SH1 Belfast to Pegasus Project

Road of National Significance Project Overview Conference

NZ TRANSPORT AGENCY
WAKA KOTAHI

Te Kāwanatanga o Aotearoa
New Zealand Government

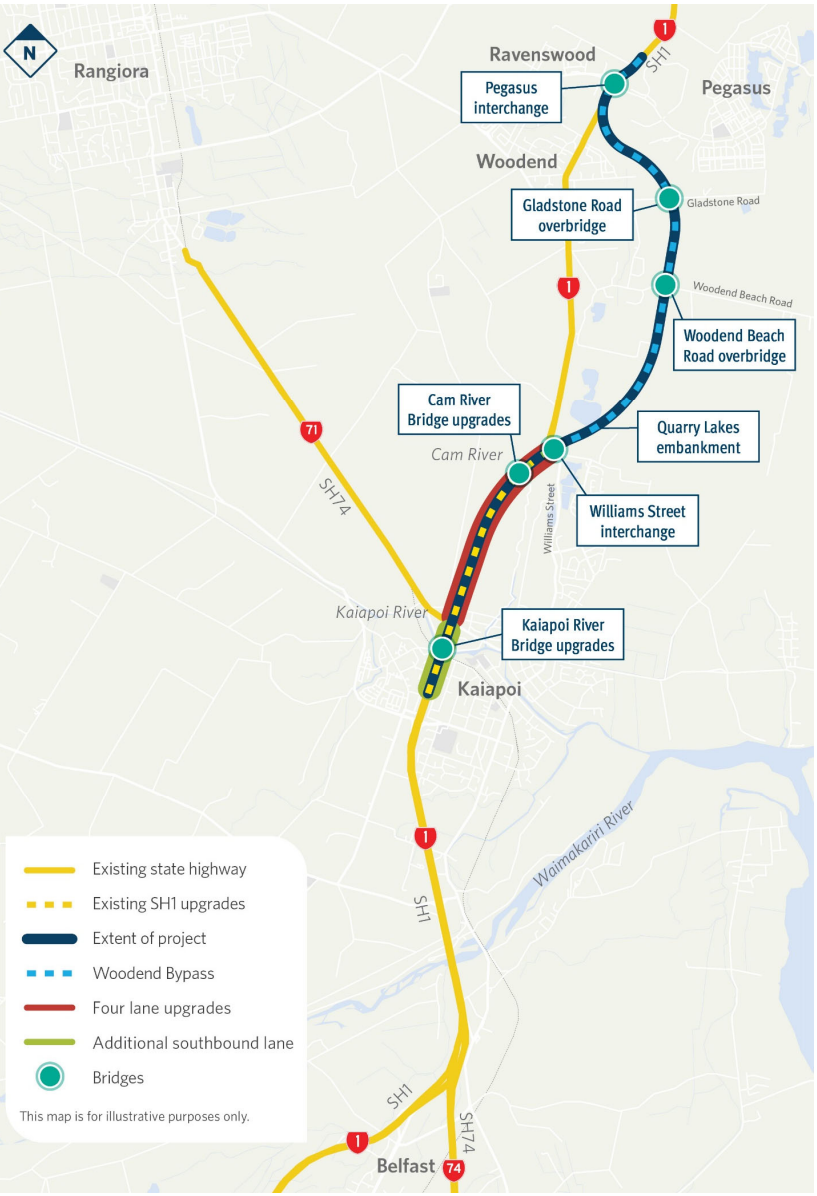
Overview of NZTA's presentation

- A description of the project
- A description of the application
- FTAA approvals sought
- Legal tests and legal issues in contention
- Project benefits
- Earthworks
- Hydrology
- Ecology – terrestrial and freshwater
- Ecology – lizards
- Conditions
- Key outstanding issues

Project Context

- Recent project history dates back to bypass route consultation in early 2000s and NOR/designation for short eastern alignment 2013-2015
- Identified as a Road of National Significance for priority delivery by NZTA in the Government Policy Statement on Land Transport 2024
- SH1 from Belfast to Pegasus – the key freight route to the north of Christchurch
- Growing population and increased traffic volumes are causing travel time and reliability issues along the corridor
- Significant commercial and residential development in Ravenswood and Pegasus over last ten years has led to higher traffic volumes sooner than expected
- Growth and increasing traffic numbers on SH1 through Woodend is creating safety and access/severance issues for local community – will get worse as traffic continues to grow


Sefton
Loburn
Ashley
Saltwater Creek
Ashley River / Rakahuri
Waikuku Beach
Waikuku
Rangiora
Coldstream
Ferniside
Pegasus
Southbrook
Woodend
Woodend Beach
Ohoka
Wetheral
Kaiapoi
The Pines Beach
Pegasus
Wilsons Siding
Kairaki
Ohapuku
Mandeville North
Waimakariri River
Stewarts Gully
Brooklands
Eyreton
Clarkville
Kainga
Coutts Island
Spencerville
Cheneys
Belfast
Templers Islands
Marshland
Parklands
Waimairi Beach
Papanui
New Brighton
Yaldhurst
Riccarton
CHRISTCHURCH
Estuary of the Heathcote and Avon Rivers / Ihutai
Linwood
Ferrymead
Southshore
Redcliffs



The Project

Four lanes of grade-separated motorway over 11km in length. Key features include:

- Kaiapoi Bridge upgrades and tie in with current SH1
- Upgrades existing SH1 section from two lanes to four
- Bypasses Woodend township offline
- New bridges and interchanges – Cam River/Williams Street, Woodend Beach, Gladstone, Pegasus/Ravenswood

The Application

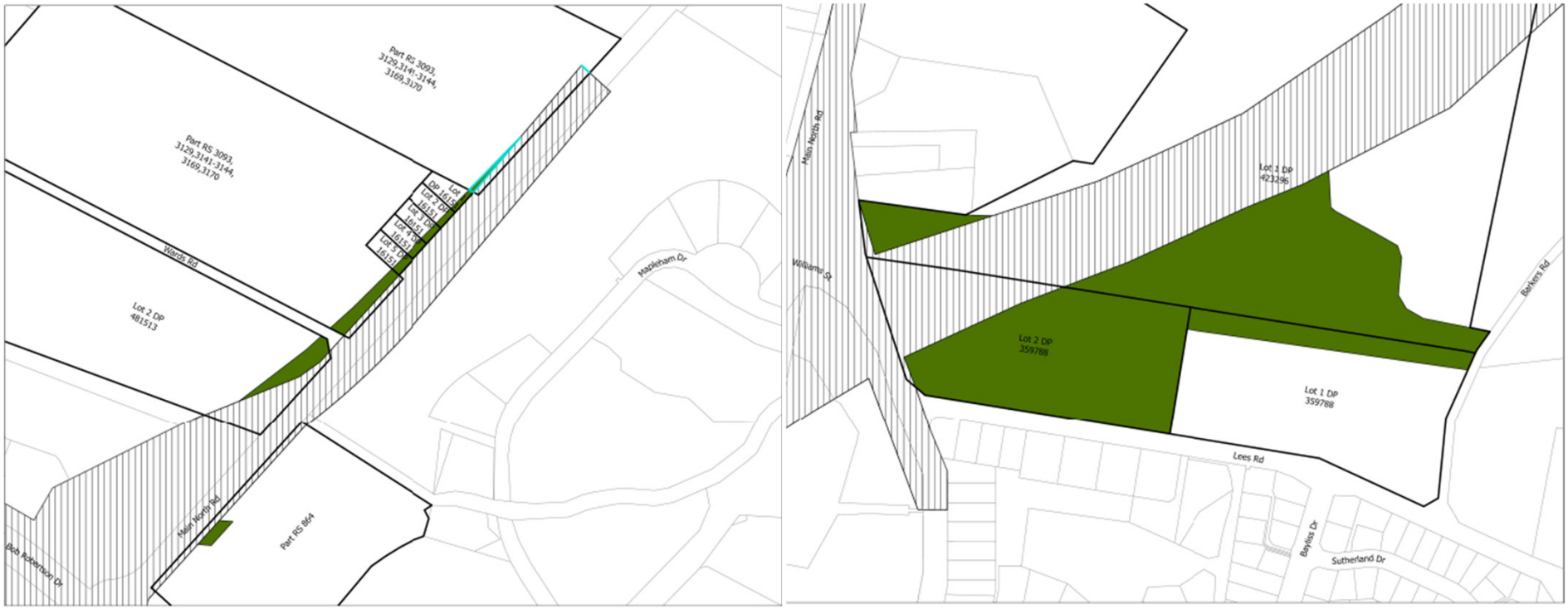
- Application structure:
  - Volume 1: High-level overview documents
  - Volume 2: Substantive application report, conditions, consent triggers, consultation records
  - Volume 3: Technical reports
  - Volume 4: Plans
- Not included in the application: Geotech investigations, early works & future approvals e.g. outline plan or authorisation under Flood Protection & Drainage Bylaw 2013

FTAA approvals sought

Approvals sought:

- Regional resource consents
- Resource consent under the Freshwater NES
- Resource consent under the Contaminated Soils NES
- Alterations to the designation
- Wildlife approval
- Complex freshwater fisheries activity approval
- Archaeological authorities

Designation alteration plans (Volume 4D)



Additions shown in green

Belfast to Pegasus Motorway and Woodend Bypass | Roads of National Significance

Project benefits

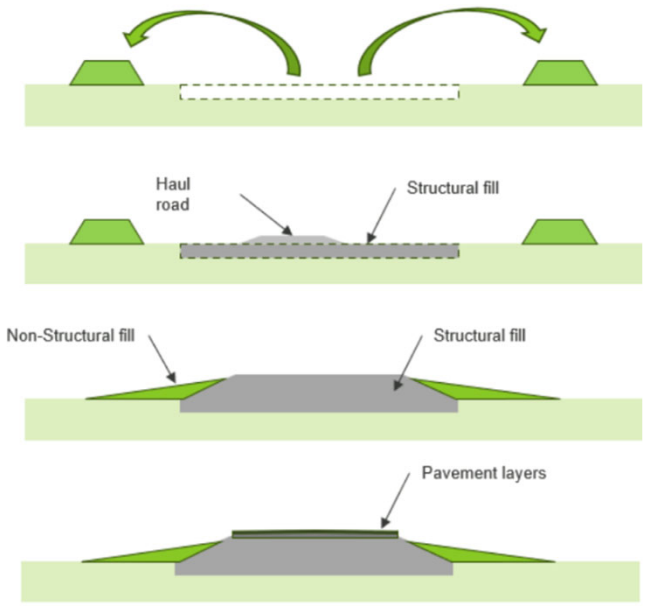
- Improved travel efficiency and reliability
- Improved traffic safety – reduction in DSIs from 5.6 per year to 1.25
- Improved community accessibility and connectivity between Woodend, Ravenswood and Pegasus
- $320 million injection into Canterbury economy over 7 years; creation of 2,361 FTE jobs during construction
- Environmental benefits from mitigation, remediation and restoration works

Legal tests and legal issues in contention

- The key legal tests under the FTAA are:
  - Adverse impacts vs regional or national benefits
  - Giving the greatest weight to the purpose of the FTAA
  - The conditions must not be more onerous than necessary
- The key legal issues in contention include:
  - Condition drafting (management plan outcomes, deemed certification, and the requirement for conditions on the freshwater fisheries approval).
  - Assignment of habitat value and consequential extent of offsetting
  - Whether further ecological surveys are required for invertebrates & non-vascular plants
  - Peer review of the stormwater model

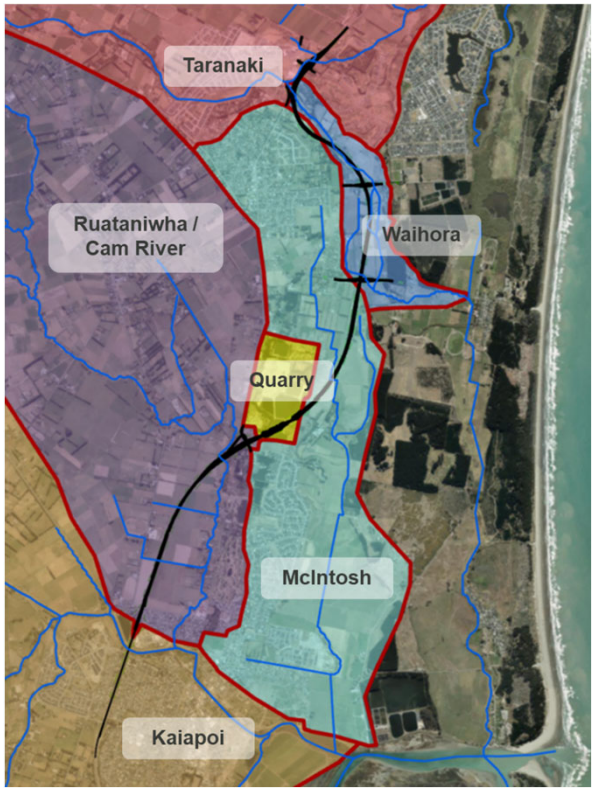
Earthworks

- Bulk fill for embankments
  - Establish erosion and sediment control
  - Strip topsoil progressively under embankment profile only
  - Place structural fill and pavement layers
  - Respread topsoil as landscape fill
- Gladstone Rd landfill
  - Dig out landfill material and replace with structural fill
  - Landfill material can be reused as landscape fill (e.g. noise bunds)
- Quarry Lakes
  - Causeway embankment formed by end tipping large pitrun/riverrun gravel
  - Dynamic compaction ground improvement
- Bridges
  - Concrete bridges on Mechanically Stabilised Earth (MSE) abutments
  - Ground improvement underneath embankments (stone columns and rigid inclusions)
  - Cam River Bridge – large diameter bored piles




Dynamic compaction

Hydrology – Existing Environment



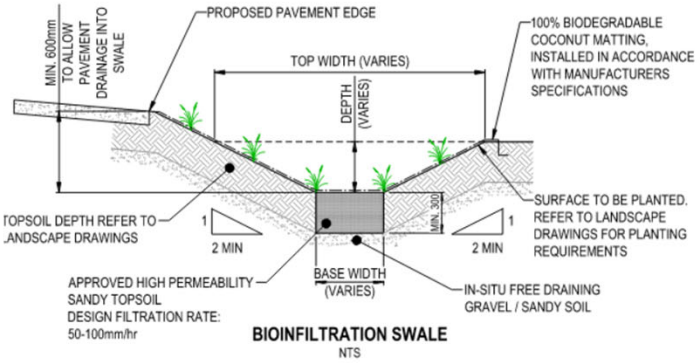
Catchment	Approximate Area
Taranaki Stream	8 km^2
Waihora Stream	1 km^2 (8 km^2 Taranaki distributary)
McIntosh Drain	3 km^2
Quarry Lakes	<1 km^2
Cam River	60 km^2
Kaiapoi River	340 km^2

Hydrology - Existing Road Stormwater Management

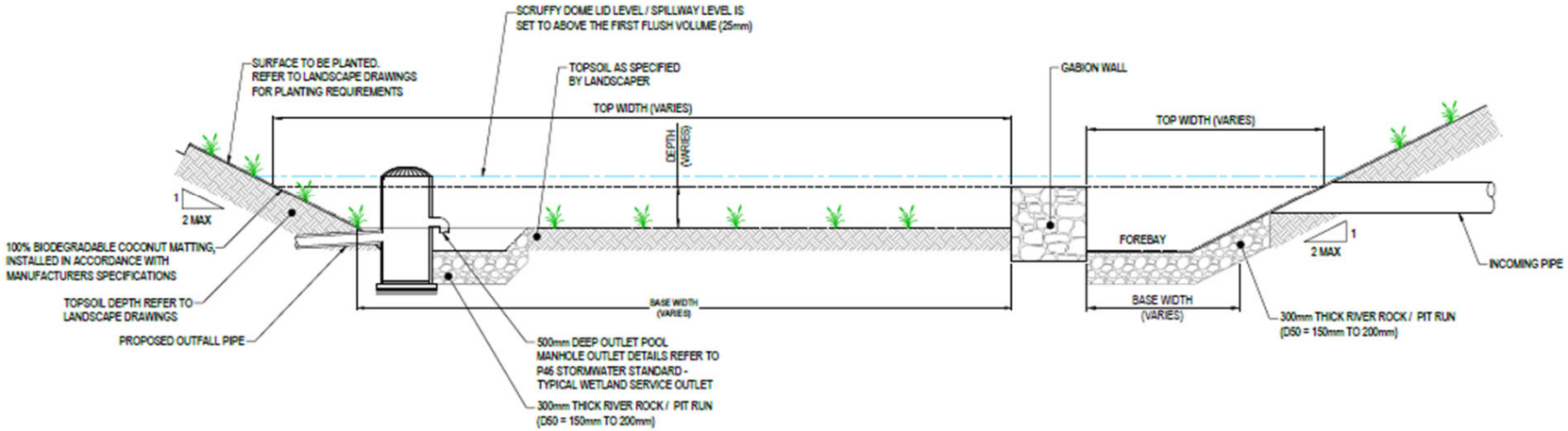
Catchment	Existing Roadway Stormwater Management
Taranaki Stream	Roadside channels discharge to Taranaki Stream at the Taranaki culvert and Taranaki North Branch culvert.
Waihora Stream	• Approx. 300m of SH1 roadway discharge directly to Wahiora Stream • Roadside channels at Woodend Beach Road and Gladstone Road
McIntosh Drain	No existing major roadway interfaces with Mcintosh Drain. Catchment includes Woodend stormwater reticulation.
Quarry Lakes	No existing major roadway interfaces with Quarry Lakes. Industrial facility drains to lake.
Cam River	• Cam River Bridge Area – Existing bridge and roadway drain directly to Cam River untreated and unattenuated • Lineside to Cam - Existing SH1 motorway drains to roadside channels that discharge to Wilsons & Rossiter Drains. Short swales north of Lineside Interchange
Kaiapoi River	• Kaiapoi River Bridge drains directly to Kaiapoi River • South of Kaiapoi River drains to Kaiapoi stormwater reticulation

Hydrology - Stormwater Quality

Treatment	Number / Quantity
Treatment Basins	• 4 Bioretention Basins • 2 Bioinfiltration Basins
Treatment Swales	• 11.5km of treatment swales • 5.6 km bioinfiltration swales with 148 check dams

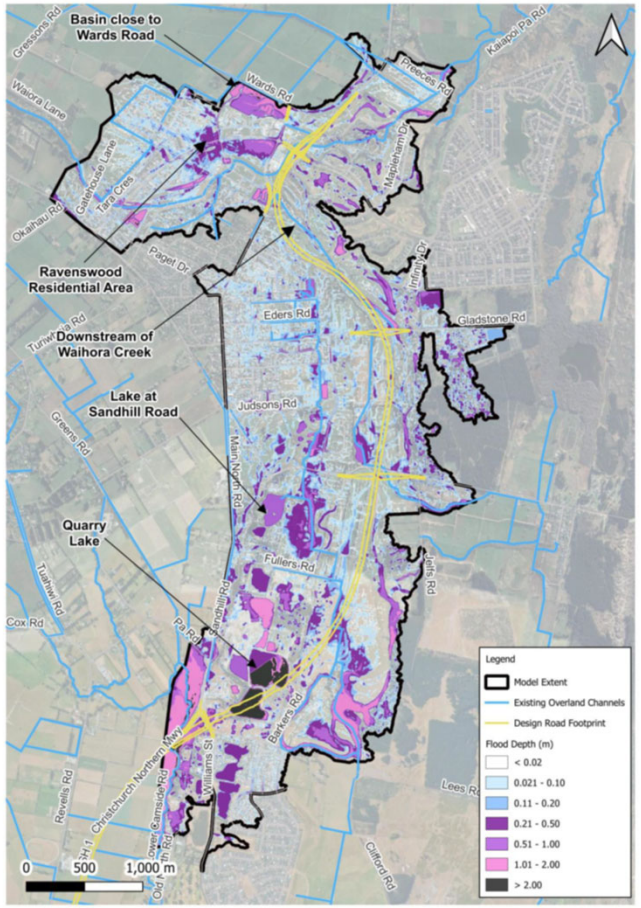


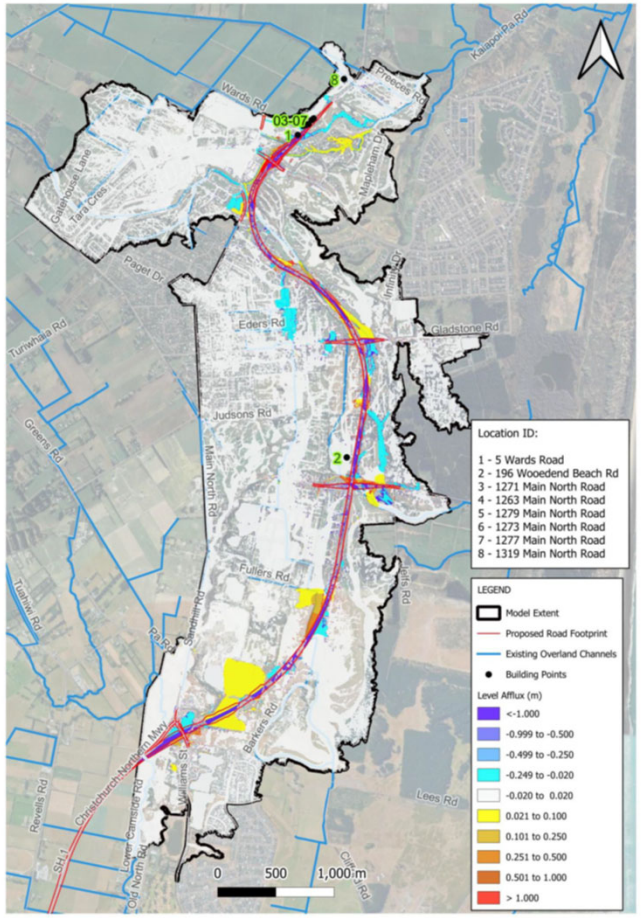
BIOINFILTRATION SWALE
NTS



BIORETENTION BASIN AND FOREBAY
NTS

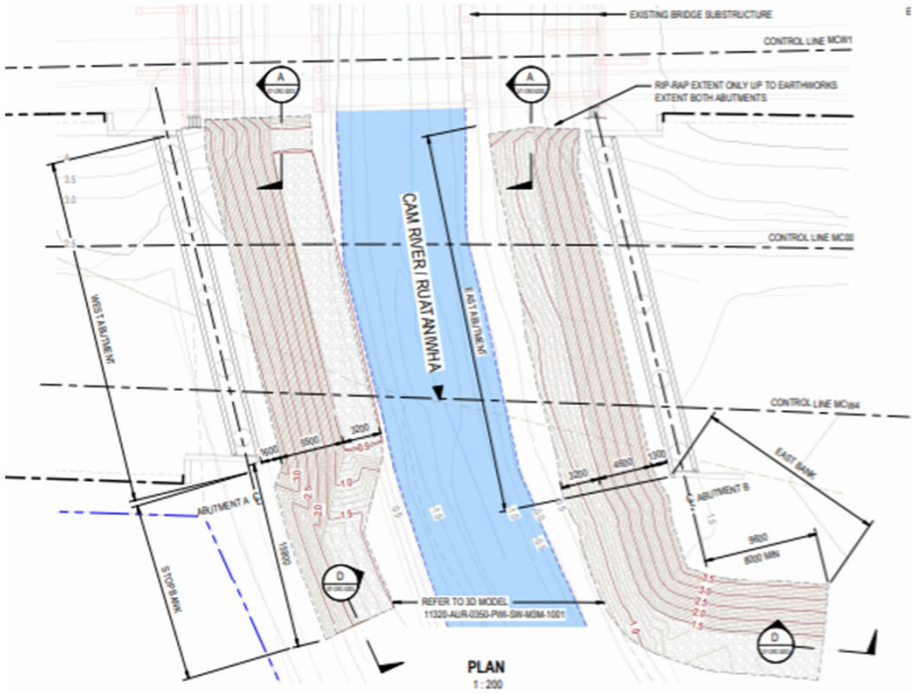
Hydrology- Flooding and Stormwater Quantity





Belfast to Pegasus Motorway and Woodend Bypass | Roads of National Significance

Hydrology- Erosion, Scour, and Channel Stability



- Culvert erosion protection
  - NZTA bridge manual + P46 primary guidance
  - Incorporates Austroads + FHWA HEC-14
- Bridge scour assessment
  - NZTA bridge manual
  - Incorporates Austroads + FHWA HEC-23 + FHWA HEC-18

Freshwater Ecology - Streams

- Desktop assessment and targeted site investigations completed by Boffa Miskell and T+T.
- Stream ecological values range from low to high
  - Stream habitat quality generally low to moderate
  - High fauna values include ‘At Risk’ and 'Threatened' fish species within some watercourses
- Potential and actual adverse effects include:
  - Temporary construction related effects
  - Permanent modification of stream habitat, fish passage, migration success
  - Operational effects e.g. changes in receiving water quality
- Overall effects can be avoided or minimised to a low to very low level
  - Implementation of fish management plan (within EMP), or various management measures within the CEMP and ESCMP.
  - Culvert fish passage informed by the NZ Fish Passage Guidelines 2024
- Moderate to high effect on stream habitat and values
  - Restoration and habitat management at the realigned reaches of Taranaki Stream and the Taranaki Stream Tributary.
  - Residual effects to stream habitat values and extent via offsetting at McIntosh Drain.


Taranaki Stream - moderate habitat/ high fauna value


McIntosh Drain – low habitat/ high fauna value

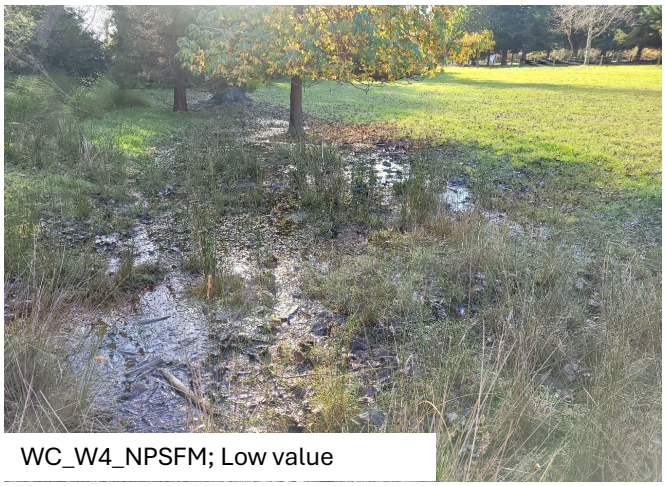
Freshwater Ecology - Wetlands

- Identified through ground-based and desktop methods by Boffa Miskell and T+T

- 25 natural inland wetlands, 15 impacted or potentially impacted; values range from Low to High

- Impacts include:
  - Permanent loss of habitat
  - Temporary or permanent hydrological change
  - Temporary sedimentation
  - Fragmentation

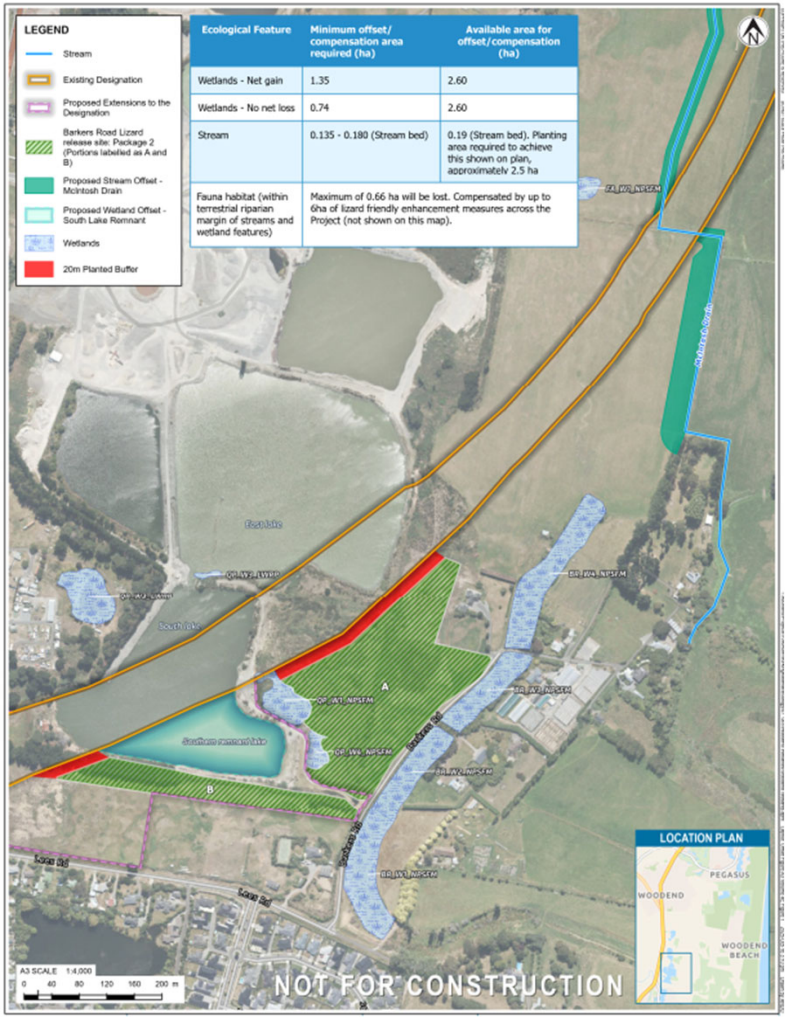
CR_W2_NPSFM; Moderate value



WC_W4_NPSFM; Low value

Freshwater Ecology - Wetlands

- Some options to avoid/minimise adverse impacts:
  - E&SC
  - Fencing
  - Stormwater infiltration design
- Maximum direct permanent loss of 5,995 m^2
- Offsetting through wetland creation
  - Minimum 0.74 ha of wetland
  - Five habitat types
  - Progressive and adaptive restoration plan



Belfast to Pegasus Motorway and Woodend Bypass | Roads of National Significance

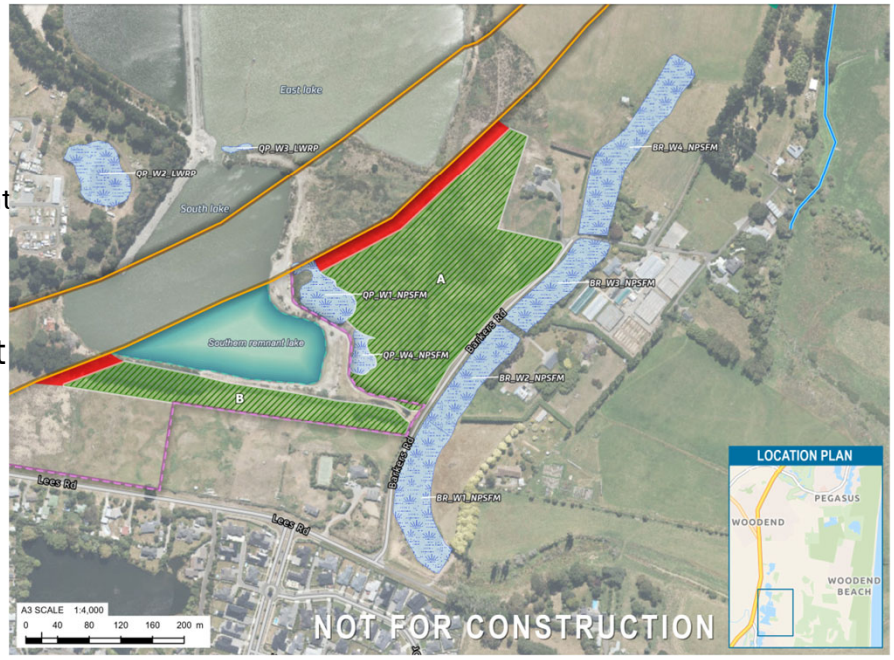
Terrestrial Ecology

- Survey approach: desktop assessment and targeted site investigations (within terrestrial margins of waterways)
  - Vegetation surveys, fauna habitat mapping, lizard and bird surveys, invertebrates
- Terrestrial ecology values ranged from negligible/low (vegetation) to very high ("At Risk" lizards; Canterbury grass skink – At Risk Declining)
- Adverse (actual and potential) effects:
  - Permanent loss of largely exotic vegetation (up to 8.72 ha)
  - Loss of low- moderate indigenous lizard and bird habitat (up to 2.83 ha)
  - Disturbance, injury or mortality of indigenous fauna during vegetation clearance and construction works
- Most effects can be avoided or minimised to a <u>low to very low level</u>
  - Through implementation of EMP
- Residual adverse effects due to loss of moderate value lizard habitat (0.66 ha)
  - Compensation planting proposed within designation
- Assessment of effects followed EIANZ guidelines (Roper-Lindsay et al. 2018)

Lizards

- Due to presence of Canterbury Grass Skink (At-Risk Declining), Wildlife Approval (WA) is sought for **lizard salvage & relocation, and approval for incidental mortality**
- WA report addresses specific WA application requirements set out in Clause 2(1) of Schedule 7 of FTAA
- ~12 ha of lizard habitat of low – moderate value impacted

  (across Package 2 area – this wildlife approval)
- Potential impacts on lizards:
  - Habitat loss, stress, injury or mortality during construction, displacement
- Salvage and relocation programme to minimise effects
- Lizards will be released at pre-prepared release site adjacent to designation (green areas)



Conditions

- Overall approach to conditions:
  - Consistent and streamlined conditions which are not more onerous than necessary
  - Appropriately manage potential adverse effects of construction, operation and maintenance, while retaining flexibility for construction methodology
  - Developed in response to recommendations of technical assessments and consultation feedback.
- Alterations to the existing designation conditions to reflect updated design and achieve efficiency and avoid duplication
- Resource consent conditions structured by consent type with general conditions applying to all consents in schedules
- Wildlife approval conditions: Lizard Management Plan primary mechanism to manage effects.
- Archaeological authority conditions: similar to HNZPT's standard conditions.
- Continuing to refine conditions sets with relevant authorities/agencies

Post lodgement engagement

- ECan:
  - Site visit (February)
  - Initial meeting with legal counsel and planners to discuss outstanding items / key topics
  - Expert-to-expert discussions (terrestrial, freshwater, contam land, stormwater)
  - Responses to ECan on updated conditions, technical reports and stormwater
- WDC:
  - Site visit (February)
  - Monthly meetings, including discussions on monitoring and landscape peer review
- DOC:
  - NZTA sent draft LMP
  - Expert-to-expert discussions (freshwater fisheries conditions and wildlife approval)
  - Responses to DOC on freshwater and wildlife matters
- HNZPT:
  - NZTA sent draft ACSMP
  - HNZPT provided tracked-change conditions & meeting held to discuss
  - HNZPT to provide comments on ACSMP as part of s51 report
- Whitiora:
  - Ongoing consultation through various project channels
  - NZTA engagement on ACSMP

Outstanding matters - ECan

- Wording of management plan conditions
- Further ecological surveys (invertebrates and non-vascular plants)
- Assignment of ecological values and consequential offset
- Contaminated land investigations and reuse criteria
- Peer review of stormwater model

Outstanding matters - DOC

- Draft LMP updates to ensure sufficient contingency at release site and species covered
- Draft LMP to be fed into FTAA process or not
- Other lizard species
- Requirement for complex freshwater fisheries approval conditions
- Ecological evaluation of wetlands and consequential offset effectiveness with coarse fish

Outstanding matters – Waimakariri District Council and HNZPT

- WDC: monitoring/CEMP content condition wording and clarity of monitoring responsibilities, landscape peer review
- HNZPT: Agreeing on suggested tweaks to draft conditions