AWANUI RIVER SCHEME

ASSET MANAGEMENT PLAN

2015

Prepared By Northland Regional Council

Acceptance and Amendment History

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Cover Images (Clockwise, from top left): Lower Awanui ; Tarawhataros Slip Repair; Waihou Gate; Whangatane Spillway.

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1 EXECUTIVE SUMMARY

The **purpose of this plan** is to provide a single document that provides for the present and future management of the Awanui River Flood Scheme assets, in a way that ensures efficient and effective delivery of specified levels of service. It also would provide communication and justification on funding requirements for the operation of the scheme assets and delivery of service levels. It also ensures compliance with regulatory requirements.

This Asset Management Plan addresses the management of the Awanui River Flood Scheme assets. These assets are designed, operated and maintained to reduce the risk of river flooding to urban and rural areas within the Awanui River catchment, including the urban area of Kaitaia.

In summary, these assets comprises of:

- River channels (Awanui River – 21,700 metres, Tarawhataroa Stream – 1,200 metres)
- Constructed channels/drains (Whangatane Spillway, Tangonge Drain, Waihoe Channel, Waipapakauri Outfall and Puckeys Outfall – 24,100 metres in total)
- Flood storage areas (Lake Tangone & Puckeys Outfall)
- Stopbanks (85,772 metres total length)
- Floodgates (141 in total)

The desired Levels of Service (LOS) are summarised below:

LOS for Objective 1: Urban Flood Risk Reduction

i. To contain flood flows within Awanui River channel in urban Kaitaia up to a 1% AEP flood level with a 500mm of freeboard
ii. To make more frequent use of the Whangatane Spillway for conveying flood flows iii. To prevent overtopping of the Whangatane Spillway left bank in a 1% AEP flood with an allowance for freeboard
iii. To improve stability of river banks and associated stopbanks.

A 30yr ARI design capacity for the Tarawhataroa through Kaitaia shall be adopted.

Factors influencing future demand of the flood scheme include population growth/development, climate change, proposed capital improvements and development on floodplain areas.

Separate life cycle management plans are provided for each of the following asset classes:

- Channels, Rivers and Storage Areas
- Stopbanks
- Floodgates

The lifecycle management plans detail the physical parameters of the assets, asset capacity/performance, condition, valuations, maintenance plans, standards/specifications of maintenance, future costs, renewal/replacement planning, creation planning and disposal.

The expenditure and revenue are comprised of the following key elements:

- An average operational expenditure of $574438.10 per annum over the first 10 years of the plan.
- Capital expenditure averaging $70603.00 during the first 10 years of the plan, for asset renewals and scheme improvements– refer Section 10.2.
- The budget for the annual plan being $178173.98 remains at this level for the remaining 10 years to service the debt funded capital works (and ongoing operational works).

A range of asset management practices are used in the management of the assets, including financial systems, where distinctions are made and tracked between maintenance, renewal and capital expenditure, asset management databases, geographical information systems, customer enquiry databases and asset valuation databases.

The principal role and responsibility for asset management resides with the River Team of the Northland Regional Council. The Team is responsible for day to day management of the River

Scheme and in the preparation, monitoring and revision of the Asset Management Plan and for monitoring the plan and the performance of the scheme.

Consultation with external parties, in particular the Liaison Committee and scheme ratepayers, will occur in the preparation and revision of the plan. External parties have also provided feedback about the scheme performance in the past, and the external monitoring role they undertake is expected to continue.

This Asset Management Plan was prepared using the International Infrastructure Management Manual as a guideline.

2 INTRODUCTION

2.1 Background

2.1.1 Purpose Of The Plan

The purpose of this plan is to provide a single document that provides for the present and future management of the Awanui River Flood Scheme assets, in a way that ensures efficient and effective delivery of specified levels of service.

This Asset Management Plan aims to cover the following attributes, to provide the basis for the present and future management of the scheme assets:

- **Description of the assets** – both physical and financial
- **Levels of service** – setting the performance of the asset, linked to strategic/community outcomes
- **Growth management** – demand forecasts for the scheme for a 10 year period, based on latest growth forecasts and demand drivers
- **Risk Management** – identification of critical assets and associated risks and management strategies
- **Lifecycle (optimised) decision making** – identification of gaps between current service capability and that required to meet future demand, with gaps reflected in an asset development programme.
- **Financial forecasts** – physical aspects of planned maintenance, renewal and new work translated into financial terms for the ensuing 10 years
- **Planning assumptions and confidence levels** – statement of assumptions and an indication of degree of confidence of data reliability underpinning the AMP
- **Improvement programmes** – processes for improving asset management techniques
- **Review** – review of the AMP process by suitably qualified peer
- **Commitment** – approval and adoption of the plan by Council executive management, setting the direction for asset management.

2.1.2 Relationship With Other Planning Documents

Other documents that deal with internal processes are also integrated into operational requirements as a result of this plan.

Such documents include:

- NRC Long Term Plan and Annual Plans
- Northland River Management Policy
- Regional Policies and Plans
- Health and Safety Policy and Manual
- NZ Coastal Policy Statement
- NZS4360:1999 Risk Management
  ZBS9401:2008 Managing Flood Risk – A Process Standard
- ME891: Preparing for Climate Change: A guide for local government in NZ

- Awanui Flood Scheme Preliminary Design Reprot by Tonkin & Taylor
- NRC Infrastructure Strategy

2.1.3 Infrastructure Assets Included In The Plan

This plan deals with the infrastructure assets that form the Awanui River Scheme. These infrastructure assets are stopbanks, floodgates and retaining walls designed and operated to reduce flood risk to parts of the rural and urban areas of the mid-lower Awanui River catchment. Management of non-financial assets are included in this plan, which includes river channels and floodway's.

In summary, these assets are comprised of:

- River channels (Awanui River – 21,700 metres, Tarawhataroa Stream – 1,200 metres)
- Constructed channels/drains (Whangatane Spillway, Tangonge Drain, Waihoe Channel, Waipapakauri Outfall and Puckeys Outfall – 24,100 metres in total)
- Flood storage areas (Lake Tangonge & Puckeys Outfall)
- Stopbanks (89,493.60 metres total length)
- Floodgates (141 in total)
- Retaining Wall – Tarawhataroa slip control

2.1.4 Key Stakeholders

The key stakeholders of the Awanui Scheme are represented through the Awanui River Flood Management Liaison Committee, comprised of the following stakeholder representatives (refer Appendix 1):

- The Far North District Council's Northern Community Board, who represents the residents of the urban areas of Kaitaia and Awanui
- One representative of the Far North District Council responsible for drainage and stormwater works in the scheme area
- Three iwi representatives, one each nominated by Te Rarawa, Ngai Takato, and Ngati Kahu
- Four representatives of the ratepayers of the river catchment
- One representative nominated by the business community of Kaitaia
- One representative of the Kaitaia Drainage District Committee
- One representative of the Department of Conservation

2.1.5 Organisation Structure

The organisation structure for the administration of the scheme consists of the following:

- Northland Regional Council River Team – Responsible for the management of the scheme and assets, and investigations into flood hazard and options for improving the scheme to further reduce flood risk.
- Awanui River Flood Management Liaison Committee – responsible for assisting and advising the Northland Regional Council in the management of the scheme.
- Northland Regional Council Environmental Management Committee – receives minutes from the meeting of the Liaison Committee and makes recommendations to the Northland Regional Council.
- Northland Regional Council – receives recommendations from the Environmental Management Committee and makes final resolution as to the recommendations received.

2.2 Goals And Objectives Of Asset Ownership

2.2.1 Justification For Ownership

On 1 July 2005 FNDC transferred to the NRC ownership of all those assets shown in Appendix B of the Awanui River Flood management Plan (Northland Regional Council, 2005). Ownership of those assets vests in the NRC, which is the primary organisation responsible for river flood protection and control works in the Northland Region (refer Appendix 2).

2.2.2 Organisation Vision, Mission, Goals & Objectives

The vision of the Northland Regional Council is 'Creating a region of choice', this is backed up by the mission statement 'Through growth, putting Northland first by providing regional leadership, environmental protection, economic opportunities and integrated infrastructure'.

As the owners of the scheme assets, the Northland Regional Council has the following high level goals and objectives:

- Regional leadership – provide leadership for the management of the scheme, coordinating all aspects with close liaison with other stakeholders.
- Environmental protection – minimise the risk of flooding to the community in a manner that also seeks to enhance environmental outcomes and sustainability.
- Economic opportunities – manage the scheme in a manner that provides for investor confidence and business opportunities in the local community, by enabling growth through effective and efficient management of scheme assets.
- Integrated infrastructure – manage the scheme in a manner that seeks to integrate flood management with other infrastructure, including close liaison and management with FNDC and NZTA infrastructure providers.

2.3 Sophistication/Limitations Of The AMP

This plan has been compiled from the existing information that was available at the time of compilation.

The plan is only as robust as the integrity of the information and data on which it is based. As such, revisions to the plan will be required over time, as improved information/data become available in accordance with the Asset Management Plan improvement plan programme (refer Section 11).

3 THE AWANUI RIVER FLOOD SCHEME

3.1 Overview Of The Flood Scheme

The primary focus of the scheme is to reduce the flooding in the Kaitaia and Awanui urban areas. However, extensive works are also in place to protect rural land within the lower floodplain areas.

The flood protection works consist primarily of stopbanks, channel improvements, overflow channels, detention areas, retaining walls and flood gates. Some of the works provide both flood protection and farm drainage functions.

River control works to protect the Kaitaia urban area consist of:

- Stopbanking and channel improvements on the Awanui River and Tarawhataroa Stream;
- An overflow from the Awanui River, across State Highway 1 and into the Tarawhataroa Stream near Larmer Road;
- The Tangonge Drain and Lake Tangonge storage area, and the Waihoe Channel. The Tangonge drain receives overflows from the Tarawhataroa Stream, which is stored in Lake Tangonge while the Awanui River levels are high. The stored water is released through the Waihoe Channel and Waihoe flood gate when the Awanui River levels drop;
- The Whangatane Spillway, a 7.5 kilometre long overflow channel that takes excess flows from the Awanui River at the northern Kaitaia urban area during floods, relieving pressure on the Awanui River and providing reduction in flood risk for Kaitaia and the rural land to its north, west and the Awanui township.

Other flood control works include:

- Waipapakauri Outfall, a 10 kilometre long formed channel that services a large area of flat land west of Kaitaia. Its catchment is independent of that of the Awanui River.
- Puckey's Outfall, a floodgated outlet which drains the catchment between the easten bank of the Awanui River and State Highway 1, from the northern side of Kaitaia to just north of Brott Road. This also collects right bank overflow from the Awanui River between Kaitaia and Brott Road. Discharge from the collection area is controlled by river level, with the Awanui River level having to recede to enable discharge.
- Cuts in the Awanui River to eliminate loops and so quicken the flow. The majority of the work of this nature were undertaken near the Awanui township.
- 141 floodgates, which are in both the urban and rural areas. Only the rural floodgates are maintained by the Northland Regional Council as part of the flood scheme, with the urban floodgates maintained by the Far North District Council.
- Stopbanking on the sea frontage with the Rangaunu Harbour.
- The Waihou stopbank, which prevents water in the Waihoe channel from overflowing into the Waipapakauri Outfall.
- Waihoe Gate which controls the flow of water coming from Lake Tangoge through Waihoe Channel to Awanui River.
- Retaining Wall which prevents Tarawhataroa stopbank from slipping.

3.2 Description Of Flood Scheme Management Area

3.2.1 Physical Description

The Awanui River and its major tributaries, Te Puhi Stream, Victoria River and Takahue River, with a combined catchment area above Double Crossing of some 20,000 hectares, have their headwaters on the northern slopes of the Maungataniwha Range, south of Kaitaia. These rivers flow on narrow floodplains towards the northwest, through a narrow gap or gorge between two low ridges at Kaitaia before spreading out onto an extensive floodplain between Kaitaia and where the river discharges to the sea in Rangaunu Harbour.

The Maungataniwha Range and the range of hills behind Pukepoto, due south of Kaitaia, are formed from Tangihua volcanics, a complex of several basic volcanic rocks of submarine origin, and accompanying sedimentary material carried into Northland in the Northland allochthon.

The highest points on this steep, mainly bush-covered volcanic country are Tamatamahoe at 558 metres, Ratea 744m and Maungataureia 507m.

Major tributary rivers draining these ranges, the Takahue and Victoria Rivers and Te Puhi and Mangatoetoe Streams, which join to form the Karemuhako Stream, each have long narrow floodplains with one or two terraces above the lowest floodplain level. In major floods, the faster flowing Takahue and Victoria Rivers can flood up onto the first terrace level. These rivers also carry gravel and, as is normal in gravel rivers, erode their banks as they migrate around deposited gravel.

Sediment carried by the Takahue and Victoria Rivers has been deposited on the floodplain of the Awanui River downstream of Pamapuria, effectively damming the Karemuhako Stream floodplain above Double Crossing/Clough Road and creating extensive swampy flats back along Fairburn Road.

The eastern catchment boundary runs west-northwest along a lower (165m to 315m) sandstone and limestone ridge towards the Rangaunu Harbour. This broken sandstone and limestone hill country extends westwards to the edge of the Awanui Flats, between Kaitaia and the Rangaunu Harbour. Similar sandstone and shale rocks are found immediately north of the Maungataniwha Range, and across to Kaitaia, including the Takahue Valley. Between Kareponia and Kaingaroa, as far south as Donald Roa d and in the Okahu Road area, the lower northern end of the sandstone and shale ridge is capped with sand laid down during a period when the sea level was some 20 to 40metres higher than its present level. This capping has formed flat-topped ridges on which kauri forests have formed impermeable podzolised (gumland) soils.

As the Awanui River has emerged from the narrow gap in the hills at Kaitaia, it has deposited sediment, causing it to meander and build an alluvial fan that extends north and west from the middle of the town. The river has occupied a number of different channels as it built up sediment to such a level that the river was perched well above the surrounding land, and then cut a new channel away from the built up land. It has migrated from the foot of the hills, along the line of the Whangatane Spillway but due north through Awanui, around to its present position, leaving behind a number of abandoned channels which provide drainage outfalls for, in particular, the industrial area north of Kaitaia.

Sediment carried by the Awanui River has been deposited along and outwards from the banks of the river to form natural levees. The land slopes away from the riverbanks towards lower land to the east and the west of the Awanui Flats. In major floods, and before any river control works were constructed, floodwaters would have spilled over the banks of the Awanui River, spread out into these lower areas and drained out to the harbour via the Pairatahi River, to the east, and the Waipapakauri Creek to the west.

Successive lines of sand dunes along Ninety Mile Beach, forming the western edge of the Aupouri tombola, have prevented the river from flowing to the west coast, instead forcing it northwards into Rangaunu Harbour. A large peat basin has developed between the river and the dunes and Lake Tangonge occupies the lowest part of the basin.

The mapped soil types around the southern shores of Rangaunu Harbour record a gradual infilling of this shallow harbour by the Awanui River. There is a fringe of farmland that, if it were not for the stopbanks around the harbour's edge, would be subject to periodic tidal inundation, either by spring tides or by storm surge, or a combination of both.

3.2.2 Climate

The Far North's climate is characterised by mild temperatures and often high humidity, with the coastal areas being subjected to desiccating winds. The annual average rainfall measured at Kaitaia Airport is 1429mm, rising to approximately 2,000mm on the Mangamuka Range. While 30 to 40% of the annual rainfall occurs during winter, this distribution can be altered considerably by subtropical weather systems from the northeast. The area, as with much of Northland is susceptible to short duration, extremely high intensity rainfall over generally small geographic areas, during which over 350mm of rain may fall in two hours. Fortunately, these systems cut a narrow path across the area, usually affecting only one or two of the Awanui River tributaries in any one event.

Prolonged periods of northeasterly weather systems bringing warm and wet conditions can result in waterlogged soils. If a high intensity burst of rain should fall following such an extended period of wet weather, and the climatic conditions do favour such events, even greater erosion, runoff and flooding can result.

3.2.3 Land Use

Fortunately, much of the steeper upper catchment of the Victoria and Takahue Rivers on the northern slopes of the Maungataniwha Range is still clothed in native bush, providing protection against soil erosion and slowing down the rate of runoff. Some of this steeper, Tangihua volcanic hill country has been cleared for farming, as has much of the lower sandstone and limestone. The district has a high proportion of beef cattle, as has most of Northland, when compared with hill country further south in the North Island.

The floodplain of the Awanui River and its tributaries upstream of Kaitaia are generally farmed in a manner that maximises their potential within the limits imposed by their susceptibility to flooding. That is, the landholders are aware of the risk of flooding and have developed farming systems to take advantage of the natural fertility of the alluvial soils and minimise the losses that can occur when the land does flood. Improved soil drainage will ensure that pasture growth resumes as soon as floodwaters have receded.

The floodplain downstream of Kaitaia does however offer potential for increased pastoral and arable farming. For a period in the 1980s and 1990s, dairy farms were converted to beef units, either because of the age of the landholder or because the units were no longer considered economic. This trend now appears to be reversing, with amalgamation of properties to create large dairy units and the conversion of much of the Sweetwaters Landcorp property to dairying. Even on the beef units, there is potential for much more intensive production, given improved in-farm drainage, improved pastures and adequate topdressing.

The floodplain between Kaitaia and the Rangaunu Harbour also has the potential for more intensive cropping, being capable of growing maize or corn, squash, kumera and a range of other vegetable and field crops. Kaitaia's more northerly latitude assists crops to mature four to six weeks ahead of Auckland, enabling the area to supply products to the Auckland markets before other producers of these crops. The floodplain of the Awanui River has great potential as an early or out-of-season producer of vegetable and field crops, and is capable of much more intensive pastoral farming, providing flooding is kept under control.

3.2.4 Significant Ecological Features

A large proportion of the Maungataniwha Range is in broadleaf and podocarp indigenous forest with patches of kauri. Bush in the upper Victoria and Takahue Rivers has previously been selectively logged but where stock have been excluded, has regenerated well. Land around the fringes of the forest, previously cleared for farming, is also reverting to forest, providing a wide range of forest and scrub types. Not only does this forest perform a significant soil conservation and watershed protection function but it is also a significant natural area.

The remnant forest on the sandstone and limestone hill country east of Kaitaia reflects the particular rock-type on which it grows. The forest on the limestone is predominantly broadleaf species while that on the sandstone is predominantly pod carp. There are also large blocks of kanuka regeneration which, because there are seed sources of forest trees available, is reverting quickly to forest.

Much of the peatland scrub and wetland vegetation has already been cleared and the land drained for farming. A considerable area of swamp vegetation remains around the fringes of Lake Tangonge and is worthy of protection both for the sake of the ecosystem and because the lake and wetland is an important flood storage area within the scheme. This area is known to contain threatened fauna as well as flora.

There is a small remnant wetland forest, protected by a QEII National Trust covenant, within the Puckey's Outfall ponding area. As with the Lake Tangonge and adjacent peat wetlands, management of water levels is very important, avoiding both over-draining and lowering of the wetland and ponding floodwaters too deep for too long.

3.2.5 Effects of Flooding

Pre-1900, floodwaters brought down by the Awanui River and seawater from the Rangaunu Harbour severely limited farming of any sort on the floodplain of the Awanui River downstream of Kaitaia. Prior to the construction of stopbanks around the shores of Rangaunu Harbour, high tides and storm surge caused frequent sea water flooding across extensive area between Awanui and the harbour. This rendered the land totally unsuitable for pastoral farming, except for occasional grazing of salt-tolerant native species.

Floodwaters from the Awanui River flowed into large basins either side of the river between Kaitaia and Awanui. The water would lie in these areas for weeks at a time, killing both native and introduced plant species. Peat has formed in the deeper basins while heavy, gleyed soils developed on the surrounding land. Much of this land was either totally unproductive or only supported rough grazing in summer.

While subject to periodic flooding, the river valleys upstream of Kaitaia were free of water for long enough to enable pastoral farming to develop.

Kaitaia was built on the banks of the Awanui River at the extreme limit of navigation by scow. The land would have been high enough along the immediate banks of the river to be flood-free, except in extreme events. The water would have cleared quickly from what is now the urban area, although it would have ponded in lower areas between the Awanui River and the Tarawhataroa Stream.

The landholders in the upper Awanui River catchment, upstream of Kaitaia, have developed farming systems that are generally able to cope with flooding, providing floodwaters are not held back by obstructions in the river channel between Pamapuria and Kaitaia, and/or restrictions within Kaitaia, and pond on the land, killing grass. Downstream of Kaitaia, however, land development has been totally dependent on the flood management scheme. There are a number of lower lying basins in which, were it not for the scheme, floodwaters would pond for several weeks after the river levels had dropped and pasture would be lost. Without the scheme and without the confidence the scheme provides, agricultural development would be severely restricted on the Awanui Flats. As noted in section 2.3, there is considerable potential for more intensive pastoral farming and for arable farming on these highly fertile alluvial and peat soils, given adequate protection.

The central business district of Kaitaia and over half of the residential area, as well as all of Awanui, are built on the floodplain of the Awanui River and are at risk of serious flooding. With the Tarawhataroa Stream works providing protection from only a 1:30 year flood, the protection provided to Kaitaia is well below what is expected under the Building Act. Should there be a flood of greater than 1:30 years, floodwaters would again flow down Commerce Street, causing much greater damage than they did in 1958. Human life is also at risk because of the density of residential development on the floodplain. There are probably over 3,000 people living in the flood-susceptible part of Kaitaia.

When the urban area is flooded, either by river water overflowing into the town or from stormwater trapped behind floodgated outfalls, the water enters the sewerage system. This infiltration causes the sewer to overflow within the town and overloads the sewage treatment plant in Bonnett Road, resulting in contaminated discharges to the Waihoe Channel and to the Awanui River.

The industrial area on the northern edge of Kaitaia is a rapidly developing wood processing site, along with a wide range of support industries. Further processing of wood and of other forms of primary produce are likely to be established in the future. The land on the Awanui Flats is well suited to the growing of field crops such as squash, kumera and green vegetables. The area has a mild winter climate with a growing season that is over one month ahead of Auckland, enabling it to supply fresh and processed fruit and vegetables to the Auckland market or to get premium, off-season prices for export products. The confidence to invest in such industries is in part dependent on the area remaining free from flooding. A number of old Awanui River channels cross the area and management of both stormwater and floodwater are important requirements for further development.

Not only does flooding cause serious personal and economic loss, it also reduces investor confidence in an area. Should an event similar to the Manawatu-Wanganui floods or the Bay

of Plenty floods of 2004 strike the Awanui River catchment, the image of not just the flooded area but also the wider district and even the region can be affected. It is because of this wider effect and the potential regional benefit that the Northland Regional Council is funding the investigations, modelling and management plan preparation from Regional Rate funding.

3.3 Historic Situation

The flood control and drainage works within the Awanui River catchment have been built over a period of time under a number of separate works schemes. Capital works within the Kaitaia Drainage Area, established in 1916, were carried out by the Department of Lands and Survey. These works were to provide protection from high tides and to enable the development of farmland downstream of Kaitaia. These included:

- Removing obstructions from the Awanui River;
- Reducing the extent of the meanders in the lower, tidal reaches by cut-off channels across the loops; and
- Stopbanking the tidal reaches of the river downstream of Awanui. This was later followed by:
- Stopbanking the foreshore and the lower portion of the Pairatahi River.
- In 1936, reconstructing and enlarging the Waipapakauri Outfall, the lower portion of which had been infilled to enable the construction of an aerodrome during World War II.

Both river and foreshore stopbanks have been raised from time to time. A flood relief channel, the Whangatane Spillway, was constructed in the 1920s from a bend near the Waikuruki (State Highway 1) Bridge to the Pairatahi River and Rangaunu Harbour, a distance of just over 14 kilometres.

Between 1955 and 1958 the Ministry of Works:

- Reconditioned the Whangatane Spillway;

- Constructed main drains to dispose of internal water from the swamp areas either side of the river; and
- Installed a large number of flood gates;
- Made improvements to the main drainage channels, including the Tarawhataroa Stream and Awanui River.

All of this work reduced the frequency of overflows from the Awanui River downstream of Kaitaia, allowing more land to be used for farming.

Following a major flood in 1958, during which floodwaters flowed over 1 metre deep down the main street of Kaitaia, further improvements were made to the scheme to provide protection for the Kaitaia urban area. These works included:

- Straightening the Awanui River and Tarawhataroa Stream through the urban area, cutting off meanders, and protecting sections of the Awanui River banks with rockwork;
- Constructing stopbanks across the southern end of Kaitaia to prevent floodwaters flowing down the floodplain, following the State Highway and an old river channel into the middle of town; and
- Establishing overflow levels across the State Highway at several points from near the intersection with Larmer's Road to the Kaitaia stopbanks to ensure flood flows are allocated proportionally between the Awanui River and the Tarawhataroa Stream.

From an early stage in the management of flooding on the Awanui River, willows were used to slow down the flow of floodwaters in the Victoria River upstream of Pamapuria. The trees were planted and maintained in the section of Victoria River immediately upstream of SH1, near the Takahue Road intersection, and in the Karemuhako Stream. They have helped to slow the flow of floodwaters from these tributaries, allowing the peak flow of flooding in the Takahue River to pass before water from the Victoria River and Karemuhako Stream add to flood levels.

3.4 Summary Of Scheme Operation

3.4.1 Effects of Current Scheme

The Victoria River has been straightened where it flows out of the Maungataniwha Range to facilitate the construction of State Highway 1. Rock drop structures were constructed and sections of the riverbank were armoured with boulders to control scour of the bed of the shortened channel and to prevent streambank erosion. There is evidence that the river was straightened and the channel shortened, increasing the grade of the bed and causing accelerated erosion of the bed and streambanks. To reduce the incidence of streambank erosion, bank protection needs to be installed and gravel needs to be managed, including harvesting, in this area.

Willows have been cleared from the very flat-graded section of Te Puhi Stream and the Karemuhako Stream, between Fairburn and Dodds Road, to prevent prolonged flooding of roads and farmland. The Victoria and Takahue Rivers flow on narrow floodplains with distinct terraces, the lower of which flood frequently. Immediately upstream of Pamapuria these two rivers join and are, in turn, joined by the Karemuhako Stream immediately downstream of Pamapuria. Floodwaters pond in the vicinity of Clough Road ("Double Crossing"), flow back up the Karemuhako Stream and then spread on down the floodplain towards Kaitaia.

Between the intersection of Larmer Road and the stopbank at the southern end of Kaitaia, floodwaters spill across SH1 in several places, causing the flow above this level to be shared between the Tarawhataroa Stream and Awanui River, flowing either side of the commercial centre of Kaitaia. The stopbank across the southern end of the town diverts the flow to either side of the town where it is confined to the two channels by stopbanks. Were it not for the stopbank system, floodwaters would overflow the natural banks of the Awanui River at several places through Kaitaia and flood through the town and into the Tarawhataroa Stream.

The Awanui River overflows its right (eastern) bank and through culverts downstream of School Road, spilling back and ponding in the Church Road valley, upstream of Arnold Rae Park. The flow is confined between the stopbank and the foot of Bell's Hill, and then between stopbanks on both banks down to Donald Road. At this point, floodwaters spill over a weir on the right bank and down the Whangatane Spillway. The 14 km Spillway flows directly to the lower Pairatahi Stream and into Rangaunu Harbour, compared to flowing 24 km on down the Awanui River to the harbour at Unahi. The reduced flow remaining in the Awanui River flows northwestwards under SH1 through a section of river that has been purposely left clogged with trees to reduce the flow, forcing more to spill down the Whangatane spillway.

Floodwaters that spill across SH1 between Larmer's Road and Kaitaia join with water flowing down the Tarawhataroa and Okahu Streams to flow in the Tarawhataroa around the western side of the commercial centre of Kaitaia and out in the Tangonge Drain to Lake Tangonge. Lake Tangonge also receives water from the Pukepoto and Waipapa Streams and from numerous other small streams draining the northern slopes of Maungaheremona. Floodwaters are stored in Lake Tangonge and are discharged back into the Awanui River via the Waihoe Canal and the Waihoe Floodgates as soon as the river level has dropped sufficiently to allow the water to flow through the gates. The Waihoe Stopbank extends westwards from the banks of the Awanui River to prevent the water stored in Lake Tangonge from spreading down the developed peat land along the Waipapakauri Outfall.

Any floodwaters spilling over the banks, low stopbanks and Gill's Road on the left (west) bank of the Awanui River between the Waihoe Stopbank and Gill Road and West Road is collected by the Waipapakauri Outfall and carried through to the harbour. Overflows on the right (east) bank downstream of SH1 and Awanui, plus runoff from the surrounding land pond in a basin between the river and the State Highway, and are collected and discharged back to the river just upstream of Awanui via Puckey's Outfall and the floodgates on this canal. Between Awanui and the Rangaunu Harbour at Unahi, the Awanui River flows in a modified channel and is confined between stopbanks.

Stopbanks extend right around the southern shores of Rangaunu Harbour and up each tributary stream to prevent spring tides and tidal surges from extending inland. There are floodgated drainage outfalls through these stopbanks and through the stopbanks along the Awanui River,

Tarawhataroa Stream and the Whangatane Spillway. These gates allow water to drain out, but they close as the tide and floodwaters rise in each of these major channels, preventing the floodwaters from spilling back up the drains.

3.4.2 Apportionment of Flood Flows

A feature of the scheme is the apportionment of flood flows between the Whangatane Spillway, the Awanui River, and across State Highway 1 into the catchment of the Tarawhataroa Stream south of Kaitaia. As the river rises, it overflows into the Whangatane Spillway. The higher it rises, the greater the proportion that is diverted into Whangatane Spillway. As floodwaters rise even higher, they overflow the State Highway into the upper catchment of the Tarawhataroa Stream and on into Lake Tangonge.

Flow into the Whangatane Spillway is controlled by a broad weir at Donald Road and discharges into the Rangaunu Harbour via the Pairatahi Stream.

The rough proportions of flow diversion during a 1 in 30 Year ARI flood event are given in Table 1.

Table 1. Proportions of flow diversion in a 1 in 30 event

Awanui above Larmer Rd	Tarawhataroa	Whangatane Spillway	Awanui downstream of Kaitaia
100%	31%	47%	22%

The present behaviour of the control structures at both diversions has changed from their as-built details. Resurfacing of State Highway One south of Kaitaia has raised the level of the road by about 200mm. Further engineering in the 1970s changed the shape of the spillway weir from a V to a broad crest, causing the Spillway to operate only at higher flood levels.

3.4.3 Role of Willows above Pamapuria

The Victoria River upstream of the SH1 Bridge near the intersection of SH1 and Takahue Road currently has a reduced capacity due to willows and other channel restrictions. The willows have been planted both on stream banks and in the channel to purposely choke flood flows. This reduction in capacity increases the amount of water stored “offline,” in surface flooding of rural land. The diversion of some of the runoff into storage reduces the peak levels in the protection scheme downstream by delaying some of the floodwater until after the peak from other rivers, in particular the Takahue River, has passed.

3.4.4 Stopbanking and Floodgates

In addition to the Whangatane Spillway, the other major work of the original flood protection scheme was the network of stopbanks that protect much of the rural and central urban land from Kaitaia to Rangaunu Harbour. The stopbanks south of Kaitaia and along the Awanui River within the town and the overflows across SH1 and into the Tarawhataroa Stream, protect Kaitaia.

Since the initial scheme was built, other stopbanks have also developed, mostly either through the accumulation of spoil heaps from channel maintenance, or through intentional construction.

There are some 200 known floodgates in the scheme. About 59 of these are 600mm diameter or larger, 51 of the total service is rural, and 41 in coastal and about 49 urban and 41 in coastal area. Surface flooding occurs in some areas when excess stormwater is unable to drain because floodgates have closed. Prior to the scheme, the land around the Rangaunu Harbour now protected by stopbanks and floodgates was flooded by seawater and pasture was killed each Spring Tide.

3.4.5 Storage in Lake Tangonge

Unlike the Whangatane Spillway, which discharges into a tidal stream, the Tarawhataroa Stream discharges into a storage area, Lake Tangonge, before draining back into the Awanui

River. What was once a lakebed is now, due to drainage of surrounding land, a flat peat area of about 300-500 hectares that dries out when there is sufficient time between events, but it can be inundated for extended periods. There is a further transition area around the lakebed, where some production is achieved, but periodic flooding is expected.

Lake Tangonge provides a significant volume of off-line storage, allowing some of the peak flow to bypass urban Kaitaia in the Tarawhataroa Stream and stay out of the Awanui River until levels have dropped. The lake also stores runoff from the catchments that drain directly into the lake. These catchments have an area of about 7,000 hectares, which is a significant area when compared to the 21,000-hectare catchment area of the Awanui River upstream of Kaitaia.

3.4.6 Puckey's Outfall and Waipapakauri Outfall

Puckey's Outfall drains the catchment that lies between the eastern bank of the Awanui River and State Highway One, from the northern side of Kaitaia to just north of Brott Rd. It also collects any right bank overflow from the Awanui River between Kaitaia and Brott Road. Once the Awanui River begins to rise, discharge from this catchment into the river via Puckey's Outfall does not occur until the level in the Awanui River has dropped sufficiently for the floodgates to open again. A third floodgate was installed in recent years and this has reduced the time taken to drain the surface flooding.

The Waipapakauri Outfall (or Cut) drains the catchment west of the Awanui River and north of Lake Tangonge. This catchment and drain are largely independent of the rest of the flood protection scheme, except in very peak conditions, when the Awanui River overtops some of its banks along Gills Road, discharging into the upper reaches of the Waipapakauri Outfall. The stopbank between Lake Tangonge and the Waipapakauri Outfall prevents water stored in Lake Tangonge from entering the Waipapakauri Outfall.

4 LEVELS OF SERVICE

4.1 Customer Research and Expectations

The Northland Regional Council meets with the Awanui River Management Liaison Committee on a minimum basis of twice yearly.

Advice from the Committee assists determine the stakeholder requirements in terms of the management of the scheme and the required levels of service. The Committee is instrumental in providing recommendations relating to management of assets and expenditure of budgets based on the provision of information and advice from NRC.

In addition to this, technical reports are developed and discussed with the Committee to inform discussion around management options. An example of this is the current revision of levels of service being developed through river modelling.

4.2 Strategic and Corporate Goals

Section 2.2.2 details the strategic and corporate goals of the NRC. The relevant goals, being Regional Leadership, Environmental Protection, Economic Opportunities and Integrated Infrastructure, link closely to community well beings and align with the overall goals of this AMP and the levels of service.

4.3 Legislative Requirements

The following legislation and Council Policy/Strategy is linked to the operation of the scheme and its assets and/or impacts on the defined levels of service (refer Table 2 - Table 3).

Table 2. Legislation linked to the management of the flood scheme.

Legislation	Linkage
Resource Management Act 1991	Section 30, RMA 1991 – the avoidance or mitigation of natural hazards
Soil Conservation and Rivers Control Act 1941	Section 126 SC&RC Act 1941, minimise damage by flooding and erosion
Civil Defence Emergency Management Act 2002	Duty to reduce risk.
Local Government Act 2002	Duty to consult residents, who have identified the reduction of flood risk as a primary responsibility of the Council
Local Government Rating Act 2002	Required to, wherever practical, implement a funding mechanism that recognises who benefits from or contributes to the need for the service
Land Drainage Act 1908	Section 62 requires council to take action to remove obstructions to the free flow of water in watercourses

Table 3. Council policy/strategy linked to the management of the flood scheme.

Council Policy/Strategy Name	Linkage
Regional Coastal Plan	RMA compliance
Regional Air Quality Plan	RMA compliance
Regional Water & Soil Plan	RMA compliance
Regional Policy Statement	Section 21 Natural Hazards, Hazard Protection Works
Civil Defence Emergency Management	Duty to minimise risk from identified hazards - flooding and erosion
River Management Plans	Implementation and maintenance of flood mitigation schemes i.e. Awanui River Flood Management Plan
Long Term Council Community Plan	Implement flood risk reduction schemes as a priority identified by residents
Northland River Management Policy	Comply with Policy build and maintain flood mitigation measures
National Strategy Name	Requirement to be met
Managing Flood Risk – A Process Standard NZS 9401:2008	Provides a framework for assessing and treating the risks associated with flooding

4.4 Current Level of Service

The key objectives of the Awanui River Flood Management Scheme, and respective levels of service (LOS) provided by the NRC, are:

Objective 1: Urban Flood Risk Reduction

- To reduce river flood risk to buildings and people in urban Kaitaia and Awanui to an agreed standard as determined through consultation with the Awanui River Management Liaison Committee (herein after referred to as the Liaison Committee) and the public[1].

LOS for Objective 1: Urban Flood Risk Reduction

- Provide information (by an effective hydraulic model) on flood risk and options to reduce flood risk, including cost, to enable the Liaison Committee to agree a standard of risk reduction.
- Implement risk reduction measures in accordance with the standard agreed by the Liaison Committee.
- Update Asset Management Plan to include agreed standard and implement changes through LTP in accordance with the programme agreed in consultation with the Liaison Committee.
- Undertake maintenance of the river channels and renewals of scheme assets in accordance with the river maintenance schedule agreed in consultation with the Liaison Committee.

Objective 2: Rural Flood Risk Reduction

[1] Via the LGA special consultative procedure.

- To reduce river flood risk that results in the loss of agricultural production and infrastructure on the floodplain of the Awanui River and its tributaries[2] to an agreed standard as determined through consultation with the Liaison Committee and the public[3].

LOS for Objective 2: Rural Flood Risk Reduction

- Maintain rural stop banks
- Maintain floodgate outlets to a standard that excludes pasture damaging flooding
- Condition assessment inspections and preventative maintenance of floodgate outlets are undertaken annually and the asset register updated.
- Undertake maintenance of the river channels in accordance with the river maintenance schedule agreed in consultation with the Liaison Committee.

Objective 3: Coastal Flood Risk Reduction

- To reduce the incidence of flooding by sea water on low-lying and reclaimed land around the southern shores of Rangaunu Harbour.

LOS for Objective 3: Coastal Flood Risk Reduction

- Maintain coastal stop banks.
- Maintain floodgate outlets to a standard that excludes pasture damaging flooding.
- Condition assessment inspection and preventative maintenance of floodgate outlets undertaken annually and asset register updated.
- Undertake maintenance of the river channels in accordance with the river maintenance schedule agreed in consultation with the Liaison Committee

Objective 4: Soil Conservation

- Implementation of soil conservation measures on identified erosion prone land to reduce sedimentation and the costs of maintaining the channels; and

LOS for Objective 4: Soil Conservation

- Complete mapping and assessment of the catchment to identify erosion prone land and determine priorities for soil conservation implementation.
- Utilise the Northland Regional Council's Environment Fund to assist land owners implement soil conservation measures within identified priorities.

4.5 Desired Level of Service

The key difference between the existing levels of service and desired levels of service relate to the capacity of assets.

The design standard will enable the NRC and stakeholders to assess the risk and cost benefit of management options for the future. The gaps between the existing and desired levels of service will be progressively closed over time through the progression of the hydraulic modelling and capital improvement projects that aim to progressively improve on the delivery of levels of service.

Desired levels of service, where different from existing levels of service are:

Objective 1: Urban Flood Risk Reduction

In April 2013 Tonkin & Taylor (T&T) was appointed by Northland Regional Council (NRC) to develop a preliminary design for the Awanui Flood Scheme Upgrade. The objectives of the Upgrade were that it:

1. Improves the scheme to protect urban Kaitaia from river flooding to a design standard that is equivalent to a 1% Annual Exceedance Probability (AEP), with an allowance for climate change (based on peak flows) and an appropriate level of freeboard

[2] With the exclusion of designated ponding areas, which include Lake Tarawhataroa and areas excluded from the targeted rate on this basis.

[3] Via the LGA special consultative procedure.

2. Improves safety of river banks against slope failure (i.e. improves stability of river banks and associated stopbanks).

A 1% AEP design flood hydrograph for the Preliminary Design was developed following consideration of a range of hydrological studies. The hydrograph is based on a peak flow of 400 m3/s and a temporal profile established by NIWA (2005).

LOS for Objective 1: Urban Flood Risk Reduction

The design philosophy adopted for the project is as follows:

iv. To contain flood flows within Awanui River channel in urban Kaitaia up to a 1% AEP flood level with a 500mm of freeboard
v. To make more frequent use of the Whangatane Spillway for conveying flood flows iii. To prevent overtopping of the Whangatane Spillway left bank in a 1% AEP flood with an allowance for freeboard
vi. To improve stability of river banks and associated stopbanks.

A 30yr ARI design capacity for the Tarawhataroa through Kaitaia shall be adopted with the following reason:

1. Significant work has been done since 2000 on this channel. To lower the design standard from 30yr ARI is counter intuitive.

2. Although the July 2007 event exceeded channel capacity after the 2000 assessment, there is no record of the Tarawhataroa stopbanks having been overtopped in the 1990s or 1980s, and up to the 2007 event. The July 2007 flood is likely to have been the largest event in the Tarawhataroa since the 1956 event.

3. For an event to exceed the Tarawhataroa design standard requires not just magnitude, but also timing, as in most cases Awanui overflow needs to coincide with a relatively high level of residual flow in the Tarawhataroa (as with July 2007). This reduces the probability of design standard being exceeded.

4. A 3.3% event (30yr ARI) peak flow would lie in the range 170m3/s (Gumbel) – 200 m3/s (GEV) at Puriri Place. Based on discussion with the Kaitaia team, the channel is currently in a well maintained state, so a design standard of 30yr ARI does require continued upkeep.

5. The best estimate of the July 2007 event is a 50yr ARI event (2% AEP). The Cato Bolam stopbank crests appear to be no higher than surveyed July 2007 flood levels.

Therefore the design standards would remain consistent with the estimates given in the 2000 report.

Objective 2: Rural Flood Risk Reduction

Same as current objective

Objective 3: Coastal Flood Risk Reduction

Same as current objective

Objective 4: Soil Conservation

Same as current objective

5 DEMAND MANAGEMENT

5.1 Historic demand

Historically, demand on the scheme increased as development within the rural and urban areas increased, and following damaging flood events (i.e. the 1958 flood event) that resulted in scheme improvements being undertaken (refer section 3.3).

5.2 Current Demand

Current demand of the scheme is based on two main components, the urban areas of Kaitaia and the rural areas of the scheme.

The demand for urban and rural areas of the scheme is based on providing level of flood protection to an agreed standard as determined through consultation with the Awanui River Management Liaison Committee (herein after referred to as the Liaison Committee) and the public .

The primary demand drivers are the reduction in risk of damage from flooding that may affect assets, safety of people, infrastructure and the production of land.

5.3 Future Demand

The growth factors in Table 4 have been identified as having the potential to influence demand of the flood scheme. These factors influence the management and utilisation of the assets, and drive the lifecycle management of the scheme, which in turn influence the levels of service and financial forecasting for the management of the scheme.

Table 4. Growth factors, impacts on assets and management approach.

Growth Factor	Impact On Asset	Proposed Management Approach
Population Growth/Decline	Influences affordability of the scheme. Population growth potentially improves affordability of the scheme and cost benefit arising from expenditure. The converse applies to population decline.	The targeted rating model is continuously updated by QV/FNDC to capture any changes in growth. Significant changes in growth are not anticipated in the foreseeable future, noting a decline in population in Kaitaia of 6.11% between 2006 and 2013[4].
Climate Change	Climate change predictions indicate an increased risk of flooding over time as temperatures increase, meaning the existing design standard of the scheme is likely to be reduced over time and damage to scheme assets from increased flooding. This has the potential to increase financial costs in terms of potential increases in design standards and flood damage repair expenditure.	Assess future impacts of climate change in hydraulic model. Undertake financial forecasts to assess implications based on increasing design standards and flood damage repair costs.

[4] Statistics NZ 2013 Census Of Population and Dwellings.

Proposed Capital Improvements	Capital improvements will influence capital expenditure and may result in increased or reduced maintenance expenditure pending the nature of improvements.	Financial forecasts to consider impact of improvements on capital and maintenance expenditure.
Development on rural floodplain	Construction of built assets (i.e. dwellings) on the rural floodplain could lead to demand for higher design standards to protect assets. However, this is not likely to be affordable and new assets should be constructed in a manner that mitigates or avoids risk.	Land use planning to prevent construction of assets that create additional risk or development done in a manner that does not increase risk.

5.4 Demand Management Plan

5.4.1 Non-Asset Solutions

A range of non-asset solutions are available as alternatives to asset-based solutions.

A number of these are currently used to supplement asset solutions and offset the risk and cost, but not necessarily limit opportunities, of demand to the scheme stakeholders. These include:

- Land use planning – Done through the NRC and FNDC RMA planning documents to reduce development that may increase flood risk on areas that are prone to flooding
- Flood hazard mapping – Links in with planning documents to provide basis for risk assessment and planning framework for hazard mitigation
- Insurance – Scheme assets are insured to cover the risk associated with large flood events
- Flood warnings/CDEM planning – CDEM provide warning and response to flood events, along with pre-event community response planning
- Maintenance of non-financial assets – River channels are cleaned to maintain channel capacity to convey flood waters

5.4.2 New Work Programmes and Cost

Proposed new works programmes and associated costs are defined in Section 10.

6 LIFECYCLE MANAGEMENT PLAN

In this section the relevant components associated with the management of the flood scheme are broken down into the following categories;

- Channels, Rivers and Storage Areas (Non-financial Assets)
- Stopbanks (Assets)
- Floodgates (Assets)
- Retaining Wall (Assets)

The lifecycle management for each component is discussed separately in an individual lifecycle management plan for each category of asset.

6.1 Channels, Rivers and Storage Areas

6.1.1 Background Data

6.1.1.1 Physical Parameters

The scheme is comprised of a number of natural river channels and constructed overflow or drainage channels. There are also several storage areas associated with the scheme that act to temporarily pond flood waters.

The channels and storage areas are not assigned a financial value as an infrastructural asset, however they are a key component of the flood scheme and are maintained as part of the flood scheme in delivering the schemes primary objective of reducing flood risk.

The natural and constructed channels and storage areas maintained under the scheme are summarised in Table 5:

Table 5. Channel description.

Channel	Area Maintained
Awanui River	In its entirety, with primary management focus on the reach from south of Kaitaia to the coast (approximately 21,700 metres)
Whangatane Spillway	In its entirety (approximately 9,700 metres)
Tarawhataroa Stream	In its entirety (approximately 1,200 metres where maintenance is most required)
Tangonge Drain	From urban Kaitaia boundary to Waihoe Channel (approximately 3,900 metres)
Waihoe Channel	In its entirety from Lake Tangonge Drain storage area to confluence with Awanui River (approximately 1,500 metres)
Waipapakauri Outfall	From harbour outlet to Government Drain confluence (approx 6,500 metres) the remaining 5,000 metres to be maintained by the Far North District Council as part of the Kaitaia Land Drainage Scheme.
Puckey's Outfall	From Awanui River to Wireless Road (approximately 2,500 metres), the remaining 3,233 metres maintained by the Far North District Council as part of the Kaitaia Land Drainage Scheme.
Storage Area	Area Maintained
Lake Tangonge	No substantial maintenance undertaken.

Puckeys Outfall	No substantial maintenance undertaken.

Current issues with the existing channel assets and storage areas are summarised in Table 6.

Table 6. Current issues with channel assets.

Channel Assets		
Issue	Areas Impacted	Management Options
Debris, causing reduction in flow capacity and bank erosion	Primarily the Awanui River	River and fairway maintenance.
Sedimentation	Channels in the mid-lower floodplain and coastal boundaries	Sediment traps, routine maintenance removal and land-based soil conservation
Slips and land instability	Awanui, Urban Tarawhataroa and Whangatane spillway	Slip repair and proactive maintenance (i.e. drainage)
Bank erosion, from concentration of flood flows and meander removal	Awanui, Urban Tarawhataroa and Whangatane spillway	Stabilisation, grade control and setback of banks to increase capacity.
Vegetation and weed growth	Throughout all channels	Spray programme and mechanical removal where growth creates undesirable reduction in fairway/channel capacity
Storage Areas		
Issue	Areas Impacted	Management Options
Duration of ponding	Entire storage area during periods of high flow in Awanui River	Ensure gates are operated at earliest opourtunity when Awanui River levels fall to permit drainage.

6.1.1.2 Asset Capacity/Performance

The channel dimensions, level of stopbanks, riverbed gradients, established roughness are among the few factors that dictate the capacity of the river or channel.

River and channels are designed to specific flows and stabilisation. Obstructions such as fallen debris, overgrown trees, accumulated sediments and gravels that prevent rivers and channels to carry the design capacity must be managed.

Table 7 illustrates the estimated magnitude of design floods (20YR and 100 YR ARI) in the river network through Kaitaia. This data has been drawn from various reports based on modelling and the assessment of historical gauging records. The peak flows associated with the design storm events can be compared with estimated flow capacity of the various river channels. In some cases the current channel capacity is not well known, and further investigation is being undertaken through the development of the hydraulic model. Preliminary estimates of potential upgrade capacities have been made, assuming that a greater proportion of flood flows should

be retained within the Awanui at Larmers Road, and that the capacity of the Whangatane channel should be increased to convey the majority of this flood water out of Kaitaia.

Table 7. Estimated design storm peak flows and current channel capacities through Kaitaia:

	Tarawhataroa flow (u/s Awanui overflow)	Awanui flow above Larmers Road	Awanui flow School Cut	Overflow Larmers Road	Awanui flow downstream Whangatane Spillway	Whangatane flow near Donald Road bridge
July 2007 Peak flows	Puriri Place model peak = 71 m3/s; Gauged peak = 194 m3/s[5]	To be estimated via GHD model	226 m3/s from post flood survey	To be estimated via GHD model	Not known Assumed 75m3/s +	Gauged 143–157m3/s At bridge deck
Estimated 20 YR ARI flow	42 m3/s (NIWA 2005)	301 m3/s NCC (1986) 280 m3/s NIWA (2005)	227 m3/s NCC (1986) 222 m3/s NIWA (2005)	74 m3/s NCC (1986) 58 m3/s NIWA (2005)	52 m3/s GHD model (2009)	122 m3/s GHD model (2009)
Estimated 100 YR ARI flow (Climate change not factored)	56 m3/s (NIWA 2005)	423 m3/s NCC (1986) 367 m3/s NIWA (2005) 309 m3/s NIWA (1996)	250 m3/s NCC (1986) 232 m3/s as 84 YR ARI NIWA (2005) 233 m3/s NIWA (1996)	173 m3/s NCC (1986) 135 m3/s NIWA (2005) 76 m3/s NIWA (1996)	55 m3/s GHD model (2009)	132 m3/s GHD model (2009)
Estimated Current capacity	30 YR ARI Judd (1989)	Awanui starts to overflow across	100 YR ARI Judd (1989)	LIDAR SH1 elev 19.3m RL	75 - 80 m3/s MWD (1979)	132 m3/s at Donald Road Bridge

[5] Low confidence in gauged flow at Puriri Place due to lack of high level gaugings for this site. Low confidence in modelled flow as it incorporates only 1m3/s overflow for July 2007 event.

(estimate)	30 YR ARI = 55 m3/s Note: stopbank upgrade on Tarawhataroa since July 07 should have increased channel capacity	Larmers Road when flow at School Cut =170–180 m3/s	100 YR ARI = 233 m3/s Engineering Outcomes 2000 217 m3/s GHD model (2009)	SH1 elev 19.16m RL Pandika (1991)		
Improved situation[6] (estimate)	To be assessed. Limited potential for upgrade.	Reconfigure channel so overflow starts at 250 m3/s?	350 – 400 m3/s	Limit to less than 50m3/s	75 – 80 m3/s tbc (20% of 100 YR ARI)	300–336 m3/s (80% of 100 YR ARI)

6.1.1.3 Asset Condition

Significant work has been undertaken to improve and restore the capacity of the rivers and channels since the NRC assumed responsibility for the flood scheme and commenced works in restoring the river and channel capacity in 2005/06.

In the period since 2005/06 to (and including) 2007/08, the following works were undertaken on river and channel maintenance:

- 210,000 m^3 of earthworks
- Removal of 440 large trees and 1850 small trees
- Mulching of the vegetation on both embankments of the river

The condition of the rivers and channels for conveying flows had improved considerably since these initial works, and more recent works have continued to target improvements to ensure flows are conveyed efficiently. Further work, and ongoing maintenance, is required in the rivers and channels and consequently carries on annually.

The most significant issue facing the river and channel assets is erosion, mostly as a legacy issue of historic river scheme development, but also due to natural river processes.

Monitoring of the asset condition is undertaken by annual inspections of the channels and also through 10 yearly cross sectional surveys to assess capacity and review condition.

6.1.1.4 Asset Valuations

The channel, river and storage areas are non-financial assets and as such no valuations are performed on the assets.

[6] Based on modified Whangatane Sill option, assumes upgraded Donald Road bridge capacity, also assumes reduced volume of overflow from Awanui River to Tarawhataroa River at Larmers Road (via modification of overflow or Awanui Channel improvements)

6.1.1.5 Historical Data

Electronic copies of the historic scheme documents are held by the NRC which show the location, design, and in some instances, issues associated with the channel, river and storage areas.

6.2 Stopbanks

6.2.1 Background Data

6.2.1.1 Physical Parameters

Stopbanks are compacted earth structures, which provide protection to urban and rural properties from floodwaters. The scheme is comprised of an extensive network of stopbanks, in urban and rural areas. All the stopbanks, both those within the urban areas and those in the rural area are controlled and maintained by the Regional Council.

A summary of stopbank asset information is contained in Table 8 and a map of location of stopbank asset locations is provided in Figure 1.

Information on the stopbank assets is held in the NRC IRIS database.

Table 8. Stopbank data summary.

Stopbank Name	Row Labels	Sum of Length	Sum of Volume	Average of Volume2	Average of Inside Batter	Average of Outside Batter	Average of Setback	Average of Top Width
Awanui RB	ARB	12741.74	53224.61	289.26	0.53	12.67	2.04	3.64
Awanui - Waihoe LB	AWWL	7713.91	22515.16	160.82	2.65	7.34	3.20	2.77
Donald Road - SH 1	DSL	517.20	366.51	40.72	2.36	15.08	1.96	2.62
Donald Rd - Showground RB	DSRB	1171.87	2031.24	96.73	0.90	2.21	5.03	1.04
Lower Awanui LB	LAL	9793.91	33371.76	402.07	3.10	3.54	3.77	2.43
Lower Awanui RB	LAR	7472.23	20861.90	165.57	0.38	3.50	2.33	2.68
Lower Whangatane LB	LWL	3854.18	17633.79	152.02	0.50	2.38	2.28	2.16
Lower Whangatane RB	LWR	1167.70	5286.41	229.84	0.39	3.01	3.44	2.92
Parore Bank	PAR	3004.68	3292.81	58.80	0.64	4.88	0.31	0.91
Prices Bank	PRI	3721.20	9318.74	150.30	1.89	2.87	3.76	2.15
Panthers Bank	PTB	3701.37	7063.64	96.76	3.67	4.27	0.94	2.32
Quarry Rd - Donald RD LB	QDL	4886.99	30410.93	337.90	3.78	3.27	9.66	3.68

Stopbank Name	Row Labels	Sum of Length	Sum of Volume	Average of Volume2	Average of Inside Batter	Average of Outside Batter	Average of Setback	Average of Top Width
Quarry Rd - Donald RD RB	QDR	4958.22	39923.19	443.59	3.86	6.71	12.15	3.52
SH 1 - Gill Rd LB	SGL	1987.53	9650.01	283.82	2.73	6.63	0.18	6.75
SH 1 - Gill Rd RB	SGR	2440.37	19186.56	417.10	0.53	8.78	0.00	6.18
SH 10 - Quarry Rd LB	SQL	1821.38	42958.87	1161.05	3.47	4.20	4.04	2.89
SH 10 - Quarry Rd RB	SQR	1814.39	21645.20	585.01	0.32	19.97	7.11	3.54
SH 1 - Showgrounds LB	SSL	3120.03	18770.73	318.15	2.97	3.69	11.61	3.59
Tarawhataroa	TAR	3616.02	10751.42	149.33	1.12	3.07	1.73	1.78
Waimanoni Bank	WAM	3139.52	5851.70	95.93	0.49	2.06	1.23	1.45
Waipapakauri Cut Bank	WAP	1531.37	6990.36	218.45	0.42	1.86	0.34	6.37
Waihoe - Kaitaia LB	WKL	5317.79	13953.04	168.11	2.36	28.93	2.92	1.72
	Grand Total	89493.60	395058.57	257.53	1.79	7.06	3.74	2.93

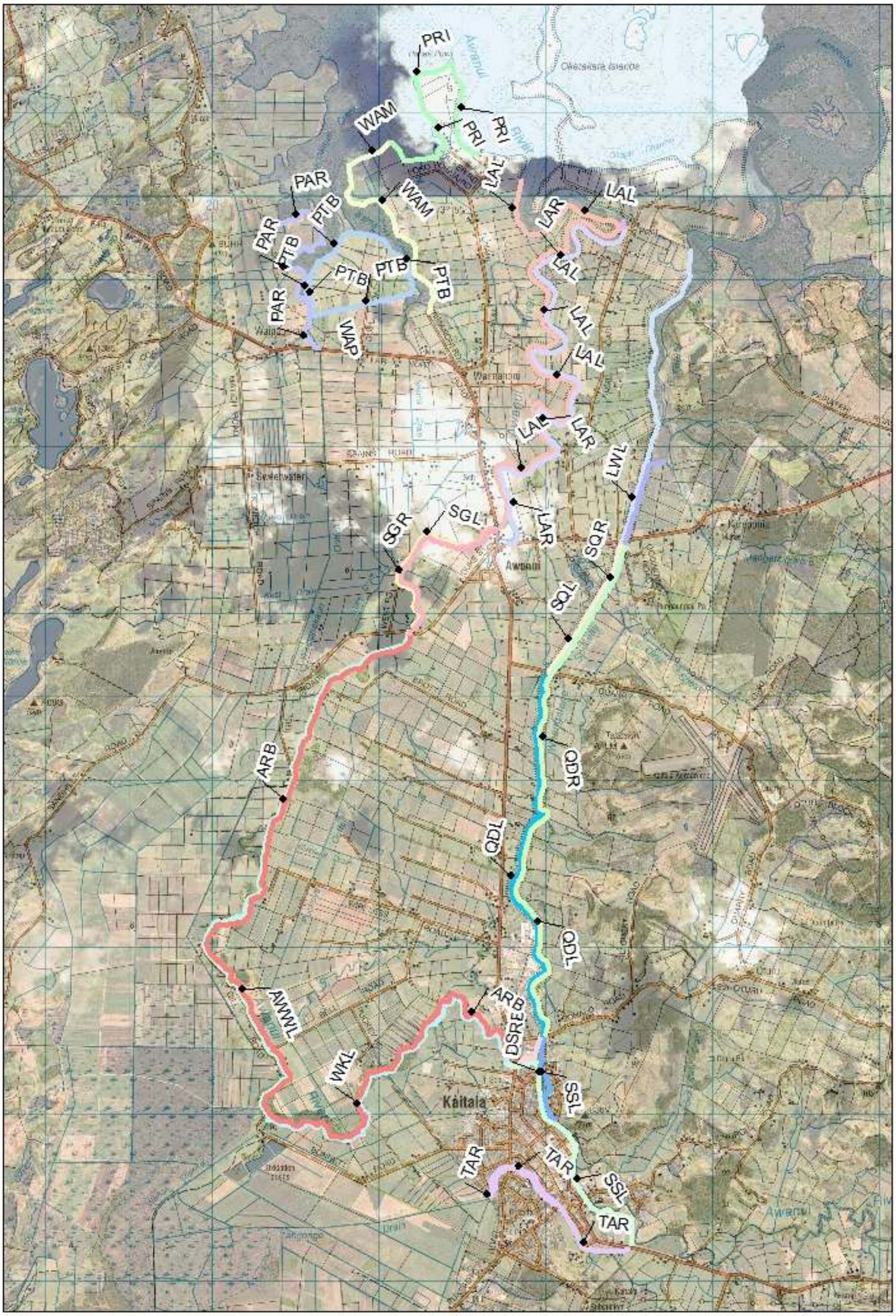


Figure 1. Awanui stopbank names.

Current issues with the existing stopbank assets are summarised in Appendix 3.

6.2.1.2 Asset Capacity/Performance

The hydraulic modelling confirms that the current level of protection afforded by the scheme is less than the proposed design standard.

A feature of the scheme is the apportionment of flood flows between the Whangatane Spillway, the Awanui River, and across State Highway 1 into the catchment of the Tarawhataroa Stream south of Kaitaia. As the river rises, it overflows into the Whangatane Spillway. The higher it rises, the greater the proportion that is diverted into Whangatane Spillway. As floodwaters rise even higher, they overflow the State Highway into the upper catchment of the Tarawhataroa Stream and on into Lake Tangonge.

Flow into the Whangatane Spillway is controlled by a broad weir at Donald Road and discharges into the Rangaunu Harbour via the Pairatahi Stream.

The scheme apportions the flood flows between Awanui River, Whangatane Spillway and the overflow on State Highway 1 into the catchment of the Tarawhataroa Stream south of Kaitaia. The more the water rises in the river the more proportions diverted into Whangatane Spillway and the more floodwaters overflow on State Highway 1 into Tarawhataroa Catchment.

6.2.1.3 Asset Condition

Asset condition is monitored by 10 yearly survey of dimensions, condition monitoring of assets and the annual inspection of banks during routine maintenance works. Inspection details are recorded in the asset database.

Appendix 3 provides a summary of the current condition of assets as determined through condition monitoring and Figure 5 shows the location of stopbank assets with a condition ranked as poor.

6.2.1.4 Asset Valuations

The Council complies with Generally Accepted Accounting Practices (GAAP) for capitalisation, depreciation, and valuation of assets as promulgated by the Institute of Chartered Accountants of New Zealand.

The principle Reporting Standard is the New Zealand equivalent to International Accounting Standard 16 Property, Plant and Equipment (NZ IAS 16).

NZ IAS 16 requires that where a revaluation takes place, assets are to be revalued to a fair value, and in the case of specialised infrastructural assets, fair value is the depreciated replacement cost.

The stopbanks will be maintained to convey floods equivalent to their design standard. Currently the programme for stopbank reconstruction is focused on the stopbank conditions and its criticality in relation to risk and demand.

Stopbanks are not depreciated unless aggradation or subsidence of the stopbanks is leading to a loss of flood channel capacity. There is no record of the original crest levels of the stopbanks and how much they have subsided over the years. Hence a depreciation rate is approximated to be of 0.2%. The valuation of stopbanks is by “depreciated replacement cost” (DRC) using the following formula; DRC = construction costs (latest unit rate values) x (1–0.002 x age).

The latest estimate of unit rate is used as the replacement cost for valuation purposes with an adjustment made for depreciation. The depreciation is calculated based on the time elapsed since the bank was built, actual height measured and age assessed. Following reconstruction works the age of the stopbank is returned to zero (ie the stopbank is in as new condition and is performing to its design standard, including freeboard and the value adjusted accordingly).

Figure 2 illustrates the depreciation, only a portion of the stopbank needs to be replaced (this is the freeboard lost due to settlement); the remainder is retained.

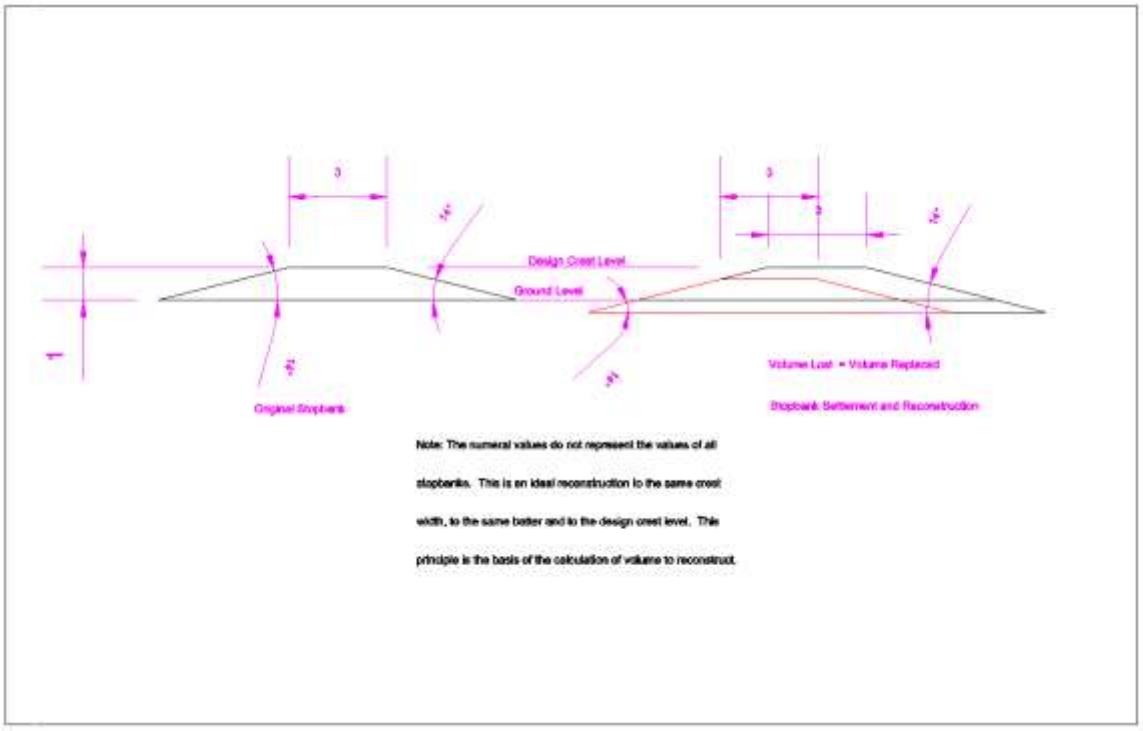


Figure 2. Typical depreciation of stopbanks based on settlement

The valuation has two components, a direct cost per m^3 and ancillary costs per lineal metre.

Direct costs (at a rate of \$16.26 m^3) include:

- Earthworks contract
- Staff salaries to prepare, supervise and administer contract
- Vehicle costs

Ancillary Costs (at a rate of \$16.71 per lineal m) include:

- Fencing, grassing
- Culverts

The valuation of the stopbank assets is:

- Total Replacement Value \$ 9,406,717.00
- Total Current Value (DRC) \$ 8,662,278.00
- Accumulated Depreciation \$ 744,439.00
- Annualised depreciation \$ 18,813.00

The valuations have been reviewed by an independent value, refer Appendix 4.

6.2.1.5 Historical Data

Electronic copies of the historic scheme documents are held by the NRC which show the location of stop bank assets. However, the historic record is incomplete, in part due to the age of some of the scheme assets and the ad-hoc nature of the historic record keeping.

Limited expenditure has been undertaken on stopbank assets since the NRC commenced ownership of the scheme, with the bulk being undertaken on emergency repairs or preventative repairs associated with failures.

6.2.2 Summary Of Future Costs

The general maintenance costs associated with the stopbanks is also accommodated for in summary of future costs provided in Section 6.4.2, as there is a significant overlap between the maintenance works done on the channels and the stopbanks which are located adjacent to each other.

6.2.3 Renewal/Replacement Plan

6.2.3.1 Renewal Plan

The current basis for renewals is a risk-based approach, which assesses the asset location, failure mode, consequence, likelihood and criticality to determine a risk ranking and then the need for renewal or preventative maintenance. A programme of asset renewals is developed based on this framework, as per the risk framework described in Section 6.4.

The method of replacement of lost freeboard due to settlement, as detailed in Section 6.2.1.4, will be used as the future basis for determining a schedule of stopbank asset renewal to ensure that the design standard, and forecast expenditure, will be maintained at a sustainable level. This relates to the desired levels of service and will be progressed over time once the existing design standard of the scheme is determined and forecasts of expenditure and risk profiling have been undertaken to inform stakeholders of the potential management options.

Stopbanks that are still functional are not considered to have an end of life, and therefore projections as to the end of life of a stopbank have not been made.

6.2.3.2 Renewal Standards

Standards for renewals are unique for each situation, and will be specified by the engineer on site or in the tendered works contract.

6.2.3.3 Summary Of Future Costs

$ 18,813.43 has been budgeted per annum for stopbank renewals, based on the calculated rate of depreciation of the stopbanks through loss of freeboard due to settlement.

Direct costs associated with stopbank reconstruction (based on June 2009 rates) are estimated to be $18.05 m^3, with ancillary costs estimated to be $17.12 per lineal meter. These rates are used for estimating future stopbank reconstruction works.

Renewals expenditure will be focused on addressing those sections of stopbanks in poor condition and of highest criticality as per the schedule in Appendix 5. The renewal works are based on the condition survey in 2013. The survey is continually updated annually.

There is a risk that this level of renewals expenditure may be too low to maintain the stopbanks to an acceptable level of service if:

- The hydraulic modelling confirms that the current level of protection afforded by the Scheme is less than the design standard required by the Scheme stakeholders, and/or;
- The rate of settlement of stopbanks is found to be much higher than that anticipated in determining the renewals expenditure.

Before confirming this the hydraulic model will be used to determine the current design standard (which will then be workshopped with the Liaison Committee before reassessing renewals expenditure and levels of service), further assessment will also be undertaken to determine rate of settlement (and freeboard loss) and further (more detailed) condition inspections undertaken of the existing stopbanks. This information will then be used to review the rate of renewals expenditure and determine the feasibility of achieving the desired levels of service.

6.2.4 Creation/Acquisition/Augmentation Plan

Refer to Section 10.

6.2.5 Disposal Plan

No disposal of stopbank assets are anticipated or planned.

6.3 Floodgates

6.3.1 Background Data

6.3.1.1 Physical Parameters

Floodgates are located throughout the scheme stopbank network to enable drainage of internal waters whilst preventing backflow of flood or coastal waters. The floodgates are typically comprised of a pipe, headwalls, gate and outlet channel, and constructed from a range of different materials including concrete, timber and steel. There are also large floodgate structures located on the Puckeys outfall and Waihoe channel, which prevent backflow of water from the Awanui River to the flood water storage areas. Only the floodgates located in the rural areas are controlled and maintained by the Regional Council, with the urban floodgates controlled and maintained by the District Council.

A summary of floodgate asset information is contained in Table 9 and a map of location of stopbank asset locations is provided in Figure 3.

Information on the stopbank and floodgate assets is held in the NRC IRIS Record.

Table 9. Summary of floodgate location and mean age.

Stopbank	Count of Asset ID	Average of Pipe Age	Average of Floodgate Age	Average of Head Wall - IN Age	Average of Head Wall - Out Age	Average Age
ARB	24.00	26.42	13.92	25.00	23.75	22.27
AWWL	3.00	19.67	19.67	19.67	19.67	19.67
LAL	16.00	31.75	26.44	29.94	29.94	29.52
LAR	4.00	27.75	27.75	27.75	27.75	27.75
LWL	9.00	60.67	8.11	37.44	45.67	37.97
LWR	1.00	64.00	24.00	49.00	49.00	46.50
PB	4.00	34.00	15.75	20.75	20.75	22.81
PRB	5.00	28.00	11.80	16.00	16.00	17.95
PTB	5.00	66.00	34.80	34.80	34.80	42.60
QDL	12.00	56.17	18.75	32.83	32.83	35.15
QDR	13.00	57.08	16.00	36.00	36.00	36.27
SGL	2.00	24.00	24.00	24.00	24.00	24.00
SGR	7.00	32.86	13.29	30.71	30.71	26.89
SQL	3.00	50.67	10.33	40.67	40.67	35.58
SQR	6.00	64.00	20.33	44.83	44.83	43.50
WAM	11.00	34.45	29.82	32.64	32.64	32.39
WAP	16.00	62.00	21.88	28.94	28.94	35.44
	141.00	43.47	19.33	30.57	30.88	31.54

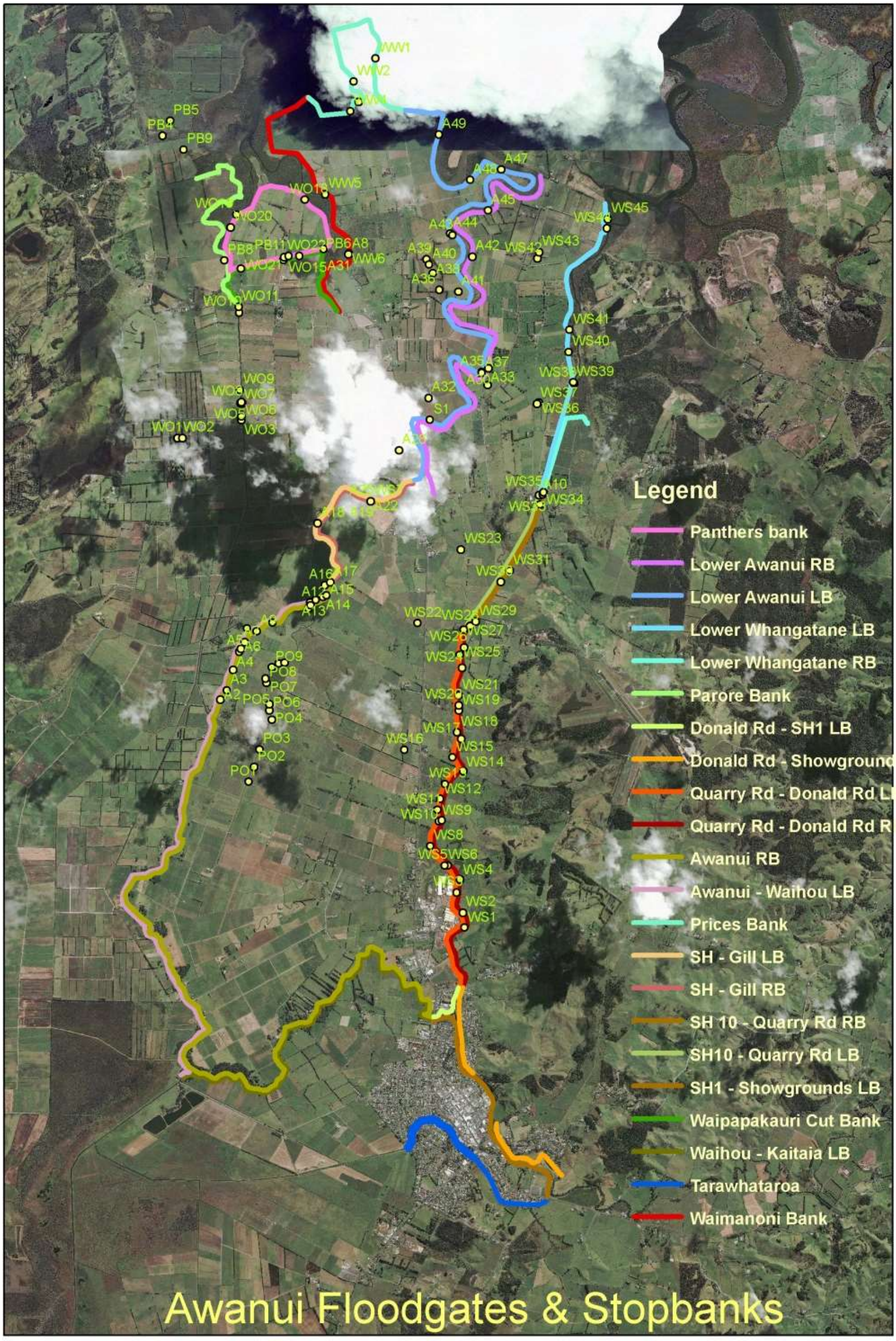


Figure 3. Awanui floodgate and stopbank location map.

Current issues with the existing floodgate assets are summarised in Table 10.

Table 10 Current issues with floodgate assets.

Issue	Areas Impacted	Management Options
General wear of components leading to partial failure of asset	Throughout areas of the rural components of the scheme	Annual maintenance and condition grading of asset components
Asset failure	Those assets nearing end of life	Renewal programme and/or planned failure response to minimise damage from failure
Sedimentation of outlet drains	Selected areas of scheme where outlet is low relative to bed level and/or outlet drain is extensive	Maintenance of outlet drains to maintain capacity
Capacity issues with Waihoe gates that restrict drainage from Lake Tangonge storage area in turn adversely affecting water quality	Awanui River, Ranguanu Harbour and Lake Tangonge storage area	Proposed capacity upgrade

6.3.1.2 Asset Capacity/Performance

Currently there is no design standard for floodgate assets. An assumption is made that when the assets were initially designed, the design standard adopted was based on the hydraulic characteristics of each drainage location. However, the asset managers have not been able to locate evidence of the design standards.

The only asset that is currently considered to be under capacity is the Waihou floodgate, where capital improvements are forecast to address the capacity issue.

6.3.1.3 Asset Condition

Annual inspections are undertaken of the floodgates, and details recorded on inspections sheets and recorded in the IRIS database (refer Appendix 6 and 1.1).

The average condition of the floodgate assets is in between good and moderate, with a mean overall condition index score of 3.4 (1 = Excellent, 6 = Very Poor), individual condition scores are listed in Appendix 1.1, including the condition scoring matrix.

6.3.1.4 Asset Valuations

The floodgates have useful life between 20 to 120 years and knowledge of the age of each structure enables the “depreciated replacement cost” (DRC) costs to be calculated (DRC = Replacement Cost x (1-Age/Life)). Table 11 provides a summary of the asset valuations (refer Appendix 8). Annualised depreciation on floodgate assets is calculated to be $36,088.30.

Table 11. Summary of floodgate asset valuations.

Asset	Replacement Cost	DRC	Annual Depreciation
Floodgate	290,610.05	107,408.43	16,022.98

Culvert	2,234,852.81	1,175,780.93	27,726.72
Headwall	1,122,672.51	316,123.88	22,756.09
	3,648,135.37	1,599,313.24	66,505.80

The valuations have been reviewed by an independent valuer, refer Appendix 4.

6.3.1.5 Historical Data

Significant expenditure has been undertaken on floodgate assets since the NRC commenced ownership of the scheme, with the bulk being undertaken on emergency repairs, renewals and annual preventative maintenance.

6.3.2 Summary Of Future Costs

The annual depreciation cost for floodgates, culverts and headwalls are is provided in Table 11

Maintenance is funded via the targeted rate set over the scheme ratepayers.

6.3.3 Renewal/Replacement Plan

6.3.3.1 Renewal Plan

Renewal of floodgate assets are scheduled to be undertaken prior to failure of the asset which is identified through the annual condition monitoring process. This plan of renewal prior to failure (beyond anticipated design life) is considered to be the most cost effective and efficient approach when viewed in association with the asset risk framework (refer Section 6.4).

The renewal decision process is at the discretion of the engineer whom determines the necessity for asset renewal based on the results from the annual condition assessment.

6.3.3.2 Renewal Standards

Standards for renewals are unique for each situation as the materials in use throughout the scheme floodgates varies, and will be specified by the engineer on site or in the tendered works contract. However, the renewals will ensure that the existing capacity of the asset to be replaced is not reduced, unless this can be justified through engineering design and assessment.

6.3.3.3 Summary Of Future Costs

An assessment has been undertaken of the replacement cost associated with the renewals of those components of the floodgate assets that have a condition grading of poor or very poor. Table 12 summaries the number of these assets and the replacement costs. $ 36,088.30 is budgeted per annum for floodgate renewals. This information is based the inspection survey and repair done in 2014.

Table 12. Summary of floodgate elements grade in poor or very poor condition and anticipated Repair Cost and Replacement Costs.

	No of Poor and Vpoor	Cost of Replacing Poor and Vpoor Asset	Cost of Repairing Poor and Vpoor Asset
Pipes	11.00	105038.13	42825.20
Headwalls	24.00	66335.47	21331.58

Gates	15.00	39767.35	10997.82
Total		211140.95	75154.60

6.3.4 Creation/Acquisition/Augmentation Plan

Refer to Section 10.

6.3.5 Disposal Plan

No disposal of floodgate assets are anticipated or planned.

6.4 Routine Maintenance Plan

6.4.1.1 Maintenance Plan

The maintenance plan for the river, channel and storage areas is determined annually in consultation with the Awanui River Management Liaison Committee. Staff prepare reports and proposed budgets that address identified issues, and these are being workshopped with the Committee to confirm the annual programme of maintenance works. In line with the LTP, staff also prepare a three year schedule of proposed works to forecast in advance the maintenance work requirements.

Staff also have a schedule that sets out the typical maintenance requirements associated with the scheme and this is referred to when setting the annual and future budget requirements.

Staff have a good understanding of the maintenance requirements based on issues and current and past levels of service associated with this management aspect.

6.4.1.2 Standards and Specifications

The methods, standards and service levels to be met for the river and channel maintenance are specified in the following:

- **Management**

  General management for administration, inspection, monitoring and auditing of scheme performance.

- **River Inspection**

Visual inspections are carried out on the ground of riverbanks and stopbanks and floodgates. Inspections might be carried out together or separately.

- **Flood Damage**

An annual sum is allocated to allow for clean up and repair of flood protection assets that have been damaged in flood events with a return period less then 5 years.

- **Cross – Sectional Survey**

Resurvey of river cross-sections every 10 years.

- **Steam Bank Protection**

Restoring, maintaining and stabilising the banks of the Awanui River between the State Highway 1 bridge and Waihoe Floodgate by re-shaping river banks as appropriate, removing from the river banks large trees and trees that are about to fall over.

- **Weed spraying**

Miscellaneous maintenance of berms and channel fairway. This consists predominantly of noxious weed removal. A 2-man gang can spray weeds at a rate of 3.5km per day.

- **Removal of blockages in the channel**

Removal of sediment, trees and other vegetation in watercourse channels in order to restore or maintain capacity.

- **Channel Dredging**

Channel dredging of all lower river channels close to the Rangaunu Harbour (not within the Coastal Marine Area).

- **Drains and Canals**

Maintaining and cleaning drains and canals, including the Tangonge drain, Puckey's Outfall and Waipapakauri Outfall.

- **Gravel Management**

Gravel and sediment extraction at specified locations Victoria Valley and Mangataiore as specified in the Scheme Resource Consent[7].

6.4.2 Summary of Future Costs

The River Scheme Maintenance has an annualised cost of $481,157.01 and annualised depreciation cost of $ 59,994.64. It is anticipated that this schedule will largely be repeated on an annual cycle although elements will change over time the actual expenditure is projected to remain constant.

6.4.3 Renewal/Replacement Plan

Refer to Section 10.

6.4.4 Creation/Acquisition/Augmentation Plan

Refer to Section 10.

6.4.5 Disposal Plan

No disposal of channel, river or storage area assets is proposed.

7 RISK MANAGEMENT

7.1 Risk Framework

The primary objective of the Awanui Scheme is to reduce flood risk to the rural and urban floodplain of the catchment, with primary focus on the area of floodplain immediately upstream of Kaitaia to the downstream coastal boundaries.

The flood risk is primarily associated with flooding from the Awanui River and storm surge causing coastal flooding at the downstream coastal boundaries. The risk associated with each of these assets for various failure modes is summarised in Table 13.

[7] NRC Resource Consent CON20041257401

Table 13. Risk associated with the assets.

Asset	Failure Modes	Consequence	Likelihood	Criticality	Risk
Urban stopbanks	Below Agreed Standard	High – extensive flooding of assets and property	Low-moderate – during large flood events	High	Moderate-High
Urban stopbanks	Slip	Moderate – if repaired prior to flood damage High – extensive flooding of assets and property	Low-moderate – areas of known slips exist	High	Moderate
Rural stopbanks	Below Agreed Standard	Moderate – short term damage to pasture, degree of asset and property damage	Low-moderate –during large flood events	Low	Low
Rural stopbanks	Slip	Low – if repaired prior to flood damage	Low-moderate - areas of known slips exist	Low	Low
Coastal stopbanks	Below Agreed Standard	High – Saltwater intrusion causing long-term pasture damage	Low-moderate – areas of poorly conditioned banks known	Moderate	Moderate
Floodgated culverts (drainage of impounded local waters)	Failure of headwall, pipe or floodgates	Low - Ingress of floodwaters increasing flood volumes, short term pasture damage	Low – gates regularly inspected and maintenance undertaken	Low	Low
The Choke	Debris blockages	High – increase of urban flood risk and property damage	Low – pending debris load	High	Moderate

Asset	Failure Modes	Consequence	Likelihood	Criticality	Risk
Waihoe Floodgates	Failure of gates or structure	High – increased risk of flooding in scheme	Low – gates well maintained	High	Moderate
Puckey's Outfall Floodgate	Failure of gates or structure	High – increased risk of flooding in scheme	Low – gates well maintained	High	Moderate
Bells Hill Slip	Large scale slip into Awanui River	High – extensive flooding of Kaitaia if coinciding with flood event	Low	High	Moderate

The management strategies for these assets to minimise the risk associated with the noted failure modes, based on risk and criticality, is summarised in Table 14.

Table 14. Risk management strategies.

Asset	Failure Modes	Preventative Maintenance	Failure Response
Urban stopbanks	Below agreed standard	Visual condition survey of stopbanks to identify those requiring maintenance	Patch banks if possible, and effect permanent repair as soon as practicable
	Slip	Visual monitoring of slip movement and risk assessment	Repair slip and reinstate bank pending stability
Rural stopbanks	Below Agreed Standard	Visual condition survey of stopbanks to identify those requiring maintenance, prioritised maintenance programme	Prioritise bank repair pending assessment of risk and criticality
	Slip	Visual monitoring of slip movement and risk assessment	Prioritise slip repair reinstatement of bank pending assessment of risk and criticality
Coastal stopbanks	Below Agreed Standard	Visual condition survey of stopbanks to identify those requiring maintenance, prioritised maintenance programme	Patch banks if possible, and effect permanent repair as soon as practicable

Asset	Failure Modes	Preventative Maintenance	Failure Response
Floodgated culverts (drainage of impounded local waters)	Failure of headwall, pipe or floodgates	Annual inspection and condition assessment, basic annual preventative maintenance. Prioritised replacement programme based on asset condition.	Block outlet to prevent ingress, effect permanent repair as soon as practicable
The Choke (Awanui River immediately downstream of Whangatane Spillway)	Debris blockages	Maintain floodway and channel free of debris through annual maintenance	Machine on call to remove debris during flood events
Waihoe Floodgates	Failure of gates or structure	High – increased risk of flooding in scheme	Low – gates well maintained
Puckey's Outfall Floodgate			
Bells Hill Slip	Large scale slip into Awanui River	Horizontal drainage, surface water diversion, monitoring of movement and water table	Mobilise plant to excavate slip materials

7.2 Other Risk Management Mechanisms

7.2.1 Flood Damage Reserves/Contingency

Historically a large percentage of the maintenance budget has been spent on repairing flood damage which results from moderate size floods and/or unanticipated failure of floodgate outlets. Experience has shown, even on schemes where a comprehensive channel training programme has been implemented, backed up by an annual programme of works, there is still a requirement to have funds set aside to finance damage that does occur periodically from floods.

Asset damage from smaller floods and freshes (of less than five year return period, or 20% AEP) are usually covered by a separate flood damage allowance ($30,000) in the annual maintenance requirements of the scheme.

Damage in excess of the quantum of funds accumulated in the damage fund and less than the insured value of the scheme or not qualifying for an insurance claim, may be covered by NRC's emergency fund[8], refer Appendix 9.

7.2.2 Insurance Policy

NRC have insured the Awanui Scheme assets under a *Civil Engineering Completed Risks* insurance policy. This policy has an existing sum insured for the insured assets (stopbanks, pipes, outlets etc.) and demolition and removal of debris to a sum insured of $ 12,581,528.75 and a minimum $100,000 excess applies. The Insurer is Vero Insurance NZ Ltd. The annual premium is $29,000.00 (excl. GST).

The Civil Engineering Completed Risks policy with Vero provides cover for:

“Damage” means sudden and unforeseen physical loss or damage necessitating repair or replacement caused by:

- fire, lightning, explosion, impact of landborne vehicles or waterborne vessels;
- impact of aircraft and other aerial devices or articles dropped therefrom;
- earthquake, hydrothermal activity or volcanic eruption;
- storm (air movements stronger than grade 8 on the Beaufort Scale);
- flood or inundation, wave action or water;
- subsidence, landslide, rockslide or any other earth movement;
- frost, avalanche, ice; or
- vandalism of single persons.

[8] Targeted Land Management Rate, Files 815.2, 300.5, 5 December 2007

8 FINANCIAL SUMMARY

8.1 Financial Statements & Projections

The spreadsheet Figure 4 details the proposed income and expenditure for the Awanui River Scheme, in terms of revenue, routine maintenance, renewal and new works expenditure.

In summary, the expenditure and revenue are comprised of the following key elements:

- An average operational expenditure of $481,157.01per annum over the first 10 years of the plan.
- Capital expenditure averaging $136,402.70during the first 10 years of the plan, for asset renewals and scheme improvements– refer Section 10.2.
- The budget for the annual plan being $70,603.00remains at this level for the remaining 10 years to service the debt funded capital works (and ongoing operational works).

Figure 4. Financial projections for Awanui River Scheme expenditure.

AWANUI - 5001 2015-2025					LTP Yr 1 - 12/ 13 TOTAL BUDGET (FV)	LTP Yr 2 - 13/ 14 TOTAL BUDGET (FV)	LTP Yr 3 - 14/ 15 TOTAL BUDGET (FV)	LTP Yr 1 - 15/ 16 TOTAL BUDGET (FV)	LTP Yr 2 - 16/ 17 TOTAL BUDGET (FV)	LTP Yr 3 - 17/ 18 TOTAL BUDGET (FV)	LTP Yr 4 - 18/ 19 TOTAL BUDGET (FV)	LTP Yr 5 - 19/ 20 TOTAL BUDGET (FV)	LTP Yr 6 - 20/ 21 TOTAL BUDGET (FV)	LTP Yr 7 - 21/ 22 TOTAL BUDGET (FV)	LTP Yr 8 - 22/ 23 TOTAL BUDGET (FV)	LTP Yr 9 - 23/ 24 TOTAL BUDGET (FV)	LTP Yr 10 - 24/ 25 TOTAL BUDGET (FV)	LTP Yr 11 - 25/ 26 TOTAL BUDGET (FV)	LTP Yr 12 - 26/ 27 TOTAL BUDGET (FV)	LTP Yr 13 - 27/ 28 TOTAL BUDGET (FV)	LTP Yr 14 - 28/ 29 TOTAL BUDGET (FV)	LTP Yr 15 - 29/ 30 TOTAL BUDGET (FV)	LTP Yr 16 - 30/ 31 TOTAL BUDGET (FV)	LTP Yr 17 - 31/ 32 TOTAL BUDGET (FV)	LTP Yr 18 - 32/ 33 TOTAL BUDGET (FV)	LTP Yr 19 - 33/ 34 TOTAL BUDGET (FV)	LTP Yr 20 - 34/ 35 TOTAL BUDGET (FV)	LTP Yr 21 - 35/ 36 TOTAL BUDGET (FV)	LTP Yr 22 - 36/ 37 TOTAL BUDGET (FV)	LTP Yr 23- 37/ 38 TOTAL BUDGET (FV)	LTP Yr 24 - 37/ 38 TOTAL BUDGET (FV)	LTP Yr 25 - 37/ 38 TOTAL BUDGET (FV)	LTP Yr 26 - 38/ 39 TOTAL BUDGET (FV)	LTP Yr 2 TOTAL (FV)
Operational expenses																																		
	2005 - Advertising - Statutory Notices				$0	$310	$320	$328	$337	$347	$357	$368	$380	$393	$407	$421	$435	$451	$467	$483	$500	$517	$535	$554	$573	$594	$614	$636	$658	$681	$705	$730	$755	
	2047 - Consultants				$0	$198,038	$8,063		5135			5611	0		6191		0	6864	0		7611		0	8438	0		9355		0	10372	0	0	11500	
	2219 - Sundry Supplies				$0	$1,656	$1,704	$1,748	$1,796	$1,848	$1,903	$1,962	$2,025	$2,092	$2,165	$2,241	$2,319	$2,400	$2,484	$2,571	$2,661	$2,754	$2,851	$2,950	$3,054	$3,161	$3,271	$3,386	$3,504	$3,627	$3,754	$3,885	$4,021	
	3385 - Valuation Consultants				$0	$18,060	$18,638	$19,123	$19,639	$20,208	$20,815	$21,460	$22,147	$22,877	$23,678	$24,507	$25,365	$26,252	$27,171	$28,122	$29,107	$30,125	$31,180	$32,271	$33,400	$34,569	$35,779	$37,032	$38,329	$39,669	$41,058	$42,495	$43,982	
	3639 - River Clearance / Works				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	4290 - Stop Banks & River Schemes				$0	$257,267	$273,711	273,711	281,101	289,253	217,697	224,446	231,628	239,272	247,646	256,314	265,285	274,570	284,180	294,126	304,421	315,075	326,103	337,517	349,330	361,556	374,211	387,308	400,864	414,894	429,415	444,445	460,001	
	XXXX - Flood Damage Maintenance programme				$0	$30,960	$31,951		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	5228 - Commission - TLAS				$0	$22,759	$23,487	$31,116	$31,973	$32,855	$33,523	$34,448	$52,109	$53,551	$55,033	$56,555	$58,119	$60,153	$62,259	$64,438	$66,693	$69,027	$71,443	$73,944	$76,532	$79,210	$81,983	$84,852	$53,683	$55,562	$57,507	$59,519	$61,602	
	5840 - Insurance				$0	$21,072	$23,206	29000	$30,529	$34,906	$38,781	$43,867	$49,247	$53,031	$56,391	$58,365	$60,407	$62,522	$64,710	$66,975	$69,319	$71,745	$74,256	$76,855	$79,545	$82,329	$85,211	$88,193	$91,280	$94,475	$97,781	$101,204	$104,746	
	5870 - Rates				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	5950 - Depreciation - Plant & Equipment				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	5942 - Depreciation - Infrasturtural Assets				$0	$52,805	$58,775	$59,995	$66,662	$69,668	$81,235	$81,235	$106,185	$116,851	$116,851	$138,851	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	$138,123	
	7946 - Labour Charge				$0	$15,379	$15,268	$16,455	$16,788	$17,104	$17,464	$17,847	$18,258	$18,696	$19,164	$19,661	$20,251	$20,171	$20,776	$21,399	$22,041	$22,703	$23,384	$24,085	$24,808	$25,552	$26,319	$27,108	$27,921	$28,759	$29,622	$30,510	$31,426	
	Interest				$0	$18,111	$26,171	$31,229	$22,819	$39,447	$85,085	$138,091	$213,279	$272,141	$302,022	$305,533	$289,786	$274,149	$258,462	$242,542	$226,919	$211,387	$195,726	$180,532	$165,587	$150,658	$136,416	$122,632	$107,865	$92,748	$78,099	$63,641	$50,207	
	Total Opex requiring funding				**$0**	**$636,417**	**$481,294**	**$462,705**	**$476,779**	**$505,636**	**$496,860**	**$569,335**	**$695,258**	**$778,905**	**$829,548**	**$862,447**	**$860,091**	**$865,655**	**$858,631**	**$858,780**	**$867,394**	**$861,457**	**$863,600**	**$875,269**	**$870,952**	**$875,752**	**$891,282**	**$889,270**	**$862,226**	**$878,910**	**$876,063**	**$884,551**	**$906,362**	
						Reval year			Reval year			Reval year																							
Dep Check	Original Depreciation				$0	$52,805	$58,054	$59,995	$61,995	$63,001	$63,001	$63,001	$68,316	$68,316	$68,316	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	
	Capex				$0	$0	$0	$0	$4,667	$6,667	$18,234	$18,234	$37,869	$48,535	$48,535	$63,808	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	$63,080	
					$0	$0	$721	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	New depreciation on new asset 3				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	Revised depreciation total				**$0**	**$52,805**	**$58,775**	**$59,995**	**$66,662**	**$69,668**	**$81,235**	**$81,235**	**$106,185**	**$116,851**	**$116,851**	**$138,851**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	**$138,123**	
	funding of asset renewals				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Capital expenditure																																		
	ref	usefull	funded by	int rate																														
Capex 1	Major Capex	150.00	targted rate	7.00%	$0	0	**$183,000**	$ 700,000	$ 300,000	$ 1,401,468	$ 1,133,781	$ 1,555,678	$ 1,591,323	$ 863,320	$ 600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Design	10	targted rate	7.00%	$0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Capex2	Waihoe Gates upgrade	150	targted rate	7.00%	**$0**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Capex 3	Asset maintenance / renewal		targted rate		$0	$52,805	**$58,054**	$59,995	$59,995	$63,001	$63,001	$63,001	$68,316	$68,316	$68,316	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	$75,043	
	Total Capex				**$0**	**$52,805**	**$241,054**	**$759,995**	**$359,995**	**$1,464,469**	**$1,196,782**	**$1,618,679**	**$1,659,639**	**$931,636**	**$668,316**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	**$75,043**	

8.2 Funding Strategy

The Awanui River Management Scheme is funded by a targeted and differentiated rate based on indirect benefit, direct benefit and to the extent that land use increases the need for the scheme (for example, clearing land of forest). The estimated total Awanui River management rate income amounts to $759,995 for the 2015/2016 financial year and for the next ten years. Table 15 to Table 17 set out the basis of the rate.

Table 15. Urban Rate.

Class	Description	GST Exc	GST Inc
1	Urban Rate Class UA Flat Count	$172.09	$197.91
2	Urban Rate Class UF Hill Count	$31.29	$35.99
3	Commercial	$516.32	$593.77

Table 16. Rural Rate.

Class	Description	Rate/ha Excl	Rate/ha Inc
A1/A2	Maximum benefit; peat basins, low-lying reclaimed tidal land; alluvial land at risk from frequent ponding and flooding.	$19.85	$22.82
B1/B2	High benefit land subject to floodwater flows but not ponding as floods recede.	$14.87	$17.10
C	Moderate benefit; land floods less frequently and water clears quickly.	$9.92	$11.40
E	Land in flood ways and ponding areas that receive no benefit and land retained in native bush that provides watershed protection.		$0.00
F	Contributes runoff waters, and increases the need for flood protection.	$0.79	$0.90
G	Rural indirect Count	$9.62	$11.06

Table 17. The revenue sought from each category of rateable land (from 2015/16).

Class	Zone	GST Exc	GST Incl
A	Rural	59438.57	68354.35
B	Rural	47004.78	54055.49
C	Rural	16030.38	18434.93
F	Rural	15904.33	18289.97
Indirect	Rural	16555.84	19039.22
UA	Urban	247123.83	284192.40
UF	Urban	20339.78	23390.74
Commercial	Urban	171502.62	197228.00
TOTAL RATE		593900.12	682985.14

The rate is applied 100% to Awanui River Scheme Management works which forms part of the River Management Activity.

Changes to the targeted rates will be made in accordance with the LGA consultative procedure, based on projected expenditure requirements. A revision to the targeted rate is anticipated in Year 3 of the LTP.

8.3 Valuation Forecasts

Section 10.2 outlines the projected future values of capital works on the scheme. The forecast future value of assets based on these additional works is summarised in Table 18.

Table 18. Forecast values of scheme assets.

ASSET	2015/16	2016/17	2017/18
Floodgates (DRC)	2353866	2320322	2286777
Stopbanks (DRC)	7840873	7823677	7806481
Waihou (DRC)	142958	139384	135810
Retaining Wall (DRC)	150560	147423	144287
TOTAL	10488257	10430806	10373355

Depreciation of the scheme assets in the future will continue to be based on the methodology applied in Section 6.

8.4 Historic Financial Summary

Historic expenditure and revenue trends for the previous 3 years are provided in Table 19. Operational expenditure has averaged $ 481157.01 per annum, with revenue averaging $682,985.14 per annum.

Table 19. Financial expenditure on the Awanui Flood Scheme during period of 2015/16 to 2017/18.

EXPENDITURE	2015 to 2016	2016 to 2017	2017 to 2018
Operational Expenses			
2005 - Advertising - Statutory Notices	328.32	337.18	346.96
2047 - Consultants		5135.00	
2219 - Sundry Supplies	1748.30	1795.51	1847.58
3385 - Valuation Consultants	19122.59	19638.90	20208.43
3639 - River Clearance / Works	0.00	0.00	0.00
4290 - Stop Banks & River Schemes	273711.00	281101.20	289253.13
XXXX - Flood Damage Maintenance programme		0.00	0.00
5228 - Commission - TLAS	31116.00	31973.00	32855.00
5840 - Insurance	29000.00	29783.00	30646.71
5870 - Rates	0.00	0.00	0.00
5950 - Depreciation - Plant & Equipment	0.00	0.00	0.00
5942 - Depreciation - Infrastructural Assets	59995.00	64662.00	67668.00
7946 - Labour Charge	16455.00	16788.00	17104.00
Interest	48735.25	65967.87	60902.64
Total	480211.46	517181.65	520832.45
Depreciation			

EXPENDITURE	2015 to 2016	2016 to 2017	2017 to 2018
Original	59995	59995	63001
Asset 01	0	4667	4667
Asset 02	0	0	0
Asset 03	0	0	0
Total	59995	64662	67668
CAPEX			
Major Capex	700000	0	0
Design	0	0	0
Waihoe Gates upgrade	0	0	0
Asset maintenance / renewal	59995	59995	63001
Total	759995	59995	63001

8.5 Key Assumptions In Financial Forecasts

Table 20 lists the assumptions in planning of the financial forecasts.

Table 20. Forecasting assumptions relating to the financial planning.

Assumption	Impact of assumption	Risk	Level of uncertainty of risk		
			Likelihood Low/medium/high	Financial impact	Impact of risk
Climate change impacts Climate change will match the Ministry for Environment's climate change predictions, which are based on recommendations from the International Panel on Climate Change (IPCC).	Capital works budgets within this plan include an allowance to accommodate climate change impacts.	Climate change impacts are under assessed.	Medium	Low	Variations to long term budget forecasts and levels of service will be required and will be addressed by subsequent long term plans. There may be additional demand for protection works.

Assumption	Impact of assumption	Risk	Level of uncertainty of risk		
			Likelihood Low/medium/high	Financial impact	Impact of risk
Land use will not change significantly over the period of the plan.	No additional expenditure has been provided for effects of land use change.	Land use in the rural areas will see a significant change from beef/sheep farming to forestry to suit climate and economic conditions.	Low	Low	Marginal beef/sheep farmers may choose to diversify into forestry which is less labour intensive and copes better with changing climatic conditions. Forestry can reduce the flow of streams which could impact on water allocations and reduce the demand for flood control measures.

Assumption	Impact of assumption	Risk	Level of uncertainty of risk		
			Likelihood Low/medium/high	Financial impact	Impact of risk
Inflation Council has adjusted base financial projections to reflect the estimated impact of inflation over the life of the 2012-2022 Long Term plan (LTP). Inflation rates applied - expenditure Inflation rates have been estimated using the Business and Economic Research Limited (BERL) "Forecasts of Price Level change adjustors to 2022". The price level change adjustor rates displayed below (at a per annum change) have been applied to all expenditure items subject to inflation with the exception of salaries, and electricity: Yr1 Yr2 Yr3 Yr4 Yr5 2.60% 2.70% 2.90% 3.00% 3.10% Yr6 Yr7 Yr8 Yr9 Yr10 3.20% 3.30% 3.50% 3.50% 3.50%	Council's costs and income required to fund those costs will increase by the rate of inflation unless efficiency gains can be made.	The actual rate of inflation will vary from the assumed rate of inflation.	Years 1-3: Low to moderate Years 4-10: Moderate - high	Low to moderate 1% increase in inflation over and above the BERL rates will increase Council's total operating expenditure	Inflation is affected by external factors, most of which are outside of Council's control and influence. Actual individual indices will at times vary from what has been assumed in the Long Term Plan. The council has relied on the Reserve Bank's use of monetary controls to keep inflation within the 1% to 3% range.

Assumption	Impact of assumption	Risk	Level of uncertainty of risk		
			Likelihood Low/medium/high	Financial impact	Impact of risk
New Assets Council is aware of all new asset requirements and has factored these requirements into the Long Term Plan's capital expenditure programme.	The impact of funding known new assets is reflected in the rates projections within this document.	New assets are required that are not included within the life of this AMP	Moderate	Medium	Consultation will be undertaken with the affected communities of additional capital works and a targeted rate will be levied via an Annual Plan or subsequent Long Term Plan to fund any new works.

Useful lives of significant assets It is assumed that no significant assets will fail before the end of their useful lives Council is aware of all planned asset acquisitions and all asset acquisitions (as per the capital expenditure program) shall be depreciated on the same basis as existing assets.		That Council assets wear out earlier or later than estimated. That Council changes activities resulting in decisions not to replace certain existing assets.	Low	Low The financial effect of the uncertainty surrounding useful lives of assets is likely to be immaterial.	As part of its Asset Management Planning process council identifies the capacity and condition of such assets, and plans its replacement programme accordingly. Depreciation and interest costs (if borrowing was required) would increase if capital expenditure was required earlier than anticipated, and any earlier replacement may result in the deferral of other discretionary capital projects. Where a decision is made not to replace an asset this will be factored into the capital expenditure projections.

Borrowing costs The borrowing costs for qualifying assets is calculated assuming the following average interest rates Yr 1 – 7% Yr 2 – 3 – 7% Yr 4 – 10 – 7 % Any internal interest expense applicable to internal borrowings is allocated directly to the activity to which the loan relates.		That the prevailing interest rate will vary from those assumed.	Moderate	Low	Council is not forecasting any external borrowing over the 10 year life of the Long Term Plan. If any actual borrowing should eventuate, an unbudgeted interest expense will also eventuate and this may affect the level of rating income increase required to fund such expenditure. Interest expense and interest income associated with Internal borrowing offset each other in the Financial Forecasts.

9 ASSET MANAGEMENT PRACTICES

9.1 Accounting/Financial Systems

A detailed description of the Council accounting system is contained within both the Councils Annual Plan and Long Term Planning documents, including detail of the standards and policies that are to be complied with.

9.1.1 Asset Maintenance, Renewal And Capital Works Expenditure

Expenditure on infrastructure assets will fall into one of three categories, being either maintenance, renewal or capital works. The differences between these are defined in the following.

9.1.2 Routine Maintenance Expenditure

Routine maintenance expenditure displays the following characteristics:

- Regular and ongoing annual expenditure necessary to keep the assets operating at the required level of service, e.g. inspections; management; liaison with ratepayers etc.
- Day to day and/or general upkeep works designed to keep the assets operating, e.g. insurance, power costs.
- Works which provide for the normal care and attention of the asset including repairs and minor replacements.
- Minor response type remedial works i.e. isolated instances where portions or sections of a unit of an asset fail and need immediate repair to make the asset operational again.

9.1.3 Renewal Expenditure

Work displaying one or more of the following attributes can be classified as renewal expenditure:

- Works which do not increase the capacity of the asset, i.e. works which improve and enhance the assets restoring them to (or below) their original size, condition, capacity, etc.
- The replacement component of augmentation works which does not increase the capacity of the asset, i.e. that portion of the work which restores the assets to their original size, condition capacity, etc.
- The replacement component of a capital work which replaces the redundant element of an existing asset.
- Reconstruction or rehabilitation works involving improvements, realignment etc.
- Renewal and/or renovation of existing assets, i.e. restoring the assets to a new or fresh condition.

9.1.4 Capital Expenditure

Capital expenditure projects are those displaying one or more of the following characteristics:

- Construction works which create a new asset that did not previously exist in any shape or form.
- Expenditure which purchases or creates a new asset (not a replacement) or in any way improves an asset beyond its original design capacity.

- Upgrade works that increase the capacity of the asset.

9.2 Asset Management Systems

9.2.1 Asset Management Responsibilities and Roles

The principal role and responsibility for asset management resides with the River Team of the Northland Regional Council. The Team is responsible for day to day management of the River Scheme and in the preparation, monitoring and revision of the Asset Management Plan and for monitoring the plan and the performance of the scheme.

Consultation with external parties, in particular the Liaison Committee and scheme ratepayers, will occur in the preparation and revision of the plan. External parties have also provided feedback about the scheme performance in the past, and the external monitoring role they undertake is expected to continue.

9.2.2 Data Management

Northland Regional Council utilises a number of tools for the management of its assets.

Information systems including GIS (geographical information systems), spreadsheets, WorkSmart Database Information System, and financial accounting systems assist the asset managers in general management, maintenance, operations and long term planning. Table 21 lists a number of the key electronic documents that are used in the management of the Awanui Scheme assets.

The asset register constitutes the heart of the asset management system. It provides a definition of assets (description, location), details of physical dimensions and capacity. It also details age and replacement costs. It is incorporated in WorkSmart/IRIS Information System.

9.2.3 Data Management Systems

Management of data related to the scheme done through the application of the data management systems listed in Table 21.

Table 21. Data management systems.

Data	Management System	Notes
Asset Inventory	Worksmart Database System	Full data on the asset and maintenance history.
Asset Plans	Objective Information System	Data to be labelled and migrated to Objective to improve archival quality
Operations Data	Smartstream Financial System	Captures historical cost elements associated with the scheme
Customer Enquiries	Worksmart Database System	Individual enquires recorded in database
Asset valuations	Worksmart Database System	Valuations reconciled to asset database.
Financials	Council financial systems	

10 CAPITAL PROJECTS

10.1 Determination Of Capital Projects

Capital projects have been determined in consultation with the Scheme Liaison Committee and through an issues and options pre-feasibility analysis and short listing and refinement process.

This process had identified several capital improvements that are proposed for further refinement and consultation via the LGA special consultative procedure.

10.2 Proposed Capital Projects

10.2.1 Awanui River Flood Management Scheme

Preliminary design has been completed for the proposed upgrade of the Awanui Flood Scheme to improve the level of flood protection for urban Kaitaia.

The objectives of the proposed upgrade was that it improves the scheme to protect urban Kaitaia from river flooding to a design standard that is equivalent to a 1% Annual Exceedance Probability (AEP), with an allowance for climate change (based on peak flows) and an appropriate level of freeboard and improves stability of river banks and associated stopbanks, and improve drainage from the Lake Tangone flood storage area.

Working in conjunction with the Awanui River Management Liaison Committee, two options of potential works have been identified.

Option 1 involves modification of the Whangatane Spillway weir to enable earlier and later floodwater flows to the spillway whilst maintaining peak flood flows close to that of the existing spillway and the construction of a stock crossing bridge. This work has the benefit of reducing flooding in parts of urban Kaitaia, and enabling improved drainage in the lower Awanui River, which importantly reduces the duration of storage of floodwater in Lake Tangonge which has positive environmental outcomes for the Awanui River and Ranguanu Harbour. The estimated cost of this option is $700,000, and construction would be undertaken during 2015/16, with payback of the capital works proposed over a 10 year period. The Awanui River Management Liaison Committee has resolved its support to progress with the detailed design for Option 1, and design and resource consenting for this option is currently being progressed.

Option 2 involves the modification of the Whangatane Spillway weir as per Option 1, the detailed design and construction of stop bank improvements on the Awanui River through urban Kaitaia, spillways on the Awanui River south of Kaitaia to reduce the amount of flood water overflow across State Highway 1 to the Tarawhataroa River and improvements to the drainage outlet of the Lake Tangonge flood storage area. The estimated cost of this option (inclusive of the Option 1 works) is $8.2M, not including the potential additional cost of slope stability works to improve the stability of river banks and associated stopbanks, with payback of the capital works proposed over a 30 year period. Detailed design and construction of this option would be undertaken over a period of eight years from 2015/16 through to 2022/23.

Continued operational maintenance of the scheme assets, maintenance of key areas of the rivers and channels and prioritised renewals of assets is proposed to continue under both options.

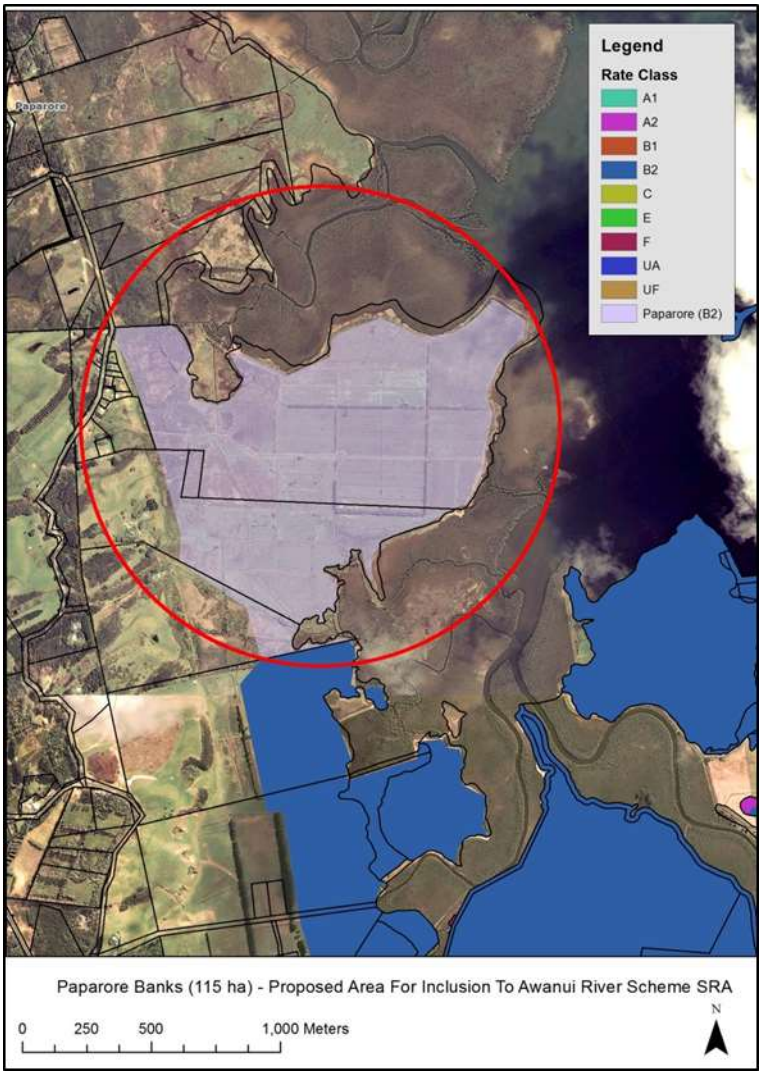
The two options are not exclusive of each other, as Option 1 can be undertaken in advance of Option 2, which would enable the remainder of the Option 2 elements to be implemented at a future date. Whilst Option 2 provides a much higher level of flood protection to urban Kaitaia than Option 1, the capital cost of Option 2 is well over 10 times higher than that of Option 1.

10.2.2 Paparore Banks Targeted Rating Area

The Awanui River Flood Scheme targeted rating area is proposed to be adjusted by including an area of land known as Paparore Banks. The Paparore Banks land contains flood control assets, comprised of coastal stop banks and floodgates, which were transferred to Northland Regional Council ownership from the Far North District Council at the time of transfer of the scheme assets. However, the Awanui River Scheme targeted rating area did not cover the Paparore Banks.

Consequently, it is proposed that the targeted rating area of the Awanui River Scheme be extended to cover the Paparore Banks to be rated as Class B2 land. This will enable rating income to be collected over the area of benefit so that the assets in this area will be maintained.

The following map shows the proposed extent of the Paparore Banks area, comprised of 115 hectares, for inclusion in the Awanui River Scheme targeted rate area to be rated as Class B2 land.



11 PLAN IMPROVEMENT AND MONITORING

11.1 Improvement Plan Gap Analysis

The Northland Regional Council engaged Opus International Consultants' Limited to undertake a peer review of the inaugural draft Asset Management Plan in May 2010. The review noted sound areas of the plan being:

- Description of the Asset
- Levels Of Service
- Financial Forecasts
- Commitment

Areas for development included:

- Managing growth
- Risk Management
- Life cycle management
- Outline improvement Programmes
- Document Structure

Improvement of the plan since the May 2010 review has focused on the development of these components of the plan, and all areas recommended for development have since been improved.

11.2 Plan Improvement Programme

Table 22 shows the proposed Improvement Plan Programme.

Table 22. Improvement plan programme.

AMP Area	Area Of Improvement	Nature Of Improvement Required	Resourcing To Complete	By When	By Whom	Priority 1. High 2. Mid 3. Low 4. Lowest
Managing Growth	Climate Change	Contrast long section levels for climate change against stop bank crest design levels - 100 year (Awanui) model and 30 year (Tarawhatarua)	Revised model outputs, GHD to provide long sections, NRC plot against bank crest survey - 7.5 hours	Complete	JS	1
Managing Growth	Urban and rural growth	Assess growth statistics for the area	Statistics NZ Growth indicators - 3.5 hours	Completed		4
Managing Growth	Future capital improvements	Summarise the proposed capital improvements we are currently investigating	Existing NRC information on improvements - 3.5 hours	Completed		1
Managing Growth	Future capital improvements financial analysis	Assess cost of capital works and contrast against the rating base to produce some rating scenarios to reflect capital expenditure proposals	Existing NRC information on improvements and rating model - 14 hours	Prior to 15/16 Annual Plan	BH	2

AMP Area	Area Of Improvement	Nature Of Improvement Required	Resourcing To Complete	By When	By Whom	Priority 1. High 2. Mid 3. Low 4. Lowest
Levels Of Service	Stop bank design level	Model long section results imposed over surveyed bank crest levels to review design bank levels and assess what LOS/capacity issues exist.	Revised model outputs, GHD to provide long sections, NRC plot against bank crest survey - 22.5 hours	On going	JS	1
Risk Management	Risk Management Framework	Assess potential risks to the scheme - failure modes etc	Refer *NAMS Optimised Decision Making Guidelines and IIMM s3.4* - 7.5 hours	Completed		1
Risk Management	Criticality framework	Determine which assets are most critical as an outcome of the risk management framework - use to prioritise capital/renewal expenditure, integrate into financial projections. Develop a prioritised list of renewals expenditure for stopbanks and floodgates with timeframes linked to expenditure	3.5 hours	Completed	JS	1
Life Cycle Management	Service levels - gap analysis	Assess gap between current service capability and required service to meet future demand and service levels	Long sections, growth and climate change forecasts - 3.5 hours	On Going	JS	2
Improvement programmes	Ongoing gap analysis	Set schedule for regular review and reporting of AMP - include target dates	14 hours	April of each year	JS	Ongoing
Improvement programmes	Weak areas and programme for improvement	Include this document in the AMP		Completed		
Planning Assumptions & Confidence levels	Assumptions	List relevant assumptions/provisos that the plan is based on	1.5 hours	Completed		4
Planning Assumptions & Confidence levels		Assess and rank adequacy of data - asset, hydraulics, growth etc	1 hour	TBC	JC	3
Commitment	Executive management sign off of AMP	Aim to have ready for sign off prior to 23 December 2015.		23 December 2015.	BH	1

11.3 Monitoring And Review Procedures

A yearly gap-analysis of the Asset Management Plan to identify areas for improvement and update the Improvement Plan Programme is scheduled for April of each year.

The Asset Management Plan will be subject to a full review on a three yearly basis. The timing of the full review is scheduled to be consistent with the three yearly Long Term Plan cycle. It is noted that the next full review is scheduled for the period from of June – October 2017, with completion of the review and updated plan required by December 2017 as to inform the Long Term Planning process. .

External Audit of the revised plan is recommended during October 2017 to identify any significant issues in order to programme improvements to the plan prior to any assessment by Audit NZ during the audit process associated with the Long Term Plan process.

12 REFERENCES

Northland Regional Council. 2005. Awanui River Flood Management Plan. 36p plus appendices.

Northland Regional Council. 2013. Awanui Stopbank Condition Assessment. 62p.

Northland Regional Council Awanui River Scheme Preliminary Design, T&T, 2014, 86p

13 APPENDICES

Appendix 1. Awanui River Flood Management Scheme Liaison Committee Terms Of Reference

AWANUI RIVER LIAISON COMMITTEE

Amended Terms of Reference

Reporting to: The Environmental Management Committee of the Northland Regional Council.

Composition: The Liaison Committee is a sub-committee of and appointed by the Northland Regional Council and shall comprise:

One Regional Councillor appointed by the Northland Regional Council who shall be the chair of the Committee;

One representative of the Far North District Council's Northern Community Board who will also represent the residents of the urban areas of Kaitaia and Awanui;

One representative of the Far North District Council responsible for drainage and stormwater works in the scheme area.

Three iwi representatives, one each nominated by Te Rarawa, Ngai Takato, and Ngati Kahu;

Four representatives of the ratepayers of the river catchment, one from each area:

- One representing upper catchment area landholders and residents upstream of the confluence of the Larmer's Road intersection with SH1;
- One representing the rural catchment area and flats east of the Awanui River between the Larmer's Road intersection with SH1 and Sandhills Road-Quarry Road;
- One representing the rural catchment area and flats west of the Awanui River between the Kaitaia urban area and Sandhills-Quarry Road, including the catchments of the Pukepoto Stream and Lake Tangonge; and
- One representing the catchment area and flats between Sandhills Road-Quarry Road and Rangaunu Harbour.

One representative nominated by the business community of Kaitaia;

One representative of the Kaitaia Drainage District Committee;

One representative of the Department of Conservation; and

The Northland Regional Council's Operations Director or his nominee.

And any other person that the Environmental Management Committee may from time to time appoint to the Committee because of their particular skills or knowledge.

Appointment of Liaison Committee members

The Northland Regional Council shall call for nominations from the Far North District Council's Northern Community Board, the Kaitaia Drainage District Committee, the three iwi authorities, the Department of Conservation for Liaison Committee representatives on a three yearly basis. The Council shall at the same time also call for nominations for the four landholder Liaison Committee representatives by way of public notice in newspapers circulating in the Management Plan area.

The Northland Regional Council shall select the Liaison Committee landowner representatives from nominations received based on the experience and familiarity of the nominees with the operation of the Awanui River Management Plan, both positive and adverse. If there are insufficient nominations to fill the four landholders positions on the Liaison Committee, the Council shall invite appropriate landholders to join the Committee.

Appointments will be made for a term of three years, in sequence with the local government elections, or until earlier disqualification, death or resignation. Should any of the latter three events arise, replacement appointees may be made by the Northland Regional Council.

Meeting Frequency: As required, but no less than twice each year in June and October. Meetings shall be held on weekday evening, shall be advertised in local newspapers and shall be open to the public.

Standing Orders: Meetings will be run in accordance with New Zealand Standard Model Standing Orders (NZS 9202:2003).

Objective: To advise and make recommendations to the Northland Regional Council, via the Environmental Management Committee, on all matters pertaining to the development and implementation of the Awanui River Management Plan.

Functions: The Awanui River Liaison Committee is an advisory committee of the Northland Regional Council and has no delegated authority or specific powers. Its functions are to:

1. Provide a stakeholder forum for the development of policies and plans for the management of flooding within the Awanui River Management Plan rating area.
2. Enable stakeholders to participate in the ongoing management of flood control with the Awanui River catchment.
3. Facilitate communications between the Northland Regional Council, which is ultimately responsible for the management of the scheme, and the residents and landholders within the catchment.
4. Advise the Northland Regional Council on all matters relating to the management of the Awanui River Flood Management Scheme.

Specific tasks will include:

1. Annually reviewing the priority and order of works within the management plan, ensuring that works are being undertaken in the order set out in the Plan and to the standards specified in the Plan or, when necessary, recommending changes to the Plan.
2. Each year, reporting on performance against the past year's work plan and recommending to the Regional Council an annual works plan and budget for the forthcoming financial year.
3. Each meeting reviewing monitoring reports on the environmental impacts of the scheme.
4. Assisting the Regional Council to identify potential opportunities for improvement to the scheme and to assist the Council to consult with affected parties.

Appendix 2. Memorandum of Understanding between the Northland Regional Council and the Far North District Council over the management of the Awanui River Flood Management Scheme

AGREEMENT

THIS agreement is made this day 2005.

BETWEEN FAR NORTH DISTRICT COUNCIL (FNDC)

AND NORTHLAND REGIONAL COUNCIL (NRC)

BACKGROUND

A The FNDC and the NRC have agreed on a plan for the management of the Awanui River system. That river system comprises the catchment areas of the Awanui River and the adjoining Pairatahi Stream and Waipapakauri Creek. That plan is called the Awanui River Flood Management Plan ("the Plan") and is annexed as Appendix A to this agreement.

B The objectives of the Plan are:

1 To reduce the risk of flooding from the Awanui River and its tributaries within the Kaitaia and Awanui urban areas by establishing and maintaining protection from up to a 1:100-year, 1% A.E.P., flood or such higher level of protection as may be achievable within the current design standards and funding mechanisms.
2 To reduce the incidence of flooding of the floodplain of the Awanui River and its tributaries where the flooding results in a loss of agricultural production, by reducing the frequency of pasture-damaging floods to no more than once every 20 years or such higher level of protection as may be achievable within the current design standards and funding mechanisms.
3 To reduce the incidence of flooding by sea water on low-lying and reclaimed land around the southern shores of Rangaunu Harbour to no more than once in 20 years or such higher level of protection as may be achievable within the current design standards and funding mechanisms.
4 To reduce the volume of sediment which is being carried by the Awanui River and dumped in Rangaunu Harbour.

C The parties have adopted the Plan and agreed that these objectives can be best achieved by the co-operation of the FNDC and the NRC.

D This agreement sets out the matters which have been agreed between the parties and in particular it allocates responsibilities between the parties for various aspects of the Plan.

E Some aspects of the Plan have been the responsibility of the FNDC and are now to be taken over by the NRC. This agreement covers the transfer of those responsibilities, (which transfer is made in accordance with s17(3)(b)(i) of the Local Government Act 2002) and the transfer of the relevant bylaw enforcement powers (which transfer is made pursuant to s161(1) of that Act).

F This agreement covers the transfer of assets as required by the Plan to ensure that they are owned in accordance with Appendix B of the Plan.

G Each of the parties to this agreement acknowledges that this is a contractually binding agreement entered into by each of them in consideration for the covenants and obligations undertaken by the other.

NOW IT IS AGREED BY THE PARTIES:

GENERAL PROVISIONS

1. The Regional Council will:

a. Administer the Awanui River Flood Management Plan and undertake all works and services listed in that Plan;

b. Manage the scheme finances, including raising loans and striking rates;

2. The District Council will:

a. Advise the Northland Regional Council of any known risks, claims or liabilities associated with management of flooding within the Awanui River catchment and indemnify the Regional Council against those identified risks, claims, omissions, liabilities or claims of negligence.
b. Under such agreements as the two Councils may make from time to time, collect rates struck by the Regional Council for the management of the Awanui River Flood Management Plan.

c. Where there is any conflict between the terms of the Plan and this document, the terms of this document shall prevail.

3. Both Councils will;

a. Promote the achievement of the objectives of the Management Plan;
b. Enforce any rules in Regional or District Plans, or any relevant bylaws, or compliance with any resource consent conditions, or use any provisions of the Building Act, or any other statutes or regulations required to ensure the management, maintenance, protection and efficient operation of the flood management scheme and achievement of the objectives of the Awanui River Flood Management Plan;
c. Enforce any rules in Regional or District Plans, or any relevant bylaws, or compliance with any resource consent conditions, or use any provisions of the Building Act, or any other statutes or regulations required to ensure the management, maintenance, protection and efficient operation of the Kaitaia Land Drainage Scheme and achievement of the objectives of that scheme;
d. Ensure that both Councils consult with each other in the development of any Council policies or procedures likely to impinge on the area subject of the Awanui River Flood Management Plan. That is, the two Councils will pursue a “no surprises” policy with each other on all matters relating to the Awanui River Flood Management Plan ;

e. Ensure early notification, through the distribution of draft documentation, of major policy decisions which may have implications beyond the boundaries of the decision-making authority in respect of the achievement of objectives of the Awanui River Flood Management Plan.

HAZARD MANAGEMENT

4. The Regional Council will:

a. Clearly identify land within the Awanui River catchment that is susceptible to flooding, assessing the level of risk and conveying this information to the District Council;

b. Maintain an effective flood warning system for the Awanui River catchment, ensuring that the District Council is alerted to any potential flood emergency, is kept fully informed during the development of a flood and is warned of an impending emergency situation;

c. Undertake works to restore and maintain the scheme in accordance with the Awanui River Flood Management Plan;
d. Ensure that the flood protection measures provided under the Awanui River Flood Management Plan are kept fully operational and effective during floods;
e. Monitor, regularly review and promote improvements to the Awanui River Flood Management Plan to ensure that the objectives of the Awanui River Flood Management Plan are being achieved.

f. Manage floodwaters under the Awanui River Flood Management Plan in a manner that achieves the hazard management objectives and complements the District Council's urban stormwater management plans for these urban areas.
g. Work with the District Council and appropriate Government departments to investigate options for reducing the flood risk to houses in at-risk areas within Kaitaia, including relocating the flood-affected houses out of any floodway or overflow point, or raising them above flood level;
h. Promote soil conservation, erosion control, and biodiversity protection and enhancement measures to landholders within the catchment area of the Awanui River to slow down runoff and reduce the sediment and debris load in the river and in floodwaters.
i. Administer and when appropriate enforce the Far North District Council Bylaw for the Protection of Watercourses, Land Drainage Systems and Defences Against Water (or such similarly named bylaw) in association with the Far North District Council.
j. Undertake works to maintain the integrity of the protection system during floods and, when a flood is of such magnitude that it exceeds the level of protection provided by the scheme, clear floodwaters from flooded areas of Kaitaia and Awanui.

5. The District Council will:

a. Use the Far North District Plan and other mechanisms to encourage the retention and enhancement of biodiversity and watershed protection within the catchment of the Awanui River;
b. With the assistance of the NRC, make a bylaw to regulate activities likely to increase the risk of flooding or threaten the integrity of land drainage and flood management measures.
c. Ensure that flood hazard data supplied by the Regional Council is recorded on a publicly accessible hazards database and, as appropriate, used to promote policies and rules within the Far North District Plan;
d. Use the Building Act 2004, the District Plan, the Resource Management Act 1991, the Local Government Act 2002 and any other relevant statutes, rules, bylaws and regulations to ensure that new buildings, industries and developments within the Awanui River catchment are not placed at risk from flooding;
e. Work with the Regional Council and appropriate Government departments to investigate options for reducing the flood risk to houses in at-risk areas within Kaitaia, including relocating the flood-affected houses out of any floodway or overflow point, or raising them above flood level where that is the most cost effective option;

f. Manage the Kaitaia Drainage Area and the associated land drainage scheme in a manner that optimises rural production but reduces the incidence of land settlement due to the over-drainage of peat, so optimising the flood management scheme benefits;

g. Manage urban stormwater within Kaitaia and Awanui under comprehensive urban stormwater management plans and in a manner that achieves the hazard management objectives of and complements the Awanui River Flood Management Plan;

h. Prepare a Civil Defence Emergency Management Community Response Plan for the urban areas of Kaitaia and Awanui, clearly identifying the roles and responsibilities of the various parties during an emergency;

i. Train appropriate personnel and as required implement an effective civil defence emergency management response plan for Kaitaia and Awanui.

SCHEME WORKS, STRUCTURES AND ASSETS

6. The Regional Council will:

a. Own and/or manage the works, structures and assets of the Awanui River Flood Management Scheme, including those currently owned and/or managed by the District Council, and any new works, structures or assets acquired or constructed under the Awanui River Flood Management Plan;

b. Construct, restore and maintain works, structures and assets involved in the management of floodwaters within the Awanui River, Pairatahi Stream, Waipapakauri Creek, and high tides and storm surge from the Rangaunu Harbour, as identified in the Awanui River Flood Management Plan;

c. Work with the District Council and Northern Community Board to develop and maintain the stopbanks, bermland and banks of the Awanui River and Tarawhataroa Stream through Kaitaia.

d. Meet with the Northern Community Board twice yearly to report on progress to date and to discuss future work in the Awanui River catchment.

7. The District Council will:

a. Own and/or manage any works, structures and assets involved in stormwater management within Kaitaia and Awanui, including stormwater pipes and drains which discharge through, under or over any stopbanks, and any floodgates associated with these pipes and drains, in a manner that does not jeopardize the flood protection integrity of the stopbanks.

b. Work with the Regional Council and the Northern Community Board to develop and maintain the stopbanks, bermland and banks of the Awanui River and Tarawhataroa Stream through Kaitaia;

c. Own and/or manage any works, structures and assets associated with rural land drainage within Kaitaia Drainage District, excluding rural floodgates, which will become assets of the Regional Council, in a manner that optimises the benefit gained from the Awanui River Flood Management Plan.

TRANSFERS

8.

a. On 1 July 2005 FNDC shall be deemed to have transferred to the NRC ownership of all those assets shown in Appendix B of the Plan at an agreed value of $7,640,000 so that, from that date, ownership of those assets shall vest in the NRC. The parties believe that Appendix B includes all assets relevant to or used for the purposes covered by the Plan. If it is later discovered that there are assets that have been omitted from Appendix B, then ownership of those assets shall also be deemed to have occurred on 1 July 2005 without payment of any further consideration.

b. On 1 December 2005 the FNDC shall transfer and deliver to NRC all files and copies of files, documents, drawings, plans and maps and other records associated with the flood control and the physical assets within the area covered by the Plan together with all intellectual property in and all rights to use those files, documents, drawings, plans and maps and other records.

c. On 1 July 2005 the FNDC shall be deemed to have transferred to the NRC its responsibilities in relation to the Plan except to the extent that those responsibilities are expressly reserved to it in the Plan. This transfer is made pursuant to s17(3)(b)(i) of the Local Government Act 2002.

d. These transfers are made in consideration of the covenants entered into this agreement. No further payment is required.

Appendix 3. River Condition Survey

Data Collection

In 2013, NRC staff conducted river condition survey the objective of which is to assess the condition of the asset of the river particularly stopbanks and grade them accordingly.

Condition Assessment

The condition assessment ranked the condition of the stopbanks according to the following (based on an assessment of the aforementioned data):

1 = Very Good

2 = Good

3 = Average

4 = Poor

5 = Very Poor

The table below (Table 23) shows the result of the Annual Awanui River Condition Survey in 2013. First column of the table is the reference point number and a location map is prepared in Figure 5 to locate those reference points. Those points in the location map are also colour coded according the assets' condition. Each of the points is described what channel and river station it belongs, the condition and criticality rating that calculates a score. Each of the references has a brief narrative to describe the condition in the last column of the table.

Haigh Workman Report

Whangatane Spillway Condition Report has been prepared by Haigh Workman Limited (see Appendix 10) that contains a study providing an outline of the spillway condition that may be used for future reference and to identify areas to monitor, and work to prioritise as funding permits. The report also includes findings and recommendations.

Table 23 Awanui Rivey Condition Survey Result 2013

OBS_REF	CHANNEL_NAME	RiverStation	Km River Station	DATE_OF_SURVEY	USER	ASSET_TYPE	CONDITION	CRITICALITY	COST	SCORE	NOTES
1	AWA	AWA 26300	AWA 26000	18/04/2013	Joe	Stopbank	1	3	<10k	3	Channel eroding, but stopbank set back and not an issue only comsetic
2	AWA	AWA 26500	AWA 27000	18/04/2013	Joe	Stopbank	1	3	<10k	3	Channel clear, stopbank set back over 100 meters
2.1	AWA	AWA 26200	AWA 26000	18/04/2013	Joe	Stopbank	2	3	>10k	6	Rongipai Place stopbank, very overgrown, difficult to tell condition of stopbank, houses have been lifted after 2007 event, very low
3	AWA	AWA 26000	AWA 26000	18/04/2013	Joe	Stopbank	4	3	>10k	12	Boots Slip
4	AWA	AWA 26000	AWA 26000	18/04/2013	Joe	Stopbank	1	2	<10k	2	Boots to Showground corner, stopbank set back over 100m
5	AWA	AWA 25900	AWA 26000	18/04/2013	Joe	Stopbank	3	3	>10k	9	Showground Slip, this repair needs to be mointored after every event
6	AWA	AWA 25700	AWA 26000	18/04/2013	Joe	Stopbank	2	3	>10k	6	Showground, Old river loop, could you longreach to tidy up and make smooth
7	AWA	AWA 25600	AWA 26000	18/04/2013	Joe	Stopbank	3	3	>10k	9	Stopbank @ ATC building, appears tho have slumped ain the past appears stabel need to montor
8	AWA	AWA 25600	AWA 26000	18/04/2013	Joe	Stopbank	3	3	>10k	9	Te Ahu Centre & NIWA Gouge site, a old slip appears to be stable need to monitor
9	AWA	AWA 25400	AWA 25000	18/04/2013	Joe	Stopbank	3	3	>10k	9	School Cut @ Church Road Bridge, new slip last season, appears to be in-situ no moisture seepage, need to monitor after events
10	AWA	AWA 25300	AWA 25000	18/04/2013	Joe	Stopbank	3	3	>10k	9	Bowl's Club parking lot, Stopbank in parking lot appears to be lower. Verify with survey if long section shows overtopping RT bank appears to be higher
11	AWA	AWA 25300	AWA 25000	18/04/2013	Joe	Stopbank	3	3	>10k	9	Stopbank @ Bowls Club appears lower
12	AWA	AWA 25200	AWA 25000	18/04/2013	Joe	Stopbank	1	3	>10k	3	FNDC Floodgate slump repair, rock armour in good condition
13	AWA	AWA 25000	AWA 25000	18/04/2013	Joe	Stopbank	3	3		9	Stopbank appears to suffered minor slumping, need to monitor - no room to set back.
19	TAR	TAR 6200	TAR 6000	1/05/2013	Joe	Stopbank	1	3	>10k	3	Retaining wall repair
20	TAR	TAR 6200	TAR 6000	1/05/2013	Joe	Stopbank	3	3	>10k	9	Slump and erosion occurring outside bend
21	TAR	TAR 6100	TAR 6000	1/05/2013	Joe	Stopbank	4	1	>10k	4	Slump down stream if retaining wall

OBS_REF	CHANNEL_NAME	RiverStation	Km River Station	DATE_OF_SURVEY	USER	ASSET_TYPE	CONDITION	CRITICALITY	COST	SCORE	NOTES
22	TAR	TAR 6000	TAR 6000	1/05/2013	Joe	Stopbank	4	3	>10k	12	20 m of toe and running track slump loll at next year works. Geotextile fix? Photo taken upstream
23	TAR	TAR 5900	TAR 6000	1/05/2013	Joe	Stopbank	2	3	>10k	6	Channel cutting down unstable slope to from bed to bench
24	TAR	TAR 5900	TAR 6000	1/05/2013	Joe	Stopbank	2	3	>10k	6	Stop bank shows signs of slumping. Old river loop
25	TAR	TAR 5800	TAR 6000	1/05/2013	Joe	Channel	2	2	<10k	4	Channel undercutting. Maybe grade control.
26	TAR	TAR 5800	TAR 6000	1/05/2013	Joe	Channel	1	3	>10k	3	Stop bank in good condition. Stony bottom channel. Appears stable.
27	TAR	TAR 5700	TAR 6000	1/05/2013	Joe	Channel	1	3	>10k	3	Stop bank and channel are in good condition.
28	TAR	TAR 5700	TAR 6000	1/05/2013	Joe	Stopbank	1	3	>10k	3	Stop bank and channel appear stable
29	TAR	TAR 5500	TAR 6000	2/05/2013	Joe	Stopbank	2	3	>10k	6	Rock armour stop bank around pump station outfall shows signs of slight movement. Need to monitor.
30	TAR	TAR 5500	TAR 6000	2/05/2013	Joe	Stopbank	3	3	>10k	9	Old Slip down stream from rock armour. Ten metres wide
31	TAR	TAR 5400	TAR 5000	2/05/2013	Joe	Channel	3	3	>10k	9	Channel meandering developing causing erosion. Slip effecting running track.
32	TAR	TAR 5400	TAR 5000	2/05/2013	Joe	Channel	3	3	<5k	9	Stream bed cutting down.
33	TAR	TAR 5300	TAR 5000	2/05/2013	Joe	Channel	2	3	>10k	6	Slip affecting running track. Stop bank steep but appears stable.
34	TAR	TAR 5300	TAR 5000	2/05/2013	Joe	Stopbank	2	3	>10k	6	Stop bank steep. Appears stable. Dry cracking developing on top.
35	TAR	TAR 5200	TAR 5000	2/05/2013	Joe	Channel	4	3	>10k	12	Slip affecting the running track. Channel meander developing causing stream bottom to erode.
36	TAR	TAR 5200	TAR 5000	2/05/2013	Joe	Channel	4	3	>10k	12	Slip very prominent.
37	TAR	TAR 5200	TAR 5000	2/05/2013	Joe	Channel	3	2	>10k	6	Small slip into the channel. Running track made narrow.
38	TAR	TAR 5100	TAR 5000	2/05/2013	Joe	Channel	2	2	>10k	4	R/b Dry cracking at the top of bank.

OBS_REF	CHANNEL_NAME	RiverStation	Km River Station	DATE_OF_SURVEY	USER	ASSET_TYPE	CONDITION	CRITICALITY	COST	SCORE	NOTES
39	TAR	TAR 5100	TAR 5000	2/05/2013	Joe	Channel	3	3	>10k	9	L/b slip affecting running track with houses close to the bank.
40	TAR	TAR 4900	TAR 5000	2/05/2013	Joe	Channel	2	2	>10k	4	Sewer crossing creating chook. Buildings zero offset on the r/b
41	TAR	TAR 4700	TAR 5000	2/05/2013	Joe	Channel	2	2	>10k	4	Rb slip healed with toe likely to erode. Slop appears stable. Lb stable sewer crossing across channel at Taafee street.
42	TAR	TAR 4500	TAR 5000	2/05/2013	Joe	Channel	2	2	<10k	4	Stony bed stable batters no stop banking overall in good condition
43	TAR	TAR 4200	TAR 4000	2/05/2013	Joe	Channel	2	2	>10k	4	Channel bed is stony appears quasi natural. Some slumping on RT bank upstream of Archibald place. Zero setback for homes along this stream. Small Gravel bank and meander pattern trying to establish. Gravel extraction may be required on future.
44	AWA	AWA 25000	AWA 25000	16/05/2013	Joe	Channel	1	3	<10k	3	No visible slumping. River is lazy.
45	AWA	AWA 24800	AWA 25000	16/05/2013	Joe	Channel	2	3	<10k	6	Existing slip may cause flood water redirection onto slip at bells hill
46	AWA	AWA 24700	AWA 25000	16/05/2013	Joe	Channel	1	3	>10k	3	Lb stable. Firth concrete.
47	AWA	AWA 24700	AWA 25000	16/05/2013	Joe	Channel	5	3	>10k	15	Rb. Bells hill.
48	AWA	AWA 24700	AWA 25000	16/05/2013	Joe	Stopbank	2	3	<5k	6	Stop bank in good condition. How ever vehicle access should be hindered as local boy racers driving up stop bank causing rutting.
49	AWA	AWA 24500	AWA 25000	16/05/2013	Joe	Channel	2	3	N/A	6	Some slips along this section of river. Stop bank set well back.
50	AWA	AWA 24200	AWA 24000	16/05/2013	Joe	Channel	4	3	>10k	12	Kitchener street slip. Old river loop
51	AWA	AWA 23700	AWA 24000	16/05/2013	Joe	Channel	1	2	N/A	2	Rb stable.
52	AWA	AWA 24100	AWA 24000	16/05/2013	Joe	Stopbank	2	3	>10k	6	Rt and Lt bank appears stable
53	AWA	AWA 24000	AWA 24000	16/05/2013	Joe	Stopbank	3	3	>10k	9	Kitchener St old river loop exit. Some slumping evident
54	AWA	AWA 23800	AWA 24000	16/05/2013	Joe	Stopbank	3	3	>10k	9	Slumping and vertical Lt bank approx. 30 meter section
55	AWA	AWA 23700	AWA 24000	16/05/2013	Joe	Stopbank	1	3	N/A	3	Lots of set back space.

OBS_REF	CHANNEL_NAME	RiverStation	Km River Station	DATE_OF_SURVEY	USER	ASSET_TYPE	CONDITION	CRITICALITY	COST	SCORE	NOTES
56	AWA	AWA 23700	AWA 24000	16/05/2013	Joe	Stopbank	3	3	N/A	9	Eh vertical. Slump. No room.
57	AWA	AWA 23600	AWA 24000	16/05/2013	Joe	Channel	2	2	N/A	4	Spillway entrance. Some erosion at sill.
58	AWA	AWA 23500	AWA 24000	16/05/2013	Joe	Channel	3	3	N/A	9	Some slumping. Erosion. High velocity. Rb.
59	AWA	AWA 23500	AWA 24000	16/05/2013	Joe	Stopbank	3	3	N/A	9	Large poplars at rivers edge.
60	AWA	AWA 23400	AWA 23000	16/05/2013	Joe	Stopbank	2	3	N/A	6	Milky Way slip repair appears stable.
61	AWA	AWA 23300	AWA 23000	16/05/2013	Joe	Channel	4	3	N/A	12	Bamboo island on left bank. Slumping into river. Fallen trees blocking river flow.
62	AWA	AWA 23200	AWA 23000	16/05/2013	Joe	Channel	4	3	N/A	12	Bamboo at north road bridge may be slumping into river course. Cracks and slipping signs are showing underneath and behind bamboo clump.
63	AWA	AWA 23200	AWA 23000	16/05/2013	Joe	Channel	3	3	N/A	9	High velocity. Channel cutting down. Mature poplars along right bank. Dense bamboo on left bank. Some fallen trees in river.
64	AWA	AWA 23000	AWA 23000	16/05/2013	Joe	Stopbank	3	2	N/A	6	90 degree bend. Left bank slumped.
65	AWA	AWA 22900	AWA 23000	16/05/2013	Joe	Channel	1	2	N/A	2	Huge set back on left bank. Right bank steep. Appears stable.
66	AWA	AWA 22900	AWA 23000	16/05/2013	Joe	Stopbank	3	3	N/A	9	Slump on outside bend. Right bank. PAK n save.
67	AWA	AWA 22900	AWA 23000	16/05/2013	Joe	Stopbank	1	1	N/A	1	PAK n save above right bank. Farm on left bank.
68	AWA	AWA 23500	AWA 24000	24/05/2013	Neville	Channel	4	1	10k	4	Scour at spillway invert entrance some rock spalls already placed
69	WHA	WHA 8500	WHA 9000	24/05/2013	Neville	Channel	4	1	<1k	4	Log at entrance left bank
70	WHA	WHA 8500	WHA 9000	24/05/2013	Neville	Channel	3	3	>10k	9	Channel scour and bed cut down possibly affecting left stop bank . Left stop bank appears non uniform
71	WHA	WHA 8400	WHA 8000	24/05/2013	Neville	Channel	5	3	>10k	15	Bed cutting down significantly upstream and under bridge may compromise stability off both banks
72	WHA	WHA 8200	WHA 8000	24/05/2013	Neville	Stopbank	4	1	>10k	4	Channel bed cutting down stretch from bridge to this location effecting stabillity of banks On both sides. Stop bank here undermined on right bank

OBS_REF	CHANNEL_NAME	RiverStation	Km River Station	DATE_OF_SURVEY	USER	ASSET_TYPE	CONDITION	CRITICALITY	COST	SCORE	NOTES
73	WHA	WHA 8100	WHA 8000	24/05/2013	Neville	Channel	4	1	>10k	4	Channel cutting down and eroding steep bank on true left potential to effect stop bank adjacent to farmlands
74	WHA	WHA 7700	WHA 8000	24/05/2013	Neville	Stopbank	4	3	>10k	12	Channel cutting down as river turns right . Eroding left bank. Left bank and left stop bank over steep
75	WHA	WHA 7600	WHA 8000	24/05/2013	Neville	Channel	4	3	>10k	12	Left Channel bank slumped compromising stop bank
76	WHA	WHA 7500	WHA 8000	24/05/2013	Neville	Stopbank	4	1	>10k	4	Erosion at left turn . Right bank and right stop bank undermined
77	WHA	WHA 7300	WHA 7000	24/05/2013	Neville	Channel	3	1	<10k	3	Left channel bank slump. 15 m length
78	WHA	WHA 7200	WHA 7000	24/05/2013	Neville	Channel	3	2	>10k	6	Channel meandering undermining left stop bank
79	WHA	WHA 7100	WHA 7000	24/05/2013	Neville	Stopbank	4	2	>10k	8	Left bank erosion
80	WHA	WHA 7000	WHA 7000	24/05/2013	Neville	Stopbank	4	2	>10k	8	Left bank steep and eroding
81	WHA	WHA 7000	WHA 7000	24/05/2013	Neville	Channel	3	1	>10k	3	Channel bed meandering grade control structure or ford in poor condition
82	WHA	WHA 7000	WHA 7000	24/05/2013	Neville	Stopbank	4	2	>10k	8	Left bank scour undermined approx 40 m length
83	WHA	WHA 6900	WHA 7000	24/05/2013	Neville	Channel	3	1	>10k	3	Right bank eroding due to scour
84	WHA	WHA 6800	WHA 7000	24/05/2013	Neville	Channel	3	1	>10k	3	Channel incised narrow and cutting down
85	WHA	WHA 6700	WHA 7000	24/05/2013	Neville	Channel	4	1	>10k	4	Right bank slumped approx 50m
87	WHA	WHA 6600	WHA 7000	24/05/2013	Neville	Channel	4	1	>10k	4	Bank erosion
88	WHA	WHA 6500	WHA 7000	24/05/2013	Neville	Stopbank	4	1	>10k	4	Right bank undermined
89	WHA	WHA 6900	WHA 7000	24/05/2013	Neville	Stopbank	4	1	>10k	4	Right bank scour undermined approx 40 m length

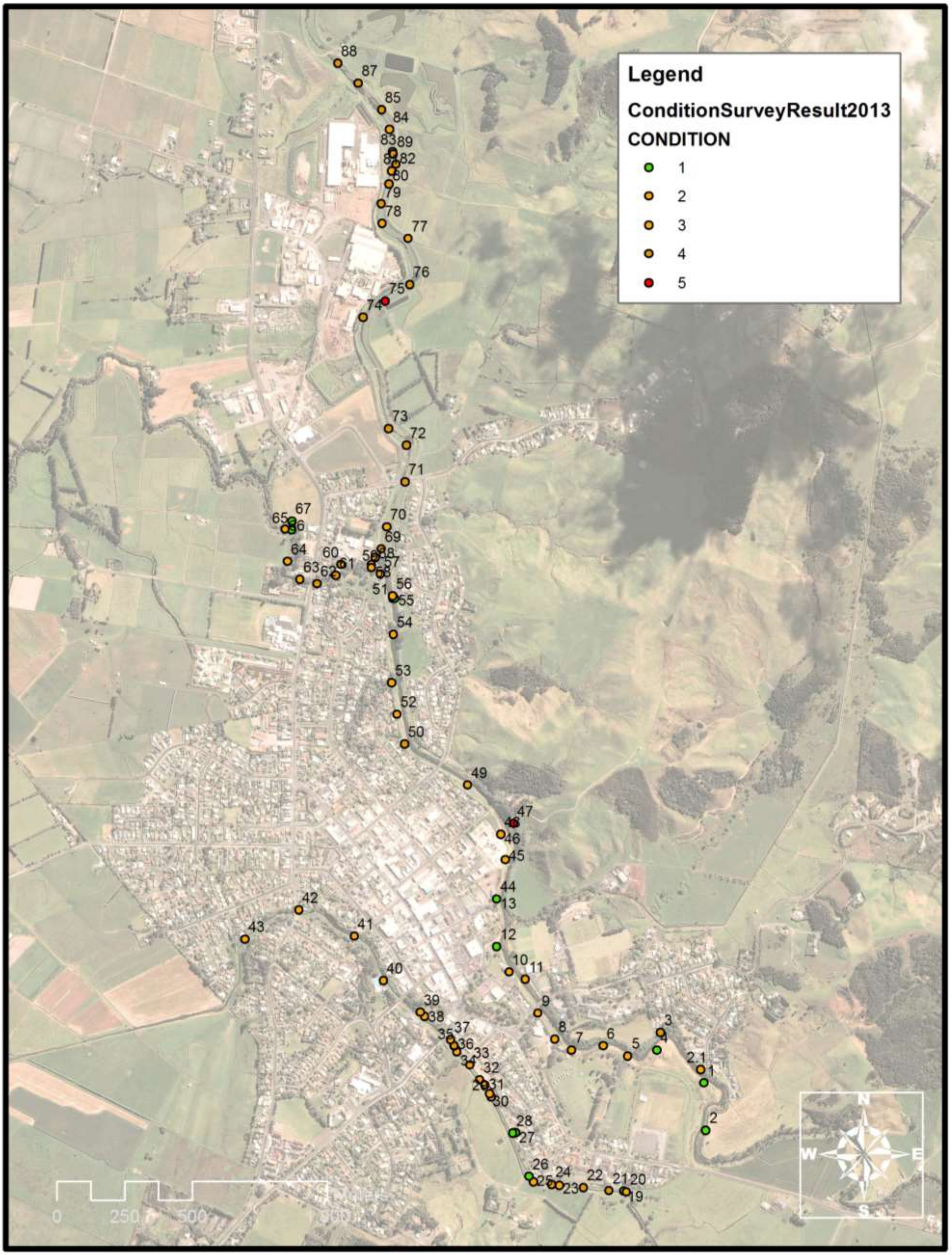


Figure 5 Awanui River Condition Reference Points

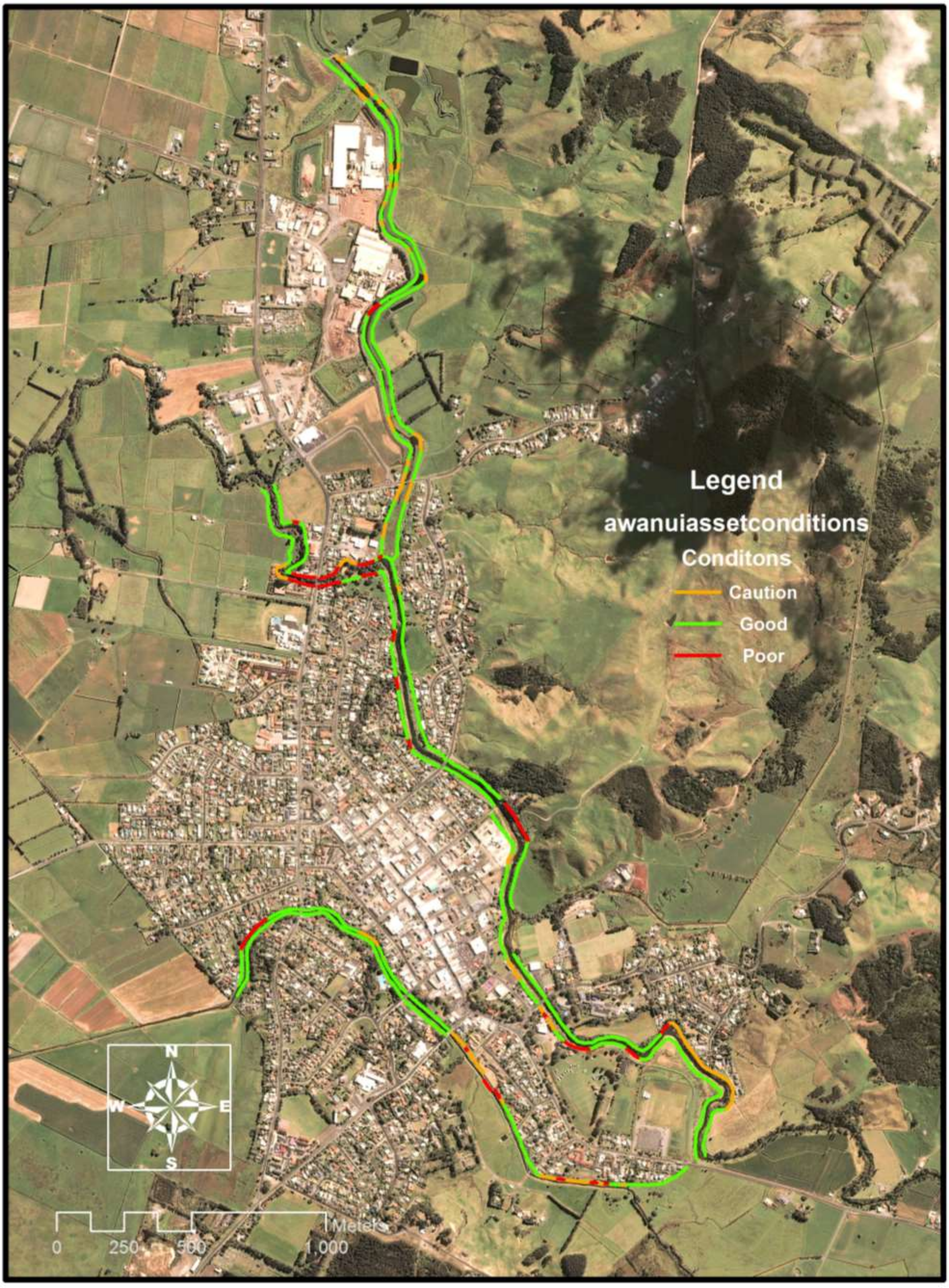


Figure 6 Awanui River Asset Conditions Color Coded

Appendix 4. Independent Review Of Asset Valuations

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SOUTH MANAKAU ROAD
R.D.3
OTAKI 5583

28 May 2014.

Lisa Aubrey,
General Manager – Finance and IT,
Northland Regional Council,
Private Bag 9021,
WHANGAREI 0148.

NORTHLAND REGIONAL COUNCIL - ASSET VALUATIONS

In response to a request from Jonathan Santos, River Management Engineer, I have carried out a review of the 3 yearly re-valuation of the infrastructural assets of the Awanui Flood Scheme of the Northland Regional Council.

I have previously reviewed the Flood Management Plan and asset valuation undertaken of the Awanui Flood Scheme, and provided comment and suggestions on methodology and spreadsheet calculations. I also undertook a detailed review of the 2011 valuation, including the unit rates and costs used in the valuation.

The Council has a comprehensive and detailed inventory of the scheme assets, which has been reviewed and amended as required to reflect the present state of the scheme. It is well designed for the management of the scheme, the determination of maintenance requirements, funding and renewals, as well as asset valuation. There is a well structured definition and classification of the assets, with components defined and valued at an appropriate level of detail, and with depreciation calculated on component life.

Appropriate cost information has been applied to the various assets of the scheme, through the spreadsheet, and the unit rates for asset components has been re-assessed for the 2014 re-valuation. Recent construction rates are available for the major stopbank assets, and updated prices have been obtained for the structural assets — of pipes, headwalls and floodgates. Some structural assets have been reassessed in more detail to better reflect their asset value.

I have corresponded with Jonathan Santos, and I am now satisfied the scheme valuation can be relied upon for financial reporting, with the valuation dated the end of this financial year (2013/14).

With respect to my review, I would make the following comments.

I am an independent consultant, and I have carried out an independent review of the valuation of the Council's scheme assets.

I have specialist skills concerning the Council's infrastructural assets, as a consulting engineer, and have wide experience in the design, construction, management and valuation of these types of assets. This includes professional knowledge of the nature and character of the scheme assets of the Council. I provide a specialist service to many regional and district councils as well as other clients. I am a Fellow of IPENZ, the professional body for engineers.

I am aware that NRC is using the valuations for their financial statements. The valuations are appropriate for this use, and can be used to give the total value of the scheme assets in the Council's financial statements.

There was no restriction on the scope of my valuation review, and all relevant information was provided on request.

The details of the rates and prices used and quantity estimates are contained in the inventory spreadsheets. The quantities were derived from survey records and inventory catalogues. The rates are appropriate, given current rates for the same or similar types of works.

I am familiar with the accounting practices used with respect to the valuation of infrastructure and scheme assets in New Zealand, which was FRS 3 and was then incorporated into NZ IAS 16. I undertake valuation reviews for other Regional Councils.

If you have any queries please contact me.

Yours faithfully

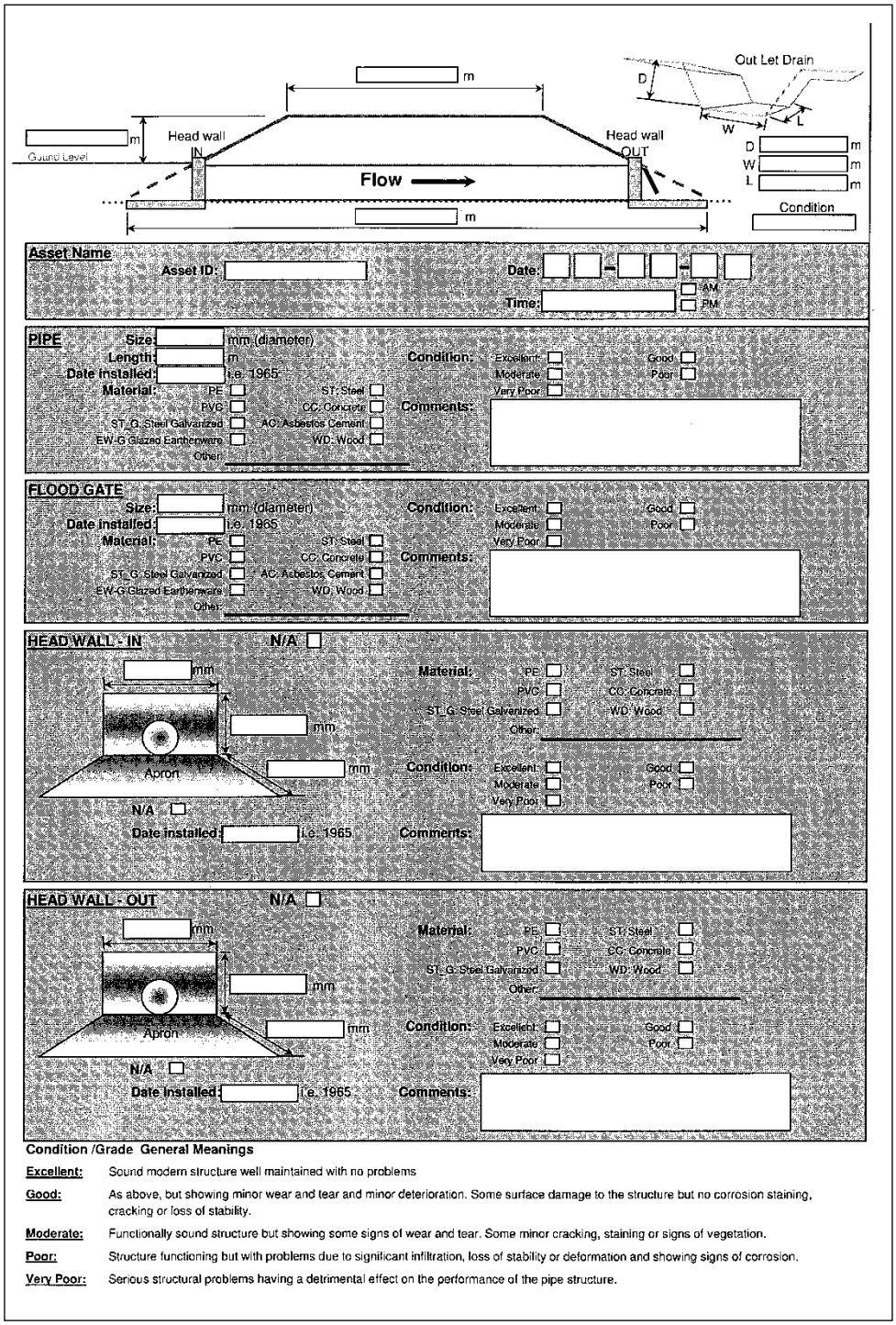
(Gary Williams)

Appendix 5. Stopbank Renewal Expenditure Spreadsheet

Schedule of stopbank renewals expenditure projections based on estimated replacement volumes and costs for those banks of high criticality (ranking of 6 or greater) and in poor condition.

CODE	Stopbank Name	Surveyed Condtion 2013	ConditionScore due to Spilling	Overall Condition Score	Risk Score	Criticality Score	Ancillary Improvement Cost	Direct Improvement Cost	Total Improvement Cost
SSL_022	SH 1 - Showgrounds LB	0.00	5.00	5.00	3.00	8.00	466.62	438.32	904.94
SSL_054	SH 1 - Showgrounds LB	4.00	1.00	4.00	3.00	7.00	442.94	1991.99	2434.93
SSL_056	SH 1 - Showgrounds LB	3.00	1.00	3.00	3.00	6.00	463.41	353.66	817.07
SSL_057	SH 1 - Showgrounds LB	3.00	5.00	5.00	3.00	8.00	190.63	152.63	343.26
WKL_001	Waihoe - Kaitaia LB	4.00	5.00	5.00	3.00	8.00	611.15	198.81	809.96
WKL_003	Waihoe - Kaitaia LB	3.00	5.00	5.00	3.00	8.00	1178.74	172.92	1351.66
WKL_004	Waihoe - Kaitaia LB	4.00	1.00	4.00	3.00	7.00	453.58	663.46	1117.04
WKL_005	Waihoe - Kaitaia LB	3.00	5.00	5.00	3.00	8.00	473.63	1391.57	1865.21

Appendix 6. Floodgate Inspection Sheet



m
Out Let Drain
D
W
L
m
Head wall IN
Head wall OUT
Ground Level
Flow
D m
W m
L m
Condition
m

Asset Name
Asset ID:
Date: / /
Time: AM PM

PIPE
Size: mm (diameter)
Length: m
Date installed: i.e. 1965
Material: PE ST: Steel PVC CC: Concrete ST_G: Steel Galvanized AC: Asbestos Cement EW_G Glazed Earthenware WD: Wood Other:
Condition: Excellent Good Moderate Poor Very Poor
Comments:

FLOOD GATE
Size: mm (diameter)
Date installed: i.e. 1965
Material: PE ST: Steel PVC CC: Concrete ST_G: Steel Galvanized AC: Asbestos Cement EW_G Glazed Earthenware WD: Wood Other:
Condition: Excellent Good Moderate Poor Very Poor
Comments:

HEAD WALL - IN N/A
mm
mm
Apron
mm
N/A
Date installed: i.e. 1965
Material: PE ST: Steel PVC CC: Concrete ST_G: Steel Galvanized WD: Wood Other:
Condition: Excellent Good Moderate Poor Very Poor
Comments:

HEAD WALL - OUT N/A
mm
mm
Apron
mm
N/A
Date installed: i.e. 1965
Material: PE ST: Steel PVC CC: Concrete ST_G: Steel Galvanized WD: Wood Other:
Condition: Excellent Good Moderate Poor Very Poor
Comments:

Condition /Grade General Meanings

Excellent:	Sound modern structure well maintained with no problems
Good:	As above, but showing minor wear and tear and minor deterioration. Some surface damage to the structure but no corrosion staining, cracking or loss of stability.
Moderate:	Functionally sound structure but showing some signs of wear and tear. Some minor cracking, staining or signs of vegetation.
Poor:	Structure functioning but with problems due to significant infiltration, loss of stability or deformation and showing signs of corrosion.
Very Poor:	Serious structural problems having a detrimental effect on the performance of the pipe structure.

Appendix 7. Floodgate Condition Summary (2014 updated)

Floodgate Asset Condition Scoring Key		
Excellent	EXC	1
Very Good	VGD	2
Good	GD	3
Moderate	MOD	4
Poor	POOR	5
Very Poor	VPOOR	6
Unknown	UNK	6

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
A1	4.00	1.00	3.00	2.67
A1A	1.00	3.00	4.00	2.67
A1B	3.00	3.00	4.00	3.33
A2	3.00	1.00	4.00	2.67
A3	4.00	4.00	2.50	3.50
A4	4.00	4.00	3.50	3.83

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
A5	3.00	3.00	2.50	2.83
A6	1.00	1.00	3.00	1.67
A7	1.00	1.00	2.50	1.50
A8	4.00	6.00	3.50	4.50
A9	4.00	6.00	4.50	4.83
A10	4.00	5.00	4.00	4.33
A11	4.00	3.00	2.50	3.17
A12	6.00	3.00	3.50	4.17
A13	1.00	3.00	4.00	2.67
A14	1.00	3.00	3.50	2.50
A15	3.00	3.00	3.50	3.17
A16	3.00	4.00	4.00	3.67
A17	3.00	4.00	3.50	3.50
A18	3.00	3.00	3.00	3.00
A19	3.00	3.00	4.00	3.33
A20	3.00	1.00	3.50	2.50

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
A21	3.00	3.00	4.00	3.33
A22	3.00	3.00	2.50	2.83
A23	3.00	3.00	3.50	3.17
A24	4.00	3.00	4.00	3.67
A25	4.00	4.00	5.50	4.50
A26	3.00	6.00	4.50	4.50
A27	4.00	4.00	4.00	4.00
A28	6.00	5.00	4.50	5.17
A29	3.00	3.00	3.50	3.17
A30	1.00	1.00	3.50	1.83
A31	4.00	3.00	3.50	3.50
A32	1.00	4.00	3.00	2.67
A33	4.00	4.00	3.00	3.67
A35	4.00	3.00	4.50	3.83
A36	3.00	1.00	3.00	2.33
A37	4.00	3.00	3.00	3.33

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
A38	3.00	4.00	4.00	3.67
A39	4.00	3.00	4.00	3.67
A40	4.00	4.00	4.00	4.00
A41	3.00	3.00	4.50	3.50
A42	4.00	4.00	5.00	4.33
A43	4.00	5.00	3.50	4.17
A44	4.00	3.00	3.00	3.33
A45	3.00	1.00	3.00	2.33
A47	3.00	3.00	4.00	3.33
A48	1.00	1.00	3.00	1.67
A49	3.00	3.00	3.00	3.00
WW1	3.00	1.00	3.50	2.50
WW2	4.00	4.00	5.00	4.33
WW3	3.00	3.00	3.00	3.00
WW4	3.00	3.00	3.50	3.17
WW5	4.00	4.00	3.00	3.67

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
WW6	3.00	1.00	3.50	2.50
PB11	3.00	3.00	4.50	3.50
PB8	4.00	3.00	4.00	3.67
PB9	3.00	1.00	3.00	2.33
PB4	3.00	3.00	4.00	3.33
PB5	4.00	4.00	3.50	3.83
PB6	4.00	5.00	3.00	4.00
A30A	1.00	1.00	1.00	1.00
PO1	3.00	4.00	3.50	3.50
PO2	1.00	4.00	2.50	2.50
PO3	4.00	1.00	3.50	2.83
PO4	3.00	1.00	3.50	2.50
PO5	3.00	4.00	4.50	3.83
PO6	3.00	3.00	5.00	3.67
PO7	6.00	3.00	4.00	4.33
PO8	6.00	1.00	3.00	3.33

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
PO9	3.00	1.00	4.00	2.67
PO10	3.00	3.00	4.00	3.33
PO11	4.00	1.00	3.50	2.83
PO12	1.00	1.00	3.00	1.67
PO13	3.00	3.00	3.50	3.17
PO14	3.00	4.00	4.00	3.67
S1	3.00	3.00	3.00	3.00
WO1	3.00	3.00	4.50	3.50
WO2	4.00	5.00	4.00	4.33
WO3	3.00	3.00	4.00	3.33
WO4	3.00	3.00	4.00	3.33
WO5	1.00	1.00	4.00	2.00
WO6	4.00	6.00	4.00	4.67
WO7	3.00	3.00	3.00	3.00
WO8	3.00	1.00	4.00	2.67
WO9	3.00	4.00	4.00	3.67

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
WO10	3.00	3.00	3.00	3.00
WO11	3.00	5.00	3.50	3.83
WO12	5.00	1.00	3.00	3.00
WO13	6.00	5.00	4.00	5.00
WO15	6.00	6.00	5.00	5.67
WO16	1.00	1.00	1.00	1.00
WO18	1.00	1.00	3.00	1.67
WO19	3.00	3.00	2.50	2.83
WO20	3.00	3.00	3.00	3.00
WO21	6.00	3.00	3.50	4.17
WO22	3.00	3.00	3.50	3.17
WS1	4.00	3.00	4.50	3.83
WS2	1.00	1.00	3.00	1.67
WS3	3.00	5.00	3.50	3.83
WS4	4.00	3.00	3.00	3.33
WS5	5.00	5.00	3.50	4.50

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
WS6	4.00	3.00	4.00	3.67
WS7	3.00	3.00	3.00	3.00
WS8	4.00	3.00	3.50	3.50
WS9	4.00	3.00	2.50	3.17
WS10	4.00	3.00	3.50	3.50
WS11	4.00	3.00	2.50	3.17
WS12	4.00	3.00	2.50	3.17
WS13	5.00	3.00	3.50	3.83
WS14	4.00	4.00	4.50	4.17
WS15	4.00	3.00	3.00	3.33
WS16	4.00	3.00	2.00	3.00
WS17	4.00	3.00	3.50	3.50
WS18	3.00	3.00	3.00	3.00
WS19	3.00	3.00	3.50	3.17
WS20	4.00	1.00	3.00	2.67
WS21	4.00	3.00	2.00	3.00

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
WS22	4.00	3.00	3.00	3.33
WS23	1.00	3.00	2.00	2.00
WS24	5.00	1.00	3.00	3.00
WS25	4.00	4.00	4.50	4.17
WS26	4.00	3.00	3.00	3.33
WS27	4.00	3.00	3.50	3.50
WS28	1.00	1.00	3.00	1.67
WS29	3.00	4.00	3.00	3.33
WS30	4.00	1.00	4.50	3.17
WS31	4.00	5.00	3.00	4.00
WS32	4.00	4.00	3.50	3.83
WS33	4.00	4.00	3.50	3.83
WS34	3.00	3.00	3.50	3.17
WS35	3.00	3.00	3.50	3.17
WS36	4.00	4.00	3.50	3.83
WS37	3.00	1.00	3.00	2.33

Asset ID	Pipe Condition Score	Floodgate Condition Score	Headwall Condition Score	Average Condition
WS38	4.00	3.00	4.00	3.67
WS39	3.00	3.00	4.00	3.33
WS40	4.00	3.00	4.00	3.67
WS41	3.00	1.00	4.00	2.67
WS42	3.00	3.00	3.50	3.17
WS43	3.00	3.00	3.00	3.00
WS45	3.00	1.00	3.00	2.33

Appendix 8. Floodgate Valuation Summaries

	Pipe			Floodgate			Headwall		
Asset ID	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
A1	11771.98	10477.06	117.72	1338.70	970.56	33.47	9851.85	8925.61	84.20
A1A	4389.00	4240.18	37.21	1338.70	1204.83	33.47	27351.85	26416.75	233.78
A1B	15604.66	14149.58	132.28	3741.22	2712.39	93.53	0.00	0.00	0.00
A2	2011.68	1824.10	17.05	772.20	559.85	19.31	0.00	0.00	0.00
A3	2709.63	2250.24	22.97	554.40	459.63	4.74	0.00	0.00	0.00
A4	5029.20	4006.02	42.63	772.20	613.80	6.60	3558.33	2828.42	30.41
A5	2011.68	1602.41	17.05	926.64	794.26	26.48	0.00	0.00	0.00
A6	2390.85	2188.18	20.27	501.60	458.73	4.29	10555.56	9653.37	90.22
A7	3771.90	2045.29	31.97	772.20	415.80	6.60	0.00	0.00	0.00
A8	4274.82	3767.49	36.24	900.90	849.42	25.74	0.00	0.00	0.00
A9	2390.85	2005.77	20.27	554.40	526.68	13.86	0.00	0.00	0.00
A10	5532.12	4406.63	46.90	913.77	868.08	22.84	0.00	0.00	0.00
A11	2514.60	2003.01	21.32	900.90	283.14	25.74	0.00	0.00	0.00

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
A12	1684.78	1342.02	14.28	900.90	716.10	7.70	0.00	0.00	0.00
A13	9216.90	7732.40	78.13	1487.44	1245.89	12.71	0.00	0.00	0.00
A14	2194.50	1655.02	18.60	1487.44	1118.76	12.71	0.00	0.00	0.00
A15	1508.76	1329.70	12.79	900.90	793.10	7.70	4579.38	4028.88	39.14
A16	4389.00	3682.10	37.21	1487.44	1245.89	12.71	0.00	0.00	0.00
A17	2514.60	1896.43	21.32	900.90	677.60	7.70	422.40	116.16	10.56
A18	14126.38	10029.72	141.26	1398.20	1051.64	11.95	1188.00	326.70	29.70
A19	7900.20	4953.53	66.97	1546.94	1480.83	13.22	332.64	0.00	8.32
A20	5643.00	4016.59	47.84	868.27	615.95	7.42	1108.80	166.32	27.72
A21	3511.20	2499.21	29.76	1487.44	1055.20	12.71	0.00	0.00	0.00
A22	14214.73	10117.80	120.50	2651.73	1881.14	22.66	8866.67	6290.03	75.78
A23	15555.54	11072.17	131.86	1780.90	1263.37	15.22	7600.00	5391.45	64.96
A24	2508.00	1785.15	21.26	868.27	615.95	7.42	0.00	0.00	0.00
A25	2633.40	1651.18	22.32	1338.70	1281.49	11.44	0.00	0.00	0.00
A26	7590.00	0.00	253.02	1653.23	1031.50	14.13	5700.00	3556.41	48.72

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
A27	102345.76	72847.98	867.58	2077.72	1371.29	20.78	6755.56	4792.40	57.74
A28	37586.84	26753.67	318.62	2817.47	1998.72	24.08	0.00	0.00	0.00
A29	6791.40	0.00	226.40	1780.90	1263.37	15.22	21392.59	15175.94	182.84
A30	1143.58	754.76	11.44	772.20	547.80	6.60	0.00	0.00	0.00
A31	12793.22	7479.28	108.45	2077.72	1207.56	17.76	8444.44	4907.88	72.17
A32	9417.58	6215.60	94.18	1427.95	1403.54	12.20	20.44	14.50	0.17
A33	3350.79	2243.01	28.40	1623.70	216.49	36.08	19844.44	13229.63	169.61
A35	1881.00	1338.86	15.95	868.27	212.24	19.29	9360.00	6640.00	80.00
A36	6666.66	4745.22	56.51	1780.90	1526.49	50.88	17100.00	12130.77	146.15
A37	5483.12	3902.79	46.48	1623.70	46.39	46.39	12930.56	9172.96	110.52
A38	8884.21	6323.63	75.31	2651.73	1881.14	22.66	40.25	28.55	0.34
A39	5705.70	5028.56	48.37	1338.70	870.15	33.47	5066.67	4460.40	43.30
A40	9999.99	6693.98	84.77	1780.90	237.45	39.58	0.00	0.00	0.00

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
A41	27110.27	24122.70	229.81	3928.28	2651.59	98.21	0.00	0.00	0.00
A42	8222.21	5852.43	69.70	1929.31	1757.81	42.87	21040.74	14926.34	179.84
A43	10234.58	5884.88	127.93	2077.72	507.89	46.17	14988.89	10633.14	128.11
A44	2011.68	1431.88	17.05	772.20	188.76	17.16	5084.19	3594.30	43.45
A45	11319.00	0.00	377.33	1780.90	1035.05	15.22	12103.70	7034.63	103.45
A47	3317.53	0.00	127.60	1487.44	363.60	33.05	0.00	0.00	0.00
A48	3795.00	0.00	126.51	1398.20	932.13	31.07	16161.73	14089.71	138.13
A49	4554.00	683.04	113.85	1338.70	624.73	29.75	10766.67	8558.12	92.02
WW1	2633.40	1874.41	22.32	1487.44	467.48	42.50	3660.00	2909.23	31.28
WW2	14126.38	9323.40	141.26	1338.70	1185.71	38.25	0.00	0.00	0.00
WW3	6791.40	0.00	226.40	2077.72	969.60	46.17	9007.41	7159.73	76.99
WW4	39535.80	28140.92	335.14	4115.34	2821.95	117.58	0.00	0.00	0.00
WW5	4389.00	3124.02	37.21	1487.44	694.14	33.05	7320.00	5818.46	62.56

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WW6	9055.20	0.00	301.86	1780.90	1583.02	39.58	9963.33	7919.57	85.16
PB11	19311.60	13745.67	163.70	1338.70	624.73	29.75	79.86	31.94	2.00
PB8	1684.78	1199.20	14.28	900.90	420.42	20.02	2058.75	1636.44	17.60
PB9	1508.76	1073.91	12.79	772.20	686.40	17.16	0.00	0.00	0.00
PB4	5885.99	5650.55	58.86	1338.70	1219.70	29.75	0.00	0.00	0.00
PB5	8888.88	6326.95	75.35	1780.90	831.09	39.58	0.00	0.00	0.00
PB6	8888.88	6326.95	75.35	1780.90	1750.46	15.22	0.00	0.00	0.00
A30A	9619.55	9234.77	96.20	2077.72	2006.68	17.76	316.80	285.12	7.92
PO1	10234.58	7284.80	86.76	2077.72	1985.37	46.17	594.00	89.10	14.85
PO2	2194.50	1562.01	18.60	1546.94	721.91	34.38	36.77	0.00	1.84
PO3	46750.00	41201.82	396.30	4863.59	4585.67	138.96	15000.00	13205.13	128.21
PO4	95901.14	68260.81	812.95	5611.83	5362.42	124.71	24269.41	17143.87	207.43
PO5	3017.52	2147.82	25.58	900.90	860.86	20.02	0.00	0.00	0.00
PO6	27500.00	21905.20	233.12	4489.47	4289.93	99.77	137.28	54.91	3.43

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
PO7	7461.30	6259.57	63.25	1487.44	694.14	33.05	0.00	0.00	0.00
PO8	2011.68	1602.41	17.05	772.20	360.36	17.16	0.00	0.00	0.00
PO9	2011.68	1431.88	17.05	772.20	360.36	17.16	0.00	0.00	0.00
PO10	64819.36	46137.32	549.47	3741.22	3325.53	83.14	1166.88	175.03	29.17
PO11	3520.44	3132.49	29.84	900.90	849.42	25.74	712.80	481.14	17.82
PO12	105264.19	88310.09	892.32	5237.71	2444.27	116.39	34166.67	28618.23	292.02
PO13	4455.00	0.00	148.51	455.40	143.13	13.01	0.00	0.00	0.00
PO14	1259.18	842.89	10.67	13169.10	11287.80	376.26	16346.88	14303.52	408.67
S1	3046.18	2168.22	25.82	1623.70	1151.86	13.88	18577.78	13179.11	158.78
WO1	3960.00	0.00	132.01	772.20	485.38	22.06	0.00	0.00	0.00
WO2	2633.40	981.48	22.32	1338.70	841.47	38.25	7740.74	6880.66	66.16
WO3	269.08	69.96	2.69	772.20	274.56	17.16	0.00	0.00	0.00
WO4	5555.55	2070.58	47.09	1780.90	237.45	39.58	0.00	0.00	0.00

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WO5	2263.14	843.48	19.18	772.20	737.88	17.16	0.00	0.00	0.00
WO6	1508.76	562.32	12.79	772.20	102.96	17.16	0.00	0.00	0.00
WO7	2633.40	981.48	22.32	1338.70	1219.70	29.75	0.00	0.00	0.00
WO8	3950.10	1472.22	33.48	1338.70	1279.20	29.75	0.00	0.00	0.00
WO9	2488.15	1148.36	95.70	1780.90	1583.02	39.58	7037.04	5894.27	60.15
WO10	2633.40	2320.87	22.32	1338.70	803.22	38.25	0.00	0.00	0.00
WO11	22000.00	10996.90	186.49	4489.47	598.60	99.77	18000.00	12000.00	153.85
WO12	8955.25	4476.36	75.91	2077.72	1296.35	17.76	11962.96	7464.07	102.25
WO13	5016.00	2507.29	42.52	868.27	405.19	19.29	0.00	0.00	0.00
WO15	5555.55	2164.77	47.09	1780.90	237.45	39.58	12666.67	8444.44	108.26
WO16	36010.76	18000.30	305.26	3741.22	2351.63	106.89	25555.56	22716.05	218.42
WO18	8888.88	4066.43	75.35	1929.31	791.02	19.29	11259.26	5581.51	96.23
WO19	23027.80	8582.56	195.21	2077.72	1267.41	20.78	7037.04	4691.36	60.15
WO20	3135.00	1168.43	26.58	868.27	529.64	8.68	10555.56	7037.04	90.22

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WO21	1881.00	701.06	15.95	911.68	866.10	9.12	0.00	0.00	0.00
WO22	1207.01	449.86	10.23	900.90	549.55	9.01	654.22	436.15	5.59
WS1	28429.46	16620.67	241.00	2651.73	2538.41	22.66	7037.04	4089.90	60.15
WS2	5266.80	3079.12	44.65	1338.70	1315.82	11.44	11540.74	6707.44	98.64
WS3	72021.51	65916.27	610.52	3741.22	3527.44	106.89	19891.36	18191.24	170.01
WS4	10533.60	8837.03	89.29	1338.70	624.73	29.75	12948.15	10845.46	110.67
WS5	3511.20	2052.75	29.76	1487.44	1182.33	12.71	4222.22	2453.94	36.09
WS6	315218.97	251088.55	2672.10	20576.72	9602.47	457.26	14637.04	11634.57	125.10
WS7	27777.75	12707.60	235.47	1780.90	1704.79	15.22	7075.97	4089.90	60.48
WS8	27777.75	12707.60	235.47	1780.90	1701.75	39.58	17522.22	13927.92	149.76
WS9	17768.41	8128.59	150.62	2651.73	1237.48	58.93	0.00	0.00	0.00
WS10	3511.20	1606.28	29.76	1487.44	694.14	33.05	0.00	0.00	0.00
WS11	27842.10	12737.04	236.02	2817.47	1314.82	62.61	0.00	0.00	0.00

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WS12	8778.00	4015.71	74.41	1487.44	1182.33	12.71	0.00	0.00	0.00
WS13	19189.83	8778.85	162.67	2077.72	1651.52	17.76	11259.26	6543.84	96.23
WS14	63934.09	29248.19	541.97	5985.96	5883.63	51.16	0.00	0.00	0.00
WS15	4389.00	2007.85	37.21	1338.70	1064.09	11.44	12948.15	10292.12	110.67
WS16	8778.00	4015.71	74.41	1487.44	1182.33	12.71	12948.15	8078.76	110.67
WS17	18277.05	8361.28	154.93	1623.70	1290.64	13.88	9987.78	7939.00	85.37
WS18	5266.80	2409.42	44.65	1487.44	1182.33	12.71	12244.44	7116.43	104.65
WS19	31983.05	14631.42	271.12	2077.72	1651.52	17.76	9851.85	7830.96	84.20
WS20	3511.20	1606.28	29.76	1338.70	1189.96	29.75	8444.44	5990.50	72.17
WS21	13167.00	6023.56	111.62	1487.44	1421.34	33.05	11540.74	11343.46	98.64
WS22	16666.65	7624.56	141.28	1780.90	831.09	39.58	4880.04	3461.91	41.71
WS23	4389.00	2007.85	37.21	1368.45	1087.74	11.70	12244.44	7116.43	104.65
WS24	12184.70	5574.18	103.29	1623.70	1290.64	13.88	6980.51	4049.00	59.66
WS25	22222.20	10166.08	188.38	1780.90	1415.59	15.22	16445.56	9558.10	140.56

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WS26	13167.00	6023.56	111.62	1487.44	1182.33	12.71	12033.33	6993.73	102.85
WS27	10972.50	5019.63	93.01	1338.70	1281.49	11.44	8444.44	4907.88	72.17
WS28	17768.41	8128.59	150.62	2651.73	2107.79	22.66	29275.96	17000.00	250.22
WS29	7022.40	3212.57	59.53	1338.70	1064.09	11.44	12244.44	7116.43	104.65
WS30	19999.98	9149.47	169.54	1780.90	712.36	44.52	8444.44	5629.63	72.17
WS31	84058.39	38454.53	712.56	14590.77	14341.35	124.71	208000.00	120888.89	1777.78
WS32	22222.20	10166.08	188.38	1988.67	1580.74	17.00	0.00	0.00	0.00
WS33	59999.94	27448.42	508.62	1899.63	1818.45	16.24	10133.33	5889.46	86.61
WS34	11111.10	5083.04	94.19	1899.63	1509.96	16.24	10489.88	6096.68	89.66
WS35	4389.00	2007.85	37.21	1427.95	1135.03	12.20	5770.37	3353.72	49.32
WS36	4389.00	2007.85	37.21	1338.70	1064.09	11.44	4222.22	2453.94	36.09
WS37	14404.30	6589.59	122.10	3367.10	3223.21	28.78	18671.60	10851.87	159.59
WS38	25586.44	11705.13	216.90	2077.72	2006.68	17.76	7740.74	4498.89	66.16

Asset ID	Pipe			Floodgate			Headwall		
	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation	Replacement Cost	DRC	Annual Depreciation
WS39	22638.00	0.00	565.96	2077.72	2042.20	17.76	0.00	0.00	0.00
WS40	4389.00	2007.85	37.21	1338.70	1292.93	11.44	71.38	53.53	1.78
WS41	12793.22	5852.57	108.45	2077.72	2006.68	17.76	25802.47	14996.31	220.53
WS42	8888.88	4066.43	75.35	1958.99	1871.92	43.53	0.00	0.00	0.00
WS43	12222.21	8699.56	103.61	1780.90	1622.60	39.58	0.00	0.00	0.00
WS45	8888.88	4066.43	75.35	1929.31	1533.55	16.49	18577.78	10797.34	158.78

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Appendix 9. NRC Emergency Fund paper

Files 815.2, 300.5

Report by Land Operations Manager Bob Cathcart, dated 5 December 2007.

PURPOSE

The purpose of this report is to establish criteria to enable the Council to:

- Use existing reserves to finance urgent hazard management, civil defence emergency management, biosecurity incursion work and similar; and
- To ensure the Chief Executive Officer has sufficient delegation to approve unbudgeted expenditure for the Targeted Land Management Rate Reserve.

MANDATE

The following Regional Community Outcomes apply to this proposal:

- Northland's residents are safe and healthy;
- Northland's infrastructure is developed in a sustainable way;
- Northland's environment is sustainably managed; and
- Northland is prosperous

The Council has responsibilities for flood risk reduction under the Soil Conservation and Rivers Control Act 1991, regional civil defence emergency management responsibilities via the CDEM Group under the Civil Defence Emergency Management Act 2002, and incursion response responsibilities under the Biosecurity Act 1993.

The funding and financial policies required by section 102 of the Local Government Act 2002, which form part of the Northland Community Plan 2006 – 2016, provide for the collection of the Targeted Land Management Rate. The Targeted Land Management Rate will specifically fund land and general river management planning, minor river works and pest plant and pest animal control functions that have a direct relationship to land. The proposed expenditure criteria included in this report comply with the council's funding and financial policies.

BACKGROUND

Activities carried out by the Land Operations Department include; hazard management, sustainable land management, and biosecurity. These activities are funded approximately 60% from the Land Management Rate and just over 30% from investment income, with the balance being met by user charges. Not included in these figures are physical works on the Awanui River and Kaihu River schemes, both of which are funded by way of special rates collected on a differential basis from the catchment areas of the two rivers.

The Land Management Rate Reserve is currently in the order of $1.9M.

The Land Management Rate is a targeted rate struck on a Land Value basis across all rateable land within the Northland Region and being a targeted rate, it can only be spent on the activities for which it was collected.

EMERGENCY WORKS

With the build up of the reserve to $1.9M the need for borrowing in the event of an emergency is significantly reduced and therefore the Council has not previously budgeted to fund emergency works. When the matter has been raised, the Council has considered that because of its low level of debt and high credit rating, it could borrow, should emergency works be required.

The Northland River Management Policy has been ratified by all four Northland Councils, and direct management of the Awanui and Kaihu River schemes, being the responsibility of the Northland Regional Council, it is appropriate to establish appropriate expenditure criteria and provide authority to the Chief Executive Officer (CEO) to incur expenditure of up to $500,000 to enable the Council

to fund agreed expenditure from the Land Management Rate Reserve. Criteria for acceptable expenditure could include the following:

1. Matching of Government and district contributions to provide financial assistance for repair work for significant events;
2. Restoration work affecting one or more rivers, following a major flooding event;
3. Urgent work to reduce the immediate flood risk;
4. Storm damage repairs within a special rating area under the Awanui River Flood Management Plan or the Interim Kaihu River Management Plan.

Following significant events the Government is prepared to provide financial assistance for repair work, but the Government contribution must be matched typically on a one third basis, by local, often Regional and District Council shares. Provided the Council is able to draw on appropriate reserves, it can actively participate in both the negotiations with Government and the remedial works programmes.

COMPLIANCE WITH FINANCIAL POLICIES AND PROCEDURES

The CEO is delegated to incur expenditure within Council approved budget. One of the purposes of this report is to request delegation to incur unbudgeted expenditure of up to $500,000, to be funded from the Targeted Land Management Rate Reserve. The background and guideline criteria for acceptable expenditure to be funded from the Targeted Land Management Rate Reserve are detailed above.

As required by the Council Treasury Management Policy, any proposal requiring the application of internal borrowing from Reserves, will be provided to Council for specific approval.

The 2007/08 Annual Plan and future planning documents and polices will include planned budgeted expenditure to be funded from this reserve, where such expenditure can be anticipated.

The decision to incur unbudgeted expenditure to restore or mitigate against unexpected storm and flooding events is considered to be part of the normal day to day operations of the Council and therefore will not require formal consideration of significance. Matters considered to be significant may require special consultative procedures with the community.

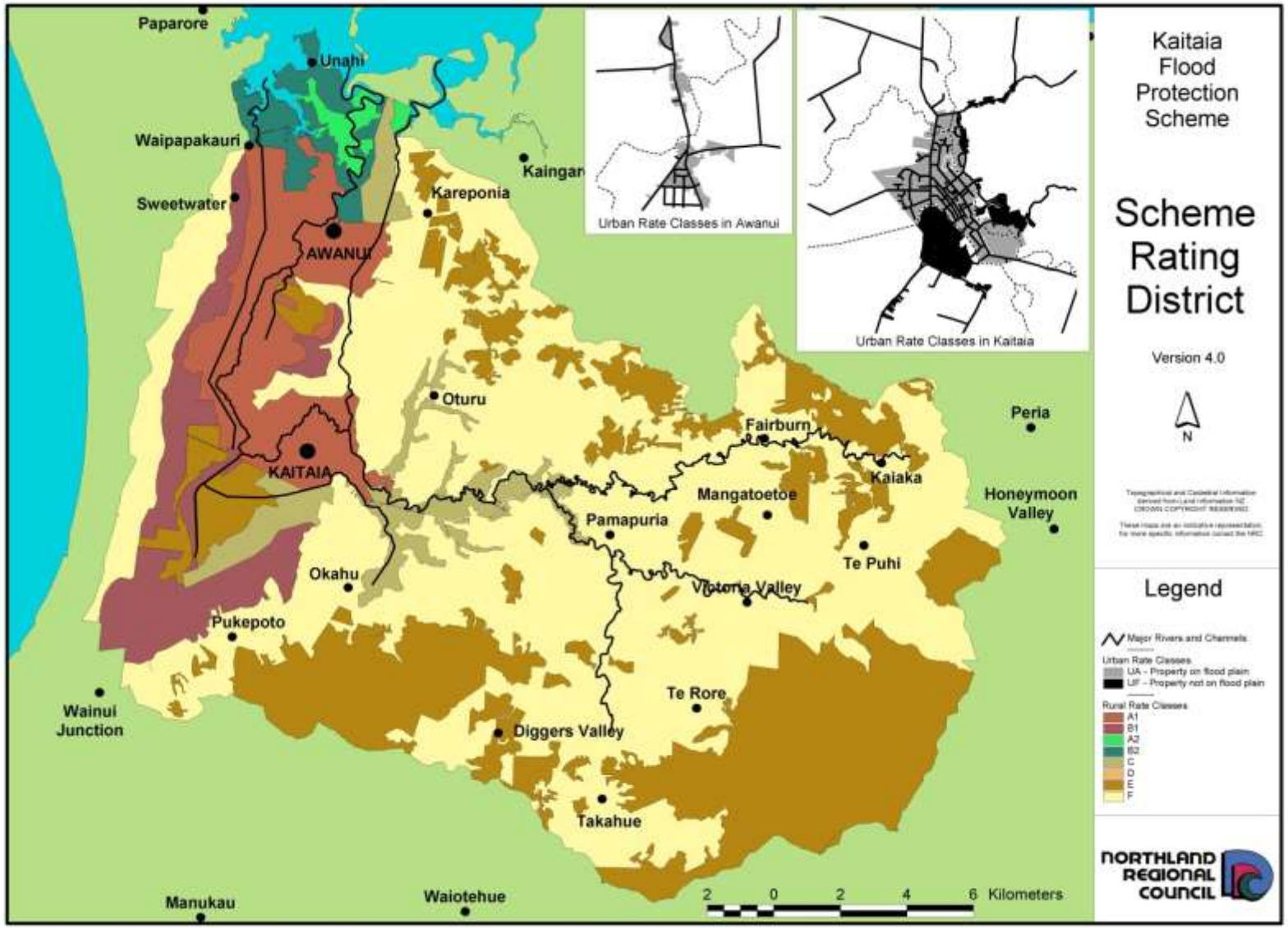
Recommendation

1. That the report Targeted Land Management Rate by the Land Operations Manager Bob Cathcart, dated 5 December 2007, be received.

2. That the Chief Executive Officer be authorised to approve expenditure of up to $500,000, as per the guideline criteria, for the allocation of funding for storm damage repairs and Civil Defence Emergency Management, from the Targeted Land Management Rate Reserve.

COMPLIANCE WITH THE DECISION-MAKING PROCESS

The activities detailed in this report are provided for in the Council's 2006-2016 Northland Community Plan, and as such are in accordance with the Council's decision-making process and sections 76-82 of the Local Government Act 2002.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Urban Rate Classes
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UF - Property not on flood plain
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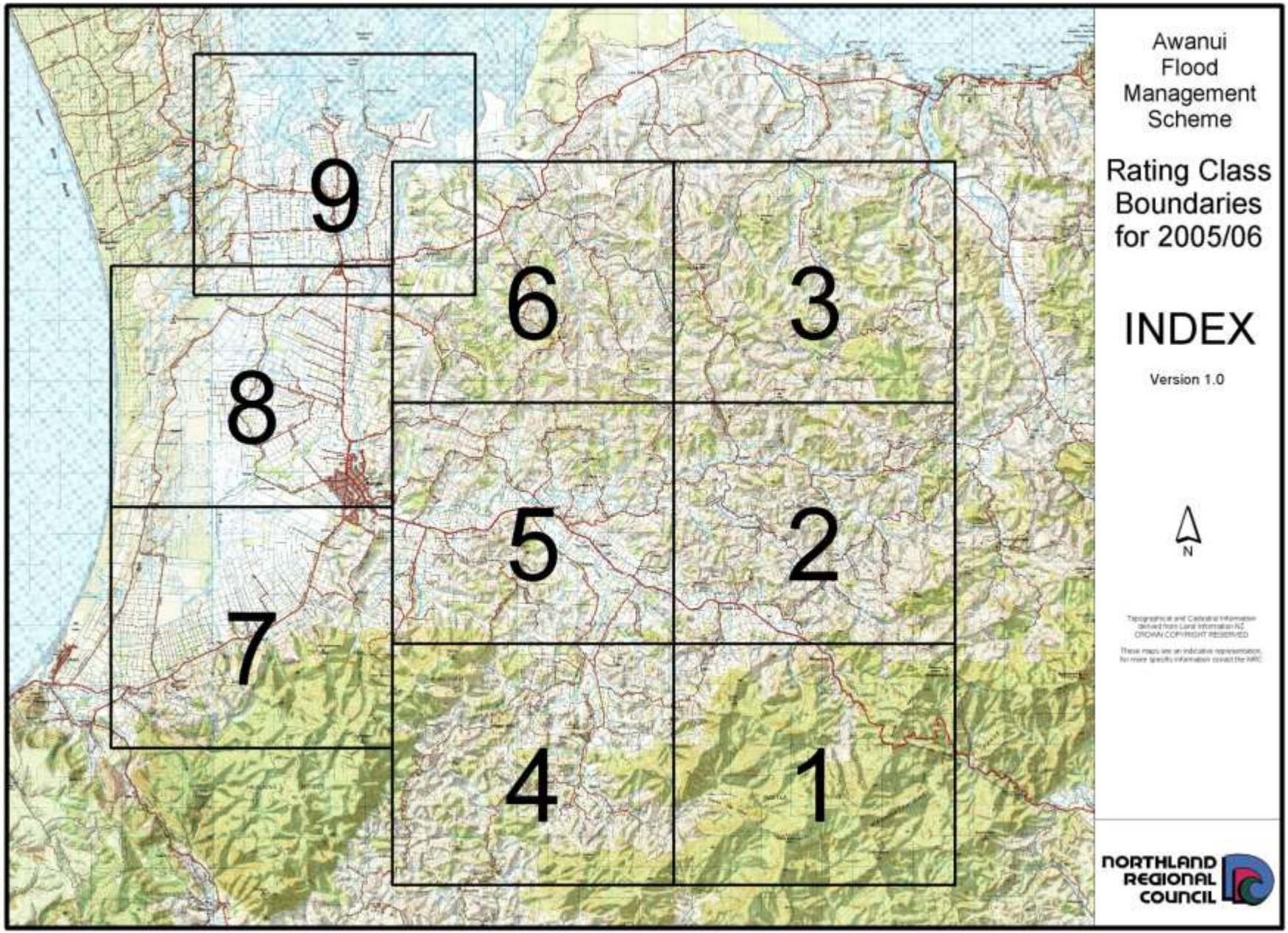
NORTHLAND REGIONAL COUNCIL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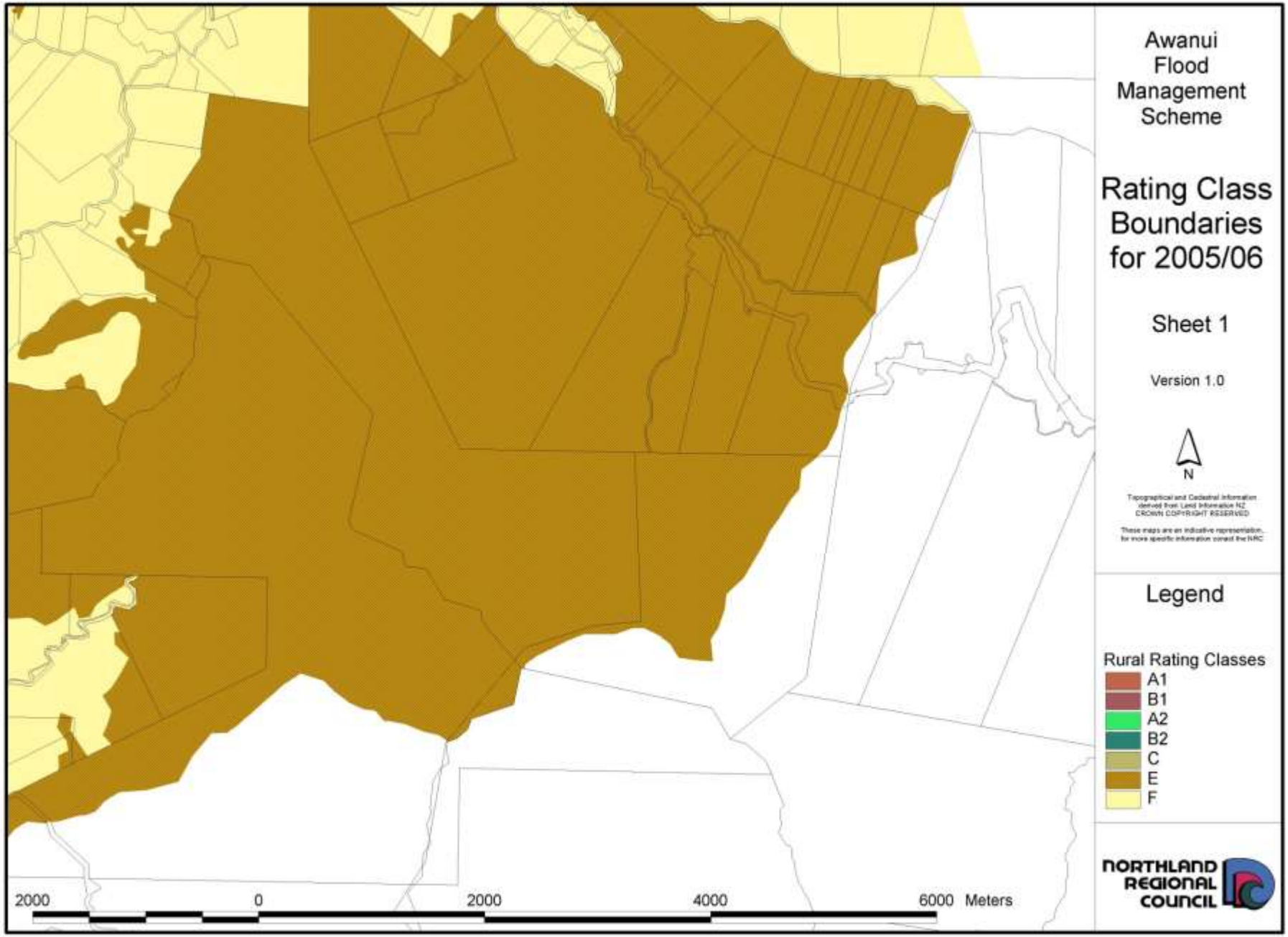
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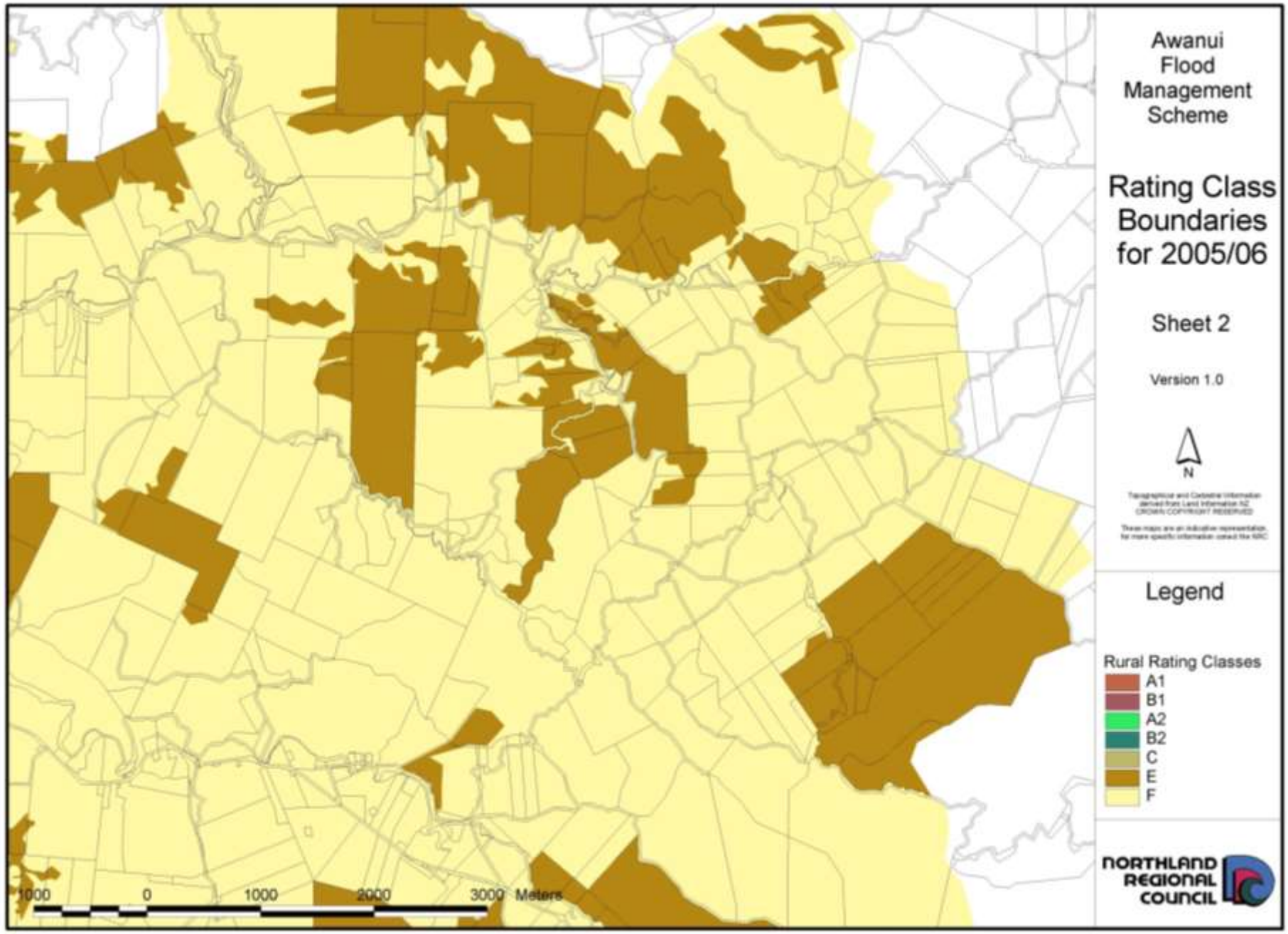
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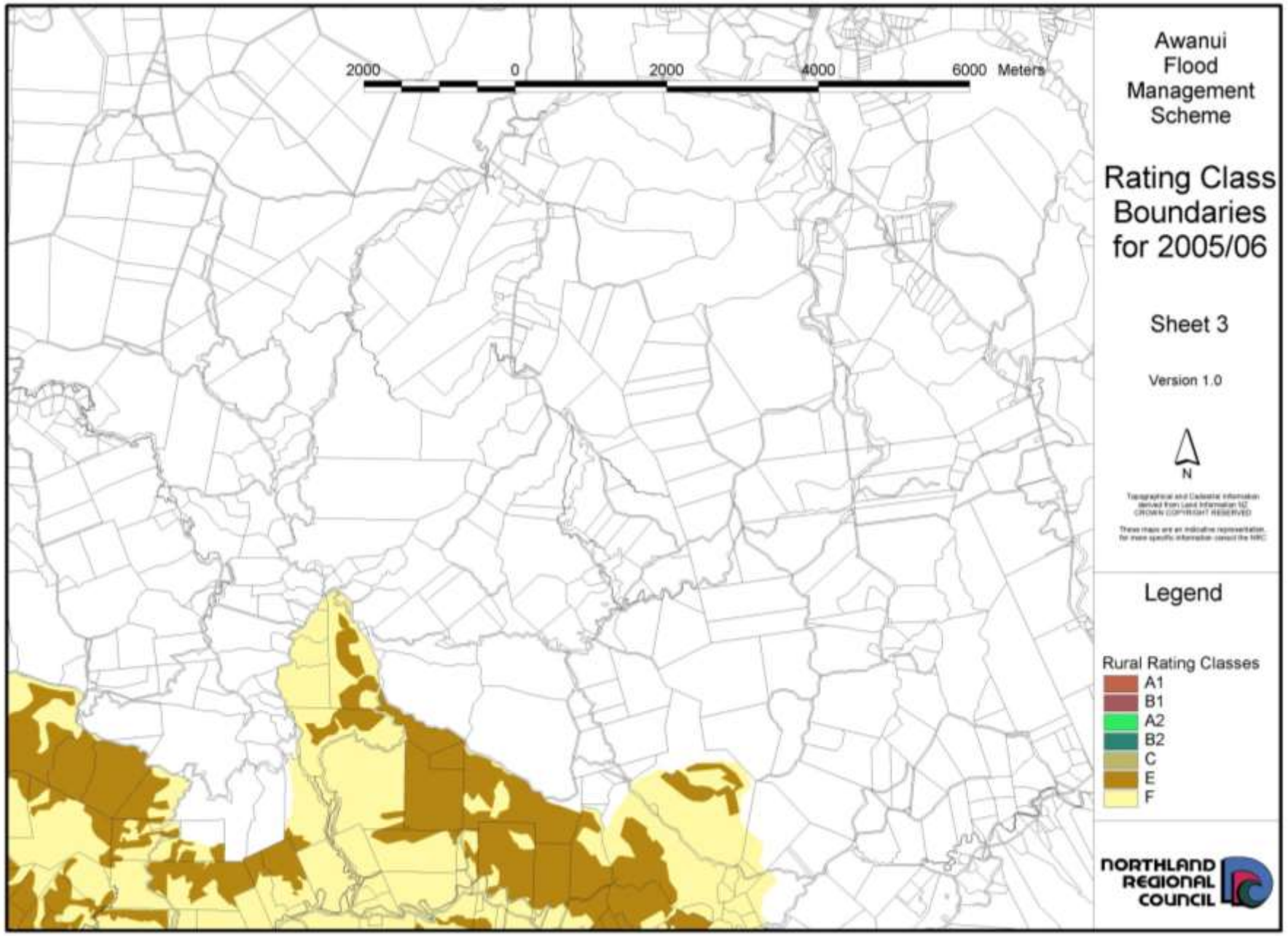
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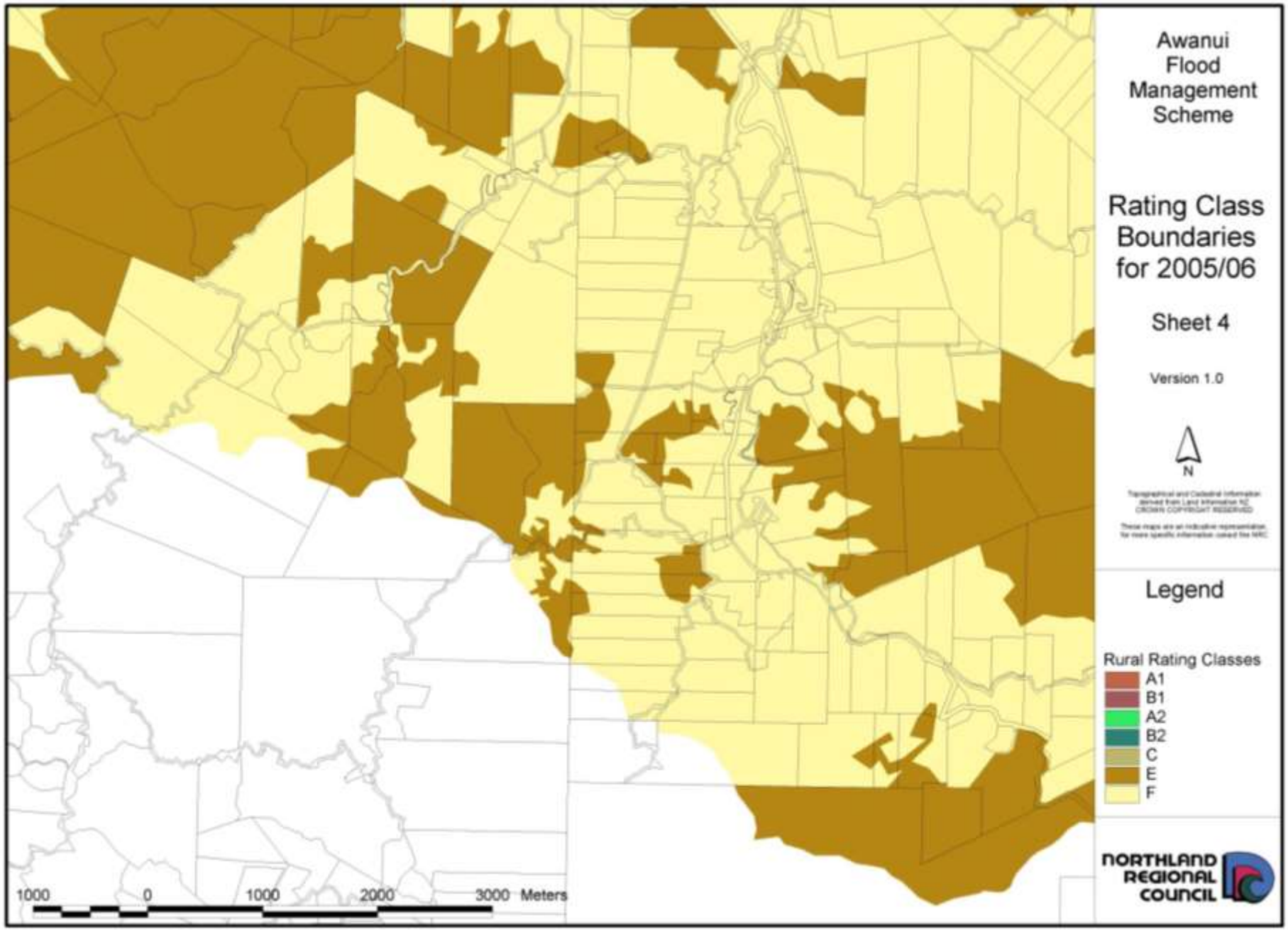
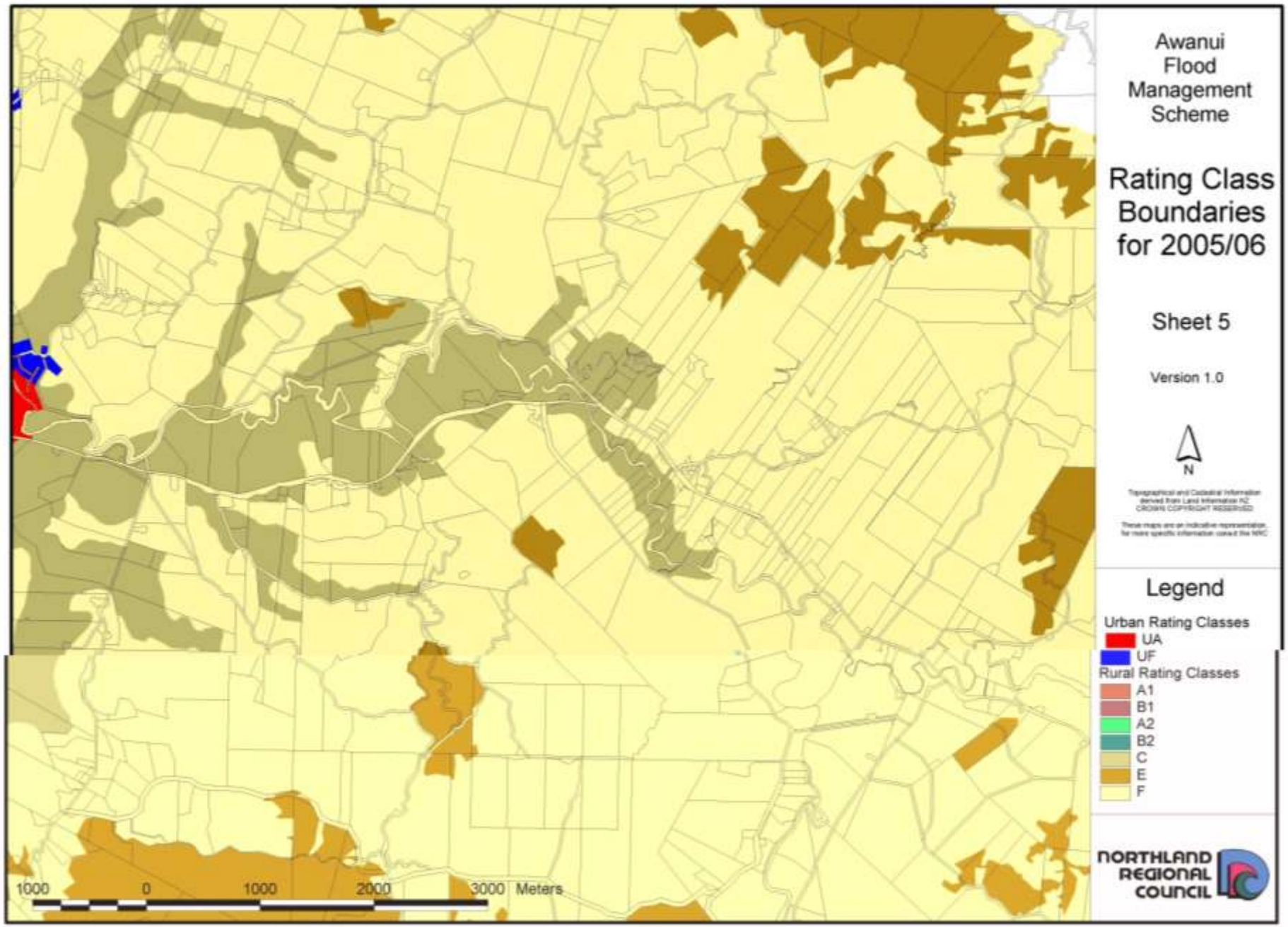
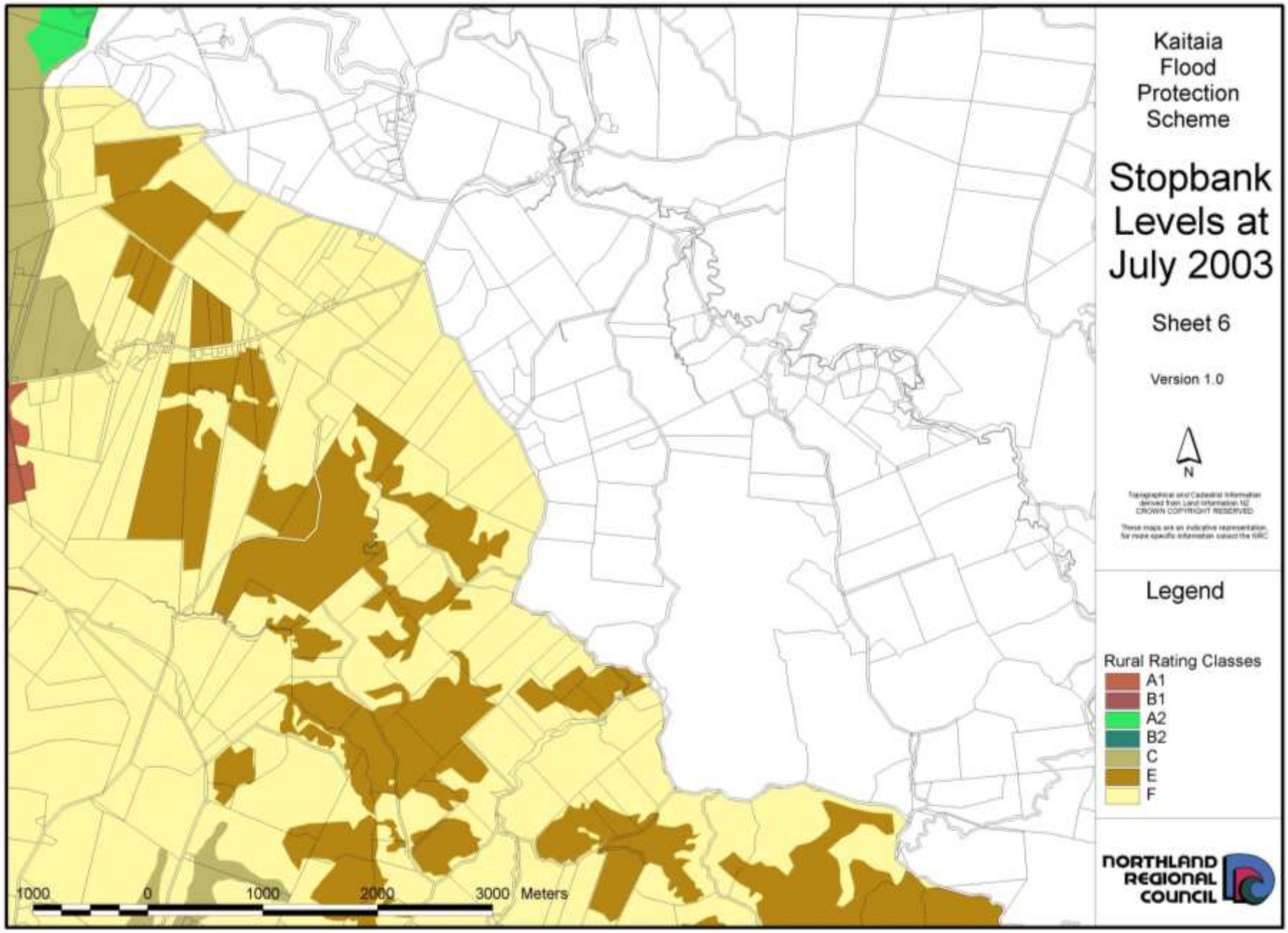
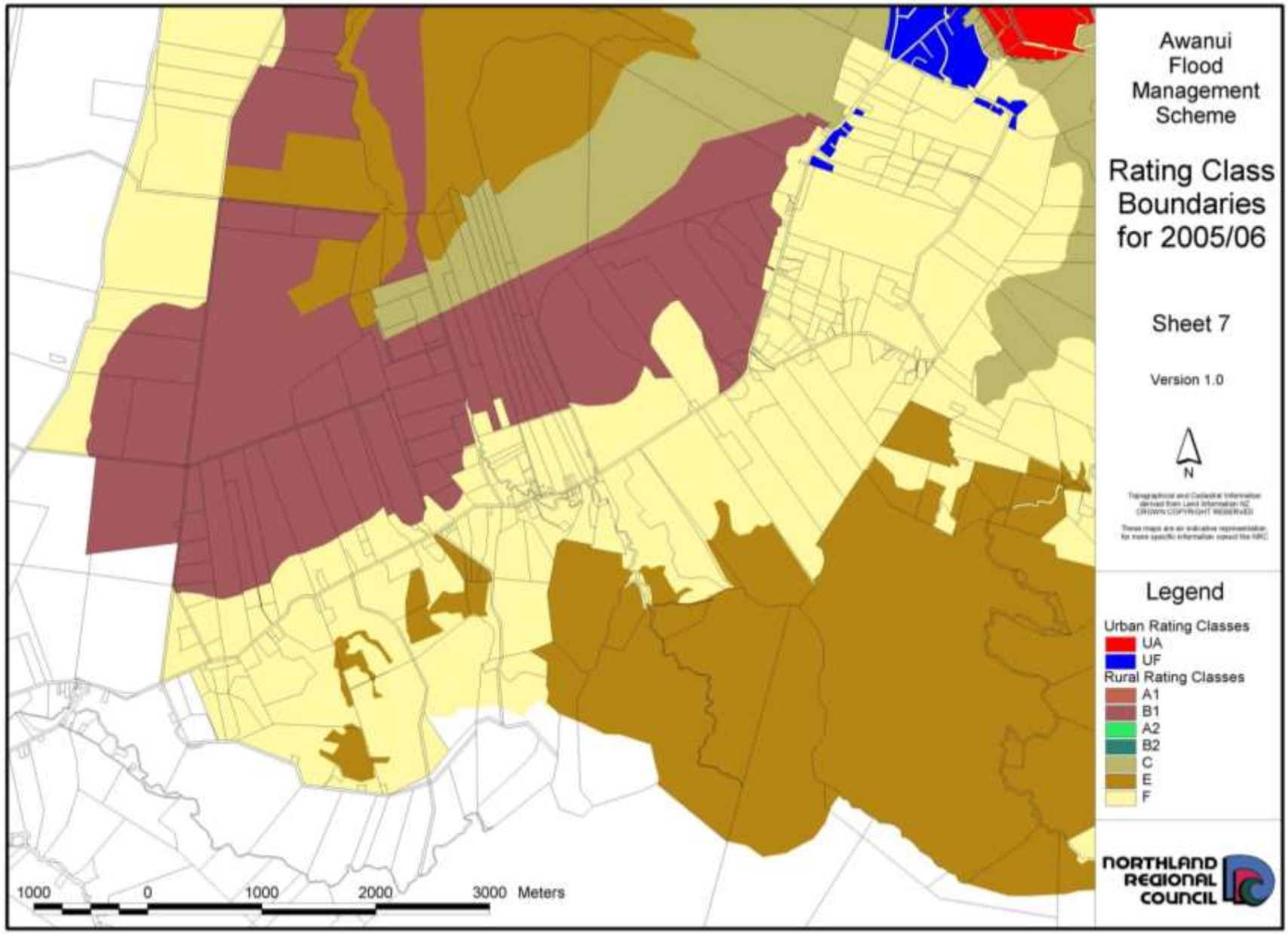
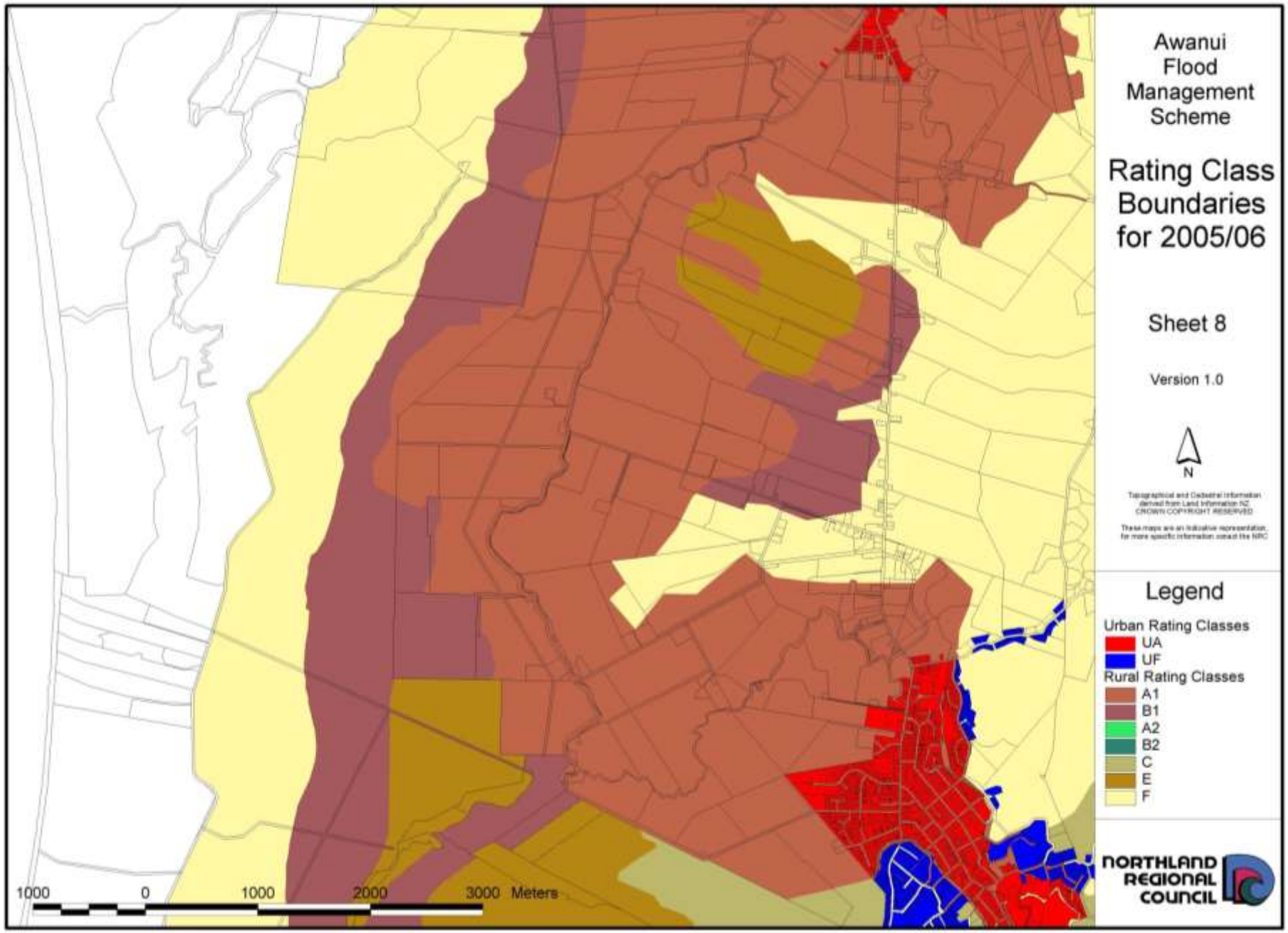
Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 3
Version 1.0
N
Legend
Rural Rating Classes
A1
B1
A2
B2
C
E
F
NORTHLAND
REGIONAL
COUNCIL

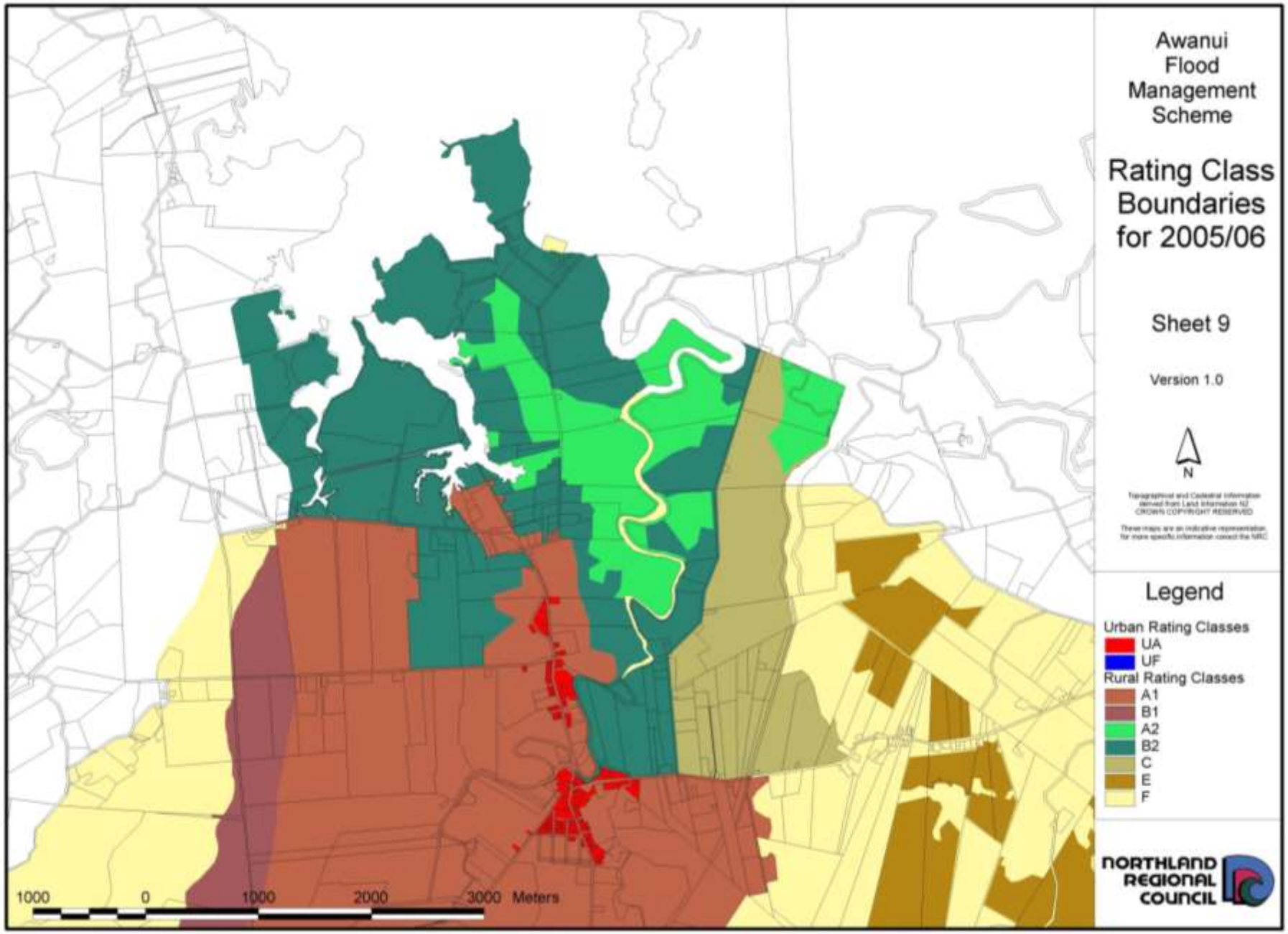

Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 4
Version 1.0
N
Legend
Rural Rating Classes
A1
B1
A2
B2
C
E
F
NORTHLAND
REGIONAL
COUNCIL
1000
0
1000
2000
3000 Meters


Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 5
Version 1.0
N
Legend
Urban Rating Classes
UA
UF
Rural Rating Classes
A1
B1
A2
B2
C
E
F
1000
0
1000
2000
3000 Meters
NORTHLAND
REGIONAL
COUNCIL


Kaitaia
Flood
Protection
Scheme
Stopbank
Levels at
July 2003
Sheet 6
Version 1.0
N
Legend
Rural Rating Classes
A1
B1
A2
B2
C
E
F
NORTHLAND
REGIONAL
COUNCIL
1000
0
1000
2000
3000 Meters


Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 7
Version 1.0
N
Legend
Urban Rating Classes
UA
UF
Rural Rating Classes
A1
B1
A2
B2
C
E
F
1000
0
1000
2000
3000 Meters
NORTHLAND
REGIONAL
COUNCIL


Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 8
Version 1.0
N
Legend
Urban Rating Classes
UA
UF
Rural Rating Classes
A1
B1
A2
B2
C
E
F
1000
0
1000
2000
3000 Meters
NORTHLAND
REGIONAL
COUNCIL


Awanui
Flood
Management
Scheme
Rating Class
Boundaries
for 2005/06
Sheet 9
Version 1.0
N
Legend
Urban Rating Classes
UA
UF
Rural Rating Classes
A1
B1
A2
B2
C
E
F
1000 0 1000 2000 3000 Meters
NORTHLAND
REGIONAL
COUNCIL

Appendix 10. Whangatane Spillway Condition Report – Prepared by Haigh Workman Limited 20 August 2013