



# Stopbanks: a community investment



March 2013

## Information for Lower Waikato residents and landowners

### In the flood zone

Flooding is the Waikato region's most frequent and widespread natural hazard. Criss-crossed with 20 large rivers and 1400 streams, the region has areas of high rainfall and steep headwaters that drain into the low lying flood plains where many of us live and work. On average we can expect a significant flood every two to three years.

Waikato Regional Council's first priority is to prevent risks to people and property by discouraging development in high-risk areas. However, where development has already occurred, it's our job to provide flood protection and flood warnings, and when the region is flooded, to work with emergency services and civil defence to help people who are at risk.

#### Flood defences

On your behalf, we look after \$350 million worth of flood protection assets, including floodgates, pump stations and stopbanks. These assets are part of a whole river and flood protection system designed to minimise flood risks. They protect homes, farms and critical regional infrastructure such as State Highway 1.

A lot of this work is so carefully integrated into the surrounding environment you can easily drive past it without realising it's there. Stopbanks, for example, may look like natural grassy banks but they are constructed to high engineering standards and can be costly to build and maintain.

#### DID YOU KNOW?

Seventy six per cent of the Waikato region benefits from our flood protection and river management schemes, while the rest of the region benefits from spin-offs like enhanced productivity and a stronger economy.

### Stopbanks: a key defence

Without stopbanks, large areas of our region, including the north Waikato and Hauraki Plains, would be underwater for months at a time.

Most of the Waikato Regional Council's 620 km of stopbanks are in the Lower Waikato and Waihou-Piako zones. These two zone schemes were developed in the 1960s and many stopbanks are now more than 50 years old.

In the 2012-2022 Long Term Plan (LTP), council budgeted \$22 million over 10 years for maintenance works on stopbanks in these two zones on a priority basis. We expect around \$5 million worth of works will be carried out in the Lower Waikato zone.

A more detailed works programme has been developed since the LTP was adopted, with the upgrade of high priority stopbanks planned for the next three years. The details of the maintenance work we plan to carry out in your area, and the associated costs, are outlined in this newsletter.

### In this newsletter

- Information about flood protection in the Lower Waikato zone.
- Details of our proposed 10-year works programme to maintain stopbanks in your area and the associated costs.
- How to protect yourself and your property from flooding.

We have also included a form you can use to tell us what you think about our proposed stopbank maintenance programme.

# The condition of our stopbanks

Soil naturally settles along stretches of stopbank. Over time, the weight of this soil can compress the foundations of the stopbank and contribute to it settling below the flood design level it was built to. Increased amounts of sediment entering waterways and increased rainfall intensity also contribute to changes in stopbank design height.

As part of the ongoing management of our flood protection schemes, we regularly monitor and review the condition and performance of our flood protection assets. Last year, we identified that about 15 per cent of stopbanks in the Lower Waikato and Waihou-Piako zones are below appropriate flood design levels.

Topping up the height of these stopbanks is a high priority for us and will be a primary focus in the first three years of our maintenance programme. Other works will also be carried out, including:

- reconstruction of some stopbanks
- repairing stock damage and grass cover to improve bank stability
- maintenance and erosion control of the associated river channels to ensure water can flow freely.

Of the stopbanks in the Lower Waikato that have a 1-in-100 year design standard, just 6 per cent are below the flood design level. It is only in the more significant flood events that water might flow over these stopbanks. However, until the stopbanks that are below appropriate flood design levels are topped up, it's important you understand that flood risk will be marginally greater.

Despite the relatively low likelihood these defences will be breached, when you're living on a flood plain you need to be aware of the risks and know how to protect yourself and your property in an extreme event. To find out more, see the back page of this newsletter.

# Flood protection in the Lower Waikato zone

## The zone

The Lower Waikato zone consists of the Waikato River catchment between Ngaruawahia and the Tasman Sea. Its position at the lower end of the Waikato River means it is the destination of all waters flowing into the Waikato River catchment.

This zone covers 283,767 hectares, and is dominated by the Waikato River and its associated lakes and wetlands.

There are 15,970 ratepayers in the Lower Waikato zone. Agriculture is the dominant economic activity, however, there are also significant industrial activities including power generation, coal mining, quarrying and sand mining. Nationally important infrastructure runs through this zone including state highways 1, 1B, 2, 22 and 39, the North Island Main Trunk railway line, national grid transmission lines and the main natural gas pipeline to Auckland.

Flood protection in this zone is managed through the Lower Waikato Waipa Control Scheme (LWWCS), which has been in place since the early 1960s.

## More than stopbanks

There are 250 km of stopbanks that prevent waterways from flooding land in the Lower Waikato zone. These work in conjunction with other flood protection assets, including:

- 251 km of channels
- 255 floodgate structures to manage waterway flows
- 65 pump stations and 120 pumps to drain water from farmland.



# Our proposed works programme

Our proposed 10-year works programme is about improving the condition and performance of stopbanks in the Lower Waikato and Waihou-Piako zones. As such, the flood design levels of the stopbanks in these two zones will not change.

The work in your area has been prioritised to take account of both the likelihood of flooding and the potential impacts of flooding. The highest priority stopbanks are scheduled to be upgraded over the next three years. Generally, these are the stopbanks along the main channel of the Waikato River which protect large areas of surrounding agricultural land and parts of the urban area of Huntly from up to a 1-in-100 year flood event.

In other areas, individual properties or small numbers of properties known as secondary compartments are protected by stopbanks designed to lower flood design levels like 1-in-50 year and 1-in-5 year. Flood protection in these areas relies on stopbanks working in conjunction with pump stations to drain water from land. Given that the role of these stopbanks is less critical than those along the main channel, work on stopbanks protecting secondary compartments has been scheduled for maintenance in years 4-10.

Factors we considered when reviewing priorities and developing our works programme, included:

- extent of floodplain areas potentially affected
- intensity of use and development on the floodplain
- capital infrastructure at risk and impact on key infrastructure and transport corridors.

## High priority Lower Waikato stopbanks

Listed on this page are the high priority stopbanks in the Lower Waikato zone that will be upgraded over the 2012/13, 2013/14 and 2014/15 financial years.

To find out which sections of these stopbanks will be upgraded and other maintenance work we plan to carry out, see the accompanying maps. The overview map on page 4 shows which map covers your area.

High priority stopbanks: Lower Waikato	Timeframe
Huntly North SB	2012/13
Huntly North Freeboard	2012/13
Huntly West Section (Golf Course)	2012/13
Mangatawhiri Contour Drain RB SB	2012/13
Mangatawhiri Contour Drain LB SB	2012/13
Aka Aka	2013/14
Locke	2013/14
Vrsaljkos SB	2013/14
Aka Aka (Mangawhero) (new)	2014/15
Aka Aka Otaua Buffer SB	2014/15

## Expected costs

	2012/13	2013/14	2014/15
Lower Waikato	\$559,000	\$509,000	\$618,000

## Give us your feedback

We think the programme we're proposing balances management of risk and the delivery of cost effective work. However, we're keen to hear your views.



The feedback you give us will be considered during deliberations on the 2013/14 Draft Annual Plan.

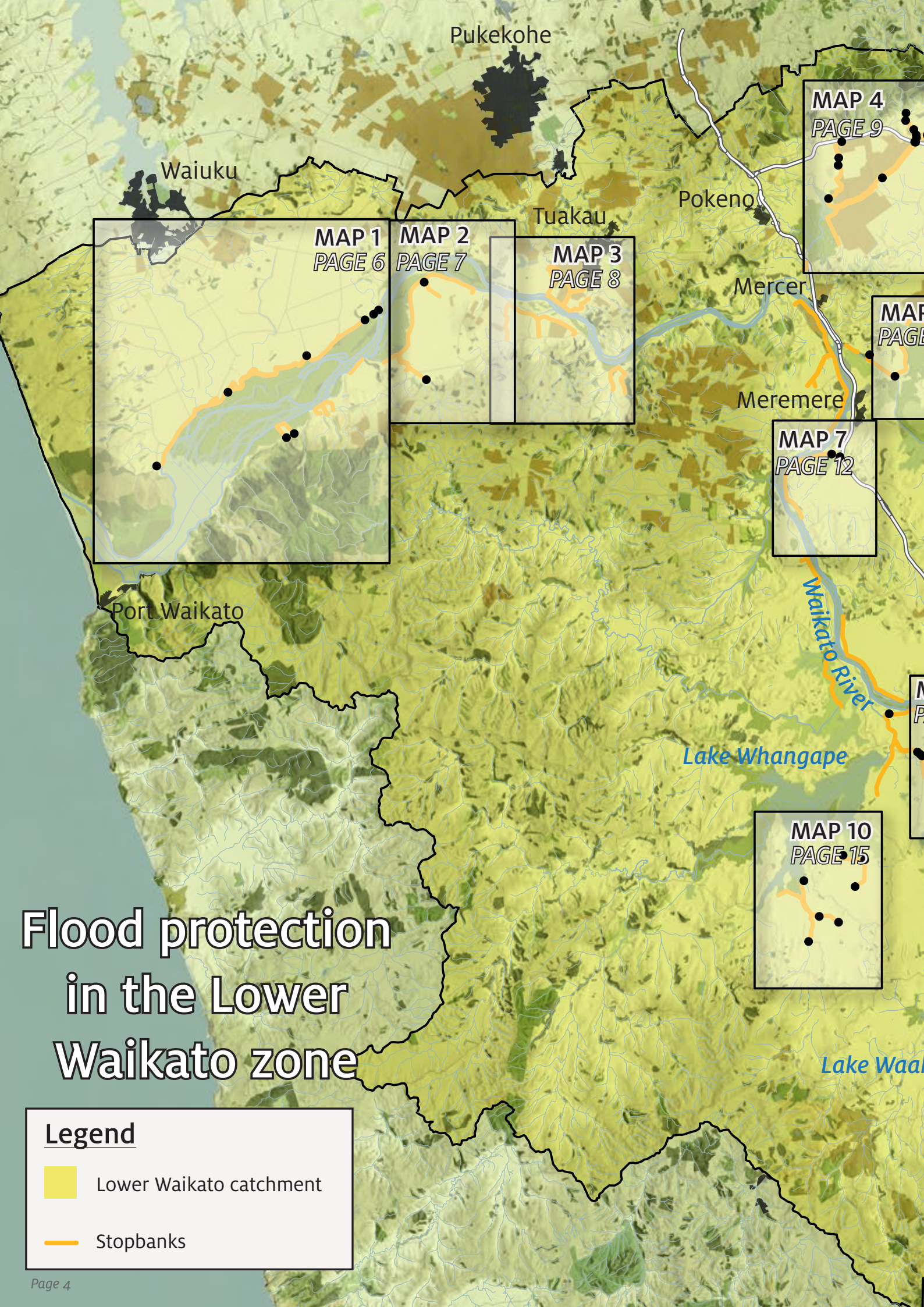
You are welcome to use the feedback form included in this newsletter or send your feedback on a separate sheet. All feedback must be sent to Waikato Regional Council by 12 April 2013.

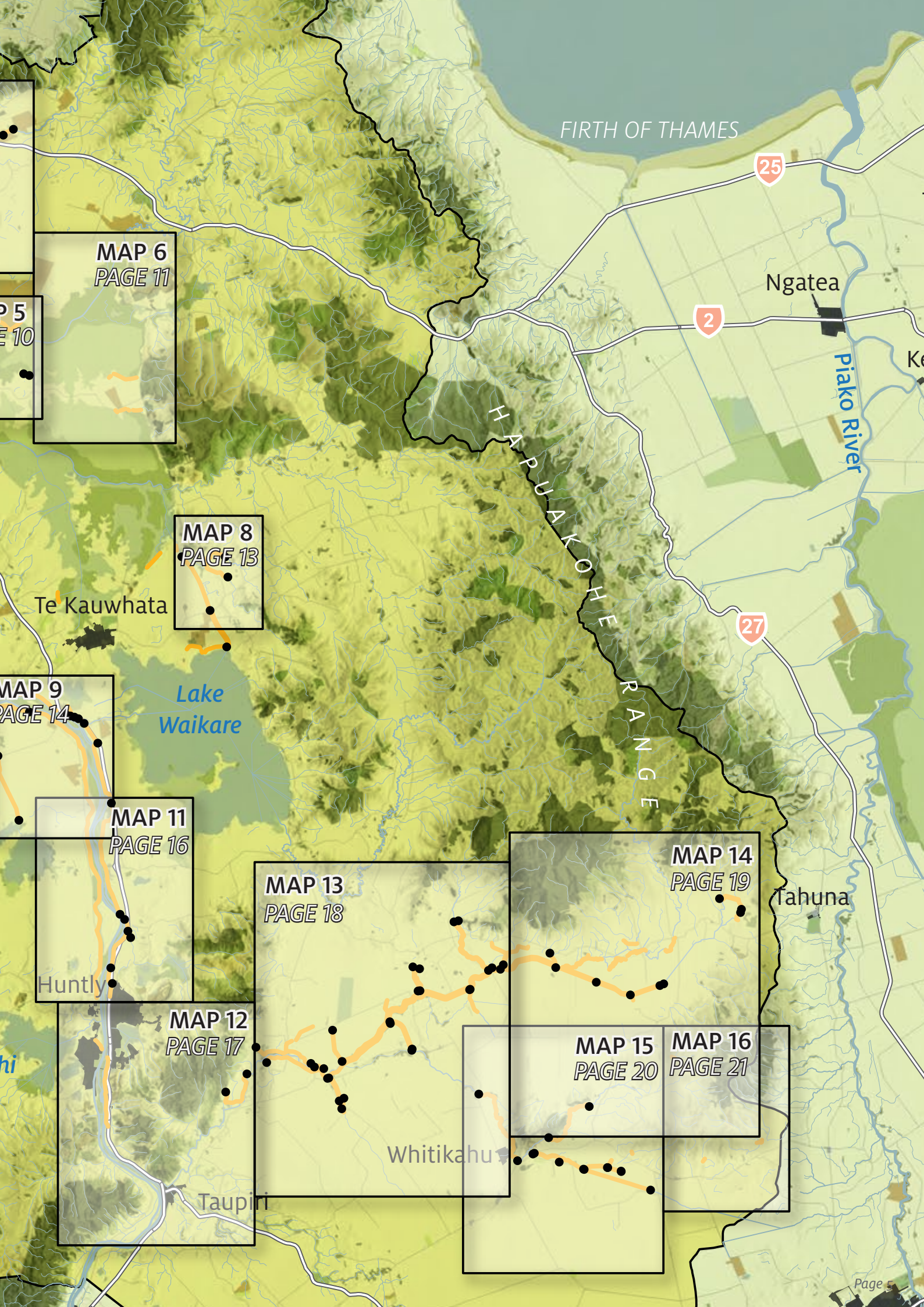


# Flood protection in the Lower Waikato zone

**Legend**

-  Lower Waikato catchment
-  Stopbanks





FIRTH OF THAMES

25

Ngatea

2

Piako River

Ke

MAP 6  
PAGE 11

5  
10

MAP 8  
PAGE 13

Te Kauwhata

Lake  
Waikare

MAP 9  
PAGE 14

MAP 11  
PAGE 16

Huntly

MAP 13  
PAGE 18

MAP 14  
PAGE 19

Tahuna

MAP 12  
PAGE 17

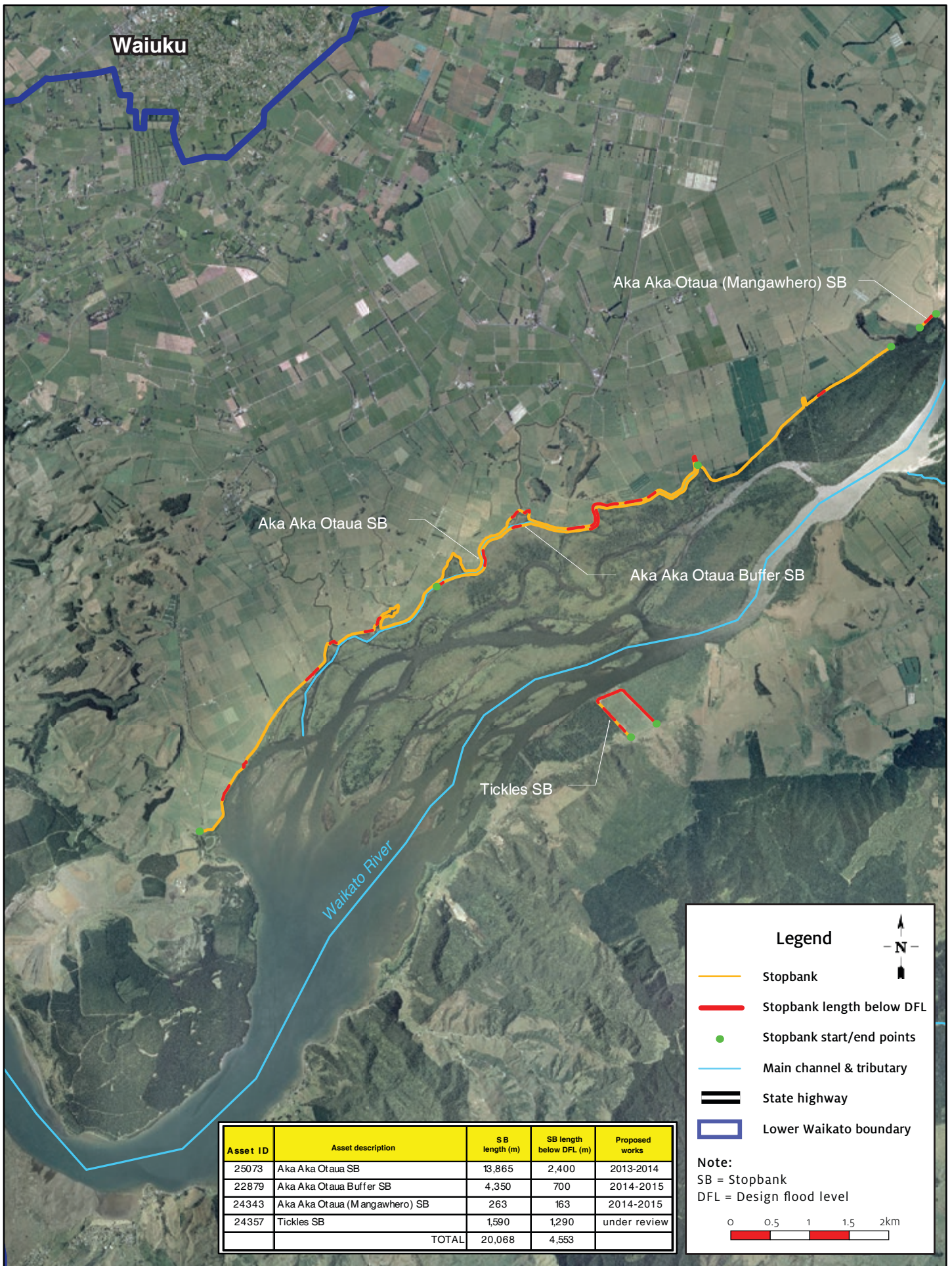
MAP 15  
PAGE 20

MAP 16  
PAGE 21

Whitikahu

Taupiri

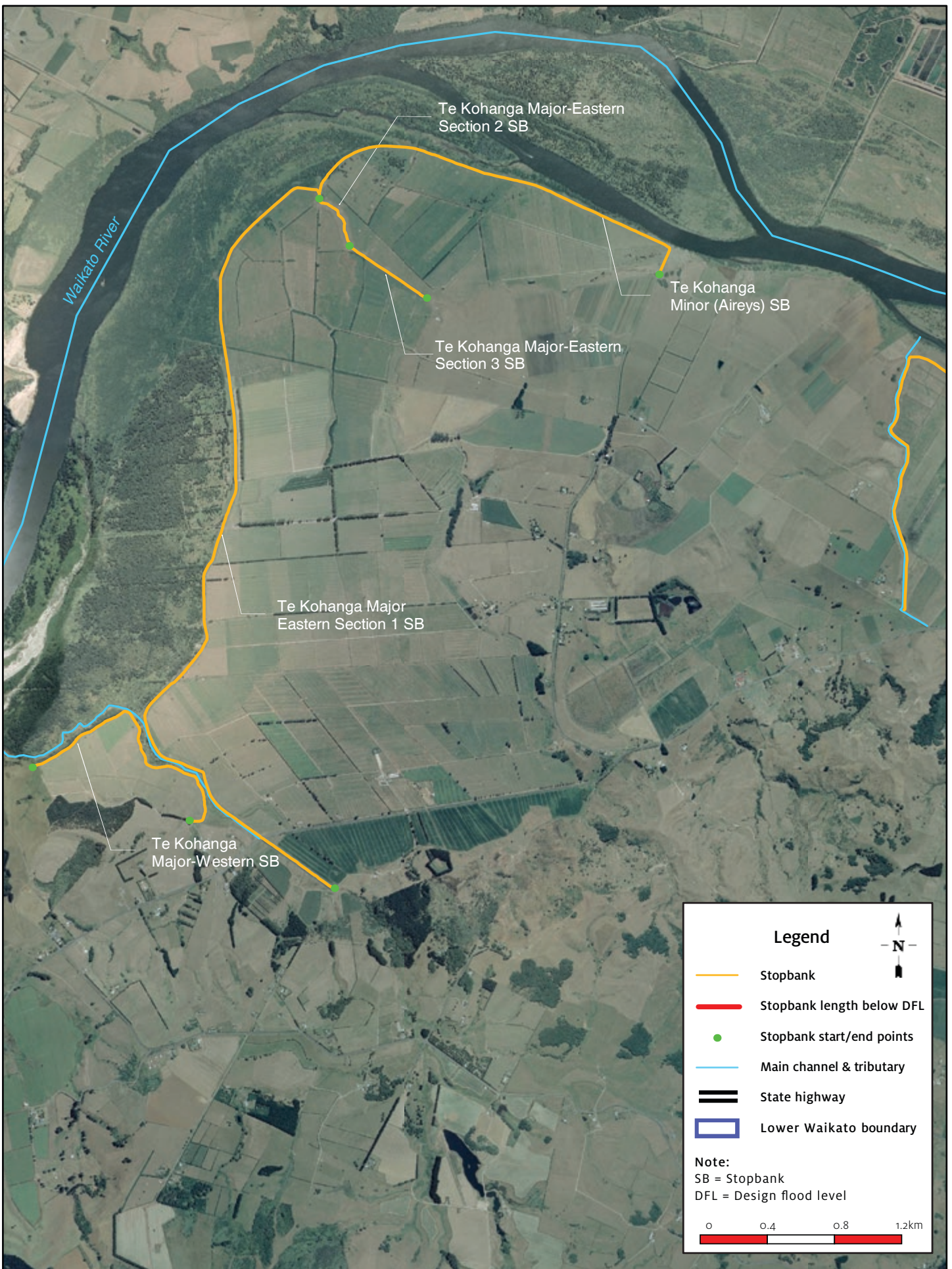
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# Lower Waikato Stopbanks MAP 1

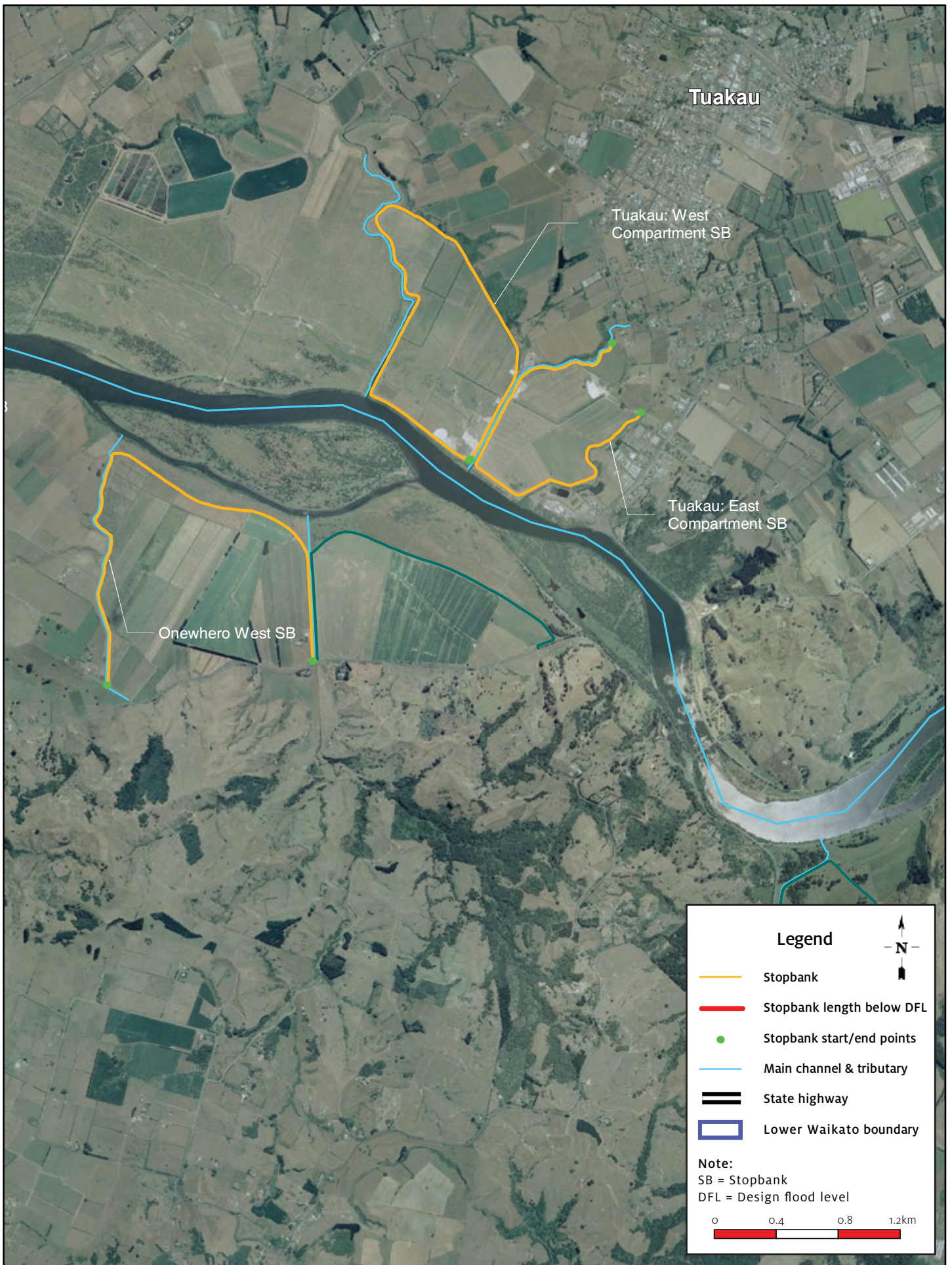
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## Lower Waikato Stopbanks MAP 2

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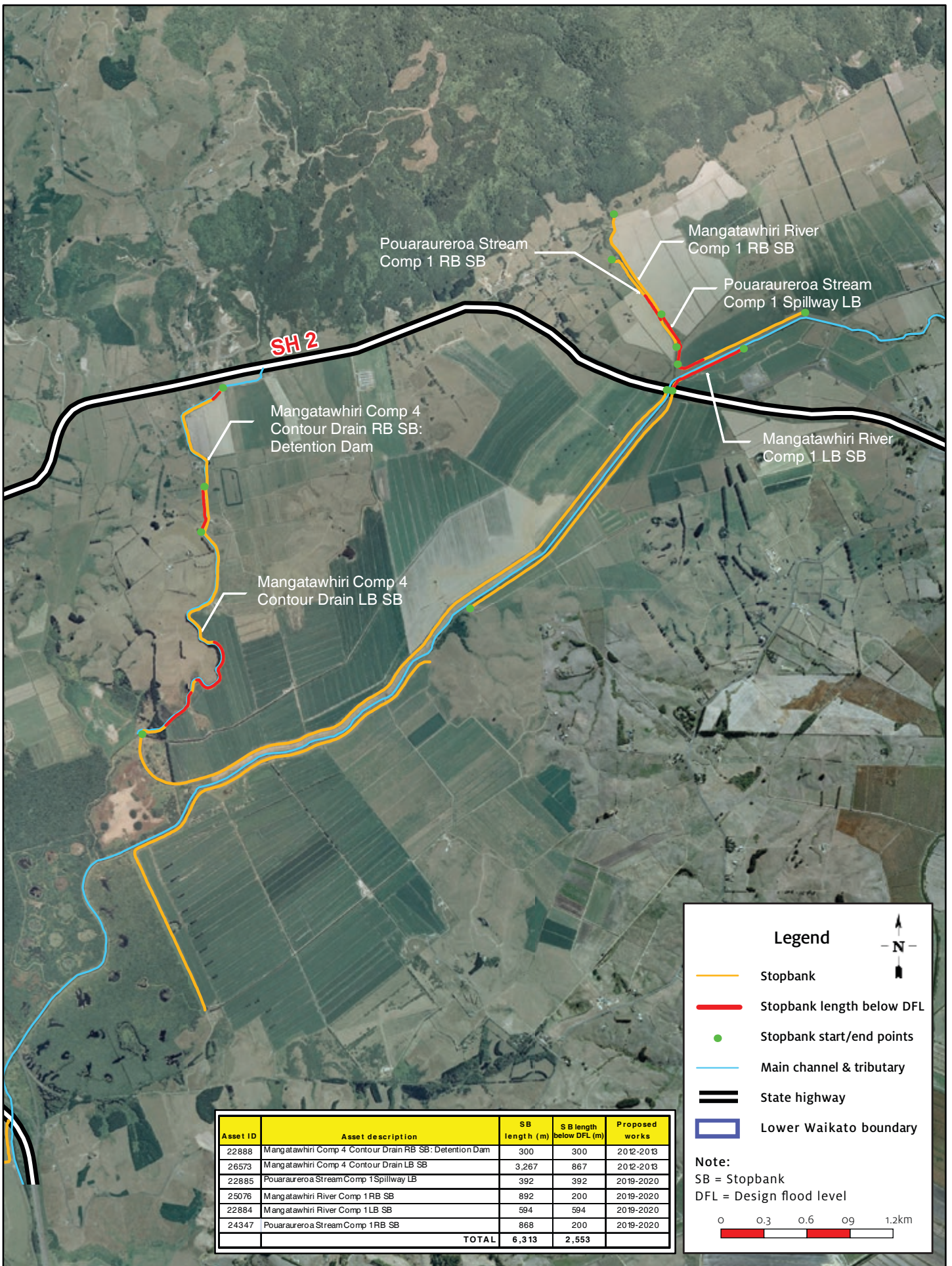


## Lower Waikato Stopbanks MAP 3

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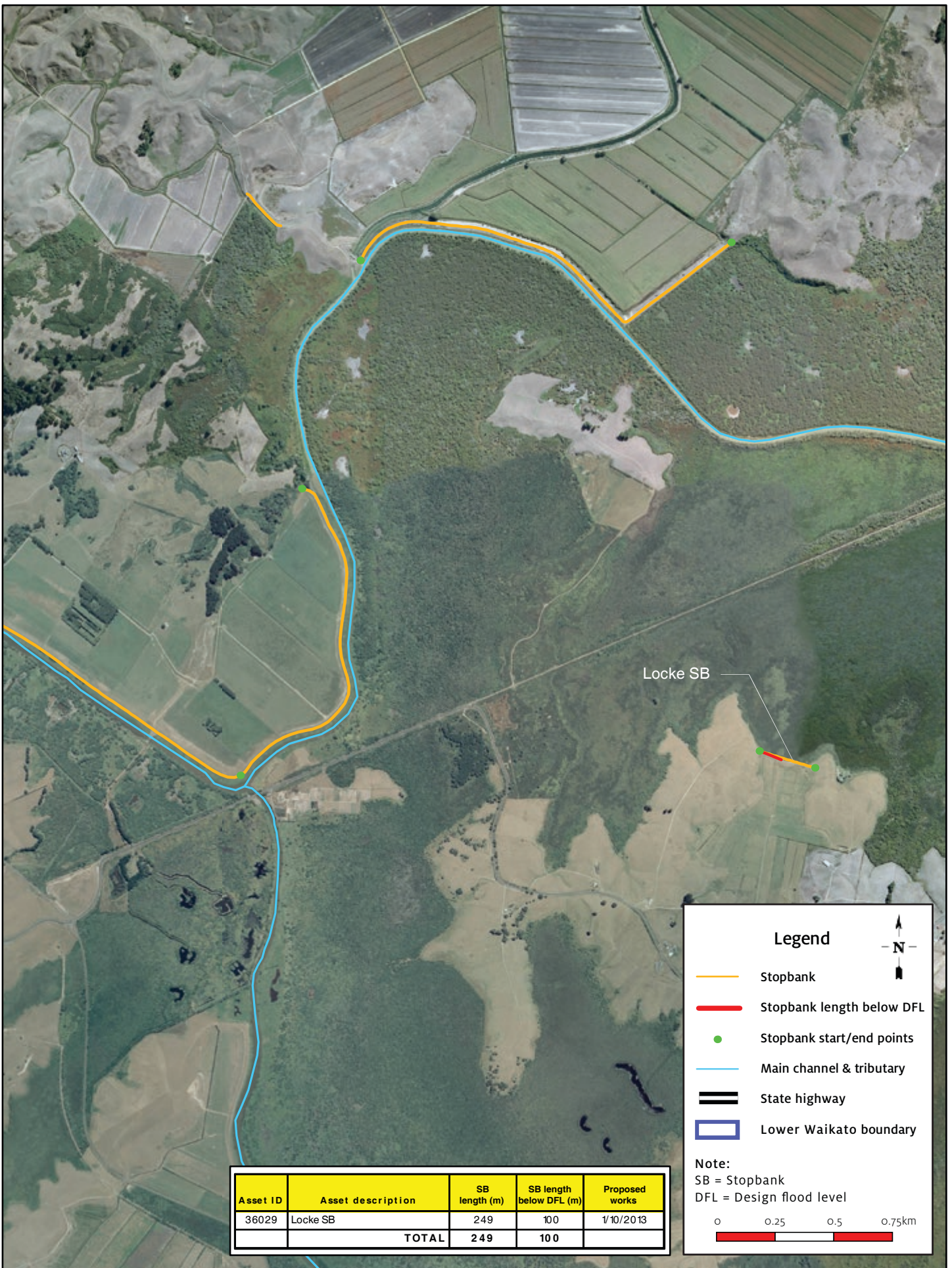




## Lower Waikato Stopbanks MAP 4

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Asset ID	Asset description	SB length (m)	SB length below DFL (m)	Proposed works
36029	Locke SB	249	100	1/10/2013
<b>TOTAL</b>		<b>249</b>	<b>100</b>	

**Legend**

- Stopbank
- Stopbank length below DFL
- Stopbank start/end points
- Main channel & tributary
- State highway
- Lower Waikato boundary

**Note:**  
 SB = Stopbank  
 DFL = Design flood level

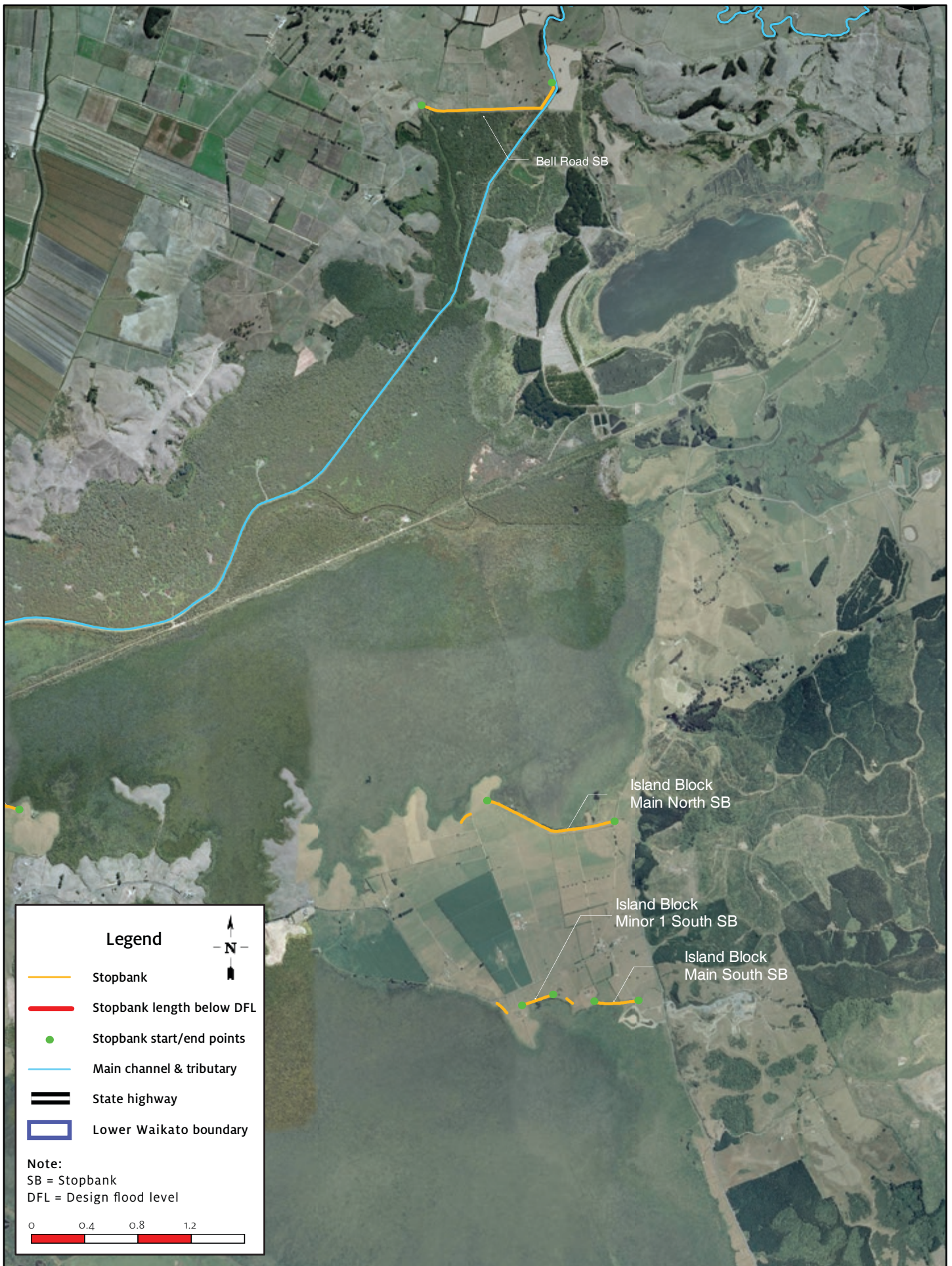
0    0.25    0.5    0.75km

## Lower Waikato Stopbanks MAP 5

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## Lower Waikato Stopbanks MAP 6

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## Lower Waikato Stopbanks MAP 7

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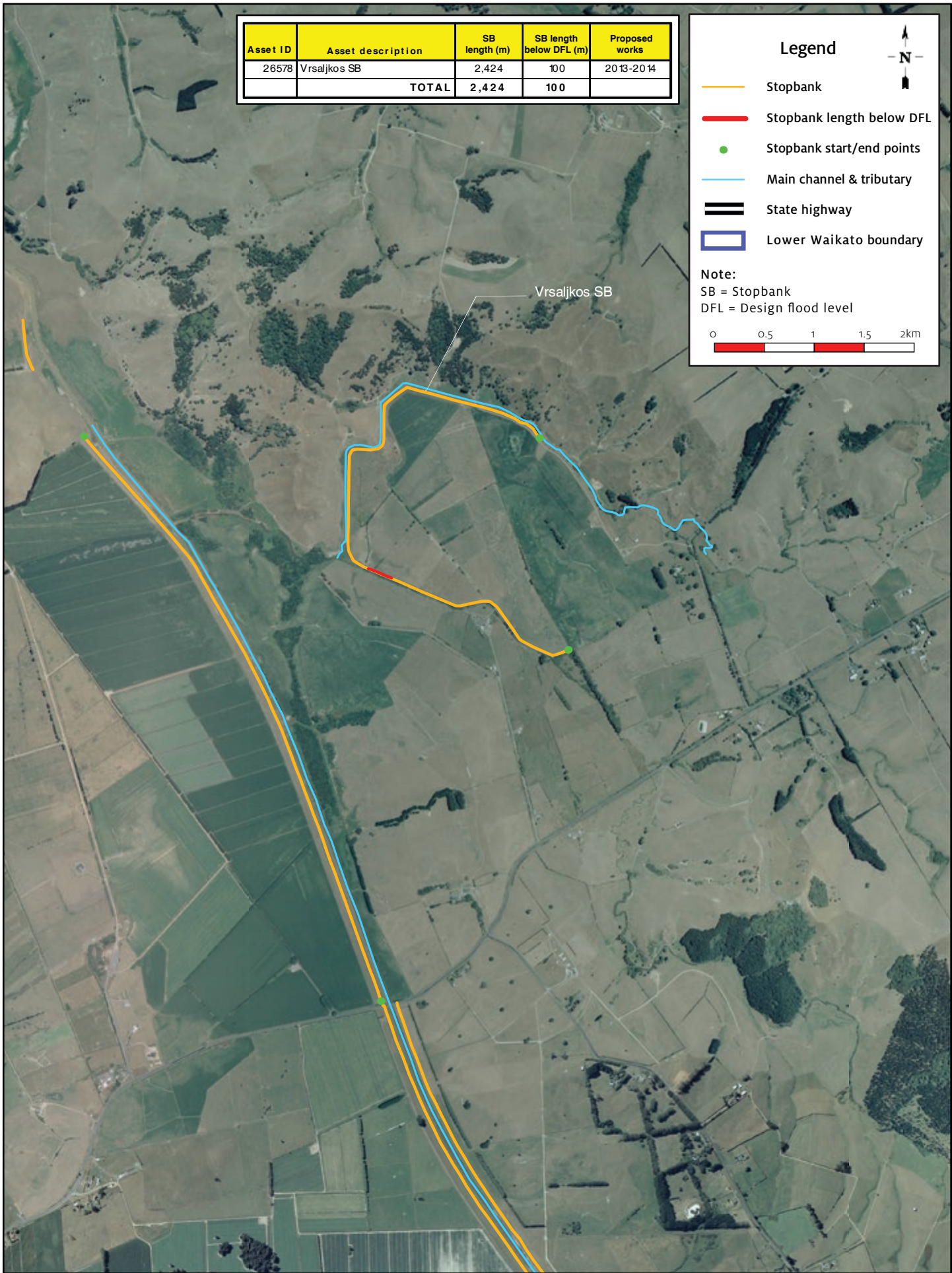
Asset ID	Asset description	SB length (m)	SB length below DFL (m)	Proposed works
26578	Vrsaljkos SB	2,424	100	2013-2014
<b>TOTAL</b>		<b>2,424</b>	<b>100</b>	

**Legend**

- Stopbank
- Stopbank length below DFL
- Stopbank start/end points
- Main channel & tributary
- State highway
- Lower Waikato boundary

**Note:**  
 SB = Stopbank  
 DFL = Design flood level

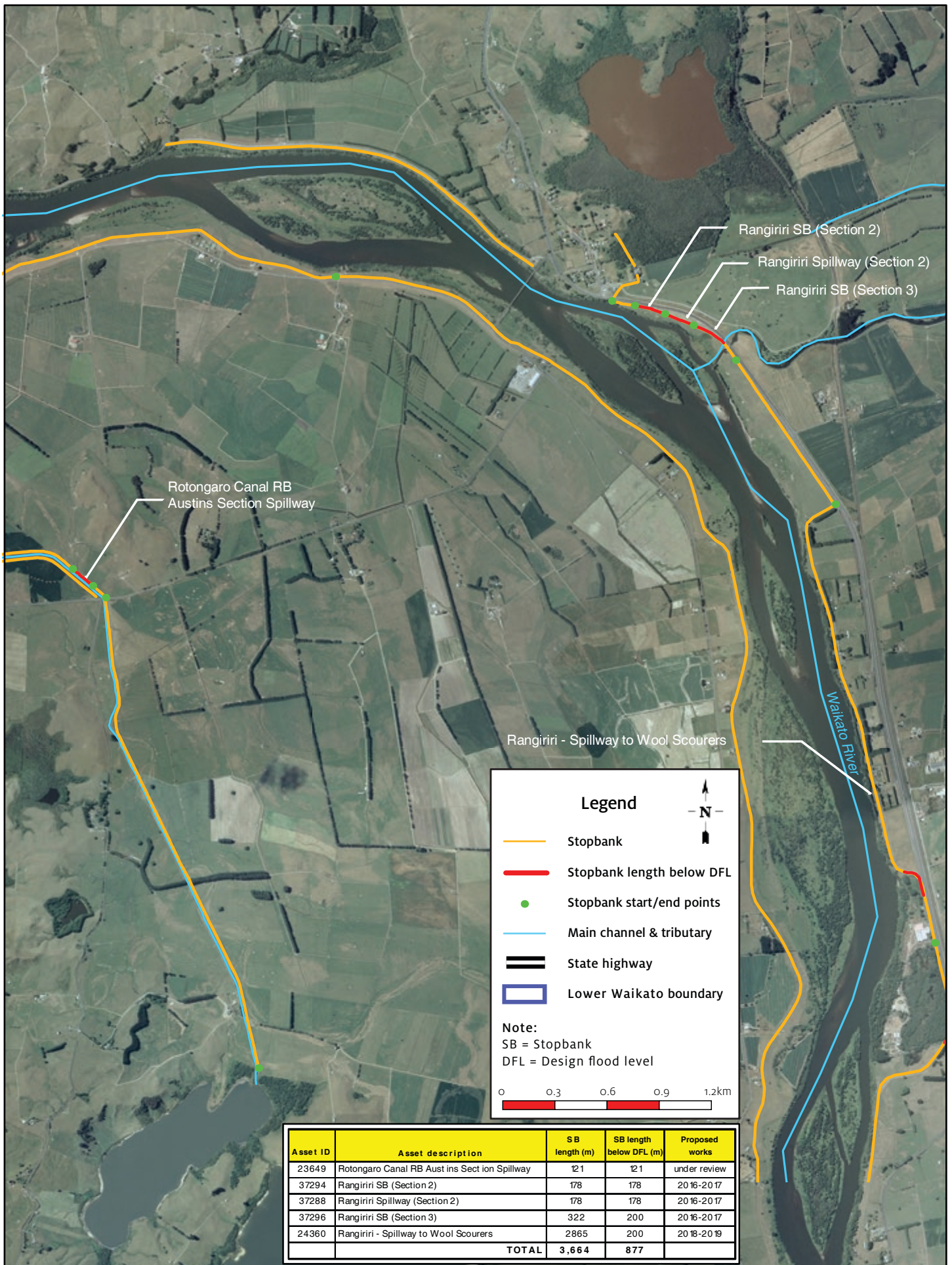
0    0.5    1    1.5    2km



## Lower Waikato Stopbanks MAP 8

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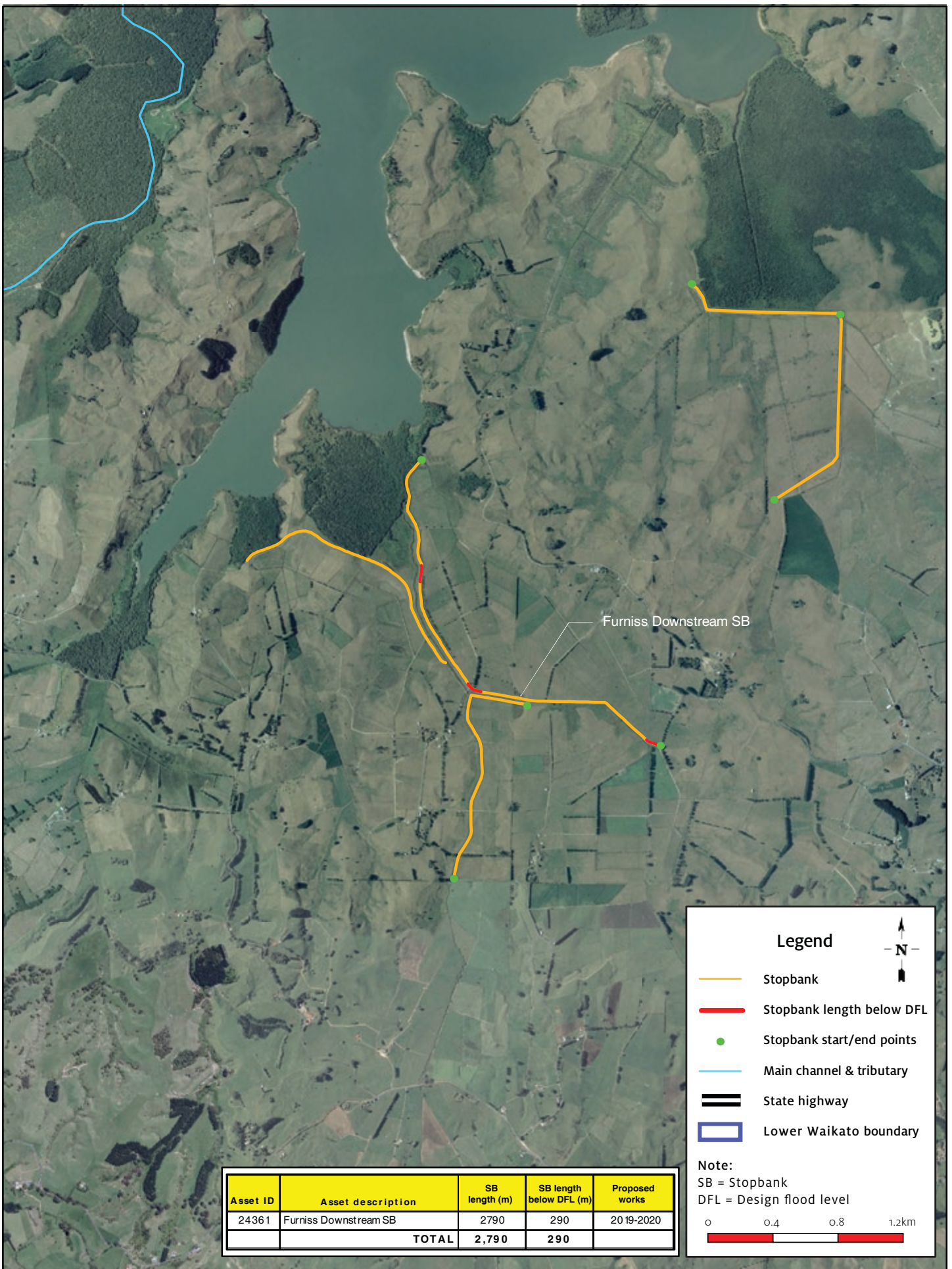




## Lower Waikato Stopbanks MAP 9

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## Lower Waikato Stopbanks MAP 10

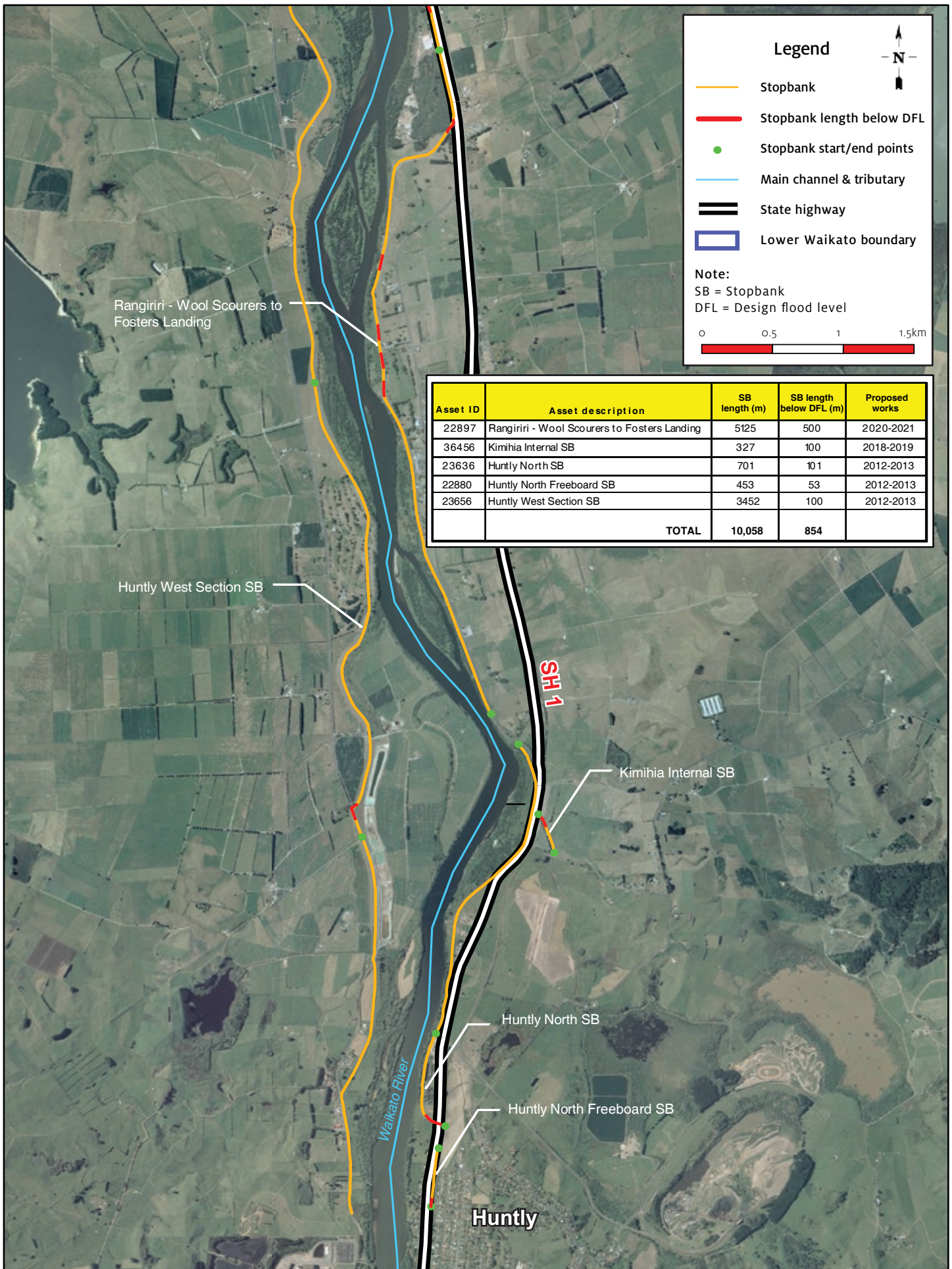
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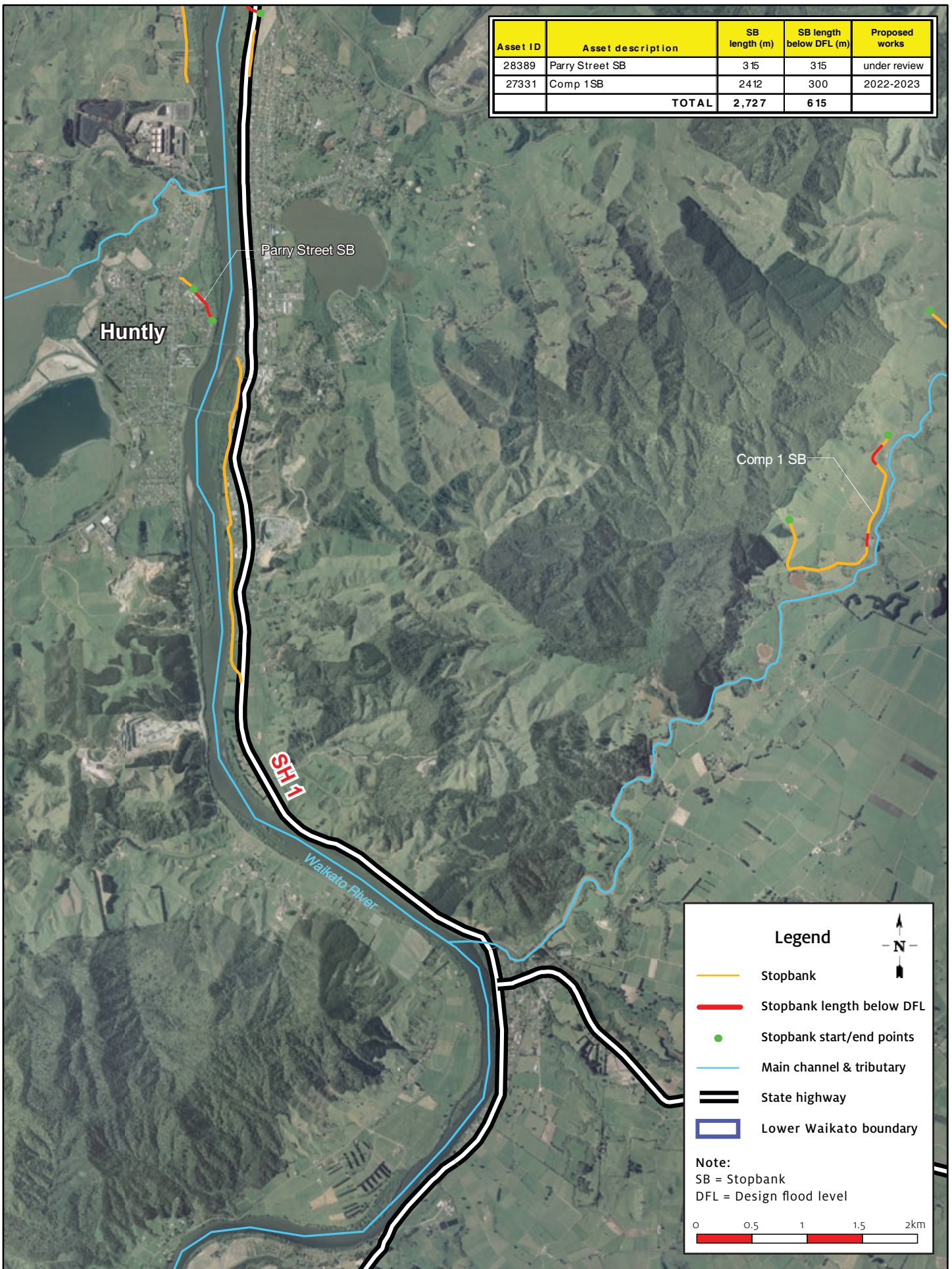
## Lower Waikato Stopbanks MAP 11

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Asset ID	Asset description	SB length (m)	SB length below DFL (m)	Proposed works
28389	Parry Street SB	315	315	under review
27331	Comp 1 SB	2412	300	2022-2023
<b>TOTAL</b>		<b>2,727</b>	<b>615</b>	

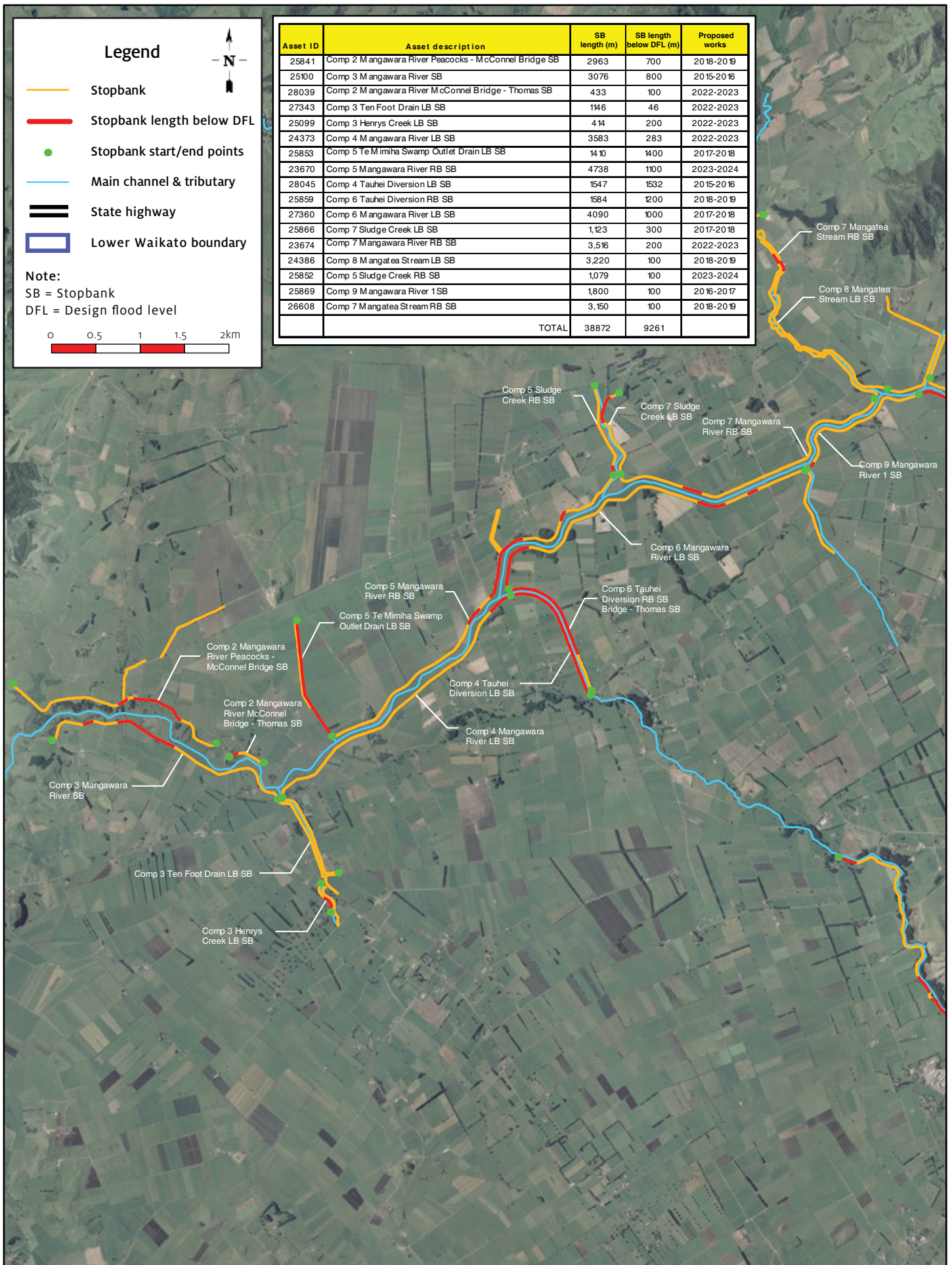


## Lower Waikato Stopbanks MAP 12

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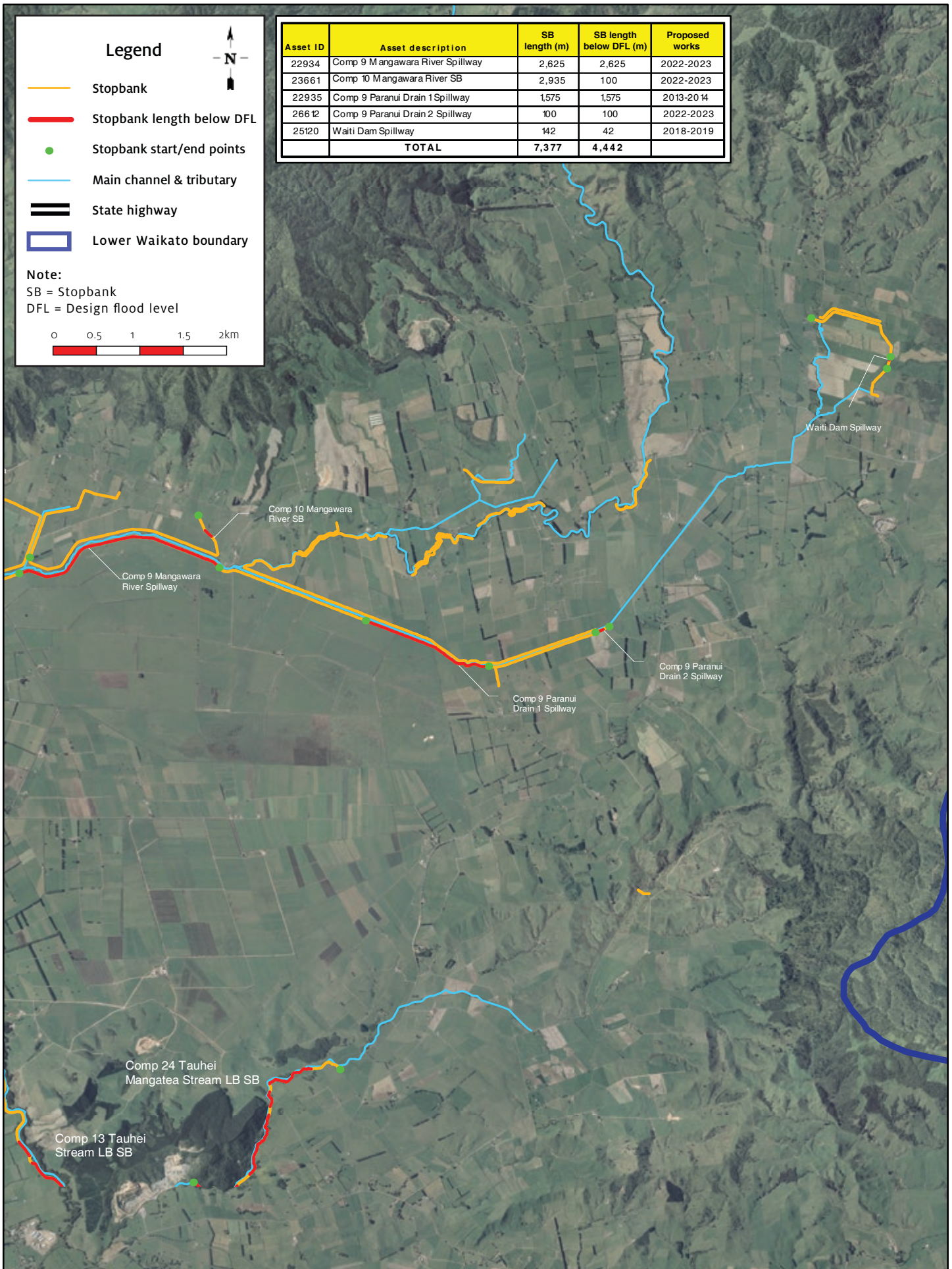




# Lower Waikato Stopbanks MAP 13

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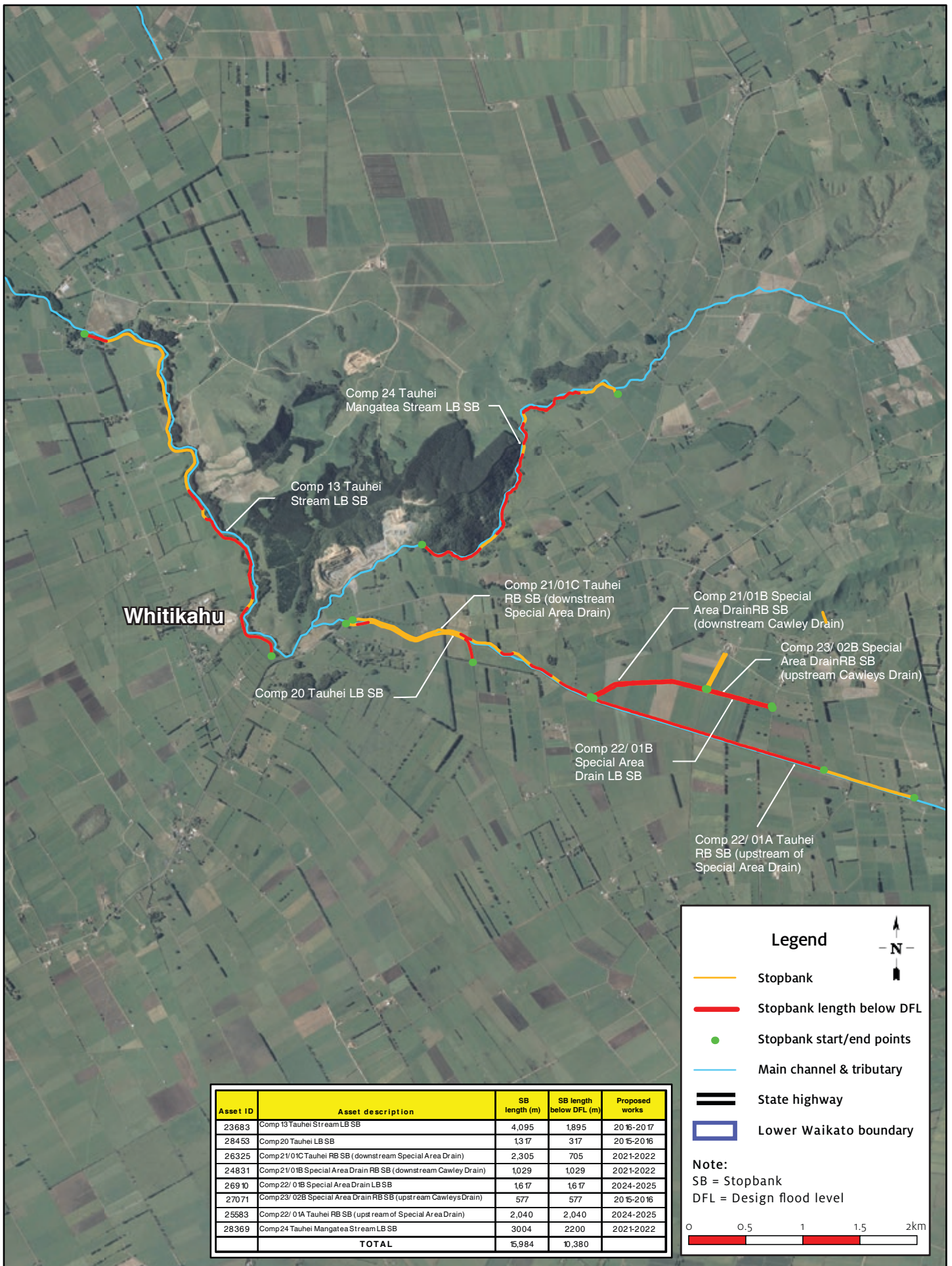




## Lower Waikato Stopbanks MAP 14

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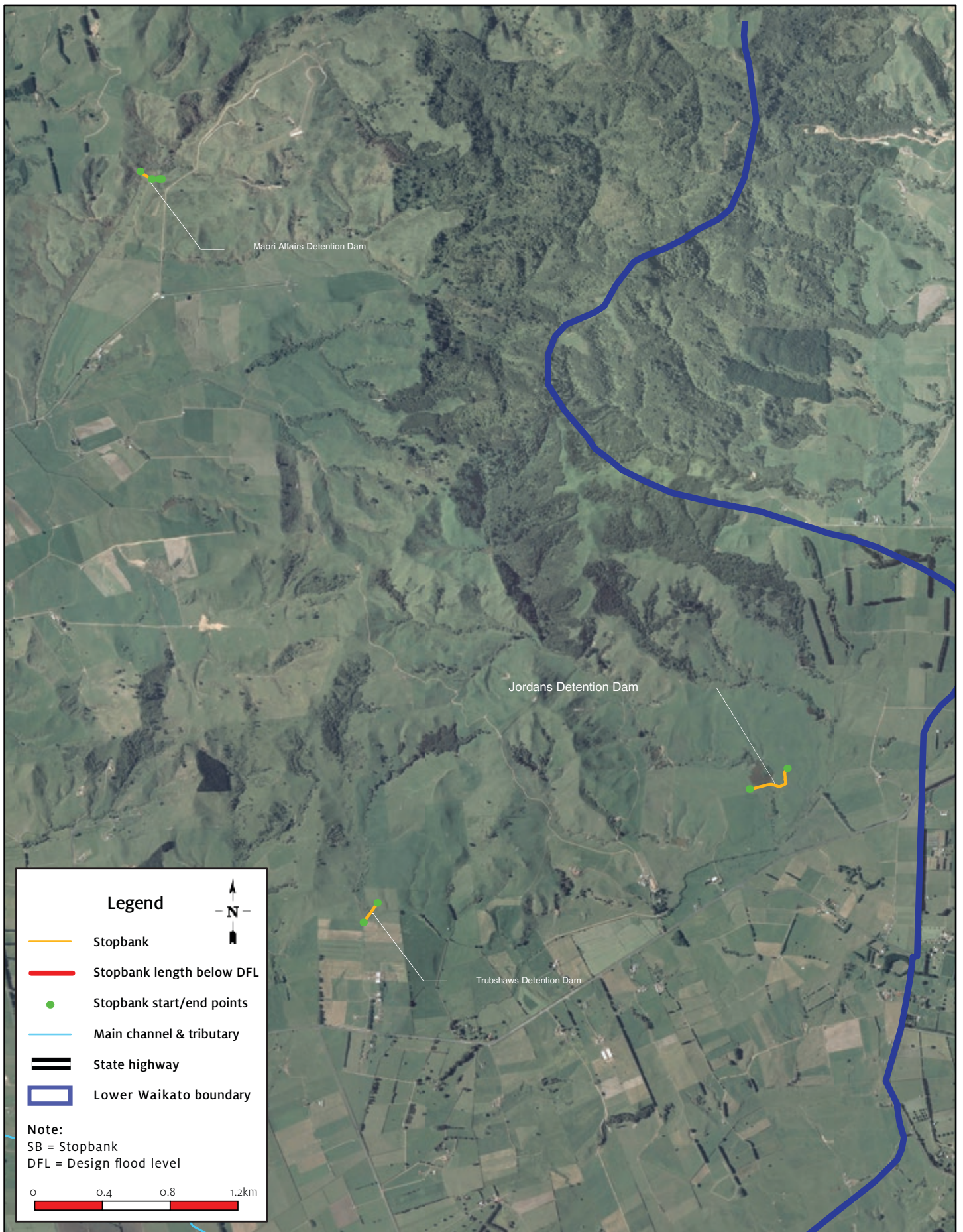




# Lower Waikato Stopbanks MAP 15

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## Lower Waikato Stopbanks MAP 16

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# Protecting yourself and your property from flooding

Flood risk involves not just the likelihood of flooding, but also the possible damage a flood could cause. In those areas where stopbanks are below the design flood level, the main risk is that productive farmland may be taken out of use for longer than desired during serious flood events. It could also affect other development and infrastructure located on the wider floodplain.

## Assessing flood risk

Flood risk assessments are how we compile information about the hazards and types of risk a flood presents, and their likely social, environmental and economic impacts. They help us establish the nature and scale of the existing risk, and how this may change over time or as a result of any flood risk management measures we put in place.

As well as historical data from past floods, we continually monitor present water levels. Many residents receive early warning alerts as water levels start to rise (more information below). We develop models from this data to predict the course and severity of future floods. All this information goes into our flood risk assessments, which particularly focus on:

- source of a flood, e.g. river, stream, or tidal water
- paths water will take during floods, and how the severity of a flood affects its path
- effects on people, land and property.

Over time, the quality of information about the condition and performance of stopbanks has significantly improved, enabling better forecasting and forward planning as to when maintenance is needed.

## Chance of flooding

The probability or likelihood of flooding is described as the chance that a location will flood in any one year. The technical term for this, which you may hear from time to time, is AEP. This stands for annual exceedance probability.

If a location has a 2 per cent chance of flooding each year, this can also be expressed as having a 1 in 50 chance of flooding in that location in any year.

However, this doesn't mean that if a location floods one year, it will definitely not flood for the next 50 years to that extent. Nor, if it has not flooded for 50 years, will it necessarily flood this year.

The **lower the percentage** then the **less chance** there is of flooding in any one year; the **higher the percentage** then the **more chance** there is of flooding in any one year.

Whatever the odds, it pays to be prepared for flood.

Recurrence interval in years	Probability of occurrence in any given year	Percent chance of occurrence in any given year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

## In the zone: be prepared

We can't prevent flooding entirely, but we can reduce the risks of flooding by managing land and river systems; by building and maintaining flood defences; being aware of flood risk and taking action to protect ourselves and our property.

- Sign up for free flood warnings that are sent direct to you by email and text message alerts by emailing [communitysafety@waikatoregion.govt.nz](mailto:communitysafety@waikatoregion.govt.nz) or free call 0800 800 401 and ask to speak with the Senior Emergency Management Officer.
- Prepare for flood by understanding your flood risk and making a flood plan for you and your family and finding ways to reduce the impact of flooding to your home or business. You'll find information on our website.
  - [www.waikatoregion.govt.nz/broadscalefloodinfo](http://www.waikatoregion.govt.nz/broadscalefloodinfo)

- Keep up to date with the latest rainfall, river level and flow rates for your area and use our interactive graphs to see current and past levels.
  - [www.waikatoregion.govt.nz/riversandrainfall](http://www.waikatoregion.govt.nz/riversandrainfall)
  - [www.waikatoregion.govt.nz/rainfall](http://www.waikatoregion.govt.nz/rainfall)
  - [www.waikatoregion.govt.nz/riverlevels](http://www.waikatoregion.govt.nz/riverlevels)
- Call 0832 InfoLine for the latest information from our 72 flood alarm and rainfall monitoring sites.

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