 drains totalling 122.1km.

Tatuanui subdivision

This includes land draining to the Waitoa River between Walton and Waitoa townships, and the upper Waiharakeke West Stream, south of SH 26.

The subdivision comprises 64 drains totalling 94.8km.

Whakahoro subdivision

This includes land north of SH 26 and west of No. 7 Road that drains to the Whakahoro Canal, and the lower Waiharakeke West Stream that drains to the Piako River.

The subdivision comprises 58 drains totalling 93.3km.

Waitoa subdivision

This includes land between Waitoa Township and Whakahoro Road that drains to the Waitoa River, east of No. 7 Road.

The subdivision comprises 51 drains totalling 71.5km.

Waihou subdivision

This includes land south and west of Te Aroha Township that drains to both the Waihou River and the Waitoa River.

The subdivision comprises 51 drains totalling 50.1km.

Elstow subdivision

This includes land north of Te Kawana Road near Te Aroha that drains to the Tee Head Canal at Awaiti, and the Waitoa River.

The subdivision comprises 37 drains totalling 84.9km.

Tahuna Subdivision

This includes land between Whakahoro Road and Maukoro Landing Road that drains to both the Piako and Waitoa Rivers.

The subdivision comprises 29 drains totalling 36.5km.

The Thames Valley drainage area comprises a total of 505 drains with total length of 760km.

The Ahikope, Bancrofts and Rowes East pumpstations are managed and funded by the Waihou Valley Scheme flood protection programmes. Power usage and weed screen clearing for each site is funded by a separate targeted funding system (SRA) for each site.

The stopbanks, floodgates and pumpstations which are associated with the second emergency ponding zone of the Piako River Scheme flood protection works are managed and funded by the Piako funding system. Pumping power costs and weed screen clearing are funded by a separate targeted funding system, the Tahuna SRA. Arnet pumpstation (which is not currently associated with the Piako works) currently remains a drainage asset and is fully funded within the Tahuna SRA.

A funding system has been established over part of the Matamata Urban area that includes the upper catchment area contributing urban stormwater discharges to the Hungahunga and Waihekau subdivisions. The targeted rate from the Matamata urban area provides funding to the two downstream subdivisions as the urban stormwater discharges are conveyed through those two subdivisions to discharge into the Waitoa River just downstream of Waitoa Township.

Grass carp have been introduced into the pump feeder drains in the North Road, Steiner's, Ahikope and Rowes East pump catchments. There are associated floodgate screens to contain the fish that are maintained as drainage assets.

About 2.6 km of stopbanking and six associated floodgates located along the lower reach of the Zig Zag drain and adjacent Waitoa River within Waitoa Subdivision are managed as drainage assets. A number of retaining walls are also located in some roadside drains.

Appendix 3 – Legislative and Policy Framework

The following outlines the legislative and policy (both statutory and non-statutory) framework that influences, directs and guides this drainage management plan.

Figure 15 provides an overall summary of the key legislative and policy framework for the plan, along with the key areas where the drainage management plan has influence over council plans and policies.

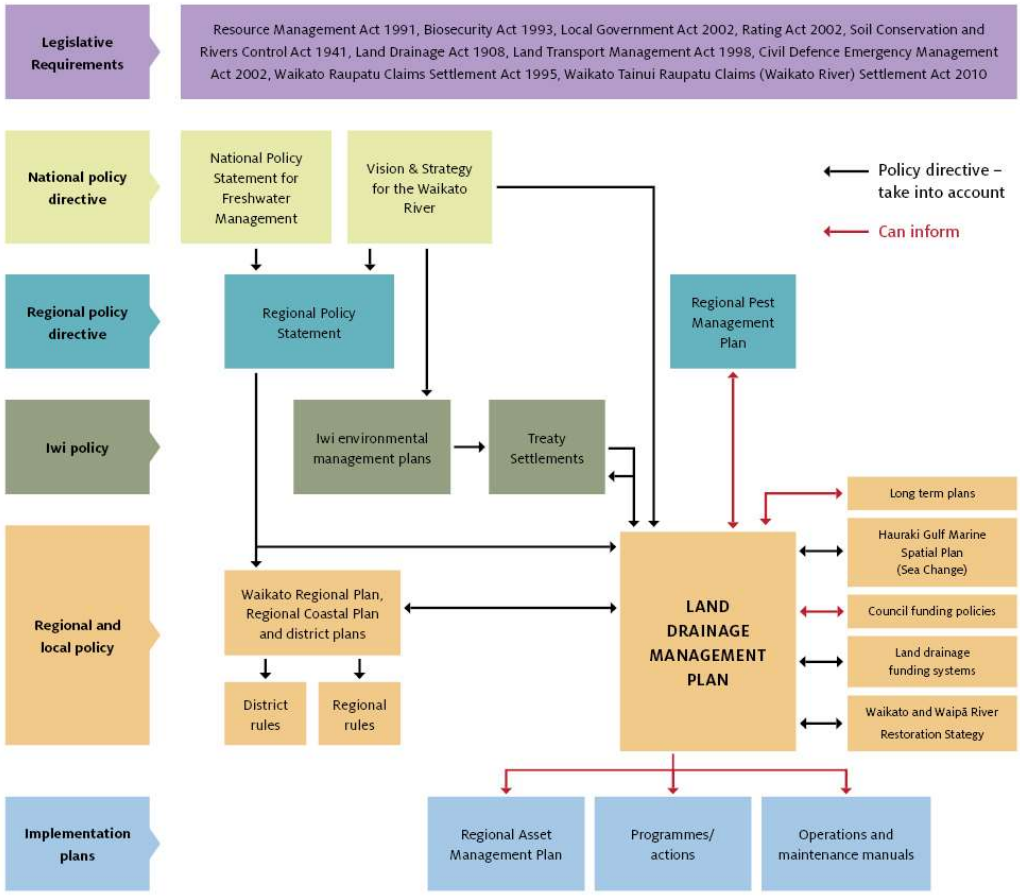


Figure 15: Key linkages between the drainage management plan and other key legislation and policy requirements

More in depth information is provided below on the various legislation that provides the Council with its functions, duties and powers, plus the statutory and non-statutory policies and plans that are the Council's responsibility, is in partnership with or must take account of when undertaking its functions and implementing its work programmes.

Land Drainage Act 1908

This legislation remains relevant for the Council in that Part 3 provides local authorities with powers and responsibilities regarding the maintenance of watercourses and drains that are not within a drainage area.

The LDA includes a process for the establishment of drainage districts but the LDA still includes that those districts are managed by a Board of Trustees elected by the ratepayers within the

drainage district. The Council is unaware of any drainage districts being established under this process within the last 50 years.

Taupiri Drainage and River District Act 1929

The OCLGR included that the Council have the functions duties and powers of the Taupiri Drainage and River Board in undertaking its activities within that area.

Soil Conservation and Rivers Control Act 1941

The Soil Conservation and Rivers Control Act 1941 (SCRCA) is the primary statue within which soil conservation, river management and flood protections services are provided by the Councils ICM Directorate. It provides the Council with the statutory function to minimise and prevent damage within its region by floods and erosion, and to perform that function a range of powers are provided including the power to enter land and to construct and maintain works on private property.

Although the SCRCA provides the Council with the power to undertake various works, the Council is also required to comply with the provisions of the Resource Management Act 1991. This requires the Council to comply with the provisions of any regional or district planning document, such as obtaining resource consents, before it undertakes work (except for emergency works for which resource consent application can be made retrospectively).

Section 143, Supervision of drainage works and river works, requires the Council to exercise a general supervision of the powers functions and duties imposed on local authorities by the LDA and LGA and the Council may give direction to guide the local authorities in exercising their powers, functions and duties.

Public Works Act 1981

For the purposes of the PWA, the Council is a Local Authority and its work is public work. However with respect to soil conservation or river management or flood control works, the SCRCA is the empowering legislation (some provisions of the SCRCA require matters to be undertaken in accordance with the Public Works Act).

Resource Management Act 1991

The purpose of the RMA is to promote the sustainable management of natural and physical resources. The Council is required to comply with the provisions of the RMA when it exercises its statutory powers and functions under other Acts, for example when undertaking works under the SCRCA or LGA.

The RMA requires the Council to adopt a Regional Policy Statement, and a Regional Coastal Plan. A Regional Plan is discretionary.

Local Government Act 2002

The LGA 2002 includes the sections of the LGA 1974 that were not repealed. Part 29 of the LGA 1974 provides TA's the functions and powers to undertake river and land drainage works. Part 29 is specifically for TA's and therefore it excludes regional councils from directly having any of its functions or powers.

However, Clauses 16 and 17 of the OCLGR provides the Council with the functions, duties and powers of a TA under Part 29 of the LGA 1974 for the ten former drainage districts listed below. The drainage districts were deemed to be drainage areas constituted under section 504 of the LGA. Those drainage districts were:

a. Aka Aka-Otaua Drainage District
b. Taupiri Drainage and River District
c. Eureka Drainage District
d. Fencourt Drainage District
e. Hautapu Drainage District
f. Te Rapa Drainage District
g. Rotomanuka Drainage District
h. Ohaupo-Ngaroto Drainage District
i. Tirohia-Rotokohu Drainage District, and
j. Thames Valley Drainage District.

Note: The Tirohia-Rotokohu Drainage District became the responsibility of Hauraki District Council and not the Council.

The effect of The Order was to transfer to WRC the functions, duties and powers of drainage boards for nine drainage districts and for WRC to administer those districts as drainage areas in accordance with part 29 of the LGA, and not in accordance with the provisions of the LDA. As a result the Councils functions, duties and powers only apply to the nine drainage districts and not to other areas in the region, which remain the responsibility of the TAs' under the LGA. The Council's powers regarding drainage to other areas in the region outside of the nine drainage areas are limited to the provisions of the LDA.

In addition to the former drainage board areas the Council now also has the responsibility for all of the drainage areas that have since been transferred from Waikato District Council and the former Franklin District Council, and these areas are also managed under Part 29 of the LGA.

Local Government (Rating) Act 2002

The LGRA provides local authorities with flexible powers to establish funding systems and collect rates to fund their activities. It sets out who is liable to pay rates, what land is rateable, what kind of rates may be set and how rates are set.

All of the Councils land drainage activities are currently funded entirely by targeted rates to discrete groups of ratepayers that are associated with the drainage service provided.

Regional Policy Statement (20 May 2016)

The Regional Policy Statement (RPS) has objectives for managing fresh water (3.14), riparian area and wetlands (3.16), ecological integrity and indigenous biodiversity (3.19), natural hazards (3.24), and values of soils (3.25). It also has new policies regarding managing coastal marine areas (Chapter 7), fresh water bodies (Chapter 8), indigenous biodiversity (Chapter 11), natural hazards (Chapter 13) and soils (Chapter 14) that includes Peat soils (Chapter 14.5). These objectives and policies are relevant to the implementation actions set out within this plan.

Waikato Regional Plan (2007) and Regional Coastal Plan (2013)

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

A full review of the WRCP and WRP is currently being planned by the Council. Ultimately the two plans will be combined and replaced by one: *the Waikato Resource Management Plan.* Notification of the first phase of the plan review (most of the current coastal plan and priority topics for the regional plan) is expected in 2020/21, with adoption of the revised Plan programmed for 2028.

Proposed Waikato Regional Plan Change 1 - (Waikato and Waipa River Catchments)

The Council has notified and is in the process of planning for the implementation of proposed Waikato Regional Plan Change 1 – Waikato and Waipa River Catchments (Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai). Plan Change 1 seeks to achieve reduction, over time, of sediment, microbial pathogens, nitrogen and phosphorus entering water bodies (including groundwater but excluding coastal waters) in the Waikato and Waipa River catchments. A council decision on submissions to the Plan Change is due in late 2019 or early 2020. Appeals to the Environment Court will follow that and the Plan Change is not likely to be operative until sometime after that, possibly 2022/2023.

Although this plan change process does not include the Hauraki area (being outside the Waikato/Waipa River catchments), it will inform wider Council direction around initiatives to improve water quality within the region. The development of the Waihou-Piako and Coromandel Catchments Plan Change in the next few years will directly affect the Hauraki area. This review will address the issue of water quality in the Hauraki Plains and Coromandel Peninsula, with possibility of a broader scope.

Regional Pest Management Plan 2014-2024

The Waikato Regional Pest Management Plan (RPMP) sets out the strategic and statutory framework for managing plant and animal pests in the Waikato region. Objectives and the management approach for specific plant and animal pests present within the region are contained in the plan.

Bylaws

Bylaws are adopted by the Council through the LGA. WRC historically had land drainage bylaws to provide an appropriate form of management for issues within specific drainage areas that were adopted by the former drainage boards. The Bylaws of the Thames Valley Drainage Board, adopted in May 1966 were a direct replica of the 1962 Model Land Drainage Bylaw and addressed a range of issues managing activities that may impact on the operation and performance of the drainage network.

With the development of the Waikato Regional Plan (WRP), the land drainage bylaws became part of the Transitional Regional Plan and were then revoked and replaced with rules in the plan when the WRP became operative. In particular, Rule 4.2.18.1 is a discretionary rule that ensures access is retained for the maintenance of artificial watercourses and beds of rivers in drainage areas and river control scheme areas, with the requirement for a 10m boundary for the planting of vegetation and rules around the placement of fences and culverts. This rule does not provide the same level of powers that was enabled via the Land Drainage Bylaw it replaced and there has been differing interpretations by regulatory staff as to where it is applied.

In terms of a model bylaw there have been no updates to the 1962 Land Drainage Model Bylaw and this has subsequently been withdrawn. There was also a model bylaw for Catchment Authorities & Regional Water Boards, developed in 1979, however this has also been withdrawn.

The Council has no bylaws at present in relation to the provision of rural drainage services. The LGA 2002 provides the Council with power to make a bylaw in relation to flood protection or flood control works. The LGA 1974 provides the Council with power to make bylaws to protect land drainage works.

Waipa District Council and Hauraki District Council each have their own bylaws in relation to managing their drainage areas:

- Waipa District Council Land Drainage and Stormwater Bylaw 2008[1].
- Hauraki District Council Consolidated Bylaw, Part 7 Land Drainage[2].

Both of these bylaws provide the respective councils with the ability to manage activities undertaken by third parties that can negatively impact rural drainage networks. The Hauraki District Council bylaws are currently being reviewed.

Waikato River Treaty Settlements

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

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

Hauraki Treaty Settlement

In 2009, the Hauraki Collective was formed for the purpose of receiving redress in the Hauraki region where iwi have shared interests. The Pare Hauraki Collective recognises the cultural importance of the Tīkapa Moana (The Hauraki Gulf), Te Tai Tamāhine (east coast of the Coromandel Peninsula), Te Aroha, Moehau Maunga and the Waihou and Piako rivers.

A Collective Redress Deed was initialled on 22 December 2016 by the Crown and iwi of Hauraki, signalling the end of negotiations. The initialled deed of settlement was signed on 2 August 2018. As part of this agreement there will be a Waihou, Piako, Coromandel Catchment Authority formed. The authority will be responsible for delivering a Waihou, Piako, and Coromandel Catchment Plan. When the plan has been delivered, the council will be required to make decisions as to how to incorporate it into its statutory policies and plans (incl. Regional Policy Statement, and regional plans).

Other relevant treaty settlement legislation where the drainage service is provided includes:

- Ngati Tūwharetoa, Raukawa, Te Arawa River Iwi Waikato River Act (2010)
- Nga Wai o Maniapoto (Waipa River) Act (2012)
- Ngati Haua Claims Settlement Act (2014)
- Waikato Raupatu Claims Settlement Act (1995)
- Māori Fisheries Act (2004)

Treaty settlements have resulted in a range of agreements between the Council and river iwi. These agreements set out a co-management framework for managed properties; sites of

[1] http://www.waipadc.govt.nz/our-council/Bylawsandpolicies/Bylaws/Documents/Land%20Drainage%20and%20Stormwater%20Bylaw%202008.pdf
[2] http://www.hauraki-dc.govt.nz/assets/council_documents/Bylaws/Part7_LandDrain.pdf

significance (reserve sites for the purposes of section 70 of the Waikato River Settlement Act); and Waikato River related lands where applicable, and include:

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

Vision and Strategy for the Waikato River

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

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

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

Fundamental to the vision are the following key principles:

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

National Direction on Natural Resource Management

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

Key national directions that will affect catchment management in the region include the National Policy Statement for Freshwater Management (2011), National Policy Statement for indigenous biodiversity, national regulation around stock access to water and swimmability standards, the National Environmental Standard for Plantation Forestry (2017), and the New Zealand Coastal Policy Statement (2010). This drainage management plan would need to be amended to give effect to any national direction which requires implementation through catchment management.

Key Non-Statutory Policies and Plans

Waikato Regional Council Strategic Direction 2016 to 2019

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

Priorities under the Council's strategic direction are:

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

The drainage management plan will assist the Council in delivering its strategic direction. The key connections from the drainage management plan to the strategic direction are summarised in Table 2 below.

Table 3: Land Drainage Management Plan connections with the strategic direction

			REGIONAL PRIORITIES						
			Communities	Partnerships	Land	Freshwater	Risks and Resilience	Coastal and Marine	Regional Development
PLAN ISSUES	1	Maintain an agreed network of drains within rural land	✓	✓	✓	✓	✓		✓
	2	Support mana whenua and strengthen community partnerships.	✓	✓	✓	✓	✓		✓
	3	Manage the impacts of urban development and land use intensification	✓	✓	✓		✓		✓
	4	Support peat soil management and research	✓	✓	✓	✓	✓		✓
	5	Consider climate change	✓	✓	✓	✓	✓	✓	✓
	6	Support landowners and occupiers to adapt to the Proposed Waikato Regional Plan Changes 1 & 2.	✓	✓	✓	✓		✓	
	7	Support animal and plant pest control.	✓	✓	✓	✓		✓	✓
	8	Promote and enhance indigenous biodiversity	✓	✓	✓	✓		✓	✓

Regional Asset Management Plan

The Council has developed a Regional Asset Management Plan (RAMP) across all eight of its catchment zones, including land drainage. Asset management planning enables the relationship between LOS and the cost of the service to be determined. The RAMP confirms the levels of service (LOS) for asset management planning across the region. Assets in the drainage

programme include a network of 2,061km of drainage channels, 11.2km of stopbanks, 35 floodgates, 3 pump stations, 15 culverts, 26 drop structures and 252 retaining structures.

LOS provide the link between the corporate and asset management objectives and the more detailed technical and operational objectives. Community outcomes are the outcomes that a local authority aims to achieve through the provision of infrastructure services. They form the basis for the Councils service delivery, thus determining the LOS provided to the community. The community outcomes for the Council are set out in Council's Strategic Direction 2016-2019 and are reflected in the 2018-2028 LTP (WRC 2018).

The Waikato River and Waipa River Restoration Strategy (WWRRS) (2017)

The Waikato River Restoration Forum was established in 2014 with a purpose of maximising opportunities to realise the Vision and Strategy for the Waikato River catchment. The Forum is made up of representatives from the five River Iwi, the Waikato River Authority, Waikato Regional Council, DairyNZ, Fonterra, Territorial Local Authorities, Mercury, Genesis Energy and the Department of Conservation.

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

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

The purpose of the WWRRS is to guide future 'on the ground' activities for all organisations funding and/or undertaking river and catchment restoration, through the identification of specific, technically achievable and prioritised actions. Key objectives of the WWRRS 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 the iwi and communities within the catchment.

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

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

All of the Waikato catchment based drainage areas are in geographical scope for the WWRRS. For the purpose of the WWRRS, restoration priorities were developed in conjunction with those for the Central Waikato.

Priority catchments, streams and sites within the Waikato have been identified in the WWRRS. These priorities are detailed in Appendix 9 on page 131 of this drainage management plan. Council has been one of the project leads for the development of the WWRRS and has been involved in the prioritisation process. As such actions identified in the implementation tables within this drainage management plan (section 7, page 44) take account and are integrated with WWRRS priorities (Waikato Regional Council 2018).

Waikato Region Shallow Lakes Management Plan

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

Many of these shallow lakes are within drainage areas or are associated with drainage of land for pastoral farming and many of the lakes are associated with peat land. Some of the lakes have their minimum levels set and the management plan identifies that more shallow lakes should go through this process. The management plan also seeks better protection for more of the shallow lakes from the effects of further wetland drainage.

As the adjacent pasture land consolidates through drainage there is likely to be an increasing need to reconsider drainage patterns and land use in the areas adjacent to these lakes and their wetlands.

Lake Waikare and Whangamarino Wetland Catchment Management Plan

The Council has, through its 2015-2025 Long Term Plan, developed a catchment management plan for Lake Waikare and the Whangamarino wetland. The Plans purpose has been defined as "Conserve, enhance and, where appropriate, restore the river, land and wetland environment through effective land, water and resource planning across the Lake Waikare and Whangamarino wetland catchment; through a coordinated, collaborative approach".

The CMP forms part of a broader management planning and implementation work programme for the Lower Waikato zone that guides future work programmes within the Lake Waikare and Whangamarino wetland catchments that includes some 13 drainage areas, 6 associated with Lake Waikare and 7 associated with the Whangamarino Wetland. The CMP will be crucial in obtaining funding to deliver specific operational actions that are included in the Lower Waikato zone plan, action plan.

The CMP has been developed into two parts, with Part One of the CMP providing a detailed catchment description, an overview of the statutory, policy and institutional framework which the CMP forms part of; a detailed description of the key catchment issues and opportunities; and the strategic aims and objectives. Part two identifies the actions which can be undertaken to achieve the purpose and meet the aims and objectives.

Waikato Freshwater Strategy (2017)

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

development that competes with an incomplete understanding of site specific environmental limits.

Waikato District Lakes and Freshwater Wetlands Memorandum of Agreement

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

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

The 'Willis Report' is a regional council led report on the future of biodiversity management in New Zealand. The report has a focus on the role and work of regional councils in biodiversity management. It establishes that biodiversity maintenance is a core function of regional councils, but acknowledges that biodiversity nevertheless continues to decline. The report recommendations for halting the continued decline in biodiversity comprise the need for:

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

Lower Waikato Zone Natural Hazard Management Plan

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

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

The report presents an initial analysis for key natural hazards and provides guidance to the Council for the prioritisation of natural hazards work programmes within the region.

The plan demonstrates that earthquakes pose the greatest risk in terms of potential loss of human life, social disruption, economic cost and infrastructure damage, with river and drainage flooding having the second highest risk and highest likelihood, followed by drought.

Climate Change Guideline: Integrated Catchment Management

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

The main impacts for land drainage are identified as:

- Drought
- Flooding
- Coastal inundation (rising sea levels and storm surge)

Iwi Management Plans & Waikato Tainui Environmental Plan

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

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

Other Related Documents

Many of the aspects of the drainage programmes are the subjects of guidelines and performance criteria that subsist in other existing documents. The aim of this plan is two-fold:

2. To provide a single document that contains all of the key points and information regarding the drainage programme including detailed budget information that feeds into the LTP, and
3. To enable the reader to be directed to the appropriate repositories should more detailed information on other documents be required.

Some of those documents contain information that will be revised and updated at regular intervals, such as annually in the case of Annual Plans, Annual Reports etc., three yearly in the case of LTP's, and as appropriate in the case of other documents such as management guidelines. All supporting information has either been placed into appendices or its source documents referenced in the text of this plan. This document is proposed to be fully reviewed every 3 years to inform and keep pace with the routine review of these other documents.

The specific documents that should be read with and form parts of this drainage management plan are listed below. These documents should be consulted where more specific information is required on particular aspects of the drainage programme.

Table 4: Key documents related to the Land Drainage Management Plan

Document name	Key information
WRC LTP	Long term financial strategy (10 year)
WRC Annual Plan	Short term financial programme, Statement of proposed work for current year
WRC Annual Report	Statement of cost of service for preceding year
WRC Funding Policies	Funding policies for the council's work programmes
WRC Stopbank Management Guidelines	Generic management guidelines for stopbanks
WRC Floodgate Management Guidelines	Generic management guidelines for floodgates
WRC Pump Station Management Guidelines	Generic management guidelines for pumpstations
WRC annual Asset and Condition Report	Results of asset condition and performance studies
WRC Infrastructure Asset Accounting Policies/Guidelines	Policies/Guidelines for accounting for infrastructure assets within Environment Waikato.

Drainage Advisory Subcommittee information and feedback opportunities

The following tables and figures summarises the documents outlined above and what the drainage advisory subcommittee input might be to those documents. The documents are those that the Council is directly involved in or they influence the way that the Council works or what it must take account of when implementing work programmes.

Table 5: Documents that are Council's sole responsibility, subcommittee involvement

Document Name	Subcommittee involvement
Regional Policy Statement	• Subcommittee informed of review • Public consultation processes involved • Individuals may submit.
Waikato Regional Plan	• Subcommittee informed of review • Public consultation processes involved • Individuals may submit.
Regional Pest Management Plan	• Subcommittee informed of review • Public consultation processes involved • Individuals may submit.
Council's strategic direction	• Informed of change • Public consultation processes involved • Individuals may submit.

WRC LTP	• Informed of the process • Can recommend related to drainage programmes • Subcommittees can submit related to drainage programme • Individuals may submit
WRC Annual Plan	• Informed of the process • Can recommend related to drainage programmes • Subcommittees can submit related to drainage programme • Individuals may submit
WRC Funding Policies	• Informed of any new policies or proposals to change existing • Involved in the process for drainage funding systems • Recommend to Council for drainage funding systems • Public consultation processes involved • Subcommittees may submit • Individuals may submit
Regional Asset Management Plan	• Involved in LDMP and reviews • Involved in any LOS changes • Informed of any review of RAMP • Individuals can influence by submitting to AP or LTP on levels of service
Bylaws (currently no drainage bylaws)	• Recommendation to Council to establish bylaws • Detailed involvement in scoping and document preparation • Public process for adoption • Subcommittees may submit • Individuals may submit
Waikato Region Shallow Lakes Management Plan	• Can be informed of any issues or proposals related to these shallow lakes that are within drainage areas for information • Can provide feedback • Drainage is a potentially affected party where proposals require consent
Lake Waikare and Whangamarino Wetland Catchment Management Plan	• Informed of any proposed CMP's that include drainage areas for members' information • Subcommittees may provide feedback • Individuals can get involved in the development process.
Waikato Freshwater Strategy	• Informed of any review of the Waikato Freshwater strategy. • Individuals may become involved.
Lower Waikato Zone Natural Hazard Management Plan	• Can be informed of the Plan content • Advised of any reviews
Climate Change Guideline: ICM	• Can be informed of the guidelines content • Advised of any reviews

Table 6: Council's partnership documents, subcommittee involvement

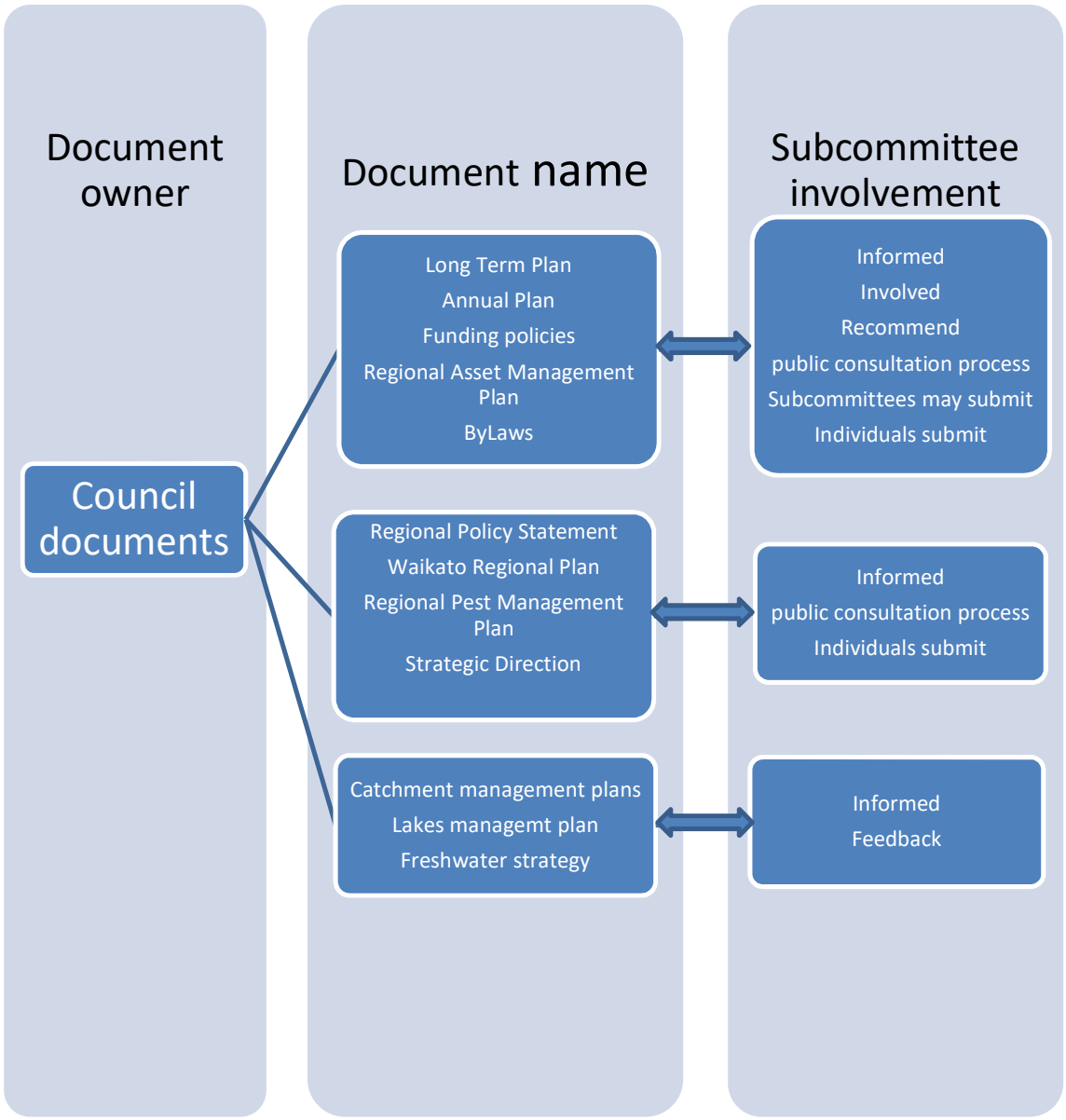
Document Name	Subcommittee involvement
Waikato River Treaty Settlements	• Can be informed of the agreement and what it means
Vision and strategy for the Waikato River	• Can be informed of the vision and strategy, and what it means
Hauraki Treaty settlements	• Can be informed of any future agreements and what they mean
Waikato River and Waipa River restoration strategy	• Can be informed of the document and what it means
Waikato District Lakes and Freshwater Wetlands Memorandum of Agreement	• Can be informed of any proposals that are within particular drainage areas that may have impact on the drainage programme

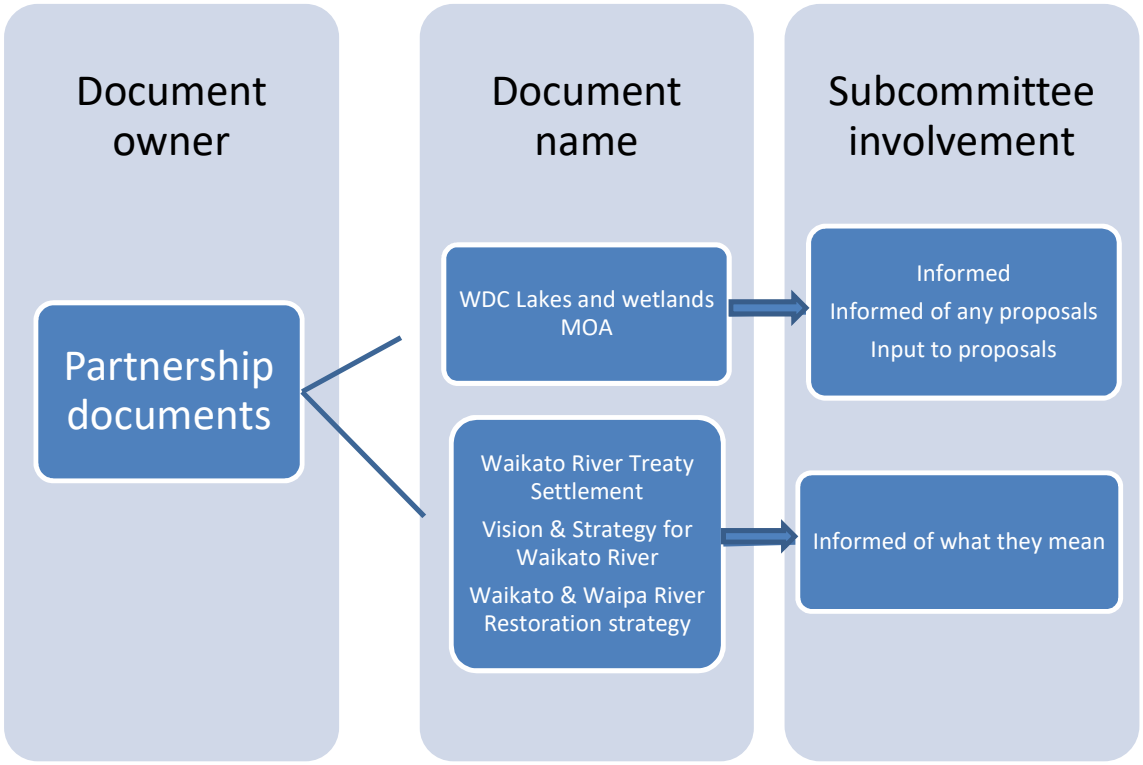
Table 7: Other organisations documents, subcommittee involvement

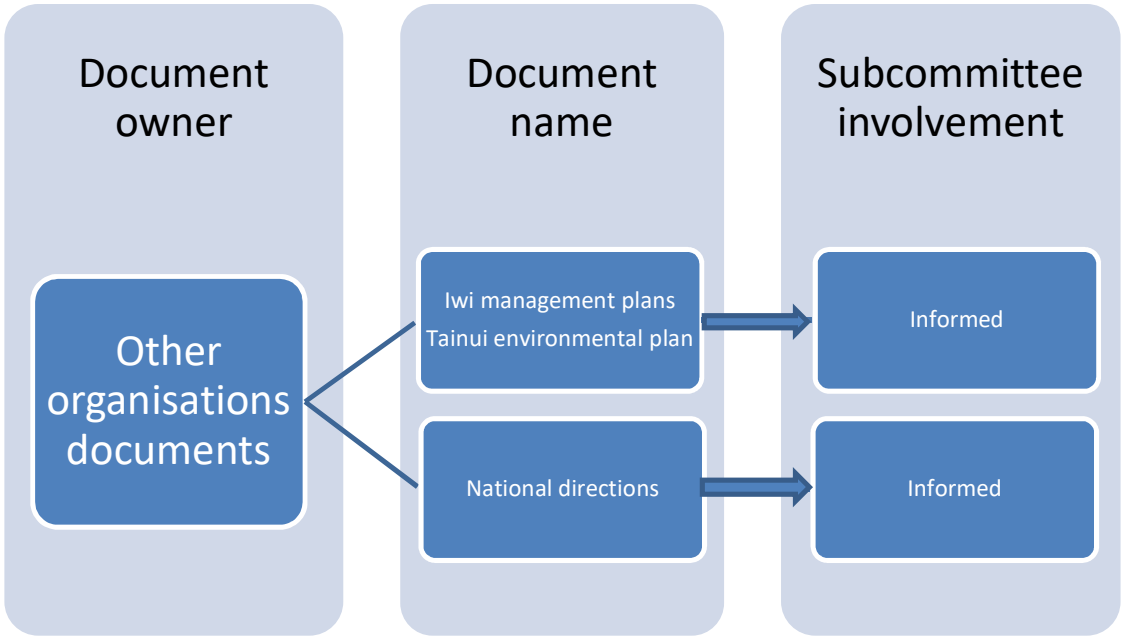
Document Name	Subcommittee involvement
Iwi Management Plans & Waikato Tainui Environmental Plan	• Can be informed of what they are and what it means
National Directions on resource management	• Can be informed of any Direction impacting on drainage programme

The following diagrams help to summarise and visualise the drainage advisory subcommittee involvement in the various Council related documents:

Figure 16: Subcommittee involvement diagrams




Document owner
Document name
Subcommittee involvement
Partnership documents
WDC Lakes and wetlands MOA
Informed
Informed of any proposals
Input to proposals
Waikato River Treaty Settlement
Vision & Strategy for Waikato River
Waikato & Waipa River Restoration strategy
Informed of what they mean


Document owner
Document name
Subcommittee involvement
Other organisations documents
Iwi management plans
Tainui environmental plan
Informed
National directions
Informed

Appendix 4 - Decision-making process for drain cleaning

For the full document please refer to WRC Internal Series 2019/06, document #14038117

Improvements in practice

As with any drainage network, routine maintenance, such as mechanical cleaning or aquatic spraying, is required to maintain capacity and depth, as well as conveyance of stormwater during rainfall events.

ICM recognises the cost associated with maintenance, and the potential for adverse environmental effects, such as habitat disturbance, suspension of sediment and fish mortality to occur during works.

ICM has therefore taken steps to reduce the frequency that drains need to be cleaned, and wherever possible drain cleaning is avoided or deferred. Key preventative measures led or implemented by WRC include:

Initiative	Outcome
Effluent system upgrades to remove effluent (a source of nutrients) from drains.	Reduced growth of aquatic vegetation resulting in slower loss of capacity.
Stock exclusion from drains through fencing and targeted riparian planting / restoration programmes.	Reduced nutrient inputs and resulting growth of aquatic vegetation. Reduced erosion slows sediment accumulation and loss of capacity.
Prioritising non-mechanical maintenance (spraying aquatic and terrestrial plants).	Increased use of chemical control has greatly increased intervals between drain cleaning.

Figure 17: Key WRC measures that have reduced machine cleaning frequencies

Additionally, the institutional and legal framework under which maintenance activities occur, seek to recognise and manage these risks, which are subject to regulatory and environmental best practice requirements. ICM staff as such have a legal obligation to comply with these requirements and to set an example to other local resource users.

Environmental Best Practice Guidelines

ICM's Environmental Best Practice Guidelines (the Environmental Best Practice Guidelines) provide a 'tool box' of best practice methodologies to manage the environmental risks of river and drainage activities, including drain cleaning. When planning to undertake river and drainage maintenance works the relevant solution based on the nature of the works and the site are incorporated in the site works methodology.

A key objective of the Environmental Best Practice Guidelines is to achieve good environmental outcomes irrespective of whether the works are being delivered under the provisions of a permitted activity or resource consent.

The Environmental Best Practice Guidelines are a living document and are formally reviewed every five years.

Maintenance

Drainage maintenance activities

The performance of the drainage network is reduced over time as a result of 'up-stream' sediment load and deposition in relatively flat gradient drains, stock damage, and growth of vegetation. Some drains in peat soils are also subject to settlement as peat oxidises and decomposes.
The design of the network seeks to minimise these impacts through 'buffer capacity' being built in to maximise the intervals between maintenance. However, almost all the drainage assets require regular maintenance to meet the agreed LOS.

Maintenance options typically include:

- Spraying of aquatic vegetation
    - Management of surface weeds
    - Management of aquatic weeds
- Erosion control
    - Bank stabilisation
    - Bed stabilisation
    - Planting and fencing
- Mechanical cleaning
    - Removal of vegetation
    - Removal of sediment
- Blockage removal
    - Removal of isolated trees and shrubs
    - Removal of slips
    - Removal of accumulated debris
    - Clearing culverts

As discussed above, preventative measures such as fencing, nutrient management and regular spraying is preferred over mechanical cleaning due to financial and environmental advantages. These preventative options are also favoured by landowners as they result in less disturbance to their property and savings in the direct rates.

The frequency of mechanical drain cleaning ranges from every year for the most problematic drains that suffer from prolific aquatic weed growth, to every 15 - 20 years, or not requiring machine cleaning at all as natural flow or the spray programme keeps the drain clear of sediment and vegetation.

Scheduled maintenance

All data and actions relating to drainage management are recorded in the current WRC asset management system. The asset management system provides information on the location of all drainage assets, their components, condition, value, replacement costs, estimated replacement dates, outstanding or expected maintenance demands, past performance, and related funding issues.

The asset management system provides works supervisors with an annual drain maintenance schedule informed by historical cleaning frequency. Works supervisors will then inspect the drains including those that the system has marked as due for maintenance, as described in the inspections and monitoring section below.

Inspection serves to collect further information with the aim of avoiding mechanical drain cleaning wherever possible. Any drains not already scheduled for maintenance but that are found to require work will be added to the maintenance schedule in the asset management system for the coming works season.

Unscheduled maintenance

The need for unscheduled maintenance can arise from routine inspections and monitoring by works supervisors, or by a verified enquiry from a landowner. As stated above, the effectiveness of the drainage network as a whole relies on ICM and landowners working in partnership. When a landowner notices a problem that indicates the agreed LOS is not being upheld, ICM will investigate the concern.

Unscheduled maintenance can also arise when landowners clean out lateral drains and spread the spoil on the paddocks for re-grassing. When this occurs, they will usually request that ICM do the same in the arterial drain for convenience.

Inspections and monitoring

As stated above, the annual drain maintenance schedule is supported by visual inspections of the drainage network by ICM works supervisors and contractors.
Drains are monitored for the following:

- Encroachment of weeds and other obstructions which may impair waterway performance;
- Specific bank erosion that may also threaten the waterway performance, result in loss of pasture and siltation of the drains;
- Accumulation of silt which may result in high water levels and loss of capacity; and
- Excessive bed degrading and/or gradient control structure deterioration that may destabilise drain beds and banks.

Inspections generally occur in winter or early spring ahead of the coming works season. The inspections also inform the Annual Works Programmes required under Comprehensive Resource Consents.

Decision-making process for drain cleaning

The ICM Drain Cleaning Decision-making Process provides a step-by-step process to determine the need for, and best management approach, for drain cleaning. The process is detailed in Figure 18 below:

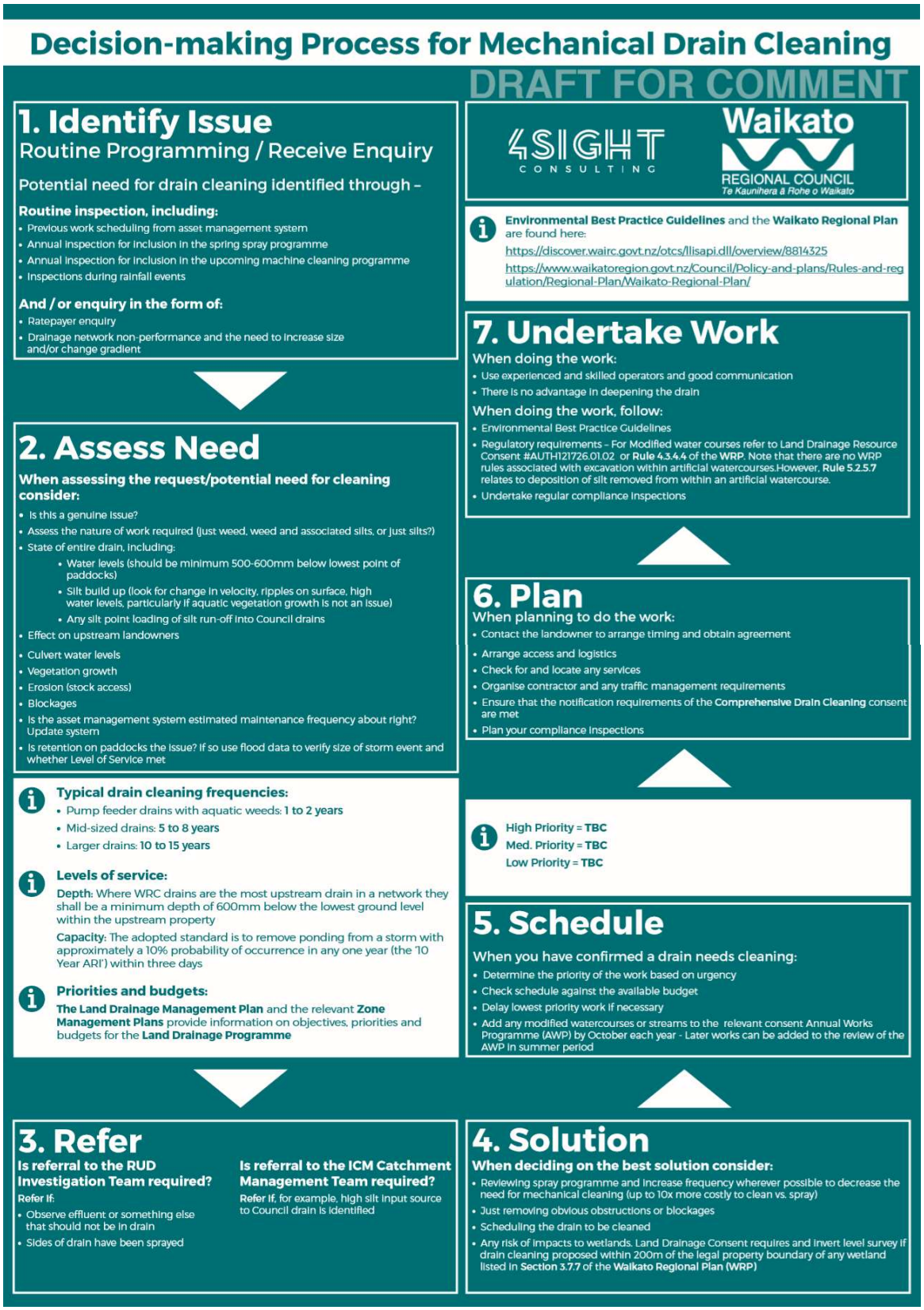


Figure 18: Decision-making process for mechanical drain cleaning

Appendix 5 – Land drainage operating practices

Operating practices describe how the drainage work is implemented and clearly set out the Council's responsibilities and the landowner's responsibilities. These practices ensure a fair and equitable service is provided to all landowners in a consistent manner.

Operating practices for maintenance

The maintenance and refurbishment of drains includes spraying, hand cleaning, machine cleaning, and erosion control. The service is provided through a partnership between the Council and the landowners and each party has responsibilities to ensure that the service is provided consistently and in a manner that is fair to all ratepayers. The following policies have been developed to clearly identify what is provided and where the responsibilities lie.

The Council maintains the channels for and on behalf of the landowners. If the Council did not undertake the work the landowners would have to undertake the maintenance work themselves, and the consequences of that maintenance would remain with each property involved, including meeting regulatory requirements.

Cleaning of drains

Operating practice 1
Drain cleaning shall be undertaken from the private property immediately adjacent to the Council maintained drain, where practical. Where a drain is along a boundary between two properties, subsequent cleaning shall be alternated between the properties, where practical, unless other arrangements have previously been agreed with the landowners.

Explanation
Drain cleaning is undertaken from the property adjacent to the drain, rather than from a road frontage or railway reserve, as this is the most economic and safe location to undertake the cleaning.

Where a council maintained drain passes along a boundary between two properties, equity between the two properties is provided where practicable by alternatively cleaning from each of the properties. Exceptions to this are where it is not practical to clean from one side or where previous arrangements have been made with landowners that the drain is always cleaned from the one side.

Drain cleanings

Operating practice 2
Drain cleanings from Council maintained drains will be deposited on the property from where the drain cleaning is undertaken.

Explanation
In order to minimise maintenance costs and maintain consistency between properties, the cleanings from drains are deposited immediately adjacent to the machinery that is undertaking the drain cleaning. If a landowner does not wish to have the drain cleanings deposited on their property, it is their responsibility to provide the cartage necessary to remove the drain cleanings. The contractor undertaking the cleaning can place the cleanings in the machinery to allow it to be carted away instead of dumping it on the ground, but the machinery provided to cart the cleanings away must be able to keep up with the drain cleaning machinery. Any additional costs incurred as a result of landowner requests are to be met by the landowner.

Note
The Matangi drainage area includes a significant number of rural residential properties and as such the operating practice in Matangi includes the removal from site of the drain cleanings at Council's expense, when requested by the landowners. The rating level in this area reflects this operating practice.

Access gates and access culverts within a property

Operating practice 3
Continuous access must be provided by the landowner along Council maintained drains by the provision of gates and culverts.

Explanation
It is the landowners' responsibility to provide good access along the Council drains. This is to be provided by installing gates and culverts in all lateral fences and lateral drains within a property. Good access along drains is known to significantly reduce the cost of inspecting and maintaining drains as less time is involved to progress along the drains.

The requirement to provide access was historically included in the drainage bylaws that were included in the Transitional Regional Plan. Under the Waikato Regional Plan it is included in Rule 4.2.18.1 (Maintaining access for maintenance of artificial watercourses and beds of rivers in drainage districts and river control scheme areas).

Boundary fence gates and boundary drain culverts

Operating practice 4
Continuous access along both sides of Council maintained drains is to be provided by the Council installing gates in boundary fences and culverts in boundary drains.

Explanation
Boundary fence gates and boundary drain culverts adjacent to Council drains also improves access for drain inspections and maintenance and therefore reduces costs to ratepayers. Once installed the gates and culverts are considered part of the boundary fence and are the responsibility of the landowners to maintain and replace as part of their boundary fence responsibilities.

At present, boundary fence gates and boundary drain culverts are required to be installed by the subdivider for all new subdivisions.

Farm culverts and bridges

Operating practice 5
Maintenance and replacement of private culverts and bridges is the responsibility of the landowner. The Council's land drainage programme will repair where possible, or replace private culverts or bridges if damage results from the Council's management or upgrading of the drainage system. Upon satisfactory completion of the repair or installation of a private culvert or bridge, the landowner shall assume ongoing responsibility for future maintenance.

Explanation
All culverts and bridges within farms are owned by the landowners whose property the drains pass through. As such, responsibility for maintenance of those culverts, or for the installation of any new farm culvert required by the landowner lies with that landowner. The larger new culverts will require a resource consent which will require (among other things) that the culvert size, invert level, and design meets the appropriate standard for the drain within which it is located. Where damage results from the Council's management of the drainage system, then Council will repair such damage. Where upgrading requires that a culvert be lowered, existing culverts will be reused when practicable, or a new culvert will be provided at the Council's cost.

On satisfactory completion of the work, the landowner is to assume ongoing responsibility for the culvert.

Road and rail culverts and bridges

Operating practice 6
Maintenance and replacement of culverts within private and public utility corridors is the responsibility of the respective utility authority. The Council's land drainage programme may contribute to the cost of replacement of the culverts within utility corridors.

Explanation
If a utility authority is relocating or replacing a culvert and it is in the interests of the drainage area that the invert of the culvert be lowered at the same time, an appropriate cost sharing arrangement between the Council and the respective utility authority can be negotiated.

If the Council wishes to alter the size or lower the invert of a culvert, a cost sharing arrangement can be negotiated with the respective utility authority based on the residual life of the existing culvert.

Private Access culverts and bridges within road reserves

Operating practice 7
Maintenance and replacement of private access culverts and bridges within road reserves or any third party property is the responsibility of the landowner enjoying that access. Council's land drainage programme will repair where possible, or replace private access culverts or bridges if damage results from Council's management or upgrading of the drainage system. Upon satisfactory completion of the repair or installation of a private culvert or bridge, the landowner shall assume ongoing responsibility for future maintenance.

Explanation
All private access culverts and bridges in Council drains within road reserves, or any other third party property, are owned by the landowner who gains access to the property. As such, responsibility for maintenance of those culverts, or for the installation of any new culvert required by the landowner lies with that landowner. Larger new culverts will require a resource consent which will require (among other things) that the culvert size, invert level, and design meets the appropriate standard for the drain within which it is located. Where damage results from Council's management of the drainage system, then Council will repair such damage. Where upgrading requires that a culvert be lowered, existing culverts will be reused when practicable, or a new culvert will be provided at Council's cost. On satisfactory completion of the work, the landowner is to assume ongoing responsibility for the culvert.

Operating practices for upgrading

In some areas the consolidation of land after drainage may require that the existing drainage is regraded (i.e. lowering the drain and culvert inverts). This work is also the responsibility of the council as the drainage objectives need to be met continuously. The nature of the work is more significant than normal drain cleaning and the disturbance to any one property can be for the benefit of many properties so a different approach is taken to that for normal drain cleaning.

Drain upgrading

Operating practice 8
Spoil from drain upgrading will be spread and re-grassed as a cost of the work.

Explanation
Upgrading works involve a lot more disturbance to a property than normal drain cleaning and a particular work can often provide benefit to more landowners than just where the work is being

undertaken. The quantities of spoil are, in some cases, beyond the capabilities of the landowner to dispose of under normal farming practices. The Council will therefore undertake to spread the spoil from drain upgrading and to re-grass the disturbed area as a cost of the drain upgrading work.

Compensation for loss of grazing

Operating practice 9
The Council may consider compensation for loss of grazing in special circumstances.

Explanation
Upgrading works, or capital works, or particular portions of any works are sometimes undertaken on a property but provide little or no benefit to that property. In these circumstances the Council may consider compensation for loss of grazing for the disturbed land. This approach is supported within the present legislation.

An example where this practice may be applicable is where a borrowpit is opened on one landowners' property for the benefit of other landowners. Compensation could be paid for the area of land disturbed or the volume of spoil removed but is not normally paid for both.

Operating practices for service

The extent of service provided and the level of service provided within the Council's land drainage programme are continually under review. Any review of a funding system includes a review of the service provided and the Local Government Rating Act 2002 (LGRA) provides that minor change can be made to rating systems. The process required includes the Council making a decision and informing the ratepayer. The changes would mainly be the result of adding drains to the network or removing drains from the network and the following policies and policy directions allow for the service provided to be continually reviewed through the subcommittees.

Review of drainage service

Operating practice 10
The drainage service provided will be reviewed annually to allow for the inclusion of private drains within the Council maintained network or the removal of drains from the network after fulfilling the conditions of the Council. The review shall include that the Council maintained drainage network is provided to the most upstream property or farming unit boundary to allow the drainage of each wet area where it is economic to do so.

Explanation
In order for the service to be fairly provided to all ratepayers who rely on land drainage for the productive use of their land, the land drainage network should be regularly reviewed and extended to each property that relies on drainage through a downstream property. Council adopted this practice in 1995.

The Council network only extends to the boundary of the most upstream property that requires drainage. Within the property it is the landowners' responsibility to provide their own drainage and discharge it into the Council drainage network.

There are instances when it is appropriate for the Council maintained network to include new drains that have previously been privately maintained drains. Such instances include land subdivision where newly created Lots require drainage and the Council drainage network needs extending to provide that service. Another instance is the inclusion of new isolated drains that for various reasons may not have been historically included as a Council drain.

There are instances where it is appropriate for the Council maintained network to be reduced by the removal of drains or portions of drains. Such instances include the amalgamation of

properties where a current Council drain would end within a farming unit, and it would be appropriate to shorten the drain to the new farming unit boundary.

Inclusion of new isolated drains

Operating practice 11

The cost of upgrading isolated drains prior to them being included as Council drains shall be met by the benefitting landowner/s.

Explanation

Occasionally it comes to the attention of the Council that a property that requires drainage has not previously been provided with a drainage outlet or the network requires extending because of land subdivision. The existing funding system has been established to maintain the existing drainage network and will reflect that the direct service is not provided to the property in question.

The provision of a Council maintained outlet to the property, or new Lot, might mean that existing drains to the property require upgrading, or in some circumstances new lengths of drain might need to be constructed. The cost of upgrading or excavating new drains is not part of normal maintenance and is to be funded by the landowner, or landowners who benefit from the upgraded drain.

Once the upgraded drain has been included in the Council network the funding system is adjusted and the future cost of maintaining the drain is funded by the amended funding system.

Floodgates

Operating practice 12

- ***Where a floodgate prevents flooding on more than one property then the entire structure should be the responsibility of the Council.***
- ***If a floodgate benefits a single property and its failure would not affect any other property then the ownership & responsibility of the floodgate is the landowners.***
- ***A private floodgate that has received no financial input from Council remains private unless agreement otherwise is reached.***
- ***Benefits and detriments resulting from floodgates should be reflected in the rating system that funds the floodgates.***
- ***The cost of retaining floodgates that could be diverted into an adjacent floodgate should be reflected in the rating system.***
- ***Drainage reorientation that will link more than one property should only be undertaken through agreement with landowners if effective drainage could be provided through a single floodgate.***

Explanation

Most floodgates are river scheme assets but there are some minor floodgates within the drainage networks that have been constructed by drainage authorities or private landowners. The various issues relating to floodgates have been discussed by the drainage advisory subcommittees and the above policy directions are the result of those discussions. The policy directions retain some discretion but give a clear message that floodgates that benefit more than one property should be a community asset and that the rating system should reflect the benefit that the floodgates provide.

Organic farming

Operating practice 13

Where organic farming or other farming practices require types of land drainage service that result in higher costs than the normal cost of providing the service, the additional cost shall be met by the landowner concerned, through agreement.

Explanation
Organic farming is becoming more popular within the Council drainage areas. This type of farming results in special requests by landowners to change the normal drain maintenance practices and this can result in costs that are greater than the normal cost of maintaining a particular portion of drain. In order that the drainage service is provided in a fair manner to all ratepayers, the ratepayer who causes the extra cost should meet the extra cost of providing that special type of service.

Where landowners request a special type of service, staff will discuss the service required with the landowner to reach agreement on the type of service provided and the extra cost of that service that will be met by the landowner. The level of service provided will be fair to all ratepayers and shall remain the same.

Funding systems

Operating practice 14
Funding systems for the land drainage targeted rates shall be based on land area and shall be differential unless the Council is satisfied that all areas receive equal benefit.

Explanation
Funding systems are established under the LGA and the Council must decide on the type of funding system it adopts for each of the services it provides.

Historical decisions by the Council and its predecessors are that drainage work is most fairly funded by the area of land that benefits from the drainage work. This was confirmed in 1995 when the Council resolved that all drainage rating systems be established on an area basis. Presently there are 92 individual targeted rating systems and all are based on land area.

The systems that have been reviewed in more recent years are based on the entire contributing catchments, but many of the historic systems that were transferred from the TA's are still based on direct benefit only so only include the flat land within the contributing catchment. As the cost structure associated with the drainage programme is changing to include more catchment related costs, these historic funding systems should be reviewed.

All existing systems are differential except for the one that funds the Aka Aka/Otaua drainage area where a flat rate is applied.

Damage to drains

Damage to drains is considered a serious issue that results in both upstream and downstream effects to other properties together with higher costs for maintenance and refurbishment. The former drainage bylaws included provisions prohibiting damage to drains but the Regional Plan does not include any specific reference to prevention of damage to Council drains. It is anticipated that serious damage issues can be dealt with through the RMA as an adverse effect on the environment but no such cases are known to have been pursued.

Any enforcement action that may be considered necessary regarding inappropriate land use or damage to Council's drains would be implemented via the RMA through the use of abatement notices or enforcement orders.

Operating practice 15
Landowners shall protect the Council drains from damage and siltation.

Explanation
Within a property, landowners are entitled to manage their land as they wish, but when their activities have an adverse effect on the drainage network the effects are felt both upstream and downstream, within someone else's property, or within downstream drains, streams, and rivers.

The effects result in higher costs for maintenance and refurbishment of the drainage network, and have an adverse environmental effect to streams and rivers.

The Council maintained drains provide a service to the ratepayers. To meet the standards required the drains are maintained to a size and shape that provides the service and results in a minimum of loss or disturbance to the property they are within. Landowner activities can result in damage to the structure of a Council drain and/or siltation of the drains if the activities are not undertaken in a manner that prevents or minimises the impact on the drainage network. Such activities include:

- Stock access to drains that damage the drain bank, result in siltation, widen the drain top, and put effluent directly into the drain that can exacerbate weed growth.
- Spraying of the drain banks and adjacent pasture that results in erosion of the drain banks, siltation and widening of the drain top.
- Cultivation and silt laden runoff resulting in siltation of the Council drains.
- Heavy machinery operating too close to the drain resulting in collapse of the bank, siltation, and widening of the drain top.

Each of the activities is expanded on in the following sections.

Stock damage

Stock damage drains by trampling down and collapsing the banks and putting effluent directly into the drain. The trampling results in siltation and filling of the drain beds and widening of the drain tops. The drains become ineffective and require more frequent cleaning that results in more mess on the property concerned. The effluent deposited results in poor water quality and provides nutrients for weed growth. The more frequent cleaning and spraying result in higher costs to the ratepayers in the area.

The Council wants all drains adjacent to pastoral land fenced at the property owner's cost. The fence should be between 0.5 metres and 1.0 metre from the top edge of the drain, and should be a height above ground level that allows access to the drain for maintenance.

Fencing is a very cost-effective means to prevent damage to drains by stock. In most dairying areas a single electric wire is all that is needed. A fence will allow riparian vegetation to grow, and it provides a barrier to limit the encroachment of machinery adjacent to drains.

Fencing of drains results in an increase in grass growth between the fences. Research has shown that grass growth is the most effective method of stripping nutrients and bugs from surface water runoff and from groundwater seepage. This effect will result in better water quality and less maintenance cost in the long term.

Much of the region's drains have already been fenced by adjacent landowners at their own expense. It is considered that maintenance and erection of fences alongside all drains is the responsibility of the landowner, to reduce the effects of their land management practices.

As more drains are fenced, the amount of silt and nutrients in drains is reducing, the frequency between machine cleaning is getting greater, and hence the direct maintenance costs are reducing.

Spraying

Chemical Spraying is the most common and cost effective method of drain maintenance used by the Council and most landowners. Spraying controls the growth of vegetation in drains and can keep the waterway largely clear of vegetation obstructions when applied correctly.

The most common spray chemical used for surface weeds is glyphosate and for aquatic weeds is Reglone. Both of these chemicals are permitted for use over water. When drains are dry other chemicals may be used.

Spray is most effective when applied before any bed vegetation is too large. In these circumstances the spray need only be applied to the bed of the drain, the plant is killed before it has seeded, the amount of dead material that remains in the drain is minimal, and the vegetation on the drain banks can remain. In some instances this may require more than one application of spray each year.

If the drain is sprayed too late, the amount of vegetation to be killed can be large and the cost will be greater as more chemical is required. A late spray will result in a large amount of dead material that remains in the drain and this can cause blockages, or reduce the water quality as the material rots. The plant may also have seeded and this will provide a source of further growth the following year.

The application of spray should not be intended to kill all the vegetation on the banks of a drain. Bank vegetation helps to keep the drain bank stable and also strips nutrients and silt. Plant pests or problem weeds on the banks can be controlled with spot spraying. Spraying of the drain banks can result in bank erosion, downstream siltation and higher costs due to more frequent drain cleaning.

Cultivation

Cultivation of paddocks adjacent to drains can result in runoff from the paddocks washing silt into the drains. Sediment in the drains reduces their efficiency, reduces the water quality, results in mechanical removal of the sediment and increases costs.

Increasing concern has been expressed at the practice of blanket spraying of areas that are to be cultivated, including the areas adjacent to drains, and then cultivating right up to the drain top edge. This practice results in runoff from the paddocks carrying silt and entering the drains as there is no vegetation around the cultivated margins or on the drain banks to trap any silt.

The effects of cultivation are reduced if a strip of growing grass is left around the perimeter of the cultivated area. This provides an area for access and allows the grass to assist in stripping nutrients and silt from surface runoff.

The Waikato Regional Plan includes rule 5.1.4.12 that permits the cultivation of soil not less than 2 metres from the bed of a river or lake. While this should prevent cultivation within 2 metres of rivers and lakes most of the land drainage infrastructure is artificial watercourses that are not captured by this rule.

Heavy machinery

Most drains are constructed so they occupy a minimum of area within a property and as such the drain banks are formed as steep as is practical to minimise drain size while providing adequate stability under normal farming operations.

The operation of heavy machinery close to the top edge of a drain can place too much load on some soil types and this results in the collapse of the drain bank. Collapse of the drain bank will reduce the drain efficiency and introduce a quantity of sediment into the drainage network. This will obviously have an effect on upstream and downstream drainage and will result in higher costs, as the drain will require more frequent cleaning.

Ideally heavy machinery should remain a reasonable distance (2 metres) from the top edge of drains to reduce the potential for damage to occur to the drains. Heavy machinery is mainly

associated with cultivation or harvesting and the above discussions on associated activities also recommend that a strip be left around the cultivated area to reduce the effects of the activities.

Emergency Response and Recovery

In its role as a manager of infrastructural assets that reduce the effect of natural hazards such as flooding, the Council has a responsibility to ensure adequate emergency response systems are in place. These systems provide warnings and information about rainfall and river levels so the assets can be monitored to ensure that the service levels are being achieved and to direct resources for active response during major events and recovery after the events. The information is also used to provide warnings to landowners so that stock can be moved if necessary.

In addition, the Council has a wider responsibility for management of natural hazards throughout the whole region as required by the RMA and the Civil Defence Act.

Early warning and forecasting systems

The use of early warning monitoring systems allows advance warning of rainfall and flood events that may threaten drainage assets or impair the service they provide. When it is established that a major event is developing or likely to develop then actions may be taken to mitigate and avoid potential damage to drainage assets.

The Councils flood early warning systems are currently a separate function from the asset management activities because of the wider responsibility for managing natural hazards across the whole region. The Council has a Regional flood response management plan that sets out the management structure and responsibilities during the response and recovery stages of a flood event.

Emergency procedures and planning

The Regional flood response management plan define how the Council will respond in an emergency event. They give guidelines to staff responsible for emergency response functions and set out actions to be taken under particular threshold conditions.

The procedures include requirements for monitoring the performance of assets, undertaking remedial works and issuing warnings during flood events. In addition resources likely to be required, including personnel, machinery and plant, and materials such as sandbags and rock spalls etc. need to be identified and their provision planned for.

General procedures for emergency response and monitoring relating to specific types of assets during major flood events are set out within the generic guidelines for stopbank, pumpstation and floodgate management which have been developed as stand-alone documents.

Disaster recovery and insurance

There exists the potential for a disaster to severely damage or destroy a portion of the drainage assets. Management of the risks associated with natural hazards is an important consideration for management of the drainage system. The following text is from the disaster recovery provisions set out in the Financial Strategy in the 2018-28 LTP.

"Infrastructural assets

> Events over the last year have highlighted the importance of the council's flood infrastructure to our communities, but also its vulnerability to extreme weather conditions. Given the importance of these assets to the protection of both properties and people, as well as their role in enhancing the productive capacity of the land, adequate protection against the impacts of weather events and other natural disasters is critical.

Insurance coverage for these assets is provided in a variety of ways, with each insurance vehicle providing protection against a different level of risk. The insurance framework is delivered through the following mechanisms:

- Commercial insurance
- Self-insurance through:
    - regional disaster recovery reserve
    - zone disaster recovery reserves
- Central government funding through the National Recovery Plan. It is anticipated that this funding agreement will be revised sometime over the period of this LTP. The council has worked to ensure that its other financing options (in particular its commercial insurance contracts) provide an appropriate level of cover should any changes occur.

The planned introduction of an external borrowing facility provides a new potential funding stream.

These insurance vehicles fit within a Risk Financing Strategy, summarised in figure 19 below.

Treatment option	Item	Description
Internal financing	Zone funding (operating and zone disaster recovery reserves	To meet routine damages up to a 20 year (5% AEP) event for both insured and non-insured assets
	Regional disaster recovery reserve	For the risk cost for insured assets between the 20 year event and events which qualify for insurance cover and/or Government funding For the risk cost for non-insured assets between the 20 year event and events which qualify for Government funding For the "insurance excess" in events which qualify for insurance and/or Government funding
Risk transference	Insurance	For 100% of the risk cost for insured assets and damage between the insured excess and $10 million For 40% of the risk cost for insured assets between the $10 million primary layer and the Maximum Probable Loss
	Central government funded (National Recovery Plan)	For 60% of the risk cost for insured assets between National Recovery Plan excess and the Probable Maximum Loss

Figure 19: WRC Risk Financing strategy

Based on flood risk assessments, the council has determined that the following reserve balances should be held:

- Routine event response costs – an annual provision of $260,000
- Zone disaster recovery reserve – balance of up to $3.12 million
- Regional disaster recovery reserve – balance of up to $6.5 million.

Implementation of this risk financing strategy was started in 2012. Disaster recovery reserves are now in place at the required levels. Additional insurance cover has been put in place to address risks associated with the more frequent weather events that may cause damage to assets, reducing the requirement for self-insurance through the regional

disaster recovery reserve. While the budget forecasts reserve balances in excess of the limits set above, the council is aware that weather events in early 2018 will require funding to be drawn down from these reserves in order to meet costs of remedial works."

All of the catchment zones have established their zone disaster recovery reserves. However, consultation with drainage advisory committee representatives indicates that the option of a specific disaster recovery reserve is not favoured for drainage and that operational reserves would be used or special loans would be raised to fund any necessary remedial works. Because of the small number of high value assets in the drainage system compared to the flood protection schemes, the risk of large-scale damage to the drainage system being caused by a flood event is relatively small. In the 30 years since the Council has been responsible for providing the land drainage service, no areas have suffered significant damage from storm events that could not be managed within existing budgets and reserves.

However, remedial costs could be significant for a large earthquake event resulting in land uplift or depression, as occurred during the 1987 Edgecumbe earthquake.

History has shown that a rainfall event that causes significant damage to the drainage system is likely to be a local event and not a region wide event. On the other hand an event that causes a major regional flood is not likely to be a significant local event within any one drainage area, so the criteria for access to the Central Government funding is not likely to be met within the drainage programme. The damage resulting from the July 1998 and April-May 2017 floods supports this.

To ensure that sufficient reserves are in place, the target level of operational reserve has been set at 50% of the total annual operational expenditure level (excluding interest) for each drainage area or subdivision budget. Rate levels are considered annually and adjusted as required to achieve this level of reserve.

Appendix 6 – Existing resource consents for drainage activities

The following is a schedule of resource consents currently held by ICM that allow the land drainage activities to be undertaken. The consents identified include a brief description and a summary of the more relevant conditions, but for a full description of the consent and its conditions the actual resource consent certificate should be read.

Resource consent 121726, silt removal from watercourses in 54 drainage subdivisions

Resource consent 121726 (Document #2070995) was granted in November 2011 and authorises the silt removal from beds of natural and modified watercourses within 54 drainage subdivisions within the Waikato catchment where modified watercourses are involved. The resource consent conditions include the following:

- Provision of a proposed annual work programme prior to 31 October each year for circulation to 4 interested parties plus Iwi
- Survey of invert levels of all waterways within 200m of the wetlands listed in the WRP
- Timing of work restrictions based on the nature of the waterway
- Preparation of a monitoring and mitigation plan
- Preparation of a habitat enhancement plan
- Preparation of an annual report summarising the works completed, monitoring, mitigation and enhancement completed along with any non-compliance.

Resource consent 121727, deposition of silt onto land

Resource consent 121727 (Document #1938253) was granted in November 2011 and authorises the deposition of cleanfill onto the floodplains of natural and modified watercourses within 54 drainage subdivisions within the Waikato catchment where modified watercourses are involved. The silt deposited is derived from the activities authorised by consent No. 121726.

The resource consent condition is that the activities are undertaken in accordance with those under consent No. 121726.

Resource consent 136365, Deposition of sediment and vegetation into wetlands

Resource consent 136365 (Document #13479980) was granted on 8 March 2016 and authorises the deposition of sediment and vegetation into wetlands from land drainage and stream maintenance works. The resource consent conditions include the following to note:

- Provision of a proposed annual work programme prior to 20 November each year for circulation to 4 interested parties that includes Iwi
- Preparation of site specific management plans for 5 specific sites
- No work between July to December
- Fish recovery shall be undertaken
- Monitoring of deposition areas and weed control

Resource consent AUTH137698.01.01, Berm work in Aka Aka Otaua area

Resource consent AUTH137698.01.01 (Document #9793139, staff report with consent attached) dated 17 February 2017, authorises earthworks and deposition of material in a High Risk Erosion Area for berm reshaping on various watercourses in the Aka Aka Otaua drainage area. The resource consent conditions include the following to note:

- Provision of a proposed annual work programme prior to 31 October each year for approval by RUD.
- Work is limited to not exceed 400m in any waterway in any year
- Total cumulative length shall not exceed 1500m annually
- Sediment discharges shall be minimised
- Provision of a compliance audit report by 31 July each year summarising the works completed, an assessment of works against conditions, reasons for any non-compliance and any remedial steps to ensure compliance for future works.

Resource consent AUTH135834.01.01, erosion control work in Aka Aka Otaua area

Resource consent AUTH135834.01.01 (Document #3683595, staff report with consent attached), granted on 3 March 2016, authorises erosion control activities in natural and modified watercourses in the Aka Aka Otaua drainage area, including associated earthworks in high risk erosion areas. The resource consent conditions include the following to note:

- Provision of a proposed annual work programme prior to 31 October each year for approval by RUD.
- Signage is erected two days prior to works commencing
- Total cumulative length shall not exceed 300m per bank kilometre annually
- No work during July to December
- Preparation of an annual report by 31 July each year summarising the works completed, any non-compliance and any remedial steps to ensure compliance for future works.

Resource consent 124998, obstruction removal, Waikato

Resource consent 124998 (Document #2372199) was granted on 7 September 2012 and authorises the removal of obstructions from the beds of rivers and their tributaries within the Lower Waikato, Central Waikato and Waipa River management zones. The resource consent conditions include the following to note:

- Notification to RUD of the location and nature of any obstructions to be removed at least 24 hours prior to the work commencing
- Disposal of the removed material appropriately including assessing opportunities for relocation to provide aquatic habitat.
- Activity shall not adversely affect others or cause erosion.
- Sites shall be stabilised to prevent sedimentation and erosion
- Provision of an annual report by 31 July each year summarising the works completed, any reasons for non-compliance and any remedial steps to ensure compliance for future works.

Resource consent 135115, obstruction removal, Waihou and Lower Piako

Resource consent 124998 (Document #3437017, staff report with consent attached), was granted on 15 April 2015 and authorises the removal of obstructions from the beds of rivers and their tributaries within the Lower Piako and Waihou River catchments. The resource consent conditions include the following to note:

- Notification to RUD of the location and nature of any obstructions to be removed at least 24 hours prior to the work commencing
- An ecologist shall be engaged to assess habitat and can recommend how to mitigate for habitat removal.
- Disposal of the removed material appropriately including assessing opportunities for relocation to provide aquatic habitat.
- Obstruction removal is limited to 5 times the channel width or 100m, whichever is the lesser
- Activity shall not adversely affect others or cause erosion.
- Any erosion resulting from the activity shall be controlled
- Provision of an annual report to RUD, DoC and Fish and Game by 31 July each year summarising the works completed, any recommendations made by an ecologist, any reasons for non-compliance and any remedial steps to ensure compliance for future works.

Appendix 7 – Land subdivision process

The subdivision of land into a greater number of titles or the shifting of property boundaries is an ongoing issue that needs to be well managed within drainage areas to ensure the following:

- That properties that requires drainage have direct access to an adequate Council maintained outlet
- That access to Council drains for maintenance is provided and preserved
- That changes and additions to the drainage network are managed and adopted by the Council
- That appropriate changes to the funding systems are made
- That appropriate changes to the Asset Management system are made
- That appropriate future maintenance is provided

The process for approving subdivisions and changes to property boundaries is managed by territorial authorities (TA's), with applications for these changes normally being submitted by Surveyors on behalf of the property owners or developers. It is critical that the TA's and their staff include land drainage as a consideration in their land subdivision processes to avoid future issues with landowners not being able to adequately drain their land and with the Council not being able to access the community drains to maintain them. A good relationship is essential between the Council's land drainage manager and the TA's planning staff to ensure that land drainage is provided for within the land subdivision process.

For the Council there can be up to three stages, or areas of work to the process which are:

1. Providing comment/approval to the initial subdivision proposal that might include the developer needing to do work to upgrade the drainage network to the proposed new Lots.
2. The execution by Council of easement documentation when required.
3. The changes and additions to the funding and asset management systems.

The following sets out the process for each of the stages:

Proposed subdivision requirements

The existing process includes a proposed subdivision being received from a surveyor seeking Council comment. It is then the work supervisors' responsibility to determine if the land is free draining or if it requires drainage. If it requires drainage then the work supervisor decides on and sets out the drainage requirements in a letter to the surveyor who then includes that as part of the subdivision application process. The input from staff is currently not recoverable, is provided with limited detailed information about ground and drain levels and also carries the risk to Council if the required work is not adequate in the future.

It is proposed to change the current process to require the developer to determine if a drainage plan is required and to be able to develop a plan for Council staff to approve. The following information is designed to allow other parties to develop a drainage plan that meets the Council requirements.

Easements

The maintenance of access along the Council drains is critical to ensure that the drains can be maintained in a fair and equitable manner at minimum costs and inconvenience. The Council adopted Rule 4.2.18.1 in the WRP to ensure that access for maintenance along Council maintained watercourses continues, but in spite of this rule landowners still place improvements along Council drains that makes maintenance difficult and costly. This is mainly an issue with small landholdings.

To help overcome this issue the Council has decided that easements shall be established over Council drains plus the access and cleanings deposition area associated with the drains. The requirements for establishing easements are:

- Over all existing or proposed Council drains within or along proposed Lots that are less than 5 hectares.
- Easement shall include the area occupied by the drain plus an access strip adjacent to the drain for maintenance access and deposition of drain cleanings.
    - Access strip is normally 7 metres wide. This allows for a 12 tonne excavator plus deposition of cleaning debris.
    - Access strip may be reduced to 5 metres wide but only where drain is small and a small excavator (say 5 tonne) can be used.
    - Access strip may be 10 metres wide but only where drain is large and larger excavator (say 20 tonne or long reach) is required.
- The standard easement conditions are detailed in Document #2928763

Access

Continuous access to and along Council drains is essential to allow for the continued maintenance in a consistent and cost effective manner. Trees, shrubs, high fences and buildings along the top edges of drains prevent access to the drains and lack of gates in cross fences and culverts in lateral drains makes continuous access along the drains impossible. These issues result in higher costs to undertake normal maintenance. To overcome these issues the requirements for access to Council drains are:

- No trees, shrubs or buildings along the drain edges or within the access strip required for maintenance (normally 7m wide. See access strip information in Easements above).
- Any permanent fence along the drain shall be within 1 metre of the drain top edge and no higher than 1.0 metre.
- Any fence crossing the access strip shall include a gate adjacent to the drain. This includes boundary fences.
- Any lateral drain to the Council drain that crosses the access strip shall be culverted adjacent to the drain to allow for maintenance machinery to cross the lateral drain.

Drain Standard

Because of the different catchments and characteristics of each drainage area, the adopted runoff design standard for each drainage area varies. The following design daily runoff standards have been adopted for each drainage area (runoff to be cleared within 24 hours) and they are used when designing the upgrading of drains and culverts:

Figure 10: Land drainage design standards

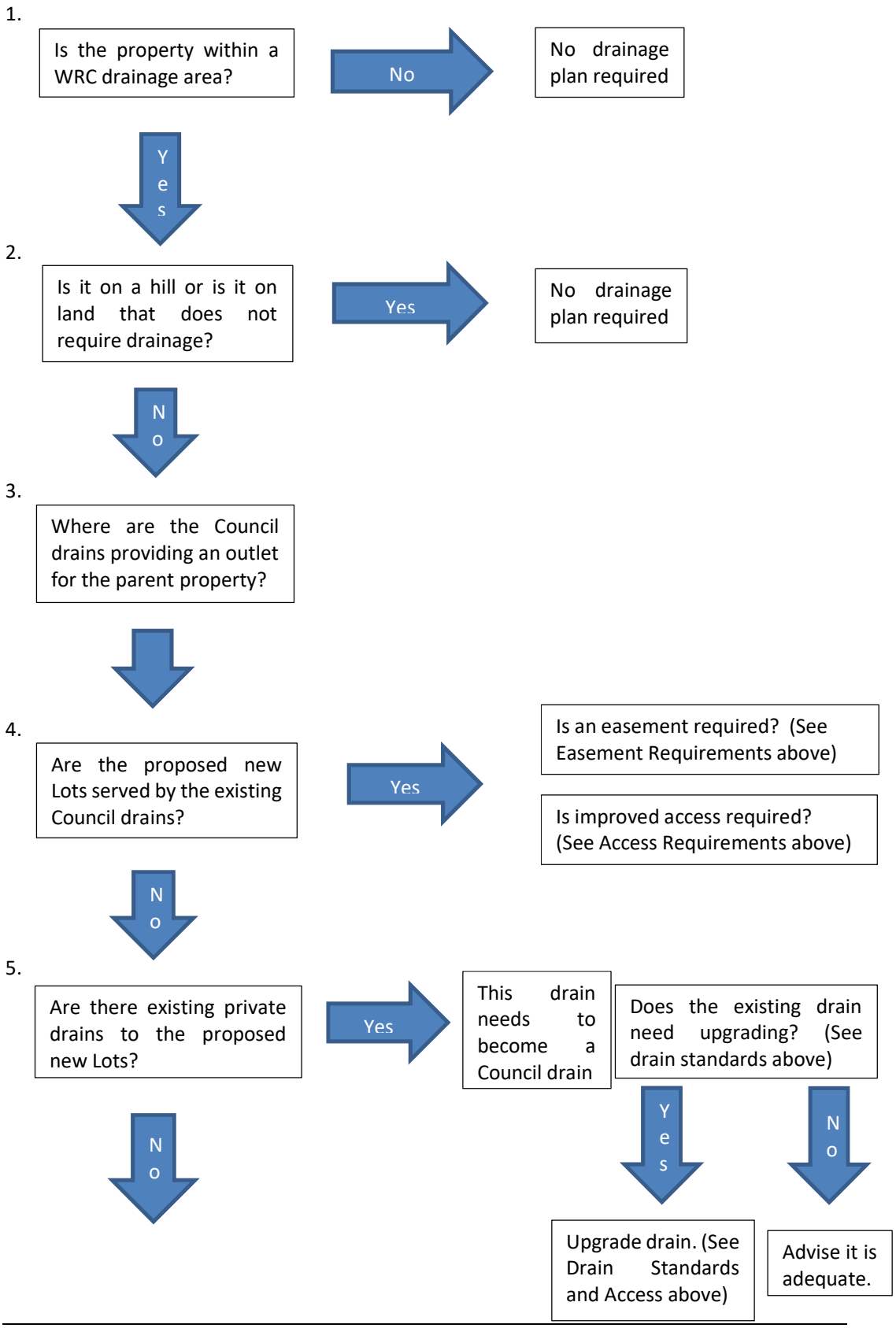
Drainage area	Design standards (depth of runoff per day)
Thames Valley	**38 mm. (1 1/2 “)**
Taupiri, Eureka and Te Rapa	**38 mm. (1 1/2 “)**
Fencourt, Hautapu, Rotomanuka, Ohaupo/Ngaroto	**25 mm. (1”)**
Aka Aka/Otaua	**10 mm. (3/8 “)**
Franklin areas	**Various but eventually 19mm from flat land and 38mm from hill land.**
Waikato District areas	**Various but generally 20mm**

The depth of a drain needs to be sufficient to allow for adequate management of the water table beneath the lowest land within any proposed Lot. For this to occur, the normal water level

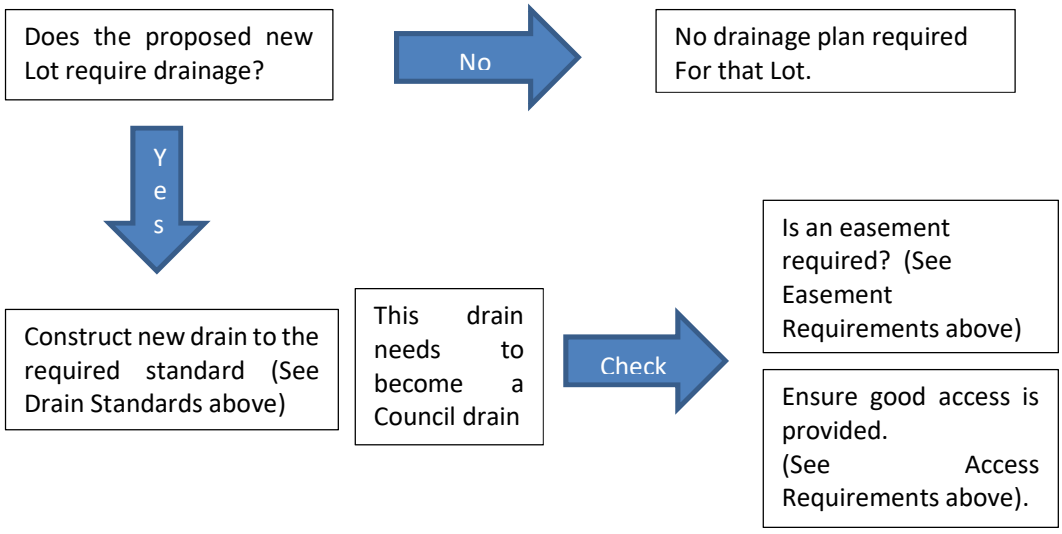
within the drain, or the drain invert, whichever is the highest, shall be a minimum depth of 600mm below the lowest ground level within the adjacent or upstream property.

Drainage plan preparation process

The process set out below is designed to enable anyone to prepare an adequate drainage plan.



6.



8.

Important Note:
The installation of services to Lots are to cross Council drains via the property access culvert or be buried a minimum of 1.0 metre below the Council drain invert.

- Power cables
- Telephone and broadband cables
- Water supplies

It is not appropriate to put cables or pipes through or beneath open Council drains as machine cleaning of drains combined with future land consolidation is likely to result in damage to the cables or pipes.

The above process results in a drainage plan being developed or a recommendation that no drainage plan is required. The process from this point includes:

- Proposal submitted to the Council, including a drainage plan or recommending none is required
- Letter of approval from the Council
- Letter of approval goes into resource consent application to TA
- TA grants consent subject to conditions, which meet WRC requirements
- Developer implements the consent conditions that includes the WRC requirements
- Site is inspected by WRC staff
- Letter sent to developer acknowledging drainage plan conditions have been met
- TA issues 224 Certificate
- Process of creating new titles and applying easements commences
- Details of the subdivision and documentation is added into Conquest AM system under the task of “Inspect for new subdivision application” by the work supervisor
- A copy of the relevant documentation together with a plan of the drainage changes is to be sent to the WRC Senior Data Management Analysist by the relevant work supervisor where:
    - there are changes to the drainage network, or
    - easements have been required

Easement execution process

The requirement for any easement is noted in the drainage plan submitted to the relevant TA within the resource consent process for the land subdivision. The consent conditions will include that easements are required. The process from there is:

- Creating new titles includes the imposition of the required easements
- Legal team for the developer creates the plan and easement documentation that will include the conditions required by the Council.
- Easement document is executed by the Developer and sent with a copy of the plan to the Council.
- Documentation is run through Drainage easement in gross checklist (Document #1335297)
    - Does documentation include subdivision survey plan
    - RMA 223 Certification included
    - Check documentation for accuracy of names, titles and relevant clauses
    - Check for consistency between survey plan and easement documentation
    - Obtain approval from drainage manager or relevant work supervisor
    - Obtain signatures and common seal
    - Return executed document with covering letter
    - Retain a copy of the executed easement
- Advise Drainage Manager and Senior Data Management Analyst of executed document and references.

Funding system and asset management changes

There may be some time between the TA issuing of a 224 Certificate and the sale of a property or change to the rating database. This part of the process is triggered by changes to the rating database that are managed within the Council's Strategy and Science directorate by the Senior Data Management Analyst. The process includes:

- Receiving information from the work supervisors about a proposed subdivision where a change to the drainage network has occurred or easements have been required.
- Routinely receiving TA data files on their rating systems and changes.
- Loading the information into the WRC system.
- Changes in property areas and new properties are highlighted.
- Drainage funding system maps are checked where differentials are involved in the property area changes.
- Changes to the drainage networks are mapped.
- The land categories are adjusted according to the changed drainage network and relevant funding policies.
- The land categories are reallocated to the changed and/or new property areas.
- Rates are recalculated for the changed property areas.
- Staff are notified that the changes have been actioned:
    - Drainage manager: So new drains can be included in annual drainage network review process for the Council adoption.
    - Work supervisor: for information and inclusion in the monitoring and maintenance programmes
    - Asset Management: For inclusion of new or changed drains into the Conquest Asset Management system.

Appendix 8 – Process to amalgamate drainage areas or change drainage area boundaries

The following is a summary of the process detailed in the LGA part 29, Sections 504 and 505 that would allow the Council to amalgamate contiguous drainage areas or alter the boundaries of a drainage area.

Step 1:	Identify the need for amalgamation or boundary change for a drainage area.
Step 2:	Prepare - A statement of proposal - A summary of proposal
Step 3:	Publically notify the Summary of Proposal
Step 4:	Receive feedback - If Council receives a petition from more than 50% of the electors, they can make a declaration. - If more than 15% of the electors demand a poll, Council must undertake a poll of the area.
Step 5:	Make declaration or undertake poll depending upon outcome of Step 4.

The tasks within this process include:

- Gaining support from the drainage advisory subcommittee to undertake the process
- Obtaining a resolution from the Council to undertake the process
- Identifying the area/s to be included in the process
- Identifying the electors in the area
- Identifying the drains that will become Council drains
- Establishing a draft funding system to be able to provide details of the likely cost implications to each landowner.
- Preparing a statement of proposal
- Preparing a summary of the proposal
- Preparing a public notice
- Directly contacting the electors to advise them of the proposal
- Hold a public meeting as part of the consultation
- Promote a petition if support is strong, or
- Promote a demand for a Poll
- Resolve that a Poll be undertaken
- Conduct the Poll in accordance with the Local Electoral Act 2001
- Prepare a report on the outcome of the Poll for Council's consideration to make a Declaration.

Copy of public notice

The following is a copy of the public notice used in 2014 when the Council went through the process to alter the boundaries of the Taupiri drainage area to include the upper Maungahaumia catchment:

> **"Public Notice** of Waikato Regional Council's proposal to establish a new drainage subdivision to be known as the Maungahaumia Drainage Subdivision
>
> Notice is hereby given that Waikato Regional Council will consider a proposal to alter the boundaries of the Taupiri Drainage and River Area at its meeting of Council to be held on 27 February 2014, to include additional land that forms part of the upper

Maungahaumia Stream catchment, pursuant to section 504 of the Local Government Act 1974. The proposal will result in the formation of a new drainage subdivision to be known as the Maungahaumia Drainage Subdivision.

The proposal can only be confirmed **if** a petition of the majority of the electors is received, **or**, a demand for a poll of electors is undertaken and results in a majority of votes in favour of the declaration.

If a petition of the majority of electors is received, Council may confirm the proposal by way of declaration. If a demand for a poll of electors is received, a poll of electors will be undertaken. In the event that both a demand for a poll *and* a petition is received, then Council must undertake a poll of electors. If Council does not receive either a petition or demand for a poll of electors, it may resolve to undertake a poll of electors, or decide to retain the status quo.

A valid petition must:

- Be made in writing;
- Be signed by at least fifty percent of electors in the Maungahaumia Drainage Subdivision. This equates to **33** valid electors signatures;
- Clearly state that he or she petitions the Council to make the proposed declaration; and
- Be delivered to the main office of Waikato Regional Council, 401 Grey Street, Hamilton East by 4.00pm on Tuesday **25 February 2014**, marked for the attention of the Electoral Officer.

A valid demand for a poll must:

- Be made in writing;
- Be signed by at least fifteen percent of electors in the Maungahaumia Drainage Subdivision. This equates to **10** valid electors signatures;
- Clearly state that he or she demands a poll on whether the council should make the proposed declaration.
- Be delivered to the main office of Waikato Regional Council, 401 Grey Street, Hamilton East by 4.00pm on Friday **21 February 2014**, marked for the attention of the Electoral Officer.

Every elector who signs a petition or demand for a poll must legibly state against their signature, his or her full name and the address for which the person is qualified as an elector of the proposed Maungahaumia Drainage Subdivision.

A summary of the proposal can be accessed on our website www.waikatoregion.govt.nz; or may be inspected at Waikato Regional Council office 401 Grey Street, Hamilton East, or Matamata-Piako District Council office 58 Canada Street, Morrisville. If you have any queries please contact Roger Spooner on 0800 800 401.

Dated at Hamilton this 20th day of January 2014.
V.R.J. Payne
Chief Executive"

LGA Sections 504 and 505

The following is an extract from Sections 504 and 505 of the LGA from which the above summary has been made:

504 Declarations in relation to drainage areas

(1) A council may, for the purpose of land drainage work, declare—
  (a) all of its district to be a drainage area:
  (b) part of its district to be a drainage area:
  (c) 2 or more contiguous drainage areas to be a drainage area:
  (d) the boundaries of a drainage area to be altered.

(2) A declaration must—
  (a) define the relevant area; and
  (b) assign a name to the drainage area; and
  (c) fix the day on which the declaration takes effect.

(3) A council may make a declaration only if—
  (a) a demand for a poll of electors is taken in accordance with sections 505 and 505A and results in a majority of votes in favour of the declaration; or
  (b) a petition complying with section 505B is presented to the council.

(4) Before making a declaration, a council must—
  (a) prepare a statement of proposal in relation to the declaration that includes—
    (i) a draft of the declaration; and
    (ii) a statement of the reasons for proposing to make the declaration; and
    (iii) an explanation of the procedure—
      (A) to demand a poll under section 505; and
      (B) to petition the council under section 505B; and
    (iv) when and where the council will vote on a motion to make the declaration; and
    (v) any other information that the council identifies as relevant; and
  (b) make the statement of proposal available in a way appropriate to the subject matter of the proposal; and
  (c) produce a summary of proposal that—
    (i) is a fair representation of the major matters in the statement of proposal; and
    (ii) explains how the statement of proposal is available; and
  (d) publicise the summary of proposal in a way appropriate to the subject matter of the proposal.

(5) The council must not vote on a motion to make the declaration until at least 20 working days after the summary of proposal is first publicised under subsection (4)(d).

505 Procedure for demanding poll

(1) For the purposes of section 504(3)(a), a demand for a poll is made if—
  (a) the council resolves that a poll be taken; or
  (b) 15% or more of the electors in the relevant area demand a poll, and a document containing the demands is delivered to the principal office of the council at least 3 working days before the date referred to in section 504(5).

(2) An elector has demanded a poll if he or she—
  (a) signs a document which clearly expresses that he or she demands a poll on whether the council should make the proposed declaration under section 504(1); and

(b) states, against his or her signature, his or her name and address with sufficient accuracy to determine whether—

(i) he or she is an elector; and

(ii) the given address is in the relevant area.

505A Poll on proposed declaration

(1) A council must conduct a poll on the proposed declaration under section 504(1) if a demand is validly made under section 505(1).

(2) The poll must be conducted in accordance with the Local Electoral Act 2001, and the provisions of that Act apply with all necessary modifications.

505B Petition to make declaration

(1) A petition for a declaration is made under section 504(3)(b) if—

(a) a majority of the electors in the relevant area petition the local authority to make the proposed declaration under section 504(1); and

(b) a document containing the petitions is delivered to the principal office of the council at least 1 working day before the date referred to in section 504(5).

(2) An elector has validly petitioned if he or she—

(a) signs a document which clearly expresses that he or she petitions the council to make the proposed declaration under section 504(1); and

(b) states, against his or her signature, his or her name and address with sufficient accuracy to determine whether—

(i) he or she is an elector; and

(ii) the given address is in the relevant area.

505C Relevant area for polls and petitions

In sections 504 to 505B, **relevant area**,—

(a) in the case of a declaration under section 504(1)(a), means the district; and

(b) in the case of a declaration under section 504(1)(b), means the part of the district that would become the drainage area; and

(c) in the case of a declaration under section 504(1)(c), means the drainage areas that would become the new drainage area; and

(d) in the case of a declaration under section 504(1)(d), means—

(i) any part of a drainage area that would be excluded from the drainage area as a result of the boundary changes; and

(ii) any part of the district that would be included in the drainage area as a result of the boundary changes.

Appendix 9 - Priority locations, issues and works in the Land Drainage Areas as identified in the Waikato and Waipa Rivers Restoration Strategy.

The Waikato and Waipa River Restoration Strategy, Te Rautaki Tamata I nga awa O Waikato me Waipa, has been prepared to guide future restoration activities throughout the Waikato catchment. It identifies restoration activities within subcatchments and gives them a priority.

The schedule below is taken from the restoration strategy document and lists the priority projects that are associated with the relevant drainage areas that are the responsibility of the Council.

Aka Aka Otaua Drainage Area

High Priority

CLW1 Water Quality Improvements in the Aka Aka Otaua catchments

Location: Wetlands greater than 0.1 ha and ephemeral streams within the Aka Aka catchment

Summary of priority works:

- Fencing wetlands and ephemeral streams (55km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $550,000

High Priority

CLW2 Inanga spawning habitat rehabilitation – Hills Drain

Location: a 2 hectare section of streambank adjacent to Hills Drain at the end of Fisherman Road, on the northern bank of the Waikato River near Otaua

Summary of priority works:

- Develop restoration plan
- Weed control
- Fencing (640m)
- Native planting (50% of site at 0.75m spacing)
- Project management/staffing/incidentals (15%)

Total estimated cost: $179,458

Taupiri Drainage Area

Medium Priority

CLW21 Mangatea Stream integrated catchment programme

Location: Mangatea Catchment – a 2,086 ha catchment extending from the west of the Hapuakohe summit downstream to its confluence with the Mangawara River.

Summary of priority works:

- Riparian fencing (13km)

- Erosion control structures
- Riparian willow/poplar pole planting (1,200 poles)
- Remediation of barriers to native fish
- Native riparian planting (5ha)
- Project management/staffing/incidentals (20%)

Total estimated cost: $526,276

Medium Priority

CLW22 Upper Mangawara integrated catchment programme

Location: The upper Mangawara Catchment – a 2,086 ha area lying at the southern end of the Hapuakohe Range and along the eastern boundary of the Lower Waikato catchment. The upper catchment is estimated to have an approximately 50km stream network including the Mangawara Stream itself.

Summary of priority works:

- 124ha LUC 6e land managed with pole planting
- 124ha LUC 6e land managed with plantation species (pine or manuka)
- Fencing managed LUC 6e land (30km)
- 145ha LUC 7 land managed with plantation species
- Fencing managed LUC 7 land (20km)
- Reducing sediment outside LUC 6e, 7 and 8 land (4ha)
- Fencing existing indigenous vegetation (17km)
- Riparian fencing (17km)
- Riparian willow/poplar pole planting (1,478 poles)
- Native riparian planting (6ha)
- Erosion control structures
- Remediation of fish barriers
- Project management/staffing/incidentals (30%)

Total estimated cost: $4,319,905

Very High Priority

CLW23 Water quality improvement in the middle Mangawara catchment

Location: Wetlands and ephemeral streams in the middle Mangawara catchment. The middle Mangawara catchment covers 14,219ha and drains the Mangatea, upper Mangawara and Tauhei catchments

Summary of priority works:

- Fencing wetlands and ephemeral streams (11km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $110,000

High Priority

CLW24 Water quality improvement in the Tauhei catchment

Location: Wetlands and ephemeral streams within the Tauhei catchment. The Tauhei catchment extends over 11,600ha from west of Morrinsville and drains to the Mangawara Stream at Orini.

Summary of priority works:

- Fencing wetlands and ephemeral streams (8km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $80,000

High Priority

CLW25 Water quality improvement in the Komakorau and Mangatoketoke catchments

Location: Wetlands and ephemeral streams in the Komakorau and Mangatoketoke catchments. This large catchment covering 19,143ha lies east of Hamilton and Ngaruawahia with streams entering the Waikato River at Taupiri.

Summary of priority works:

- Fencing wetlands and ephemeral streams (44km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $440,000

Mangaonua subdivision of the Eureka Drainage Area, Fencourt, Hautapu and Matangi Drainage Areas

Very High Priority

CLW27 Water quality improvement in the Lower Mangaonua Stream catchment

Location: Wetlands and ephemeral streams in the lower Mangaonua Stream catchment. The Mangaonua is an 11,346ha catchment that lies southeast of Hamilton City. The lower catchment makes up 6615ha of this.

Summary of priority works:

- Fencing wetlands and ephemeral streams (23km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $230,000

Medium Priority

CLW28 Rehabilitation of fish habitat in the Mangaonua, Mangaone and Mangaomapu Streams

Location: Mangaonua, Mangaone and Mangaomapu Streams

- Mangaonua Stream upstream of State Highway 1B near Matangi (approximately 22km) and a 7km tributary
- Mangaomapu Stream between Racecourse Road (near Cambridge), downstream to its confluence with the Mangaone Stream – approximately 7km in length
- Mangaone Stream from its headwaters near St Kilder, Cambridge, to its confluence with the Mangaomapu Stream near Tamahere.

Summary of priority works:

- Riparian fencing (68km)
- Riparian planting (93ha)
- Remediation of fish barriers
- Resource consent
- Project management/staffing/incidentals (30%)

Total estimated cost: $2,663,086

Medium Priority

CLW29 Upper Mangaonua catchment hill country erosion protection and remediation

Location: The upper Mangaonua catchment – an 11,346ha catchment that lies southeast of Hamilton City, containing the Pukemoremore and Te Miro areas.

Summary of priority works:

- 210ha LUC 6e managed with pole planting
- 210ha LUC 6e managed with plantation species (pine or manuka)
- Fencing managed LUC 6e land (40km)
- Fencing existing indigenous vegetation (13km)
- Project management/staffing/incidentals (25%)

Total estimated cost: $3,231,250

Appendix 10 – Land drainage funding systems

Funding systems provide the rate income that supports the undertaking of the land drainage programmes. The Council has decided that the land drainage service is to be funded by targeted rates, that the systems are to be based on area and that they are to be differential, unless all of the land receives the same benefit. Currently all of the systems are differential, area based systems except for the Aka Aka/Otaua system, which is a flat rate, based on area.

The Council confirmed in June 1998 that funding systems for river and drainage work are to be based on catchments. The more recent land drainage funding system reviews have included all of the land within the contributing catchment area, resulting in the funding system including land that is within the drainage area plus land that is not within the drainage area but is within the catchment of the drainage network. e.g. Freshfield subdivision funding system within the Taupiri drainage area adopted in 2004.

The existing funding systems are a mixture of systems inherited from all of the former drainage boards and territorial authorities. Some of them have been reviewed by the Council for the following reasons:

- The Council reviewed the extent of the drainage service provided.
- The systems did not meet legislative requirements at the time.
- The Council established catchment funding systems and drainage assets were transferred to those programmes.
- Inherited systems did not have any associated documentation.

All of the funding systems transferred from the WDC and the former FDC came with rating lists and classification maps but no documentation describing the makeup of the system or describing the classification classes. Within the transfer process the Council prepared and adopted funding policies for all of these transferred funding systems.

Funding Policies

Each of the funding systems are based on a Funding Policy adopted by the Council or its predecessors. Under historic legislation funding policies for differential rating systems were called classifications and the land involved was described as being of the various classification classes. Under the LGRA, differential funding policies have land described in categories. The categories of land have considered the distribution of benefits and those who contribute to the need for the work. The following is typical wording detailing the benefits and contributions that is used in the descriptions of the categories of land adopted.

Direct Benefits

Within drainage areas the flat land and slightly elevated land generally requires drainage and the rolling and hill land does not require drainage. The drainage work that is undertaken is located in the flat land and that is where the direct beneficiaries of the Council maintained network are located.

Direct benefit from the Council works is related to the removal of groundwater and surface water. The removal of groundwater occurs throughout the year, while the removal of surface water occurs after rain and is for approximately 10% of the year. Direct benefits include:

Direct benefits from the removal of groundwater include:

1. Greater productivity from the soil throughout the year.
2. The ability of service vehicles and machinery to traverse the land to maximise production.

3. The ability to effectively use septic tank systems.
4. The ability to dispose of roof water from buildings and paved surfaces.
5. The right and ability to discharge groundwater collected by a private drain into a council drain.

Direct benefits from the removal of surface water include:

1. Prevention or reduction of damages which surface water will cause to pasture, crops, horticulture, fences, and buildings.
2. The right and ability to discharge surface water collected by a private drain into a council drain.
3. A reduction in siltation of pasture, crops and horticulture.

The maintenance of rivers, streams and drains within or associated with the drainage areas have enabled very considerable development of the direct benefit areas. The council maintained drainage network is complemented by the intensive internal private drainage systems maintained by landowners.

Land that benefits from drainage includes land elevated sufficiently above drainage channels and scheme outlets to allow drainage by gravity discharge as it nevertheless receives a degree of drainage benefit as a result of being able to freely discharge drainage water onto lower lying areas which themselves are highly dependent on council drains and outlets.

The percentage of the total rate that is collected through direct benefit is normally approximately 60%.

Direct Benefit Categories of Land

Three categories are generally used for land receiving direct benefit from Council's drainage work.

High Direct Benefit.

Isolated or small areas of land and immediate lake margin which without the drainage system would not be capable of significant productive use and Council maintains the drainage system. This land would have the water table permanently at or above the ground surface if there was no drainage system or if Council did not maintain the system. A proportion is allocated to reflect the high direct benefit.

Direct Benefit

Farmland on which drainage is required for maximum production and to reduce surface flooding. The drains that Council maintains provide most, if not all, of the drainage to the land with little owner input. This land would have some productive use if Council did not maintain the system. A proportion is allocated to reflect the direct benefit.

Low Direct Benefit

Farmland on which drainage is required for maximum production and to reduce surface flooding, and the Council drains provide an outlet to which the landowner must connect private drainage. This land will probably also benefit from the lower water table in adjoining direct benefit land. This land would also have some productive use if the Council did not maintain the system this land drains into. To reflect the landowner cost of undertaking drainage within this land a low direct benefit proportion is allocated.

Local community benefit

All of the land within the drainage areas receives local community, or indirect benefit from the Council work but the flat land, or land that is surrounded by flat land, is considered to receive a greater local community benefit from the Council work than hilly land that is removed from the flat areas.

The local community benefits include:

1. The maintenance of communications and access to land by occupiers, service industries, and utilities.
2. The ability to effectively use an area of land, which in itself does not require drainage, but without the adjoining land being drained would not be economically viable.
3. The higher productivity and population of the district resulting from the Council works allowing service industries to establish and maintain economic enterprises in or near the district which improves the economic viability of the district as a whole.
4. The knowledge that the Council works will continue to be developed and maintained gives land users the confidence to maintain and further develop their land.
5. The result of all the above benefits is to increase and maintain land values throughout the district.

The percentage of the total rate that is collected through indirect benefit is normally approximately 15%.

Indirect Benefit Category of Land

Two categories are generally used for land receiving indirect benefit from Council's drainage work.

High Indirect Benefit

This includes farmland on which drainage is required, and rolling or hill country land that is completely surrounded by or adjacent to land on which drainage is required, and where the drainage is significant to the overall farming operation. This land is normally allocated a proportion of 10.

Low Indirect Benefit

This includes rolling and hill country land that is adjacent to or removed from land on which drainage is required, and where the balance of the property indicates that drainage within the area is not a major part of the properties viability. This land is normally allocated a proportion of 5.

Contributors

Land which drains to a Council maintained system has characteristics or use that either has no additional contribution to the need for Councils drainage service, or it has increased the contribution to the need for Councils drainage work or service. Some characteristics or uses contribute more than others do.

The percentage of the total rate that is collected through contribution is normally approximately 25%.

Some actions of occupiers do not necessarily add more water to the system but more work is required to provide the service. The categories of contribution come from four main uses.

Use 1 - Industrial or Commercial

This use has a high percentage of impervious surfaces from which stormwater runoff goes to a Council maintained system. This use has a high contribution to the need for the drainage work.

Use 2 - Residential or Rural Residential

Within the flat land where the drainage service is provided, these allotments have a high demand for the drainage service. The small size of the allotments reduces the choice for the location of any improvements resulting in a greater expectation and demand for the drainage service than that for rural lots.

The small size of the allotments results in a larger proportion of the allotment being required for access along drains, or being disturbed during maintenance. There is a resistance to provide this access strip and extra work is often required to organise transport for cleanings, to have the drains cleaned by hand instead of by machinery or to clean the drain from the roadside where traffic control is necessary.

Use 3 - Farmland

This is the normal rural use of land and includes pasture, crops and horticulture. The use of land as farmland increases the rate of runoff from that which would have originally occurred prior to any land clearance. The rolling or hill land has always produced higher volumes and rates of runoff. The flat land has surface slopes that result in reduced volumes and rates of runoff. The drainage standard makes no specific allowance for the difference in runoff rates from hill land or flat land and provides the same standard for runoff from all land types. Hence the rate of contribution to the need for Councils drainage work from hill land and flat land is considered to be similar so there is not normally any specific degree of contribution applied within the catchments.

Use 4 - Forestry or Bush

This land use results in no extra contribution to the need for Councils drainage work, as there is considered to be no change to infiltration of rainfall and therefore no change to runoff rates or quantities.

Contribution Categories of Land

Within drainage areas the rate of contribution to the need for Councils drainage work from hill land and flat land is considered to be the same so there is only one category of rural land considered to be a contributor. Areas of bush are a second category and are considered to make no contribution.

The third category of land, classed as Urban, is also included as it is of a nature that contributes to the need for Councils drainage work, or it requires more work for Council to provide the drainage service.

Contribution Category

This includes all land within the drainage area catchment that is not the Urban Type and is not in trees or bush. It includes all farmland that is flat, rolling, or hilly. This land is normally allocated a proportion of 10 but that can vary to provide the 25% of the total rate required.

No Contribution Category

This includes land that is fenced to exclude stock and is maintained in trees or bush, or is land that does not drain to the Council maintained work. This land is allocated a proportion of 0.

Urban Category

Where a holding contains an allotment with an area of less than 5 hectares, then the Urban Category shall apply as follows:

Industrial or commercial use:
0.2 hectares has been placed in the U Group for each average dwelling equivalent value of commercial or industrial development.

Residential Use:
In an area where the underlying category is A, B, or C, 0.2 hectares has been placed in the Urban Category for each dwelling on the holding.

In an area where the underlying category is D, E, or F, 0.2 hectares has been placed in the A Category for each dwelling on the holding.

Regional community benefit

Council currently considers that drainage works are of local benefit only and there is no wider regional community benefit, hence there is no Regional Rate contribution to the drainage programme.

Combining funding considerations

The funding system is then made from the combination of the 3 elements considered, direct benefits, indirect benefits and contributions made. Table 8 below summarises those elements

Category Name	Direct Benefit	Indirect Benefit	Contribution	Total
Urban				1000
Category A	High Direct	High indirect	Contribution	100
Category B	Direct	High indirect	Contribution	various
Category C	Low Direct	High indirect	Contribution	various
Category D	No direct	High indirect	Contribution	various
Category E	No direct	Low indirect	Contribution	various
Category F	No direct	Low indirect	No contribution	various
Category G	No direct	No indirect	No contribution	0

Table 8: Summary of funding elements

The proportions adopted for any particular system are adjusted to ensure the funding mix between the 3 considerations are maintained. That funding mix has generally included the following approximate percentages for allocating the costs:

Direct beneficiaries	60%
Indirect beneficiaries	15%
Contributors	25%

The indirect beneficiary element adopted is similar to that historically adopted through previous funding systems so has been continued.

The contributor element was justified on the basis of the cleared catchment requiring a drainage channel that was 25% larger because of the increase in flows from a catchment that was in pasture rather than in bush (See Document #497367).

A typical application of this method might look like Table 9 below:

Category Name	Direct Benefit	Indirect Benefit	Contribution	Total
Urban				1000
Category A	80	10	10	100
Category B	50	10	10	70
Category C	30	10	10	50
Category D	0	10	10	20
Category E	0	5	10	15
Category F	0	5	0	5
Category G	0	0	0	0

Table 9: Typical funding proportion makeup

Detailed category descriptions

The following provides a typical detailed description of the Urban category and the 7 rural categories of land currently used in recent drainage funding policies:

Urban

Where a holding is an allotment with an area of less than 5 hectares then part or all of the holding is placed in a group of higher rating than is shown on the plans according to the following criteria:

Industrial or Commercial Use

For each average dwelling equivalent value of commercial or industrial development, 0.2 hectares has been placed in the U Group.

Residential Use

In an area where the underlying category is A, B, or C, then for each dwelling or average dwelling equivalent increase in value above a rural use value, 0.2 hectares has been placed in the U Group.

In an area where the underlying category is D, E, or F, then for each dwelling or average dwelling equivalent increase in value above a rural use value, 0.2 hectares has been placed in the A Category.

A

Rateable land receiving a very high degree of direct benefit from maintenance of the drainage network as it is land that would not be capable of significant production without the council maintained system. High local community benefit and contribution as it is land in pasture.

One category of land assigned to this type is gully systems where the area of land drained is a narrow band, which is drained by the Council system. Without a drainage system the soil water levels would be so high as to prevent the establishment of productive use within the gully. It is likely that the unproductive use would extend to the top of the gully banks, which generally results in weeds and plant pests becoming established.

Another category is floodplains alongside streams, drains or lakes where regular flooding causing inundation, erosion, pasture damage, debris, stock losses and fence damage would be likely to occur if the waterway were not maintained by Council.

B

Rateable land receiving a high degree of direct benefit from maintenance of the drainage network, generally being land that would not be capable of significant production without the council maintained system and which, due to its more elevated position, is slightly less reliant on maintenance of the system.

Direct benefit as it is land that requires drainage for maximum production, high local community benefit, and contribution as it is land in pasture.

C

Rateable land receiving a moderate degree of direct benefit from maintenance of the drainage network, generally being land that requires drainage and is removed from the network or may suffer from the longest ponding as it is the lowest land. High local community benefit, and contribution as it is land in pasture.

This is generally land that is beyond the B Group land that requires drainage, and the drainage is provided privately but the drains discharge into the Council system.

D

Rateable land receiving a low degree of direct benefit from maintenance of the drainage network, generally being land that requires a degree of drainage and is removed from the council drainage network or the land is elevated and free draining but is surrounded by land that requires drainage. High local community benefit and contribution, as it is land in pasture.

This is generally hilly land that occurs within areas that are drained, but does not require drainage in itself.

E

Rateable land receiving no direct benefit as the land is all elevated and free draining, low local community benefit as the land is removed from land that requires drainage, and contribution as it is land in pasture.

This is generally rolling and hilly pastureland that drains to the Council maintained system.

F

Rateable land receiving no direct benefit as the land is all elevated and free draining, low local community benefit as the land is removed from land that requires drainage by the Council system and no contribution as the land drains away from the area where the Council works are located.

This is generally land that is within the drainage area but does not drain to the Council maintained system

G

Land that derives no direct or local community benefit from the Council maintained system and does not contribute to the need for Councils work. This land is non-rateable.

This is generally land such as lakes, or other land that has no productive potential. It includes land that drains to the Council maintained system that is fenced to exclude stock, and is maintained in trees or bush. It also includes land within the drainage area that drains away from the council maintained system and has no community of interest with the balance of the drainage area, and land which is excluded from rating by the LG Rating Act such as roads, schools, churches or reserves.

Funding system details

The Council currently has 92 separate funding systems to manage its land drainage responsibilities. The following provides summary information about each of the land drainage funding systems that are managed by the council.

Waikato Central funding systems (28)

Most of the systems are for the maintenance of land drainage channels only. The exceptions are:

- Manor Park; Maintains drains plus fully operates and manages a drainage pump
- Freshfield Pump; Maintains drains plus fully operates and manages a drainage pump
- Ohote Basin; Maintains stopbanks, floodgates and the Ohote Channel
- Rotomanuka; Maintains drains plus two detention dams

Table 10: Waikato Central funding system details

Drainage area/subdivision	Date	Plan Doc	Funding Policy Doc#	Classification category proportion							
				Urban	A	B	C	D	E	F	G
Waitakaruru	1999		527786	1000	100	70	50	20	15	5	0
Manor Park	2001		697857	500	100	70	-	-	50	20	0
Mangaonua	1999		527786	1000	100	70	50	20	15	5	0
Freshfield	2004		869517	1000	100	70	50	20	15	5	0
Freshfield Pump	2004		869517	1000	100	80	50	40	15	5	0
Komakorau	1991		2107377	1000	100	70	50	30	15	5	0
North Mangawara	2002		777186	1000	100	70	50	25	20	5	0
South Mangawara	2002		777186	1000	100	70	50	25	20	6	0
Tauhei	2002		777186	1000	100	70	50	25	20	6	0
Tenfoot	2002		777186	1000	100	70	50	25	20	6	0
Uapoto	2002		777186	1000	100	70	50	25	20	5	0
Rotokauri	1996		490382	1000	100	70	50	25	15	5	0
Ohote Basin	2001		697857	400	100	65	60	-	25	5	0
Ngaruawahia	1996		490382	1000	100	70	50	25	15	5	0
Fencourt	1999		527786	1000	100	70	50	20	15	5	0
Hautapu	1997		2106973	1000	100	70	50	25	15	5	0
Rotomanuka	1976			100	70	29	4	0			
Ohaupo/Ngaroto	2001		697857	1000	100	70	50	25	20	5	0
Greenhill	1968	1520489	1922441		100	90	63				
Hopu Hopu	1966	2174618	2122216		100	66	33	11			0
Kirikiriroa Horsham Downs	1983	2174621	2122216				20	10		2	
Kirikiriroa Komakorau	1983	2174623	2122216				20	10		1	
Koromatua	1974	2174626	2122216		100	66	16				
Matangi (SA)	1988	2174639	2122216		100						
Ngaruawahia North	1990	2174642	2122216		100						
Pukeroro	1969	2174646	2122216		100	66	50				
Puketaha	1993	2174647	2122216	1000	100	70	50	30	15	5	0
Te Kowhai	1969& 1980	2174653 & 2174651	2122216		100	75	37	25	12	6	0

All systems adopted from 1988 have been adopted under the former Rating Powers Act or the LGA 2002. All systems adopted prior to 1988 only include elements of direct benefit and indirect benefits.

Franklin Waikato funding systems (49)

The Kaawa funding system maintains stopbanks, floodgates and the Kaawa Stream

Table 11: Franklin Waikato funding system details

Drainage area/subdivision	Date	Plan Doc	Funding Policy Doc	Classification category proportion							
				Urban	A	B	C	D	E	F	G
Austins	-	1922864	1922441		100	62	25				
Blairs	-	1922859	1922441		100	71	28	15			
Guests	-	1922887	1922441		100	66					
Hills	-	1922892	1922441		100	71	28	15			
Horohoro	-	1922856	1922441		100	71	28	15			
Golf Course	-	1922891	1922441		100	71	28	15			
Island Block	1964	1922868	1922441		100	50	25				
Kimihia drainage	1984	1923063	1922441		100	50					
Kimihia pumped	1984	1922866	1922441		100	50					
Meremere West	1966	1923208	1922441		100	75	50	25			
Meremere East	1966	1922870	1922441		100	75	50	25			
Ohinewai	1965	1922876	1922441		100	50	25	12			
Okowhau	-	1922890	1922441		100	57	28	14			
Orchard Road	2017	8875731	8875731	1000	100	70	50	20	15	5	
Rangiriri North	1969	1922877	1922441		100	83	50				
Ruawaro No1, Central	-	1922885	1922441		100	71					
Ruawaro No1, Furniss	-	1922884	1922441			100	66				
Ruawaro North	-	1922879	1922441		100	71	28				
Ruawaro East	-	2174650	2122216			100	66	33			
Ruawaro West	-	2174650	2122216		100	75	50	25			
Swan Road	1978	1922865	1922441			100	66	33			
Vrsaljkos Road	1978	1922845	1922441		100		50				
Churchill East	1971	1922849	1922441		100	80	60	0			
Mangawara	1966	2174635	2122216		100	62	50	12			
Pukekapia 1	-	2174643	2122216		100	50	25				
Pukekapia 2	-	2174644	2122216		100	50	25				
Waikare Frost	1969	2174628	2122216		100	50	25	12			
Waikare Ohinewai	1968	2174631	2122216		100	50	25	12			
Waikare Nikau	1969	2174630	2122216		100	82	66		33	16	
Waikare Rangiriri	-	2174632	2122216		100	60	20				
Waikare West	1966	2174633	2122216		100	80	40	20			
Mangati	1950	2174634	2122216		100						
Waikorea	1971	2174655	2122216		100						
Bell Road	1969	1620310	1620129				1				
Motukaraka	1970	1620326	1620129		1						
Mangatawhiri C1	1978	1620330	1620129			45	30	10	6	4	
Mangatawhiri C2	1978	1620330	1620129			45	30	10	6	4	
Mangatawhiri C3	1978	1620330	1620129			45	30	10	6	4	
Mangatawhiri C4	1978	1620330	1620129			45	30	10	6	4	
Mangatawhiri C5	1978	1620330	16201291			45	30	10	6	4	
Waller Commins	1974	1620335	1620129			1					
Tuakau	1977	1620313	1620129			45		10			
Orton	1969	1620321	1620129		5	3	2	1			
Morrison Swamp	1974	1620329	1620129		4	3	2	1			
Onewhero Downstream	1974	1620323	1620129		50	36	14				
Onepoto	1973	1620324	1620129		4	3	2				
Te Kohanga	1977	1620315	1620129		6	2	1				
Tickles	-	-	1620129		1						
Kaawa	1958	1620332	1620129		2	1					

All of the Franklin Waikato systems were adopted prior to 1988, except Orchard Road, so therefore only include consideration of direct benefit and indirect benefit.

Aka Aka Otaua funding system

The Aka Aka Otaua funding system is a flat rate per hectare applied to every property within the drainage area.

Thames Valley funding systems (14)

Most of the systems are for the maintenance of land drainage channels only. The exceptions are:

- Ahikope SRA; Operates the Ahikope pump within the Waihou system
- Tahuna SRA; Fully funds the Arnet pump, plus operates the North Road and Steiners pumps in the Piako system
- Bancrofts SRA; Operates the Bancrofts pump within the Waihou system
- Rowes East SRA; Operates the Rowes East pump within the Waihou system
- Matamata Urban; Provides funding for the downstream Hungahunga and Waihekau subdivisions

Table 12: Thames Valley funding system details

Drainage area/subdivision	Date	Plan Doc	Funding Policy Doc	Classification category proportion							
				Urban	A	B	C	D	E	F	G
Hungahunga	1993		2106980	1000	100	80	50	25	15	5	0
Manawaru	1992		2106957	1000	100	80	50	25	15	5	0
Waihekau*	1987		2106899	1000	100	80	50	25	15	5	0
Tatuanui*	1985		2106903		1000	80	50	25	15	5	0
Whakahoro*	1979		2106906		100	80	50	25	15	5	0
Waitoa	1996		490382	1000	100	80	50	25	15	5	0
Waihou*	1982		2106931		100	80	50	25	15	5	0
Elstow	1981	1055368	1055368	1000	100	70	50	20	15	5	0
Tahuna*	1980		2106951		100	80	50	25	15	5	0
Ahikope SRA*	1981		2106948		100	80	50	40	15	5	0
Tahuna SRA*	1980		2106951		100	80	50	25	15	5	0
Bancrofts SRA	1996		490382		100	80	50	25	15	5	0
Rowes East SRA	1996		490382		100	80	50	25	15	5	0
Matamata Urban	1996		490382		100	80	50	25	15	5	0

* indicates a system implemented by the classifier, Glyn Jones

Review of Funding Allocation

The more recent land drainage funding systems adopted by the Council have a reasonably structured approach in allocating costs between the direct beneficiaries, the indirect beneficiaries and the contributors within the catchments. That allocation is detailed above in the "Combining funding considerations" section above.

Costs currently being experienced through the requirement to operate under resource consents, increased costs associated with compliance and potential future costs of mitigation may require a review of the allocation between the three elements considered within the existing funding policies, or may require a completely different approach to the funding policies.

Appendix 11 - Review of Contracted Services costs

The following tables present the details of the Contracted Services (CS) cost review for each drainage area or subdivision that has been undertaken from first principles based on the average cost and frequency for the activities involved. The detailed information can be found in Document #13671615.

The figures in brackets in the difference column indicates a shortfall in funding between the assessment and the existing CS budget.

The differences between the assessed CS amount and the existing CS budget that are greater than 10% of the budgeted amount have been highlighted for further review and potential budget changes in future LTP or AP processes.

Waikato Central

Table 13: Review of Waikato Central Contracted Services budget amounts

Drainage area/subdivision	Existing CS budget	Assessed CS amount	Difference
Waitakaruru	28,600	30,714	(2,114)
Manor Park	600	585	15
Mangaonua	14,100	13,566	534
Freshfield	11,500	15,238	(3,738)
Freshfield Pump	2,800	2,816	(16)
Komakorau	29,400	45,786	(16,386)
North Mangawara	3,800	4,006	(206)
South Mangawara	8,300	8,844	(544)
Tauhei	23,800	25,292	(1,492)
Tenfoot	13,900	19,522	(5,652)
Uapoto	6,400	8,188	(1,788)
Rotokauri	9,100	10,962	(1,863)
Ohote Basin	3,800	3,828	(28)
Ngaruawahia	13,500	12,503	997
Fencourt	9,800	14,962	(5,162)
Hautapu	20,450	19,944	506
Rotomanuka	8,500	8,393	(107)
Ohaupo/Ngaroto	5,000	5,652	(152)
Greenhill	1,100	1,129	(29)
Hopu Hopu	2,500	1,863	637
Kirikiriroa Horsham Downs	3,100	2,301	799
Kirikiriroa Komakorau	1,800	1,699	101
Koromatua	800	1,040	(240)
Matangi (SA)	38,172	25,217	12,955
Ngaruawahia North	600	1,328	(728)
Pukeroro	1,100	1,127	(27)
Puketaha	2,100	2,026	38
Te Kowhai	1,800	1,828	(28)
TOTALS	**266,922**	**290,422**	**(23,500)**

Most areas have adequate CS budget but a few have a shortfall of more than 10% and require further checking to see if the budgets need to be increased in the next LTP. The greatest shortfall is in Komakorau where the current budget amount is significantly less than that estimated to be required to maintain the 175 km of drains in that subdivision.

Franklin Waikato

Table 14: Review of Franklin Waikato Contracted Services budget amounts

Drainage area/subdivision	Existing CS budget	Assessed CS amount	Difference
Austins	2,600	2,587	13
Blairs	550	1,282	(732)
Guests	2300	2,307	(7)
Hills	800	792	8
Horohoro	7,600	7,541	59
Golf Course	3,800	3,810	(10)
Island Block	1,300	1,328	(28)
Kimihia drainage	700	1,277	(577)
Kimihia pumped	250	247	3
Meremere West	Non operational		
Meremere East (SA)	19,504	19,765	(261)
Ohinewai	300	378	(78)
Okowhau	2,500	2,507	(7)
Orchard Road	600	603	(3)
Rangiriri North	2300	1,760	540
Ruawaro No1, Central	Non operational		
Ruawaro No1, Furniss	300	394	(94)
Ruawaro North	800	783	17
Ruawaro East	1,000	1,052	(52)
Ruawaro West	1,000	1,162	(162)
Swan Road	6,800	6,482	318
Vrsaljkos Road	1,100	948	152
Churchill East (SA)	39,356	24,165	15,191
Mangawara	2,500	2,453	47
Pukekapia 1	1,200	1,191	9
Pukekapia 2	1,000	970	30
Waikare Frost	1,000	1,005	(5)
Waikare Ohinewai	800	777	23
Waikare Nikau	600	635	(35)
Waikare Rangiriri	1,000	1,089	(89)
Waikare West	2,500	2,591	(91)
Mangati	1,000	1,023	(23)
Waikorea	900	864	36
Bell Road	1,600	1,606	(6)
Motukaraka	29,738	29,523	215
Mangatawhiri C1	1,200	1,244	(44)
Mangatawhiri C2	3,800	3,868	(68)
Mangatawhiri C3	1,700	1,883	(183)
Mangatawhiri C4	11,300	8,350	2,950
Mangatawhiri C5	1,300	1,230	70
Waller Commins	300	341	(41)
Tuakau	3,000	3,064	(64)
Orton (SA)	6,000	6,049	(49)
Morrison Swamp	800	844	(44)
Onewhero Downstream	300	421	(121)
Onepoto	2,100	2,043	57
Te Kohanga	2,400	2,405	(5)
Tickles	Non operational		
Kaawa	4,200	4,344	(144)
TOTALS	**169,598**	**160,022**	**9,576**

Almost all of the Franklin Waikato CS budgets are adequate for the work to be completed. A few indicate that the actual costs need to be further monitored to determine of the LTP budgets require changing. Further work needs to be undertaken with the Churchill representatives to determine if their current level of CS is actually required.

Aka Aka Otaua

Table 15: Review of Aka Aka Otaua Contracted Services budget amounts

Drainage area/subdivision	Existing CS budget	Assessed CS amount	Difference
Aka Aka Otaua	53,400	53,453	(53)

This area has the majority of its machine cleaning programme implemented directly through its own excavator and driver. The CS budget is therefore only approximately 23% of the areas total expenditure and is mainly related to spraying, erosion control work and the main stream channels being annually cleaned by a contractors long reach excavator. The existing budget is adequate for the CS work undertaken.

Thames Valley

Table 16: Review of Thames Valley Contracted Services budget amounts

Drainage area/subdivision	Existing CS budget	Assessed CS amount	Difference
Hungahunga	20,500	34,453	(13,953)
Manawaru	25,000	38,185	(13,185)
Waihekau	30,000	48,148	(18,148)
Tatuanui	20,000	28,611	(8,611)
Whakahoro	33,000	35,632	(2,632)
Waitoa	20,000	32,706	(12,706)
Waihou	900	23,161	(22,261)
Elstow	20,000	45,598	(25,598)
Tahuna	11,000	22,004	(11,004)
Ahikope SRA	200	200	0
Tahuna SRA	1,000	1,000	0
Bancrofts SRA	100	100	0
Rowes East SRA	250	250	0
TOTALS	**181,950**	**310,049**	**(128,099)**

The existing Thames Valley subdivision CS budgets are significantly less than the assessed CS budget amount. The main reason for this is the higher machine cleaning costs ($1.80/metre) that are currently being experienced when compared to the historic Thames Valley machine cleaning costs and other drainage area machine cleaning costs. The significance of the differences indicates that the expenditure levels require further monitoring and assessment prior to the next LTP.