



Waikato Expressway

Rangiriri Section

Information sheet July 2014



The Mudfish from Rangiriri have been residing in tanks at the University of Waikato but are soon to be relocated to their new home

Little wetland wonders

- Once their habitat dries out, Mudfish burrow into soil and remain there motionless, breathing air, until the autumn rains refill the wetlands
- Mudfish are unique and noted as one of the few fish species worldwide that have such an ability to survive for extended periods out of water
- Mudfish were probably once the most abundant freshwater fish in New Zealand but are now confined to limited habitats due to a severe loss of wetlands
- Black Mudfish are a threatened species listed by DoC as being 'At Risk'
- The biggest threat to mudfish is the loss of habitat, from either filling or draining of wetlands and from cleaning out of drains by farmers

Mudfish heading home

A colony of rare black mudfish found in the pathway of the Waikato Expressway have been holidaying in tanks at the University of Waikato while a new habitat is built for them.

Around 150 mudfish were caught in a culvert near the planned Rangiriri Interchange in June 2013. The population of mudfish in this area was very dense and therefore quite significant. The most likely reason that this particular group were present in such numbers is due to an existing perched culvert, which remains in place, which has limited the

access of predatory fish.

After removing approximately 160m² of their habitat to make way for the Expressway, a team guided by ecologists and the Department of Conservation have constructed a new home for the mudfish which at approximately 500m² is twice what was required by the consents. Landscape planting of the new area has now been completed and planning is underway for the mudfish to return in early September.

Reintroduction is best timed for the end of winter when the mudfish will be keen to establish themselves in the vegetation which not only provides shelter and food but reduces the water temperature and retains moisture which is essential for their survival. Following the reintroduction of the mudfish this area will be monitored for a period of three years to ensure that the community survives.

Traffic moving well through site

Work continues across the site but earthworks won't restart until the drier weather in September.

Project manager Charles Stokes reports State Highway 1 traffic has been moving well through the 4.4km stretch on two "temporary" bypasses needed to move traffic away from both the Rangiriri and Te Kauwhata interchanges.

"Most travellers won't have noticed the difference really," says Charles, "but it was a big part of the project and has been going smoothly."

April 2014 saw the successful diversion of all State Highway 1 traffic onto a temporary road between Plantation Road and Te Kauwhata intersection. This temporary layout will remain in place until mid-2016 to enable the

construction of the Te Kauwhata Interchange, the new State Highway, and local road tie-ins. Please drive to the conditions at all times and follow the 80km/h temporary speed restrictions.

As work on site progresses there will be further temporary road changes, with traffic management and temporary speed restrictions in place to ensure the safety of all our road users. We thank all motorists for their cooperation and safe driving.



The southern start of the Rangiriri section looking north from the Waikato River

To stay informed of project updates on this and other sections of the Waikato Expressway, we encourage you to 'like' our Facebook page: www.facebook.com/waikatoexpressway



KEY

- Existing SH1
- Waikato Expressway Rangiriri section
- Waikato Expressway Longswamp section
- Road to be closed

0 100m 200m 500m

What's coming up?

- Rangiriri MSE Walls: the construction of the southern mechanically stabilised earth (MSE) wall at Rangiriri to allow the abutment construction to continue
- Rangiriri Bridge super structures works under way: this is the offsite precast concrete beams that will make up the bridge deck.
- Earthworks season two: We will look to recommence as soon as weather and ground conditions permit, hopefully late August / early September, with 490,000m³ still to be cut
- Te Kauwhata service diversions: the water main will be relocated to allow for retaining walls and future road alignment
- Te Kauwhata retaining walls: due to start at the beginning of August
- Return mudfish to new home - reintroduction of mudfish to their new habitat planned for early September 2014

Safety first for Wayside Rd

The Transport Agency and Fletcher Construction have been considering a proposed change to the designated alignment connecting Te Kauwhata Road and Wayside Road to the new Expressway interchange. This option was presented at the information day held in January 2014 and consulted on with stakeholders and local land owners.

Following a thorough investigation of the pros and cons of this alternative proposal the Transport Agency has decided not to pursue it further and will revert back to the

original design that traverses the 'DoC' gully.

It was considered that the benefits offered did not justify the design change. The alternative option included a new T-intersection which increases the potential for a traffic incident when compared to the original design.

The Transport Agency and Fletcher Construction are strongly focused on Safe System design solutions and safety was one of the key factors in making the decision.

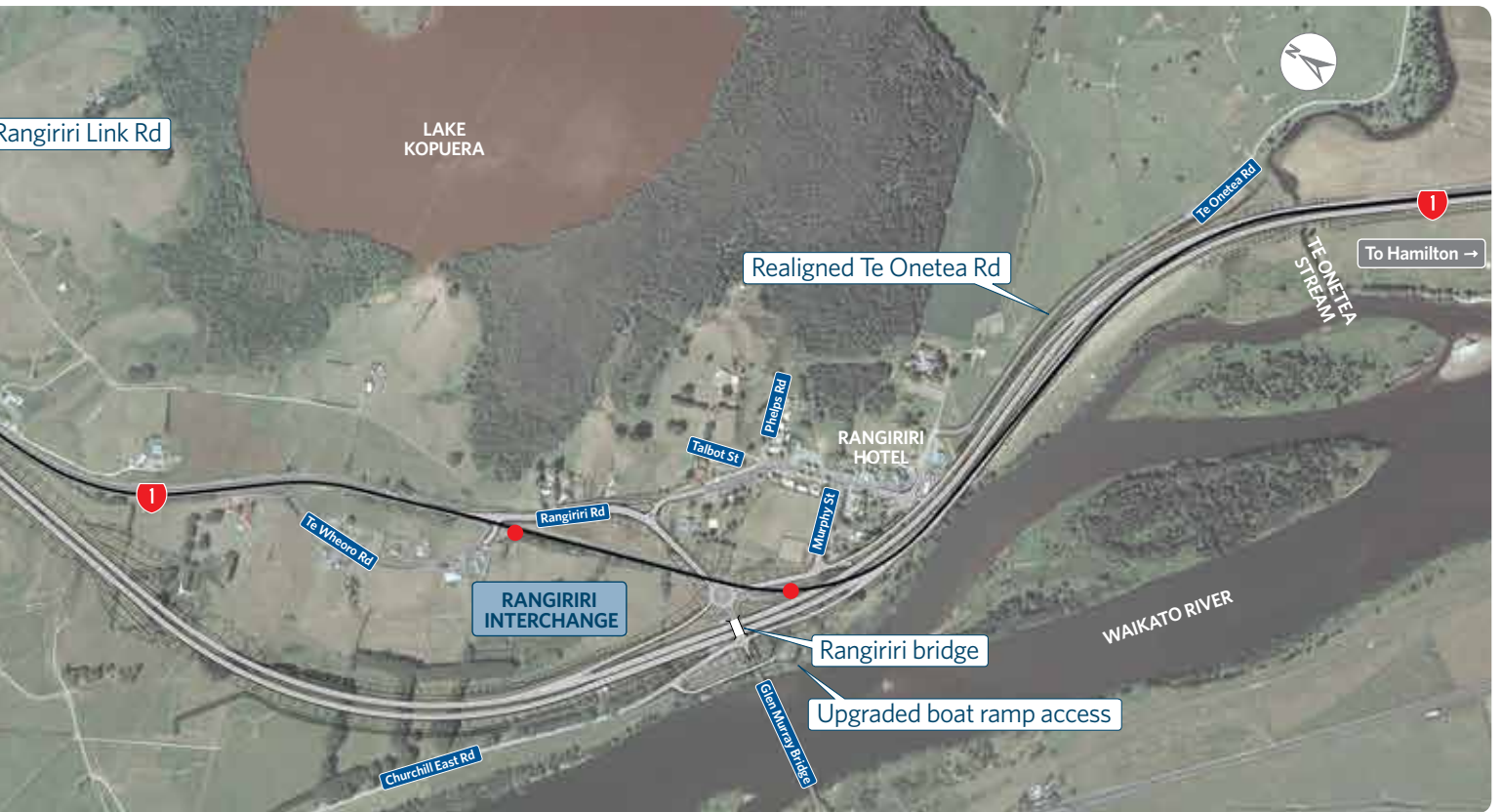
Drainage works

Minor drainage works continue across the site including the longitudinal drainage south of Glen Murray Bridge. This process involves the drainage down the centre of the new Expressway and will ensure that the majority of water from the carriageway is collected and diverted to the various wetlands.

Culvert works will commence from Rangiriri towards Te Onetea Stream, including around

the Rangiriri Hotel and surrounding areas. This work allows for water to flow from Rangiriri and be diverted towards the drainage system south of the township.

Speed restrictions will be in place when works take place near the Rangiriri Hotel, however the majority of the work will be undertaken at night when traffic volumes are reduced and there will be little impact on local residents.



What's an MSE wall?

You may have seen or heard the term 'MSE wall' while following the construction progress of the Waikato Expressway - we thought we'd explain this in a little more depth.

MSE stands for 'Mechanically Stabilised Earth'.

MSE walls are heavy duty retaining walls generally made of heavily compacted earth, hence the mechanically stabilised term.

The layers of fill also include engineering grid which 'reinforces' or 'stabilises' the fill, meaning that the embankments can withstand greater loads. This is why MSE walls are used at bridge abutments where they can also conceal the columns and provide a better aesthetic view.

The grid is often tied into something at the face like keystone blocks and/or pavers. These provide a façade, sometimes patterned, but also provide additional support and protection.



MSE wall being constructed at the Te Kauwhata Interchange

Within the Rangiriri section, MSE walls are forming the retaining walls you will see as you approach Rangiriri and Te Kauwhata Bridges.

Winter a test



One of the many environmental controls in place along the Expressway

The winter weather can create a number of challenges for any large construction project, with rain not only slowing or stopping earthworks but also creating mud, muddy storm water, and tracking issues. This winter

weather is not unexpected so we have planned for its effects by putting additional control measures in place and by changing the way we do things.

With significant amounts of rain received over recent months, environmental controls in place around site have ensured that water sediment has remained within the construction site and has had no environmental impact on the surrounding areas. Diversion drains direct all the rain that falls on site to ponds specifically designed to capture any sediment before this water is discharged from the site.

To minimise how much muddy water is created by the rain we have covered large areas of the site with hay to minimise the erosion caused by rain drops hitting bare surfaces. We have also installed additional ponding areas on site, above our already installed sediment retention

ponds, to catch any sediment that is generated.

To address the effect on the earthwork production we have simply stopped works where it is no longer practical. Where practical and cost effective we have changed the material we use by importing a mainly rock material which is less affected by wet weather.

To stop dirt and mud being tracked onto the public roads we have simply closed areas of the site and in other areas provided all-weather access tracks.

In order for all these controls to continue to operate efficiently throughout the winter period they require monitoring and maintenance. This is done on a regular basis including during and after any rainfall. Environmental ponds are regularly checked for pH levels and the Waikato Regional Council also regularly inspects the site and all its controls.

Expressway overview

This project is part of the larger Waikato Expressway programme of work. The Waikato Expressway is one of seven roads of national significance for New Zealand.

Sections update:

- Longswamp - Secondary investigation, target opening 2018
- Rangiriri - Under construction, opens late 2016
- Huntly - Speciman design, target opening 2019
- Ngaruawahia - Opened December 2013
- Te Rapa - Opened December 2012
- Hamilton - Speciman design, target opening 2019
- Cambridge - Under construction, opens late 2016.

Tests make sure of solid base

Did you know there's a laboratory set up at the Rangiriri site? However white coats don't really come into it for this kind of lab.

Set up by Winstone Aggregates this dedicated lab has the specialised and dirty job of ensuring that the Expressway earthworks are all up to scratch.

Materials brought in from local quarries, or cut from other parts of the project site, is currently being used to form the solid base that will eventually support the road itself.

Rangiriri lab manager, Greg Campbell, and his team of technicians, are familiar faces around site as they head out daily to check each new area for levels of compaction and moisture content, both of which can confirm that the future road will last for many years.

Meanwhile back at the lab the team accepts deliveries of new soils where they identify suitability for the job. The Winstone team are enjoying being part of the project and are enthusiastic about the diversity of soils they are seeing, "At every step of the project's earthworks the soil differs and it's a great challenge to work with this," says Greg.



One of the many tests performed in the lab - this vacuum test determines the solid density of soil particles



Laboratory manager using a Nuclear Densometer on site to determine density and moisture of the ground

Our contact details

For enquiries or information regarding the Rangiriri Section of the Waikato Expressway.

VICKI ANNISON
Communications and Stakeholder Liaison
Phone: 07 958 7260
Mobile: 027 292 8076
Email: vicki.annison@nzta.govt.nz



For further information online visit:
www.nzta.govt.nz/rons
www.nzta.govt.nz/waikato-expressway
www.nzta.govt.nz/rangiriri

WENDY AUSTIN
Fletcher Construction
Traffic and Stakeholder Manager
Phone: 07 853 0553
Email: wendya@fcc.co.nz

FLETCHER CONSTRUCTION
SITE OFFICE
Phone: 07 826 3188
Email: cheriew@fcc.co.nz



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