

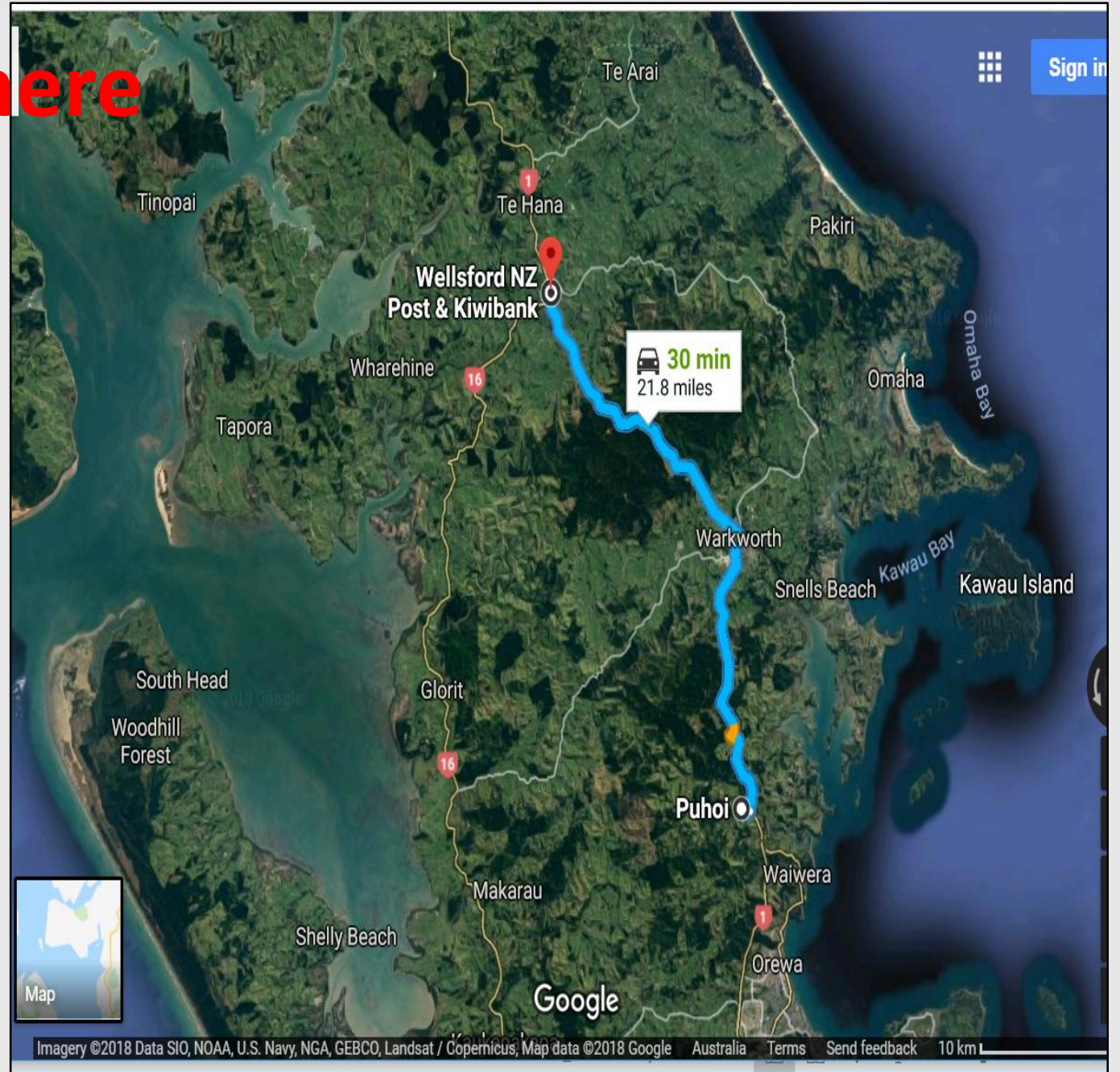


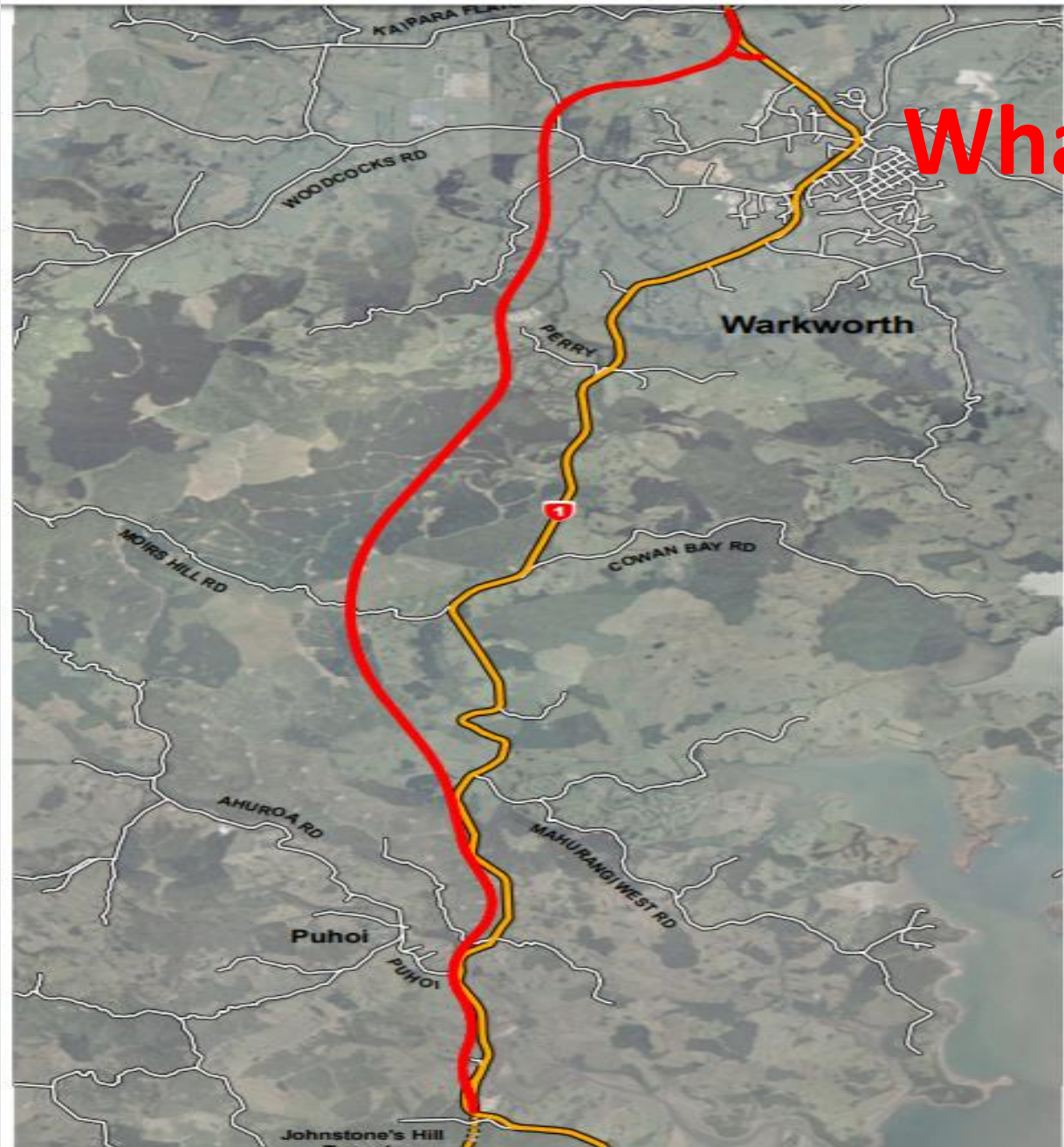
NZ TRANSPORT AGENCY
WAKA KOTAHI

Connecting Auckland to Northland NZ while meeting multiple outcomes effectively

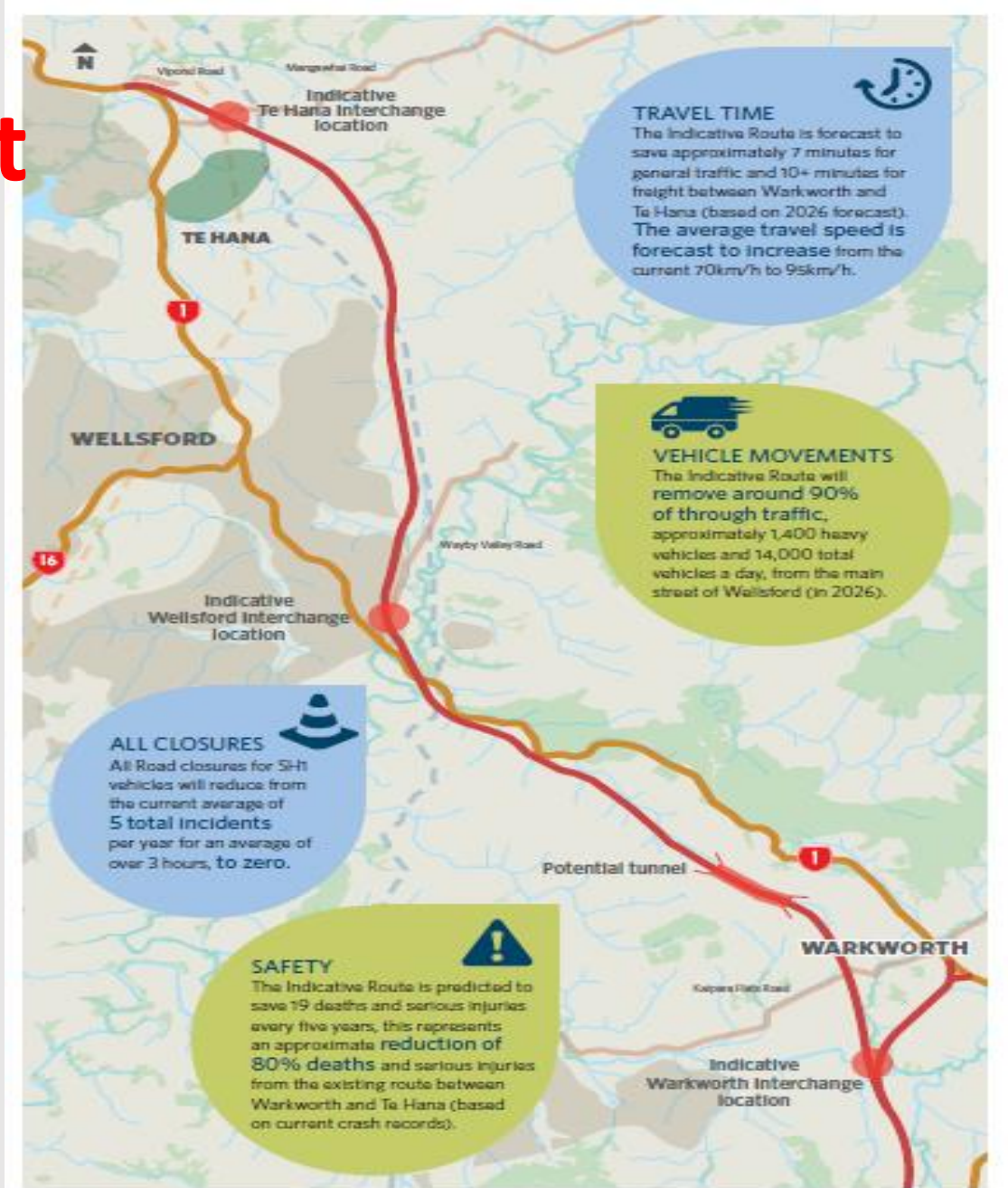
David A Greig
NZ Transport Agency
Transport Issues

Where





What



Past



© Albertland Heritage 2004.2.95.59



Port Albert in the Eighties
The S.S. Minnie Casey lying at the new wharf
© Albertland Heritage 2007.683



Warkworth to Wellsford



Updated Construction Parameters

- Assumed start date 2030
- 6 year bulk EW duration plus approx. 1 year enabling works and early construction activities
- Enabling and early activities includes activities such as vegetation clearance, relocation of utilities, site investigations, site establishment, access roads and haul roads, trial embankments, provision of initial ESC
- Total earthworks footprint of approx. 310ha
- Potential soil disposal site areas = 85 ha
- 12.3 m m³ of Cut and 9.6 m m³ of fill
- 0.64 m m³ imported material with 3.4 m m³ to go to spoil sites
- Approximately 45% (139.5 ha) of the overall earthworks footprint area is steeper than 10 degrees
- (Pakiri Formation) south of the Hoteo River, and the Northland Allochthon (formerly known as Onerahi Chaos) rocks to the north of the Hoteo River



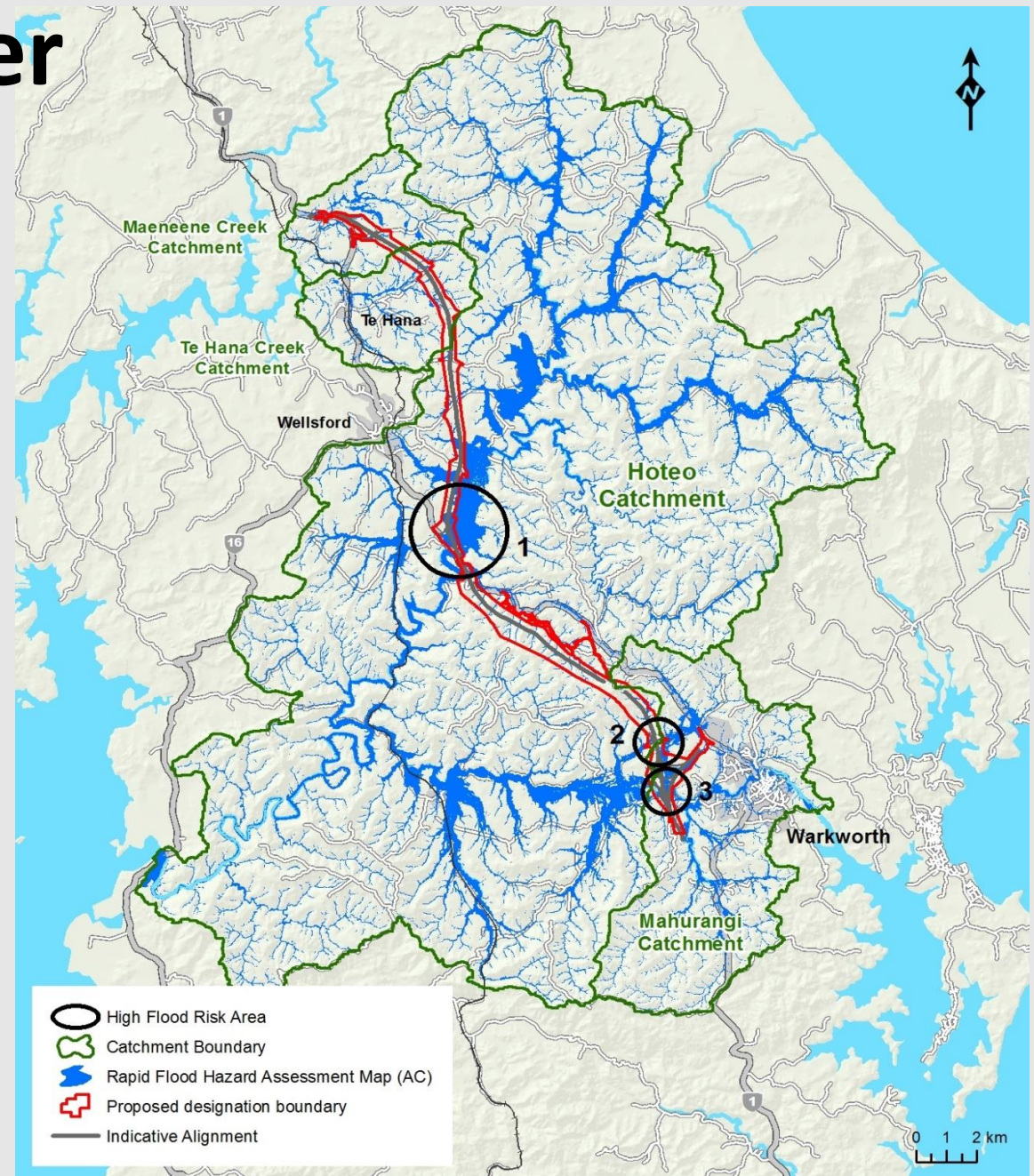
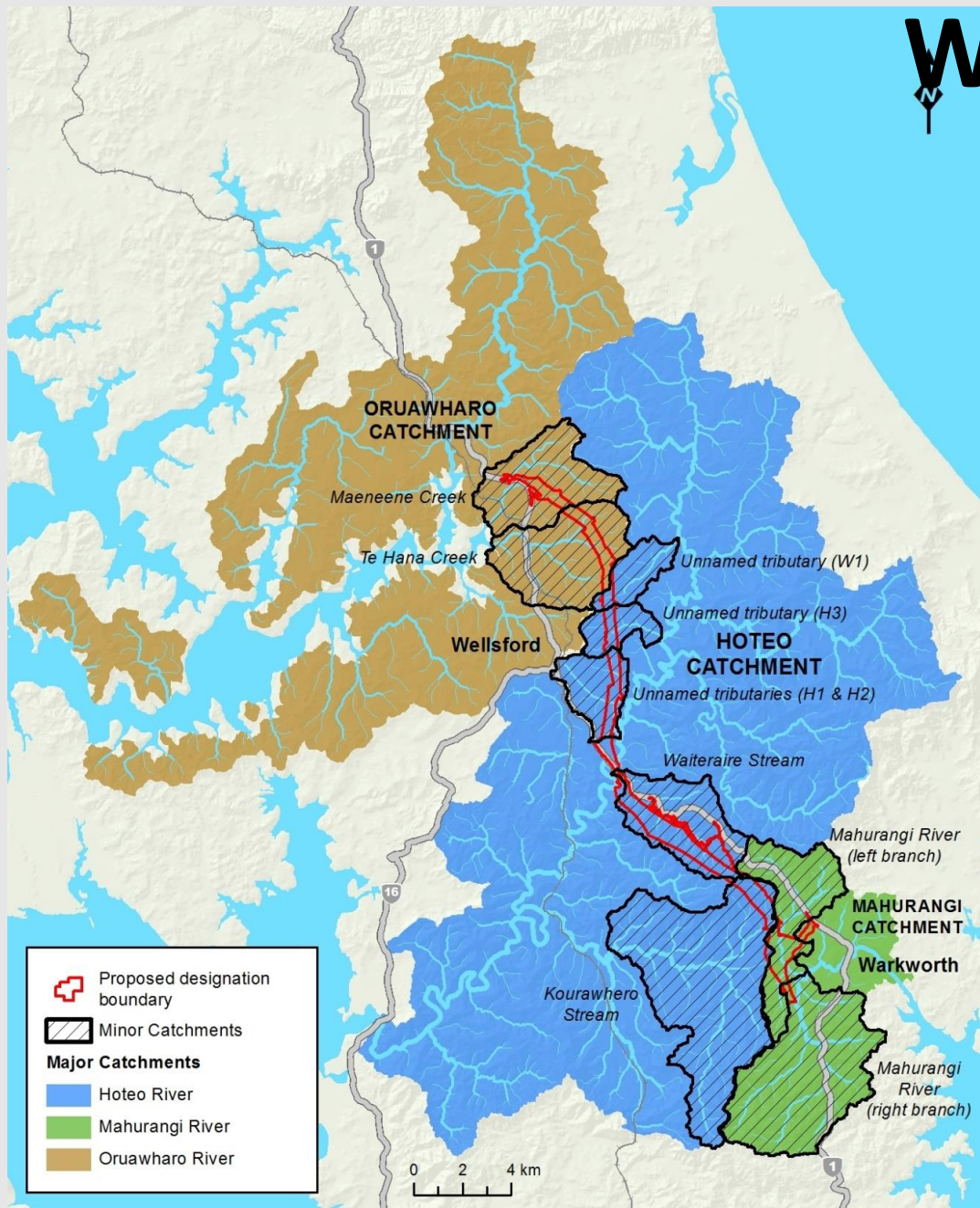
Statutory process

- **Consents and designation**
- **One Notice of Requirement which may overlay existing NZTA designations at common points – eg near Warkworth, to facilitate the Wellsford and Te Hana interchanges**
- **Designation conditions – including construction and operation**

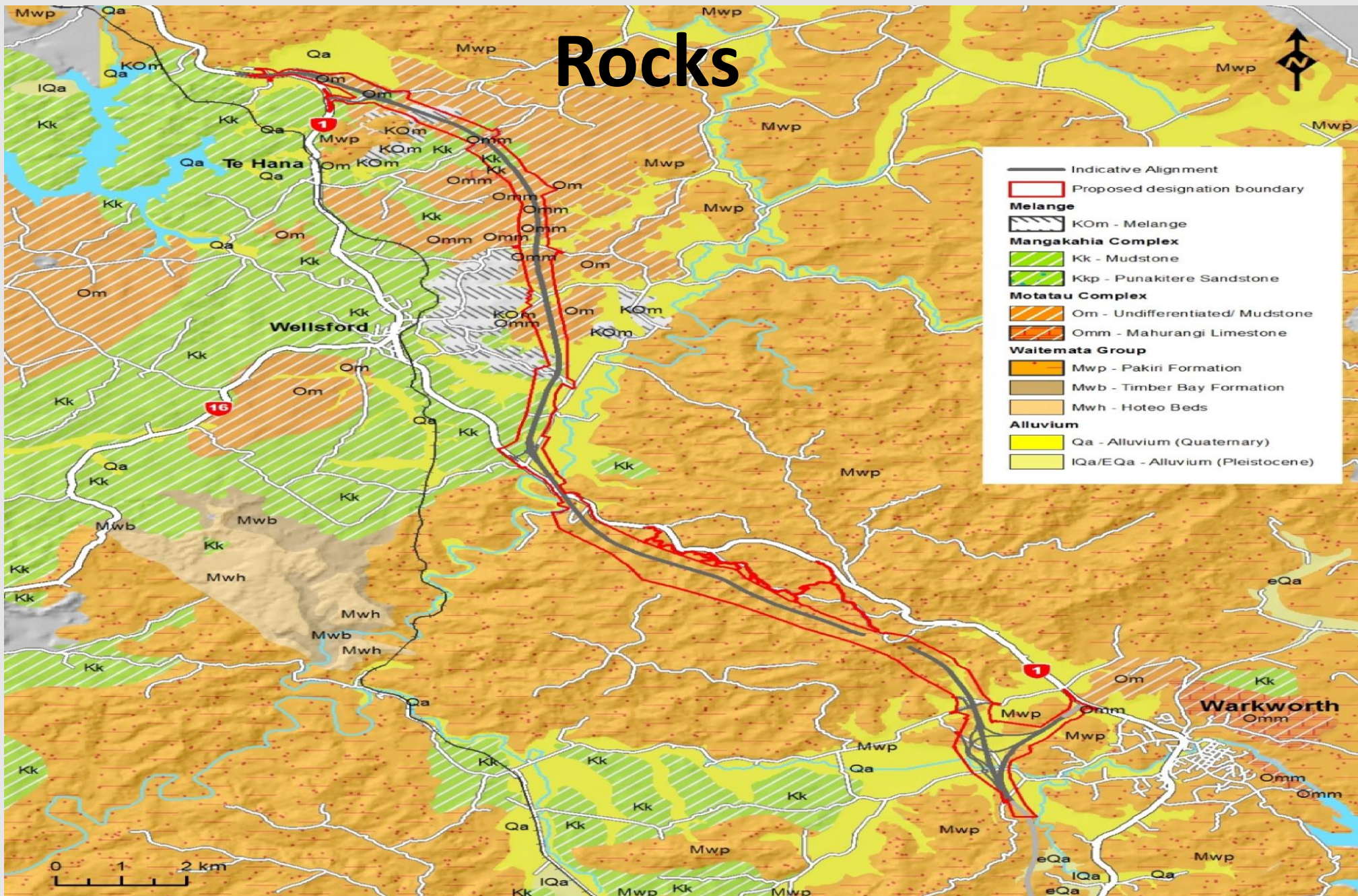
Resource consents

- **Earthworks (including in SEAs and SCPAs, and area and quantity) – RDA**
- **Vegetation alteration and removal (including in SEAs, riparian zones and rural zones) – RDA**
- **Works in watercourses – Discretionary Diversions of intermittent and permanent watercourses – discretionary**
 - **Note – none in overlays**
- **Diversion of groundwater – tunnel and large cuts – RDA**
- **Diversion and discharge of stormwater runoff – RDA**
- **High use road – section 9 consent – controlled activity**
- **Air discharge – mineral rock crushing - RDA**

Water



Rocks



JACOBS

Project No. : 12083000

Borehole No. : WW-BH1006

Project Name : WARKWORTH TO
WELLS FORD

Date : 7/6/17

Box No. : 52 154.50-157.50

0 50 100 200 Scale: mm

KODAK Color Control Patches

154.50m

156.00m

156.87m

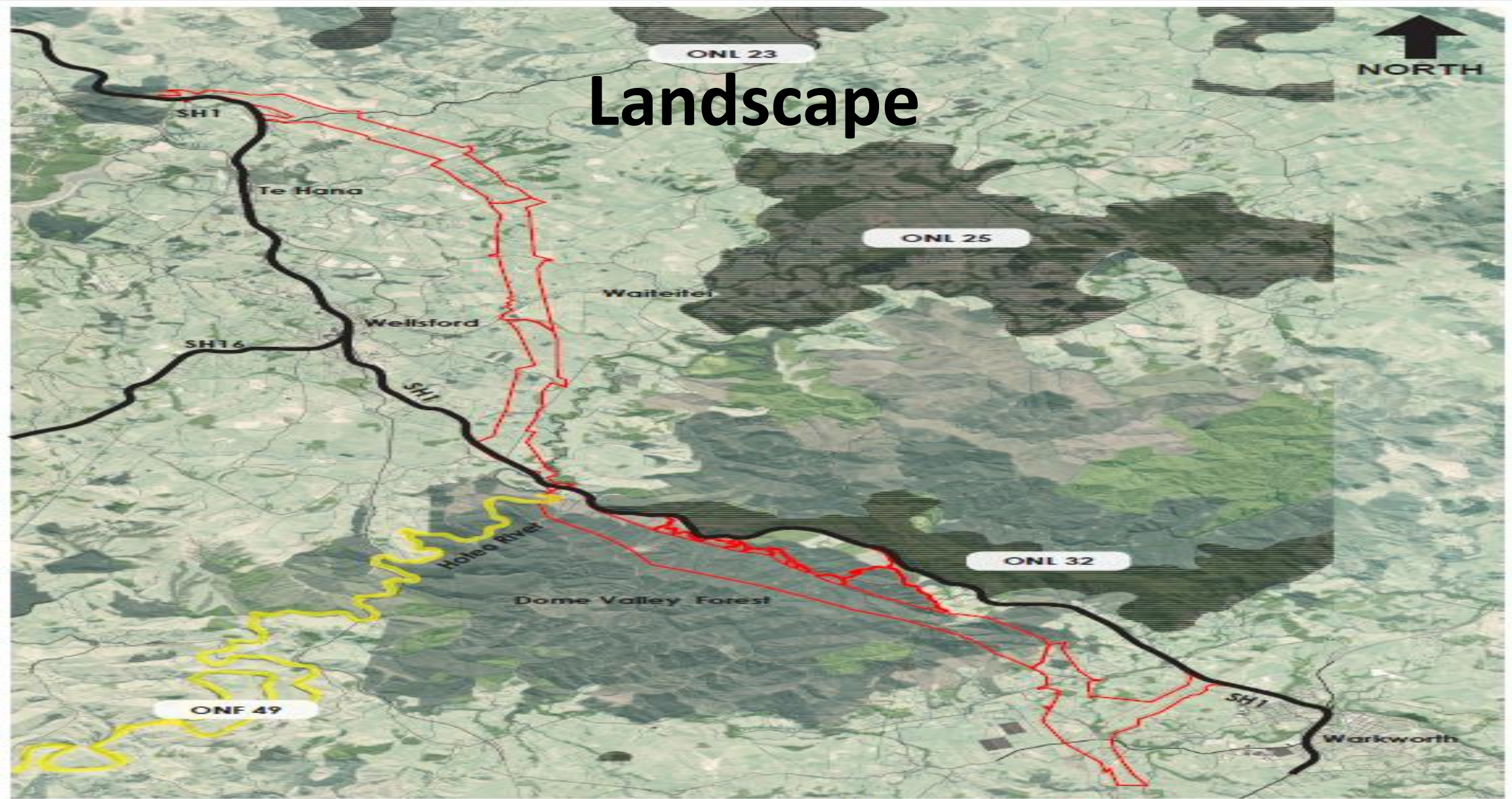
CORE LOSS
130mm

157.00m

157.50m



Landscape



Location of Outstanding Natural Features and Outstanding Natural Landscapes ▭ Proposed Indicative Designation

Southern Warkworth



Kaipara Flats Road near Phillips Road, within the character area (showing areas of lower valley pasture, enclosed to the north by the rising land associated with the Dome Valley Forest).



Carran Road, within the character area (showing the agricultural activities within the sector; where timber stock loading ramps and post and wire fencing are a common feature).

Central Dome



Saunders Road, within the character area (showing the predominant plantation pine forestry land use, which also features areas of weedy regrowth around forestry tracks and layout down sites).



Saunders Road, within the character area (showing the valley of the Waiteraire Stream).

Northern Hoteo

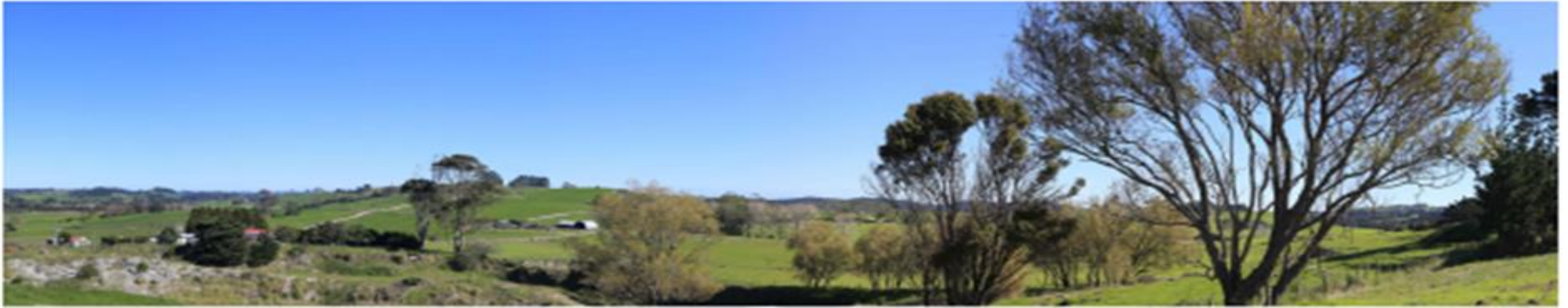


Whangaripo Valley Road, within the character area (showing areas of undulating and lower valley pasture).



Farmers Lime Road, within the character area (showing a rural landscape with a predominance of pastoral land use with occasional farm steads and buildings and pockets of exotic vegetation).

North Wellsford



Lower Silver Hill Road (showing areas of undulating pasture and former quarry workings to the east of the character area).



Mangawhai Road, within the character area (showing areas of lower valley pasture with scattered exotic trees typical of a rural productive landscape).

Terrestrial Ecology

- **Small, low value wetland features are interspersed throughout the landscape, generally degraded due to stock access.**
- **High value mosaic of wetlands/remnant vegetation in upper Kourawhero Stream catchment**
- **Pine forest dominates Dome Valley forest. Construction follows forest harvesting**
- **Remnant patches of lowland forest including the totara-dominated forest lining the Hoteo River, and patches of kahikatea swamp forest and taraire forest on higher ground.**

Small, low value wetlands



Small, low value wetlands



High value mosaic of wetlands/remnant vegetation



High quality lowland forest



HN_T_Hoteo_03 (SEA_T_6851)

Terrestrial Ecology Management

- Fauna habitat and flyway mitigation – 83.4 ha of existing retained and managed pine forest; above tunnel; alongside natural escarpment.

Purpose is to retain old growth vegetation for roost and breeding sites for bats and birds; potential relocation site for salvaged fauna.

Managed vegetation regrowth.

Pest and weed management/stock exclusion.



- Fragmentation/connectivity/edge effects – 17.3 ha

Purpose is to mitigate for the fragmentation of sites.

Provides N-S connection, crosses Mahurangi River and Kourawhero Stream (Hoteo River) catchment boundary; fauna and seed dispersal route.

Planting of vegetation.

Pest and weed management/stock exclusion.

- Fauna management (incl. Hochstetter Frogs)



Vegetation loss and proposed mitigation

| Vegetation type | Value | | | | | Total | Ratio | | | | | Total |
|------------------|-------|------|-------|-------|---------|--------------|-------|------|-------|-------|---------|--------------|
| | | Mahu | Koura | Hoteo | Te Hana | | | Mahu | Koura | Hoteo | Te Hana | |
| Podocarp/ scrub | H-VH | 0.00 | 0.03 | 0.85 | 0.00 | 0.88 | 6 | 0.00 | 0.17 | 5.09 | 0.00 | 5.27 |
| Remainder | L-M | 2.37 | 3.29 | 2.79 | 0.71 | 9.15 | 3 | 7.10 | 9.87 | 8.37 | 2.12 | 27.45 |
| TOTAL | | | | | | 10.03 | | | | | | 32.72 |
| Wetlands | H-VH | 0.00 | 0.39 | 0.26 | 0.00 | 0.64 | 6 | 0.00 | 2.32 | 1.55 | 0.00 | 3.86 |
| Wetlands | L-M | 0.00 | 0.66 | 0.57 | 1.7 | 2.93 | 3 | 0.00 | 1.98 | 1.72 | 5.09 | 8.78 |
| TOTAL | | | | | | 3.57 | | | | | | 12.65 |
| TOTAL ALL | | | | | | 13.6 | | | | | | 45.37 |

Freshwater Ecology Assessment

- Overall balance of streams to be mitigated (from indicative alignment)
 - Estimated loss of permanent and intermittent streams of **27.1 km**.
 - Approximately **18.3 km** of stream diversions (equivalent habitat)
 - On balance, mitigation required for approximately **8.8 km** of stream loss
- Following the SEV and ECR protocols the mitigation required within the different sections are:
 - Warkworth North: **10.1 km** (of 26.8 km of available habitat)
 - Dome Valley Forest: **24.9 km** (of 38.5 km of available habitat)
 - Hoteo North: **36 km** (of 52.8 km of available habitat)

Key assessment results

- **Mahurangi River (existing) water quality is generally good, however there are slightly elevated concentration of phosphorus and turbidity/suspended sediments**
- **Hoteo River (existing) has turbidity/suspended sediments that are elevated above the guideline values for the majority of the time and phosphorus concentrations are slightly elevated.**
- **Forestry felling (not Project) has much greater influence on hydrology (peak flows) than the Project and needs to be consider in design**

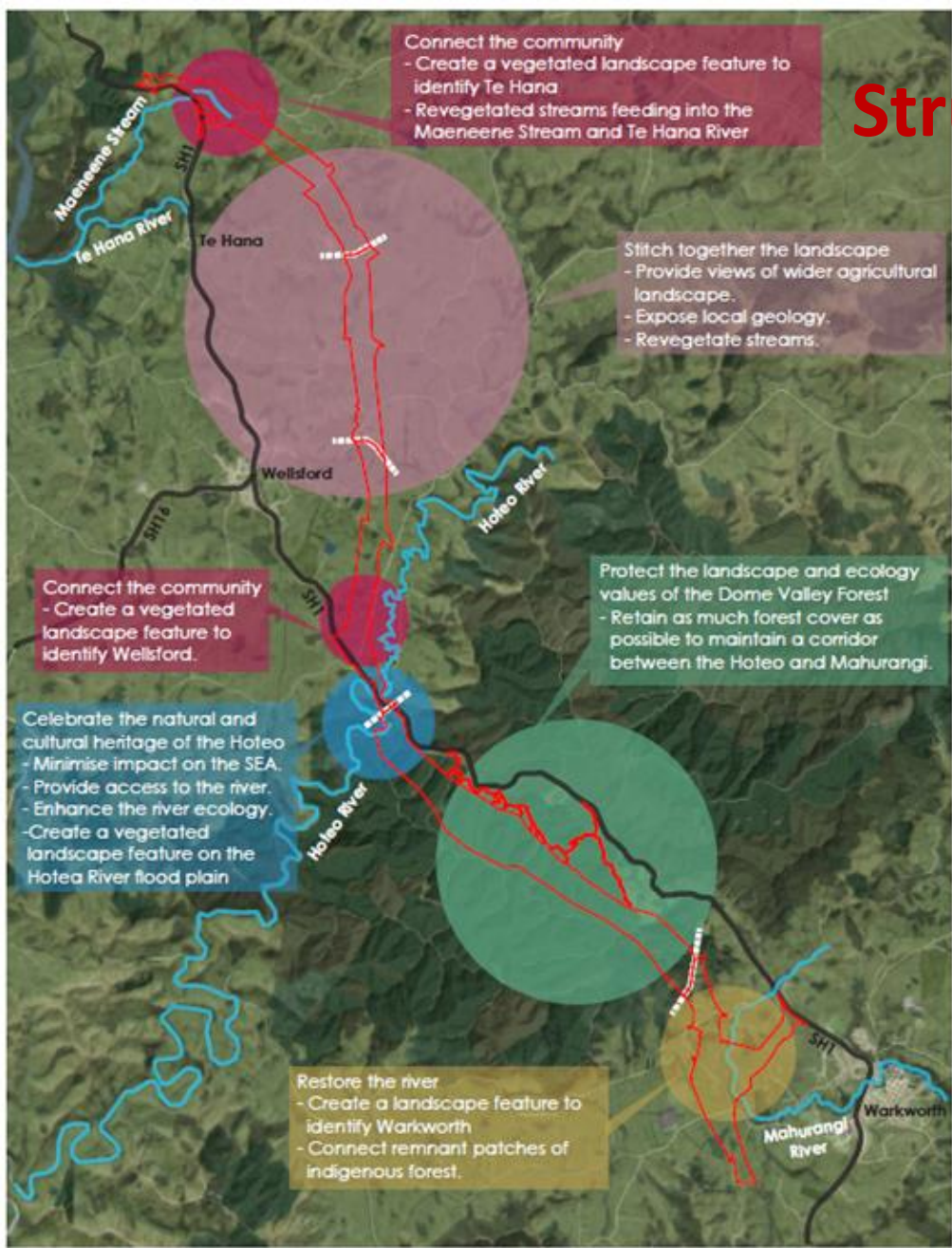
Marine Ecology

- **Ultimate receiving environment – muddy upper harbour estuarine depositional habitats of Kaipara and Mahurangi Harbours**
- **Distant from the Project earthworks**
- **High baseline sediment loads**
- **Benthic invertebrate assemblages reflect high sedimentation**
- **But, receiving environments are SEA M1 areas and AUP requires activities do not contribute to cumulative degradation of SEA M1 areas**
- **Stakeholder groups in Kaipara and Mahurangi focussed on reducing sediment loads to the harbours**

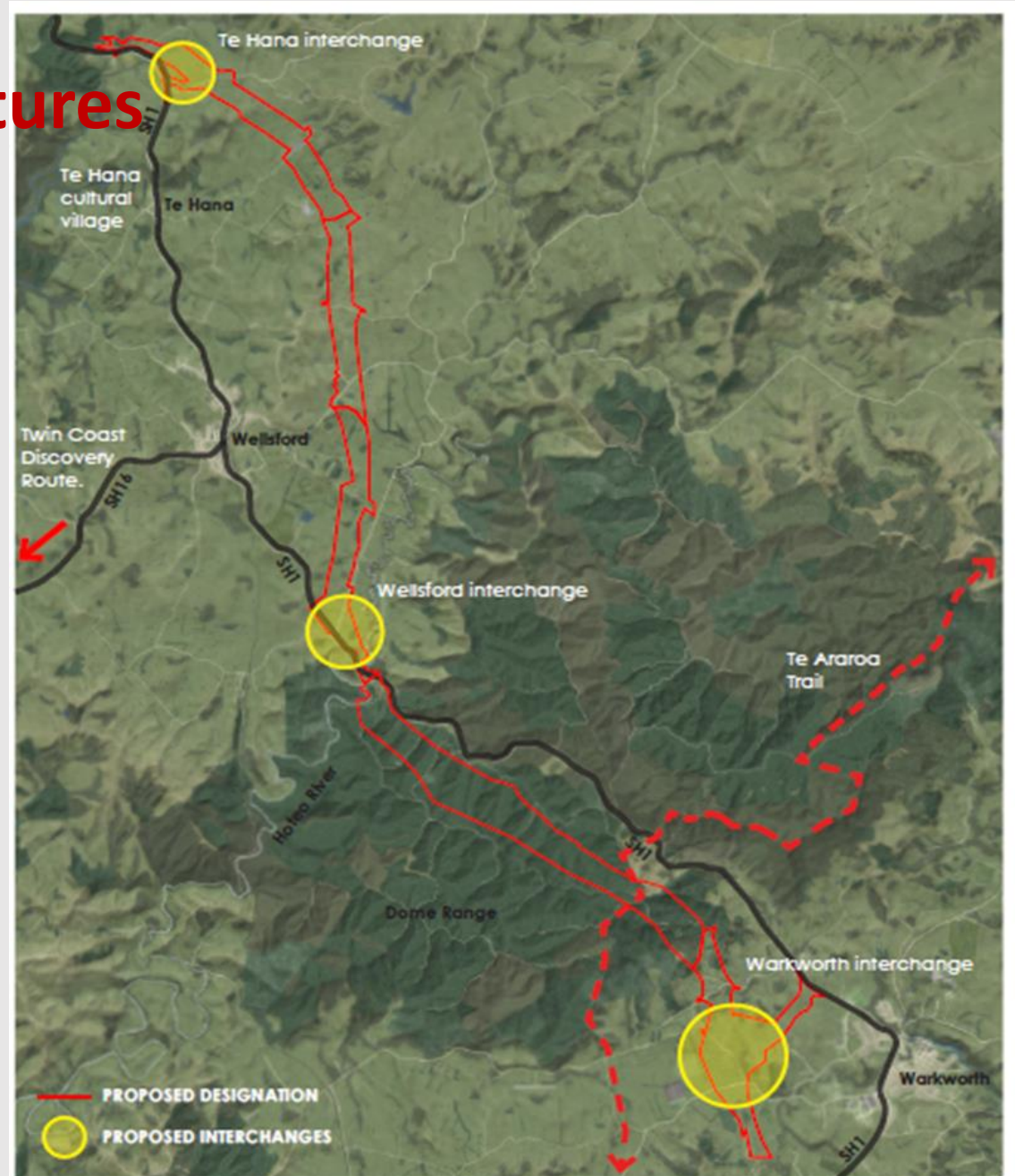
Marine Monitoring and Mitigation

- **No direct discharges to the CMA**
- **Best practice ESCP's** will be in place and usual monitoring at freshwater receiving locations would occur
- **Monitoring in upper harbour** receiving environments during construction would not assist with determining the effects of the Project – **inconclusive, cannot separate existing discharges from Project**
- Recommend **no monitoring** of effects of rainfall events on estuarine ecology and no annual monitoring
- But, recommend mitigation of the Project's **potential contribution to sedimentation** of the harbours – both through acute events and chronic contributions to long term sedimentation (cumulative effect)
- Measure and mitigate the **actual sediment contribution** (against our modelling calculations) during construction of the Project.
- **Offset through potential for retirement of land and and planting** to reduce long term sediment loads to return an ongoing net benefit within c.10-20 years after construction.

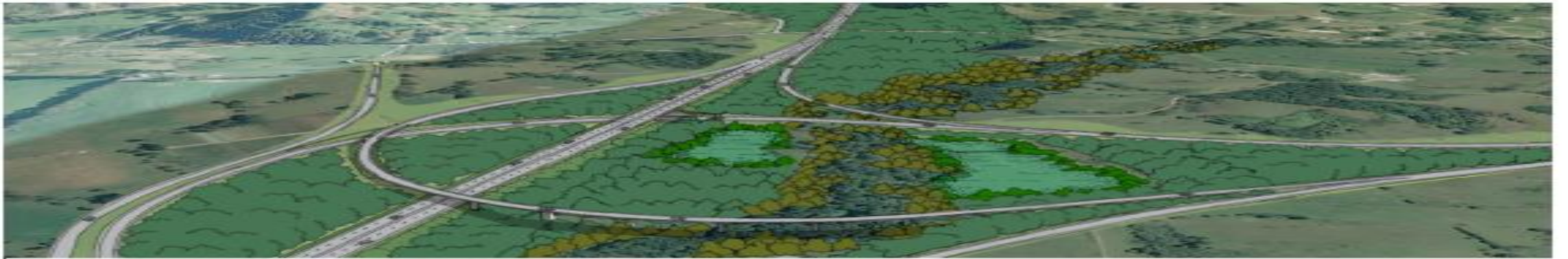
Structures



Preliminary Landscape Vision.



Proposed Project Designation and Interchanges



Indicative perspective view of Warkworth interchange



Indicative perspective view of Wellsford interchange



Indicative perspective view of Te Hana interchange

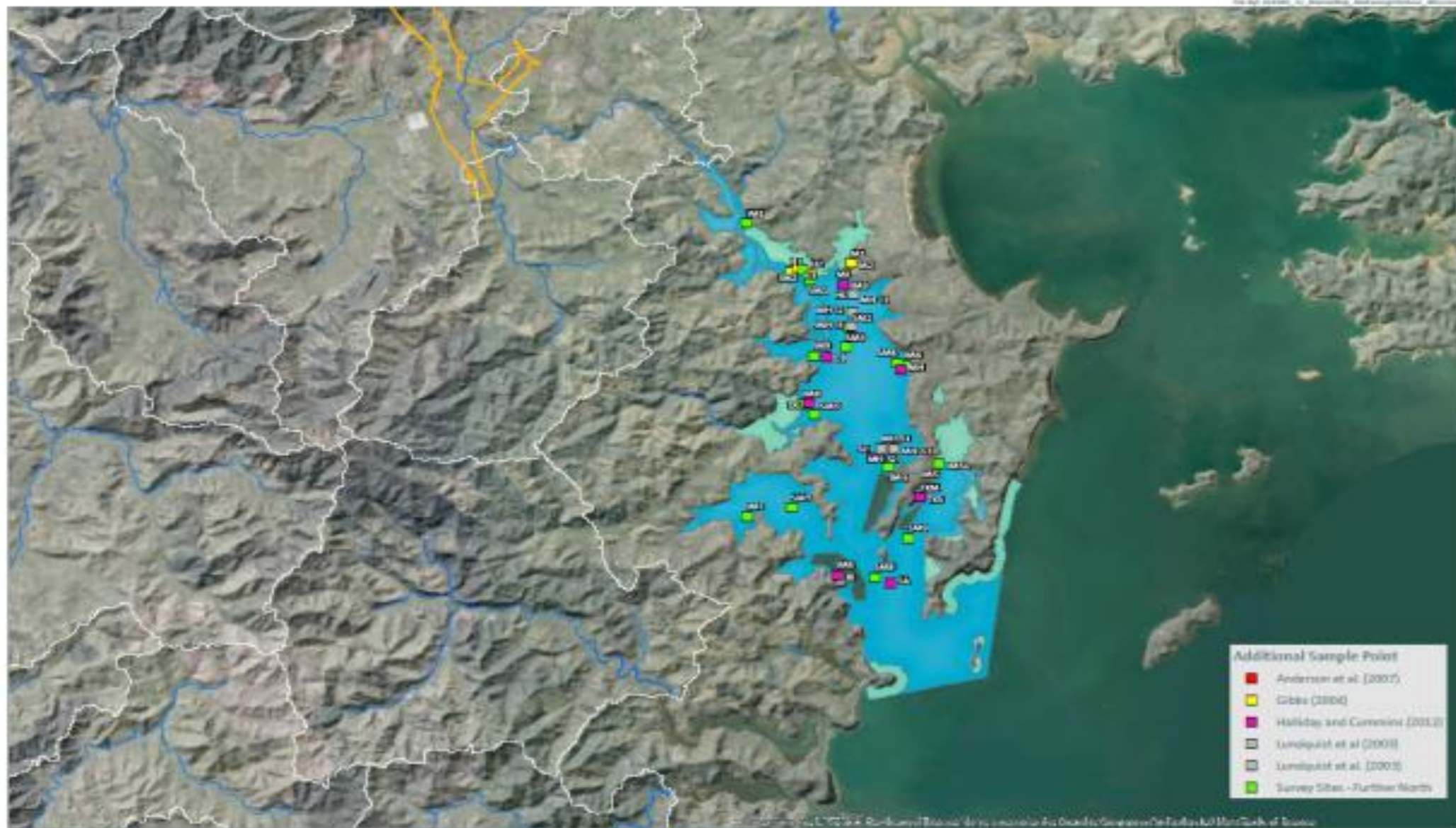


This map has been prepared by Boffa Miskell on the basis of information provided to it by the Department of Conservation. It is not intended to be used as a substitute for the official records of the Department of Conservation. It is not intended to be used as a substitute for the official records of the Department of Conservation. It is not intended to be used as a substitute for the official records of the Department of Conservation.

Scale: 1:250,000 NZMS
 Date: 20/11/2013
 Data Source: Land Information New Zealand, Crown Copyright
 Projection: NZMS 2000 New Zealand Transverse Mercator

- Auland Coured Sample Point
- Bath Survey Location
- Hotspot (H1&2)
- Wetland (W1&2)
- Proposed Designation Boundary
- River (RDC Stream Order >= 2)
- River Catchment (RDC)
- Significant Biological Area - Marine 1
- Significant Biological Area - Marine 2

MARKWORTH TO WELLSFORD MARINE ECOLOGY ASSESSMENT - JUNE 2013
 Kaipara Harbour
 Date: 20 November 2013 | Worksheet 2
 Prepared by: Boffa Miskell
 Project Manager: John Doolan@boffa.co.nz | Drawn: MFR | Checked: JB



Additional Sample Point

- Anderson et al. (2007)
- Gibbs (2004)
- Halliday and Currie (2012)
- Lundquist et al. (2008)
- Lundquist et al. (2003)
- Survey Sites - Further North





