

# TE KAURU UPPER RUAMĀHANGA FLOODPLAIN MANAGEMENT PLAN

## PHASE 2 – VISION AND AIMS

*DRAFT*



**BIBLIOGRAPHIC REFERENCE FOR CITATION:**

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## REPORT STRUCTURE

This report sets out the Flood Management Vision and corresponding issues and aims which inform Phase 2: Te Kauru - Upper Ruamāhanga Floodplain Management Plan.

The project area has been split into 31 sections called river reaches (these are defined by their character and are therefore different to the existing River Management Scheme reaches). They are spread over the length of each river and include the whole river from the headwaters to the confluence of the Ruamāhanga with the Waiohine River. Each reach is described in separate chapters of this report which set out the following:

- a description of character of each river and reach including key characteristics
- the values that exist within each reach including identified influences upstream or downstream
- the flood and erosion issues they contain
- a description of specific flood and erosion management aims

Each reach has been identified through assessing river attributes, landscape context and riparian margins across the study area in order to differentiate sections of river which have a distinct difference in character. River attributes consider channel and watercourse characteristics, such as its size and channel outline. The character of the riparian edge provides descriptions of the area immediately adjacent to the watercourse, including vegetation, bank morphology and modifications. The landscape context characterisation takes larger scale landforms, land uses and built modification of the wider area into account.

In response to the combined values and flood management and erosion issues, flood management techniques and overarching aims have been set out at the start of this report together with reach specific aims to address unique values or issues identified within each reach.

## CURRENT FLOOD RISK MANAGEMENT

The current approach to flood risk management in the catchment primarily addresses erosion concerns. This is managed through a number of schemes, some of which have been successfully operational for more than 30 years. This focus has been driven by the tolerance of rural land use within the catchment to flooding impacts, and a driver to maximise productive capacity of that land. Agricultural land use remains one of the key drivers behind the need for river and predominantly erosion management and creates the greatest demands on the rivers. It remains an important factor in the determination of vision and aims. In recent years concern has been raised about the techniques used and the impacts that these techniques and schemes have had on the river ecology and environment. As a result of these concerns and collaborative work between the schemes and community representatives some big steps have already been made to create positive change to these management practices. The Te Kauru Upper Ruamāhanga Floodplain Management Plan will build on the improvements that have already been made, and recognise the range of values, including economic, as part of the assessment and option development process.

## FLOOD MANAGEMENT VISION

The overriding Flood Management Vision developed for Te Kāuru identifies:

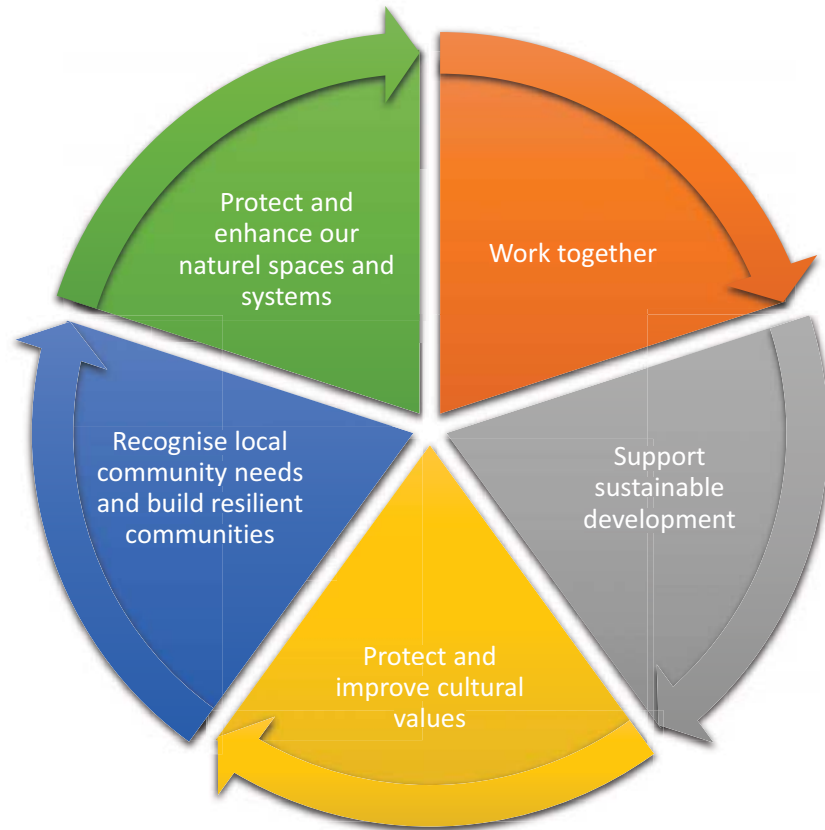
*A connected, resilient, prosperous and sustainable community, proud of its rivers, that is involved in managing flood risks in a manner that recognises local identity and protects, enhances or restores natural and cultural value.*

## FLOODPLAIN MANAGEMENT PLAN OVERARCHING AIMS

The overarching aims identify the desired outcome from the development of the floodplain management plan. Further clarification of aims for each reach or that may be required for specific sites is also included on a reach by reach basis.

Floodplain management aims draw inspiration from a range of different sources including council policies, mission and purpose statements of organisations involved with the floodplain management plan and the issues and values held by affected communities. Through the floodplain management process, options developed for each reach will be supported by objectives which provide measurable and achievable outcomes used to deliver identified aims.

While the aims have been split into five groups there exists a complex relationship across the aim groups and between individual aims. No prioritization is implied by the numbering of the aims which has been used to assist discussion.



### 1. To work together to develop a sustainable floodplain management plan

- Provide affordable flood hazard management across a whole continuum of flood risk
- Align with integrated catchment management principles
- Follow the principles set out in the flood protection code of practice
- Endeavour to make future development and land-use compatible with flood risk

### 2. To support sustainable economic development

- Inform the long term plans of local authorities
- Reduce the likelihood of loss to private property, business and agriculture
- Make property owners aware of their flood risks and damage potential
- Manage or reduce the risk to essential public infrastructure and maintain lifelines during flood events.

### 3. To protect and improve the cultural values of rivers

- Improve the recognition of impacts of flood and flood hazard management on cultural activities and values
- Improve the mauri of water ways within the catchment
- Improve access for mahinga kai and cultural practices
- Recognise and consider the interconnectedness of natural systems

### 4. To recognise local community needs and build resilient communities

- Make communities aware of their flood and erosion risk
- Recognise opportunities to support the sustainable aspirations of the community and landowners
- Identify and support opportunities for improved public access to and along rivers
- Maintain and improve the level of safety for recreation users of the rivers

### 5. To protect and enhance our natural spaces

- Improve awareness and understanding of the natural values and character of the river environment
- Improve recognition of impacts of flood and flood hazard management on environmental and ecological values
- Create more space for rivers and their natural processes
- Improve the water quality and habitat diversity along the rivers
- Make the use or extraction of natural resources including gravel management sustainable and compliant with relevant policies

## WAINGAWA RIVER

The Waingawa River flows from the Tararua Ranges into the Ruamāhanga River to the south of Masterton. The upper reaches of the river commence in the Tararua Forest Park and flow out onto the Wairarapa Plains from the confluence with the Atiwhakatu Stream near Kaituna.

The Waingawa River was known to change its course often. As the river moved and shifted across the plains, some sections of river channel were left isolated. Over time these isolated river channels developed into wetland areas. The name Waingawa stems from the name given by Haunui-a-Nanaia, 'Waiawangawanga' which means troubled or uncertain waters. Like many traditional names, the Waiawangawanga has been shortened to Waingawa for easy pronunciation.

Within the Upper Wairarapa Plains the river widens to form a broad braided form which follows a fairly direct alignment towards the Ruamāhanga River over a distance of approximately 17km. Here the bed of the river is typically contained by willow margins with further pockets of remnant forest also retained on terraces which step from the river.

The Waingawa floodplain soils are formed from greywacke alluvial parent materials from the Tararua Ranges. Land use in the catchment is a mix of native forest in the upper catchment transitioning to a range of primary production activities within the Wairarapa Plains. The middle section of river also adjoins rural lifestyle development, and urban areas (Masterton) including the Hood Aerodrome.

### General issues

Important community infrastructure is subject to flood and erosion damage from the Waingawa River. This includes the Taratahi water race intake, Masterton Water Supply Pipe Bridge and pipeline, SH2 and rail bridges, and Hood Aerodrome.

The Waingawa River is also subject to the three key gravel river management issues noted in the Ruamāhanga River section, namely:

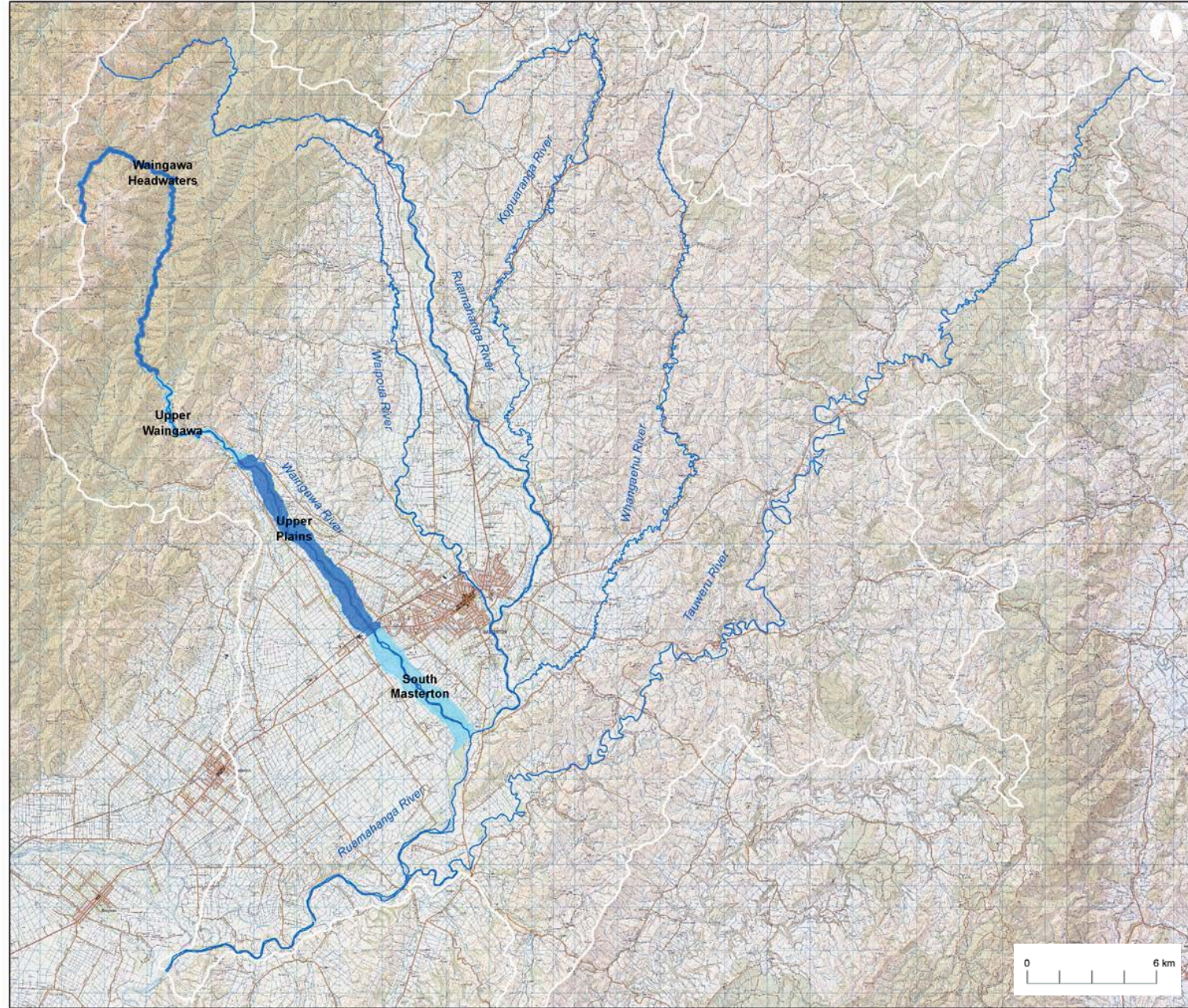
- Degradation/aggradation;
- Inconsistency in community acceptance of current erosion management practices; and
- The value of the rivers for recreation and habitat conflicts at times with river management works (The open riverbed of the Waingawa River is particularly valuable as bird habitat).

In addition the Waingawa River creates challenges for the establishment of vegetated buffer areas due to its deeply cut channel with areas of vertical river bank.



*Waingawa River viewed from Upper Waingawa Road end*





**WAINGAWA RIVER**



## WAINGAWA HEADWATERS – REACH 14

### Character

The headwaters of the Waingawa River flows through the Tararua Forest Park. In this area the river passes through bush clad gullies with rock lined gorges with narrow boulder gardens with rapids and pools extending a wilderness character along the course of the river.

### Key Characteristics

- Bush clad gullies
- Rock lined gorges and bolder gardens
- Limited visible human presence

### Values

The headwaters of the Waingawa flow through fenced and unfenced indigenous vegetation protected as part of the Department of Conservation Estate. Rock lined gorges framed with native beech and podocarp forest express very low levels of landscape modification with corresponding very high scenic value. The entirety of this reach is zoned Rural (Conservation) in the WCDP (2013).

Due to the underlying strong wilderness and scenic values, this reach attracts popular walking and tramping tracks with huts leading into the Tararua Ranges. Additionally it sees use for wilderness fishing, and some grade 2+ kayaking along boulder gardens and sharp end. Mitre Flats is a popular fishing and kayaking area along this reach of river with foot access only.

### Flood and erosion issues

No issues have been identified in this reach

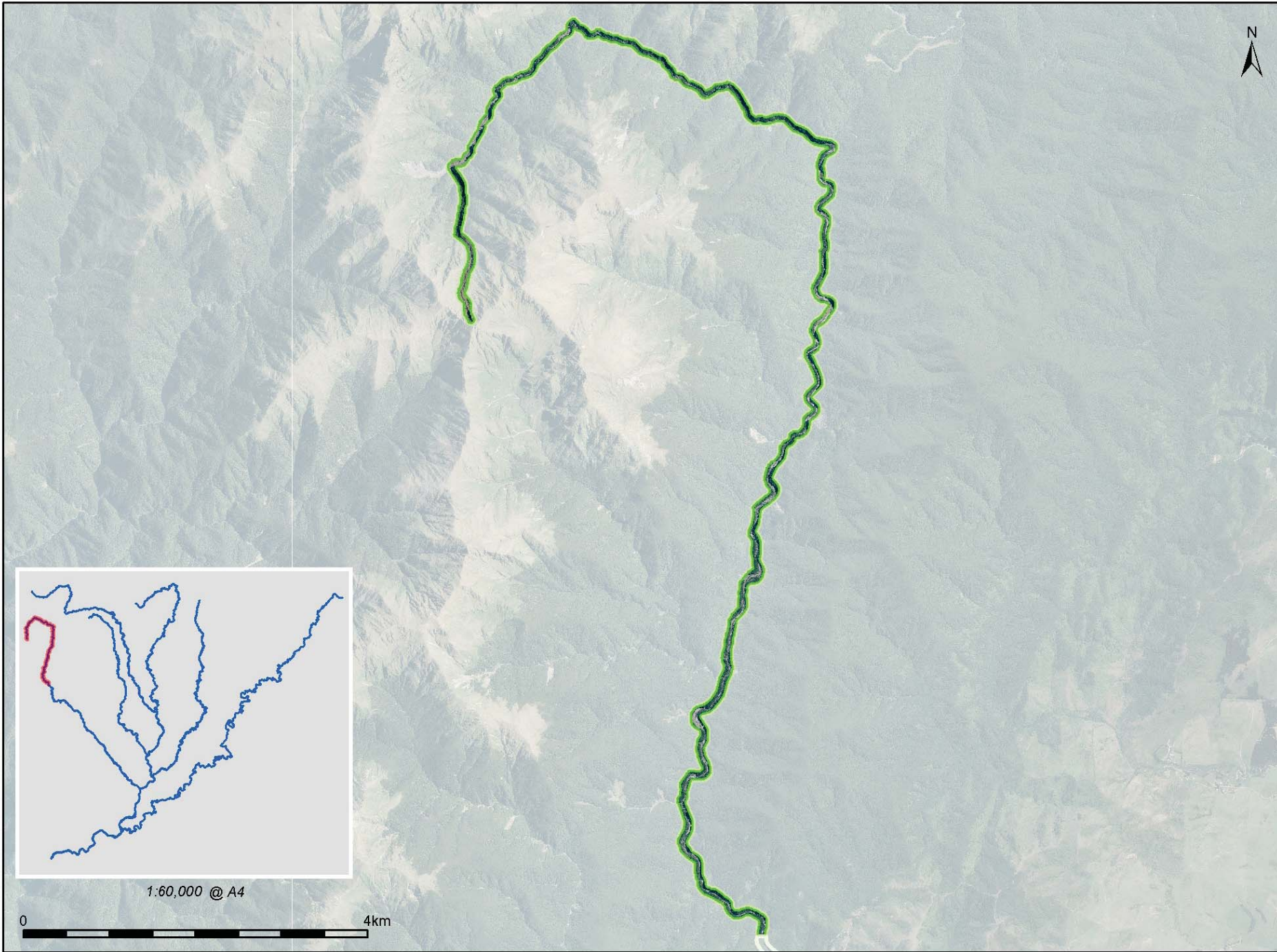
### Additional reach specific floodplain management aims

There is no intent to carry out any form of management or maintenance activity within this reach as part of the floodplain management plan.

Encourage continued recognition of the values and character of this reach.

Support initiatives that aim to preserve or improve the natural values of this reach.





WAINGAWA HEADWATERS – REACH 14

# UPPER WAINGAWA – REACH 15

## Character

The Upper Waingawa River flows from the Tararua Ranges through an area of low lying foothills separating the headwaters from the wider Wairarapa Plains. As the river emerges from the Tararua Forest Park, the river begins to develop a braided form dispersed between rock lined gorges. The margins of the river continue a dominant cover of native vegetation separating the river from surrounding low intensity rural use. The valley floor, associated with the river also includes increasing areas of rural lifestyle use.

### Key Characteristics

- Discrete braided areas separated by narrowed rock gorges
- Continuous bands of native vegetation framing the river margin
- Recent rural lifestyle expansion along the valley floor in some areas

## Values

This reach of the river is slightly more modified than the Waingawa headwaters which flow through Tararua Forest Park. Gorges with rapids and pools continue wilderness recreation opportunities along the course of the river against a backdrop of areas of native broadleaved. In other areas, where the river begins to widen, exotic shelter belts and pasture grassland becomes established along the river margins with areas of rural lifestyle settlement also established along the lower parts of this reach. This has resulted in a low level of landscape modification overall and retains high scenic value.

Walking tracks providing angler and kayak access continue from road ends occurring alongside this reach with popular semi-wilderness recreation sites identified at the Blake Stream Confluence and The Pines. The latter of these sites also forms a popular swimming area at the end of the Upper Waingawa Road.

Terrestrial habitats with identified ecological values along this reach include fenced indigenous forest, unfenced indigenous forest, mixed exotic-indigenous forest, indigenous treeland and stonefield and boulderfield.

## Additional reach specific floodplain management aims

- Work with MDC to improve the security of the Masterton water supply, including intake, pipe crossing and pipe line

## Flood and erosion issues

### Masterton District Council Water Supply Intake [ID0]

The water supply intake for Masterton is located in the foothills area and within a stable gorge like section of the river. It does sit within the erosion study area. No known issues exist with this intake point.

### MDC Water Supply Pipe Bridge [ID1]

The river bed in the vicinity of the pipe bridge is subject to fluctuation, increasing risk of debris flow or scour to structure. Damage to this structure which may occur as part of a large flood event would have very significant consequences for the population of Masterton and therefore this issue is considered high priority.

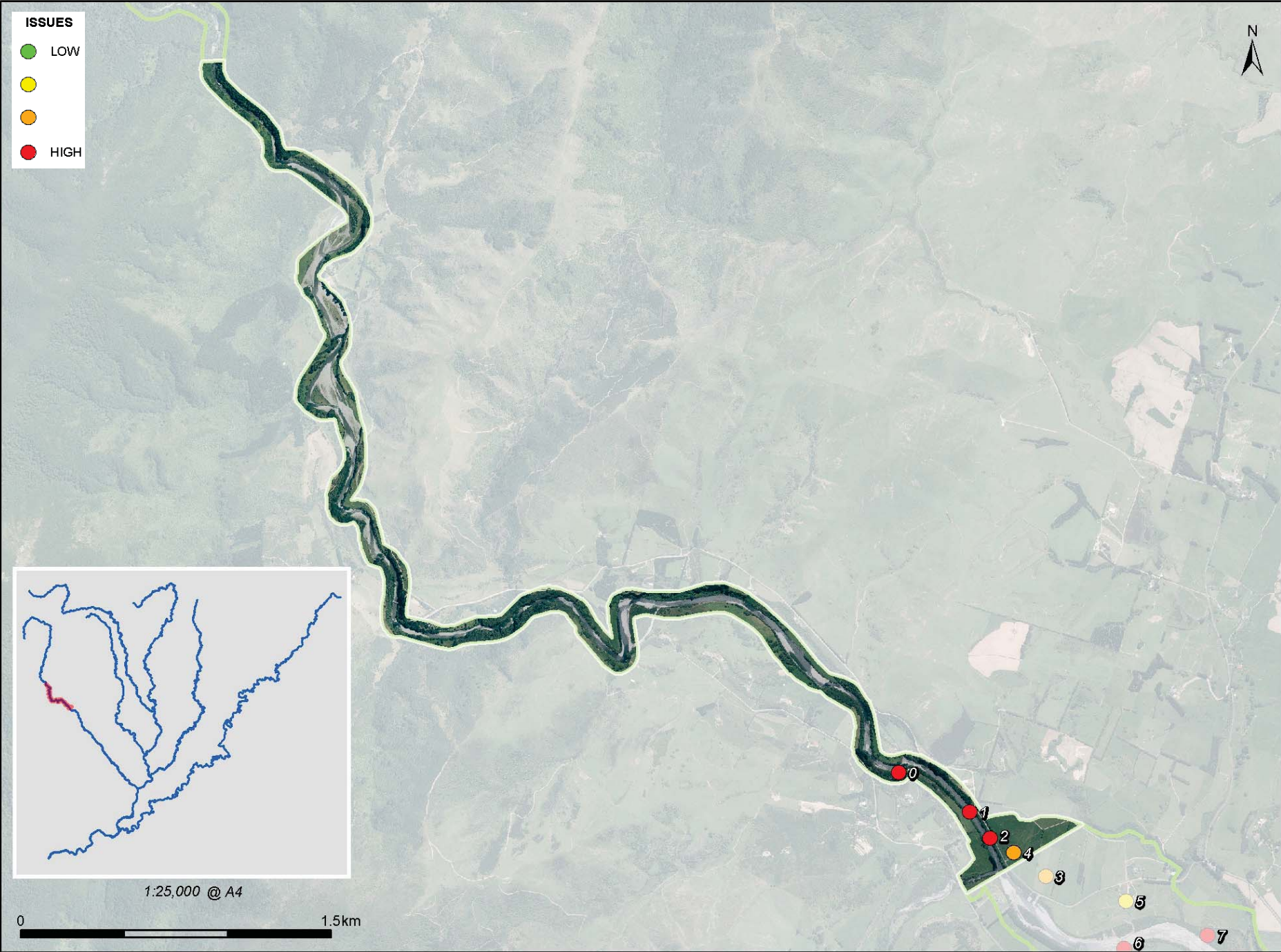
### MDC water supply pipeline [ID2]

The water supply pipeline runs through a narrow strip of land between the river bank and the road. This is under ongoing erosion pressure requiring ongoing management and maintenance of protection assets. Damage to this structure would have significant consequences for the population of Masterton.

### House [ID4]

House located in erosion study area and modelled 1%AEP flood extents. No currently managed issues exist.





UPPER WAINGAWA – REACH 15

## UPPER PLAINS – REACH 16

### Character

From the confluence with Atiwhakatu Stream, the Waingawa River emerges onto the Masterton plains from an area of undulating hills. The bottom of this reach is separated from the lower reaches of the Waingawa River by the State Highway 2 Road Bridge. In this area, the river establishes the twisted braided form from which its name is derived.

The margins of this corridor include willow planting and native vegetation. Beyond the river corridor, terraces accommodating mixed agricultural use and vegetation step above the river corridor. Vegetation includes a significant stand of totara and kahikatea surrounding the Masterton Water Treatment Plant along the eastern banks of the river. Domestic use in the form of rural residential development becomes increasingly more apparent on the approach to Masterton and the State Highway 2 Road Bridge.

#### Key Characteristics

- Strongly braided form
- Margins of mixed willow and remnant native forest
- Increasing settlement in proximity to Masterton

### Values

This reach continues through rural land used for primary production which is predominantly established in pasture. River re-contouring works become more frequent in this area alongside areas of willow planting with large areas of indigenous vegetation. Overall this reach has undergone a low to medium level of landscape modification with medium / high levels of scenic value.

Some kayaking continues along this reach resulting from the flat water with riffles and braids. The naturally shifting course of the river results in an unstable environment which is infrequently fished, whilst remaining important for fish passage. Access for both kayaking and fishing is obtained at the end of Skeets Road.

Important ecological values identified along this reach include Waingawa River Bush (RAP) and include terrestrial habitats associated with unfenced indigenous forest, mixed exotic-indigenous forest, indigenous treeland and stonefield and boulderfield.

### Flood and erosion issues

A total of 30 erosion and flood management issues are identified along this reach, predominantly associated with water supply and rural development established west of Masterton. These are illustrated and described overleaf.

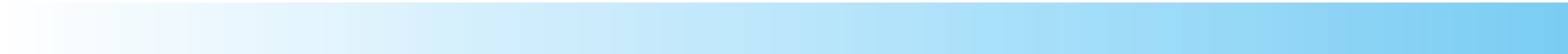
### Additional reach specific floodplain management aims

- Protect the Waingawa River Bush RAP site from negative impacts of flooding and erosion.
- Work with MDC to improve the security of the Masterton water supply, including pipe line and treatment works.
- Maintain the additional protection for Masterton provided by the Skeets Road stopbanks.
- Work with Carterton District Council to maintain the security of the Taratahi water race intake.
- Work with the asset owner of the electricity distribution network to relocate pylons outside of the active channel.
- Address the security concerns regarding the Waingawa bridges stopbanks.
- Work with the infrastructure owners of the railway bridge and road bridge to ensure their continued operation and security
- Work with the Wairarapa Water Use Project in relation to dam and irrigation proposals within the vicinity of this reach.





*Waingawa River viewed west from SH2 Road bridge*



**Flood and erosion issues**

**Upper Waingawa Road [ID3]**

The Upper Waingawa Road is modelled to be flooded to a depth of up to 0.9m in a 1%AEP flood.

**Farm Buildings [ID5]**

A number of farm buildings including a milking shed sit within the modelled flood extents and erosion study area. No currently managed issues exist.

**Taratahi Water Race Intake [ID6]**

Bed degradation in the vicinity of the water race has meant ongoing difficulties with maintaining water flow into the race. There is also a difficult balance to achieve between scour and aggradation effects due to the location of the intake in relation to the channel alignment.

**MDC Water supply pipeline [ID7]**

Bed degradation at black creek is creating a risk to the Masterton Water Supply pipeline, the pipeline also sits within the erosion study area.

**Waingawa River Bush RAP Site [ID341]**

The RAP site sits within the erosion study area and is part of the buffer strip along this bank, it is also very close to the design channel alignment. No currently managed issues exist.

**Houses [ID8]**

Houses located within the erosion study area.

**MDC Water Treatment Plant – Sludge Treatment Area [ID10]**

The sludge treatment sections of the water treatment plant are located on the lower river terraces and within the erosion study area. No currently managed issues exist.

**MDC Water Treatment Plant – Main Facility [ID9]**

Parts of the water treatment plant sit within the erosion study area, the main section of the plant is outside of this area. No currently managed issues exist.

**MDC Water Supply Boost Pump Station [ID12]**

The boost pump station for the Masterton water supply sits within the 1%AEP flood extents. No currently managed issues exist.

**House [ID13]**

A single dwelling sits within the modelled flood extent for the 1%AEP flood. No currently managed issues exist.

**Historic River Channel [ID11]**

An old river channel sits within the overflow path of the updated 1%AEP flood. The old gravel river bed has been planted over and closed off with a stopbank.

**House [ID15]**

A single dwelling sits within the erosion study area. This house is also within the existing Wairarapa Combined District Plan erosion area. It is not modelled to be affected by the 1%AEP flood extent. No currently managed issues exist.

**Channel Alignment [ID14]**

A lack of buffer zones at this location has created ongoing management issues and difficulty in maintaining the within agreed design lines. The TRB erosion current extends beyond the designed buffer.

**MDC Water Supply Future Treatment Site [ID175]**

The site designated for potential future water treatment site sits within the erosion study area and modelled 1%AEP flood extent. No currently managed issues exist.

**Tararua Drive Stopbanks [ID17]**

The stopbanks in this location are of low level and crest height is frequently monitored due to issues with stopbank levels.

**House [ID 18]**

The house and outbuildings are within the erosion study area but sit outside the modelled 1%AEP flood extent. No currently managed issues exist.

**Flaggates in stopbanks [ID20]**

Two flaggates in Skeets Stopbank create possible back flow routes. These are occasionally blocked open because of misunderstandings about their purpose and use

**Skeets Stopbanks [ID21]**

The stopbanks in this location cut off an historic overflow path that connected the Waingawa to the Waipoua River near Akura. It is a good quality stopbank maintained by GWRC.

**Buildings [ID22]**

There are several buildings which sit within the erosion study area and modelled flood extents. No currently managed issues exist.

**SLUR Site [ID23]**

A site on the selected land use register which sits within the erosion study area.

**Distribution Network Powerlines [ID24]**

A pylon which is part of the distribution network for local electricity sits in the active channel on the river bed. Adjacent pylons sit close to the river berms and are at risk of erosion.

**Contractors Yards [ID26]**

Contractors yards within the erosion study area and are affected by modelled flood extents.

**Transmission Powerlines [ID25]**

Pylons just upstream of the Railway Bridge sit on the berms and are within the erosion study area. No currently managed issues exist.

**Railbridge [ID30]**

Bed degradation is a managed and known issue in the area around the railway bridge.

**Channel Alignment [ID32]**

The buffer zones between the two bridges are very narrow, and have been recommended for review.

**Stopbank [ID31]**

The stopbank on the TLB between the two bridges is of very poor quality due to the mixing of wood mulch with the other material used in its construction. It is believed to be of high failure risk and flooding through this area would affect the industrial yards further along the bank edge and along the fringes of Masterton. Material from these banks has been washed into the river in past events.

**Contractors Yards [ID27]**

Contractors Yards within the erosion study area and affected by the 1%AEP flood extent. Known erosion management issues exist in this area.

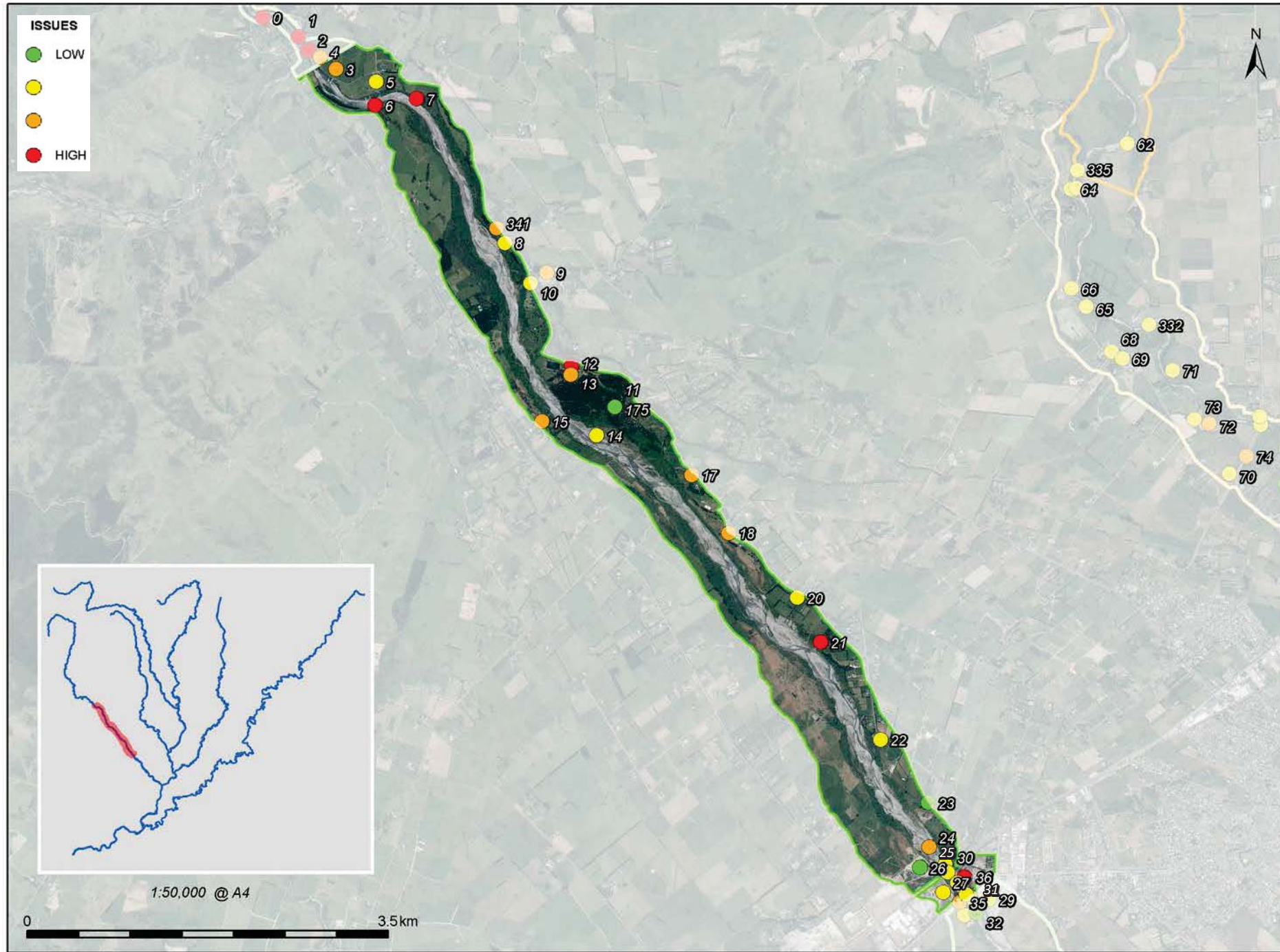
**Sewer and Water Supply pipeline [ID36]**

Both sewer and water pipelines are clipped to the road bridge across the Waingawa. No currently managed issues exist.

**Pumpstation for sewerline [ID35]**

The sewerline pump station is located within the erosion study area and on the edge of the 1%AEP flood extents. No currently managed issues exist.





UPPER PLAINS – REACH 16

# SOUTH MASTERTON – REACH 17

## Character

The Waingawa River continues a twisted braided form to the east of the State Highway 2 Bridge. The margins of the river corridor are more consistently established in willow separating adjoining areas of pasture and cropland. Hood Aerodrome and other urban edge development which includes gravel extraction also influence the character of the river. In other areas, the river retains a varied and dynamic braided form.

### Key Characteristics

- Broad braided form
- Consistent willow planting along margins

## Values

The close proximity of the southern end of Masterton together with gravel extraction visible from State Highway 2 Bridge frequently detracts from natural values associated with the river. Overall this results in a perceived medium / high level of landscape modification with medium scenic values retained along the wider reach.

Some kayaking occurs along this reach on account of the continuation of flat water with riffles and braids flowing from the upper reaches of the river. State Highway 2 Road Bridge also forms the upper limit of jet boating typically encountered along the Waingawa.

Fishing remains infrequent throughout this reach on account of the changing course of the river. Whilst fish passage remains important, the form of the river remains unstable and does not typically hold fish within it. Popular swimming sites are identified at South Road and Hughes Line on each side of the river immediately above Hood Aerodrome.

Terrestrial habitats with identified ecological values along this reach include mixed exotic-indigenous forest, Indigenous treeland, stonefield and boulderfield, natural wetlands and ponds.

Wetlands along the margins of the Waingawa River were important for gathering mahinga kai with cultural sites also associated with the mixing of mauri as water flows into the Ruamāhanga at the bottom end of this reach.

## Additional reach specific floodplain management aims

- Work with the owners of Hood Aerodrome to maintain the operation and security of their facility
- Work with MDC and CDC to address the dumping of rubbish that occurs at access points along this reach.
- Continue to develop land access and retirement agreements to widen the river corridor
- Recreation management to encourage good quality recreation opportunities

## Flood and erosion issues

### Powerlines [ID33]

Transmission network power line pylons are located within erosion study area. No currently managed issues exist.

### Contractors Yards [ID28, 29]

Contractor's yards are within erosion study area and 1%AEP flood risk. Erosion management is an ongoing issue at this location.

### Powerlines [ID32]

Distribution network powerline pylons are located within erosion study area 30m downstream of SH2. No currently managed issues exist.

### Land Retirement Agreements [ID38]

Land use changes are currently underway in this area to increase the amount of buffer strip available to manage riverbank erosion.

### Illegal Dumping Site [ID43, 44]

This recreation access site is affected by illegal dumping of rubbish.

### Hood Aerodrome [ID41, 39, 40]

The runway on the hood aerodrome has been continually affected by erosion. Erosion management with rock protection and vegetated buffer is in place, and repair works have been carried out in the past. Vegetated buffer strip has height limit restrictions due to flight path. Aerodrome site is listed on contaminated sites database.

### Private Water Intake [ID45]

There is a private water intake structure located within the erosion study area. It is not known to have any issues.

### Drag Strip [ID42]

The Masterton drag strip is located within the erosion study area and is affected by the modelled 1%AEP flood. No currently managed issues exist.

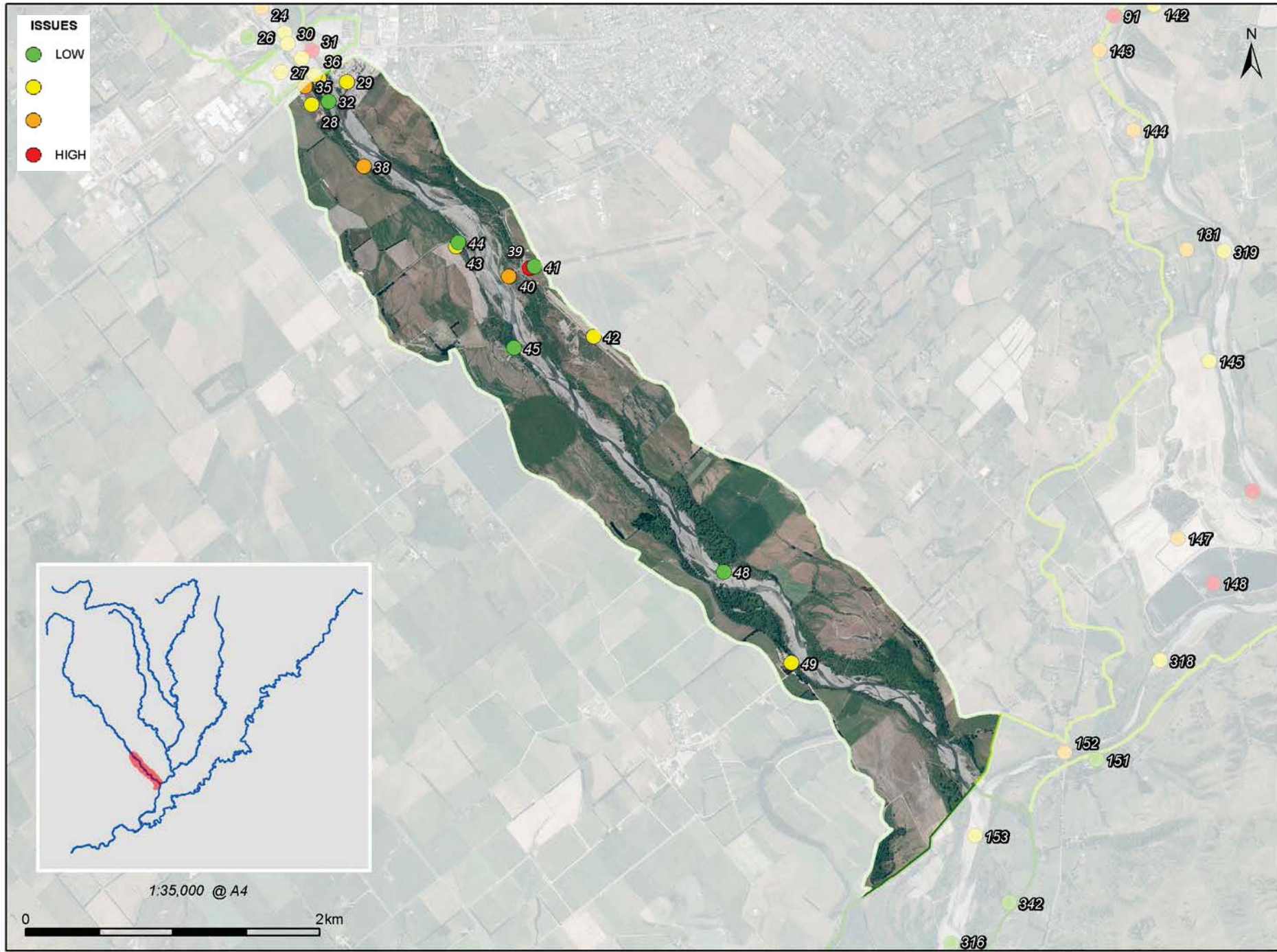
### Distribution Network [ID48]

The TRB pylon sits within erosion study area, the TLB is believed to be outside of the erosion study area extents. No currently managed issues exist.

### Private Water Intake [ID49]

A private water intake is located within the erosion study area, No currently managed issues exist.





SOUTH MASTERTON – REACH 17