



# Emergency Flood Plan

## Makino Flood Action Plan

Version 8.0  
May 2023

## DOCUMENT REVISION HISTORY

Version Number	Date	Who	Why
1.0	April 2010	Shane Bayley	Initial release
1.1	September 2010	Allan Cook	Post event operations review
2.0	October 2010	Shane Bayley	Post event multi-agency review
3.0	April 2011	Shane Bayley	Change requested from council
4.0	July 2011	Shane Bayley	Change requested from Ops
5.0	August 2011	Shane Bayley	Change requested from Ops
5.1	December 2012	Evan Lloyd	Minor updates
6.0	October 2015	Evan Lloyd	Minor updates
6.1	30 November 2015	Evan Lloyd	Minor updates
6.2	21 March 2016	Evan Lloyd	Minor updates
6.3	15 December 2016	Evan Lloyd	Minor updates
7.0	June 2017	Evan Lloyd	Changed as a result of remote control.
7.1	13 December 2018	Ross Brannigan	Updated contact lists
7.2	November 2019	Ross Brannigan	Minor changes only
7.3	June 2021	Jeanie Boost-Turner	Annual review. Change format of document, update contact lists
7.4	September 2021	Jeanie Boost-Turner	Amendments in consultation with Cameron Reid
7.5	February 2022	Jeanie Boost-Turner	Update new keypad access documentation for Makino Gates.
7.6	May 2022	Kyle Russell	Update for gate automation.
8.0	May 2023	Jeanie Ferry, David Rei Miller	Full review.

### Author

Shane Bayley  
Manager Emergency Management

**CONTACT** | 24hr Freephone 0508 800 800      help@horizons.govt.nz      www.horizons.govt.nz

SERVICE CENTRES	REGIONAL HOUSES	DEPOTS
<p><b>Kairanga</b> Cnr Rongotea &amp; Kairanga-Bunythorpe Rds Palmerston North</p> <p><b>Marton</b> Cnr Hammond &amp; Hair Sts</p> <p><b>Taumarunui</b> 34 Maata Street</p> <p><b>Woodville</b> Cnr Vogel (SH2) &amp; Tay Sts</p>	<p><b>Palmerston North</b> 11-15 Victoria Avenue</p> <p><b>Whanganui</b> 181 Guyton Street</p>	<p><b>Levin</b> 11 Bruce Road</p> <p><b>Taihape</b> Torere Road Ohotu</p>

**POSTAL ADDRESS** | Horizons Regional Council, Private Bag 11025, Manawatū Mail Centre, Palmerston North 4442 | F 06 9522 929

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# 1 Introduction

This Flood Action Plan (the Plan) has been developed as a joint effort between staff of Horizons Regional Council (HRC or Horizons) and Manawatū District Council (MDC) in order to coordinate responses to a potential flood from the Makino Stream and/or the operation of the Reid Line diversion. The Plan outlines the actions of staff and contractors of both councils at various river heights. The Plan also provides guidance to the Local and Group Controllers for Civil Defence and emergency services.

## 1.1 Description of the Risk

The Makino Stream is a small stream that runs north to south through the township of Feilding and joins with the Oroua River at Awahuri. The Kiwitea Stream also runs north to south along the eastern edge of Feilding and joins the Oroua River on the eastern edge of Feilding. The Oroua River runs NE–SW along the edge of Feilding with the township on one side and farmland on the other. Following the February 2004 floods, HRC constructed a diversion structure on the Makino Stream in order to divert excess flows (up to 50 cumecs<sup>1</sup>) from the Makino Stream into the Kiwitea Stream (and consequently into the Oroua River) before the Makino Stream passes through Feilding. The diversion of this flow provides a 1 in 100 year level of protection to Feilding.

Ponding from overflows of the Makino Stream is expected to continue between Rata Street and Awahuri as the stream flattens out and covers farmland.

Maps depicting areas of potential flooding are contained in the Plan and include flooding areas based on 200-year flood modelling, evidence from the 2004 flood event, plus a map showing all of these layers in a single overlay. Depending on the nature of the flooding (such as breach scenario or longer return period), these extents may change and emergency responses should adapt accordingly.

## 2 Objectives

The objectives of the Makino Flood Action Plan are to:

- a. manage the flood risk to Feilding to ensure the safety of the community;
- b. minimise damage to infrastructure and property;
- c. enable timely advice between HRC, MDC and emergency services in consideration of evacuation of the flood hazard zones of the Makino Stream; and
- d. ensure consistent understanding of HRCs operation of the Reid Line diversion structure.

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<sup>1</sup> 1 cumec = 1 m<sup>3</sup>/s (1 cubic metre per second). 1 m<sup>3</sup> = 1000 litres.

### 3 Gate Operation

The Makino Stream Diversion Gates are located towards the western end of Reid Line, Feilding and are accessed via Clare Court.

The main gates can be operated remotely using a tablet. This is normally done by the River Management Duty Officer (RMDO).

Before the main gates are closed, the slide gates<sup>2</sup> within the spillway need to be closed first to ensure that water diverted down the spillway doesn't flood out of it into neighbouring farms.

Slide gate operation has now been automated, but because of the number of them and the potential for blockages or other issues to impact their operation, it is advised to operate them remotely from site. This ensures that if there is a need to clear blockages, deal with issues or manually operate the slide gates, it can be done without significant delay.

### 4 Combined Plan of Action and Stage Heights

Events within the catchments impacting operation of the Makino Gates can be fast-moving and can develop very quickly, at times with only limited warning. This is due to the nature of parts of these catchments, weather radar coverage being less than complete in northern parts of the catchment, Feilding's location and topology, and capacity constraints within the MDC stormwater network in Feilding.

If there is any doubt as to how the situation may develop, response actions described in this plan should be initiated.

The following table has been developed in an effort to specify actions for agencies and individuals in relation to pre-determined stage heights at Reid Line. Other documents that support this plan are the:

- Horizons Emergency Response Manual
- Manawatū District Council Emergency Operations Centre Procedures

The MDC facilities are located at:

Emergency Operations Centre  
135 Manchester Street  
Feilding  
06 323 0000

Emergency Operations Centre (Alternate)  
Feilding Fire Station  
201 Kimbolton Road  
Feilding



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<sup>2</sup> Also referred to as guillotine gates or sluice gates. These are all terms for this type of valve, and have the same meaning.

The HRC Emergency Operations Centre is located at:

Te Ao Nui  
17 Victoria Avenue  
Palmerston North  
0508 800 800

Table 1: Combined Plan of Action

Severe weather forecast OR forecast flow @ Reid Line >15 cumecs OR forecast flow @ Rata Street > 50 cumecs			
<p><b>Note</b> - gates may operate if actual flow @ Reid Line &gt; 40 cumecs (approx) or Rata St &gt; 60 cumecs (approx)</p>			
 <b>Manawatū District Council</b>		 <b>Horizons Regional Council</b>	
		<b>River Management Duty Officer (RMDO)</b>	<ul style="list-style-type: none"> <li>Monitor weather forecast for rain</li> <li>Check this FAP.</li> <li>Liaise with Environmental Data Duty Officer (EDDO) to ensure forecasted weather and data is correct.</li> <li>Advise EMDO of situation.</li> <li>Advise Incident Controller of situation.</li> </ul>
		<b>EDDO</b>	<ul style="list-style-type: none"> <li>Monitor MetService and Horizons network.</li> <li>Liaise with RMDO with weather warnings and/or network issues.</li> </ul>
		<b>EMDO</b>	<ul style="list-style-type: none"> <li>Decide whether briefing of staff other than Duty Officers is necessary, and if so organise it.</li> <li>Activate the EOC if instructed by the IC.</li> </ul>
		<b>Incident Controller (IC)</b>	<ul style="list-style-type: none"> <li>With reference to activation flowcharts, determine whether EOC activation is necessary and if so instruct the EMDO to organise this.</li> </ul>
		<b>Area Engineer – Central</b>	<ul style="list-style-type: none"> <li>Place field staff on standby for closing slide gates in spillway to enable main gate operation.</li> <li>Instruct field staff to travel to Makino Gates and close slide gates in spillway so main gate can be closed.</li> </ul>
<b>1.5 m @ Reid Line or 8-10 mm/hr Rainfall @ Halcombe or Cheltenham rain gauges</b>			
<p><b>Note</b> – rapidly rising flood levels may require the gates to be lowered proactively by the River Management Duty Officer if EOC is not fully operational.</p>			
<b>Duty Manager or Water Manager will:</b>	<ul style="list-style-type: none"> <li>Ensure that stormwater outlets from the MDC network to the Makino are checked and operable, including any flap gates</li> </ul>	<b>Interactive Voice Response (IVR)</b>	<ul style="list-style-type: none"> <li>Issue a 1.5 m river height notification of the Makino Stream to subscribers (e.g. MDC and landowners of the floodway).</li> </ul>
<b>Duty Manager or Roading Manager will:</b>	<ul style="list-style-type: none"> <li>Liaise with roading contractors to maintain a watching brief on the Makino Stream and its effects on Feilding streets – particularly the Denbigh St/York St area.</li> <li>Ensure roads are closed as necessary.</li> <li>Check Pharazyn Road flood barriers and key available.</li> <li>Monitor the Rata St – Awahuri ponding area and advise residents if necessary.</li> </ul>	<b>River Management DO</b>	<ul style="list-style-type: none"> <li>Advise EMDO that the Makino has reached the 1.5 m alarm level.</li> <li>Continually monitor water level at Derby St nibwall in the context of predicted flows and report to EOC.</li> <li>When water level is 400 mm below top of nibwall (or other predetermined level in Feilding as advised by EOC Operations Manager), lower the main gates.</li> <li>Manage the operation of the gates to maintain a water level 250 mm below the nibwall or other predetermined level in Feilding as advised by Incident Controller.</li> </ul>
<b>Emergency Management Officer will:</b>	<ul style="list-style-type: none"> <li>Activate the EOC at a low level to monitor responses and liaise with Horizons and emergency services.</li> <li>Advise a Local Controller.</li> <li>Advise the Emergency Management Committee.</li> <li>Advise the PIM.</li> </ul>	<b>EMDO</b>	<ul style="list-style-type: none"> <li>Consider whether EOC needs to be activated in partnership with the Incident Controller.</li> <li>Ensure that MDC is aware of the alarm.</li> </ul>
		<b>EMDO</b>	<ul style="list-style-type: none"> <li>Issue a gate operation alert to MDC and floodway landowners when flows are likely to be diverted down the floodway (IRIS Report – ‘Emergency Manual Dial Out’ ‘River Heights, Makino at Floodway’)</li> <li>Issue a further alert to MDC and landowners once gates are operated.</li> </ul>

<b>Local Controller will:</b>	<ul style="list-style-type: none"> <li>Fully activate EOC.</li> <li>Initiate a briefing (including a declarer) for response agencies.</li> <li>Consider whether door-to-door notification is required of residents in higher risk areas.</li> <li>Decide whether a Welfare Centre needs to be activated.</li> <li>Liaise with Horizons IC and Group Controller.</li> <li>Arrange for MDC staff to deploy flood barriers at Pharazyn Road before floodway flows overtop road.</li> <li>Liaise with MDC elected members.</li> </ul>	<b>EOC Operations Manager</b>	<ul style="list-style-type: none"> <li>Task field staff</li> <li>Monitor water levels in Feilding and Pharazyn Road.</li> <li>Organise the closure of all slide gates once spillway operation is confirmed.</li> <li>Direct gate operation based on observations from Ops field staff.</li> <li>Advise Incident Controller.</li> </ul>
		<b>Catchment Operations Field staff will</b>	<ul style="list-style-type: none"> <li>Monitor flood levels in Feilding and after gates lowered, at Pharazyn Rd and along floodway stopbank as required.</li> <li>Regularly relay intelligence to EOC Operations Manager.</li> </ul>
		<b>Planning &amp; Intelligence Manager</b>	<ul style="list-style-type: none"> <li>Prepare and provide situation reports.</li> <li>Liaise with MDC Planning &amp; Intelligence Manager.</li> </ul>
		<b>Logistics Manager</b>	<ul style="list-style-type: none"> <li>Conduct shift planning and monitoring to ensure excessive hours are not worked by individuals.</li> <li>Contact and provide purchase orders for all external contractors supplying goods and services.</li> <li>Provide for staff welfare i.e. food and drink, safety equipment, and communications equipment.</li> </ul>
		<b>Public Information Manager</b>	<ul style="list-style-type: none"> <li>Liaise with MDC PIM regarding messages to the public to ensure consistency of messages between authorities.</li> <li>Prepare and distribute Horizons media releases approved by the Horizons Incident Controller.</li> <li>Update Horizons website.</li> </ul>
<b>EOC Operations Manager</b>	<ul style="list-style-type: none"> <li>Coordinate Welfare Centre operations.</li> <li>Coordinate responses in the field, including door-to-door notifications if necessary.</li> </ul>	<b>Incident Controller</b>	<ul style="list-style-type: none"> <li>Ensure Council staff are responding in an appropriate, safe and coordinated manner.</li> <li>Approve Horizons media releases.</li> <li>Liaise with Horizons elected members.</li> <li>Liaise with Local Controllers.</li> </ul>
<b>Planning &amp; Intelligence Manager</b>	<ul style="list-style-type: none"> <li>Monitor implementation of this Plan.</li> <li>Receive intelligence and provide advice to the Controller.</li> <li>Prepare SITREPs and briefings as required.</li> <li>Maintain information in the EOC including maps and boards.</li> <li>Liaise with Horizons P&amp;I Manager.</li> </ul>	<b>Group Controller</b>	<ul style="list-style-type: none"> <li>Ensure an overview of this event is maintained in conjunction with concurrent events and liaise with Local Controllers</li> <li>Ensure coordinated Civil Defence messages are issued across the Region.</li> <li>Liaise with the National Emergency Management Agency and other Group level agencies, including Local Controllers.</li> </ul>
<b>Logistics Manager</b>	<ul style="list-style-type: none"> <li>Contact and provide purchase orders for all external contractors supplying goods and services.</li> <li>Prepare shift plans.</li> <li>Support EOC operations.</li> <li>Provide for staff welfare i.e. food and drink, safety equipment, and communications equipment.</li> </ul>	<b>Safety</b>	<ul style="list-style-type: none"> <li>Withdraw staff from hazardous areas or where the risk of isolation is significant.</li> </ul>
<b>Public Information Manager</b>	<ul style="list-style-type: none"> <li>Liaise with Horizons PIM.</li> <li>Prepare and distribute approved MDC media releases detailing the local response by MDC and emergency services – ensuring these are consistent with Horizons information.</li> <li>Provide media briefings.</li> <li>Update MDC website and social media.</li> </ul>		
<b>Predicted flow @ Reid Line &gt; 100 cumecs OR Rata Street &gt; 130 cumecs OR Kiwitea @ Spr Road &gt; 380 cumecs</b>			
<b>NOTE</b> - overflow of Kiwitea stopbanks occurs around 380 cumecs, with overland flow onto Makino flood plain.			
<b>EOC Operations Manager</b>	<ul style="list-style-type: none"> <li>Consider options for responding to an overdesign flood.</li> <li>Task staff to monitor Kiwitea Stream levels and any stopbank overflows at Bells Road.</li> </ul>	<b>Group Controller</b>	<ul style="list-style-type: none"> <li>Activate EOC/ECC to Level 4.</li> <li>If necessary, initiate a declarers briefing to consider Group declaration.</li> </ul>



<b>Local Controller</b>	<ul style="list-style-type: none"> <li>• Continue to coordinate MDC responses to this and any other emergencies happening at the time.</li> <li>• Liaise with Emergency Management Committee members.</li> <li>• Liaise with the Group Controller and Horizons EOC.</li> <li>• Initiate a declarer's briefing.</li> <li>• Ensure local media are updated.</li> </ul>	<b>EOC Operations Manager</b>	<ul style="list-style-type: none"> <li>• Consider options for responding to an over-design flood, in conjunction with P&amp;I Manager</li> <li>• Task staff to monitor Kiwitea Stream levels and any stopbank overflows at Bells Road.</li> </ul>
		<b>Incident Controller</b>	<ul style="list-style-type: none"> <li>• Continue to coordinate Horizons' response to the flood using EOC and field staff</li> </ul>

## 5 IVR Notification

The HRC Interactive Voice Response (IVR) system automatically notifies registered people when pre-determined river levels are reached. Recipients acknowledge receipt by pressing '1' on their telephone.

Certain positions at HRC and MDC with responsibility for actions in this plan have been identified to receive automatic alerts for the "Makino @ Reid Line" 1.5 m and 2.1 m levels. Those positions are:

### HRC

- River Management Duty Officers (RMDOs)
- Emergency Management Duty Officers (EMDOs)
- Environmental Data Duty Officers (EDDO)

### MDC

- EOC Operations Manager
- EOC Controllers
- Manawatū District Council Reception (06 323 0000)
- Emergency Management Officer

Owners of land along the floodway and other members of the public may also be subscribed to receive these alerts.

The IVR lists referred to above will be updated annually through a mail-out to registered people however they should also be reviewed at the same time the plan is reviewed.

## 6 Manual Alert to Floodway Landowners

A manual alert is to be issued to floodway landowners when flows are likely to be diverted down the floodway. A further alert will be issued when the gates are actually operated.

Contacts for the Makino Floodway Manual Dial-out list are held in Herman \\file\herman\PEM\05\01\01-Emergency Operations-Coordination Centre (EOC-ECC)\02 - ERM - Emergency Response Manual\Part 3 - Flood Management\Flood Action Plans\Flood Action Plan - Makino (Reid Line). The Senior Emergency Management Advisor is responsible for maintaining the contacts.

This list is to be reviewed and updated at the same time the plan is reviewed, and after each operation of the gates. It is best achieved by calling each person on the list and checking details.

## 7 Resource Needs

The following tables outline key resource needs for the primary organisations involved.

**Table 2: Resource Needs – Manawatū District Council**

Resource	Source	Location required	Time to deploy	Time on site
MDC staff/Higgins	Roading	Pharazyn Rd gates	1 hour	ASAP after 1.5m alarm

**Table 3: Resource Needs – Horizons Regional Council**

Resource	Source	Location required	Time to deploy	Time on site
Gate operators	HRC	Makino gates	1 hour	ASAP after 1.5m alarm

## 8 Information Flow

The following agencies and staff will be kept informed about changes and progress on this Plan:

Agency	Function Performed
Manawatū Local Controller (with EMO support)	local response coordination
Manawatū District Council EMO	Local warnings and local welfare response
Manawatū Police LO	Evacuation
Horizons Incident Controller	Flood Management
Horizons Emergency Management Duty Officer (EMDO)	Horizons initial response
Horizons Hydrology Duty Officer	Hydrology Data
Horizons River Management Duty Officer	Advice on flood potential & field operations
CDEM Group Controller	Response coordination during declared emergencies

## 9 Communications Plan

The passing of any urgent warning is to be by voice communication. Fax, email, voice message, SMS or any other method may be used as a 'heads-up' to the warning however the message will not be considered to have been passed until actual voice contact is made.

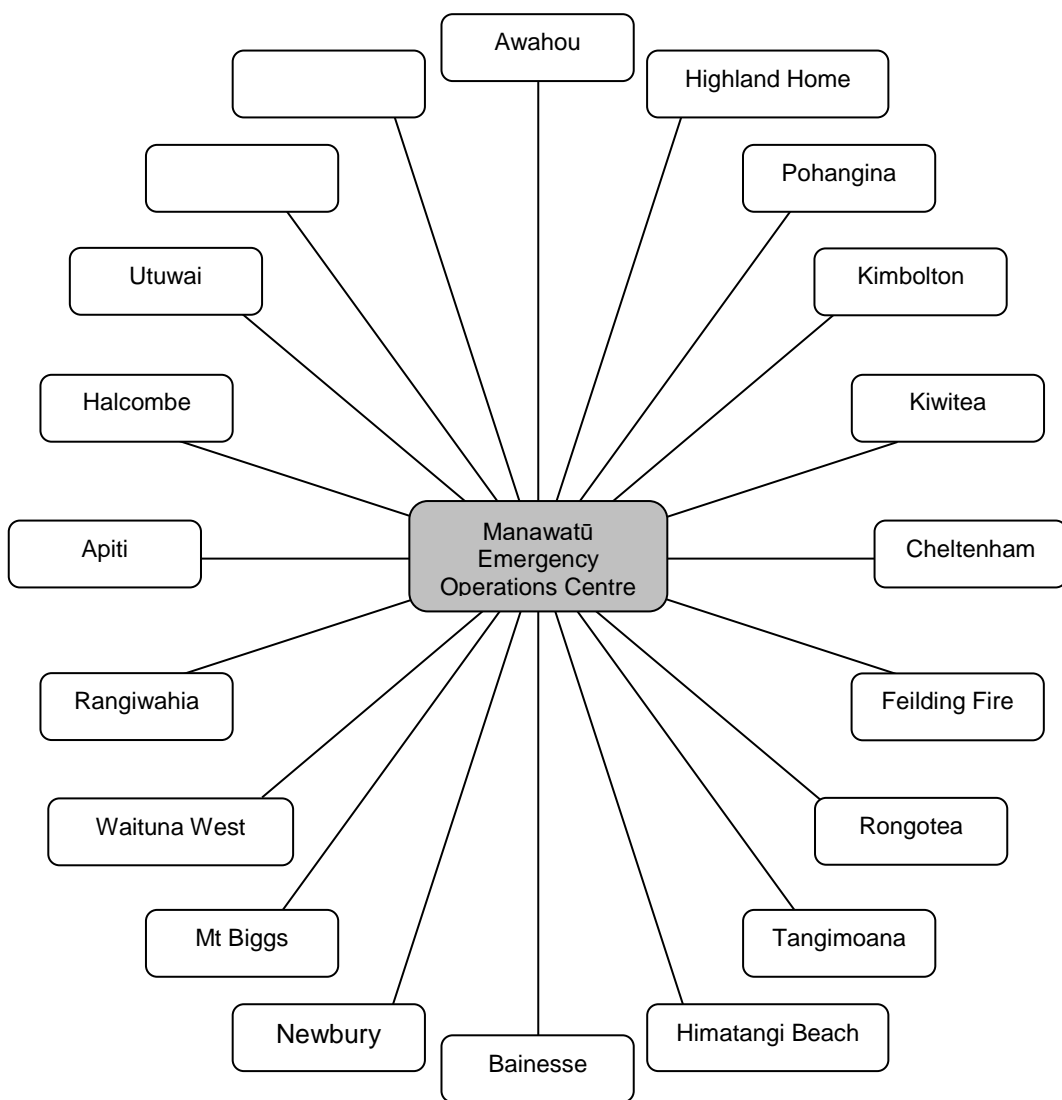
The HRC Manager Emergency Management Office will ensure that an appropriate means of communication is available for the coordination of this Plan. During an activation of the Horizons EOC, the EOC Operations Manager will ensure that such

means, and any other means introduced on the day, operate effectively for their intended purpose.

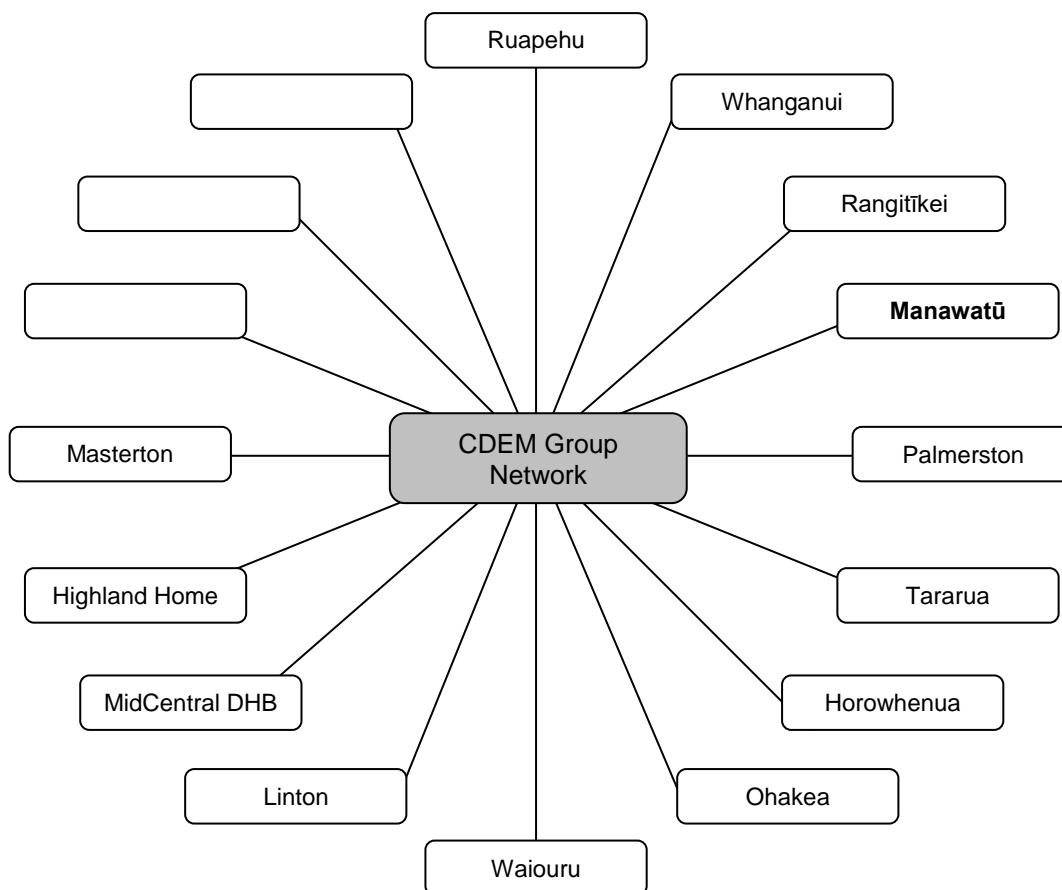
Contact details for HRC contractors and staff are maintained in the CDEM Contacts database. Contact details for agencies to be contacted by MDC are contained in MDC procedures.

Liaison with the media will be undertaken in a coordinated manner. Public Information staff from HRC and MDC will ensure that messages provided to the public are consistent. Statements to the media will focus on core business of council.

To assist in operational communications, radio networks have been established as a contingency plan for telecommunications failure. Network diagrams are given on the following pages.



**Figure 1: Emergency Management Radio Network – Manawatū District**



**Figure 2: Emergency Management Radio Network – CDEM Group**

Horizons and MDC also operate internal radio networks to support the continuation of council business.

## 10 Roles and Responsibilities

Organisation	Roles and Responsibilities
Horizons Regional Council	<ul style="list-style-type: none"> <li>• Activities of Horizons EOC and Group ECC (if required)</li> <li>• The height of the rivers</li> <li>• Flood monitoring, modeling and warnings</li> <li>• Flood protection/prevention works</li> <li>• Operation of the diversion</li> <li>• IVR river height warning system</li> <li>• Coordination of responses (if multiple districts affected)</li> </ul>
Manawatū District Council	<ul style="list-style-type: none"> <li>• Activities of Manawatū EOC</li> <li>• Evacuations</li> <li>• Road closures</li> <li>• Local CDEM coordination activities</li> <li>• Public actions to be taken</li> <li>• Emergency welfare arrangements</li> </ul>

## 11 Health and Safety

Staff deployed to the field face the greatest health and safety risks in this scenario. The council or contractors engaging staff in the field remain responsible for their health and safety. Councils' health and safety documents should address many of the issues staff will face. Communications between the employing EOC and field staff should be undertaken frequently to check the safety of staff.

Any EOC or ECC structure should involve a role dedicated to Health & Safety.

## 12 Distribution

### Controlled Copies

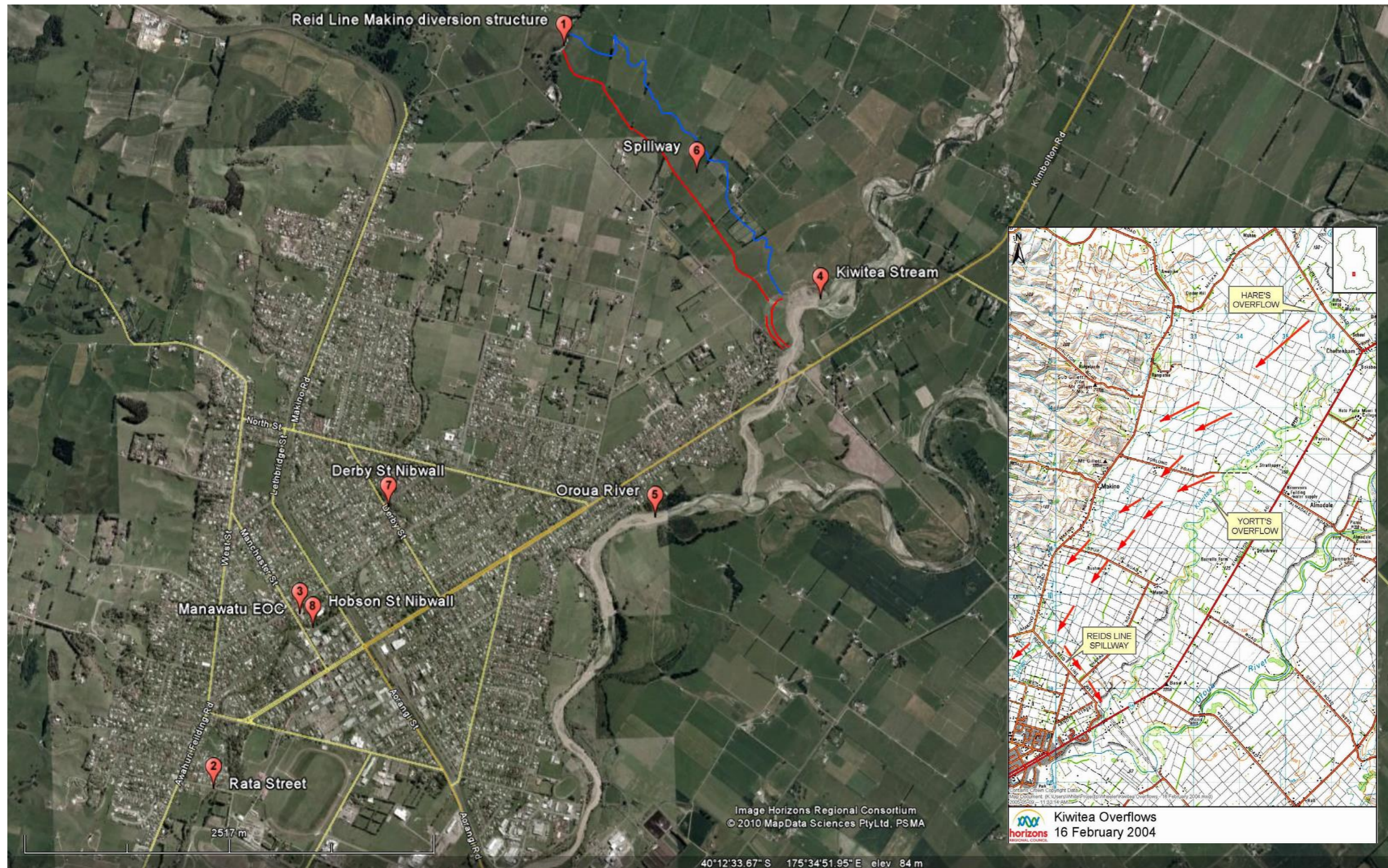
Horizons Emergency Response Manual - Part 3

As per ERM distribution list

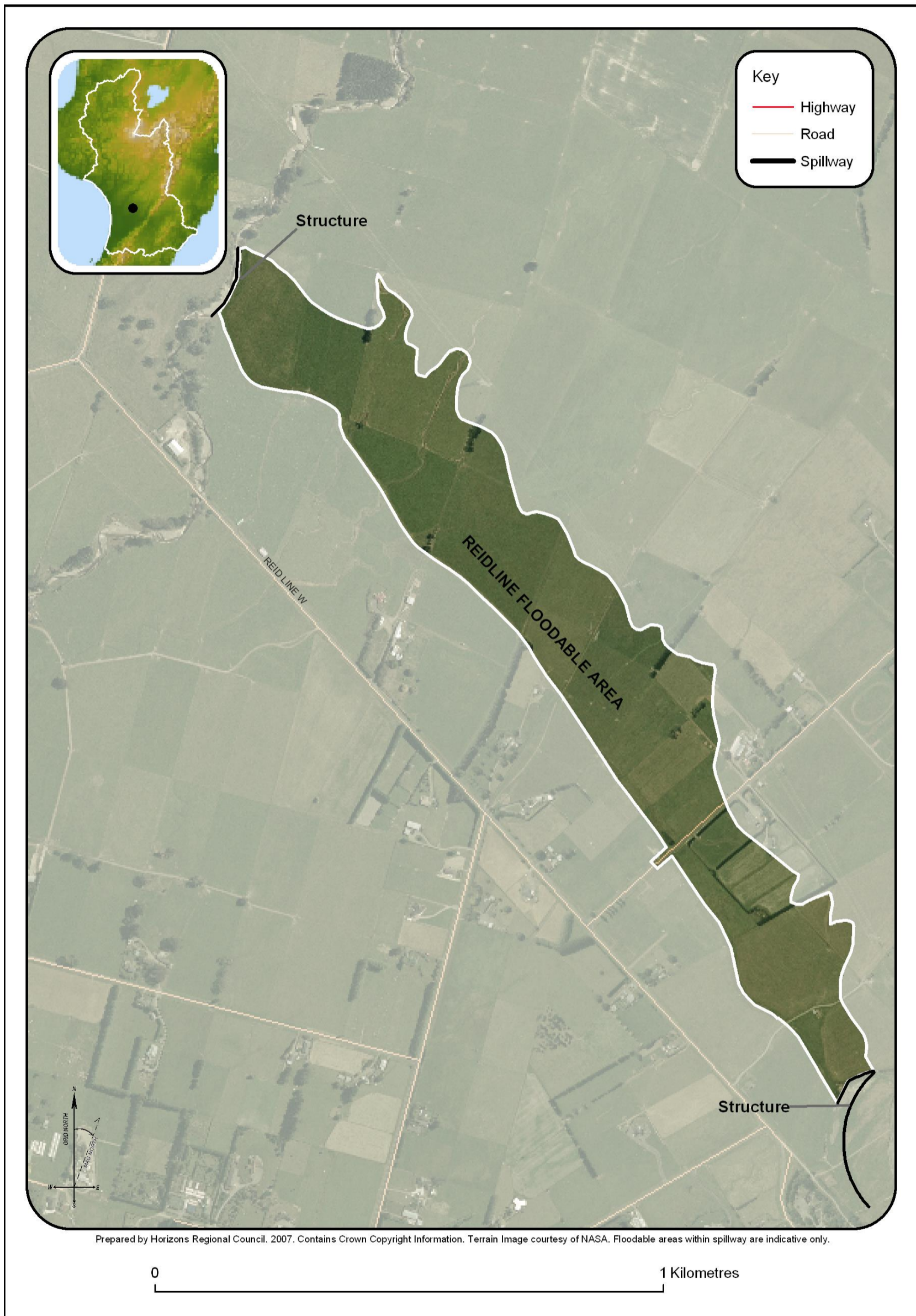
### Distribution to MDC

An electronic copy is to be sent to the MDC Emergency Management Officer who will arrange internal and support agency distribution.

# Appendix 1 - Map of Key Locations

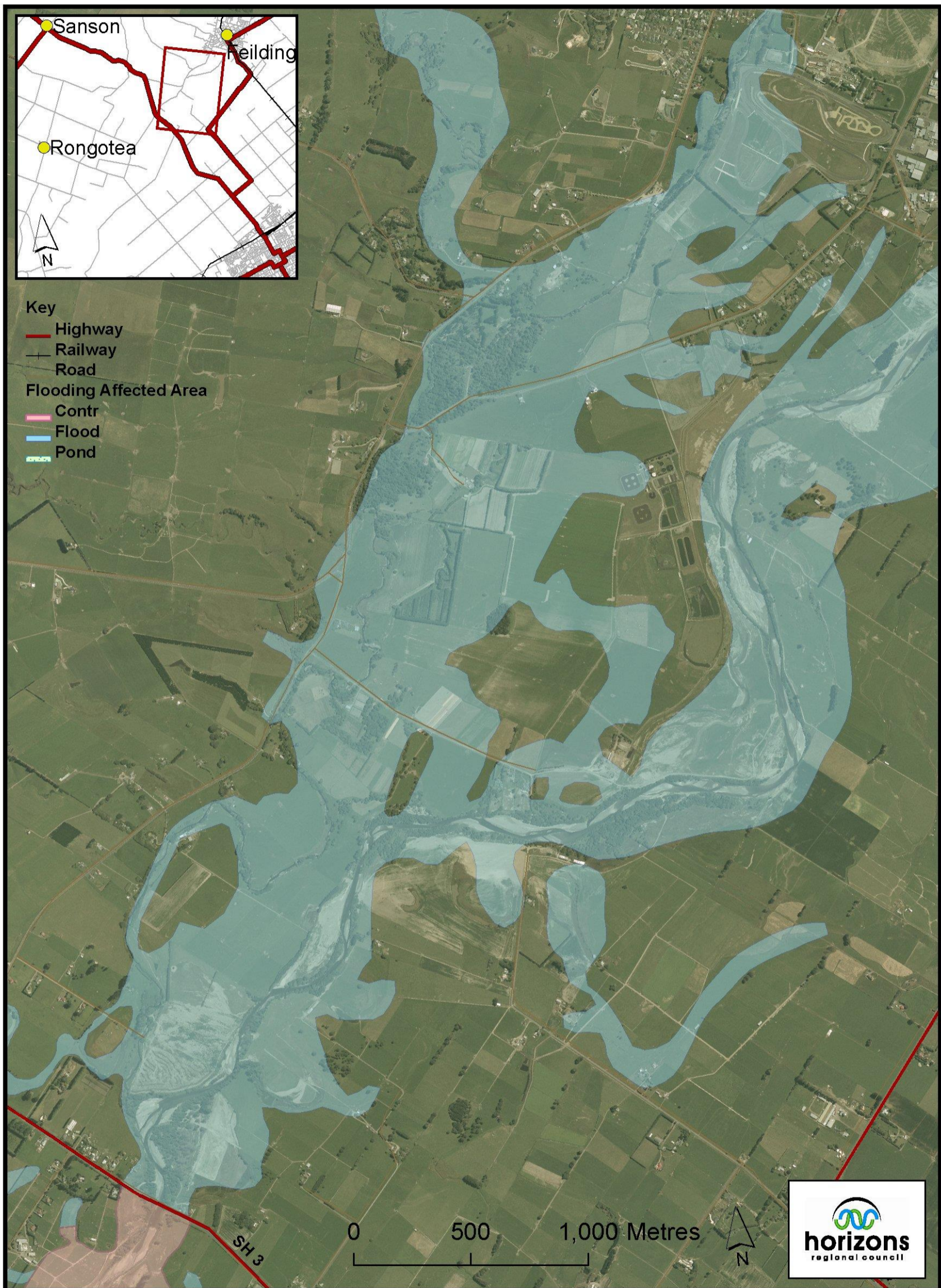


# Appendix 2 - Maps of Floodable Areas

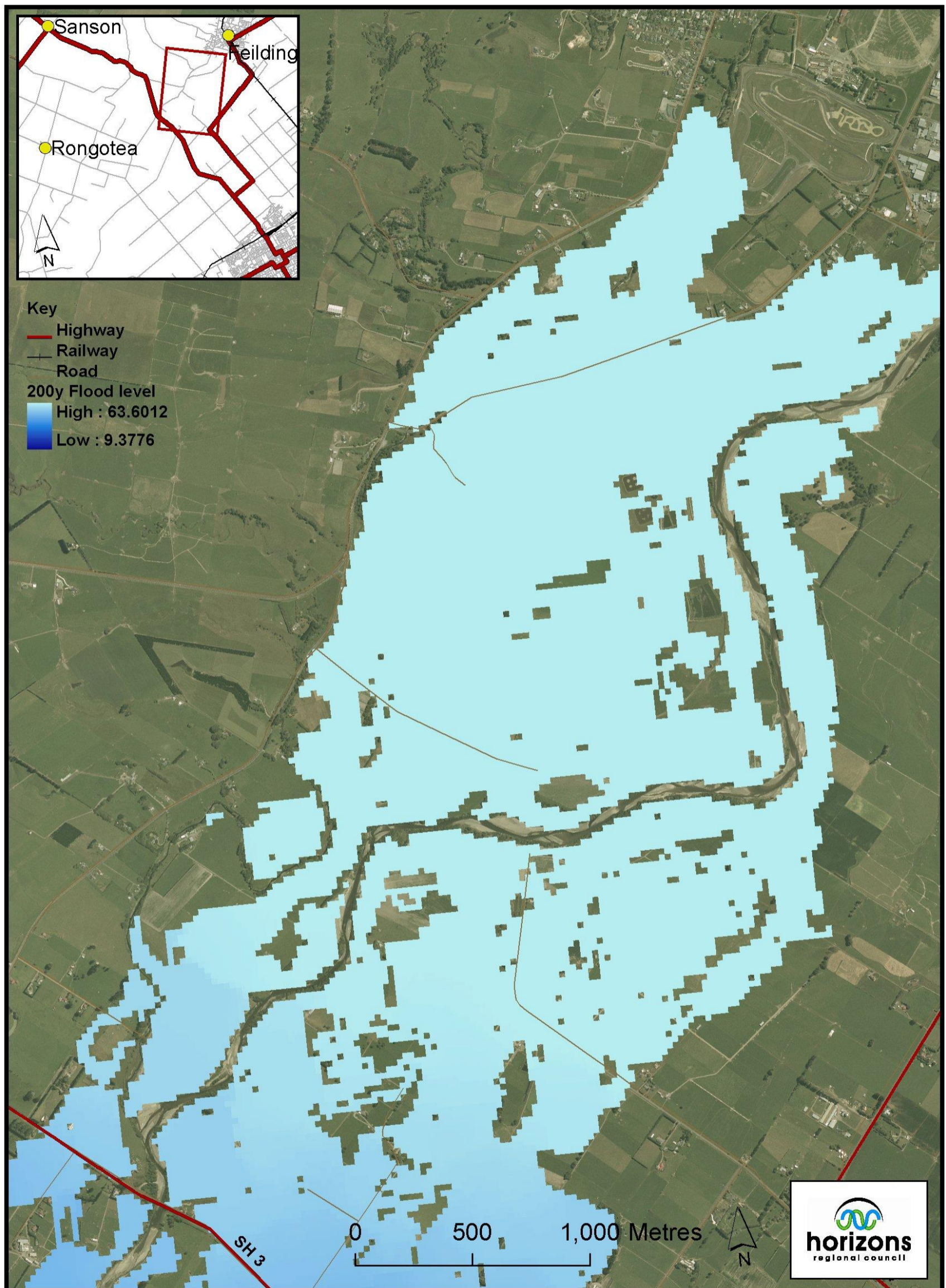




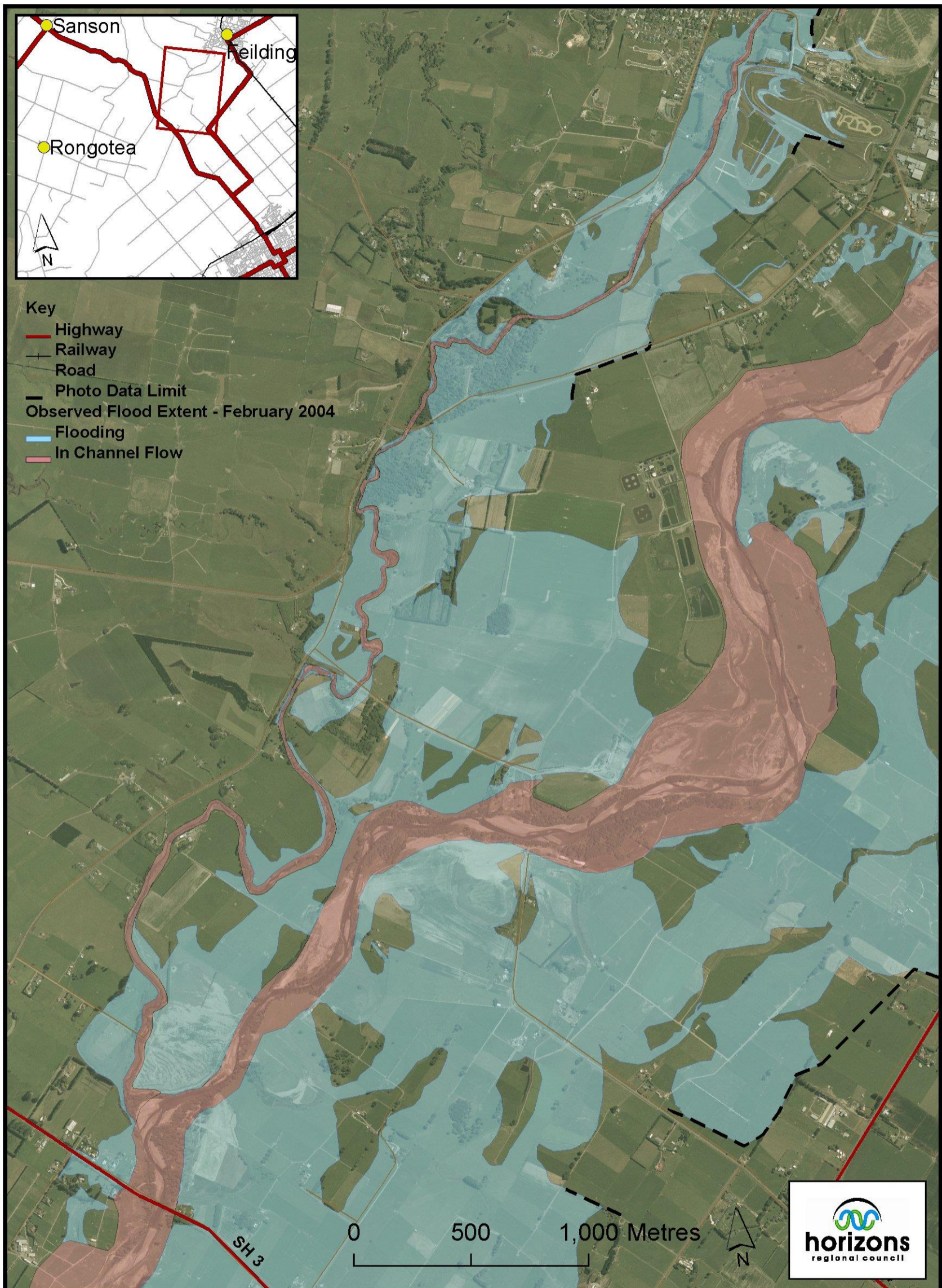
Horizons Regional Council - Flood Plain Mapping  
 Flooding Hazard in the Rata Street to Awahuri area - District Advice Floodable Area



Horizons Regional Council - Flood Plain Mapping  
Flooding Hazard in the Rata Street to Awahuri area - Modelled Flooding 200 year ARI



Horizons Regional Council - Flood Plain Mapping  
 Flooding Hazard in the Rata Street to Awahuri area - Observed Flooding February 2004



## Makino Diversion Gates

Instructions for automation process of the Makino Gates can be found in Herman in the flood action plan folder for Makino titled "Makino Gate Remote Access".

A quick guide for the Makino Diversion Gates is also available in Herman in the flood action plan folder for Makino. This guide is to be used should the automation process fail. It also contains information regarding the guillotine slide gates.



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24 hour freephone 0508 800 800  
fax 06 952 2929 | email [help@horizons.govt.nz](mailto:help@horizons.govt.nz)  
Private Bag 11025, Manawatū Mail Centre, Palmerston North 4442