

Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

13 February 2014

SITE SPECIFIC MANAGEMENT PLAN - WAIKANAE RIVER AREA [SSMP 7 - SECTOR 470]

For the purposes of the SSMP certification it is assumed that the consent conditions for the MacKays to Peka Peka Expressway, as determined by the Board of Inquiry under Section 149R of the Resource Management Act (1991) will be read in conjunction.

SSMP Exclusions or omissions:

- If there are discrepancies between master plans and the detailed planting plans the detailed plans take precedence.

1.0 SSMP REVISION HISTORY			
REVISION NO:	DATE:	STATUS:	ISSUED TO:
REV A	12.09.2013	Preliminary	KCDC
REV B	29.11.2013	Issue for certification	KCDC, GWRC
REV C	03.02.2014	Certification issue	KCDC, GWRC

2.0 SSMP CERTIFICATION DETAILS POSITION				
PREPARED BY M2PP ALLIANCE	NAME:	POSITION:	SIGNATURE:	DATE:
	Marc Bailly	Urban Design		13.02.14
	Frazer Baggaley	Landscape Architect		13.02.14
	Vaughan Keesing	Ecologist		13.02.14
	Matiu Park	Ecologist		13.02.14
	Boyden Evans	Landscape Architect		13.02.14
	Dean Mackenzie	Architect		13.02.14
M2PP ALLIANCE APPROVAL	NAME:	POSITION:	SIGNATURE:	DATE:
	Doug Stirrat	Sector Manager		14.02.14
	Peter Bradshaw	Design Manager		14.02.14
	Dean Herrmann	Technical Director		14.02.14
	Anna Lewis	Consents/Compliance Manager		14.02.14
CERTIFICATION	NAME:	POSITION:	SIGNATURE:	DATE:
Reviewed by Julia Williams, Landscape, KCDC. Deyana Popova, Urban Design, KCDC and Adam Forbes, Ecology, GWRC	Andrew Guerin	KCDC		24.02.14
	Al Cross	GWRC		24.02.14

2.1 POST CERTIFICATION CHANGES							
DRAWING/PAGE TITLE:	DRAWING NUMBER:	DRAWINGS STATUS:	REVISION NO:	DESCRIPTION OF CHANGE:	ISSUED TO:	CERTIFIED BY:	DATE:
SHEET 2 - Master Plan	M2PP-121-D-DWG-8101	Revision/Update	D	Design change- El Rancho access arrangement- Removal of vehicle access under the Waikanae Expressway bridge- Supersedes all other plans showing Kauri road/El Rancho access in the SSMP	KCDC		3-5-16
SSMP 7 - SHEET 16 - CWB sign types	M2PP-121-D-DWG-8701	Revision/Update	D	Signs updated to include horse symbol - All CWB signs to be updated as per this sheet	KCDC		3-5-16
SSMP 7 - SHEET 24 Type 1 CWB entrance	M2PP-121-D-DWG-8802	New Sheet added	A	CWB entrance structures Type 1 - design change to precast units. To replace 'gabions' on sheet 12	KCDC		3-5-16
SSMP 7 - SHEET 25 Te Atiawa Column Design	M2PP-121-D-DWG-8803	New Sheet added	A	Page added to illustrate Te Atiawa design to be applied to bridge columns (sand blasted etching)	KCDC		3-5-16
SSMP 7 - SHEET 26 Kauri Road End Detail	M2PP-121-D-DWG-8304	New Sheet added	A	Page added to show intersection between Kauri Rd and CWB Link	KCDC		3-5-16

SITE SPECIFIC MANAGEMENT PLAN [CERTIFICATION ISSUE]

WAIKANAĒ RIVER AREA [SSMP 7 – SECTOR 470]

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SITE SPECIFIC MANAGEMENT PLAN [FOR CERTIFICATION ISSUE]
 WAIKANAE RIVER AREA [SSMP 7 – SECTOR 470]

SSMP Certification means complete to the point of the end of confirmation of concept design (refer to Diagram 1) within the project's design phases. The aim of Certification is to enable detailed design to proceed with certainty in regard to the concept design. Landscape specifications required for the Site Specific Landscape Management Plan are appended as draft. Any issues outstanding at this issue for Certification are highlighted. Changes in design from that described in the NOR/AEE are also identified.

For the purposes of the SSMP certification it is assumed that the consent conditions for the MacKays to Peka Peka Expressway, as determined by the Board of Inquiry under Section 149R of the Resource Management Act (1991) will be read in conjunction.

1. SSMP CERTIFICATION DETAILS		Signature	Date
PREPARED BY M2PP ALLIANCE:	Boyden Evans (Landscape Architect)		13.02.14
	Marc Baily (Urban Designer)		13.02.14
	Matiu Park (Ecologist)		13.02.14
	Vaughan Keesing (Ecologist)		13.02.14
	Dean MacKenzie (Architect)		13.02.14
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M2PP ALLIANCE APPROVAL	Doug Stirrat (Sector Manager)		14.02.14
	Peter Bradshaw (Design Manager)		14.02.14
	Dennis Hunt (Technical Director)		14.02.14
	Anna Lewis (Compliance Manager)		14.02.14
CERTIFICATION	Andrew Guerin (KCDC) [Reviewed by Julia Williams, Landscape, KCDC and Deyana Popova Urban Design, KCDC]		24/02/14
	Al Cross (GWRC) [Reviewed by Adam Forbes, Ecology, GWRC]		24/2/14

A. PURPOSE	<p>The consent conditions for the MacKays to Peka Peka Expressway, as determined by the Board of Inquiry under Section 149R of the Resource Management Act (1991), set out the matters to be covered in the Site Specific Management Plans (SSMP). The SSMPs refer to the combination of the Site Specific Urban Design Plans (SSUDPs), Site Specific Landscape Management Plans (SSLMPs) and Site Specific Ecology Plans (SSEMPs).</p> <p>A total of 11 SSMPs shall be prepared that address all the required sectors of the Expressway. The level of detail in the SSMPs varies according to whether landscape, ecology or urban design aspects are being addressed and the nature of the environment the Expressway traverses at any particular point.</p> <p>The purpose the SSMP is to assist the implementation of the applicable management plans by providing site specific detailed design and construction responses to address specific context and environmental conditions and circumstances of each applicable sector of the route and in accordance with the staging identified in the programme. Each SSMP must be consistent with, and be implemented in accordance with, the respective Management Plan and consent conditions. The SSMPs need to be read in conjunction with the certified Landscape Management Plan (LMP) and the certified Ecological Management Plan (EMP).</p>
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	<p>This document (including Appendix 1 Plans and the other four Appendices) incorporates four interrelated SSMPs, covering landscape, ecology, urban design, and cycle, walking and bridleway (CWB). The intention of combining these SSMPs is to ensure integration between all disciplines, to maximise the benefits of mitigation works within each sector, and to reduce reporting and monitoring requirements. The consent conditions (DC.64) also require the preparation of a Network Integration Plan (NIP). This SSMP shall address the requirements of DC.64 a) and b) ii) as they relate to the details of the cycleway/walkway/bridleway (CWB).</p> <p>SSMPs are to be prepared in consultation with various stakeholders including iwi, interest and residents' groups as directed by conditions. Appendix 2 describes the matters raised in consultation and the responses made.</p> <p>The SSMPs have been prepared through an iterative process to allow discussion between the Alliance, the Kapiti Coast District Council (KCDC) and Greater Wellington Regional Council (GWRC) advisors and certifiers. This has included further advancement of design in response to feedback on the preliminary issue. The aim will be to establish and agree as much of the landscape, ecology, urban design and CWB design through the initial 'confirmation of design' phase (refer to section D below) to give the best possible definition to the Project design elements as early as possible.</p>
<p>B. GENERAL PROJECT DESCRIPTION REFER APPENDIX 1 SHEETS 1 AND 2</p>	<p>This SSMP relates predominantly to the Waikanae River Bridge and associated Expressway construction works, including the Waikanae River, flood plains, Muaupoko Stream, interface with El Rancho, bridge construction yards and storage areas etc. It includes the following main elements:</p> <ul style="list-style-type: none"> • Bridge over Waikanae River comprising of two separate decks. • Two way cycling and walking path on the east deck (southbound lanes side) of the bridge with a width of 2.5m and separated from the carriageway by a 1.4m high barrier (1.1m solid and 0.3m top rail) • New access driveway to El Rancho under the bridge. • Eight columns beneath the bridge (4 piers each with 2 columns). • Rock armoured edges to the Waikanae river adjacent to the piers closest to the river channel edge generally under the bridge deck and left bank of the Muaupoko Stream • Changes to the river channel alignment. • Ground treatment beneath the bridge consisting of shaped and formed river stones or 'rip rap'. • Realignment of the Muaupoko Stream. • Planting, including mitigation planting for Muaupoko Stream changes. • CWB paths to connect from both ends of the bridge to the existing CWB paths running alongside both sides of the river. • New path alongside one side of the El Rancho access road to connect between the CWB path where it descends off the bridge, and Kauri Road where the CWB continues northwards.
<p>C. SSMP EXISTING AREA DESCRIPTION REFER APPENDIX 1 SHEET 1 AND ULDF SECTION 3.10</p>	<ul style="list-style-type: none"> • The natural character of the Waikanae River and its margins is rated as moderate/high. • There are dune landforms. • Muaupoko Stream has ecological and cultural values. • The Waikanae River has recreational values and loose surfaced pathways that run parallel along both sides. Horse 'fording' places are marked. • There is use of the pathways by people commuting to and from work and schools – river crossing points upstream and downstream occurs via existing footbridges. • The Waikanae River is considered to be regionally significant, with the downstream Waikanae Estuary comprising nationally important freshwater and marine receiving environments. • Willow and poplar trees are dominant along much of the northern riverbanks, with indigenous riparian planting dominating the southern riverbanks. Much of the vegetation is for flood protection works. There are also mown grass areas at El Rancho and reserve areas on both sides of the riverside flood plain. • El Rancho is the predominant land use on the north bank and its access road from Kauri Road passes through the area. • Other surrounding land uses are typically set back from the river corridor and are residential or rural – many of which are buffered by large areas of indigenous planting. • There are no other roads or local streets in this area.
<p>D.PROCESS</p>	<p>DIAGRAM 1 – SSMP DEVELOPMENT PROCESS</p>

- Lighting;
 - Footpath and on-road cycle lane design (1.5m on road and 2.0m footpaths);
 - Safe crossing points for CWB;
 - Visual treatment of structures and landscape (retaining walls, noise mitigation structures and landforms);
 - Local property access;
 - Landscape treatment (LMP and SSMLPs);
 - Bridge piers and abutment design (location of piers, scale and materials);
 - Signage;
- Condition 59A(g) requires preparation of a SSUDP for the Cycleway, Walkway and Bridal (CWB) path network and include:
 - Final alignment and form of CWB.
 - Provision for a 3.0m wide two-way path
 - Connections
 - Boardwalks;
 - Lighting, safety provisions for crossing of local roads
 - CPTED review.
 - In addition, SSMP7 shall consider the following in relation to Condition 59A(i)(ix):
 - (ix) *Waikanae River:*
 1. *Detailed alignment of pedestrian walkways on both sides of the River; and*
 2. *Connection of walkway with CWB on both sides of the River*

Landscape

- Condition DC57 f) lists the matters to be provided and in summary includes:
 - Vegetation to be retained;
 - Vegetation protection measures;
 - Proposed Planting (including the stages)
 - Fernbird habitat created;
 - Maintenance standards;
 - Detailed specifications;
 - A maintenance regime;
 - Landscape treatment of any noise barriers;
 - Landscape treatment for pedestrian and cycle facilities.

Ecology

- SSEMPs are to be prepared for each ecological mitigation area set out in Condition G42.
- The valued terrestrial vegetation and habitats set out in Condition G41 for Waikanae River include:
 - Waikanae River riparian vegetation (comprising the indigenous plantings on the southern side of the Waikanae River).
- Condition G.42C(c) lists the matters the SSEMP is to include.
 - Indigenous vegetation to be retained;
 - Indigenous vegetation protection measures;
 - Target Stream Ecological Valuation (SEV) scores for all areas of mitigation riparian planting (refer to Condition WS.8);
 - Plans of mitigation planting (terrestrial and riparian);
 - Full landscaping details;
 - Detailed specifications;
 - Maintenance processes and standards;
 - Monitoring and maintenance (including pest control) regime.

	<p>Network Integration Plan</p> <ul style="list-style-type: none"> • Condition DC.64 a) in relation to the CWB; • Condition DC.64 b) ii) in relation to lighting.
<p>3. CONSULTATION</p>	<ul style="list-style-type: none"> • SSLMP, SSEMP and SSUDP (under Conditions DC57(e), DC57A, G42(d) and DC59A(j)) requires consultation with the following parties: <ul style="list-style-type: none"> - Te Āti Awa ki Whakarongotai; - Takamore Trust; - Friends of Waikanae River; - Kapiti Coast District Council (KCDC); and - Greater Wellington Regional Council (GWRC). • The SSLMP and SSUDP requires consultation (Condition DC 57(e) and DC.59A(j)) with the following: <ul style="list-style-type: none"> - Residents' associations for the affected area. • The SSLMP requires consultation with residents whose properties are located close by and in landscape focus areas (identified for sensitivity to visual effects): <p>(vi) Puriri and Kauri Roads (including El Rancho) – for the purpose of SSMP7 it is assumed that Puriri and Kauri Road residents will be consulted for the SSMP8 which covers this area. However, El Rancho has been consulted for SSMP7 as they own property contiguous with the project within the area of SSMP7.</p> • The SSUDP requires consultation with the following parties: <ul style="list-style-type: none"> - Kāpiti Cycling Incorporated and the Implementation Group of the Kāpiti Coast District Council Advisory on Cycleways, Walkways and Bridleways in respect of the CWB and any cycle or pedestrian connections.

4. URBAN DESIGN	CONDITIONS – URBAN DESIGN	RESPONSES – URBAN DESIGN
<p>A. LIGHTING</p> <p>REFER APPENDIX 1 CPTED REVIEW COMMENTS ON SHEET 2</p>	<p>DC59A f) i) Lighting for the benefit of pedestrians and cyclists; DC.64 a) b) ii).</p>	<p>No lighting is proposed on the Waikanae River Bridge CWB path – there are no lights on the Expressway proposed except at interchanges as this reduces the light spill to residential and rural/natural areas. There will be no lighting under the Waikanae River Bridge on the river paths – there is no lighting currently along the river and lighting under the bridges would be out of character. CPTED review notes lighting at the locations under the bridge may also attract people to congregate at night which is not desirable.</p> <p>At the intersection of the CWB to the El Rancho access road/driveway an overhead light on a pole will be provided to act as an alert to drivers on the access road in the evening that cyclist/walkers maybe crossing. Vehicles are typically moving slowly on the access road/driveway. The concept of an overhead way-finding light at all the intersections of the CWB and local roads is proposed.</p> <p>There is a split along the centre of the Waikanae River Bridge which will allow a limited amount of natural light to the space beneath the bridge – <u>this is a change from the NOR and Consent Package</u> as the bridge was not shown as split at that time. This change is considered to be consistent with the principles of the ULDF (5.8.6 although this applies as written to local road crossings).</p>
<p>B. CWB</p> <p>REFER TO APPENDIX 1 SHEETS 2, 3, 4, 11, 12, 13, 14, 15, 16, 19, 20, REFER ALSO TO CPTED REVIEW COMMENTS SHEET 2</p>	<p>DC59A.f ii and iii and DC59A.g, DC59A i) ix) and DC.57 c)</p> <ul style="list-style-type: none"> • Footpath and on road cycle lane on-road (2.0m and 1.5m) • Intersection of the CWB and Local Roads to be safe for crossing • Alignment of CWB • Minimum 3.0m wide two way path that is generally parallel with expressway • Locations for connections (immediate and future) • Boardwalks • Lighting and safety provisions for local road crossings • CPTED review 	<p>The CWB as it crosses the Waikanae River is formed as a 2.5m wide separate path on the main bridge. It is not intended that horses will use this path and will continue to use the posted fording locations on the river itself.</p> <p>From the bridge end, the CWB connects down to the river path on south side via a 3.0m wide link connection that follows an alignment through a contoured landform. On the north side, the CWB is 2.5m wide down to the El Rancho access road. The CWB connects down to the river path via the El Rancho access road/driveway - <u>this is a change from the NOR and Consent Package</u> as there was no connecting pathway at that time. This change is considered to be consistent with the principles of the ULDF (5.12.2).</p> <p>A 2.2m wide path will be provided alongside the low speed (currently posted at 15kmh) 5.0m wide El Rancho access road/driveway to connect to Kauri Road. The path and access road will be demarcated and separated by a shallow dish drain in places. Cyclists are expected to use the access road/driveway, or if less confident will share the path with pedestrians. The reason the CWB leaves the position adjacent to the Expressway at this point is to avoid the sensitive Takamore cultural area.</p> <p>As outlined in attached plans, edge planting and species selection will be kept at low heights adjacent to the CWB to maintain sight-lines.</p> <p>In the Waikanae River area, which is rural, the surface will be loose chip of the ‘Kapiti Blue’ type which is the surface used by KCDC for other paths.</p> <p>The Waikanae River Bridge cycle/walking path will have a 1.4m high concrete barrier (including handrail) between the CWB on the bridge and the roadway.</p> <p>CPTED - review comments: maintain clear sight lines by keeping vegetation low where there is an intersection with local road and also at edges to CWB; this was noted at the El Rancho access road intersection and Waikanae River pathway intersections and has been addressed accordingly. Low planting of appropriate indigenous species in some areas is also required to assist with maintenance of clear overflow paths in this area.</p> <p>A subsequent CPTED review of a revised version of this SSMP was completed and the reviewer confirmed that all of the CPTED features of the design arising from the initial review have now been incorporated into the design.</p>
<p>C. RETAINING WALLS AND NOISE MITIGATION STRUCTURES</p> <p>REFER TO APPENDIX 1 SHEETS 6, 7, 8 AND 9</p>	<p>DC59A.f) iv) Retaining wall structures, in terms of their scale, and materials and noise mitigation structures and landforms in terms of their fit in the landscape and visual treatment.</p>	<p>The bridge vertical abutments at either bridge end will have wall treatments comprising precast panels with a stone facing. The design approach is to show a layered transition from the stone rip rap beneath the bridge (coarse), to the abutment surface (granular but less coarse and representative of an exposed cut to a dune), to the bridge structural elements surface (finer concrete finish).</p> <p>There is a 1.1m high noise wall on the north west side of the Expressway to address noise to El Rancho. This is designed as a continuation of the bridge barrier and will take the form of a standard road safety barrier. There will be planting behind the barrier.</p>

D. LOCAL PROPERTY ACCESS	DC59A.f iv Local property access to provide for existing and future needs	El Rancho property access will be maintained with a new access road/driveway. This shall be concrete at its lower section to provide a surface that is resistant to damage from flooding. <i>Note: An existing alternative access to El Rancho is available in times of flood via Weggery Drive.</i> Flood hazard mitigation measures are subject to agreement with El Rancho and NZTA.
E. BRIDGE PIERS AND ABUTMENTS REFER TO APPENDIX 1 SHEETS 5, 6, 7, 8, 9 & 10	DC59A.f iv Bridge piers and abutments design to address the location of piers and the treatment of abutments to address their scale and materials ULDF 5.8.3 Unite the bridge elements of pier, cross head, deck and barrier as one sculptural form and ensure services are concealed from below	Bridge piers have retained a sculpted form and sit beneath the split bridges. The bridge piers are positioned in accordance with hydrology requirements, to avoid the river channel and to limit the number and size of piers. The bridge length is determined by the required width of the floodway. <u>Change to the bridge form is proposed from the NOR and Consent Package (refer to Appendix 3 for summary of changes and evaluation relative to the ULDF principles). The changes are proposed to address the combination of factors which include seismic standards, hydrological requirements, and constructability.</u> The change is considered to be generally consistent with the ULDF (Section 5.8 although this applies as written to local road crossings) as noted below: <ul style="list-style-type: none"> The Waikanae River bridge has consistently (in NOR and Consent Package) had piers located under the centre of the bridge deck and not aligned with the outside edges (ie 'inboard'). The elements remain united despite the cross head extension as the cross head end face is set at an angle that matches the inclination of the barrier, is set back from the barrier face, and will have a recessive colour finish and its form and materials will be such that the bridge will continue to read as a long horizontal form. The services shall be concealed in the spaces between the SuperT beams under the deck slab and shall not hang below the overall deck form.

5. LANDSCAPE + ECOLOGY	CONDITIONS – LANDSCAPE + ECOLOGY	RESPONSES – LANDSCAPE + ECOLOGY
A. DUNES AND DRYLAND VEGETATION REFER TO APPENDIX 1 SHEETS 2, 6, 7, 17 & 18 and GWRC Plan W - 268 / 5 and APPENDIX 5	The Waikanae River indigenous riparian vegetation, nearly all of which has been planted by community groups, is identified as valued indigenous vegetation by Condition G.41 c). Condition DC.57 f) specifies exotic trees to be retained. Re-shaping of dune landforms. Condition DC.57 - GWRC flood protection requirements	Consent conditions allow for the loss of 0.13 ha (1,300 m ²) of indigenous Waikanae River riparian vegetation (planted). Detailed design has determined the loss of approximately 0.22 ha (2,222 m ²) ha of indigenous riparian vegetation (planted) in this area as part of bridge construction and lay-down areas. <u>This is a change from the NOR and Consent Package and Ecological Management Plan.</u> As outlined in Appendix 5, the Ecological Management Plan determined that approximately 0.46 ha (4,600 m ²) of indigenous riparian planting would be undertaken within the Muaupoko SSEMP area, comprising a minimum of 75 lineal metres. As a result of detailed design in this area and other planting and flooding constraints, the final extent of indigenous riparian planting is 0.22 ha (2,169 m ²) over a distance of 72.2 lineal metres. <i>Note: In addition to the detailed design increasing the amount of Waikanae River riparian vegetation lost, a number of design constraints have also reduced the amount of riparian mitigation available. This is outlined in Appendix 5. These changes are considered to be minor when all sites are considered in their entirety. The shortfalls and/or surplus of indigenous mitigation planting types will be addressed following detailed design in the other SSMP areas, focusing in particular on the Drain 7 / Wharemauku Ecological Mitigation Area and the Kakariki / Smithfield Ecological Mitigation Areas. The Alliance is currently investigating opportunities for addressing the shortage of freshwater length and riparian mitigation in the Waikanae River / Muaupoko Stream area outside the Designation on private land either upstream of the Muaupoko Stream; downstream of the Expressway in the Ngarara Stream; or upstream of the Designation on the Kakariki Stream. Consistent with the consent conditions, any ecological mitigation outside of the Designation will require associated covenants on Certificate of Title to ensure the permanent maintenance of these mitigation areas.</i> Removal of the Waikanae River riparian vegetation shall be restricted to the area necessary for construction. All other indigenous riparian vegetation shall be retained and protected during construction. Removal of exotic trees and vegetation growing on the north bank to be restricted to those affected by construction of the Expressway and associated works; all others to remain in situ and protected during construction. Dune landforms are addressed under the Landform section below. Flood protection requirements comprising planting on realigned river edge (willows and indigenous vegetation consistent with KCDC's and GWRC's joint management plans for the river). Plant selection in river flood plain and within riprap shall consider flood protection and maintenance requirements, including ability to withstand temporary inundation and flattening. <i>Note: no willow shall be planted within riprap required for flood protection works.</i>

		<p>Riprap shall be sized to minimise migration / movement downstream during flood conditions.</p> <p>Plant layout within the Waikanae River floodplain shall take account of natural overflow flood paths as identified by GWRC Flood Protection (refer Plan W - 268 / 5).</p> <p>Shaping of flood protection riprap in floodplain to resemble braided river island forms and to maintain existing flood flow paths.</p>
<p>B. STREAMS AND RIPARIAN WORKS REFER TO APPENDIX 1 SHEET 5, 6, 7, 17 & 18, and APPENDIX 5</p>	<p>Condition G.42 b) requires specific lengths of stream mitigation.</p>	<p>Refer discussion on indigenous riparian vegetation above. In summary, this SSEMP area comprises approximately 72 lineal metres of freshwater ecological mitigation being undertaken as part of the diversion and realignment of the Muaupoko Stream prior to its outlet to the Waikanae River. Mitigation works and riparian planting shall be consistent with existing Waikanae River riparian planting.</p> <p>Riprap design has taken into account ecological and visual mitigation requirements as far as practicable.</p>
<p>C. WETLANDS</p>	<p>There are no wetlands within this SSMP area.</p>	
<p>D. SALVAGE</p>	<p>Condition G.34 m) sets out the salvage requirements.</p>	<p>Waikanae River gravels from the bank excavation shall be screened and reused in the river channel stabilization.</p> <p>Logs and other large woody debris present in the Muaupoko Stream channel shall be salvaged and incorporated in to the new stream channel.</p>
<p>E. VEGETATION TO BE RETAINED REFER TO APPENDIX 1 SHEET 2, 17 & 18, APPENDIX 4, AND APPENDIX 5.</p>	<p>Conditions: DC.57 f i) and DC.42C c) i) and G.34 m) – identification of vegetation to be retained. Refer: Landscape Management Plan, sections 8.21 to 8.28 and Attachment 2: Principles, Methods and Procedures: Pre-construction. Ecological Management Plan, sections 7.1 to 7.18.</p>	<p>Identification of vegetation to be retained, including retention of as many as practicable significant trees and areas of regenerating indigenous vegetation. (The Vegetation Clearance plans have already been certified by KCDC – see SHEETS17 and 18).</p> <p>Consent conditions require best endeavours to minimise loss of the Waikanae River Riparian Vegetation (listed as Valued Vegetation).</p> <p>Indigenous and exotic vegetation to be retained shall be identified by survey and marked and fenced prior to any work commencing in SSMP7.</p> <p>The extent and boundaries of vegetation to be retained shall be checked and confirmed on site by Project Ecologist and/or Project Landscape Architect.</p> <p>Vegetation clearance boundaries shall be delineated by marker tape, pegs, or by marking perimeter trees. Temporary fences around these areas shall be subsequently erected prior to earthworks machinery being mobilised on site and construction commencing.</p> <p>Temporary fences shall be erected around individual trees to prevent disturbance or damage; fences to be aligned outside the tree ‘drip zone’.</p> <p>Machinery, materials, fuel, and chemicals to be stored, even temporarily, well away, from fenced vegetation to avoid accidental spillage, contamination, and compaction. All storage shall be located out of the floodway.</p> <p>Areas of indigenous and exotic vegetation to be retained within the Designation shall be photographed and this will form part of the baseline information.</p>
<p>F. VEGETATION TO BE CLEARED REFER TO APPENDIX 4</p>	<p>Conditions: DC.57 f i) and DC.42C c) i)- identification of vegetation to be removed. Refer: Landscape Management Plan, sections 8.21 to 8.28 and Attachment 2: Principles, Methods and Procedures: Pre-construction. Ecological Management Plan, sections 7.1 to 7.18.</p>	<p>Project Ecologist and Project Landscape Architect to provide briefing to Constructors prior to vegetation clearance and protection work commencing; briefing to identify any hold points during vegetation clearance process.</p> <p>Project Landscape Architect to identify areas of vegetation to be cleared that can be mulched and stockpiled for future use.</p> <p>Stockpile sites and details to be outlined in contract documentation specifications.</p> <p>Vegetation to be mulched and stockpiled shall exclude aggressive weed species that could result in potential pest plant problems (eg blackberry, gorse, Convolvulus, and willows). Stockpiles shall be located outside of the floodway.</p> <p>Stored mulch to be periodically inspected for evidence of aggressive pest plant species and if present shall be sprayed with appropriate herbicide.</p> <p>The Project Ecologist shall observe any removal or modification of indigenous vegetation.</p>

<p>G. INDIGENOUS FAUNA</p>	<p>Conditions (G.34 n)) and the EMP (Appendix 3) - freshwater fish requirements for diversions and culverts. There are no other requirements for rare or threatened fauna within SSMP 7.</p>	<p>Immediately prior to any stream reclamation process / diversion installation in the Waikanae River or the Muaupoko Stream, the section of watercourse subject to works shall be isolated by coffer dams or bunds (or other method specified), and fish present shall be safely captured for translocation by accepted methods as provided in the EMP.</p> <p>Prior to livening of the diverted section of the Muaupoko Stream, an extensive fish capture and removal will be required.</p> <p>All fish that are captured shall be transferred upstream to the nearest equivalent habitat to limit their exposure to any increased turbidity that is caused during the stream reclamation process / diversion / installation.</p>
<p>H. LANDFORMS REFER TO APPENDIX 1 SHEET 2, 3, 4, 17 & 18 and APPENDIX 4.</p>	<p>Condition DC.57 c) - SSLMPs shall be consistent with the Landscape Management Plan, ULDF (Technical Report 5), the Ecological Management Plan, the relevant Site Specific Urban Design Plan, and the Network Integration Plan as relevant.</p>	<p>The dune on the southern side of the Expressway will be significantly modified to enable construction of the Waikanae River bridge abutments. The dune landform shall be reinstated post construction incorporating the CWB, and will be planted.</p> <p>Organic material (i.e. the limited topsoil development on the dunes and peat in the interdunal hollows) shall be stripped and stockpiled separately for future use. Contract documentation and specifications to detail stripping and storage.</p> <p>Project Landscape Architect to be involved in final shaping of dune profiles, including reinstatement of the dune landform, to ensure 'natural' appearance.</p> <p>Hydro-seeding (or alternative measures) of exposed sand areas once re-shaping is completed.</p> <p>Temporary protection of exposed sand areas with straw or proprietary materials during re-shaping may be required to limit erosion from wind and rain and also to minimise dust issues in adjoining properties.</p> <p>All planted slopes and embankments over 1:3 gradient shall have a customised planting solution to minimise rilling and ensure plant success (eg. using a mulch that 'knits' together to limit mulch movement).</p> <p>The extent of earthworks shall be pegged on site prior to construction providing an opportunity for KCDC's Landscape Reviewer and GWRC's Ecological Reviewer to inspect the area.</p> <p>Riprap forms associated with the bridge abutments and piers within the river corridor designed to resemble braided river islands.</p>
<p>I. STREAM DIVERSIONS REFER TO APPENDIX 1 SHEET 2, 4 & 5 AND APPENDIX 5</p>	<p>Condition G.42 and G.42C - diversion and realignment of the Muaupoko Stream</p>	<p>Realignment of the lower Muaupoko Stream to move the confluence up-stream and away from the bridge infrastructure (resulting in a loss of approximately 49.0 lineal metres of the existing stream).</p> <ul style="list-style-type: none"> • New channel of 72 lineal metres shall be formed with associated riparian planting of 2,169 m² subject to flood protection requirements, including species section within riprap, location of services, etc. • The design shall maintain unimpeded fish access within the Muaupoko Stream to and from the Waikanae River and to replace the developing indigenous riparian community in this area. • Channel design to be developed in consultation with Project Ecologist to as far as practicable maintain current depth, flow and velocity to achieve dual ecological and flood capacity requirements. • Rock rip rap is required as part of the stream alignment on the true left side for scour control. This will be overlaid with 300mm of topsoil for planting. • Any large woody debris present in the former stream channel shall be salvaged and incorporated into the new channel (true right only) taking care to avoid crack willow or potentially invasive exotic species. <p>The current SEV score of the Muaupoko Stream is 0.48. The SEV target for the realigned and new enhanced stream section is 0.677.</p> <p>Sediment monitoring via in-stream logger is required at diversion creation and livening as set out in the EMP.</p> <p>Fish salvage of the former Muaupoko Stream channel shall be undertaken prior to dewatering (as set out in the EMP).</p> <p>Fish migration movement is required to be monitored post diversion (as set out in the EMP).</p>
<p>J. CULVERT INSTALLATION</p>	<p>Culverts where provision of fish passage is required.</p>	<p>Two permanent flood balancing culverts are required; culvert 22.2 on the El Rancho access road and a culvert under the CWB into a bund through the flood attenuation area and then in a culvert under the El rancho access road ; neither of these culverts require fish passage to be provided.</p>

<p>K. MITIGATION PLANTING REFER TO APPENDIX 1 SHEETS 2, 6, 7, 16, 17, 18, 19, 2, 21, 22 & 23 AND APPENDIX 5.</p>	<p>Conditions G42 and DC.57 f) - Landscape and ecological mitigation requirements -</p>	<p>Four planting types as follows: Ecological riparian mix: SHEETS 19, 20, 21 & 22 illustrate typical planting layout and species composition. Plant grades shall be a mix of 0.5 and 1.0 litre grades (or equivalent) with good root systems planted at 1.0m centres. <i>Note: indigenous planting within riprap to consider flood protection and maintenance requirements (i.e. low-stature, able to fold over during flood events/maintenance, smaller trunks and rootballs, etc).</i></p> <p>Massed indigenous planting: SHEETS 19, 20, 21 & 22 illustrate typical planting layout and species composition. Plant grades shall be a mix of 0.5 and 1.0 litre grades (or equivalent) planted at 1.0m centres.</p> <p>Willows interplanted with indigenous species: SHEET 19 illustrates willows and indigenous species planted adjacent to the riprap and along the sections of the Waikanae River being realigned (in accordance with GWRC requirements). The willow species used shall be sterile clones. <i>Note: no willows are to be planted in riprap required for flood protection works.</i></p> <p>Grass in floodplain: SHEET 2 illustrates the extent of the grassing on north bank.</p>
<p>L. PLANTING METHODS AND SPECIFICATIONS REFER TO APPENDIX 4</p>	<p>DC 57 f) and G.42C c) - planting methods and specifications</p>	<p>Planting shall be undertaken during 3 month planting window only (beginning June until the end of August). Planting may be carried out during a 2-week shoulder period either side of this but it will depend on environmental conditions. No planting shall be undertaken outside the June-August planting window unless approved by Project Landscape Architect.</p> <p>Planting substrate shall be a minimum of 300mm deep, consolidated, and free from rilling and erosion before mulch placement.</p> <p>Organic mulch shall be placed over the area to be planted at least 2 weeks prior to planting to allow for settlement.</p> <p>All planted slopes and embankments over 1:3 gradient shall have a customised planting solution to minimise rilling and ensure plant success, , choosing a mulch that ‘knits’ together to limit mulch movement).</p> <p>No planting shall be undertaken until site is approved by Project Landscape Architect and Project Ecologist to be free of aggressive pest plant species. Planting shall be delayed in areas where aggressive pest plants are detected until these are removed or sufficiently controlled.</p> <p>Constructor/supplier to confirm all plants are well hardened off prior to planting.</p> <p>Species composition in accordance with species percentages.</p> <p>Plant set out and groupings to be random, but reflecting natural assemblages.</p> <p>Plant selection shall take into account engineering and service constraints, such as riprap and Vector Gas planting restrictions above the pipeline in this area.</p> <p>All planted areas shall be temporarily fenced to assist with plant protection.</p> <p>Enrichment planting within the ecological riparian planting zones shall be undertaken during the planting season in the year following massed planting.</p>
<p>M. WEED CLEARANCE REFER TO APPENDIX 4</p>	<p>Conditions: DC.57 f) vii) B and Condition G.35 - weed control and clearance. Refer: Landscape Management Plan, sections 8.16 to 8.20 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)</p>	<p>All invasive plants shall be controlled in planting areas prior to planting in accordance with the GWRC Regional Pest Management Strategy (2002-22).</p>
<p>N. GROUND PREPARATION REFER TO APPENDIX 4</p>	<p>Condition D.C57 f) and G.42C c)</p>	<p>All areas to be planted shall be sprayed with an approved herbicide.</p> <p>All areas to be planted shall be free of actively growing grass, weeds, and any extraneous material removed.</p> <p>Any localised rilling or erosion of planted areas shall be remedied prior to placement of approved soil mix.</p> <p>Project Landscape Architect to approve all finished earthwork areas prior to placement of approved soil mix.</p>

		Approved soil mix comprising salvaged peat, stripped topsoil, sand and compost shall be placed and lightly compacted to a depth of 300mm over all areas to be planted.
O. MULCHING REFER TO APPENDIX 4	Condition D.C57 f) and G.42C c)	100mm of organic mulch shall be placed lightly over all areas to be planted. Mulch shall be left for 2 weeks to settle prior to commencement of any planting.
P. PLANT SUPPLY REFER TO APPENDIX 4	Conditions DC.57 f) and G.42C c)	While consent condition DC.57 f) require that all indigenous plants to be sourced from Manawatu Ecological Region, for the area covered by SSMP 7 (Waikanae River) all indigenous plants shall be eco-sourced from the Foxton Ecological District. All plants shall be hardened off prior to planting.
Q. PLANTING PROGRAMME / STAGING REFER TO APPENDIX 4	Conditions DC.57 f) and G.42C c)	Planting shall be staged according to completion of construction works. No planting shall be carried out in areas where there is a risk of damage from adjoining construction activities. Construction Manager shall confirm areas where construction is completed and area is ready for planting. Planting shall be completed only within June-August planting window unless otherwise approved by Project Landscape Architect. Areas that have been planted shall be photographed and details recorded to form part of baseline information.
R. PLANT MAINTENANCE REFER TO APPENDIX 4	Condition D.C57 f) and G.42C c)	Riparian planting shall be maintained for 4 years. Terrestrial planting, both indigenous and exotic shall be maintained for 3 years. Planting shall be maintained according to the maintenance plan as set out in the Landscape Specifications (Appendix 4). Monitoring reports on plant survival and establishment and the frequency and success of the maintenance regime shall be completed by the Project Landscape Architect (in consultation with the Project Ecologist in relation to riparian planting) as follows: 1 month after planting completed and then 3 months 6 months 12 months 2 years and Twice yearly thereafter until the end of the maintenance period. Monitoring reports shall include dates of visits, condition of vegetation, condition of fencing, issues arising, actions required, together with photographs. Monitoring reports on completion shall be provided to KCDC Landscape Reviewer. Monitoring reports shall cease to be prepared for those areas where the performance standards have been met ahead of the maintenance period.
S. PEST PLANT MANAGEMENT REFER TO APPENDIX 4	DC.57 f), G.42C c and G.43 d) – control of pest plants.	Weed surveys shall be carried out annually in spring to track the introduction of weeds and their spread and to recommend appropriate management in accordance with the GWRC Regional Pest Management Strategy (2002-22).
T. PEST ANIMAL MANAGEMENT REFER TO APPENDIX 4	DC.57 f), G.42C c and G.43 d) – control of pest animals.	Pest monitoring shall be carried out annually in spring to track the introduction of browsing animal pests and their spread and to recommend appropriate management in accordance with the GWRC Regional Pest Management Strategy (2002-22).
U. PROTECTION REQUIREMENTS REFER TO APPENDIX 4	Condition DC.57 c) and G.43 d) – temporary and permanent protection	Temporary fences shall be erected as part of the protection of valued vegetation to be retained. All areas of ecological and landscape mitigation planting within the operational designation shall be fenced following planting, maintained and protected in accordance with the consent conditions and as outlined in the EMP and LMP.

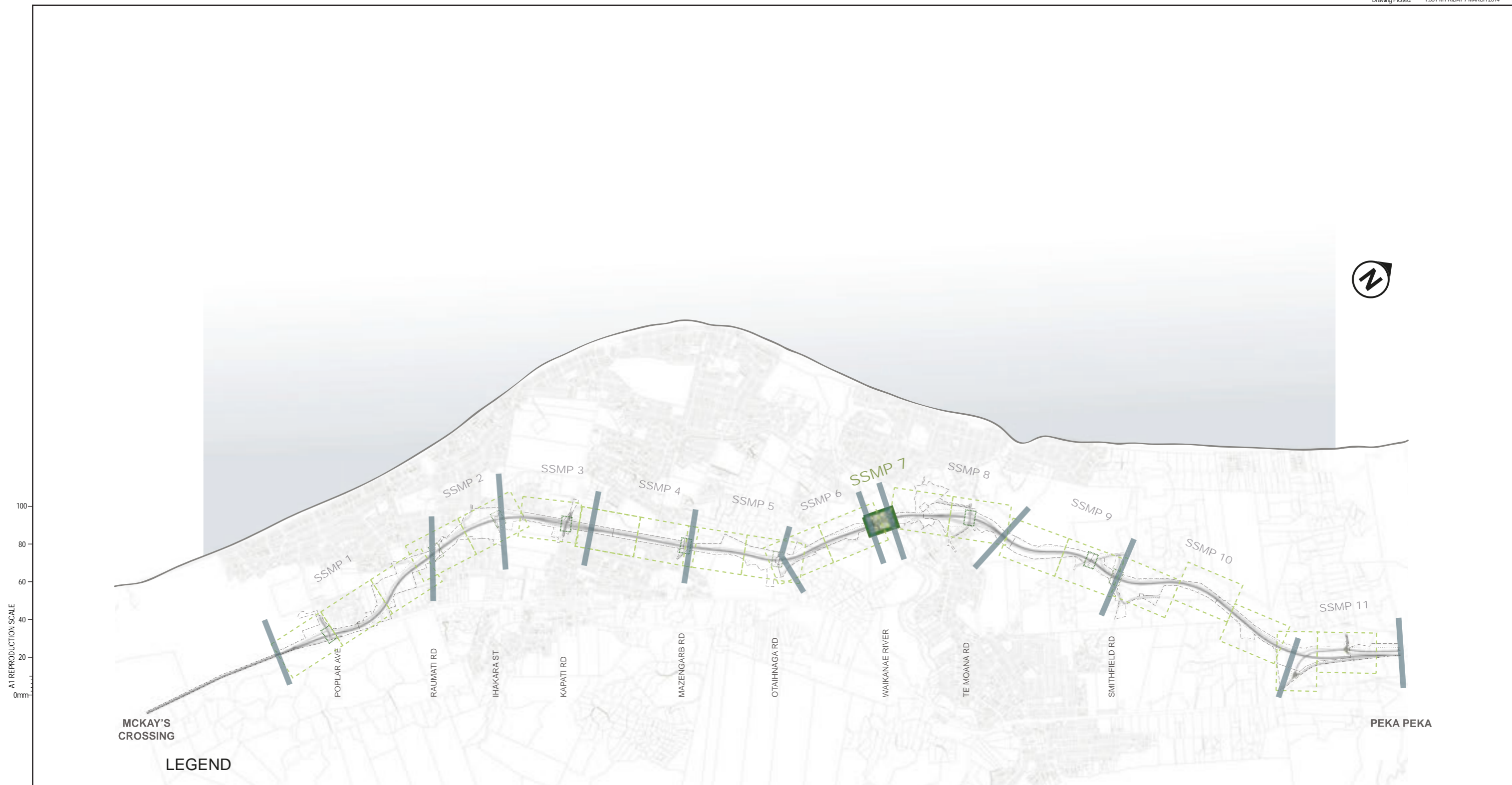
<p>V. LANDSCAPE AND ECOLOGICAL SUCCESS MONITORING – POST CONSTRUCTION</p>	<p>G.40, G.42C c) and DC. 57 c) - monitoring and adaptive management requirements to confirm landscape and ecological mitigation success has been achieved are as follows (as outlined in the EMP and LMP):</p> <p>DC.53 c, DC.57 f and G.42 c - 3 year Defects Liability and Maintenance Period for all terrestrial planting and a 4 year Defects Liability and Maintenance Period for riparian planting.</p> <p>Consistent with the EMP and LMP, monitoring of the success of stream formation shall be undertaken in coordination by the Project Ecologist, Landscape Architect, Project Hydrologist and GWRC Flood Protection Operations to ensure ecological remedial and mitigation works meet the project outcomes and objectives specified in conditions G.34 and G.38 c).</p> <p>DC. 57c and G.42C e - at the completion of planting, each area of ecological mitigation shall be reviewed by the Project Ecologist in conjunction with the Project Landscape Architect and a report prepared on the parameters above.</p>	<p>In relation to massed planting, successful planting shall be defined as 80% canopy closure at the time of Final Completion whereby a sustainable plant community has been established and where plants have grown to create a canopy that shades the ground and suppresses weed growth.</p> <p>Flood protection planting shall require 100% plant survival, with 100% of trees in full leaf at the time of Final Completion (seasonally dependent).</p> <p>In relation to ecological mitigation planting, total area of riparian planting as far as practicable reflects the indigenous habitat types lost and ecological functioning and is based on development of similar representative vegetation communities (G.42A).</p> <p>Invasive terrestrial weed species successfully controlled.</p> <p>Natural colonisation by other non-planted indigenous species.</p> <p>In-stream surveys within the Muaupoko Stream to confirm hydrological success shall be undertaken, with follow up SEV process to confirm SEV score (condition) as specified in the EMP (Condition G42C c) ii) - Target Stream Ecological Values (SEV) for mitigation riparian planting as follows:</p> <ul style="list-style-type: none"> • Combination of riparian vegetation establishment and correct substrate, depth, flow, macrophyte and in-stream cover development. • Post development of each diversion reach, a SEV measurement shall be undertaken to measure functional and biological condition. • Measurements undertaken at year 3 (one year before the end of plant maintenance) and 5 year time frames. • Once the SEV (and other metrics) meet the standard for success (baseline measures), no further mitigation success measurement in regard to the waterway diversions shall be required. <p>Following construction (and in particular following the creation and livening of the new channel reaches), the success of the diversion created as aquatic habitat shall require monitoring and potentially additional works to result in the anticipated aquatic biodiversity gains. As part of the SEV assessment, function shall be assessed via the SEV process which includes presence absence of macroinvertebrates and fish as well as a range of physical habitat characteristics (including the success of the riparian revegetation).</p> <p>A PHA (physical habitat assessment following Harding et al 2009) shall be undertaken and the results compared to the original PHA scores and to a reference site of good quality. That analysis will assist in recognition of habitat structural issues (if any).</p> <p>The new Muaupoko Stream diversion channel identified in SHEETS 2, 19 & 20 shall meet the forecast SEV potential (0.677) outlined in the EMP, but at least exceed the current SEV condition (0.48).</p>
<p>W. ADAPTIVE MANAGEMENT – POST CONSTRUCTION</p>	<p>Condition G.40 – adaptive management and condition DC.57 c)</p>	<p>In the event that mitigation planting does not achieve the objectives within the consent timeframes, the Project Ecologist and Project Landscape Architect shall prepare a report, including recommendations for remedial work or additional mitigation, and ongoing monitoring and reporting through the adaptive management process.</p>

<p>6. REFERENCES</p>	<ul style="list-style-type: none"> • Ecological Management Plan (EMP), July 2013. • Landscape Management Plan (LMP), July 2013 • Urban and Landscape Design Framework, Technical Report 5, MacKays to Peka Peka Expressway • Assessment of Landscape and Visual Effects, including Appendices A and B, Technical Report 7 • Assessment of Ecological Impacts Report, including Technical Reports 27 – 31 (Terrestrial Vegetation and Habitats, Herpetofauna, Avifauna, Freshwater and Marine), • Waikanae River Environmental Strategy: An outcome of the Waikanae Floodplain Management Plan. GWRC. October 2012.
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Appendix 1: DRAWING SET

Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

13 February 2014



LEGEND

	ROAD		SSMP SHEET (ROAD)		SSMP SHEET (BRIDGE)		PARCEL BOUNDARIES
	SSMP BOUNDARY		CURRENT SSMP SHEET (ROAD)		CURRENT SSMP SHEET (BRIDGE)		CONSTRUCTION BOUNDARY

A1 REPRODUCTION SCALE
0mm 20 40 60 80 100

A3 REPRODUCTION SCALE
0mm 10 20 30 40 50

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE	-			12.09.13
No	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Drawn	Approved For Construction*
1:25,000			Date
Reduced Scale (A3)	Dwg Verifier	Dwg Check	
1:50,000			* Refer to Revision 1 for Original Signature



Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 1
LOCATION PLAN

Drawing No: M2PP-121-D-GPH-8001

Rev. C

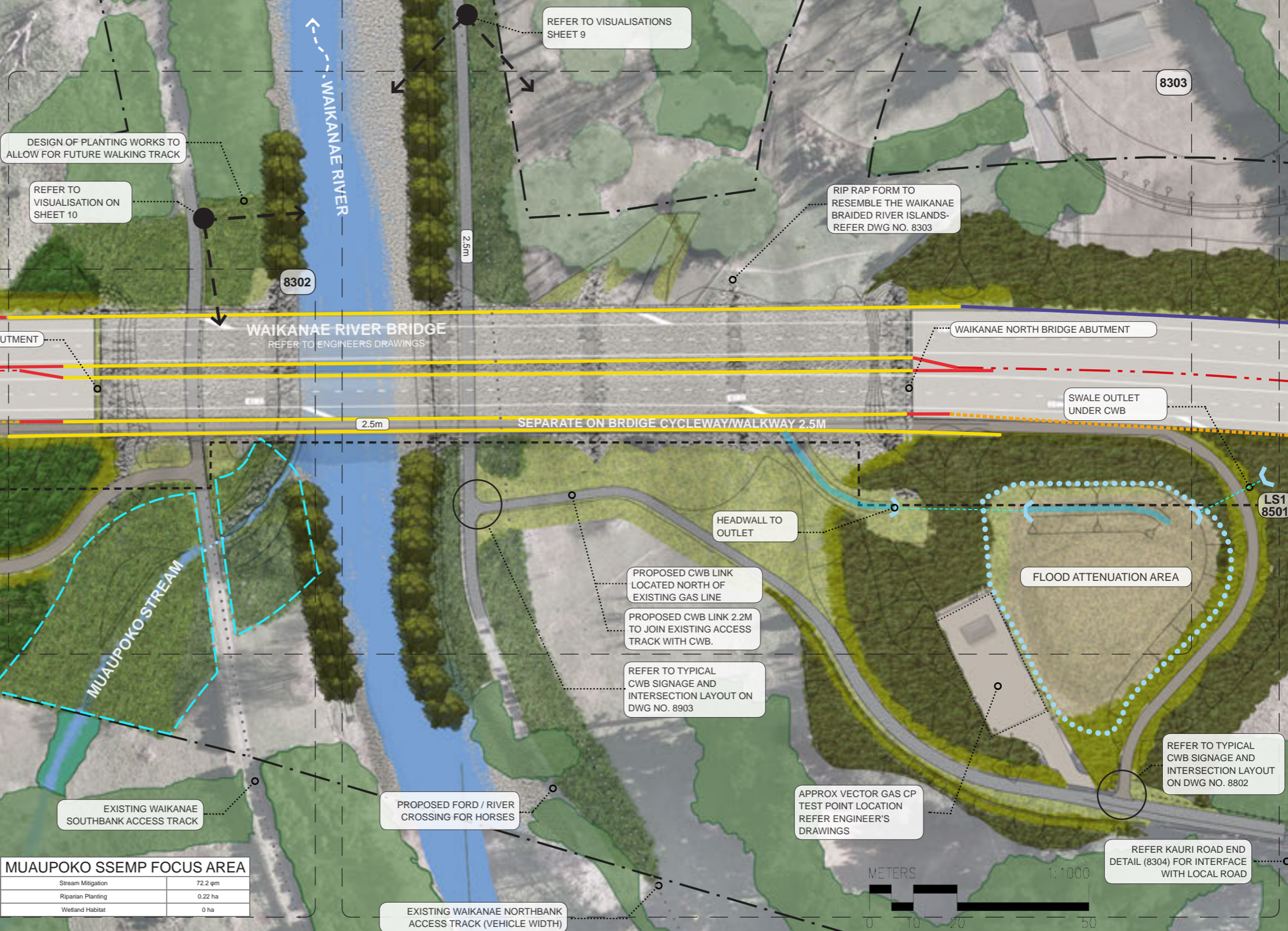
DETAIL DESIGN (DET)

Document No

General		Urban Design		Landscape		Ecology		CWB	
---	Designation Boundary	---	Concrete Bridge Barrier	○	Individual Retained Trees	○	Retained Valued Terrestrial Vegetation	---	Loose Chip CWB
- - -	Wire Barrier	---	Concrete Noise Wall	○	Retained Vegetation	○	Retained Valued Wetland Vegetation	---	Chip Seal CWB
---	Barrier Transition	---	Culvert Headwall	○	Grass	○	Planted Indigenous Terrestrial Habitat	---	Concrete CWB
---	Concrete Traffic Barrier	---	Retaining Wall	○	Massed Planting	○	Planted Indigenous Wetland Habitat	---	Existing Access Track or CWB
---	Culvert	---	Bridge Deck	○	with Tree Enrichment	○	Stream Mitigation / Riparian Habitat	---	
---	Swale	---	Bridge Abutment	○	Wetland / Riparian Planting	○	Existing Water Body	---	
---	Flood Attenuation Area	---	Bridge Piers	○	Low Massed Planting	○		---	
○	Visualisation Viewpoint			○	Exotic Tree Planting				

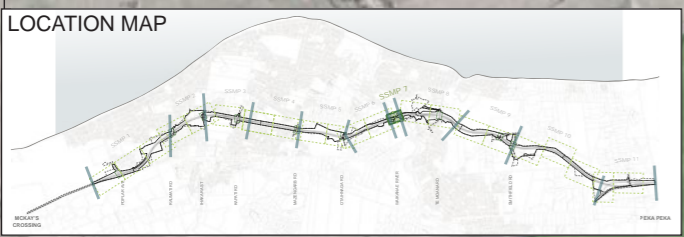
KEY CPTED CONSIDERATIONS:

- CLEAR LINES OF SIGHT AT INTERSECTIONS
- THE 'TAGABILITY' OF MATERIALS AND SURFACES
- AVOID CREATING VISUALLY ISOLATED AND ENCLOSED HABITABLE SPACES THAT MAY ENCOURAGE ANTI-SOCIAL BEHAVIOUR. FOR EXAMPLE PLANTING ADJACENT TO BRIDGE ABUTMENTS SHOULD IDEALLY BE LOW/MEDIUM DENSE PLANTING.
- THE MAJORITY OF THE CWB CORRIDOR SHOULD BE WITHIN A 5.0-6.0M WIDE OPEN SPACE (COMPRISING GRASS AND LOW PLANTINGS), PARTICULARLY AT THE APPROACHES TO AND THROUGH BENDS TO PRESERVE VISIBILITY. VEGETATION TALLER THAN 1.0M CAN BE ESTABLISHED ADJACENT TO THE PATH FOR SHORT STRETCHES (SAY 40.0 M STRETCHES AT A TIME) ALONG STRAIGHTER SECTIONS.
- PROVIDE A SEPARATION OF 4.0-5.0M BETWEEN CWB 'PAUSE SPACES' (ROAD CROSSING POINTS, INTERSECTIONS) AND VEGETATION TALLER THAN 1M.
- FLOOD HAZARD MEASURES (GATES, SIGNAGE, BOLLARDS, DEPTH INDICATORS) ARE SUBJECT TO NZTA / EL RANCHO PROPERTY AGREEMENT



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm



D	POST CERTIFICATION AMMENDMENT	VB			01.09.15	Original Scale (A1)	Design	Approved For Construction
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B	FOR CERTIFICATION				28.11.13	Reduced Scale (A3)	Design Checker	
A	PRELIMINARY ISSUE				12.09.13	1:1000	Drawn	
No.	Revision	By	Chk	Chk.V	Appd	Date		



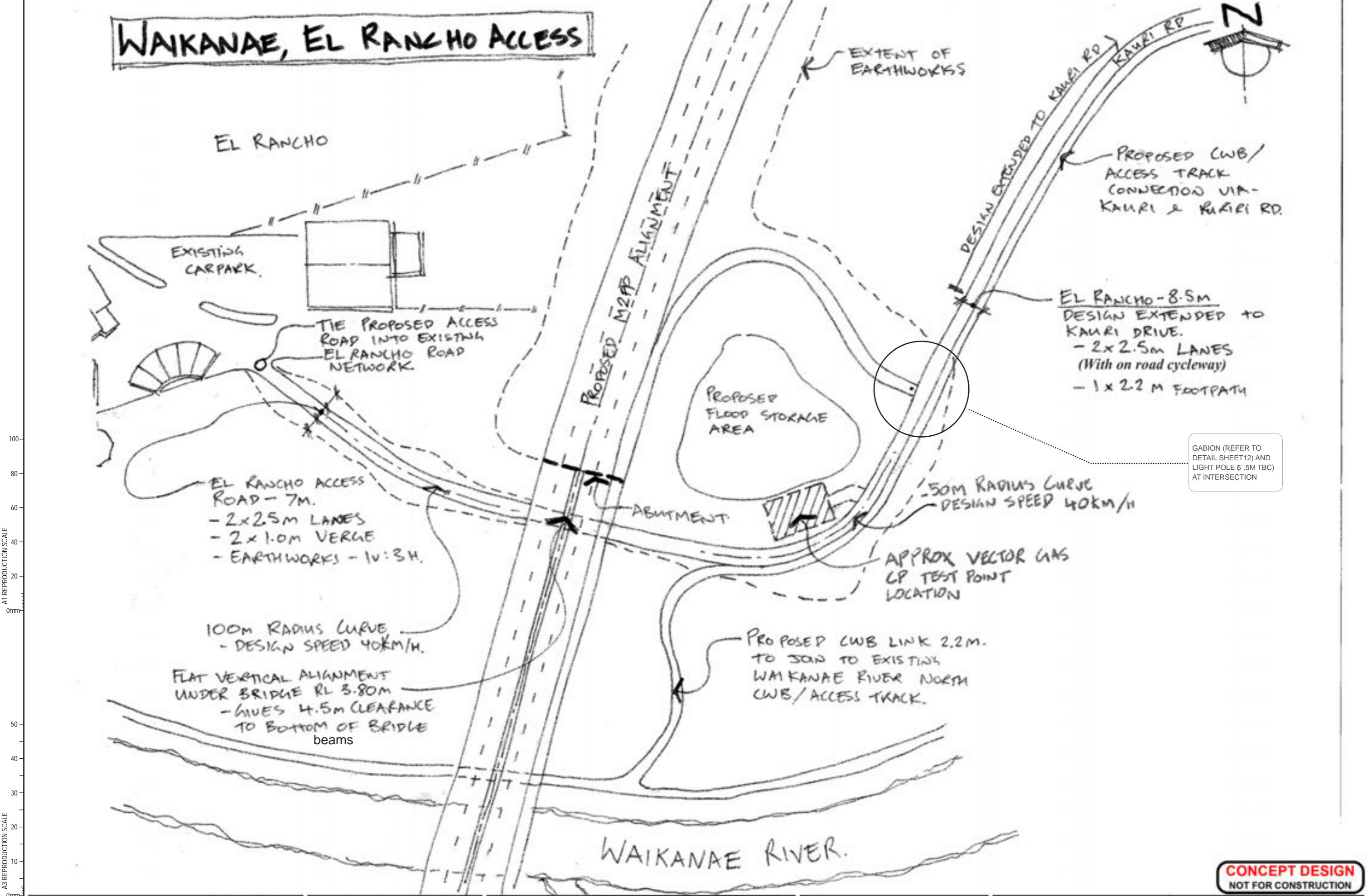
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 7 - SHEET 2 MASTERPLAN

Drawing No: M2PP-121-D-GPH-8101
Rev: D

DETAIL DESIGN (DET)

WAIKANAE, EL RANCHO ACCESS



GABION (REFER TO DETAIL SHEET 12) AND LIGHT POLE (6.5M TBC) AT INTERSECTION

CONCEPT DESIGN
NOT FOR CONSTRUCTION

A1 REPRODUCTION SCALE
0mm 20 40 60 80 100
A3 REPRODUCTION SCALE
0mm 10 20 30 40 50

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No.	Revision	By	CHK	CHK	Appd

Original Scale (A1)	Design Drawn	Approved For Construction
NTS	Drawn	Date
Reduced Scale (A3)	Design Check	
NTS	* Refer to Revision 1 for Original Signature	

NZ TRANSPORT AGENCY
MacKays to Peka Peka

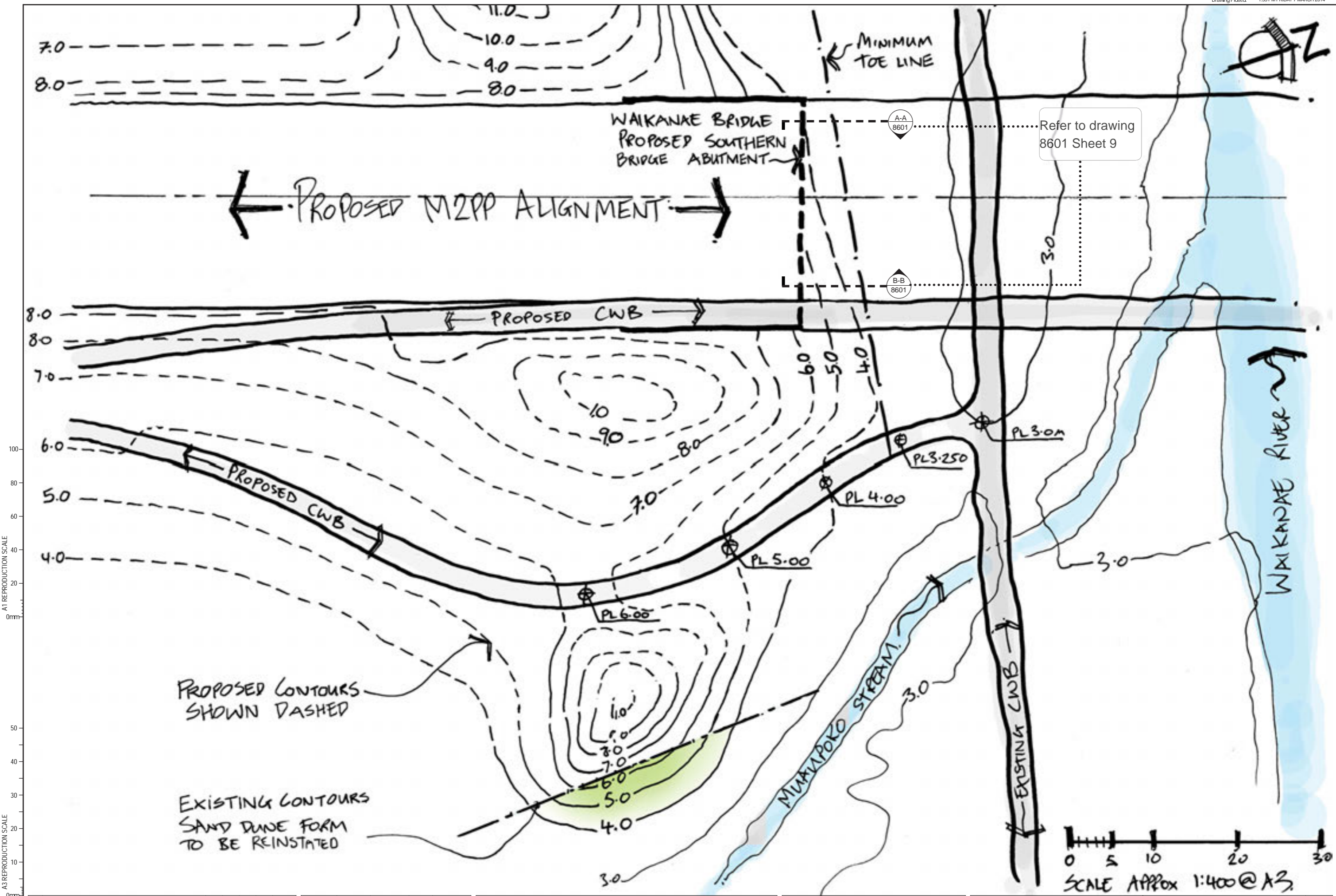
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 3
KAURI RD & NORTH ABUTMENT
DETAIL PLAN

Drawing No: M2PP-121-D-GPH-8301
Rev: C

DETAIL DESIGN (DET)

Document No



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	CHK	CHKV	Appd

Original Scale (A1)	Design	Approved For Construction
NTS	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
NTS	Dwg Check	
	* Refer to Revision 1 for Original Signature	

NZ TRANSPORT AGENCY
MacKays to Peka Peka
Wellington Resource Coordinator

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
 RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 4
 SOUTHERN ABUTMENT
 DETAIL PLAN

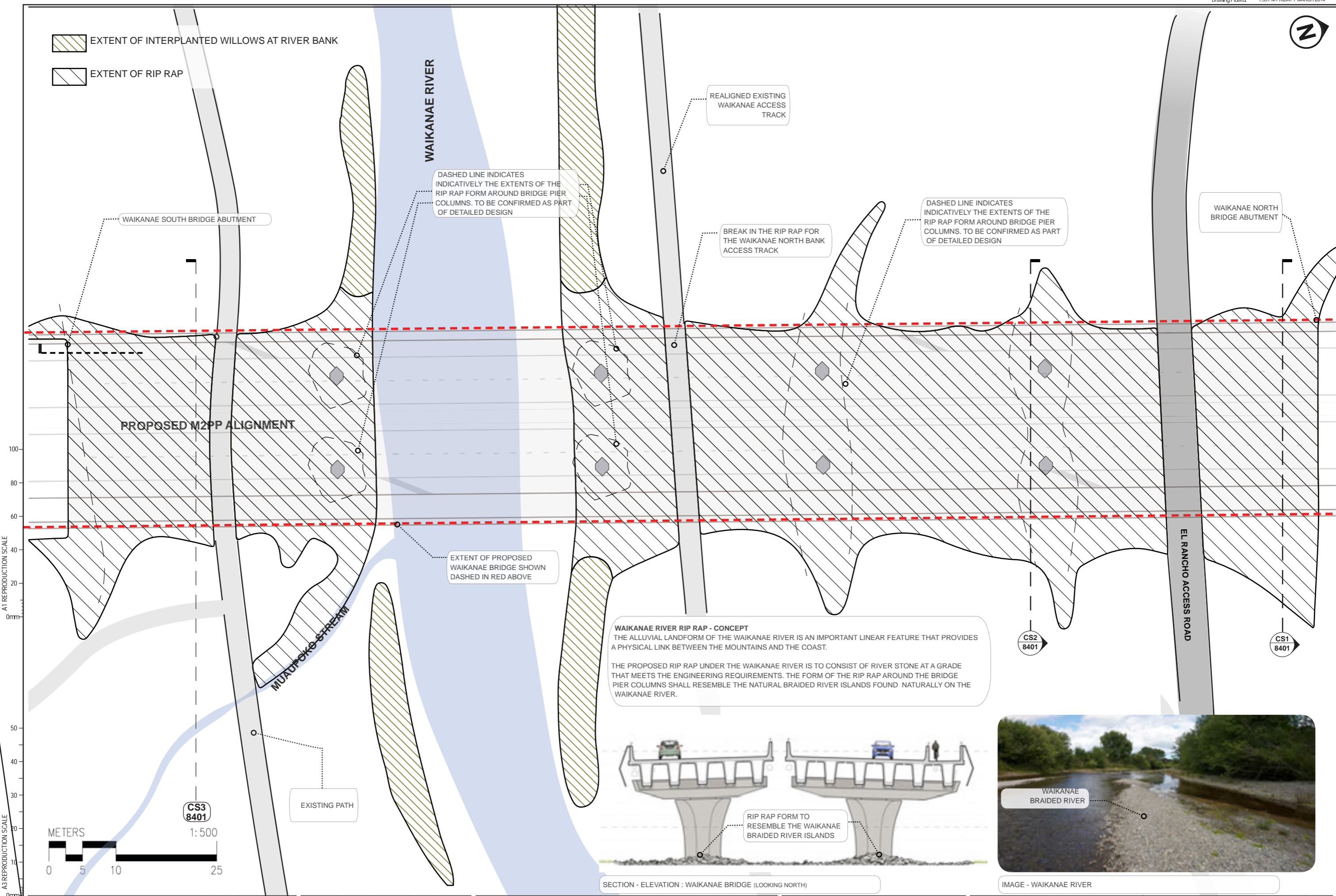
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 Rev: C

DETAIL DESIGN (DET)

Document No

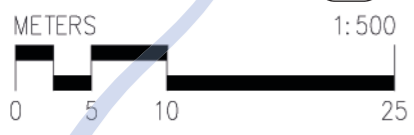


- EXTENT OF INTERPLANTED WILLOWS AT RIVER BANK
- EXTENT OF RIP RAP

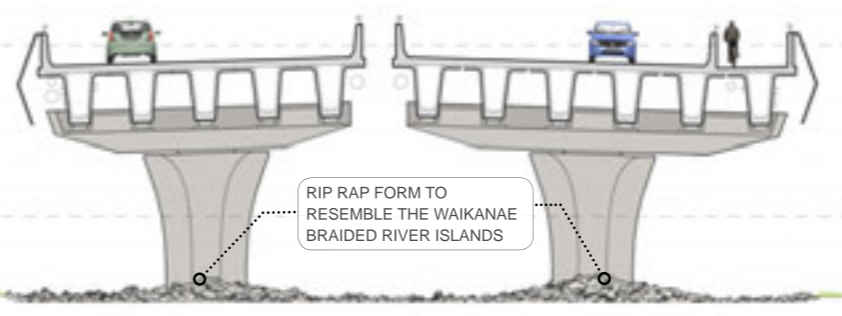


A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50



WAIKANA RIVER RIP RAP - CONCEPT
 THE ALLUVIAL LANDFORM OF THE WAIKANA RIVER IS AN IMPORTANT LINEAR FEATURE THAT PROVIDES A PHYSICAL LINK BETWEEN THE MOUNTAINS AND THE COAST.
 THE PROPOSED RIP RAP UNDER THE WAIKANA RIVER IS TO CONSIST OF RIVER STONE AT A GRADE THAT MEETS THE ENGINEERING REQUIREMENTS. THE FORM OF THE RIP RAP AROUND THE BRIDGE PIER COLUMNS SHALL RESEMBLE THE NATURAL BRAIDED RIVER ISLANDS FOUND NATURALLY ON THE WAIKANA RIVER.



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Approved For Construction
1:250	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
1:500	Dwg Check	
	* Refer to Revision 1 for Original Signature	

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
 RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 5
 RIP RAP EXTENTS

Drawing No: M2PP-121-D-GPH-8303
 Rev: C

DETAIL DESIGN (DET)

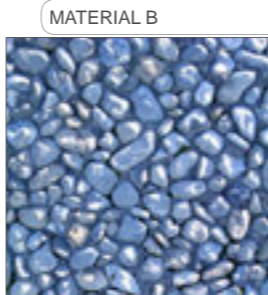
Document No

MATERIAL A

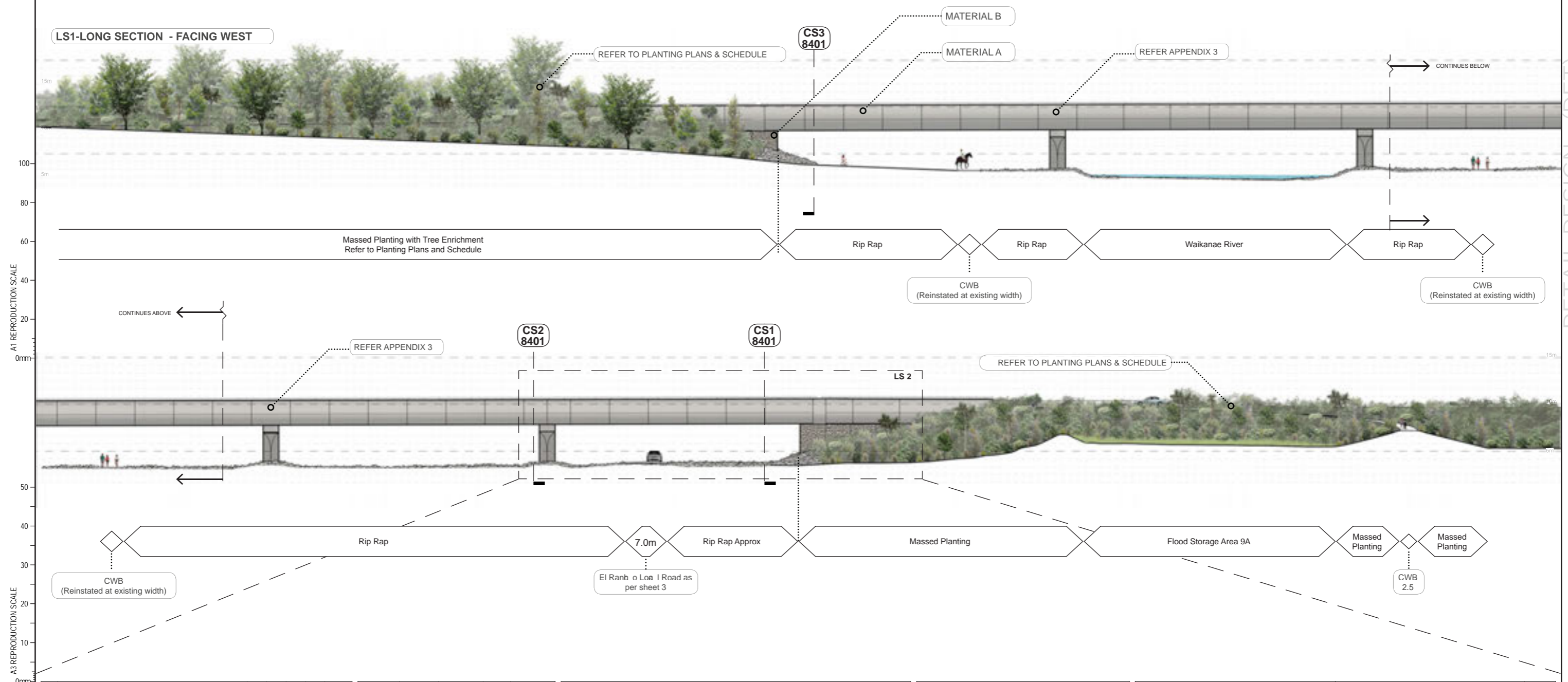
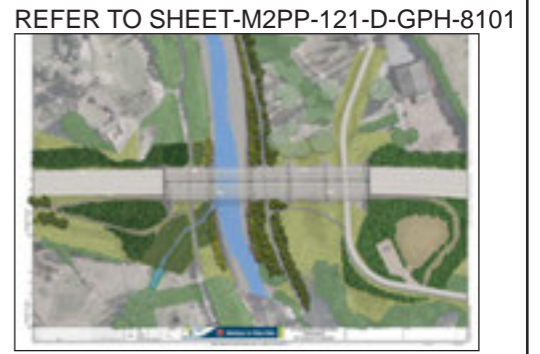
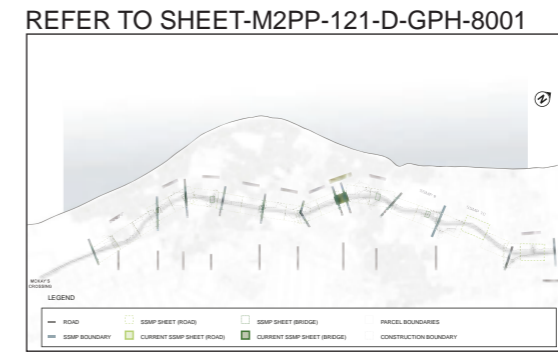


BRIDGE BARRIER:
PRECAST
CONCRETE WITH
2 COATS WHITE
KIEH COATING &
ANTI GRAFFITI
PROTECTION-
PENDING SAMPLE
PANEL APPROVAL

MATERIAL B



BRIDGE ABUTMENT:
PRECAST
CONCRETE PANEL
WITH INLAYED OTAKI
PEB 40MM STONE
AND MATT GRAFFITI
PROTECTION-
PENDING SAMPLE
PANEL APPROVAL



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE	-			12.09.13
No	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Approved For Construction
1:250	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
1:500	Dwg Check	
	* Refer to Revision 1 for Original Signature	



Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

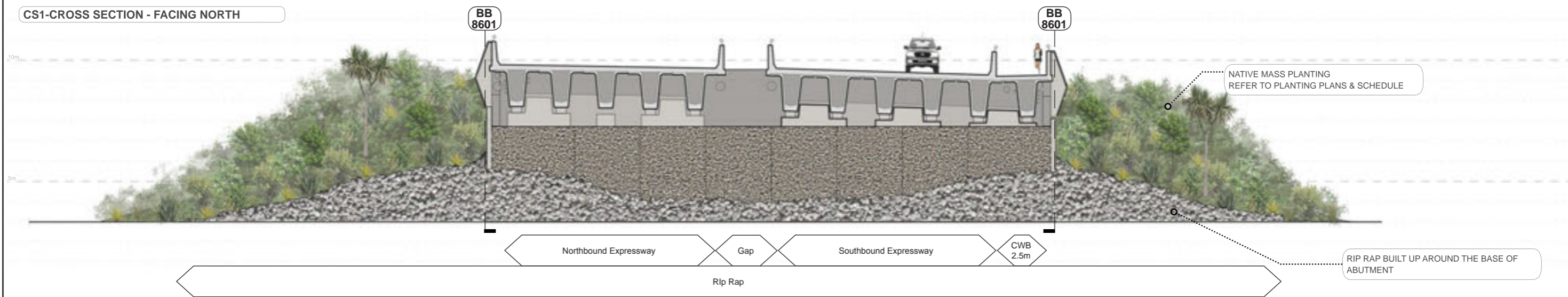
Title: SSMP 7 - SHEET 6 LONG SECTION

Drawing No: M2PP-121-D-GPH-8501

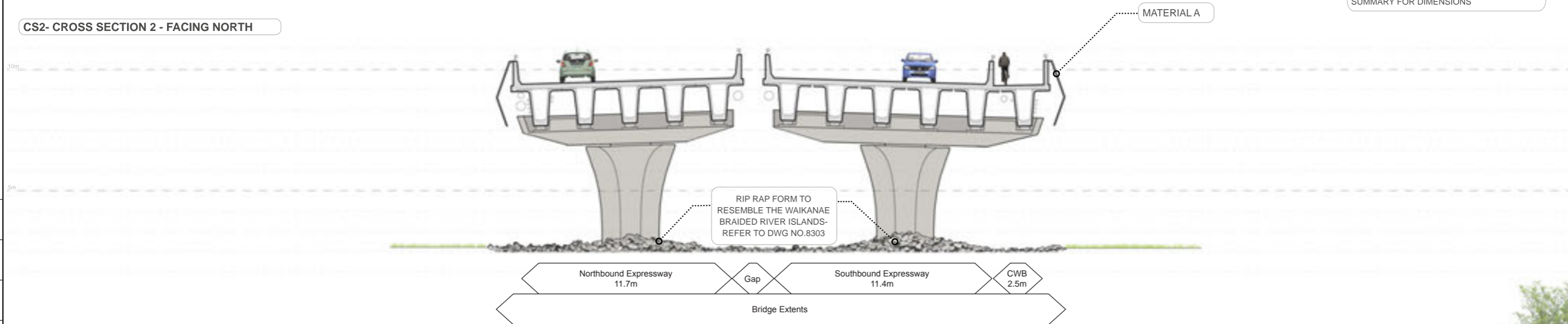
Rev: C

DETAIL DESIGN (DET)

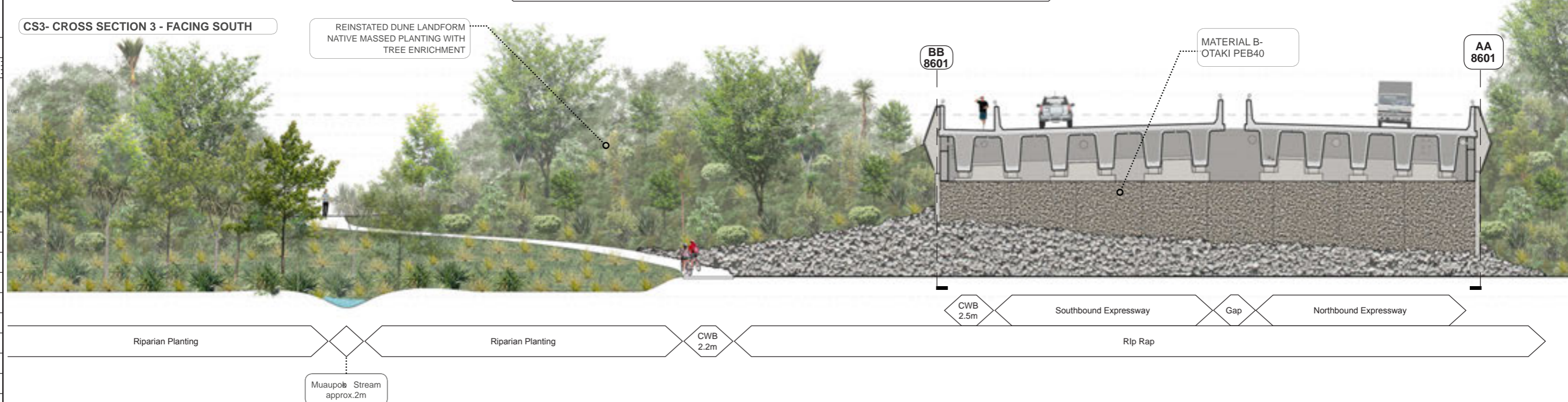
CS1-CROSS SECTION - FACING NORTH



CS2- CROSS SECTION 2 - FACING NORTH



CS3- CROSS SECTION 3 - FACING SOUTH



A1 REPRODUCTION SCALE
A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

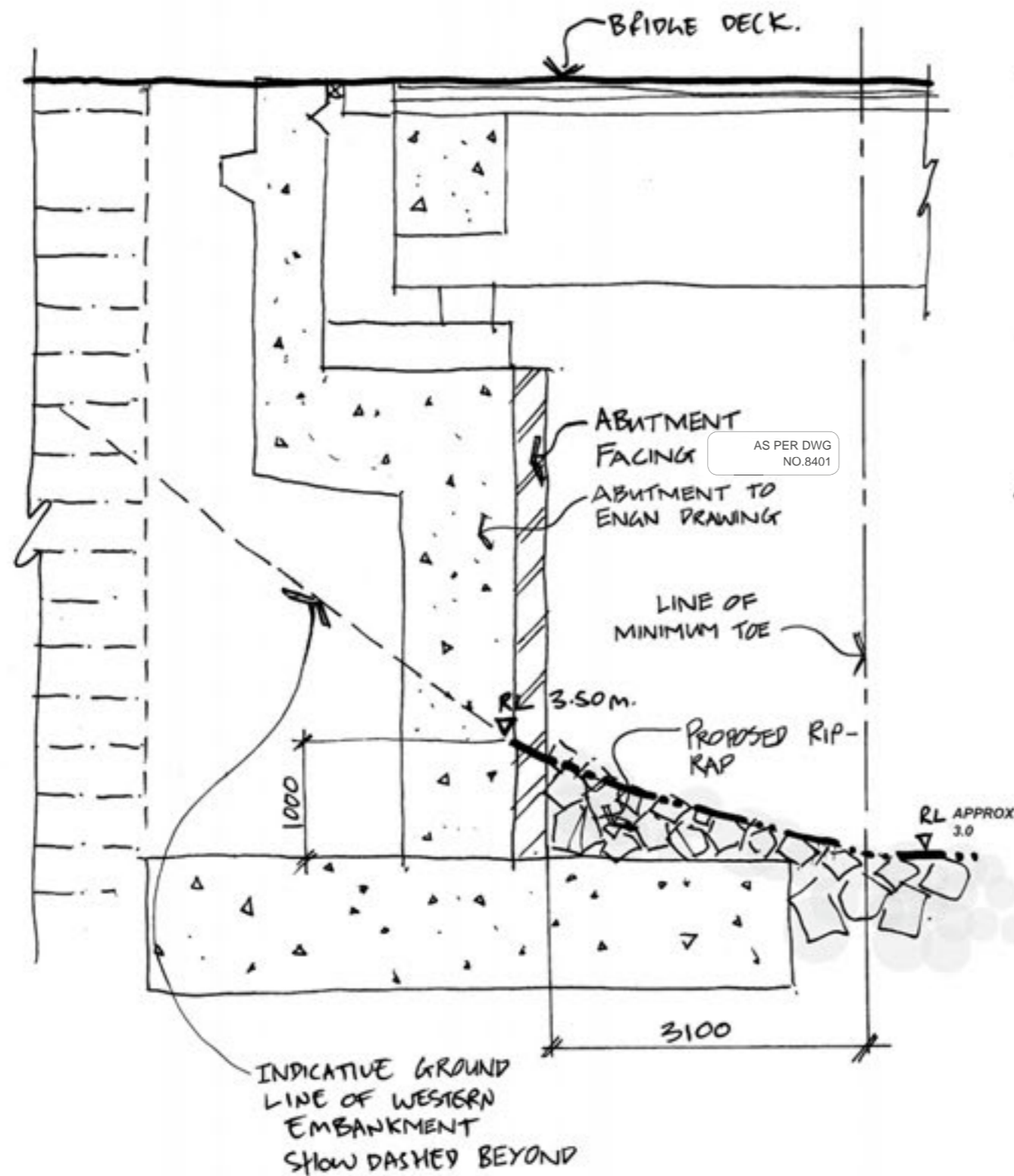
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13	Original Scale (A1)	Design		Approved For Construction*
B	FOR CERTIFICATION				28.11.13	1:100	Drawn		Date
A	PRELIMINARY ISSUE				12.09.13	Reduced Scale (A3)	Dwg Verifier		
No	Revision	By	Chk	Chk.V	Appd	1:200	Dwg Check		* Refer to Revision 1 for Original Signature



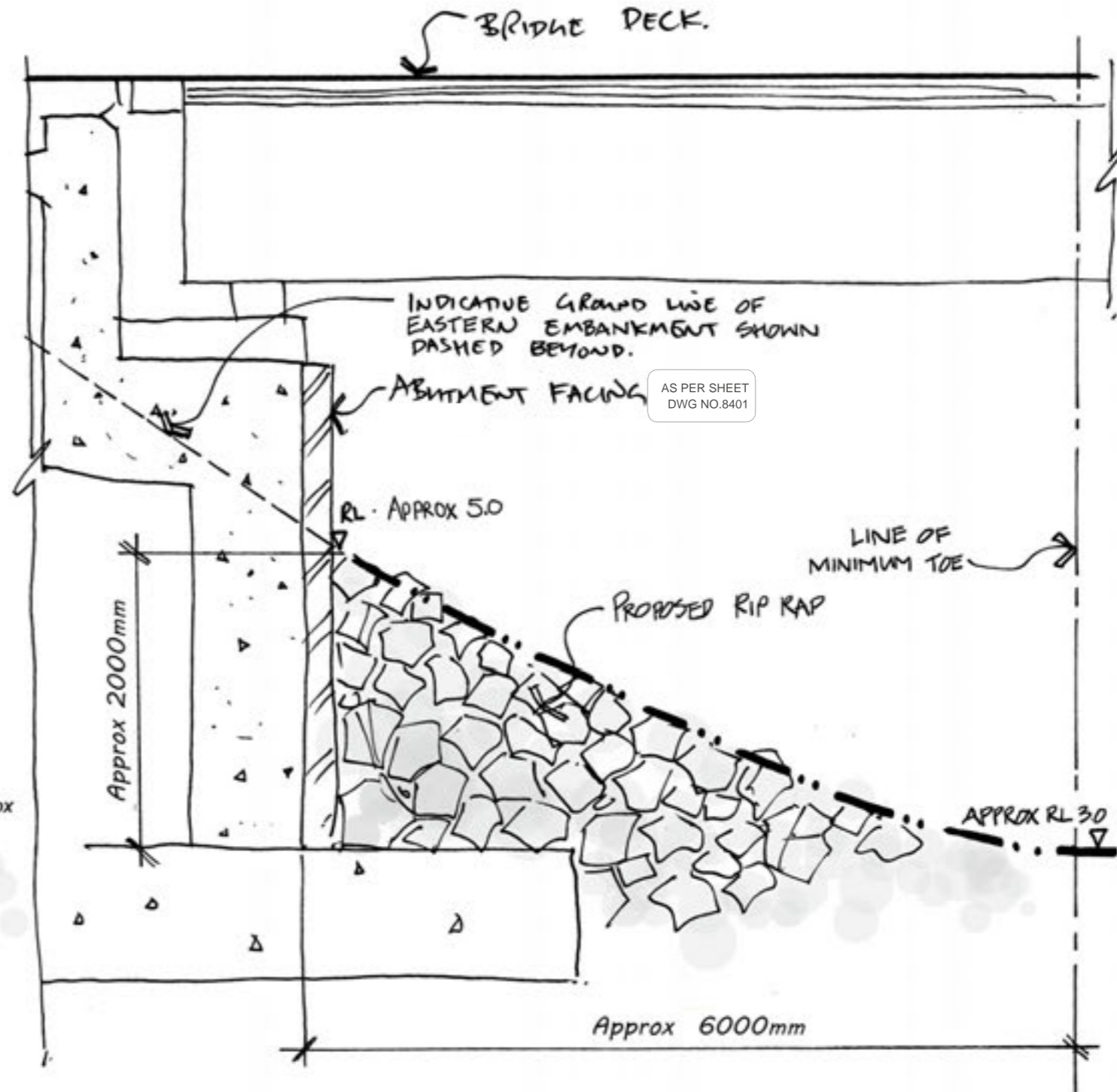
Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 7 CROSS SECTIONS

Drawing No: M2PP-121-D-GPH-8401
Rev: C



SECTION A-A - SOUTH WEST WAIKANA E BRIDGE
SCALE: 1:50 @ A3



SECTION B-B - SOUTH EAST WAIKANA E BRIDGE
SCALE 1:50 @ A3.

A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40

DETAIL DESIGN (DET)



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	CHK	CHK.V	Appd

Original Scale (A1)	Design Drawn	Approved For Construction
1:25	Dwg Verifier	Date
Reduced Scale (A3)	Dwg Check	
1:50	* Refer to Revision 1 for Original Signature	



Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 8
WAIKANA E ABUTMENT DETAILS

Drawing No. M2PP-121-D-GPH-8601
Rev. C



A1 REPRODUCTION SCALE
0mm 20 40 60 80 100

A3 REPRODUCTION SCALE
0mm 10 20 30 40 50

WAIKANAЕ RIVER BRIDGE LOOKING NORTH EAST - SOON AFTER CONSTRUCTION (IE. WITHOUT ANY MITIGATION PLANTING SHOWN)

DETAIL DESIGN (DET)

No	Revision	By	Chk	Chk.V	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE	-				12.09.13

Original Scale (A1)	Design Drawn	Approved For Construction*
NTS		
Reduced Scale (A3)	Dwg Verifier	Date
NTS		

* Refer to Revision 1 for Original Signature






Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

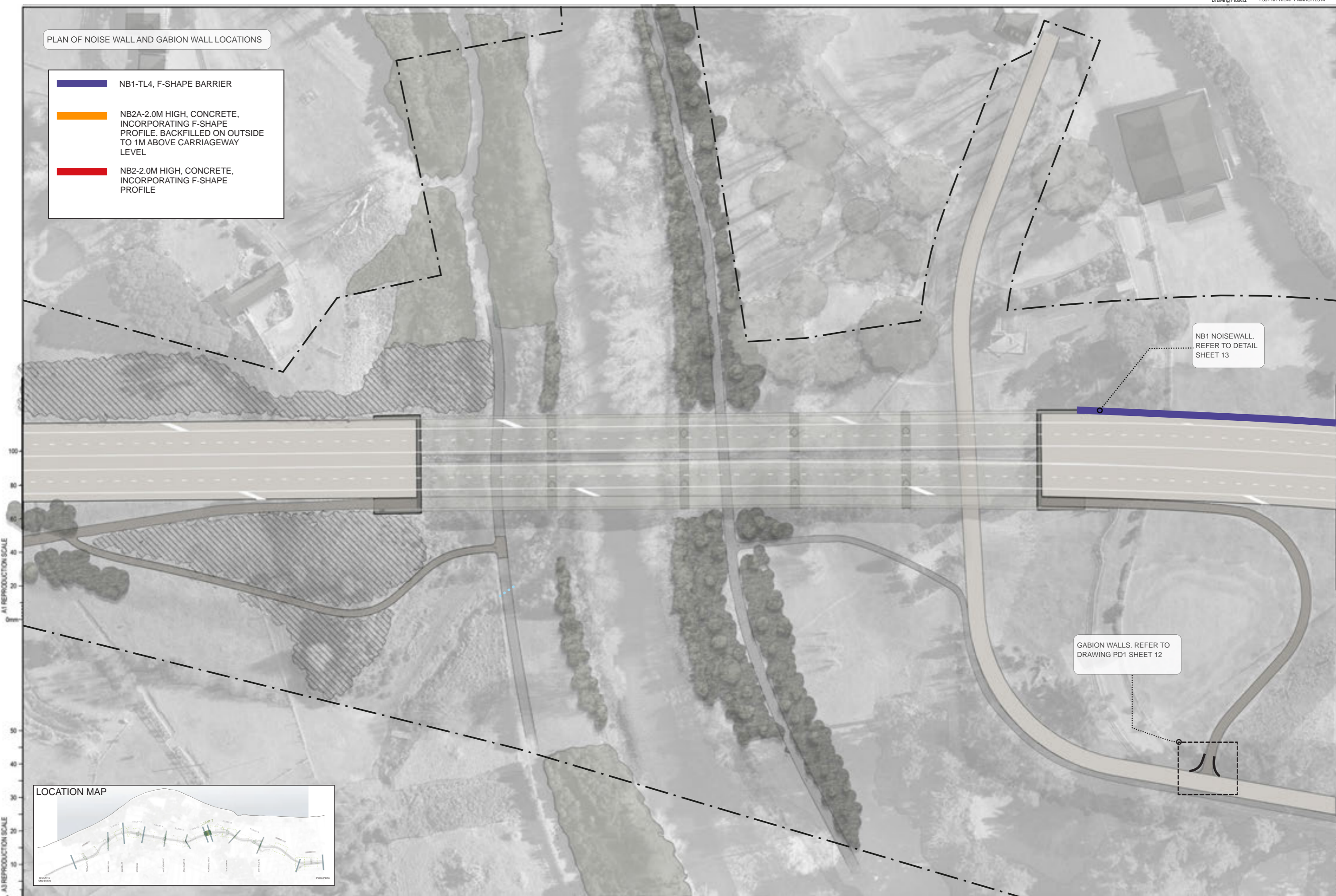
Title: SSMP 7 - SHEET 10
BRIDGE VIEWS

Drawing No: M2PP-121-D-GPH-8802

Rev: C

PLAN OF NOISE WALL AND GABION WALL LOCATIONS

	NB1-TL4, F-SHAPE BARRIER
	NB2A-2.0M HIGH, CONCRETE, INCORPORATING F-SHAPE PROFILE. BACKFILLED ON OUTSIDE TO 1M ABOVE CARRIAGEWAY LEVEL
	NB2-2.0M HIGH, CONCRETE, INCORPORATING F-SHAPE PROFILE



NB1 NOISEWALL. REFER TO DETAIL SHEET 13

GABION WALLS. REFER TO DRAWING PD1 SHEET 12



No.	Revision	By	Chk	Chk.V	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE					12.09.13

Original Scale (A1)	Design	Approved For Construction
NTS	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
NTS	Dwg Check	

* Refer to Revision 1 for Original Signature

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012.0.00 TO 1023.5.00

Title: SSMP 7 - SHEET 11
NOISE WALL/ GABION LOCATIONS

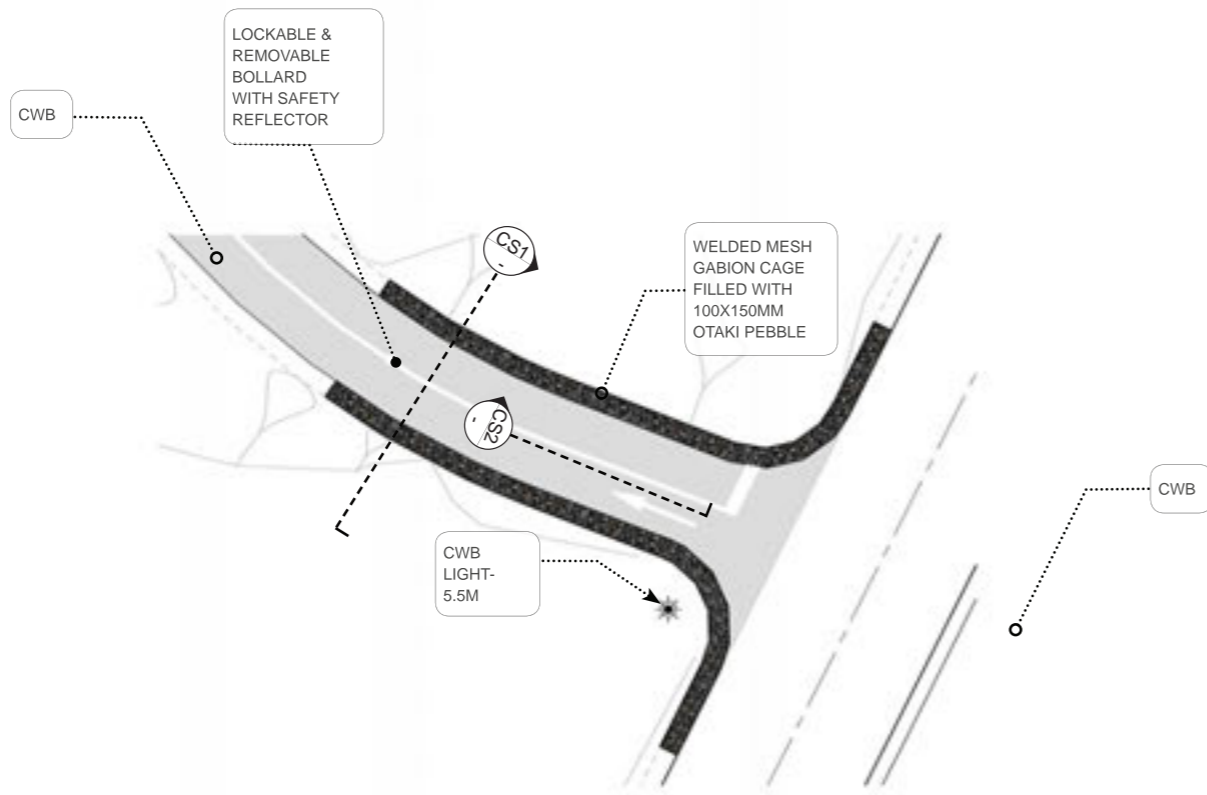
Drawing No. M2PP-121-D-GPH-8600

Rev. C

DETAIL DESIGN (DET)

M2PP-121-D-GPH-8600

PD1-TYPICAL GABION BARRIER



SSMP LOCATION MAP-M2PP-121-D-GPH-8001



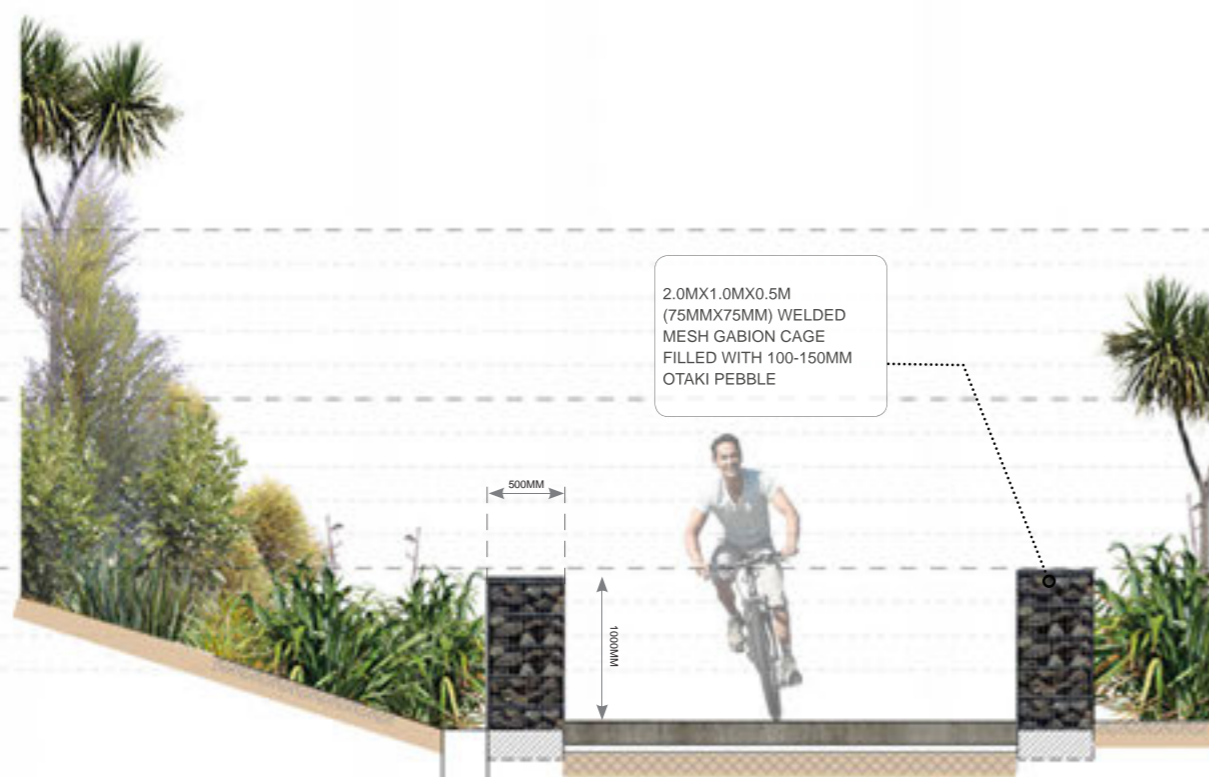
M2PP-121-D-GPH-8101



MATERIALITY SAMPLES



CS1-CROSS SECTION CWB GABION



CS2-CROSS SECTION CWB GABION



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE	-			12.09.13
No	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Approved For Construction*
NTS	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
NTS	Dwg Check	

* Refer to Revision 1 for Original Signature



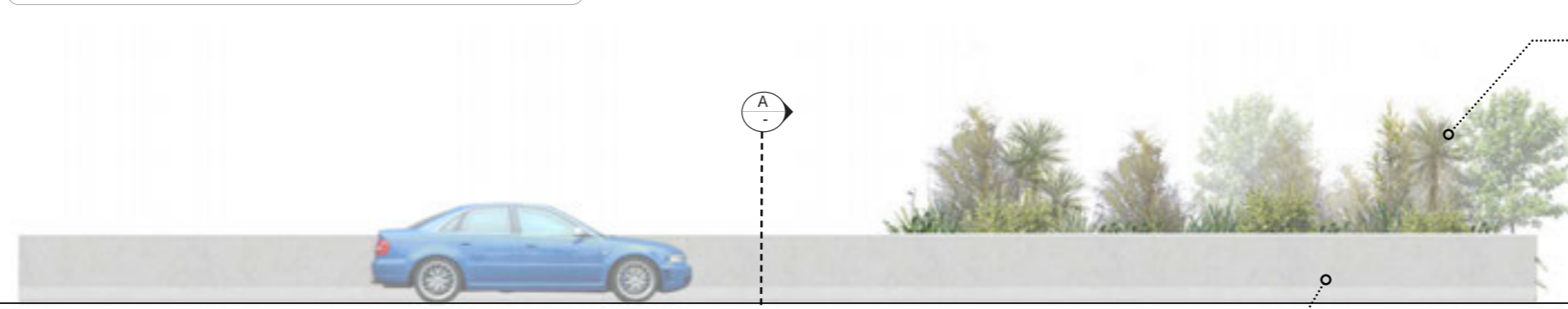
Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 12 GABION DETAILS

Drawing No: M2PP-121-D-GPH-8601

Rev: C

ELEVATION 1 - NOISE WALL NB1(TL4)- EXPRESSWAY SIDE

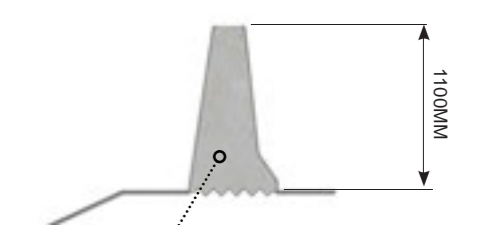


INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO DWG NO. 8201

SECTION A - NOISE WALL NB1 (TL4)

SCALE - 1:25@A3

RESIDENTIAL SIDE EXPRESSWAY SIDE



ELEVATION 2 - NOISE WALL NB1 (TL4)- RESIDENTIAL SIDE



TL4 FAIR FACED CONCRETE EXPRESSWAY BARRIER

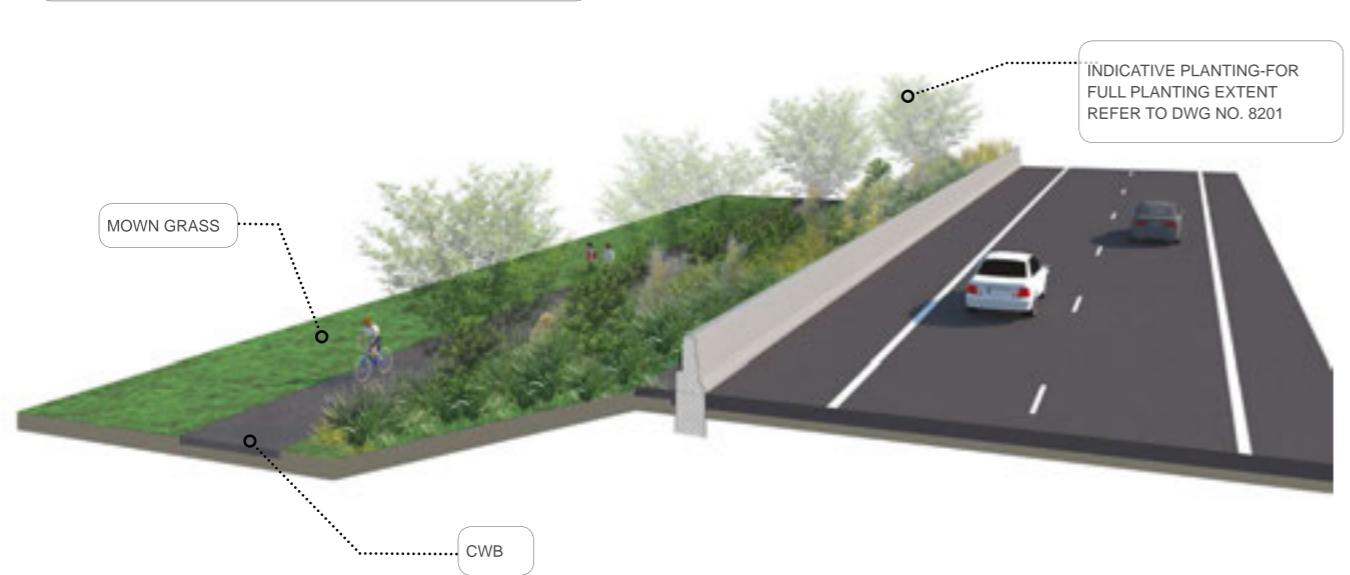
INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO DWG NO. 8201

TL4 FAIR FACED CONCRETE EXPRESSWAY BARRIER

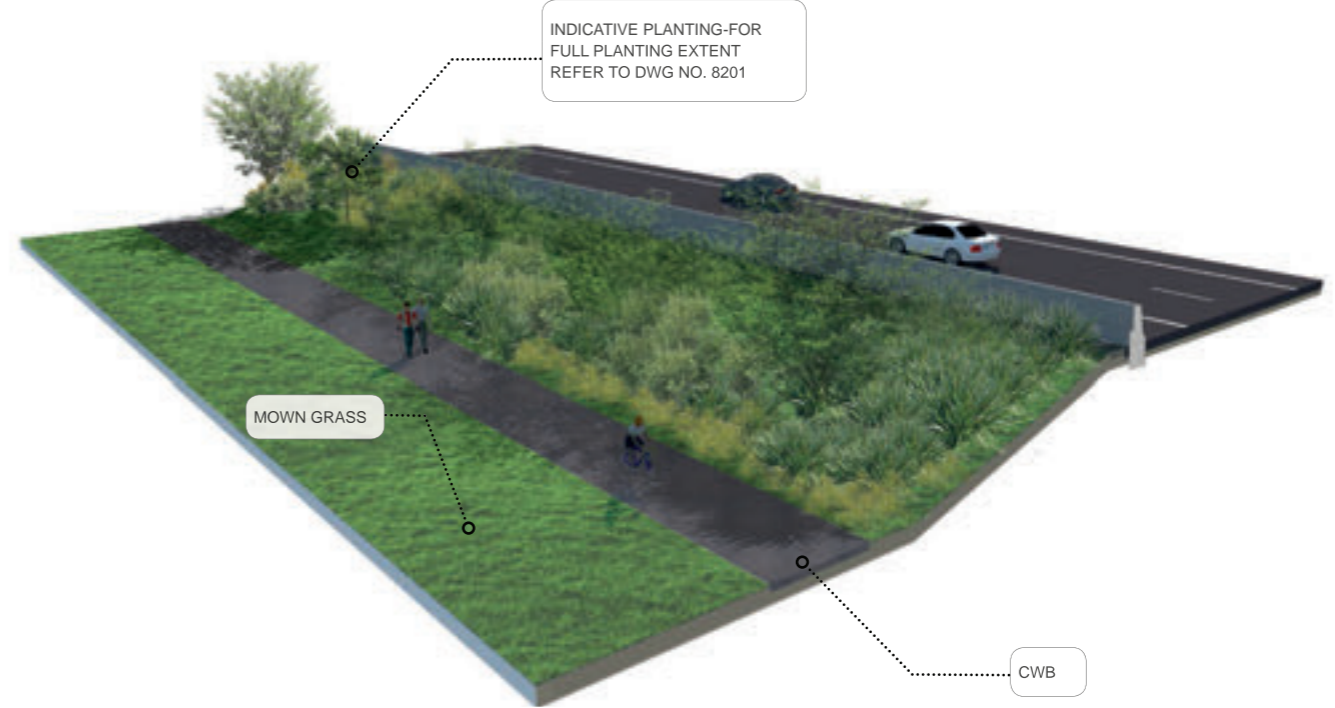
A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

VISUALISATION EXPRESSWAY SIDE



VISUALISATION RESIDENTIAL SIDE



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	Chk	ChkV	Appd

Original Scale (A1)	Design	Drawn	Approved For Construction
NTS			Date
Reduced Scale (A3)	Dwg Verifier	Dwg Check	
NTS	* Refer to Revision 1 for Original Signature		



Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10236.00

Title: SSMP 7 - SHEET 13
NOISE WALL-NB1 DETAILS

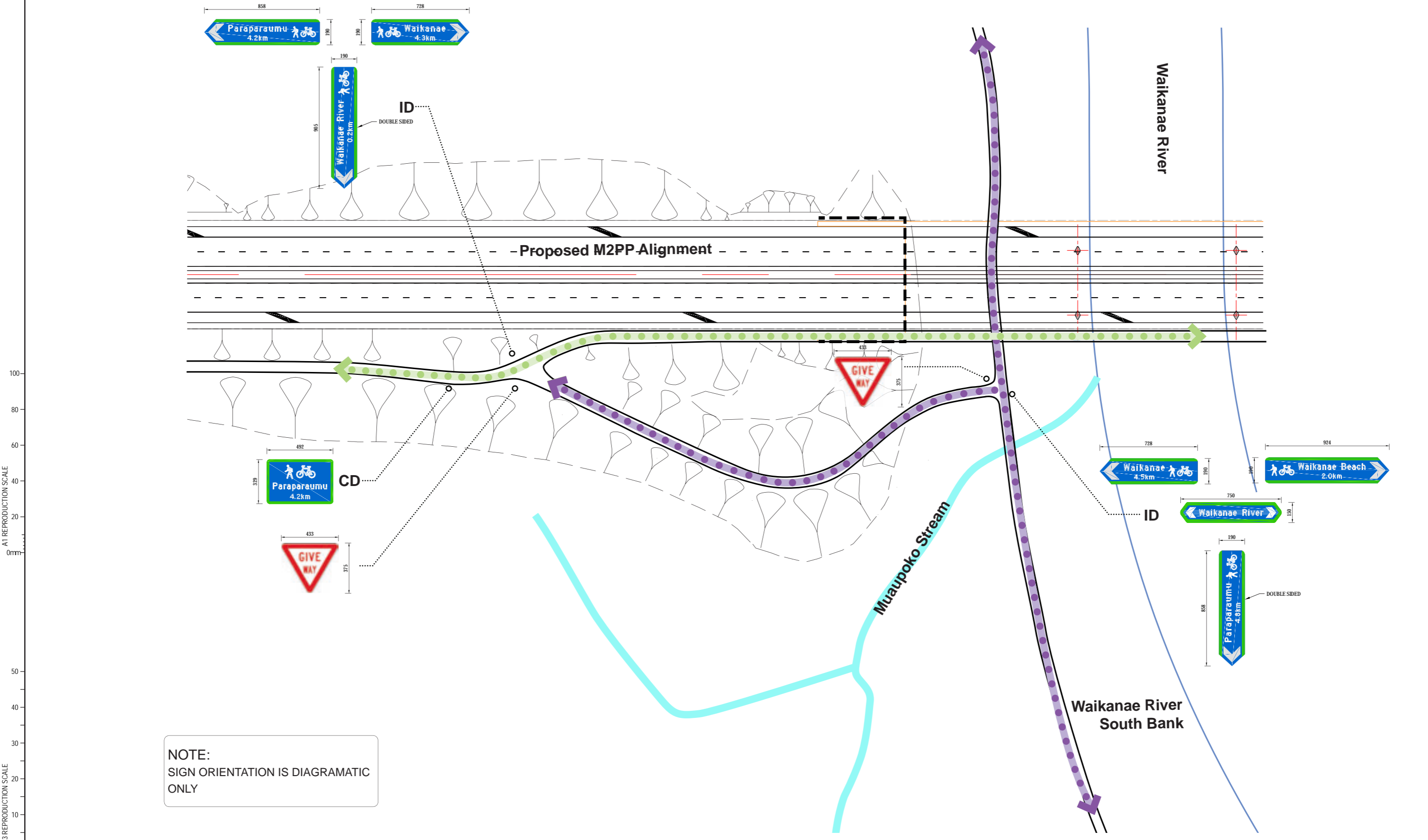
Drawing No: M2PP-121-D-GPH-8602

Rev. B

DETAIL DESIGN (DET)

Document No

DETAIL PLAN - SIGNAGE - WAIKANAĒ RIVER SOUTH BANK



NOTE:
SIGN ORIENTATION IS DIAGRAMATIC ONLY

A1 REPRODUCTION SCALE
0mm 10 20 30 40 50 60 80 100

No	Revision	By	Chk	Chk.V	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE					12.09.13

Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	Date
Reduced Scale (A3)	Drawn Verifier	
1:1000	Drawn Check	

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY
MacKays to Peka Peka

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012.0.00 TO 1023.5.00

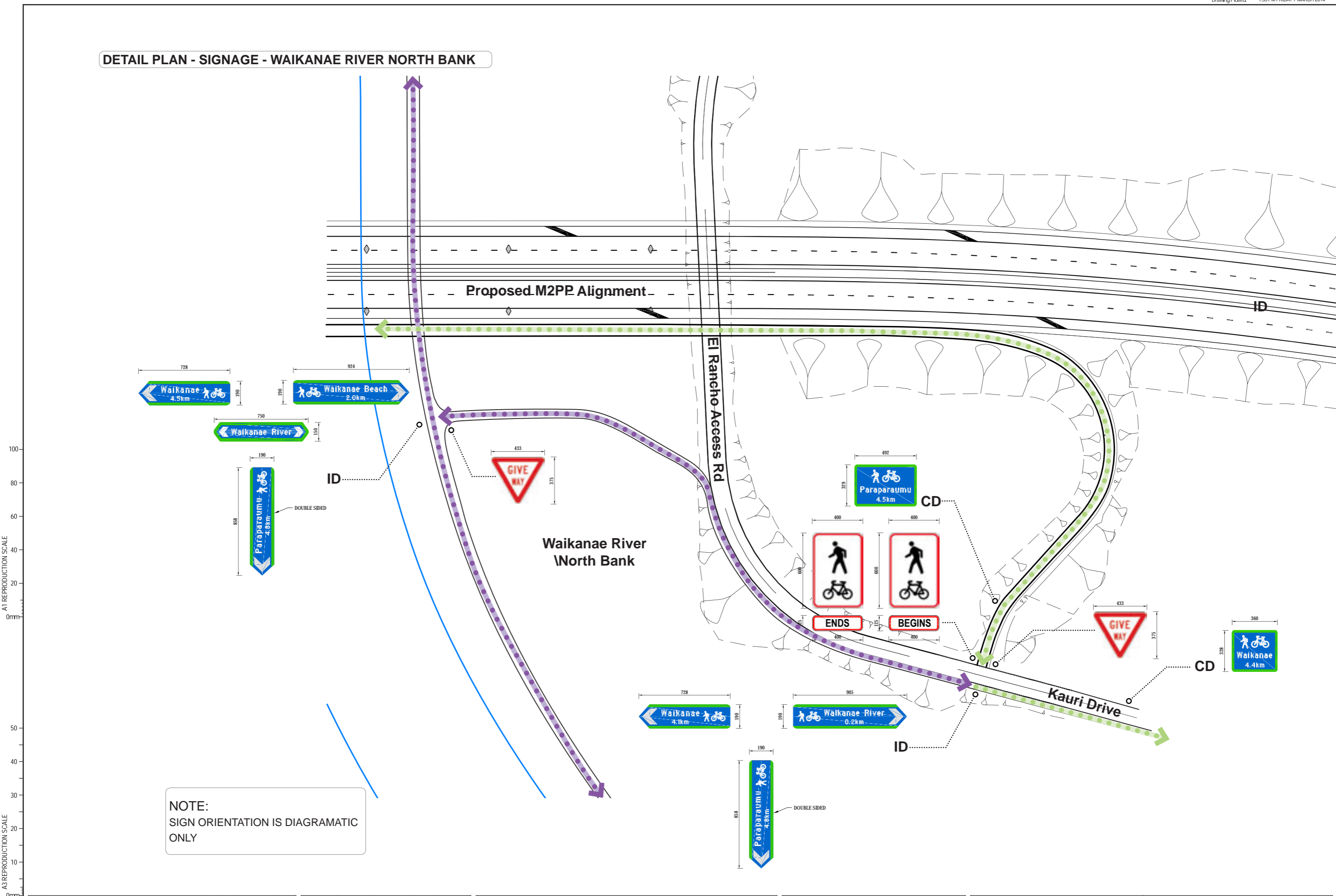
Title: SSMP 7 - SHEET 14
SOUTH BANK CWB SIGNAGE

Drawing No: M2PP-121-D-GPH-8902

Rev: C

DETAIL DESIGN (DET)

DETAIL PLAN - SIGNAGE - WAIKANAĒ RIVER NORTH BANK



NOTE:
SIGN ORIENTATION IS DIAGRAMATIC ONLY

A1 REPRODUCTION SCALE
0mm 20 40 60 80 100

A3 REPRODUCTION SCALE
0mm 10 20 30 40 50

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	Date
Reduced Scale (A3)	Drawn/Verifier	
1:1000	Drawn/Check	
	* Refer to Revision 1 for Original Signature	

NZ TRANSPORT AGENCY
WANGA NUI-A-TIAKI

MacKays to Peka Peka
Wellington Resource Controller

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 15
NORTH BANK CWB SIGNAGE

Drawing No: M2PP-121-D-GPH-8903

Rev: C

DETAIL DESIGN (DET)

Document No

AI - ADVANCED INFO SIGNS

AT START OF ROUTE.
INCLUDES:

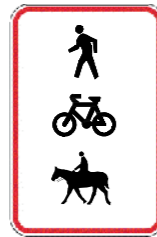
- MAP & INFO
- LENGTH & DURATION OF RIDE / WALK

AI - Advance Information Signs are not an essential requirement for public access tracks or cycle routes, nor are they standardised in terms of their design and layout. These signs may, if desired and appropriate, be installed at or near the start point of the route to provide detailed information, such as a map and information about the length and duration to ride etc. These signs should be clearly visible from the road, allowing cyclists and pedestrians a safe place to stop clear of the roadway or cycleway to read the information.

BE - BEGINNING AND ENDING SIGNS



BEGINS



ENDS

BE - Begins/Ends Signs are used to indicate the start and/or end point of a cycle route. They will include route specific information. Route Begins Signs should be installed on the left hand side of the CWB immediately beyond or adjacent to any advance information sign or at a logical starting point for the cycle route.

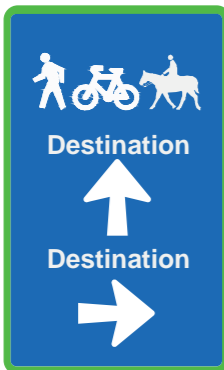
AD01 - ADVANCED DIRECTION SIGN - ON LOCAL ROAD APPROACHING CWB



AD - The purpose of the Advance Direction Sign is to give cyclists prior warning, to enable them to make decisions and, if necessary, place themselves in the best position to make any change in direction required before they reach the intersection. These signs should be used in any situation where the cyclist could easily miss making a required turn at an approaching intersection.

To occur 40-60m in advance of an intersection and should only include information about the destination, not the distance.

AD - ADVANCED DIRECTION - ON CWB



AD - The purpose of the Advance Direction Sign is to give cyclists prior warning, to enable them to make decisions and, if necessary, place themselves in the best position to make any change in direction required before they reach the intersection. These signs should be used in any situation where the cyclist could easily miss making a required turn at an approaching intersection.

To occur 40-60m in advance of an intersection and should only include information about the destination, not the distance.

ID - INTERSECTION DIRECTION



ID - The Intersection Direction Sign is located at or as near as possible to the actual intersection. Should include both information about the destination and the distance.

Multiple signs and destinations to be on one post

CD - CONFIRMATION DIRECTION



CD - The Confirmation Direction Sign is used to confirm the direction/destination of travel after an intersection it is intended to provide assurance to cyclists. The CD sign features a straight ahead arrow and should include both information about the destination and the distance.

As a general rule of thumb, these signs should be installed; between 20-50m beyond an intersection where an Advance Direction Sign has been used and should generally be visible from that intersection;

Cyclists should see a CD sign at least every 15-30 minutes of typical cyclist travel, or every 5-10 km.

LOCAL ROAD INTERSECTION SIGNS



LR + GW - Local road (LR) and Giveaway (GW) signs should be used where the CWB crosses a local road. These are to be located at or as near as possible to the actual intersection. Where possible the LR should be kept to one per intersection and be able to be read by people on either side of the intersection. Both the LR and GW should share the same post and or be incorporated onto an existing post.

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

D	POST CERTIFICATION AMMENDMENT				01.09.15
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No.	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	Drawn	Approved For Construction*
NTS	Design Verifier		Date
Reduced Scale (A3)	Design Check		
NTS	* Refer to Revision 1 for Original Signature		



Project	SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
	RP 1012/0.00 TO 1023/5.00

Title	SSMP 7 - SHEET 16
	CWB SIGN TYPES

Drawing No.	M2PP-121-D-GPH-8901
Rev.	D



VEGETATION TO BE RETAINED

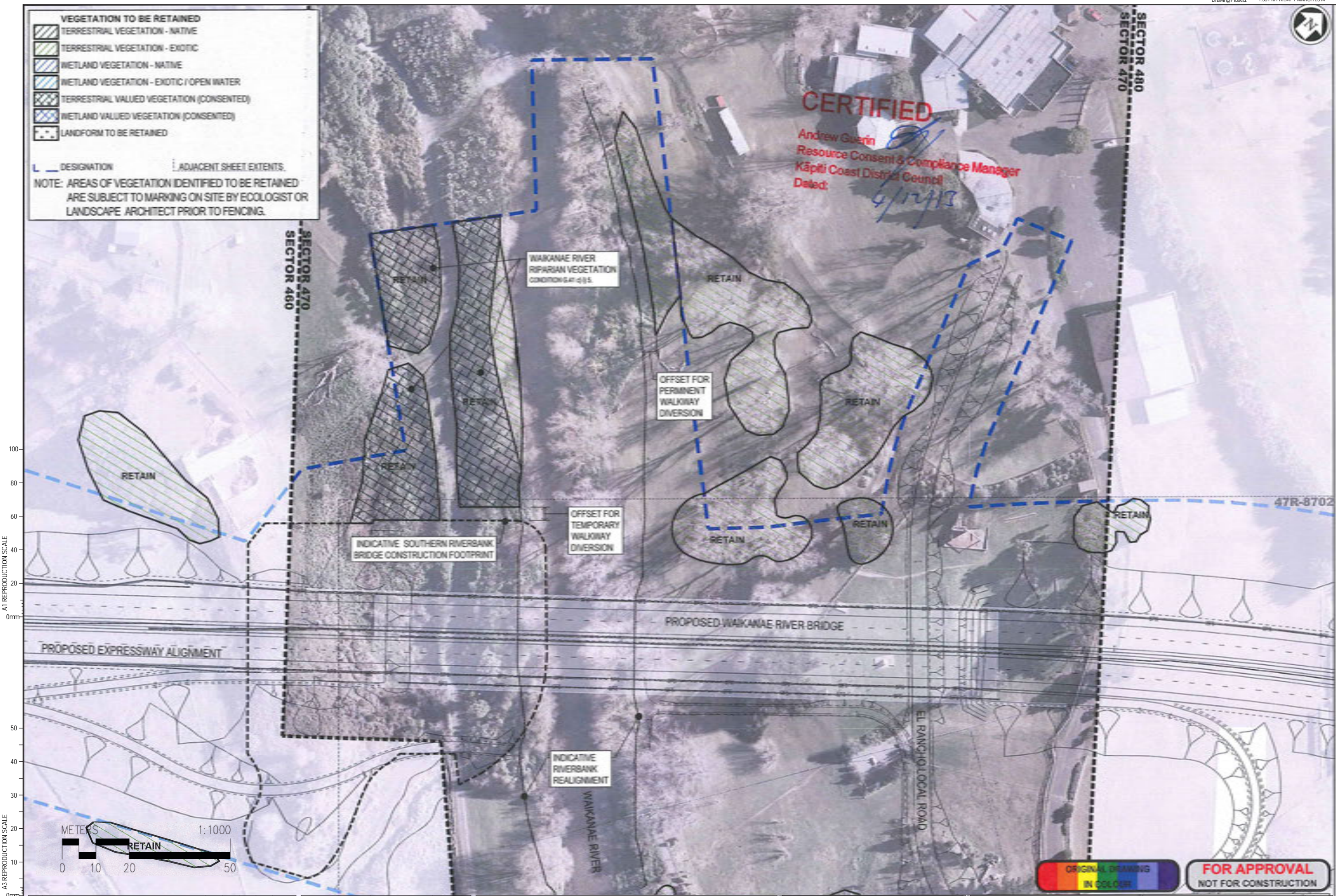
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- TERRESTRIAL VALUED VEGETATION (CONSENTED)
- WETLAND VALUED VEGETATION (CONSENTED)
- LANDFORM TO BE RETAINED

DESIGNATION ADJACENT SHEET EXTENTS.

NOTE: AREAS OF VEGETATION IDENTIFIED TO BE RETAINED ARE SUBJECT TO MARKING ON SITE BY ECOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO FENCING.

CERTIFIED

Andrew Guerin
 Resource Consent & Compliance Manager
 Kāpiti Coast District Council
 Dated: 6/12/13



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No.	Revision	By	CHK	CHKV	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE					12.09.13

Original Scale (A1)	Design Drawn	Approved For Construction
1:500	Dwg Verifier	Date
Reduced Scale (A3)	Dwg Check	
1:1000		

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY
 WAIKANA RIVER

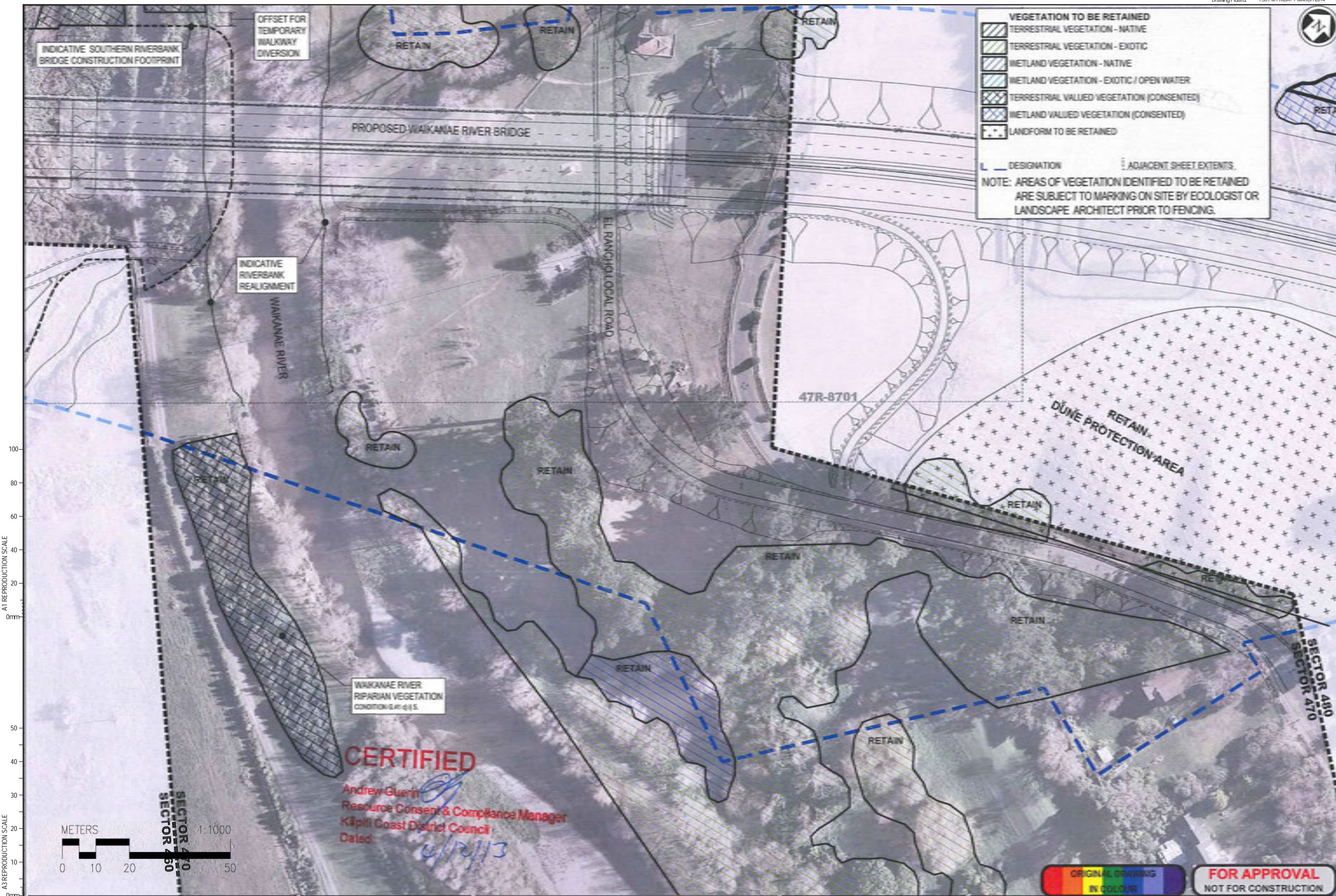
MacKays to Peka Peka
 Wellington Northern Corridor

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
 RP 1012.0.00 TO 1023.6.00

Title: SSMP 7 - SHEET 17
 VEGETATION TO BE RETAINED

Drawing No: M2PP-47R-D-DWG-8701

Rev: C

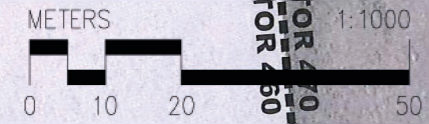


A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

CERTIFIED
 Andrew Guerin
 Resource Consent & Compliance Manager
 Kaipiti Coast District Council
 Dated: 6/2/13



ORIGINAL DRAWING IN COLOUR
FOR APPROVAL
 NOT FOR CONSTRUCTION

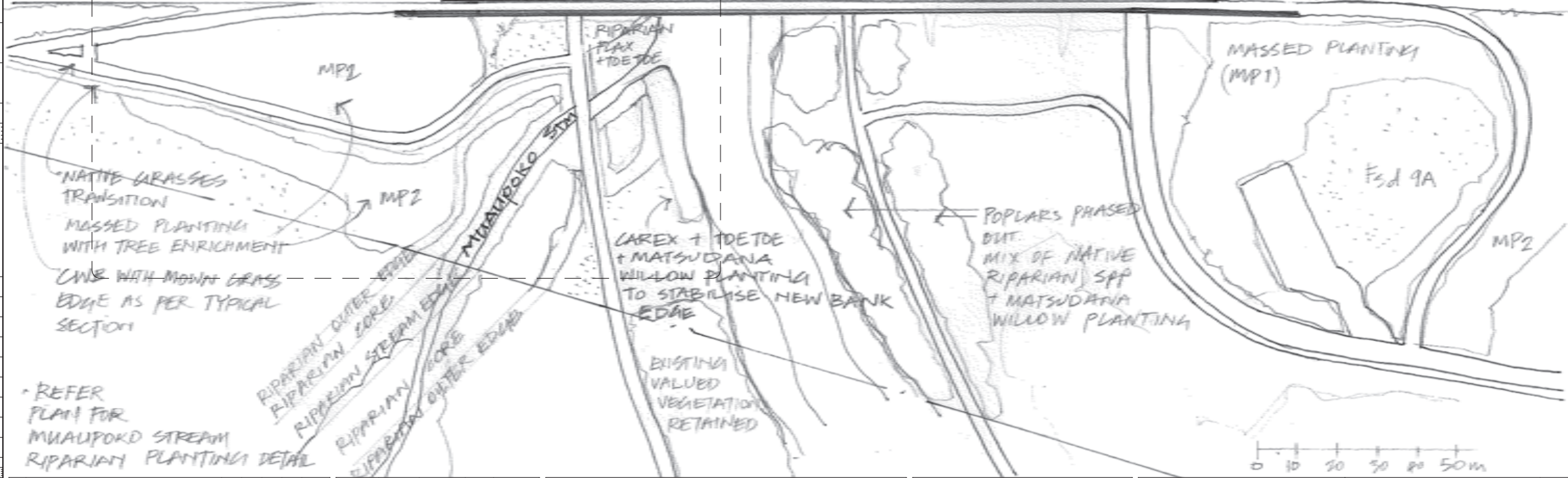
No.	Revision	By	Chk	ChkV	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE					12.09.13

NZ TRANSPORT AGENCY
 MacKays to Peka Peka
 Wellington Northern Corridor

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
 RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 18
 VEGETATION TO BE RETAINED

Document No: M2PP-47R-D-DWG-8702
 Rev: C



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No.	Revision	By	CHK	CHK	Appd

Original Scale (A1)	Design	SD	Approved For Construction
NTS	Drawn	SD	23.08.13
Reduced Scale (A3)	Design Verifier		
NTS	Design Check		

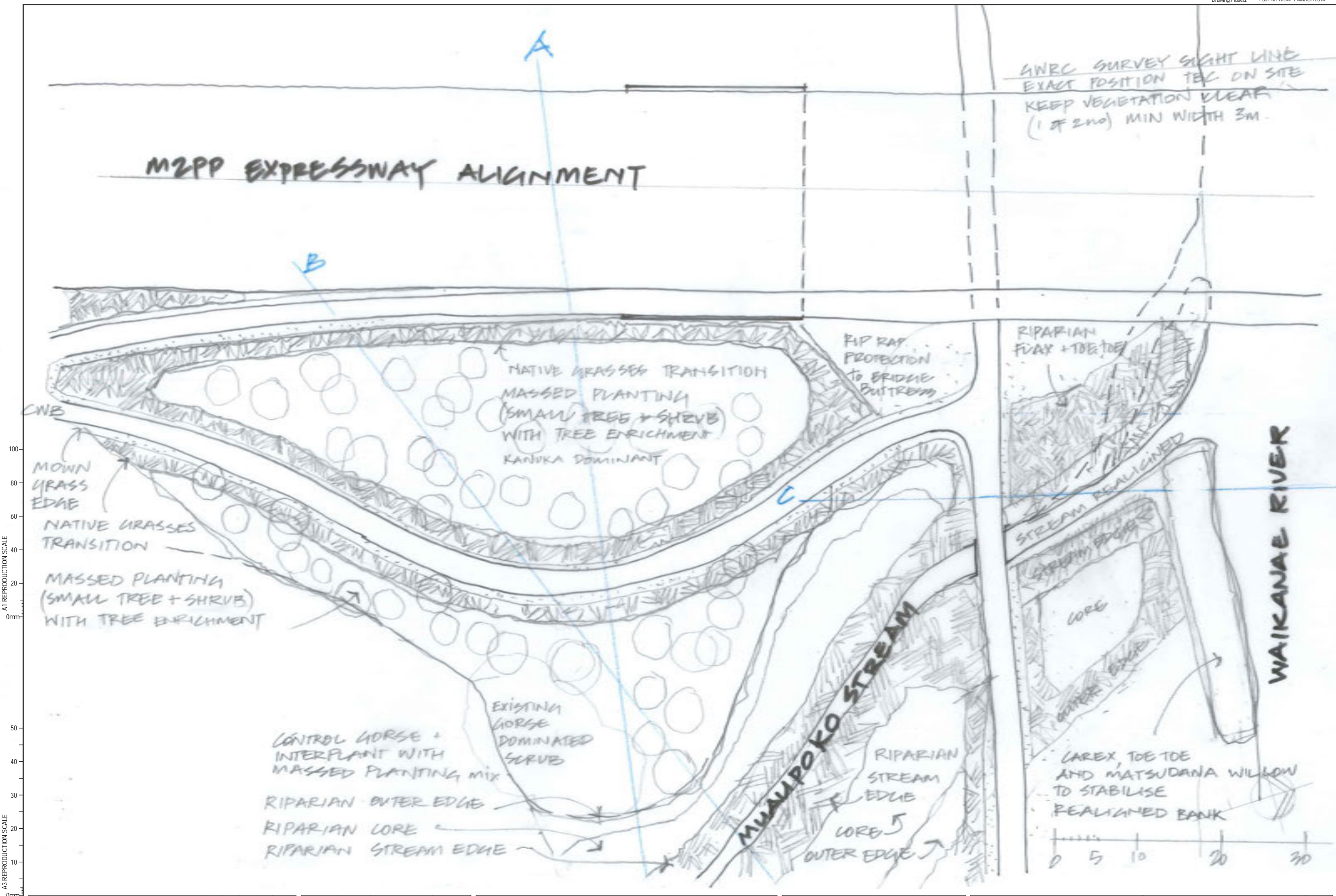
* Refer to Revision 1 for Original Signature

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

Title: SSMP 7 - SHEET 19 PLANTING PLAN

Drawing No: M2PP-121-D-GPH-8201
Rev: C

DETAIL DESIGN (DET)



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No	Revision	By	CHK	CHK	Appd

Original Scale (A1)	Design	FB	Approved For Construction
NTS	Drawn	MP	23.06.13
NTS	Checked		
NTS	Dwg Check		
NTS	Date		

NZ TRANSPORT AGENCY
MacKays to Peka Peka

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 10120.00 TO 10235.00

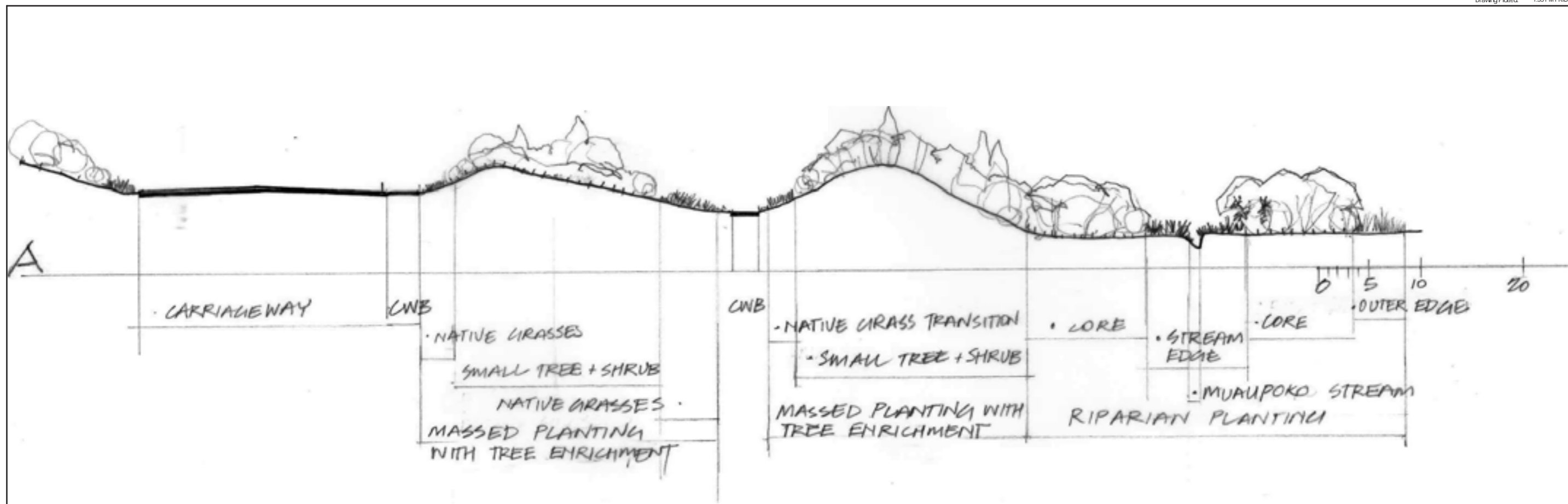
Title: SSMP 7 - SHEET 20
PLANTING DETAIL PLAN
SOUTHERN ABUTMENT

Drawing No: M2PP-121-D-GPH-8304

Rev: C

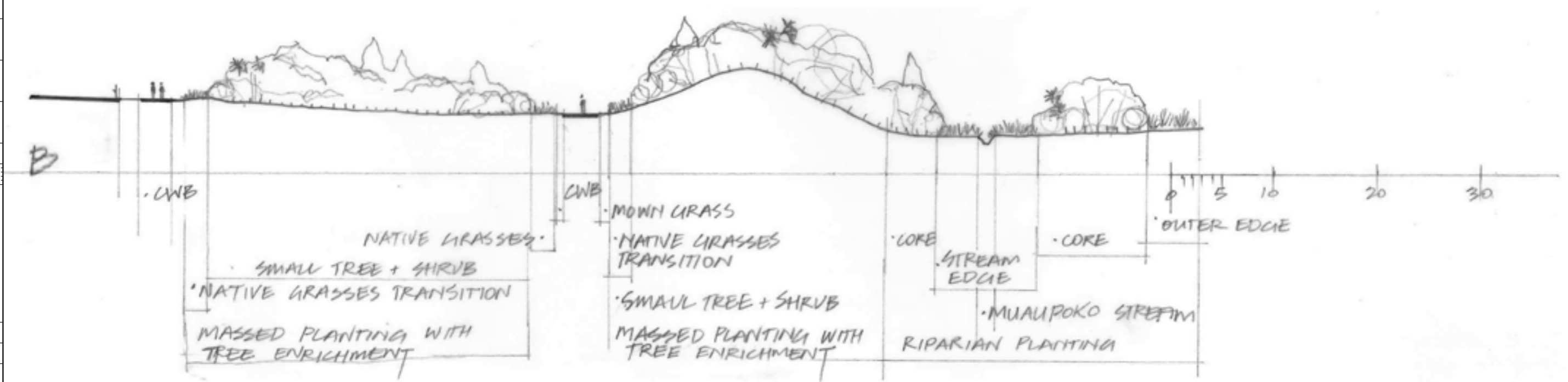
DETAIL DESIGN (DET)

Document No



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE



DETAIL DESIGN (DET)

Rev						
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13	
B	FOR CERTIFICATION				28.11.13	
A	PRELIMINARY ISSUE				12.09.13	
No	Revision	By	Chk	Chk.V	Appd	Date

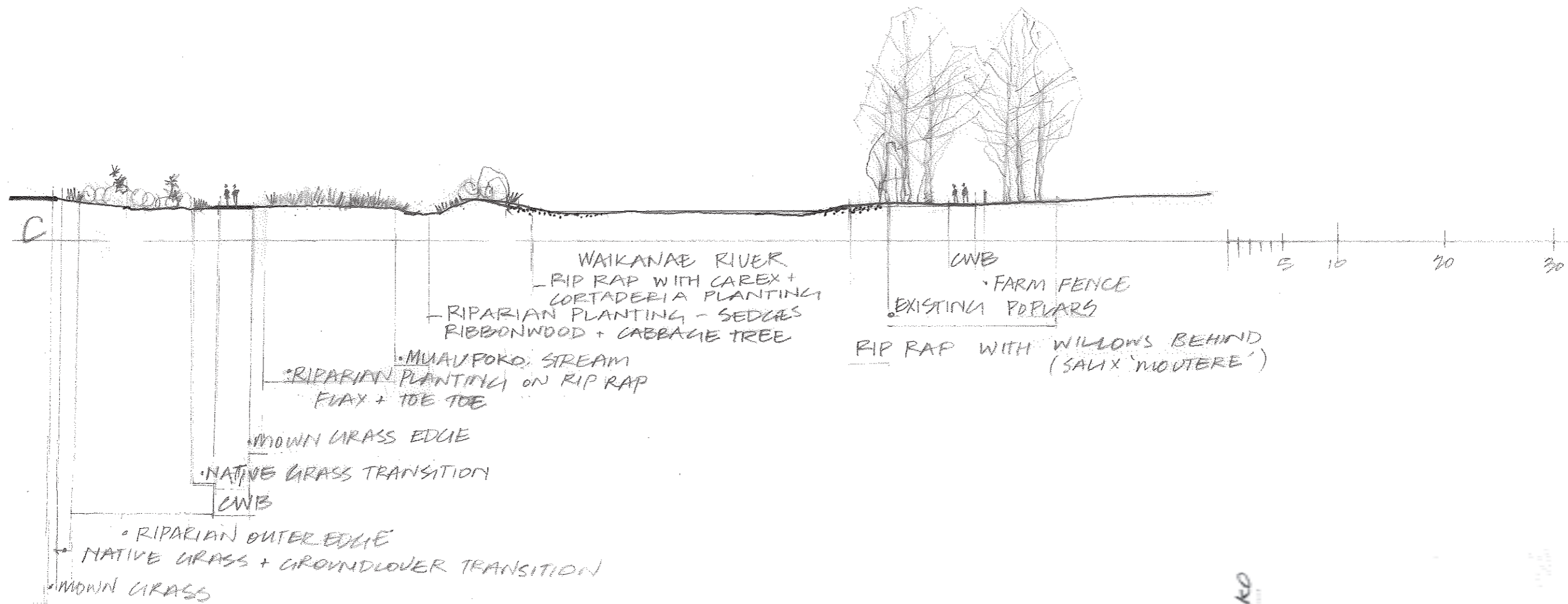
Original Scale (A1)	Design	FB	Approved For Construction
NTS	Drawn	MP	23.06.13
Reduced Scale (A3)	Design Verifier		
NTS	Design Check		
	* Refer to Revision 1 for Original Signature		

Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012.0.00 TO 1023.5.00

Title: SSMP 7 - SHEET 21 PLANTING SECTIONS

Drawing No: M2PP-121-D-GPH-8411

Rev: C

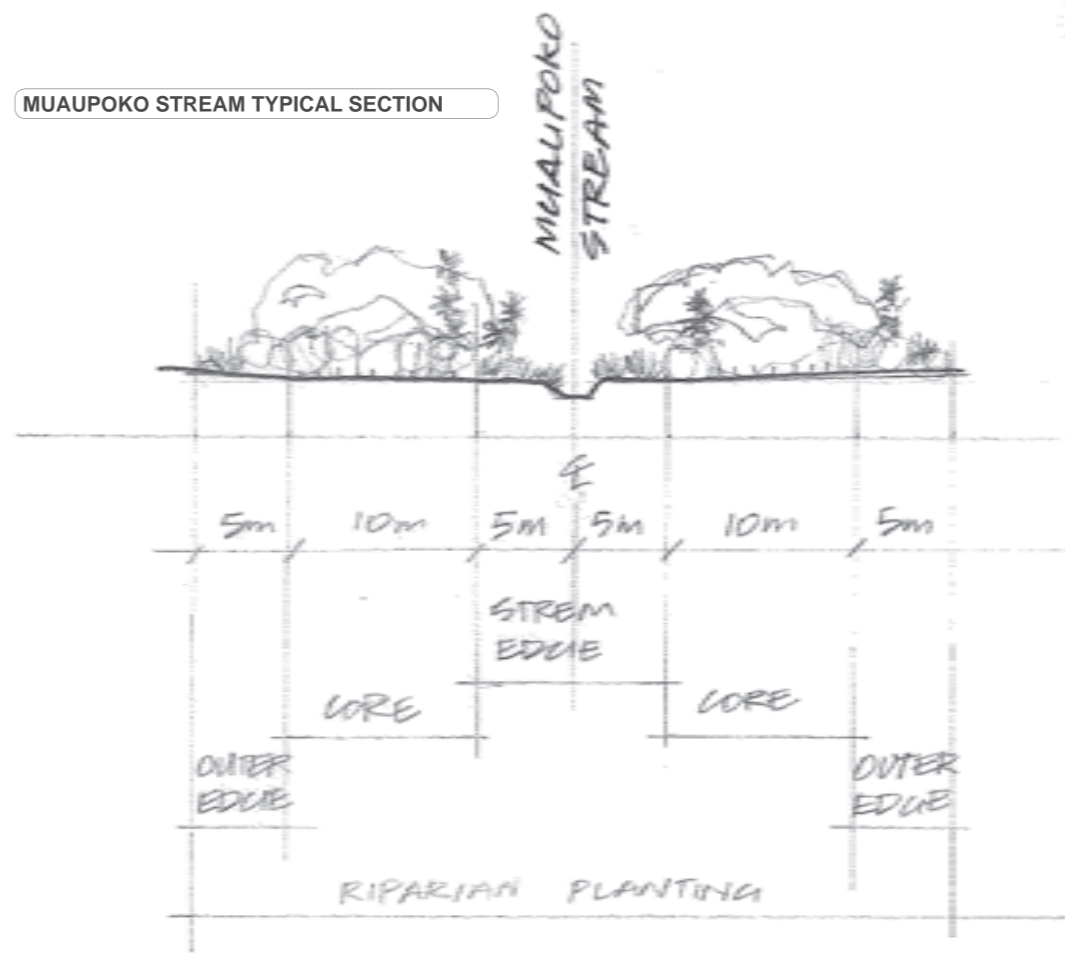
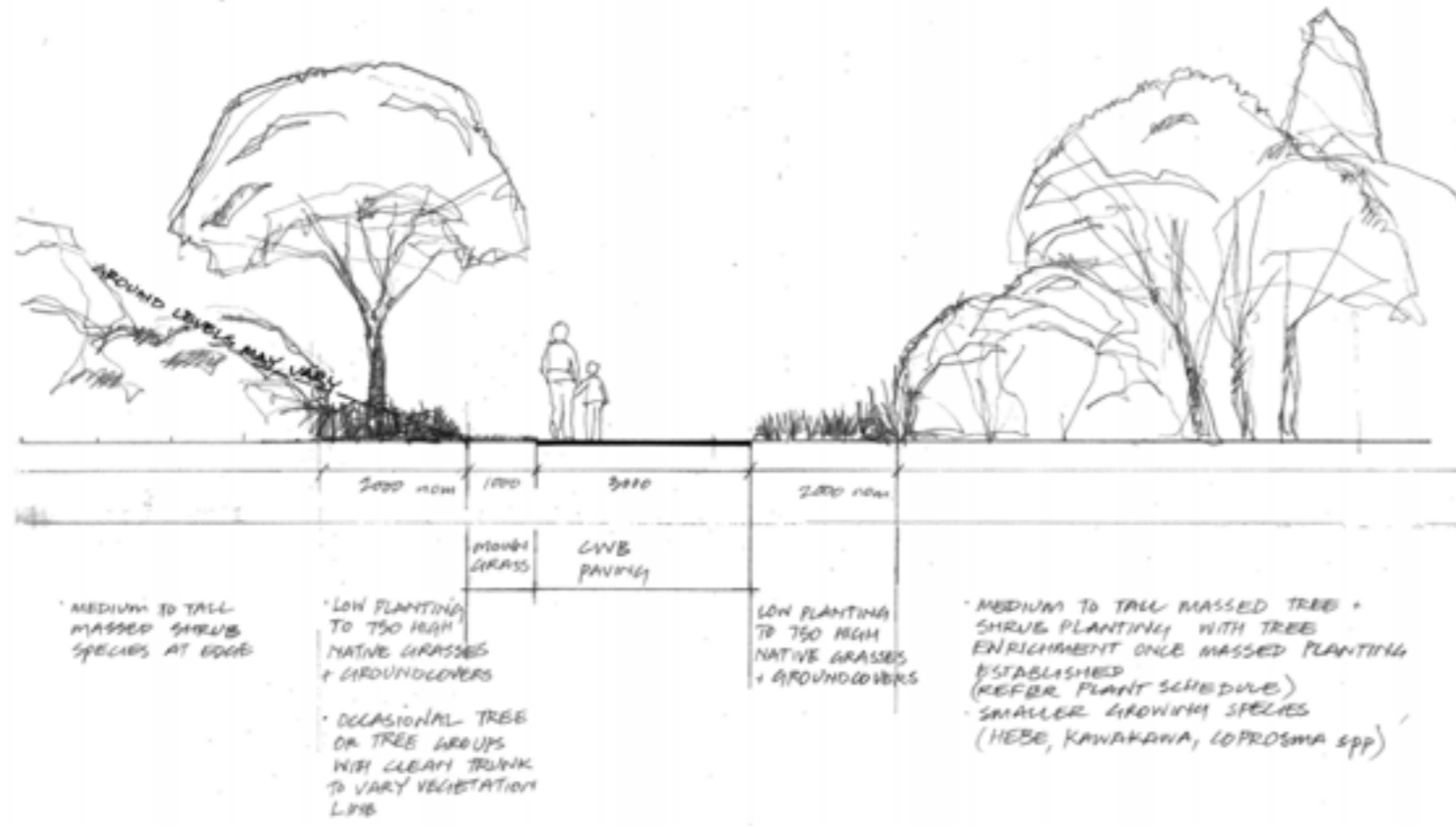


CWB TYPICAL PLANTING SECTION

MUAUPOKO STREAM TYPICAL SECTION

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE



C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)				13.12.13
B	FOR CERTIFICATION				28.11.13
A	PRELIMINARY ISSUE				12.09.13
No.	Revision	By	CHK	CHK	Appd

Original Scale (A1)	Design	FB	Approved For Construction
NTS	Drawn	MP	23.08.13
NTS	Checked		
NTS	Drawn		
NTS	Checked		

Project	SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP	10120.00 TO 10235.00

Title	SSMP 7 - SHEET 22 PLANTING SECTIONS & DETAILS
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Drawing No.	M2PP-121-D-GPH-8412
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Rev.	C
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DETAIL DESIGN (DET)

Document No.

SSMP7 WAIKANAE RIVER PLANT SCHEDULE

Botanical name	Common name	%	Grade	Crs
MUAUPOKO STREAM RIPARIAN PLANTING				
Stream edge				
Austroderia fulvida	(toe toe)	20	0.5L	1m
Carex secta	(pukio)	20	0.5L	1m
Phormium tenax	(harakeke)	60	0.5L	1m
Core				
Dysoxylum spectabile	(kohekohe)	10	1.0L	1m
Carpodetus serrata	(putaputaweta)	10	1.0L	1m
Cordyline australis	(ti kouka)	15	1.0L	1m
Macropiper excelsum	(kawakawa)	10	1.0L	1m
Melicope ternata	(wharangi)	5	1.0L	1m
Melicytus ramiflorus	(mahoe)	10	1.0L	1m
Myrsine australis	(red mapou)	15	1.0L	1m
Plagianthus regius	Ribbonwood	15	1.0L	1m
Sophora microphylla	(kowhai)	10	1.0L	1m
Outer edge				
Phormium tenax	(harakeke)	90	0.5L	1m
Myrsine australis	(red mapou)	10	1.0L	1m

SOUTH BANK MP2 - Massed planting with tree enrichment

Massed planting				
Aristotelia serrata	(makomako)	-	-	-
Coprosma repens	(taupata)	-	-	-
Coprosma robusta	(karamu)	10	1.0L	1m
Cordyline australis	(ti kouka)	15	1.0L	1m
Hebe stricta	(koromiko)	-	-	1m
Kunzea ericoides	(kanuka)	45	1.0L	1m
Leptospermum scoparium	(manuka)	-	-	-
Melicytus ramiflorus	(mahoe)	5	1.0L	1m
Myoporum laetum	(ngaio)	-	-	-
Myrsine australis	(red mapou)	5	1.0L	1m
Olearia paniculata	(akariho)	5	1.0L	1m
Olearia solandri	(coastal tree daisy)	5	1.0L	1m
Phormium tenax	(harakeke, Flax)	5	1.0L	1m
Pittosporum eugenioides	(tarata)	5	1.0L	1m
Pittosporum tenuifolium	(kohuhu)	-	-	-
Sophora microphylla	(kowhai)	-	-	-

Tree enrichment				
Alectryon excelsus	(titoki)		Pb18	
Dacrycarpus dacrydioides	(kahikatea)		Pb18	
Dysoxylum spectabile	(kohekohe)		Pb18	
Knightia excelsa	(rewarewa)		Pb18	
Podocarpus totara	(totara)		PB18	

Edge transition zone, nom 2m wide - native grasses, low groundcovers and small shrubs				
Carex testacea	(speckled sedge)		0.5L	1m
Carex dipsacea	(treasel sedge)		0.5L	1m
Carex flagellifera	(Glen Murray tussock)		0.5L	1m
Muehlenbeckia complexa	Pohuehue, wire vine		1.0L	1m

Riverbank protection				
Salix matsudana x alba 'Moutere'	(matsudana willow)		poles	1m

A1 REPRODUCTION SCALE
0mm
20
40
60
80
100
A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No	Revision	By	Chk	Chk.V	Appd	Date
C	FOR CERTIFICATION (WITH REQUESTED ALTERATIONS)					13.12.13
B	FOR CERTIFICATION					28.11.13
A	PRELIMINARY ISSUE	-				12.09.13

Original Scale (A1)	Design	Approved For Construction
NTS	Drawn	Date
Reduced Scale (A3)	Dwg Verifier	
NTS	Dwg Check	
	* Refer to Revision 1 for Original Signature	



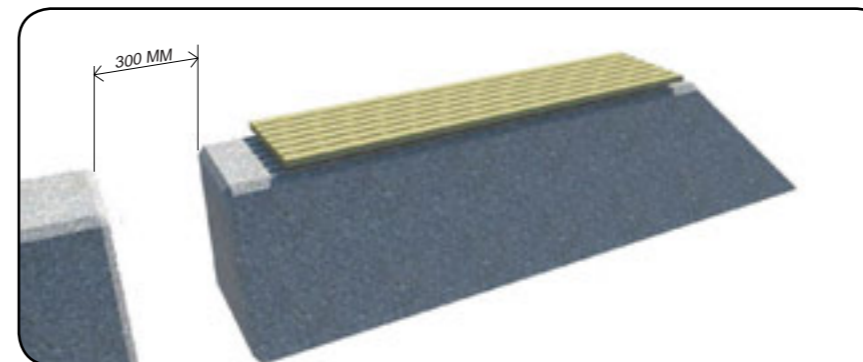
Project	SH1 MACKAYS TO PEKA PEKA EXPRESSWAY RP 10120.00 TO 10235.00
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Title	SSMP 7 - SHEET 23 PLANTING SCHEDULE
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Drawing No	-	Rev.	C
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CYCLEWAY ENTRANCE TYPE 1 - TYPICAL PLAN

SCALE - 1:150 @ A3



HARDWOOD TIMBER SLAT SEAT



HARDWOOD TIMBER SLAT SEAT EXAMPLE

GROUND LEVEL VIEW OF TYPICAL TYPE 1 CYCLEWAY ENTRANCE

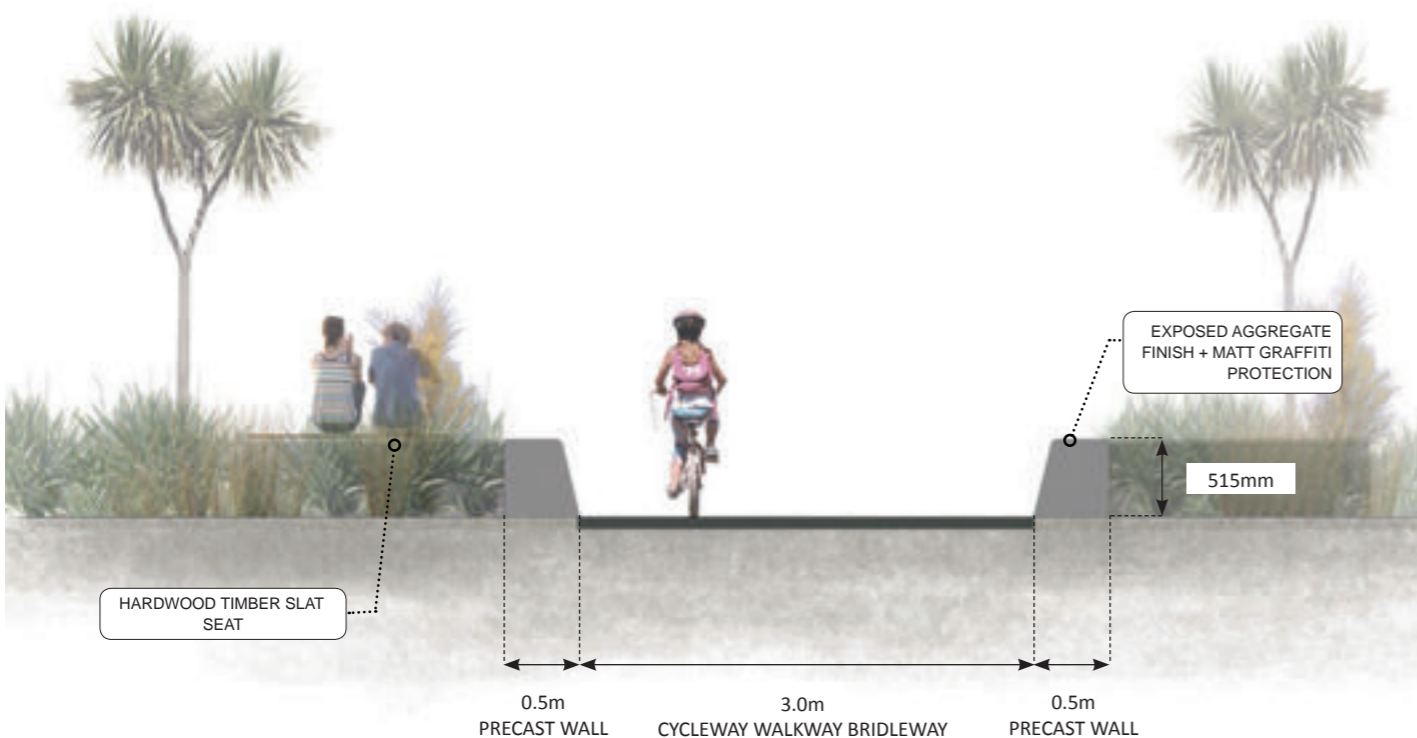


CS1 - CYCLEWAY ENTRANCE TYPE 1 - TYPICAL SECTION

SCALE - 1:50 @ A3

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE



No.	Revision	By	Chk	Chk.V	Appd	Date
A	POST CERTIFICATION ISSUE	FB				01.09.15

Original Scale (A1)	Design	FB	01.09.15	Approved For Construction*
Reduced Scale (A3)	Drawn	MP	01.09.15	
	Design Verifier			
	Design Check			

* Refer to Revision 1 for Original Signature



MacKays to Peka Peka
Wellington Northern Corridor

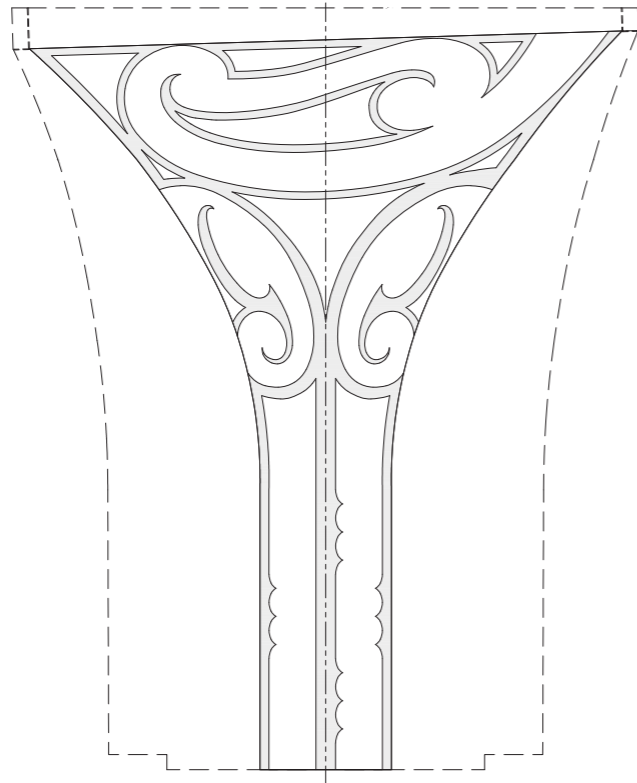
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 7 [470]
SHEET 24 - TYPE 1
CWB ENTRANCE DETAIL

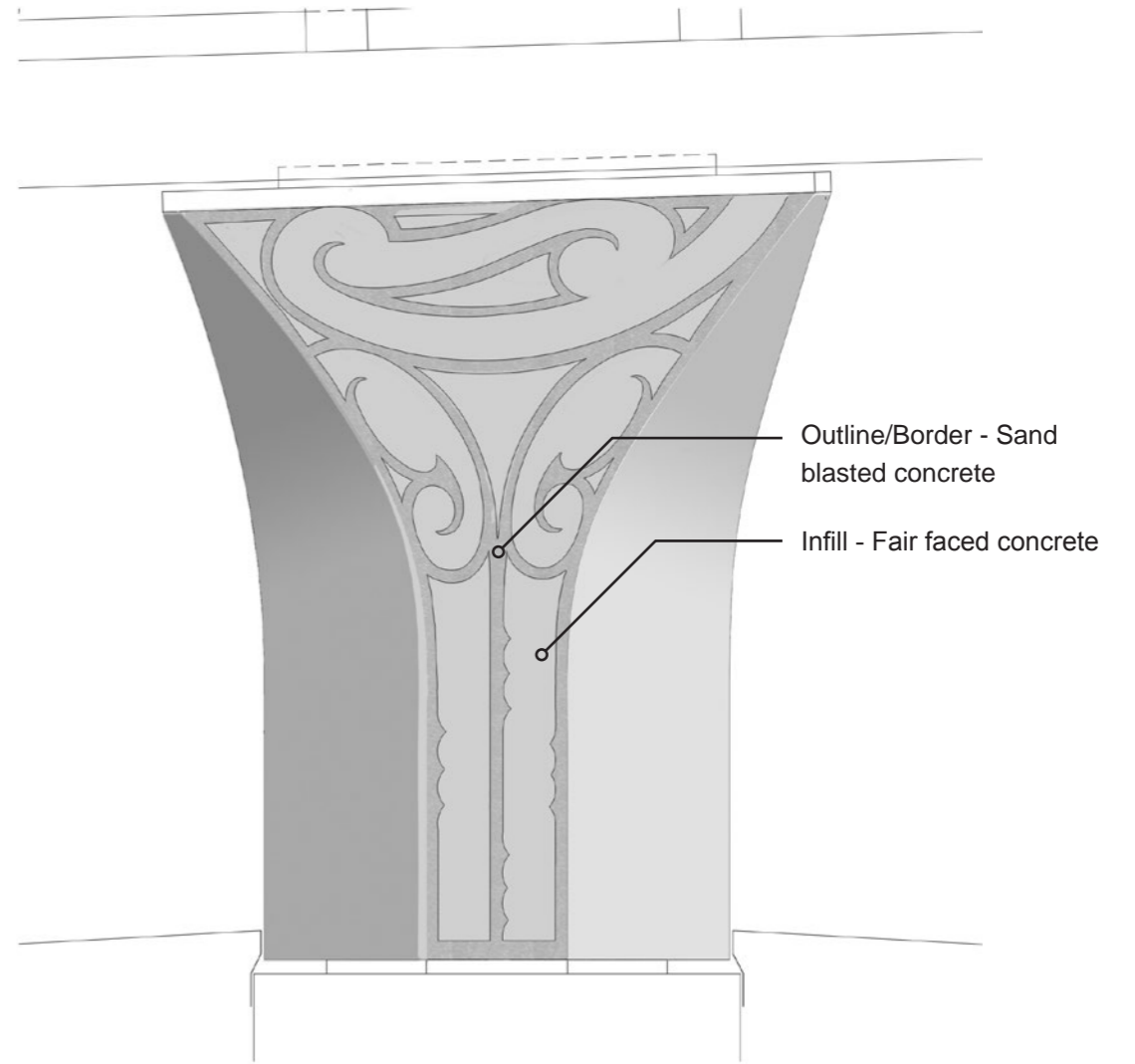
Drawing No: M2PP-121-D-DWG-8802

Rev. A

COLUMN TREATMENT - VECTOR DRAWING FOR STENCIL SETOUT
SCALE - 1:50 @ A3



COLUMN TREATMENT - RENDERED IMPRESSION
SCALE - 1:50 @ A3



A1 REPRODUCTION SCALE
0mm 20 40 60 80 100
A3 REPRODUCTION SCALE
0mm 10 20 30 40 50

DETAIL DESIGN (DET)

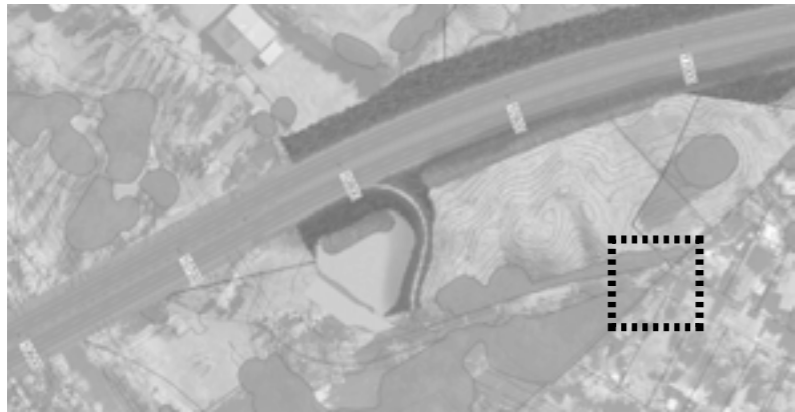
No.	Revision	By	Chk	Chk.V	Appd	Date
A	POST CERTIFICATION ISSUE	FB				01.09.15

Original Scale (A1)	Design	FB	01.09.15	Approved For Construction*
Reduced Scale (A3)	Drawn	MP	01.09.15	Date
	Design Verifier			
	Design Check			
* Refer to Revision 1 for Original Signature				

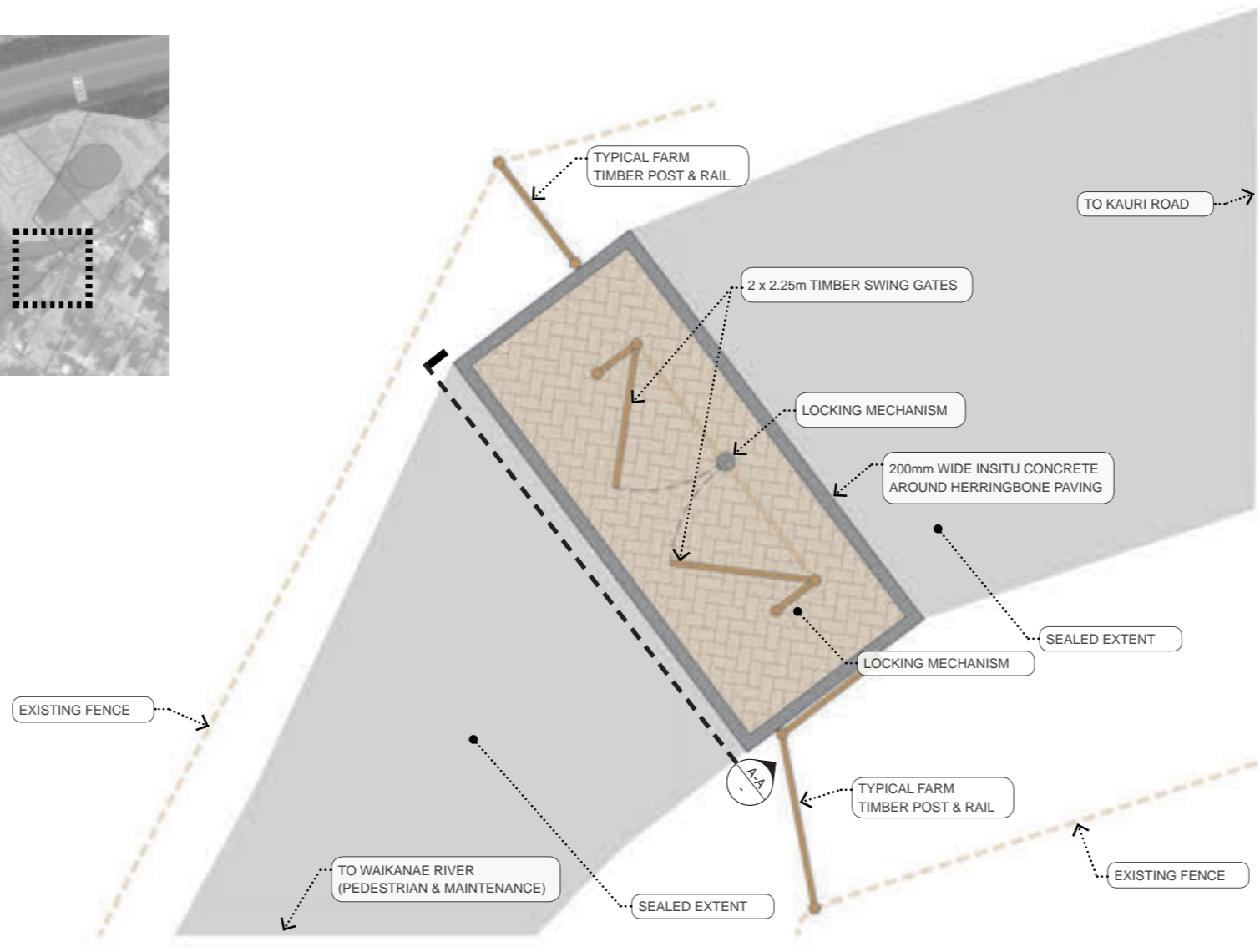
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 7 [470] SHEET 25
TE ATIWA COLUMN DESIGN

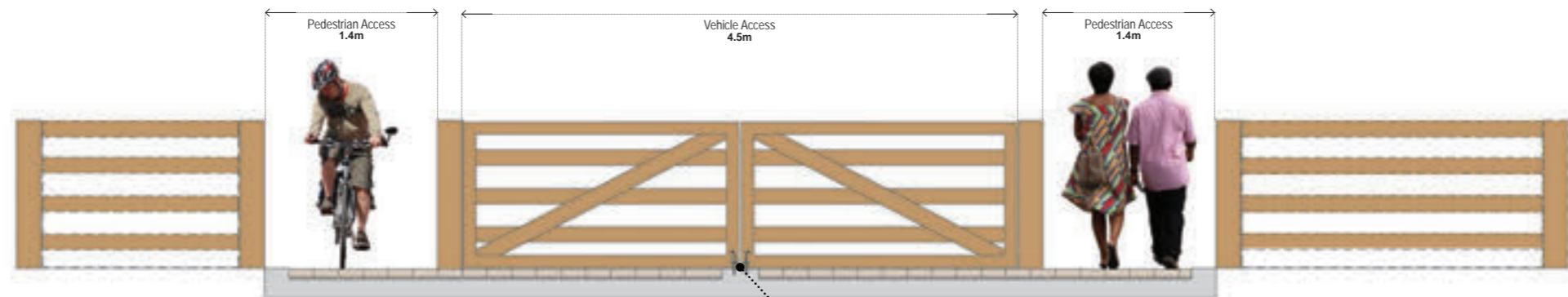
Drawing No: M2PP-121-D-DWG-8803
Rev: A



LOCATION PLAN



ROAD END DETAIL PLAN 1:50 @ A3



AA - GATE ELEVATION 1:25 @ A3

A1 REPRODUCTION SCALE

0mm

20

40

60

80

100

0mm

10

20

30

40

50

A3 REPRODUCTION SCALE

0mm

10

20

30

40

50

No.	Revision	By	Chk	Chk.V	Appd	Date
A	POST CERTIFICATION ISSUE	-				25.11.15

Original Scale (A1)	Design	Approved For Construction?
AS SHOWN	Drawn	Date
Reduced Scale (A3)	Drawn Verifier	
AS SHOWN	Design Check	
	* Refer to Revision 1 for Original Signature	



Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 7 - SHEET 26
KAURI ROAD END DETAIL

Drawing No: M2PP-121-D-DWG-8304

Rev. A

Appendix 2: CONSULTATION, FEEDBACK AND RESPONSES
Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

13 February 2014


The following tables set out the responses to comments raised by reviewers and those parties consulted in regard to the preliminary SSSMP. The project responses are either reflected in the certification issue to which this Appendix pertains, or have been directed to other processes for action, or have been considered but for the reasons noted not agreed to. The parties consulted are those identified by the consent conditions and for Waikanae River are:

- Te Āti Awa ki Whakarongotai;
- Takamore Trust;
- Friends of Waikanae River;
- KCDC; and
- GWRC.
- El Rancho
- Kāpiti Cycling Incorporated
- Implementation Group of the Kāpiti Coast District Council Advisory on Cycleways, Walkways and Bridleways

COMMENTS ON PRELIMINARY ISSUE SSMP7: WAIKANA E RIVER

KCDC REVIEWERS COMMENTS: JW=Julia Williams- Landscape Architect; DP = Deyana Popova-Urban Designer; SK=Stu Kilmister-CWB Planner; SM= Shona Myers-ecologist – documented and meeting notes responses

Condition Reference	Condition Detail	Reviewer/ commenter	KCDC Reviewer's comment	reference in SSMP	Management Plan Author's response
		JW/DP	Change to bridge design will change the perception of bridge form and visual weight	Appendix1	Working on bridge design in further detail. Appendix 3 describes.
		SK	KCDC expecting 3.0m on main line as hard surface (Kapiti Blue on rural and chip seal on urban sections) and are less concerned about horses using it. Consider the main users are cyclists and walkers and horses can be accommodated where possible with extra grass strip if this is not detrimental fit with proposed cuts and fills	Appendix1	Agreed – plans and text amended to show 3m wide surfaced (seal or Kapiti blue) wide main line CWB. Will be provision alongside 3m for horses in rural areas with grass verge 1m wide where practicable without changes to cuts and fill
		SK	On El Rancho road KCDC want to see a 2.5 (2.2min) parallel path for CWB	Appendix1	Agreed – will be parallel 2.2m wide path beside El Rancho Road
		SK	Need to provide for radius curves (2.0m) on the CWB at locations where it connects to other CWB paths (e.g. at Waikanae River)	Appendix1	Agreed – radii will be addressed in detailed design – scale of plans may not show effectively.
DC.57(f)	Landscape maintenance	JW	'Flood protection planting shall require 100% plant survival, with 100% of trees in full leaf at the time of Final Completion.' This may be difficult if trees are planted in June-August, add 3 years for maintenance – trees may still not have come into leaf.	Pg. 23	This is not insurmountable and should be able to be readily resolved at the time. The trees can be checked in the autumn and then verified in the following spring once they are in full leaf.
DC.57(f)	Landscape maintenance	JW	'Survival of a minimum of 80% of 80% of the planted indigenous plant species.' Please correct to 80% (rather than 80% of 80%).	Pg. 24	SSMP has been amended to refer to '80%' consistent with the consent condition.
G.41(c)(i)	Valued vegetation	SM	Riparian vegetation to be retained is less than identified in the EMP		Agree, and rationale for this is outlined in Appendix 5. Note that final extent of vegetation clearance within Expressway will need to be consistent with the consent conditions.
G.43C(c)	SSEMP to include plans for mitigation	SM	More detail required as to where additional riparian mitigation will be undertaken		Agree, SSMP amended in response to final extent of vegetation communities being confirmed.

G.42C	Detailed specs to be included	SM	More details required. Remove <i>Vitex lucens</i> from planting schedule. A number of appendices still to come. "I understand that GWRC and NZTA are supportive of native riparian planting rather than willows in this area. I support this approach."		Agree, reference to <i>Vitex lucens</i> has been removed from plant schedule. More details on species has been added to planting plans.
DC.59A(h)	CPTED Review	JW/DP	Will the CPTED review of preliminary plans/comments to support plans be provided?		The preliminary comments from Frank Stoks (CPTED reviewer) are annotated to the Plans (Appendix 1 Sheet 2). A statement from CPTED reviewer will be provided from CPTED review meeting 5 November 2013.
DC.7A, DC.57A & DC.59A	SSUDPs and SSLMPs must be consistent with the ULDF	JW	ULDF 5.10.3: Plan M2PP-121-D-GPH-8501 Maximum slope for planting with topsoil and mulch is 1:3. Embankments either side of bridge @ 1:2 therefore require customised planting solution. Expect to see this in final plans		Uncertain as to the specific location this comment refers, but to confirm that out of the 4 embankments in this location, 3 are 1:3 in grade, and the other is 1:2.5 gradient. No specific planting solution is proposed. Any additional management will be addressed through plant maintenance contracts.
DC.7A, DC.57A & DC.59A	SSUDPs and SSLMPs must be consistent with the ULDF	JW	ULDF 5.11.3: Exotic terrestrial vegetation to be retained (south bank, NE of Ch 10600) not shown in Plan M2PP-121-D-GPH-8101. This vegetation appears to be replaced by grass in the plan on Sheet 2. (refer Figure 1 below) It is my understanding that this is recently planted re-vegetation and the community group involved has been informed and has agreed to its removal (to be confirmed in consultation)	Sheet 2 & 3	Agree, this area has been amended in the revised vegetation clearance plan attached in this version of the SSMP. The extent of vegetation clearance works on the south side of the Waikanae River were outlined to the Friends of Waikanae River, GWRC and KCDC representatives during the annual Waikanae River walkover on 26 November 2013. The extent of clearance is outlined in Appendix 5.
					
DC.7A, DC.57A & DC.59A	SSUDPs and SSLMPs must be consistent with the ULDF	JW/DP	UDLF 5.8.3 & 4: Inconsistencies. Greater level of detail is required to clarify the design in terms of quality and finish.		Changes to bridge forms as a result of detailed design process. Changes and rationale in relation to the ULDF set out in Appendix 3 Bridge Matrix
DC.57	The SSLMPs shall be consistent with the LMP	JW	LMP 8.54.2: Planting beside carriageway on southwest side of Expressway has native grasses as a transition at the edge. Clarify whether there is also an edge of gravel or grass directly adjacent to road – this is unclear on Sheet 16.	Sheet 16	Agree, this has been amended in the revised cross-sections to illustrate transition zone.

DC.57	The SSLMPs shall be consistent with the EMP	SM	EMP 7.1.5: Detailed design has determined the loss of approximately 0.33 ha of vegetation in this area as part of bridge construction and lay-down areas. [DETAILS OF EXTENT OF AREAS TO BE CONFIRMED. Need to ensure additional riparian mitigation undertaken to mitigate for this.	Pg. 13	Agree, the SSMP has been amended to include the final extent of vegetation clearance in this area and recommendations on locations for additional riparian mitigation for this loss.
DC.58	The SSLMPs shall be consistent with the EMP	SM	New channel will be formed with associated riparian planting of xxx m2 [DETAILS OF EXTENT OF AREAS TO BE CONFIRMED.	Pg. 18	Agree, extent of riparian planting now confirmed in this SSMP.
DC.59A(g)	The SSUDP prepared for the CWB shall include certain information	JW/DP	ULDF: 5.12.10: Gabions at CWB intersection with El Rancho access road not shown in Plan M2PP-121-D-GPH-8301 Intersection detail. Detail yet to come. May need to be changed to be consistent with potential changes from gabion to textures wall under bridge for this and other Sectors.		Agree, use of gabion as a threshold will be changed at El Rancho to be consistent with intersection of CWB and other local roads. KCDC use a hold rail system (at Otaihanga Road for example) so a similar system can be utilised.

COMMENTS ON PRELIMINARY ISSUE SSMP7: WAIKANAE RIVER – updated on 7th December 2013 following additional review.
KCDC REVIEWERS COMMENTS : JW=Julia Williams- Landscape Architect; documented and meeting notes responses]

Condition Reference	Condition Detail	Reviewer/ commenter	KCDC Reviewer's comment	reference in SSMP	Management Plan Author's response
	LMP principles, methodologies and procedures (where appropriate)	JW	Requires Final specification to verify	Appendix 4	Draft Landscape Specification supplied undergoing internal review and once signed off final version will be provided. .
	Landscape Conditions Condition DC57(f): Maintenance standards;	JW	Requires Final specification to verify	Appendix 4	Draft Landscape Specification supplied undergoing internal review and once signed off final version will be provided
	Urban design Conditions DC 59A g) ii)	JW	The CBW should be 3.0m wide between Waikanae Bridge and Otaihanga Road. Expect to see the Masterplan show that the CWB increases from 2.5m (on bridge) to 3.0m south of bridge at the point where it intersects with 2.2m link that runs down to river. Notation on plan should confirm this.	SHEET 2	
	DC 59A f) i)	JW	Lighting pole at intersection of the CWB and El Rancho Road. Confirm height of pole on plans.		Notation added re location of lighting pole; proposed height of lighting pole is 5.5m but this is yet to be confirmed.
	Consultation	JW	Consultation not received form Takamore Trust or Te Ati Awa ki Whakarongotai needs to be completed		An initial meeting was held with Ben Ngaia, Takamore Trust on 18th September 2013; a copy of the SSMP provided for Ben to take away and discuss with the Trustees.

					A meeting was held on 13th December 2013 with Ben Ngaia & Tony Ropata from Takemore Trust, Hemi Sundgren, Te Atiawa ki Whakarongatai, and Mahara Okeroa, representing NZTA to go through SSMP 7 and to discuss opportunities for iwi input into aspects of design. A further meeting was held on 23 January 2014 with Hemi Sundgren, which discussed specific opportunities for design input on the Waikanae River Bridge (i.e.columns, barrier, abutments).
	CPTED Review	JW	Final CPTED Review required.		Completed by Frank Stoks on 9 December 2013. Copy of comments appended to SSMP and amendments to SHEET 6 added.
	Informal notes:	JW	Page 5 diagram for SSMP process virtually unreadable		Agree, has been amended.
	Informal notes:	JW	Sheet 2 Masterplan <ul style="list-style-type: none"> • check spelling of tagability under 'Key CPTED considerations' • Remove note re gabion wall at intersection CWB and El Rancho Road since detail is not being used and hold bars are used instead. 		Spelling corrected. Gabion wall is correct.
	Informal notes:	JW	Sheet 6 Long Section - Notate 2.2m CWB on El Rancho Road cross section		Has been amended.
	Informal notes:	JW	<ul style="list-style-type: none"> • Sheet 7 • top left corner on Cross section 1 – layers are been mixed and plan has whited out area over it 		Printing error has been corrected.
	Informal notes:	JW	Sheet 19 Planting sections and details introduces ribbonwood and cabbage trees to riparian planting but they have not been transferred to Sheet 20 Planting Schedule		Plant schedule has been amended accordingly.

COMMENTS ON PRELIMINARY ISSUE SSMP7: WAIKANA E RIVER					
GWRC REVIEWERS COMMENTS [PW=Philippa Crisp, SW=Sharyn Westlake, IB = Ian Boothroyd]					
Condition Reference	Condition Detail	Reviewer/ commenter	GWRC Reviewer's comment	reference in SSMP	Management Plan Author's response
DC.57 f) and G.42C c)	Matters to be included in an SSEMP	PC	Should be Foxton Ecological District	Pg. 21	Agree with intent, but Consent Condition DC.57 (f) (vii) F.3 states, "Any native plants to, so far as practicable, be genetically sourced from the Manawatu Ecological Region" and G42C(c)(v)E 3 states, "Any native plants to be genetically sourced from the relevant Ecological District". Throughout the project the focus in plant selection is Foxton Ecological District for all ecological mitigation planting and virtually all of the indigenous planting throughout the project.
DC.57 f) and G.42C c)	Matters to be included in an SSEMP	PC	<i>Vitex lucens</i> is not a local species, shouldn't be on the species list	Sheet 20	Agree - this species has been deleted from the planting lists and schedules.
DC.57 f) and G.42C c)	Matters to be included in an SSEMP	PC	If willow is to be planted (<i>Salix matsudana</i>), are they sterile clones?	Sheet 20	<i>Salix matsudana x alba</i> 'Moutere' has been specified in the plant schedule, which is a male clone.
DC.57 e) iv)	GWRC flood protection requirements	SW	GW has overflow paths along the Waikanae River (see plan W-268/5 - in Sharepoint). Planting should not obstruct these. The sequence requires editing. Planting needs to take flood flow into account.	Pg. 11	The overflow paths notated on the planting plans and species nominated take flood flow into account.
DC.57	GWRC flood protection requirements	SW	Riprap will need to be sized so that it won't migrate/be moved downstream during floods.	Pg. 14	Discussed rip rap size with hydrology and stormwater team and updated description on this page to reflect GWRC's concerns.
DC.57 f) i) & DC.42C (c) i)	Identification of vegetation to be removed	SW	Stockpiles of mulched vegetation should be out of the floodway.	Pg. 16	Amended SSMP to confirm that stockpiles of mulched vegetation shall be located out of the floodway.
G.42 and DC.57 f)	Mitigation planting	SW	The ecological riparian mix need to be plants with good root systems	Pg. 19, Sheet 16, 17 & 18	Agree, this was the intent of the planting in the riparian species selection in this area - and plant list has been reviewed in discussion with GWRC.
G.42 and DC.57 f)	Mitigation planting	SW	No willows to be planted in riprap. Other vegetation that folds over in a flood may be suitable (e.g. sedges, cabbage tree, ribbonwood). Sheets 19-23 details to be changed	Pg. 19, Sheet 16, 17 & 20	SSMP text has been amended and planting plans to state that no willows are to be planted within riprap. Riparian planting species list has been amended to incorporate more sedges, cabbage trees and ribbonwood in response to GWRC feedback.
G.42 and DC.57 f)	Mitigation planting	SW	GWRC cross section survey sight lines need to be kept clear (>3m) of vegetation. Survey marks may need to be relocated if under bridge footprint.	Pg. 19, Sheet 2, Sheet 16	The survey sight lines have been notated on the planting plans.

DC.57(f) and G.42C(c)	Plant supply	SW	Should be Foxton Ecological District	Pg. 21	As above, consent condition specifies to 'Manawatu Ecological Region'. Only plants from the Foxton Ecological District will be planted in Waikanae River and environs plantings. Throughout the project the focus in plant selection is the Foxton Ecological District for all ecological mitigation planting and virtually all of the indigenous planting.
N/A	N/A	SW	"Survival of a minimum of 80% of 80% of the planted...	Pg.24	This section of the SSMP has been amended to refer to 80% canopy closure at the time of final completion as per the consent condition.
G.34 and G.38 c)	Monitoring of the success of stream formation	SW	GW flood protection officer should be included in the list of people who monitoring is undertaken in coordination with.	Pg. 24	Agree, amended this section to incorporate reference to "GWRC flood protection Operations".
N/A	N/A	SW	Are you providing an area/platform for public viewing during construction	Drawings general	Nothing is proposed at this stage, but will be investigated to further.
N/A	N/A	SW	Sheet 15 is blank	Sheet 15	Amended
G.43C	Matters to be included in an SSEMP	IB	The SSMP is a preliminary of course and reads more as a plan of what is planned to be in the SSMP and does not state how all of the respective items will happen. It will be preferable to see the SSMP when the detailed steps of how it will happen have been fleshed out and incorporated (or refers to other plans/documents).	General	The detail of how each of the respective items will happen will be outlined in the construction methodology, which will have landscape and ecological input. At this stage, some components of the construction methodology and timing are still being confirmed.
G.43C	Matters to be included in an SSEMP	IB	Be preferable for each plan to have objectives or anticipated outcomes stated: separated into the various components. Nevertheless it meets the stated expectation of the EMP and discussions amongst experts regarding the inclusion of the SSEMP, SSLMP, SSUDP into a single SSMP.	General	In general terms, the objectives and outcomes are set out in the EMP; however, in the interests of keeping this SSMP concise for the purpose, some clarifications have been included to relevant sections. As outlined above, more details on ecological objectives and outcomes sought will be set out in the construction methodology.
G.43C	Mitigation planting / Vegetation clearance	IB	Section 5A: I note that less riparian vegetation clearance is required in this SSMP and that the additional vegetation lost will be incorporated elsewhere. Not sure what this is stating exactly. Does it suggest it will allow more vegetation loss elsewhere? How will this be balanced up in mitigation?	Section 5A	This section has been revised, including the addition of the new Appendix 5 outlining the extent of works in relation to that consented as well as a sum total of all ecological mitigation works by SSEMP. Ultimately, the balance of ecological mitigation works across the Expressway needs to be consistent with that consented.
G.43C	Mitigation planting / Riparian planting	IB	Section 5B: Suggests riparian planting to be consistent with Waikanae River riparian planting. Not sure if this is preferable – may be GWRC/KCDC riparian planting guidelines that are more appropriate.	Section 5B	The details of planting in this area have now been confirmed in the landscape specifications in conjunction with KCDC review and GWRC flood protection review comments on plant selection in this area.
N/A	Matters to be included in an SSEMP	IB	Some figures are still a bit indicative but presumably detail will follow	Figures	Revised figures have been added.
General	Matters to be included in an SSEMP	IB	Otherwise it is shaping up with expectations. I expect to see the step-by-step plan of how the plan will be implemented.	General	Step-by-step plan will be undertaken as part of the construction methodology in terms of timing, procedures etc. This will have ecological involvement.

Condition Reference	Condition Detail	Reviewer/ commenter	GWRC Reviewer's comment	reference in SSMP	Management Plan Author's response
		AF	Appendix 5, Table 1A is missing the 'A' in its labelling	Appendix 5 Ecological Mitigation Table	Amended table title to refer to '1A'.
		AF	Appendix 5, the set of tables which keeps a running tally of habitat loss and mitigation against what was agreed is helpful. At this stage it is noted that according to Table 2A, shortfalls are occurring in three of the four mitigation types. It would be reassuring now to be informed of which specific mitigation areas the current shortfalls will likely be made-up in, and assurance that a surplus in one mitigation type will not be viewed as sufficient to satisfy shortfalls in any other mitigation type.	Appendix 5 Ecological Mitigation Table	Added three new sections within the Word document in Vegetation and Wetlands sections to state that shortfall and surplus of ecological mitigation within this SSMP would be addressed in the Drain 7/Wharemauku and Kakariki/Smithfield SSMPs (being the largest ecological mitigation sites).

COMMENTS ON PRELIMINARY ISSUE SSMP7: WAIKANA E RIVER- ADDITIONAL COMMENTS PROVIDED BY JAN NISBET FROM THE ADVISORY GROUP ON 16 DECEMBER 2013

KAPITI CYCLEWAYS/WALKWAYS/BRIDLEWAYS ADVISORY GROUP [JN = Jan Nisbet]

Condition Reference	Condition Detail	Reviewer/ commenter	Comment	reference in SSMP	Management Plan Author's response
DC.59(a)	Matters to be included in an SSUDP		Mentioned that in previous meetings (during application preparation phase) there had been discussions around the desire to have a ford for horses to cross the river in the Waikanae bridge area.	SHEET 2	Confirmed that horse fording crossing points will be reinstated and remarked if these are affected during the construction.
DC.59(a)	Matters to be included in an SSUDP		What is the width of the CWB and the CWB width across the Waikanae River bridge?	SHEET 2	Width of CWB on bridge will be 2.5m and 3.0m elsewhere on main path parallel to expressway. On links from CWB to other existing trails (like beside river will be 2.5m). Beside El Rancho Road will be 2.2m shared path that will be used in conjunction with slow speed El Rancho access.
DC.59(a)	Matters to be included in an SSUDP		Concern raised about the lack of permeability to the outer Waikanae river bridge barrier – is it possible to modify the barrier to allow better visibility out to river?	SHEET 2	Consideration has been given to the edge barrier and this is designed to be consistent with the other side of the bridge so the bridge form appears consistent (as per the ULDF principle 5.8.1). Most people will still see over the barrier as it is solid to 1.1m high (about waist height for an adult) and then has a handrail on top making it 1.4m high. There is a gap between the solid and the top rail.
DC.59(a)	Matters to be included in an SSUDP		Concern raised about the height and proximity of proposed vegetation to the CWB	General	Planting will be low adjacent to the CWB – either grass or low so it can be seen over and taller vegetation does not obscure sight lines or snag cyclists
DC.59	CWB	JN	Provision of an off road route available to horses.	SHEETS 6 and 14-16	The CWB is available to horses. A 1.0m wide grass strip adjoining the 3.0m CWB will be provided where feasible and if space permits.
DC.59	CWB	JN	Signage for the route refers only to a cycleway and it needs to have walkers and horse riders included in the name or a more generic name such as off road route.	SHEETS 14-16	The current design and information on the signs was supplied by KCDC and is consistent with signs used elsewhere; the pictograms used on the signs display both a walker and a cyclist but not a horse. KCDC to advise on alternative name for route.

COMMENTS ON PRELIMINARY ISSUE SSMP7:WAIKANAE RIVER EL RANCHO					
Condition Reference	Condition Detail	Reviewer/commenter	Comment	reference in SSMP	Management Plan Author's response
General	General	General	Would like to avoid duplication of consultation with Vector, with whom they have met to discuss pedestrian access and Vector's maintenance access.	General	To be addressed as part of the temporary works to relocate the gas main.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Need clearer differentiation of vegetation types on the plan, would like to see cross section under bridge to clearly illustrate levels and overall relationship, more dimensions needed on the plans.	Appendix 1	Plans amended to show these items
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Need for lighting under the bridge on El Rancho access road.	Appendix 1	There is proposed to be a light at the point where the CWB joins to the access road to alert drivers and CWB users to the intersection presence. The matter of lighting under the El Rancho access bridge will be further discussed with El Rancho as part of property negotiations
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Footpath added or access road widened where it passes under the bridge to provide safe environment for pedestrians as well as entrance off Kauri Road - need for this to be widened to improve safety.	Appendix 1	The El Rancho access road will be widened to 5.0m and an adjoining 2.2m wide shared path provided separated from the road by a shallow dish drain channel. The slow moving vehicles on El Rancho access road (posted speed is 15kmh) enables an element of sharing of the road and shared space by cyclists and walkers. The path provides a clear safe zone for walkers and cyclists that prefer not to be on the road space.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Currently the SSMP plans do not extend to the entrance and ER would like the plans to show entrance off Kauri Road and the details of what is proposed in this area.	Appendix 1	This area is in the following SSMP area and will be addressed at that time.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Would like to see CWB at entrance to Vector Gas enclosure amended to improve safety (i.e. vegetation pulled back to ensure good sight lines, and gabion added to act as a threshold marker for cyclists and others approaching ER access road.	Appendix 1	Agreed – The plan has been amended. The matter of a gabion marker will be further considered to be consistent with other thresholds for the CWB to local roads. There will be a light to illuminate the intersection.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Would like to see the extent of construction yards shown on the plans; ER raised issue re height of security fences around yards as described in LMP but appreciate that they are needed as much as a safety measure as for security.	Appendix 1	Agreed – The plan to describe the construction area is included in Appendix 1.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		Stormwater drain (swale) west of expressway does not drain into the river and so water tends to pond. ER concerned that as a result of the expressway more water will pond in this area. They would like to see drainage in this area permanently resolved	Appendix 1	This is an existing issue. There will be no additional ponding and culverting for the CWB will allow it to continue to drain towards the river.
DC.59(a) DC53C	Matters to be included in an SSUDP/SSLMP		ER raised the potential for installing 'cultural markers' and information at mouth of Muaupoko Stream.	Appendix 1	Agreed – this will be undertaken in consultation with iwi.

COMMENTS ON PRELIMINARY ISSUE SSMP7:WAIKANAE RIVER
FRIENDS OF WAIKANAE RIVER

Condition Reference	Condition Detail	Reviewer/commenter	Comment	reference in SSMP	Management Plan Author's response
General	General	Heather McKenzie, Secretary for Friends of Waikanae River	"No issues -impressed with the level of information and detail."	General	No response required.
DC.59	CWB (Cycleway/walkway /bridleway)	Feriel Falconer, Chair Friends of Waikanae River (10 December 2013)	Pedestrians and cyclists specifically mentioned but not horses.	E. Conditions of Consent [Summary], page 5	Text amended to specifically mention horse riders.
DC. 59	CWB widths	Feriel Falconer, Chair Friends of Waikanae River (10 December 2013)	Width of CWB inconsistent with consent conditions.	Various places in text and on plans	Text and plans have been amended accordingly and are consistent with what was agreed with KCDC and with the consent conditions.
DC. 57 f) vii) F. 3 G. 42C v) E. 3	<i>Any native plants to, as far as practicable, be genetically sourced from the Manawatu Ecological Region.</i> <i>Any native plants to be sourced from the relevant Ecological District.</i>	Feriel Falconer, Chair Friends of Waikanae River (10 December 2013)	Query on eco-sourced whether plant supply (i.e Manawatu Ecological Region / Foxton Ecological District)	P. Plant Supply (page 12).	Text amended to state that eco-sourced plant supply for all indigenous planting shall be from Foxton Ecological District.

COMMENTS ON PRELIMINARY ISSUE SSMP7:WAIKANA RIVER TAKEMORE TRUST AND TE ATI AWA KI WHAKARONGATAI					
Condition Reference	Condition Detail	Reviewer/commenter	Comment	reference in SSMP	Management Plan Author's response
DC.57 and DC.59A j) i) and ii)	SSMPs to be prepared in consultation with Te Ati Awa ki Whakarongatai and Takamore Trust	Ben Ngaia, Takamore Trust Hemi Sundgren, Te Aiti Awa ki Whakarongatai	Identify areas where Takamore Trustees and Te Ati Awa ki Whakarongatai could provide input into design and detail.	Various places	An initial meeting was held with Ben Ngaia on 18th September 2013; a copy of the Preliminary issue of SSMP 7 was provided for Ben to take away and discuss with the Takamore Trustees. A copy of the Preliminary SSMP 7 was also provided to Hemi Sundgren to review and comment. A meeting was held on 13th December 2013 with Ben Ngaia & Tony Ropata from Takamore Trust, Hemi Sundgren, Te Atiawa ki Whakarongatai, and Mahara Okeroa, representing NZTA to go through SSMP 7 and to discuss opportunities for iwi input into aspects of design. A further meeting was held on 23 January 2014 with Hemi Sundgren, which discussed specific opportunities for design input on the Waikanae River Bridge (i.e.columns, barrier, abutments).

Appendix 3: BRIDGE SUMMARY

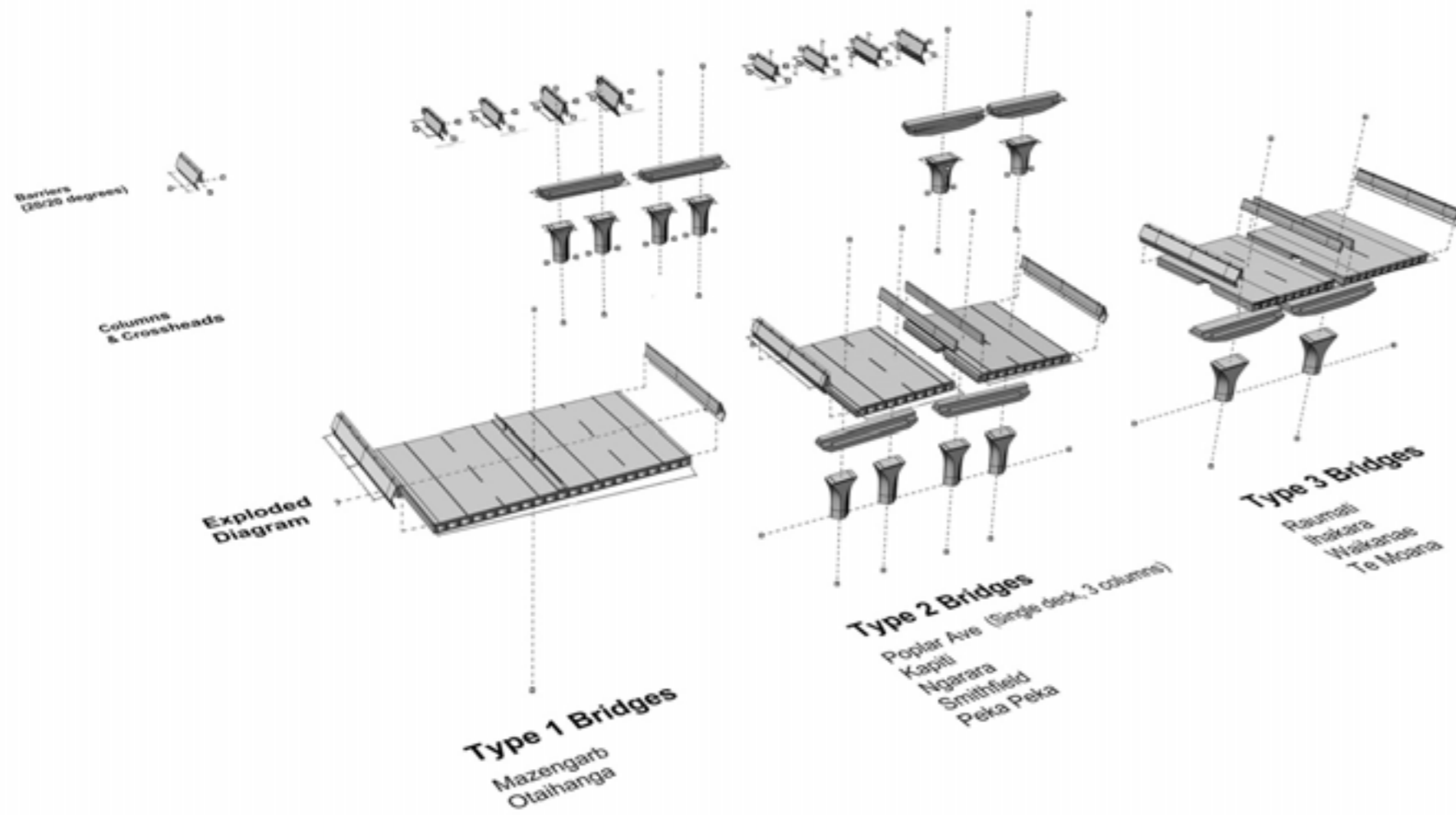
Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

13 February 2014

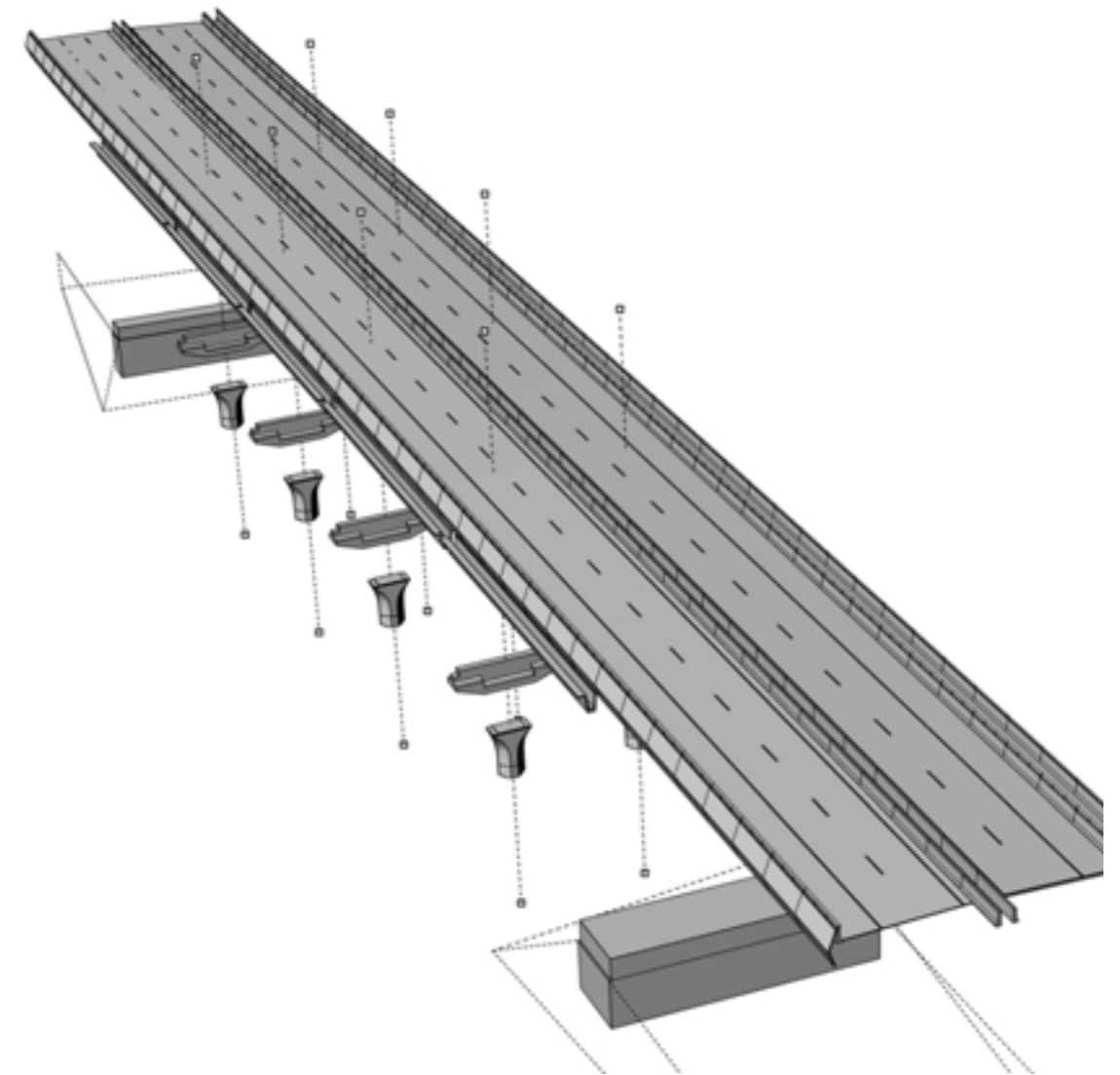
Waikanae River Crossing - Bridge Development Study
MacKays to Peka Peka Expressway

REV- A
25th February 2014

Bridges as a series of components



Proposed Waikanae exploded isometric



Design Objectives

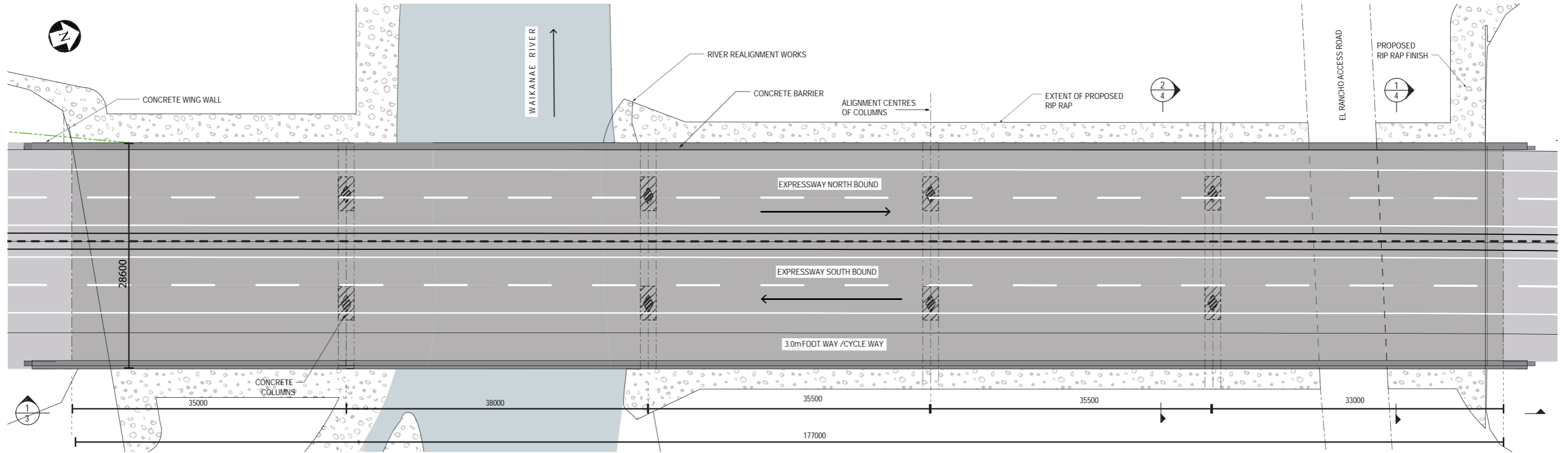
With reference to the Urban and Landscape Design Framework (Technical Report 5) (ULDF) there are four design objectives for the bridges and their respective contexts. These four objectives are overarching aims for the project and have been extracted from the Design Concept statements in two sections of the ULDF: Local Road Interface Design (section 5.7) and Bridge Design (section 5.8).

The purpose of extracting these objectives is to enable any changes to bridge structures and their context made through the concept and detailed design process to be considered at the highest level of the design intent. There are design principles in each of the sections as noted above and these too form a basis for considering the development of the designs for the bridges and their context.

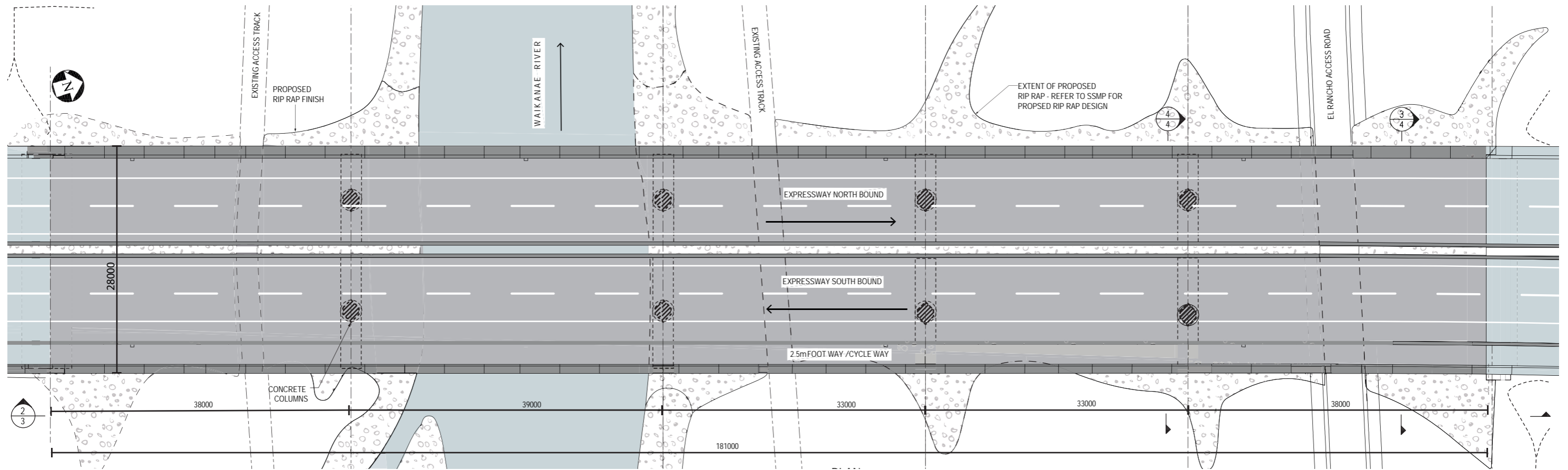
As is typical in a design evaluation process, any aspects of design that do not align with the design principles would be elevated to consideration against the design objectives.

Design Objectives:

1. The public spaces of the roads and streets take primacy over the experience for the Expressway because local people will be making slower movements and as a consequence the bridges will be more visually apparent to them than to people travelling along the Expressway.
2. As a new element in the landscape, the bridges respect the surrounding landscape and are expressed in terms of their horizontality, fluidity and simplicity because the landscape is relatively low key and low in scale; having several 'feature' bridges would become both visually complex and overwhelming in scale.
3. Bridges are formed as a whole from a single kit of parts, which allows the components to be repeated and a similar approach used at the multiple crossings to register as a 'family' of bridges because people will have multiple interactions day to day with the Expressway and this approach promotes simplicity and visual continuity
4. Utilise concrete prefabricated parts because this allows fine levels of quality control, cost benefits and significant improvements in construction time at the crossings and reduces disturbance to the area.



AEE PLAN- WAIKANAE RIVER BRIDGE - 1:500@A3



PROPOSED PLAN- WAIKANAE RIVER BRIDGE - 1:500@A3

Design development

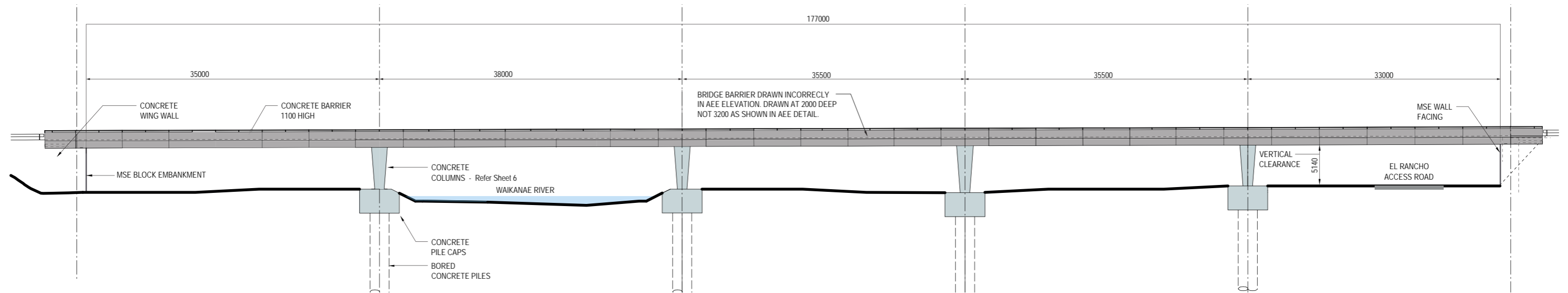
1. Split bridge (1m gap)
2. No exposed pile caps
3. Narrowed cycleway (3m to 2.5m)
4. Column profile developed

5. Rip rap design reflects river environment

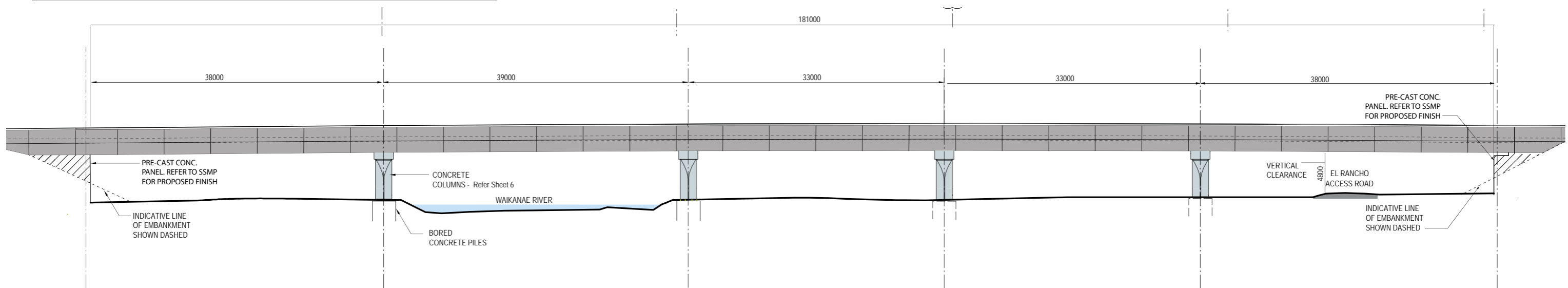
Rationale

1. Breaks up overhead structure, reduced beam numbers
2. No pile caps required (two piles/col, now 1 pile/col) improves columns interface with the ground plain.
3. Reduced beam numbers and deck area

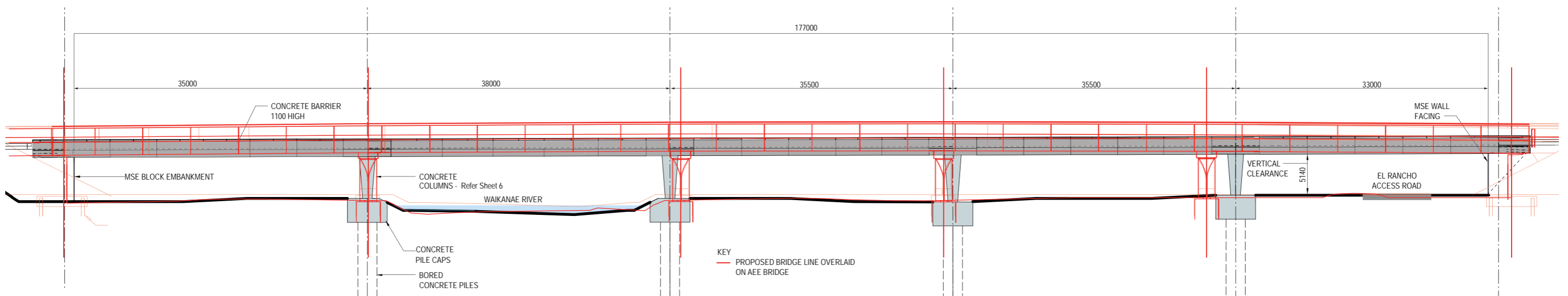
4. Flattened diamond did not work seismically, hexagon provides improved structural core
5. Greater integration of bridge elements with local context. Reflects river environment



1. AEE ELEVATION - WAIKANAE EAST ELEVATION - 1:500@A3



2. PROPOSED ELEVATION - WAIKANAE EAST ELEVATION - 1:500@A3



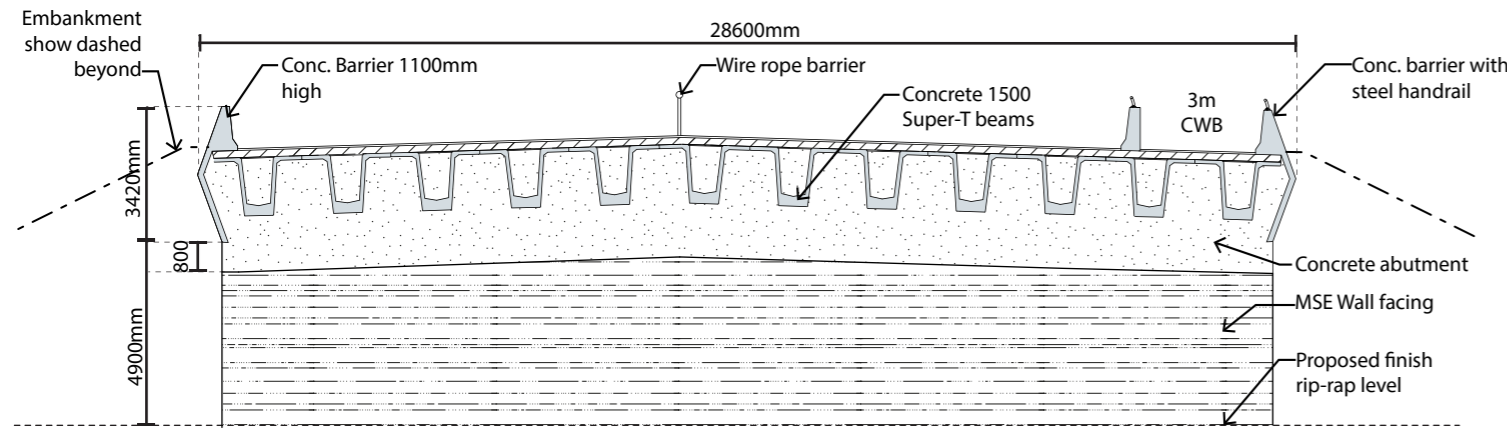
3. ELEVATION COMPARISON WAIKANAE EAST ELEVATION - 1:500@A3

Design development

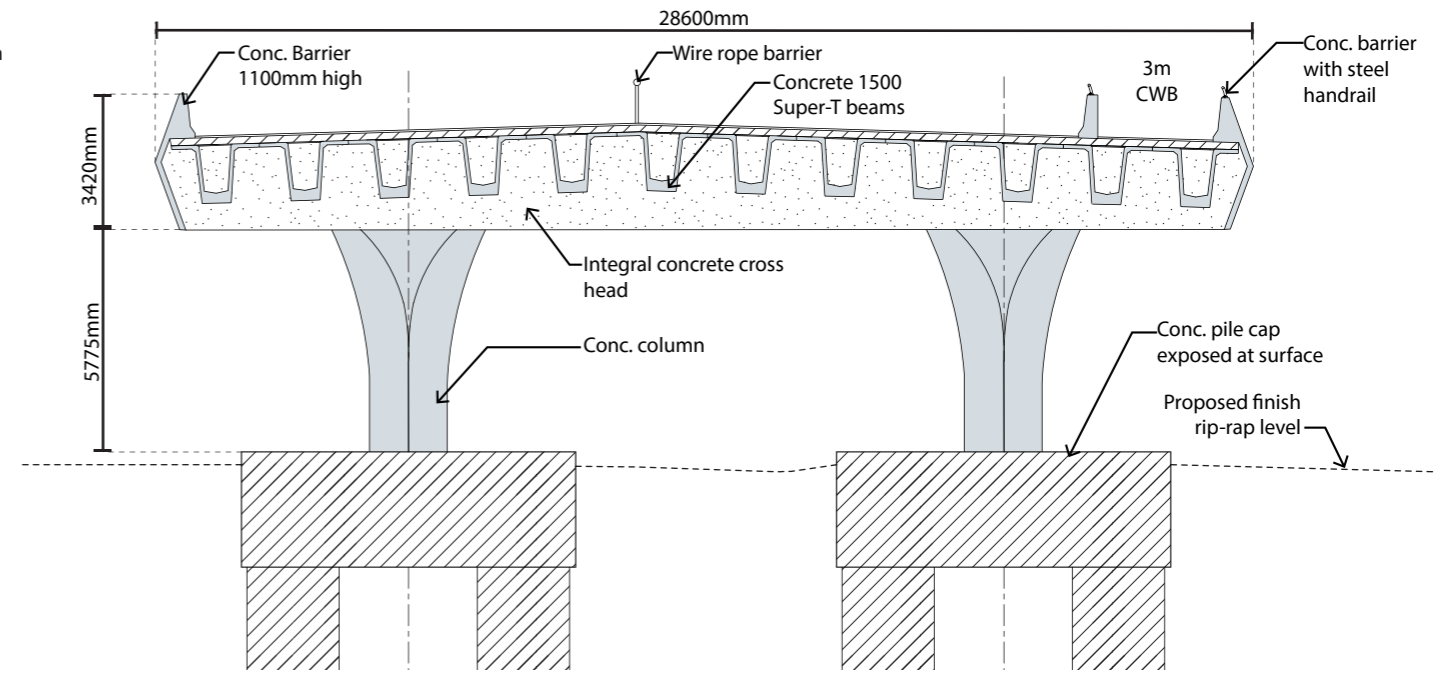
- 1. Pier locations adjusted
- 2. Bridge Barrier drawn larger
- 3. Bridge design changed from integral (Super structure connected to columns) to simply supported.
- 4. Column profile developed

Rationale

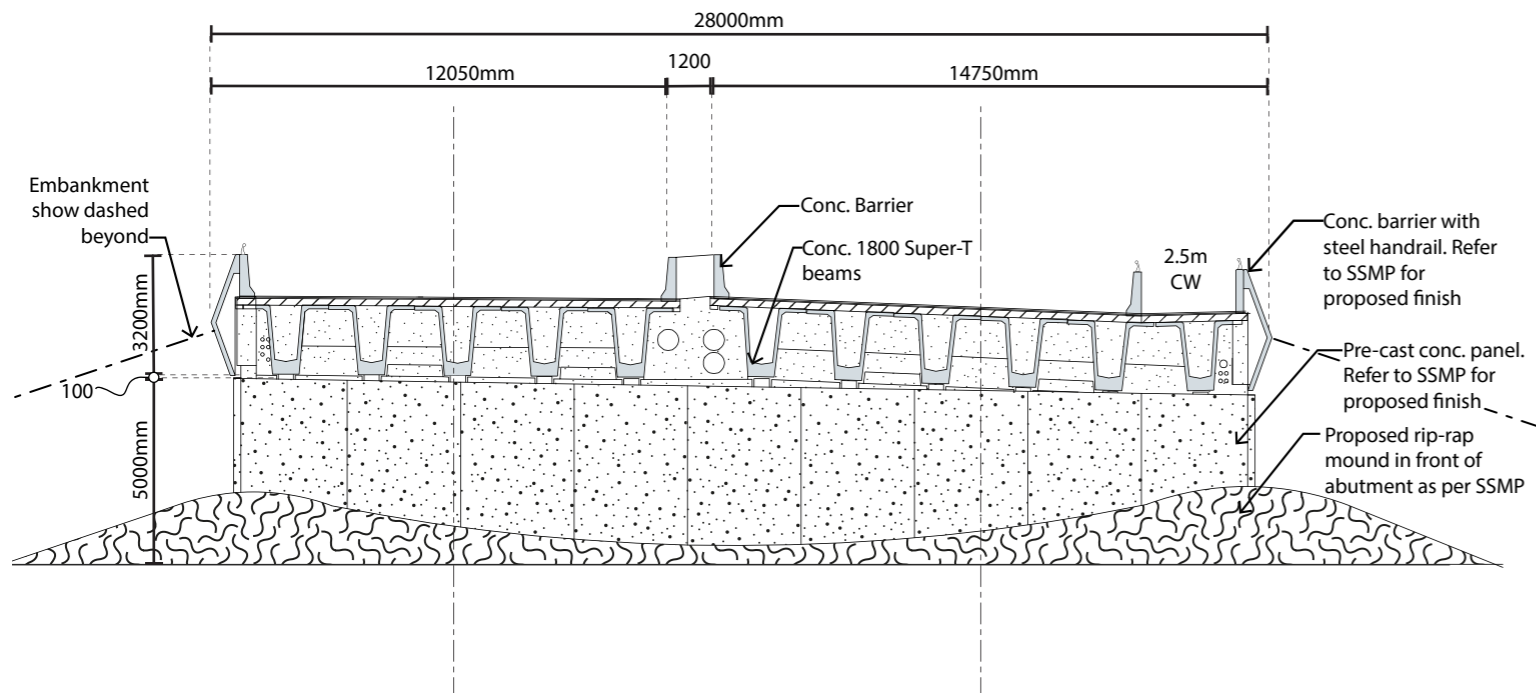
- 1. To tie in with revised beam design and span
- 2. Barrier drawn incorrectly in AEE elevation, (Actual barrier depth unchanged from AEE simulations)
- 3. Constructability issues because of seismic requirements.
- 4. Increased structural core based on geotech investigations carried out post AEE, while still providing the sculptural outer.
- 5. Integral connections difficult to build without increasing structural element sizes further.



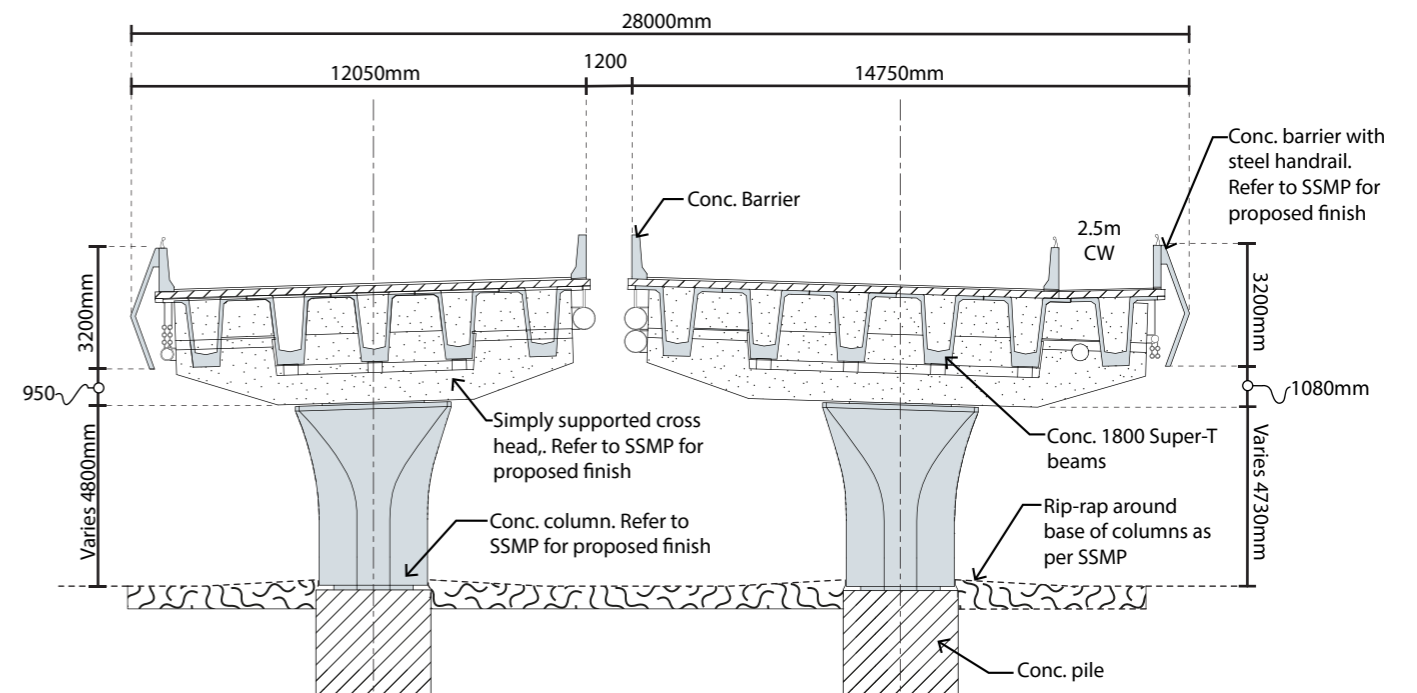
1. AEE SECTIONAL ELEVATION - WAIKANAE NORTH ABUTMENT - 1:200@A3



2. AEE CROSS SECTION - WAIKANAE RIVER BRIDGE (LOOKING NORTH) - 1:200@A3



3. PROPOSED SECTIONAL ELEVATION - WAIKANAE NORTH ABUTMENT - 1:200@A3



4. PROPOSED CROSS SECTION - WAIKANAE RIVER BRIDGE (LOOKING NORTH) - 1:200@A3

Design development

1. More detail provided for abutment treatment, Rip rap design reflects river environment
2. No exposed pile caps
3. Crosshead form now below barrier at column.

4. Column profile changed

Rationale

1. Greater integration of bridge elements with local context. Reflects river environment
2. No pile caps required (two piles/col, now 1 pile/col) improves columns interface with the ground plain.

3. Simply supported structure requires platform to seat beams
4. Increased structural core based on geotech investigations carried out post AEE, while still providing the sculptural outer.



AEE VISUALISATION - WAIKANAЕ RIVER BRIDGE (NORTH SIDE OF WAIKANAЕ RIVER LOOKING EAST)

NOTE: IN ORDER TO DEMONSTRATE BRIDGE FORM THIS VISUALISATION DOES NOT SHOW THE PROPOSED VEGETATION



PROPOSED VISUALISATION - WAIKANAЕ RIVER BRIDGE (NORTH SIDE OF WAIKANAЕ RIVER LOOKING EAST)

NOTE: IN ORDER TO DEMONSTRATE BRIDGE FORM THIS VISUALISATION DOES NOT SHOW THE PROPOSED VEGETATION



PROPOSED VISUALISATION - 10 YEARS AFTER CONSTRUCTION - WAIKANAЕ RIVER BRIDGE (NORTH SIDE OF WAIKANAЕ RIVER LOOKING EAST)

Elements	AEE Design	Current Design	Developments	Why?	ULDF Principles
<p>Column North Elevation 1:100@A3</p>			<ol style="list-style-type: none"> Overall average column height reduced Column base width increase hexagonal column rather than flattened diamond Removal of pile cap 	<ol style="list-style-type: none"> Developed crosshead design requires different clearance at top of column To provide increased structural core to the column based on geotech investigations carried out post AEE, while still providing the sculptural outer. Revised approach to pile cap based on geotech investigations carried out post AEE. 	<ol style="list-style-type: none"> Please refer to ULDF principles summary on sheet; 7 of this document. With particular reference to principle number; 1, 2, 3, 5, 8, 11 and 13
<p>Column East Elevation 1:100@A3</p>			<ol style="list-style-type: none"> Increased vertical clearance to barrier. Column base width increase hexagonal column rather than flattened diamond Removal of pile cap 	<ol style="list-style-type: none"> Designed for columns/bridge and sight distance ratio improved on bridge to conceal beams To provide increased structural core to the column based on geotech investigations carried out post AEE, while still providing the sculptural outer. Revised approach to pile cap based on geotech investigations carried out post AEE. 	<ol style="list-style-type: none"> Please refer to ULDF principles summary on sheet; 7 of this document. With particular reference to principle number 1, 2, 3, 5, 8, 11 and 13
<p>CWB & Cross Head 1:100@A3</p>			<ol style="list-style-type: none"> Simply supported rather than integral Cycleway narrowed to 2.5m from 3m Beam sizes changed from 1500mm to 1800mm 	<ol style="list-style-type: none"> Constructability issues because of seismic requirements. Integral connections difficult to build without increasing structural element sizes further. A ford crossing the Waikanae river was the preferred method for crossing the river. It was deemed undesirable to have horses on the Waikanae bridge Span lengths at river channel beyond maximum for 1500 super-T beams. 	<ol style="list-style-type: none"> Please refer to ULDF principles summary on sheet; 7 of this document. With particular reference to principle number 1, 2, 3, 4, 8 and 13

ULDF principle	Assessment of ULDF principles
1. Make the bridges generally consistent in their form so they register as a 'family' and provide some visual continuity within the local environment	Proposed bridge form remains consistent and has become even more so as there is less variation in types from that shown in AEE. Accordingly there is enhanced consistency in the local environment.
2. Express the bridges as simple forms that sit across the changes in landscape and are not seen as strong statement in their own right	Proposed bridge form remains simple and sits across the landscape as an horizontal element. The piers at Waikanae River continue, as in the AEE ,to be located beneath the bridge which as a visual device exemplifies the horizontality of the bridge.
3. Unite the bridge elements of piers/columns, cross head, deck and barrier as one sculptural form and ensure services are concealed from view	Proposed bridge continues to treat the elements of piers, cross head and deck and barrier as one sculptural form. The Waikanae Bridge at AEE had always had piers beneath the bridge. The change is with a lower cross head, but the principle on uniting these elements remains in that the cross head has been shaped to provide a visual transition from the barrier to the angled line of the cross head and then the pier below.
4. Ensure the form of the bridges from the underside is visually appealing to recognise the primacy of the local roads user's experience in design consideration	The river is not at a local road (except the access road to El Rancho). However, the principle will be satisfied provided there are no services elements or other extraneous protrusions below the deck when viewed from below.
5. Design the intersection of the piers/columns with the ground in concert with the local road interface design of abutment forms and materials (refer to local road interface design principles)	The river is not at a local road (except the access road to El Rancho). The columns have been considered in terms of not obstructing views under the El Rancho road. With the removal of the pile cap, the columns have an improved connection to the ground. The rip rap design has been revised to better reflect the Waikanae river environment and its braided river islands. Rip rap will be placed and mounded around the base of columns and abutments improving the integration of these elements.
6. Light the spaces beneath local road over bridges to enhance the quality of the space including the use of natural light penetration where the local road has a higher frequency of pedestrian cycling and other non-vehicular users	The river is not a local road (except the access road to El Rancho). However, there is some additional light penetration from the AEE design as the bridge is now split. It is not recommended to add lighting beneath the bridge for CPTED reasons. There is proposed to be lighting at the El Rancho access road location to assist visitor wayfinding and that can be turned off when not in use.
7. Use architectural lighting to emphasise the sculptural forms of the bridges and light units that are readily serviceable from the ground	As above it is not proposed to light the forms under the Waikanae River bridge
8. Utilise the opportunity provided by multiple bridges to make a system of parts that can be repeated at each location and improve efficiency of construction	Proposed bridge continues to be considered as a system of parts - this has been further refined from the AEE design such that the number of parts has been reduced for all the Expressway bridges and provides more consistency overall.
9. Use textured finishes within the bridge elements surfaces' to provide a crafted finish – avoid printed forms	The proposed finish on the Waikanae River Bridge barriers will be fair faced concrete with a white wash, applied concrete coating to ensure colour and tonal uniformity between panels. The bridge abutment will have inlaid Otaki pebbles, this moderate texture will help transition between the barrier and the riprap ground plane. The other elements – columns, cross head and deck will be simple, fair faced concrete without the applied white wash coating to help make these elements visually recessive relative to the barrier. Matt graffiti protection to be applied to all bridge elements surfaces. Refer to the SSMP for further detail on the proposed finishes.
10. Repeat the bridge design concepts within the design of pedestrians bridges recognising that these may be able to utilise lighter weight materials	Not relevant
11. Develop each bridge crossing design considering the piers/columns types best suited to the location	The proposed Waikanae River bridge has a column type that is best suited to this location, given the hydrological constraints and the requirements to minimise the number of columns in the flood plain. The requirement to minimise column numbers is also influential to the depth of the bridge deck and the width of the barrier forms
12. Locate bridge piers associated with bridge watercourse crossings away from riparian edges to prevent need to armour stream edges	The proposed Waikanae River bridge has piers that are close to the normal watercourse alignment on such that armouring of the river channel edge will be required. This is as per the AEE consent.
13. Ensure that the integrity and significance of the bridge forms as important to the amenity of the community is not accorded any less priority than the other design requirements of the project	The design of the bridge forms at Waikanae River has seen the consideration of all the contributing factors of visual amenity, CWB crossing, structural design in high seismic zone, river hydrology and Constructability



Appendix 4: LANDSCAPE SPECIFICATION

Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

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SEE SEPARATE A4 BOUND DOCUMENT.

Appendix 5: ECOLOGICAL MITIGATION TABLE

Site Specific Management Plan 007 - Waikanae River
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0007

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M2PP Explanation of Changes to Mitigation Requirements and Availability

These tables compare consented habitat loss and mitigation requirements, with the locations and quantum resulting from Detailed Design Table 1 and 1A compare the amount of habitat loss and its location. Table 2 and 2A compare the amount of mitigation to be provided and its location. Note that habitat loss is measured at 17 discrete sites (AEE). Mitigation is provided for in a 6 broad mitigation areas (SSEMP). The final rows identify if there is a surplus or shortfall in available mitigation sites necessary to meet the updated calculations. This worksheet will be updated as each SSEMP is developed and will guide design of subsequent SSEMPs to ensure mitigation requirements are met.

Source - AEE and EMP Calculations				
Table 1: Habitat Loss by Site / Stream	Indigenous Wetland Habitat (ha)	Indigenous Terrestrial Habitat (ha)	Stream Habitat - Freshwater (linear m)	
Raumati Manuka Wetland	0.03			
Southern Otaihanga Wetland	0.55			
Northern Otaihanga Wetland	0.53			
El Rancho Wetland	0.38			
Unnamed Sites 1 - 7	0.01	1.80		
Tuku Rakau Forest	0.30	0.25		
Ngarara Mahoe		0.86		
Otaihanga Kanuka Forest		0.17		
Raumati Road Kanuka		0.35		
Waikanae River Riparian (planted)		0.13		
Kakariki Stream Riparian (planted)		0.18		
Culverts (inc armouring)			1,119	
Diversions			1,525	
Bridges (armouring)			327	
Loss Allowed by Consent (G.42)	1.8	3.74	2,971	

As progressively updated by Detailed Design				
Table 1A: Habitat Loss by Site / Stream	Indigenous Wetland Habitat (ha)	Indigenous Terrestrial Habitat (ha)	Stream Habitat - Freshwater (linear m)	
Raumati Manuka Wetland	0.03			
Southern Otaihanga Wetland	0.86			
Northern Otaihanga Wetland	0.53			
El Rancho Wetland	0.38			
Scattered cabbage trees	0.01	1.80		
Tuku Rakau Forest	0.30	0.25		
Ngarara Mahoe		0.86		
Otaihanga Kanuka Forest		0.06		
Raumati Road Kanuka		0.35		
Waikanae River Riparian		0.22		
Kakariki Stream Riparian		0.18		
Permanent Culverts (inc armouring)			1,119	
Diversions			1,525	
Bridges (armouring)			327	
Revised Total Loss	2.11	3.72	2,971	
Difference consented and actual	0.31	-0.02	0.00	

Reference
AEE Calc
Updated by Detailed Design
AEE Calc
AEE Calc
AEE Calc
AEE Calc
AEE Calc
AEE Calc
Updated by Detailed Design
AEE Calc
Updated by Detailed Design
AEE Calc
AEE Calc
AEE Calc
AEE Calc

Table 2: Ecological Mitigation Requirements	Indigenous Wetland Habitat (ha)	Indigenous Terrestrial Habitat (ha)	Stream Habitat - Freshwater (linear m)	Stream Habitat - Riparian (ha)
Total Mitigation Required	5.4	7.6	5,240	17.7
+ Flood storage areas 2A & 3	4.1	0	1,400	5.9
Combined Total (G.42)	9.5	7.6	6,640	23.6
Raumati Manuka	2.07	1.15	330	1.14
Otaihanga Wetlands	1.14	4.34	440	1.77
Muaupoko	0	0	75	0.46
Kakariki / Smithfield	2.33	4.32	2,350	8.8
Hadfield / Paetawa	0	1.65	1,375	5.25
Drain 7	3.92	0	1,560	6.32
Total Available Mitigation Area/Length	9.46	11.46	6,130	23.74
Surplus / Shortfall	-0.04	3.86	-510	0.14
Situation	Shortfall	Surplus	Shortfall	Surplus

Table 2A: Ecological Mitigation Areas	Indigenous Wetland Habitat (ha)	Indigenous Terrestrial Habitat (ha)	Stream Habitat - Freshwater (linear m)	Stream Habitat - Riparian (ha)
Revised Mitigation Requirements	6.3	7.5	5,240	17.7
+ Flood storage areas 2A & 3	4.1	0	1,400	5.9
Combined Total (G.42)	10.4	7.5	6,640	23.6
Raumati Manuka	2.07	1.15	330	1.14
Otaihanga Wetlands	1.81	3.57	438	1.55
Muaupoko	0	0	72	0.22
Kakariki / Smithfield	2.33	4.32	2,350	8.8
Hadfield / Paetawa	0	1.65	1,375	5.25
Drain 7	3.92	0	1,560	6.32
Total Available Mitigation Area/Length	10.13	10.69	6125.20	23.28
Surplus / Shortfall	-0.30	3.18	-514.8	-0.32
Revised Situation	Shortfall	Surplus	Shortfall	Shortfall

Recalculated
Updated total
EMP calc
Updated by Detailed Design
Updated by Detailed Design
EMP calc
EMP calc
EMP calc