

Site Specific Management Plan 005 + 006 - Otaihanga North and South [COMBINED]
MacKays to Peka Peka Expressway
M2PP-121-D-MPL-0006

29 JANUARY 2014

SITE SPECIFIC MANAGEMENT PLAN - MAZENGARB TO OTAIHANGA [SSMP 5 - SECTOR 430, 440] AND OTAIHANGA NORTH [SSMP 6 - SECTOR 460][COMBINED]

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	19.09.2013	Preliminary	KCDC
REV B	13.12.2013	Issue for certification	KCDC, GWRC
REV C	29.01.2014	Certification issue	KCDC, GWRC

2.0 SSMP CERTIFICATION DETAILS POSITION				
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	Peter Bradshaw	Design Manager		29.01.14
	Dennis Hunt	Technical Director		30.01.14
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CERTIFICATION	NAME:	POSITION:	SIGNATURE:	DATE:
Reviewed by Julia Williams, Landscape, KCDC. Deyana Popova, Urban Design, KCDC	Andrew Guerin	KCDC		12.12.14
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2.1 POST CERTIFICATION CHANGES							
DRAWING/PAGE TITLE:	DRAWING NUMBER:	DRAWINGS STATUS:	REVISION NO:	DESCRIPTION OF CHANGE:	ISSUED TO:	CERTIFIED BY:	DATE:
SSMP 5 & 6 - SHEET 15 Noise wall NB2 & NB2A - 2m	M2PP-121-D-DWG-8607	Revision/Update	D	Noise wall construction and detail – design change	KCDC		3-5-16
SSMP 5 & 6 - Sheet 10 NOISE WALL LOCATIONS	M2PP-121-D-GPH-8601	Revision/Update	C	Southeast Wall Removed (Mitigation not necessary). Section of Southwest Wall changed to bund.	KCDC		3-5-16
SHEET 18 - CWB sign type summary	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 5 & 6 - SHEET 43 Type 2 CWB entrance	M2PP-121-D-DWG-8608	New Sheet added	A	CWB entrance structures Type 2 - design change to precast units. To replace 'gabions' on sheet 14	KCDC		3-5-16

SITE SPECIFIC MANAGEMENT PLAN [FOR CERTIFICATION ISSUE]
 MAZENGBAR TO OTAIHANGA [SSMP 5 – SECTORS 430 & 440] AND OTAIHANGA NORTH [SSMP 6 – SECTOR 450] [COMBINED]

SSMP Certification means complete to the point of the end of confirmation of concept design (refer to Diagram 1) within the project's design process. The aim of Certification is to enable detailed design to proceed with certainty in regard to the concept design. Changes in design from that described in the NOR/NEE 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		
PREPARED BY M2PP ALLIANCE	<ul style="list-style-type: none"> • Boyden Evans (Landscape Architect) • Marc Baily (Urban Designer) • Matti Park (Ecologist) • Vaughan Keesing (Ecologist) • Dean MacKenzie (Architect) • Fraser Baggaley (Landscape Architect) 	Signatures and Dates 
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2. INTRODUCTION	
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).</p> <p>A total of 11 SSMPs will be prepared that address all the required sectors of the Expressway. The level of detail in the SSMP 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.</p> <p>This document (including Appendix 1 Plans) 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, 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) i) as they relate to the details of the CWB.</p>

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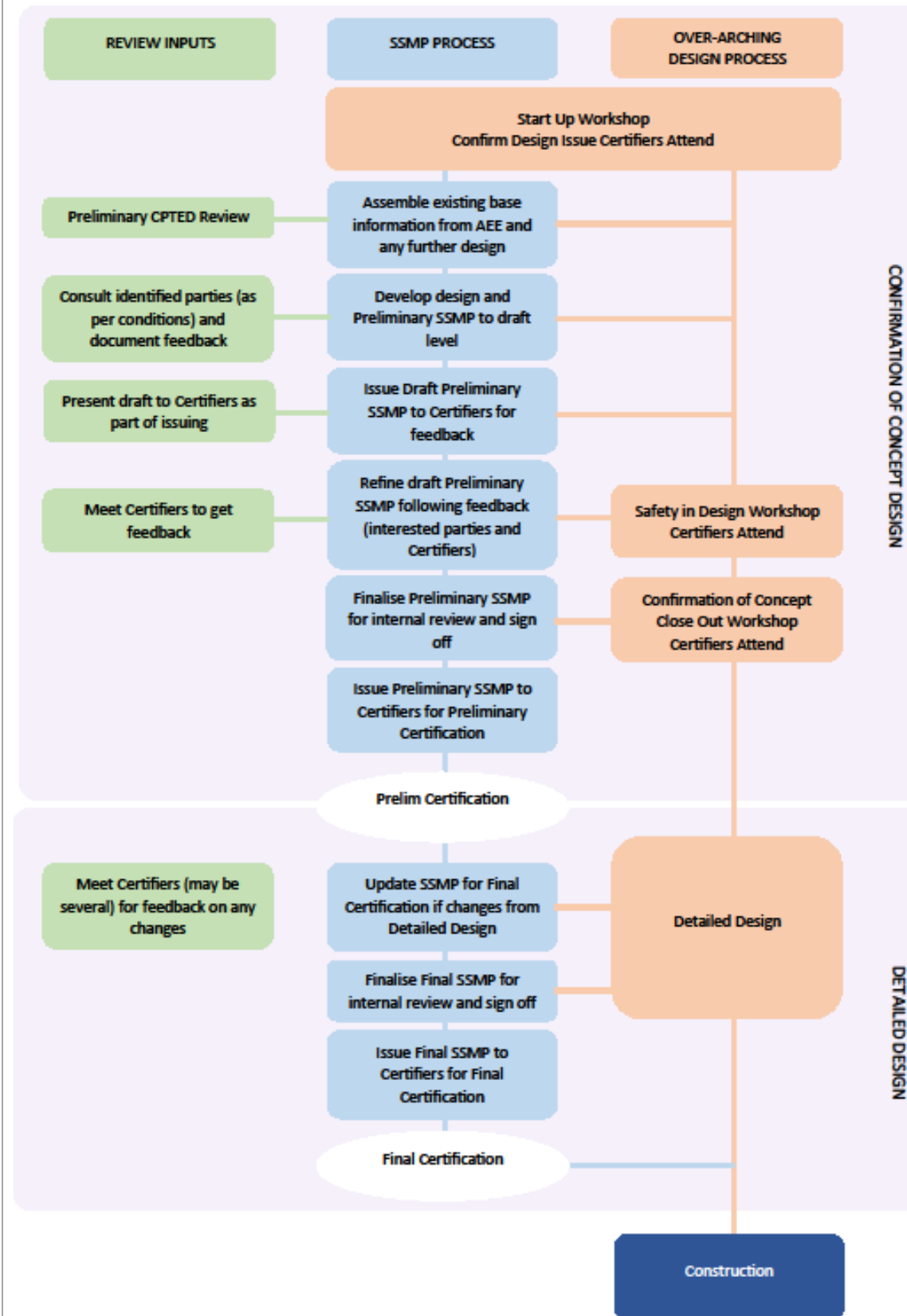
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	<p>SSMPs are to be prepared in consultation with various stakeholders including iwi, interest and residents' groups as directed by conditions. Appendix 2 describes the matters raised in consultation and the responses made.</p> <p>The SSMPs have been prepared through an iterative process to allow discussion between the Alliance 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, 2, 3, 4, 5</p>	<p>This SSMP covers the area of the Expressway from north of the Mazengarb Road crossing to the south side of the Waikanae River Bridge. It includes the Expressway overpass bridge at Otaihanga Road, Otaihanga construction yard and associated construction works within this area. This does not include the Mazengarb Road Bridge, nor the Waikanae River Bridge and associated works which are in the SSMP areas to the north and south. It includes the following main components:</p> <ul style="list-style-type: none"> • Focus area for ecological protection and mitigation planting including wetland restoration • Culverting of the Mazengarb Stream, Waste Water Treatment Plant (WWTP) Drain and Otaihanga Landfill Drain. • New flood storage areas and stormwater treatment areas. • Removal of pine trees and replacement with grass and indigenous buffer planting around existing areas of valued indigenous vegetation. • Retention of significant dune landforms and other dunes affected by earthworks to be reshaped to tie in with adjoining landforms. • 25.0m long single span bridge over Otaihanga Road with a total width of 26.4 m from side to side with no pier. • New CWB on the west side of the Expressway that joins to Otaihanga Road and crosses to the east side of the Expressway via a crossing point on Otaihanga Road. • New CWB connections to, and reinstatement of, the existing CWB on the north side of Otaihanga Road. • Widening of Otaihanga Road on the east side of the Expressway to provide safe access to construction area and access to existing properties. • Construction area formed adjacent to existing landfill (<i>Note: post construction this area will remain for utilization by KCDC</i>). • Construction yard entrance/exit would be closed post construction to take account of CWB safety considerations. • New access drive formed on the east side of Expressway to existing properties north of Otaihanga Road.
<p>C. SSMP EXISTING AREA DESCRIPTION REFER APPENDIX 1 SHEETS 2, 3, 4, 5 AND ULDF SECTION 3.10</p>	<ul style="list-style-type: none"> • The former Otaihanga Landfill and associated WWTP activities on the east side of the Expressway alignment, south of Otaihanga Road. • A large area of elevated remnant dunes, exotic and indigenous vegetation, indigenous wetlands and pine plantation to the west of the Otaihanga landfill and WWTP between Mazengarb Road and Otaihanga Road. • A large area of remnant dunes in farmland surrounded by lifestyle blocks and associated shelterbelts and amenity planting between Otaihanga Road and the Waikanae River. • The Mazengarb Stream, WWTP Drain and Otaihanga Landfill Drain are all small tributaries of the Waikanae Estuary (a nationally recognized Scientific Reserve). • Otaihanga Road is a winding rural 2-lane road with an existing gravel surfaced shared cycle/walking path on the north side. • Informal use of pine plantation area on the south side of Otaihanga Road, which was until recently used by the community as a mountain-bike riding area (now discontinued). • Killalea Place— a well-established rural lifestyle enclave to the west of the Expressway. • Rural lifestyle blocks between Otaihanga Road and the Waikanae River.

D. PROCESS

DIAGRAM 1 – SSMP DEVELOPMENT PROCESS

The process followed in preparing the SSMPs has followed is described in Diagram 1 below.



**E. CONDITIONS OF CONSENT
[SUMMARY]**

General

- Requirement to develop Site Specific Management Plans (SSMPs) for landscape and urban design purposes (DC.7), ecological purposes (G.42C), and CWB (DC.59A g).

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 between Mazengarb Road and south of the Waikanae River include:
 - Otaihanga Mahoe (comprising dry vegetation in Otaihanga);
 - Otaihanga Kanuka (Kanuka Forest west of Southern Otaihanga Wetland);
 - Northern Otaihanga Wetland;
 - Southern Otaihanga Wetlands;
 - New wetland adjacent to WWTP Drain created to mitigate permanent loss of wetlands.
- 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.

Urban Design

- Condition DC.59A e) requires SSUDPs to be prepared for locations where the Expressway interacts with local vehicular and non-vehicular pedestrian/cyclist movement. For SSMP5 and 6, the locations include: (viii) Otaihanga Road Condition
- DC.59A f) lists the matters to be provided and in summary includes detailed design of for the benefit of pedestrians, cyclists and others:

	<ul style="list-style-type: none"> - 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; <ul style="list-style-type: none"> • Condition DC.59A g) requires preparation of a SSUDP for the Cycleway, Walkway and Bridal (CWB) path network and include: <ul style="list-style-type: none"> - 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, SSMP5 & 6 shall consider the following in relation to Condition 59A i) vii): <p><i>Otaihanga Road: Safety and convenience of pedestrian and cycle crossing at the local road, including for horse riders.</i></p> <p>Network Integration Plan Condition DC.64 a) in relation to the CWB; Condition DC.64 b) ii) in relation to lighting.</p>
<p>3. CONSULTATION</p>	<ul style="list-style-type: none"> • This is not a Landscape Focus Area so there are no consent requirements for SSLMP consultation with residents. • SSLMP, SSEMP and SSUDP (under Conditions DC.57 e), DC.57A, G42 d) and DC.59A j)) requires consultation with the following parties: <ul style="list-style-type: none"> - Te Āti Awa ki Whakarongotai; Kapiti Coast District Council (KCDC). • The SSLMP and SSUDP condition requires consultation (Condition DC 57 e) and DC.59A j) vii) with the following: <ul style="list-style-type: none"> - Residents' associations for the affected area. • The SSUDP condition (DC.59A j) viii) 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 7</p>	<p>DC.59 f) i) Lighting for the benefit of pedestrians and cyclists DC.64 a), b), ii)</p>	<p>No lighting is proposed on the CWB or on the Expressway itself in this rural location. However, lighting is proposed at the thresholds of the CWB with Otaihanga Road to act as orientation points, recognising the change in position of the CWB from the west to east sides of the Expressway as suggested by CPTED review and to light the crossing point. It is anticipated that cyclists using the CWB at night will have lights for their own safety and to light their way ahead.</p> <p>There is no existing street lighting on Otaihanga Road other than the above lighting and no additional lighting is proposed.</p>
<p>B. CWB</p> <p>REFER TO APPENDIX 1 SHEETS 2, 3, 4, 5, 6 & 17 & 18 ALSO REFER TO CPTED REVIEW COMMENTS SHEET 6</p>	<p>DC.59A f) ii) and iii) and DC59A g), DC.59A i) xi) and DC.57 c) DC.64 a), b), ii).</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 • Provision for a 3.0 m 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>CWB parallel to Expressway, comprised of a formed 3.0 m wide (Kapiti Blue) section and where practicable a grass verge of up to 1.0m wide for horse riders.</p> <p>The CWB from the South connects from its position adjacent to the Expressway to Otaihanga Road on the west side. The new CWB then runs parallel to Otaihanga Road on its south side (width 3.0m), under the Expressway bridge. The CWB crosses Otaihanga Road on the east side of the bridge and continues north towards the Waikanae River.</p> <p>The crossing point for the local road has been selected as it provides the best line of sight distance for people crossing.</p> <p>The local road is temporarily posted for a speed limit of 60kph (down from 80kmh). <i>Note: KCDC has applied to have the temporary posted speed confirmed and permanent.</i></p> <p>Provision has been made for sufficient crossing sight distance signage to allow safe crossing in this area. The crossing point will have advance signing, which will alert motorists of the crossing point</p> <p>The existing loose chip Otaihanga Road CWB path will be reinstated and the new CWB will link to this on the north side of Otaihanga Road. There is no existing on-road provision for a CWB on the south side of Otaihanga Road due to the narrowness of the carriageway in this location. There is sufficient provision in the road reserve under the Expressway Bridge to instate a new on road cycle lane (in addition to the new CWB) in the future if KCDC wish to do so.</p> <p>Planting will be kept at low heights adjacent to the CWB to maintain sightlines.</p> <p><u>The comments raised in the CPTED review of the Preliminary issue of this SSMP all have been addressed:</u></p>

		<ul style="list-style-type: none"> To maintain clear sight lines by keeping vegetation low where there is an intersection and also at edges to of CWB. To provide a low level orientation light at the CWB /local road crossing points. To ensure that no spaces are created, such as between the gabions and the embankments, where people can congregate and conduct antisocial activities. To ensure that the crossing is safe and has adequate sight lines north of Otaihanga Road for people to cross. <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 been incorporated into the design-</p>
<p>C. RETAINING WALLS AND NOISE MITIGATION STRUCTURES REFER TO APPENDIX 1 SHEETS 10-13 and 15 & 16</p>	<p>DC.59A 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>There are noise wall structures on the west side of the Expressway to the north and south of the Otaihanga Bridge. These are designed as a continuation of the bridge barrier; they will be at the same height as the barrier and take the form of a standard road safety barrier. There are 2.0m high noise walls just north of the Mazengarb Road bridge.</p> <p>The surface treatment for retaining walls and noise walls will be further developed, but will recognize the importance externally and internally to both the community and expressway users.</p> <p>Reinforced earth embankments will be installed at the Mazengarb Stream culvert and these will be planted.</p>
<p>D. LOCAL PROPERTY ACCESS REFER TO APPENDIX 1 SHEET 3, 6 & 34</p>	<p>DC.59A f) v) Local property access to provide for existing and future needs</p>	<p>Lifestyle and farm property access will be maintained with a new access road/driveway off Otaihanga Road to service the properties north of Otaihanga Road where access is cut off by the Expressway.</p>
<p>E. BRIDGE ABUTMENTS REFER TO APPENDIX 1 SHEET 8 AND APPENDIX 3</p>	<p>DC.59A f) iv) Bridge piers and abutments design to address the location of piers and the treatment of abutments to address their scale and materials</p>	<p>There are no bridge piers for the Otaihanga Road bridge as it is a single span structure, supported at either end by abutments.</p> <p>The bridge abutments at either bridge end will have precast panels with an exposed aggregate facing. The design approach is to show a transition from the smooth bridge forms to the abutment surface.</p> <p>The abutments are inclined to provide a wider and lighter space beneath the bridge than would be the case if there were vertical walls. <u>Change to the bridge abutment is proposed from the NOR and Consent Package to steepen the abutment sides.</u></p> <p>It is considered that with Otaihanga Road width (two lanes with 1.5m shoulder either side – a total width of 10.0 m), the</p>

		<p>relatively wide area of space provided beneath the bridge between abutments, the single span of the bridge with no piers, and the height to the underside the bridge (minimum 4.9m) that the sense of space will remain for walkers (of which there are few based on ULDF section 3.9 Figure 43) and cyclists on the local road moving beneath the Expressway bridge.</p> <p>A wide space is provided for the CWB on the south side of Otaihanga Road under the bridge and between the two points where the CWB transitions from the west to the east side of the Expressway. There is also provision for future on-road cycle lane (1.5m wide) in each direction under the bridge. A 3.0m CWB path under the bridge will be defined as separate from the road carriageway by a raised kerb and edge marker posts.</p> <p>Marker posts are proposed along the edge between the CWB and the Otaihanga Road carriageway to denote to drivers that the CWB is not available to pull into. It also provides some benefits for cyclists and walkers as a clear delineation of safe space for their use. A 2.0m wide CWB path is provided on the north side of Otaihanga Road under the bridge as a continuation of the existing path.</p> <p>The point at which the sloping abutments intersect with the local road at the back of the footpath has changed. <u>This is a change from the NOR and Consent Package.</u> This replaces the gabion wall with a low vertical wall section (no more than 1.0m high).</p> <p>This change has increased the width of space available for the CWB on the South side of Otaihanga Road and simplified the structure and removed a potential rubbish accumulation point (and potential maintenance issue). The benefit of the gabion is retained by the upstand which provides for a clear space at head height for people moving along the edge of the abutment.</p>
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5. LANDSCAPE + ECOLOGY	CONDITIONS – LANDSCAPE + ECOLOGY	RESPONSES – LANDSCAPE + ECOLOGY
<p>A. DUNES AND DRYLAND VEGETATION REFER TO APPENDIX 1 SHEETS 2, 3, 4, 5, 6, 7, 19 –28, 29-39 AND APPENDIX 5</p>	<p>The Otaihanga Mahoe Forest and the Otaihanga Kanuka Forest are identified as valued indigenous vegetation by Condition G.41 c).</p> <p>Condition DC.57 f) specifies exotic trees to be retained.</p> <p>Re-shaping of dune landforms disturbed by construction of the Expressway.</p>	<p>Consent conditions allow for the loss of 0.17 ha (1,700 m²) of the Otaihanga Kanuka Forest. As outlined in Appendix 5, detailed design has resulted in significantly less vegetation loss than the consented Project Footprint, with 0.06 ha (627 m²) of the edge of this kanuka forest remnant now being lost as a result of redesign of the embankment to incorporate the CWB. <u>This is a change from the NOR and Consent Package.</u></p> <p>Removal of the Otaihanga Kanuka Forest shall be restricted to the area necessary for construction. All other indigenous vegetation shall be demarcated and suitably protected during construction.</p>

		<p>No vegetation will be lost from the Otaihanga Mahoe Forest.</p> <p><i>Note: although there has been a substantial reduction in the loss of kanuka forest in this SSMP area through detailed design (a reduction of approximately 0.11 ha (1,100 m²) of the Otaihanga Kanuka Forest being lost), no changes to the terrestrial mitigation planting in this SSMP area are proposed as kanuka was intended to form a large component of the landscape and visual mitigation planting in this area. Refer note below on surplus/shortfalls in ecological mitigation planting.</i></p> <p>Removal of plantation pine trees to be undertaken as part of site preparation during construction of the expressway and associated works.</p> <p>The extent of pine removal within the designation corridor is shown on the 'Vegetation To be Retained' plan, which have been certified by KDC. Additional areas of pine trees outside of the designation corridor may be removed if agreement is reached with KDC, however this SSMP does not cover any pine removal outside of the designation corridor.</p> <p>Following removal of pines and stumps, the dry dunes will be prepared and hydro-seeded in a suitable grass mix as final vegetation cover. Indigenous buffer planting will be undertaken in a 5.0m wide strip surrounding areas of valued vegetation.</p> <p>Pending final extent of plantation pine removal, a 5.0m wide strip (i.e. two rows of trees) of fast growing exotic species will be planted in selected areas adjacent to the western boundary of the designation to assist with screening. Discussions are ongoing with adjacent landowners in Killalea Place. The certified 'Vegetation to be Retained' plans (SHEETS 19-28) show the proposed buffer planting as do the Planting Plans (SHEETS 29-3928).</p> <p>Exotic trees to be retained are identified on the 'Vegetation to be Retained' plan.</p> <p>Dune landforms are addressed under the Landform section below. Final contouring of disturbed dunes will be incorporated into earthworks to replicate natural dune forms.</p> <p><i>Note: 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.</i></p>
<p>B. STREAMS AND RIPARIAN WORKS REFER TO APPENDIX 1 SHEETS 2, 3, 7, 31, 38-39 AND APPENDIX 5</p>	<p>Condition G.42 b) requires specific lengths of stream mitigation.</p>	<p>This SSEMP area comprises approximately 438 lineal metres of freshwater ecological mitigation being undertaken within and adjacent to new developed ecological mitigation wetlands as follows:</p> <ul style="list-style-type: none"> The linear extent of the three tributaries will sum to approximately 438 lineal metres with at least the central tributary (comprising 148 lineal metres - draining the WWT plant) to have perennial flow and the other two waterways

		<p>(comprising the remainder 290 lineal meters) to have at least standing water.</p> <ul style="list-style-type: none"> • The riparian planting sums to approximately 1.55 hectares (based on an average width of 20.0m either side of the watercourse along the 438 lineal metres of restored watercourse). • The SEV target score (validation of successful mitigation) for these tributaries are 0.52, as calculated in the AEE/evidence. • The riparian vegetation is to be in 20m widths from the wetted bank edge and that riparian vegetation will sit on raised bunds were within the stormwater wetland feature. • The vegetation densities within the first 5.0m (0.44ha) should be at least 1m centers (10,000/ha) • The channel and flood plain structure of the developed waterways must not be straight and artificial in nature (see below). <p>The performance standard for riparian vegetation planting success is the same as that for terrestrial vegetation (i.e. 80% cover, etc), as well as be sufficiently developed to affect the SEV measure.</p> <p><i>Note: As outlined above, the small shortfall of stream length and riparian planting from that outlined in the EMP will be addressed following detailed design in the other SSMP areas, focusing in particular on increased stream length and riparian planting within either: the Drain 7 / Wharemauku Ecological Mitigation Area; the Kakariki / Smithfield Ecological Mitigation Area; the lower Ngarara Stream downstream of Ngarara Road; or the upper Kakariki Stream upstream of the Designation. 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></p>
<p>C. WETLANDS REFER TO APPENDIX 1 SHEETS 2, 3, 31-33, 36-39 AND APPENDIX 5</p>	<p>Condition G.42 b) requires specific areas of wetland mitigation.</p>	<p>Consent conditions allow for the loss of 1.08 ha (10,800m²) of the Otaihangā Southern Wetland (approximately 0.55 ha) and the Otaihangā Northern Wetland (approximately 0.53 ha).</p> <p>Detailed design has resulted in a reduction of wetland vegetation loss as a result of the redesign of the embankment to incorporate the CWB. In total, there will be a loss of approximately 0.45 ha of the Otaihangā Southern Wetland and 0.41 ha of the Otaihangā Northern Wetland (a total of 0.86 ha). <u>This is a change from the NOR and Consent Package with more detail below.</u></p> <p><i>Note: In addition to the detailed design reducing the amount of wetland loss (a reduction of 0.22 ha from the consented area), it also leads to a reduction in the amount of available wetland mitigation sites. This is outlined in Appendix 5. These changes are considered to be minor when all sites are considered in their entirety. See Appendix 5.</i></p> <p>All areas of wetland to be removed will be excavated and replaced immediately with sand as part of the construction methodology. This has been designed to minimise construction effects on adjacent areas of wetland. <u>This is a change from the</u></p>

	<p><u>NOR and Consent Package.</u> Groundwater modelling has confirmed that the excavate and replacement section of embankment will increase the hydraulic conductivity beneath the embankment through the Otaihanga Southern Wetland, compared to that available through the peat. The small modelled increase in hydraulic conductivity of sand as fill in this location is considered likely to offset the surface flow changes resulting from embankment placement – resulting in reduced potential for ecological effects as a result of changed wetland hydrology. On this basis, flow balancing culverts will not be required within the Otaihanga Northern Wetland.</p> <p><i>Note: Pending future modelling to ensure hydrological neutrality, the flow balancing culvert proposed within the Otaihanga Southern Wetland may not be required from an ecological perspective.</i></p> <p>The ongoing monitoring of hydrology within these wetlands will continue through the Groundwater Management Plan, which includes increased monitoring (data-loggers) on piezometers within the ecologically significant wetland in this SSMP as part of construction monitoring. Groundwater modelling has shown that fine tuning of effects can be achieved by adding lower permeability inclusions later if monitoring indicates they are necessary.</p> <p>The new constructed wetland adjacent to the WWTP Drain (including the planted flood storage area south of the WWTP Drain) will be designed to incorporate the required wetland and riparian planting as follows:</p> <ul style="list-style-type: none"> • Wetland planting will comprise predominantly sedges and rushes with scattered enrichment plantings of appropriate primary wetland species such as kahikatea etc. • The new WWTP ecological mitigation wetland (which includes 1.36 ha of wetland planting, including the area of the planted flood storage area to the South of the WWTP Drain. <i>Note: there is a small change from the SSEMP Sites General Location Plan for this area outlined in the Ecological Management Plan</i>) will be designed to function as an ecological wetland (with tributaries as outlined above), while recognising flood storage and landscape and visual mitigation requirements. • Approximately 0.45 ha of the residual area of the Otaihanga Central Wetland to the west of the Expressway will have weeds controlled and planted with a mix of wetland plant species to restore this area to a predominantly sedgeland wetland, including wetland plant species salvaged from within this SSMP area. <p><u><i>Note: 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.</i></u></p>
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D. SALVAGE	Condition G.34 m) sets out the salvage requirements for vegetation in SSMP 5.	<p>As far as practicable, all <i>Baumea</i> and <i>Carex</i> wetland species and logs shall be salvaged, retained and translocated as ecological habitat enhancement in accordance with Appendix 6. Allowance made for a minimum of 1,000 plants to be salvaged from the Otaihanga Southern and Otaihanga Central Wetlands.</p> <p>Salvage of woody debris and hard substrates from stream diversion and excavate and replace works shall also be retained to assist with stream habitat enhancement.</p>
E. VEGETATION TO BE RETAINED REFER TO APPENDIX 1 SHEETS 2, 3, 4, 5, 6 & 19-28 AND APPENDIX 5	<p>Conditions: DC.57 f) i) and DC.42C c) i) and G.34m) – 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>Three sites have been identified within the SSMP where consent conditions require best endeavors to minimise vegetation loss / valued vegetation.</p> <p>Condition G.34 m) sets out the requirements for salvage of indigenous wetland plants in this area, refer Appendix 6.</p>	<p>Identification of vegetation to be retained, including retention of as many significant trees as practicable and areas of regenerating indigenous vegetation and wetlands (see SHEETS 19-23, M2PP-43R-D-DWG-8701 to 8705 for Otaihanga South, Sector 430; and SHEETS 24-28, M2PP-46R-D-DWG 8701 to 8704 for Otaihanga North, Sector 460, were certified by KCDC on 30 December 2013 as part of the ‘Vegetation to be Retained’ plans).</p> <p>Three sites where consent conditions require best endeavours to minimise vegetation loss of Valued Vegetation as follows:</p> <ol style="list-style-type: none"> 1. Southern Otaihanga Wetland; comprising sedge rushland dominated vegetation communities within this approximately 1.4 ha wetland. 2. Northern Otaihanga Wetland, comprising manuka-dominated wetlands with sedgeland within this approximately 1.0 ha wetland. 3. Otaihanga Kanuka Forest, comprising kanuka forest. <p>Indigenous and exotic vegetation to be retained shall be defined by surveyor as part of topographic survey carried out prior to any work commencing in SSMPs 5 & 6 and the extent and boundaries checked and confirmed on site by Project Ecologist / 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>Exposed vulnerable edges of Valued Vegetation to be retained following clearing of adjoining vegetation to be identified by Project Ecologist/Project Landscape Architect and temporary protection measures installed (e.g. wind cloth or similar).</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>Salvage of areas of wetland vegetation and re-use in ecological mitigation areas as per methodology attached as Appendix 6.</p> <p>Large woody debris and any cobble and boulders shall be salvaged and incorporated into the newly formed channel bed prior to livening.</p> <p>Machinery, materials, fuel, and chemicals to be stored, even temporarily, well away, from fenced vegetation to avoid accidental spillage, contamination, and compaction.</p> <p>All areas of indigenous and exotic vegetation to be retained within the Designation shall be photographed and details recorded to form part of baseline information.</p>
<p>F. VEGETATION TO BE CLEARED</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>A large area of the plantation pine between Mazengarb Road and Otaihanga Road will be removed as part of Expressway construction.</p> <p>Vegetation to be mulched and stockpiled shall exclude aggressive weed species that could result in potential ongoing management problems (e.g. blackberry, gorse, <i>Convolvulus</i>, and willows).</p> <p>Stored mulch to be periodically inspected for evidence of aggressive weed species and if present sprayed with appropriate herbicide.</p> <p>The Project Ecologist/Project Landscape Architect shall observe any removal or modification of indigenous vegetation.</p> <p>All kanuka trees to be removed shall be stockpiled with ecological supervision for future use as part of ecological mitigation requirements. Kanuka branches shall be retained for use as slash around edges of the Otaihanga Kanuka Forest being retained (to assist with natural kanuka regeneration as part of buffer planting). Following ground preparation for planting, where practicable kanuka slash shall be incorporated around kanuka plantings in the new planted areas surrounding the Otaihanga Kanuka Forest to assist with natural regeneration. Kanuka-dominated plantings will be undertaken within the kanuka slash consistent with the kanuka vegetation being removed.</p> <p><i>Note: The Project Ecologist shall review the kanuka prior to clearance to determine whether there is any seed present. If seed is present, the kanuka slash shall be placed with ecological supervision in specific areas of kanuka planting to assist with natural regeneration.</i></p>

<p>G. INDIGENOUS FAUNA</p>	<p>Conditions G.34 n) and the EMP (Appendix 3, section 7) - freshwater fish requirements for diversions and culverts in perennial and intermittent waterbodies (including drains). There are no other requirements for rare or threatened fauna within SSMP 5 & 6.</p>	<p>Within this SSMP there are three culverts within perennial or intermittent streams/wetlands that require consideration of fish passage/fish rescue. These culverts are as follows:</p> <ul style="list-style-type: none"> • Culvert 14, Mazengarb Drain • Culvert 15 WWTP; and • Culvert 17, Otaihanga Landfill Drain <p>Immediately prior to any stream reclamation process / diversion / culvert installation, the section of stream to be reclaimed shall be isolated by coffer dams or bunds, and fish present will be safely captured for translocation by accepted methods as provided in the EMP. <i>Note: this includes installation of temporary culvert installation/upgrades as part of the plantation pine removal work.</i></p> <p>Prior to livening of the new stream diversions within the WWTP Wetland and associated culverts, an extensive fish capture and removal will be required in accordance with the EMP. At least 5 working days prior to the livening of the new channel / culvert, a plan for capture and relocation of fish will be finalized and provided to GWRC in accordance with the EMP.</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 / culvert installation.</p>
<p>H. LANDFORMS REFER TO APPENDIX 1 SHEETS 2, 3, 4, 5 & 19-28</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>Both SSMP 5 and 6 include a large extent of relatively unmodified remnant dunes. Several of these dunes will be modified to enable construction of the Expressway, construction yard and to form the new WWTP wetland and in places will need to be re-shaped to help integrate the Expressway and CWB into the surrounding landforms.</p> <p>The significant dune landforms that are to be retained are shown on the 'Vegetation to be Retained' plans (SHEETS 19-28), which have been certified by KCDC.</p> <p>Consideration was given to sand extraction for construction of the Expressway in this area; following investigations where the landscape, ecological and other aspects were considered, extraction of additional sand is proposed to occur in one area east of the Expressway at Otaihanga and an application is being lodged with KCDC in relation to this.</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 the Landscape Specifications (Appendix 4) provides details on topsoil stripping and storage.</p> <p>Project Landscape Architect to be involved in design of final shaping of dune profiles to ensure 'natural' appearance.</p> <p>Where seasonal conditions prevail hydroseeding of exposed sand areas once re-shaping is completed. Alternative treatment to</p>

		<p>exposed sand areas where hydroseeding not feasible (eg organic mulch, straw / brush).</p> <p>All exposed sand areas shall be temporarily protected with straw or proprietary materials during re-shaping to limit erosion from wind and rain and also to minimise dust issues in adjoining properties.</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>I. WETLAND CREATION AND RESTORATION</p> <p>REFER TO APPENDIX 1 SHEETS 2, 3, 5, 31-33, 36-39 AND APPENDIX 5</p>	<p>Condition G. 41 c) ii) 4 - new wetland adjacent to WWTP Drain created to mitigate permanent loss of wetlands (SSMP 5).</p> <p>Weed removal and enhancement of Central Otaihanga Wetland (SSMP 5)</p> <p>Creation and planting of new stormwater treatment wetland south of Waikanae River (SSMP 6)</p>	<p>New WWTP Wetland requires earthworks and removal of topsoil/peat areas and weeds to ensure fluctuating seasonal water levels and support wetland plant species with the following design requirements to ensure requisite ecological functioning:</p> <ul style="list-style-type: none"> • Semi-permanent water levels averaging between 50 - 100 mm deep during summer and up to 400 mm deep during winter. • Shall include the creation of predominantly <i>Carex</i> and <i>Baumea</i> sedgeland with open water and scattered manuka habitat to represent as far as practicable wetland habitat being lost. • Scattered enrichment planting of kahikatea, swamp maire and pukatea. • Shall be integrated with the adjacent areas of riparian habitat and landscape planting on Expressway embankments. • In addition to meeting ecological function, the final design and construction of the WWTP wetland shall consider hydrological, flood storage and landscape mitigation requirements. <p>Restoration of residual area of Central Otaihanga Wetland west of the Expressway requires the following:</p> <ul style="list-style-type: none"> • Weed control of all invasive plants, focusing on blackberry. • Lowering of 100 – 200mm of upper horizon of peat (subject to contamination issues). • The salvage (see Appendix 6) and supplementary planting of <i>Baumea</i> and <i>Carex</i> with open water and scattered manuka habitat on raised areas to represent as far as practicable wetland habitat being lost. • Scattered enrichment planting of kahikatea, swamp maire and pukatea. <p>Development of a new stormwater treatment wetland south of the Waikanae River (SSMP 6), with pond depth and design to be developed in conjunction with Project Hydrologist.</p> <p>Planting to comprise indigenous wetland plant species and shall be integrated with the adjacent areas of landscape planting on Expressway embankments.</p>

		<p>Wetland design and planting shall be supervised through the construction phase (and sign-off) by Project Ecologist, Project Landscape Architect and Project Hydrologist.</p> <p>Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist.</p> <p>Briefings through final design, site layout and prior to final completion shall be undertaken with Regional Council.</p>
<p>J. STREAM CREATION AND RESTORATION</p> <p>REFER TO APPENDIX 1 SHEETS 2, 3, 5, 31-33, 36-39 AND APPENDIX 5</p>	<p>Condition G.42 and G.42C - creation of large areas of new stream within the new WWTP Wetland.</p>	<p>As part of the development of the new WWTP ecological wetland, 438 lineal metres of stream will be restored or created and planted so that it is integrated with the wetland planting as follows:</p> <ul style="list-style-type: none"> • New channel will be formed with associated riparian planting. • The new waterways shall maintain permanent water depth and shall form a 2.0m wide (average), 1.5m deep (average) straight sided water channel with an associated flood plain (as far as can be achieved with flood protection constraints) rising to the upper banks. • New waterways shall have a 'wettered' bank of 1.0m depth prior to a flood plain (5.0m) with a sloping bund. • The riparian vegetation shall be established on both the flood plain and raising bund feature behind (see indicative cross section, SHEET 38). • As far as practicable, new hard substrate material and other salvaged debris (e.g. logs, trunks etc. from peat excavation) shall be incorporated into the stream channel design. • The new channel shall comprise approximately 90% slow run and 10% deep pools (taking into account flood protection requirements). • The new channels shall incorporate a 'natural' meander with gentle curvature. • New stream design shall allow for the incorporation of armouring using larger cobble and boulders if required for flood protection works – e.g. on bunds and confluences. • The design shall maintain fish access within the new stream channels to the WWTP Drain and Mazengarb Stream downstream. <p>The current SEV score of the WWTP Drain is 0.393. The SEV target for the new stream channel is 0.515 and 0.581 for the new diversion channels of the WWTP drain.</p> <p>Sediment monitoring via in-stream logger is required at diversion creation and livening as set out in the EMP. Fish migration movement is required to be monitored post diversion (as set out in the EMP).</p> <p>Stream design and planting shall be supervised through the construction phase (and sign-off) by Project Ecologist, Project Landscape Architect and Project Hydrologist.</p> <p>Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist.</p>

		Briefings through final design, site layout and prior to final completion shall be undertaken with Regional Council.
<p>K. CULVERT INSTALLATION REFER TO APPENDIX 1 SHEETS 2 & 3</p>	<p>The Mazengarb Drain is a tributary of the Waikanae River, a regionally significant stream listed in the Regional Freshwater Plan. The Mazengarb Drain and WWTP Drain have three recorded freshwater fish species present, one of which is an at-risk species (long fin eel). The following permanent culverts require fish passage and associated fish rescue:</p> <ul style="list-style-type: none"> • Culvert 14 - a culvert of 111m length installed in the Mazengarb Drain (SSMP 5) • Culvert 15 – a culvert of 60m length installed the Waste Water Treatment Plant (WWTP) Drain (SSMP 5) • Culvert 16 – a culvert of 60m length in the Otaihanga Southern Wetland (SSMP 5) • Culvert 17 – a culvert of 75m length in the Otaihanga Landfill Drain (SSMP 5) • Culvert 18.1 – a culvert of 10m length in a small drain (Otaihanga Drain) (SSMP 6) <p>Several smaller flow balancing culverts are required in SSMP 6 that do not have fish passage or fish rescue requirements.</p>	<p>Culvert installation shall require the following in all culverts that require fish passage:</p> <ul style="list-style-type: none"> • Culverts shall not constrict the flow such that velocities are increased to more than 0.3m -1.0m per second to ensure fish passage for existing freshwater fish species is retained. • Entrance and exit of culverts shall be below the stream invert, and ensure any hard substrates (head wall, steps etc) do not affect flow and swimming passage. • During construction special attention shall be given to the protection of native fish within any section of stream being culverted. • Where the existing channel is to be lost or drained as part of culvert installation, fish capture and transfer will be required prior to water loss in accordance with the EMP (Appendix 3 of EMP). • All culverts shall be constructed either by installing a diversion around the work area and installing the culvert in the dry channel, or by constructing the culverts adjacent to the stream and then diverting water into the culvert on completion. <p>Culvert installation shall be supervised through the construction phase (and sign-off) by Project Ecologist and Project Hydrologist.</p> <p>Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist.</p> <p>Briefings through final design, site layout and prior to final completion shall be undertaken with Regional Council.</p>
<p>L. MITIGATION PLANTING REFER TO APPENDIX 1 SHEETS 2-7, 29-42 AND APPENDIX 5</p>	<p>Conditions G.42 and DC.57 f) - Landscape and ecological mitigation requirements -</p>	<p>There are six planting types within this SSMP required for landscape and visual and ecological mitigation as follows:</p> <p>Ecological wetland and riparian mix: SHEETS 31-33 and 40-42 illustrate typical planting layout and species composition. Planting around existing wetland areas that are being retained shall include <i>Carex secta</i>, <i>Coprosma propinqua</i> and <i>Coprosma tenuicaulis</i>. Plant grades will be a mix of 0.5 and 1.0 litre (or equivalent) planted at 0.75m centres. Also refer Enrichment Planting detail. In areas subject to enrichment planting (which will occur in the following planting season after mass planting), plant grades shall be PB 18 or equivalent.</p> <p>Stormwater wetland species mix: SHEETS 31-33 and 38-42 illustrate proposed layout and species mix. Plant grades will be a mix of 0.5 and 1.0 litre (or equivalent) planted at 0.75m centres.</p> <p>Buffer planting around Valued Vegetation to be retained: SHEETS 29-33 illustrate typical planting layout and species composition. Kanuka slash salvaged from areas of kanuka removed from this and possibly other sectors will be used</p>

		<p>around immediate edges as temporary protection. This will be supplemented with planting of a kanuka-dominated species mix (60%). Other species to be incorporated in mix include <i>Austroderia toetoe</i>, <i>Phormium tenax</i>, <i>Myrsine australis</i> and <i>Aristotelia serrata</i>. Plant grades will be a mix of 0.5 and 1.0 litre grades planted at 1.0m centres.</p> <p>Massed planting: SHEETS 29-42 illustrate typical planting layout and species composition. Massed planting in this sector comprises two types- kanuka dominated on the drier sites, especially on those that are east-facing and a more general mix that is used extensively on the embankments along the route. Plant grades will be a mix of 0.5 and 1.0 litre grades planted at 1.0m centres. In areas subject to enrichment planting (which will occur in the following planting season after mass planting), plant grades shall be PB 18 or equivalent.</p> <p>Boundary planting, Killalea Place: SHEETS 24 - 28 illustrate the 5.0m strips of fast-growing exotic tree species along the boundaries of rural lifestyle properties adjoining the Expressway. This proposed planting is also shown on the 'Vegetation to be Retained' plans (SHEETS 19-22), which have been certified by KCDC.</p> <p>Final species selection of this planting will be dependent on the outcome of consultation with adjoining property owners.</p> <p>Trees and grass: SHEETS 36-39 and SHEET 42 illustrate the areas of amenity and shelter tree planting in SSMPs 5 and 6.</p> <p>Landscape and ecological success mitigation planting requirements and approvals are covered in Section V of this SSMP.</p>
<p>M. PLANTING METHODS AND SPECIFICATIONS REFER TO APPENDIX 4</p>	<p>DC 57 f) and G.42C c) - planting methods and specifications Refer: Landscape Management Plan, sections 8.41 – 8.59 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)</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. <i>Note: organic mulch shall not be used within the areas of wetland and stormwater treatment that are subject to temporary or permanent inundation. For these areas, alternative plant protection techniques will be used (e.g. staking and proprietary matting mechanisms).</i></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</p>

		<p>where aggressive pest plants are detected until these are removed or sufficiently controlled.</p> <p>Plant supplier to confirm all plants are well hardened off prior to planting.</p> <p>Species composition shall be in accordance with species percentages.</p> <p>All indigenous plant set out and groupings to be random, but reflecting natural assemblages as directed by Project Landscape and Ecologist for the relevant mitigation requirements.</p> <p>Plant selection shall take into account engineering and service constraints.</p> <p>All planted areas shall be temporarily fenced to assist with plant protection.</p> <p>Enrichment planting shall be undertaken in year 2 as directed by the Project Ecologist and Project Landscape Architect – and in response to mitigation success requirements as set out in the EMP and LMP.</p>
<p>N. 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</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) and as directed by the Project Landscape Architect and Project Ecologist in relation to ecological and landscape mitigation areas.</p>
<p>O. GROUND PREPARATION REFER TO APPENDIX 4</p>	<p>Condition DC.57 f) and G.42C c) Refer: Landscape Management Plan, sections 8.35 to 8.40 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)</p>	<p>All areas to be planted shall be sprayed with a certified and 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> <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.</p>
<p>P. MULCHING REFER TO APPENDIX 4</p>	<p>Condition DC.57 f) and G.42C c). Refer: Landscape Management Plan, sections 8.41 – 8.59 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)</p>	<p>100mm of organic mulch shall be placed lightly over all areas to be planted (with the exception of temporarily or permanently inundated areas as outlined above).</p> <p>Mulch shall be left for 2 weeks to settle prior to commencement of any planting.</p>
<p>Q. PLANT SUPPLY REFER TO APPENDIX 4</p>	<p>Condition DC.57 f) and G.42C c). Refer: Landscape Management Plan, sections 8.41 – 8.59 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction.</p>	<p>All indigenous plants shall be sourced from Manawatu Ecological Region, with a focus on the Foxton Ecological District.</p> <p>All plants shall be hardened off prior to planting.</p>

	Ecological Management Plan sections 3.9 and 4 (Attachment 1)	
R. PLANTING PROGRAMME / STAGING	Condition DC.57 f) and G.42C c). Refer: Landscape Management Plan, sections 8.41 – 8.59 and Attachment 2: Principles, Methods and Procedures: Pre-construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)	<p>Planting shall be staged according to completion of construction works.</p> <p>No planting shall be carried out in areas where there is a risk of damage from adjoining construction activities.</p> <p>Construction Manager shall confirm areas where construction is completed and area is ready for planting.</p> <p>Planting shall be completed only within June-August planting window unless otherwise approved by Project Landscape Architect.</p> <p>All areas to be planted shall be photographed and details recorded to form part of baseline information.</p>
S. PLANT MAINTENANCE REFER TO APPENDIX 4	Condition DC.57 f) and G.42C c). Refer: Landscape Management Plan, sections 8.60 – 8.62 and Attachment 2: Principles, Methods and Procedures: Post-Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)	<p>All planted areas shall be photographed on completion of planting and details recorded to be included as part of baseline information.</p> <p>Wetland and riparian planting shall be maintained for 4 years.</p> <p>Terrestrial planting, both indigenous and exotic shall be maintained for 3 years.</p> <p>Planting shall be maintained according to the maintenance plan as set out in the Landscape specifications (Appendix 4).</p> <p>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:</p> <ul style="list-style-type: none"> • 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. <p>Monitoring reports shall include dates of visits, condition of vegetation, condition of fencing, issues arising, actions required, together with photographs.</p> <p>Monitoring reports on completion shall be provided to KCDC Landscape Reviewer.</p> <p>Monitoring reports shall cease to be prepared for those areas where the performance standards have been met ahead of the maintenance period.</p>

<p>T. PEST PLANT MANAGEMENT REFER TO APPENDIX 4</p>	<p>DC.57 f), G.42C c) and G.43 d) – control of pest plants.</p>	<p>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).</p>
<p>U. PEST ANIMAL MANAGEMENT REFER TO APPENDIX 4</p>	<p>DC.57 f), G.42C c) and G.43 d) – control of pest animals.</p>	<p>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).</p>
<p>V. PROTECTION REQUIREMENTS REFER TO APPENDIX 4</p>	<p>Condition DC.57 c) and G.43 d) – temporary and permanent protection.</p>	<p>Temporary fences shall be erected as part of the protection of valued vegetation to be retained.</p> <p>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 as outlined in the EMP and LMP.</p>
<p>W. LANDSCAPE AND ECOLOGICAL SUCCESS MONITORING – POST CONSTRUCTION</p>	<p>G.40, G.42C c), G.42A 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 wetland and riparian planting.</p> <p>Consistent with the EMP and LMP, monitoring of the success of wetland and stream formation will be undertaken in coordination by the Project Ecologist, Landscape Architect, stormwater engineers and project hydrologist 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. 57 c) and G.42C e) - at the completion of planting, each area of ecological mitigation will 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 landscape and ecological mitigation planting, success measures are as follows:</p> <ul style="list-style-type: none"> • 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. • The total area of wetland, terrestrial and 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). • Invasive terrestrial weed species successfully controlled. • Natural colonisation by other non-planted indigenous species. <p>Shelterbelts and amenity rural tree planting shall require 100% plant survival, with 100% of trees in full leaf at the time of Final Completion.</p> <p>In-stream surveys within the representative sections of the new constructed stream channels within the WWTP Wetland 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). The target Stream Ecological Values (SEV) for mitigation riparian planting are 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

		<p>success measurement in regard to the waterway diversions shall be required.</p> <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 will require monitoring and potentially additional works to result in the anticipated aquatic biodiversity gains.</p> <p>As part of the SEV assessment, function shall be assessed via the SEV process which includes presence/absence of macro-invertebrates and fish as well as a range of physical habitat characteristics (including the success of the riparian revegetation).</p> <p>A Physical Habitat Assessment (PHA) shall be undertaken in accordance with Harding et al 2009 and the results compared to the original PHA scores and to a reference site of good quality.</p> <p>The new stream channels within the WWTP Wetland identified in SHEETS 2, 3, and 31-33 shall meet the forecast SEV potential between 0.515 and 0.581 outlined in the EMP (Appendix 4), but at least exceed the current SEV condition (0.393).</p>
X. ADAPTIVE MANAGEMENT – POST CONSTRUCTION	Condition G.40 – adaptive management and condition DC.57 c)	<p>In the event that mitigation planting does not achieve the objectives within the consent timeframes, the Project Ecologist and Project Landscape Architect will prepare a report, including recommendations for remedial work or additional mitigation, and ongoing monitoring and reporting through the Adaptive Management process.</p>

6. REFERENCES	<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), • Assessment of Hydrology and Stormwater Effects, Technical Report 22.
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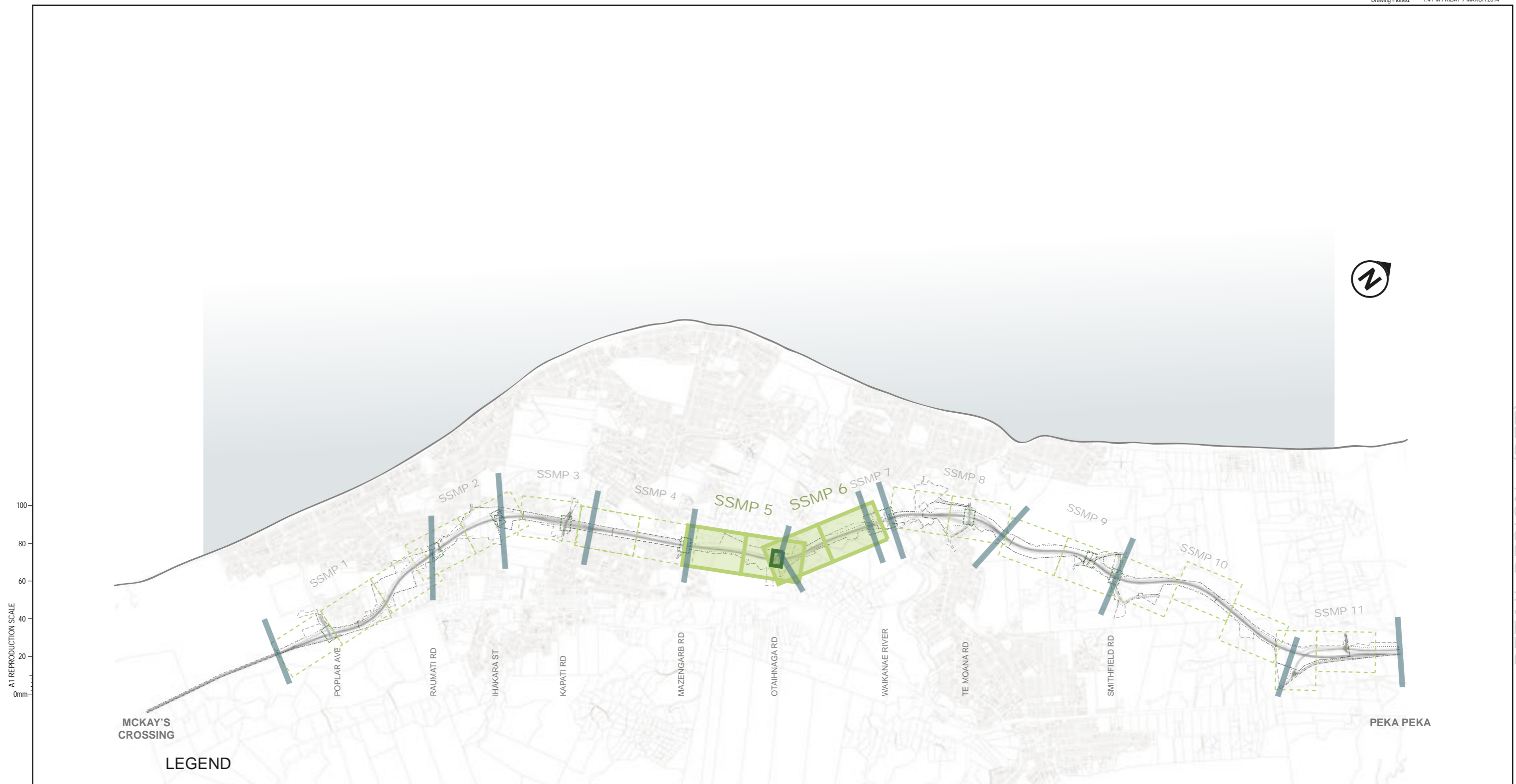
Appendix 1: DRAWING SET

Site Specific Management Plan 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

M2PP-121-D-MPL-0006

29 JANUARY 2014



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

LEGEND

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

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Approved For Construction*
1:25,000	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:50,000	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 5 & 6 - SHEET 1
LOCATION PLAN

Drawing No: M2PP-121-D-GPH-8056

Rev. B



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
	W-Barrier		Culvert Headwall		Grass		Planted Indigenous Terrestrial Habitat		Concrete CWB
	Barrier Transition		Retaining Wall		Massed Planting with Tree Enrichment		Planted Indigenous Wetland Habitat		Existing Access Track or CWB
	Concrete Traffic Barrier		Bridge Deck		Wetland / Riparian Planting		Stream Mitigation / Riparian Habitat		
	Culvert		Bridge Abutment		Native Tree Planting		Existing Water Body		
	Swale		Bridge Piers		Exotic Tree Planting				
	Planted Swale								

OTAIHANGA WETLANDS SEMP FOCUS AREA	
Stream Mitigation	438 φm
Riparian Planting	1.55 ha
Wetland Habitat	1.8 ha



Original Scale (A1)	Design	Approved For Construction?
20.12.13	Drawn	
Reduced Scale (A3)	Design Checker	Date
19.09.13	Checked	
No.	Revision	By
		Chk
		Chk.V
		Appd
		Date
		2014



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

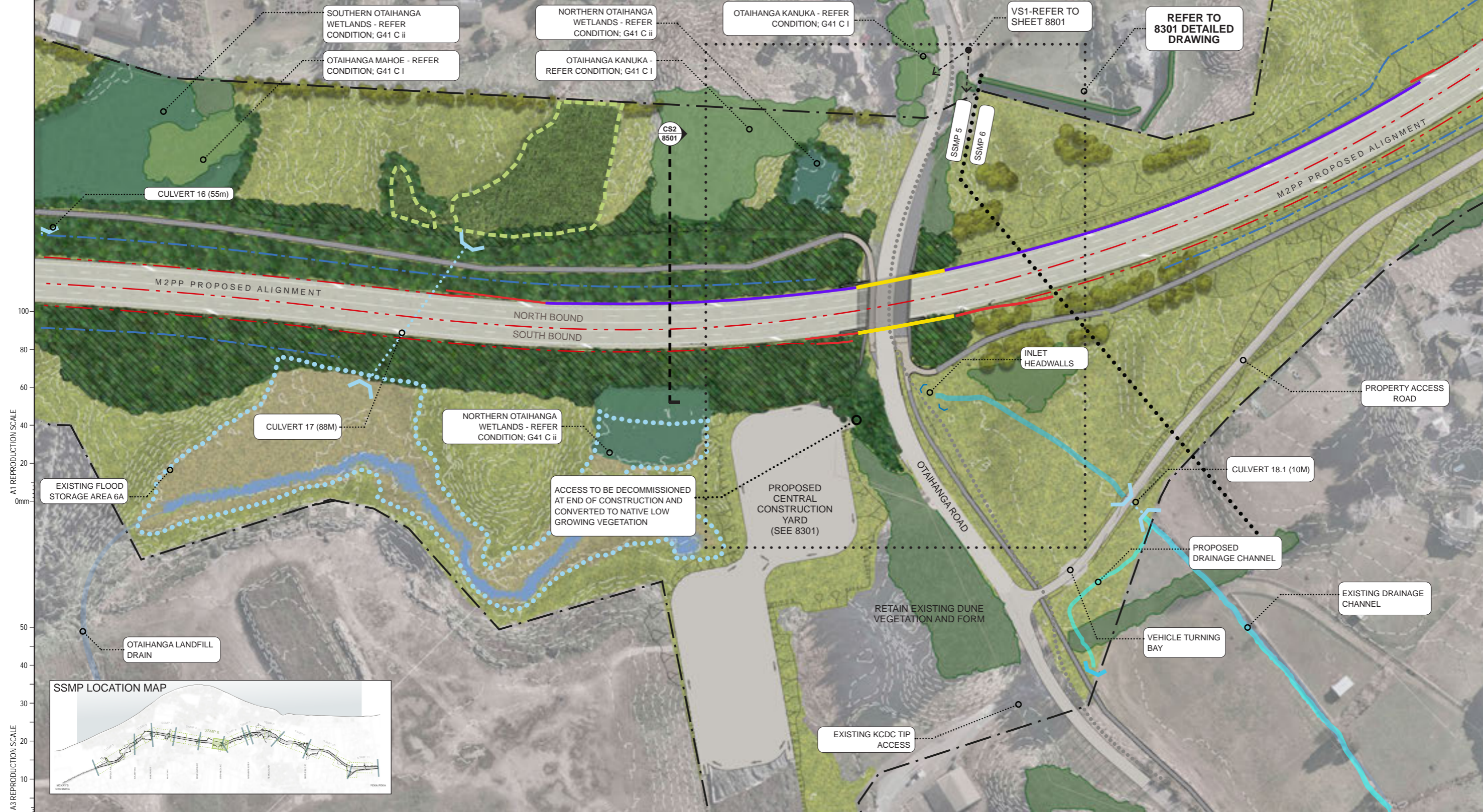
Title: SSMP 5 & 6 - SHEET 2 MASTERPLAN

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

DETAIL DESIGN (DET)

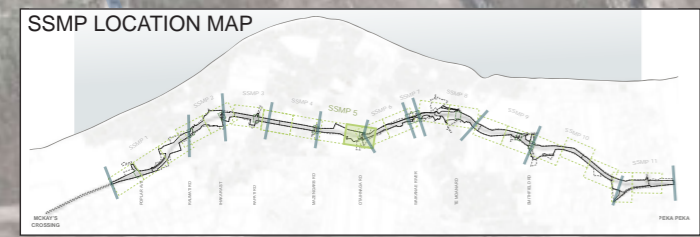


General	Urban Design	Landscape	Ecology	CWB
- - - - -	Concrete Bridge Barrier	Individual Retained Trees	Retained Valued Terrestrial Vegetation	Loose Chip CWB
- - - - -	Concrete Noise Wall	Retained Vegetation	Retained Valued Wetland Vegetation	Chip Seal CWB
- - - - -	Culvert Headwall	Grass	Planted Indigenous Terrestrial Habitat	Concrete CWB
- - - - -	Retaining Wall	Massed Planting	Planted Indigenous Wetland Habitat	Existing Access Track or CWB
- - - - -	Bridge Deck	with Tree Enrichment	Stream Mitigation / Riparian Habitat	
- - - - -	Bridge Abutment	Wetland / Riparian Planting	Existing Water Body	
- - - - -	Bridge Piers	Native Tree Planting		
- - - - -		Exotic Tree Planting		



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Drawn	Approved For Construction?
1:1000			
Reduced Scale (A3)	Design Verifier		Date
1:2000	Design Check		

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

Title: SSMP 5 & 6 - SHEET 3
MASTERPLAN

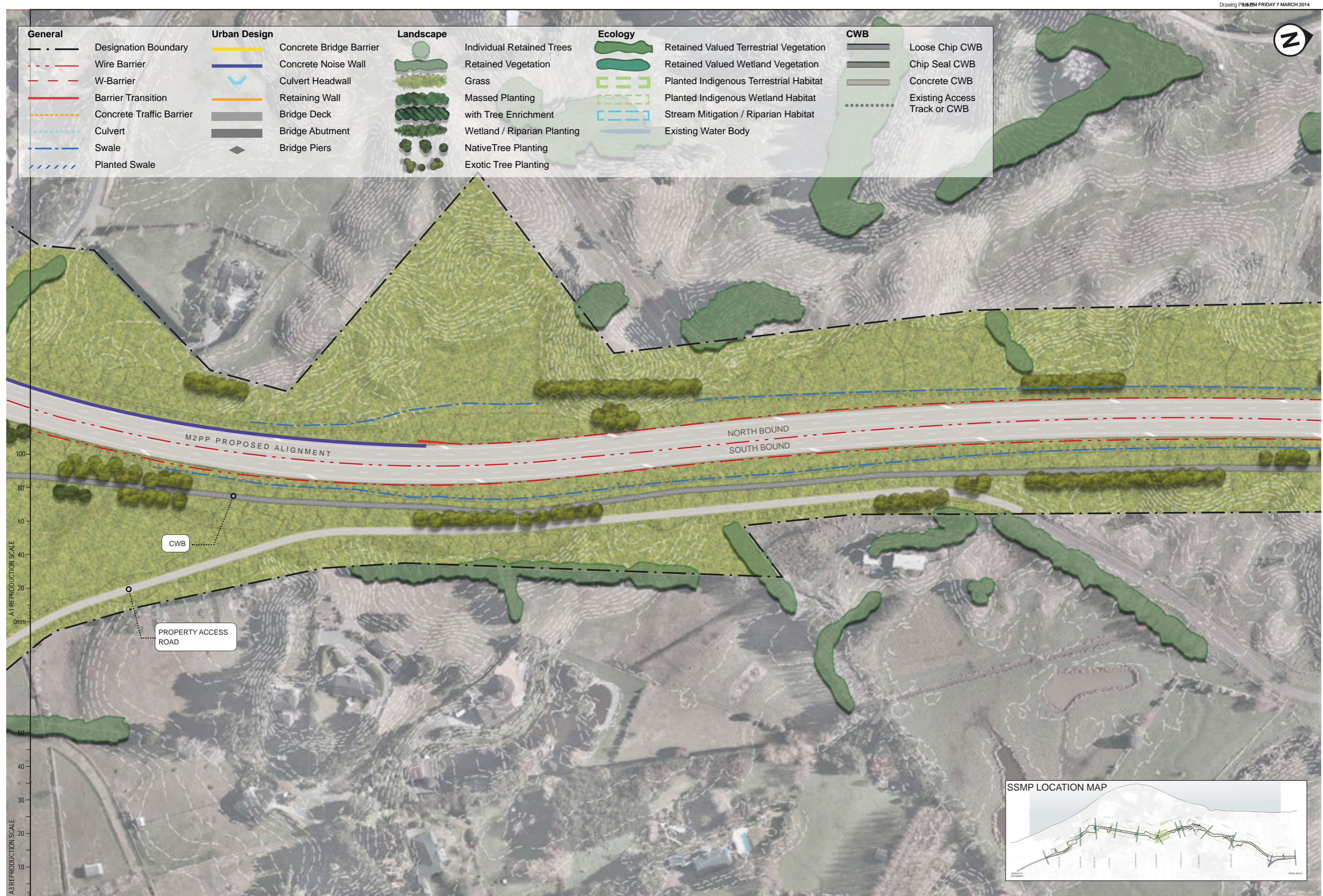
Drawing No.: M2PP-121-D-GPH-8102

Rev: B

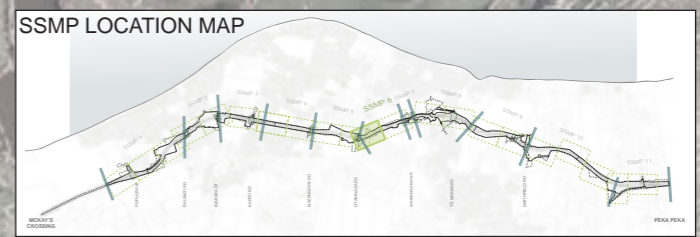
DETAIL DESIGN (DET)



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
- - - - - W-Barrier	Culvert Headwall	Grass	Planted Indigenous Terrestrial Habitat	Concrete CWB
- - - - - Barrier Transition	Retaining Wall	Massed Planting	Planted Indigenous Wetland Habitat	Existing Access Track or CWB
- - - - - Concrete Traffic Barrier	Bridge Deck	Massed Planting with Tree Enrichment	Stream Mitigation / Riparian Habitat	
- - - - - Culvert	Bridge Abutment	Wetland / Riparian Planting	Existing Water Body	
- - - - - Swale	Bridge Piers	Native Tree Planting		
- - - - - Planted Swale		Exotic Tree Planting		



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design Drawn	Approved For Construction?
Reduced Scale (A3)	Design Verified	Date



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

Title: SSMP 6 - SHEET 4 MASTERPLAN

Drawing No.: M2PP-121-D-GPH-8103
Rev: B

DETAIL DESIGN (DET)
Document No.

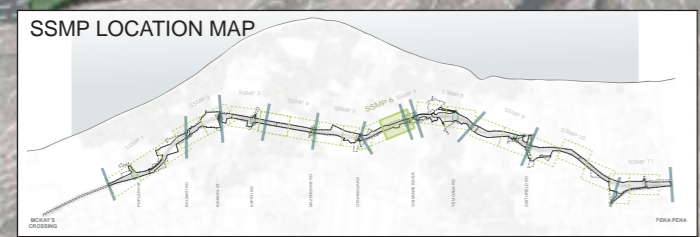


General	Urban Design	Landscape	Ecology	CWB
--- Designation Boundary	Concrete Bridge Barrier	Individual Retained Trees	Retained Valued Terrestrial Vegetation	Loose Chip CWB
- - - Wire Barrier	Concrete Noise Wall	Retained Vegetation	Retained Valued Wetland Vegetation	Chip Seal CWB
- - - W-Barrier	Culvert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



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Drawn	Checked	Approved For Construction?
1:1000				
Reduced Scale (A3)	Design	Checked		Date
1:2000				



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

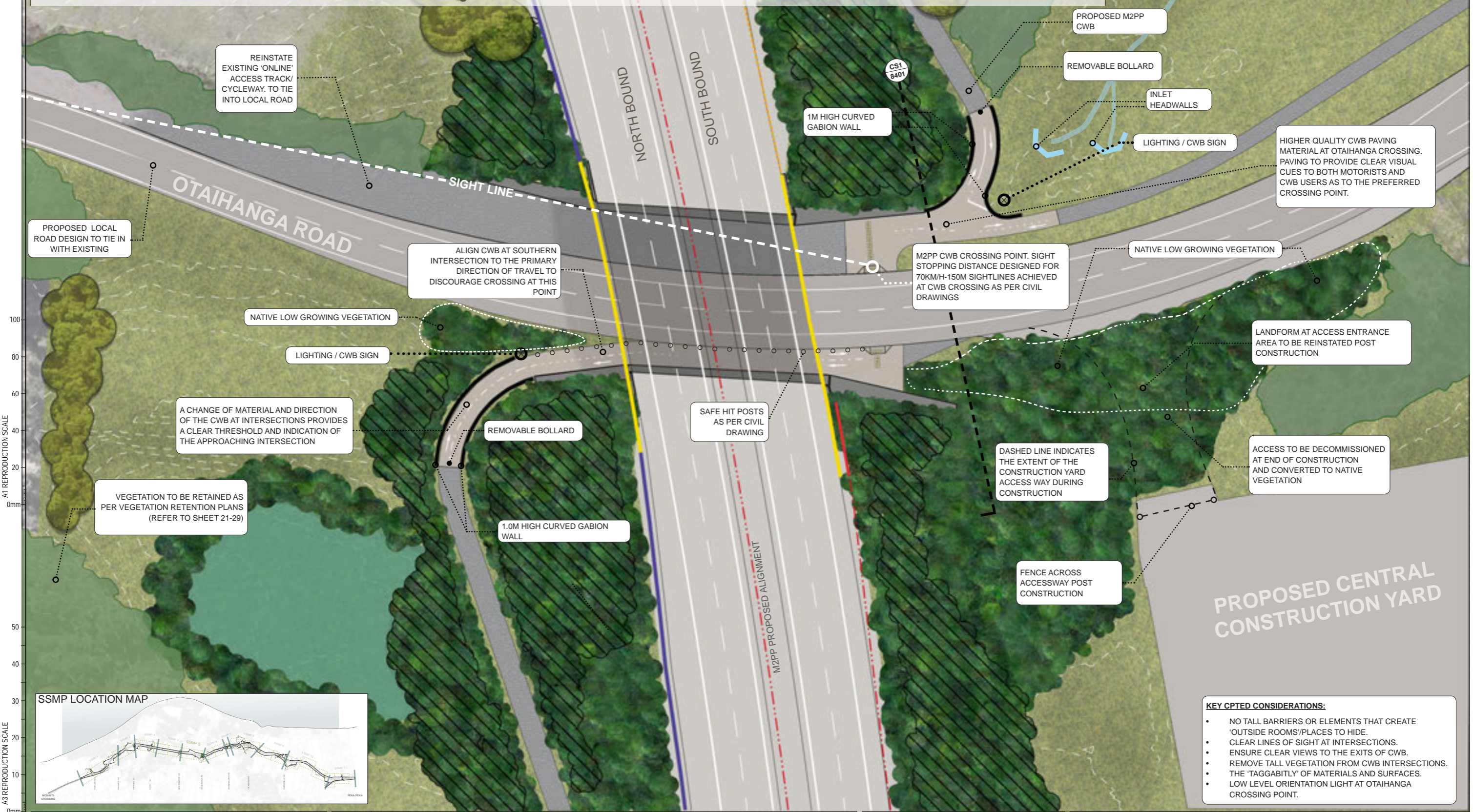
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Drawing No: M2PP-121-D-GPH-8104

Rev: B

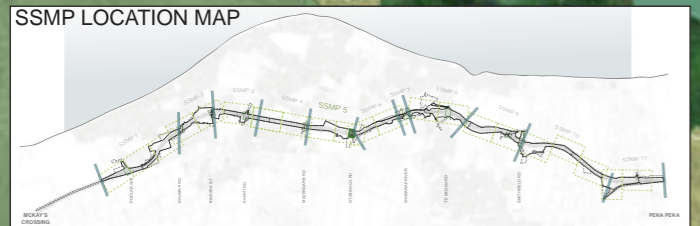
DETAIL DESIGN (DET)

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
- - - W-Barrier	Culvert Headwall	Grass	Planted Indigenous Terrestrial Habitat	Concrete CWB
Barrier Transition	Retaining Wall	Massed Planting	Planted Indigenous Wetland Habitat	Existing Access Track or CWB
Concrete Traffic Barrier	Bridge Deck	with Tree Enrichment	Stream Mitigation / Riparian Habitat	
Culvert	Bridge Abutment	Wetland / Riparian Planting	Existing Water Body	
Swale	Bridge Piers	Native Tree Planting		
Planted Swale		Exotic Tree Planting		



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50



No.	Revision	By	Chk	Chk.V	Appd	Date	Original Scale (A1)	Design	Drawn	Approved For Construction
C						03-02-14	1:250	Design		
B						20-12-13	Reduced Scale (A3)	Design		
A						19-09-13	1:500	Design		

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

Title: SSMP 5 & 6 - SHEET 6
BRIDGE MASTERPLAN

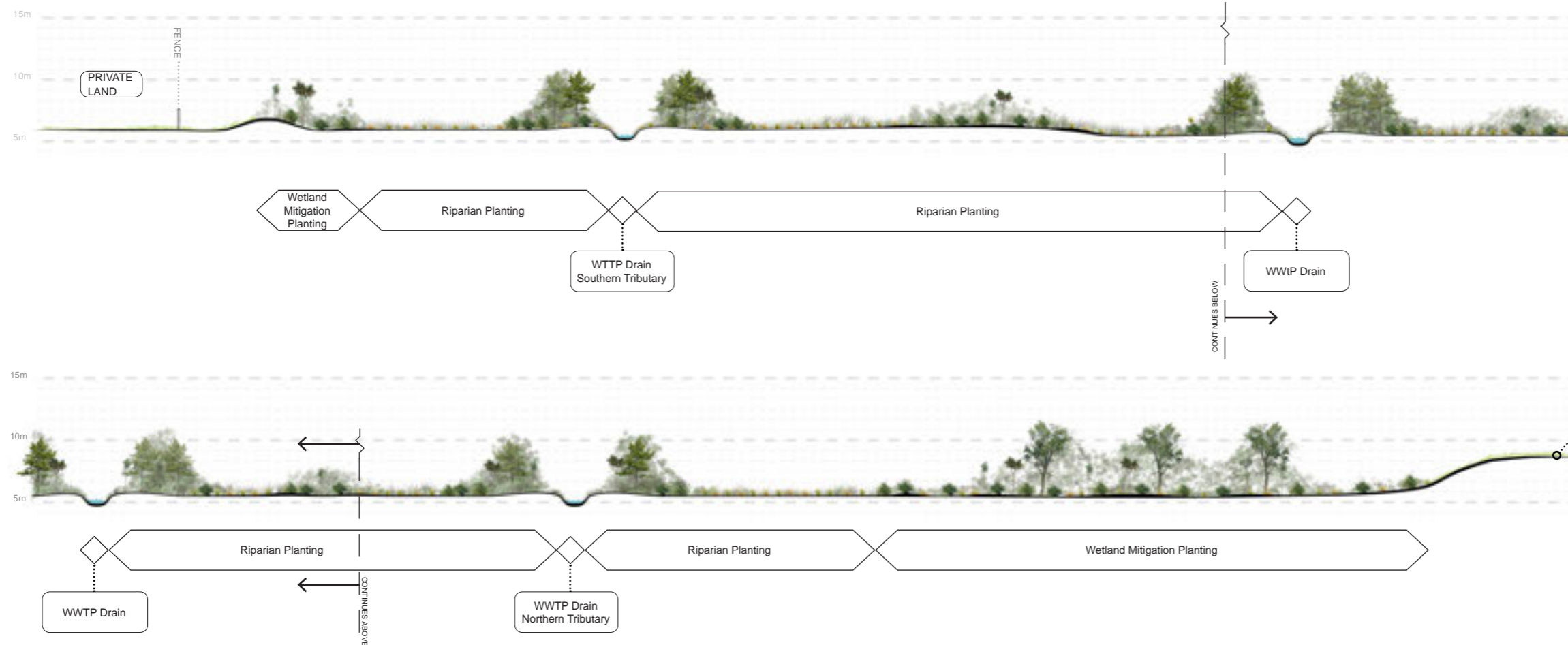
Drawing No.: M2PP-121-D-GPH-8301
Rev: C

- KEY CPTED CONSIDERATIONS:**
- NO TALL BARRIERS OR ELEMENTS THAT CREATE 'OUTSIDE ROOMS'/PLACES TO HIDE.
 - CLEAR LINES OF SIGHT AT INTERSECTIONS.
 - ENSURE CLEAR VIEWS TO THE EXITS OF CWB.
 - REMOVE TALL VEGETATION FROM CWB INTERSECTIONS.
 - THE 'TAGGABILITY' OF MATERIALS AND SURFACES.
 - LOW LEVEL ORIENTATION LIGHT AT OTAIHANGA CROSSING POINT.

DETAIL DESIGN (DET)

CS1 - CROSS SECTION-WETLAND 6

SCALE - 1:250@A1 - 1:500@A3 FACING NORTH



SSMP LOCATION MAP-M2PP-121-D-GPH-8056



SITE CONTEXT PLAN-M2PP-121-D-GPH-8101

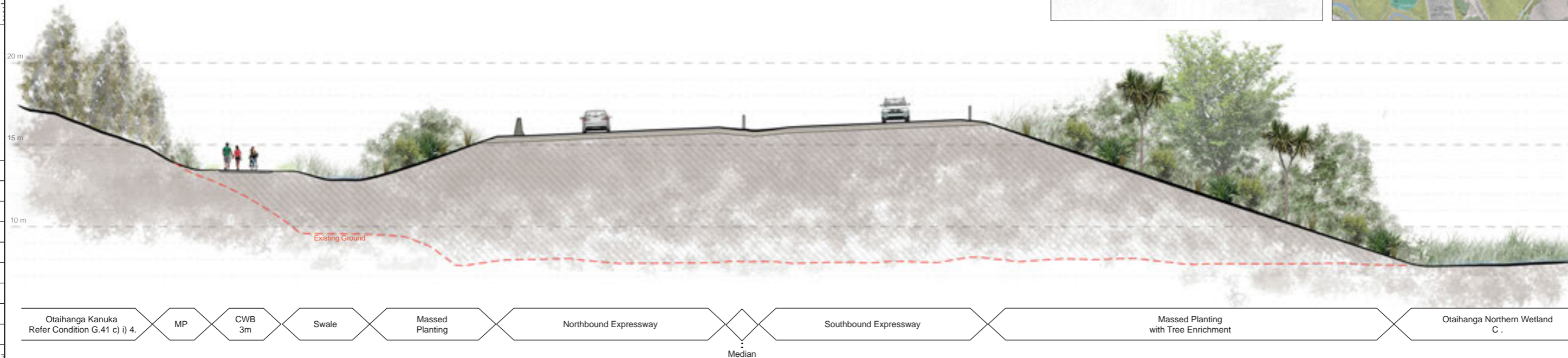


CS2 - CROSS SECTION-THROUGH EXPRESSWAY

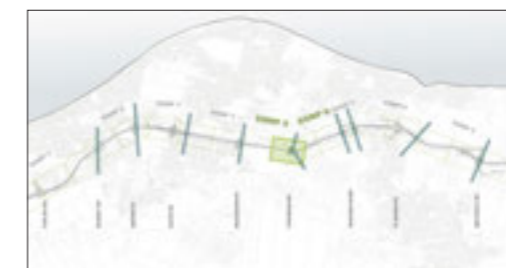
SCALE - 1:100@A1 - 1:200@A3 FACING NORTH

A1 REPRODUCTION SCALE

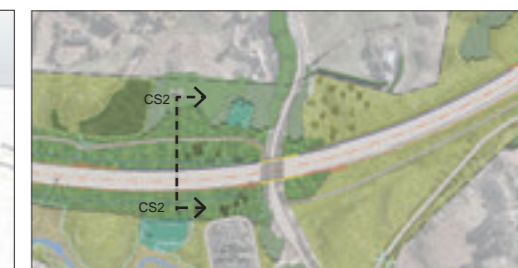
A3 REPRODUCTION SCALE



SSMP LOCATION MAP-M2PP-121-D-GPH-8056



SITE CONTEXT PLAN-M2PP-121-D-GPH-8102



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Drawn	Approved For Construction?
AS SHOWN	-	-	-
Reduced Scale (A3)	Design Verifier		Date
AS SHOWN	Design Check		



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

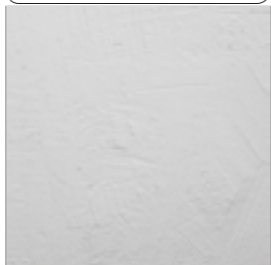
Title: SSMP 5 & 6 - SHEET 7 ROAD SECTIONS

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

CS1 - CROSS SECTIONAL ELEVATION-OTAIHANGA RD

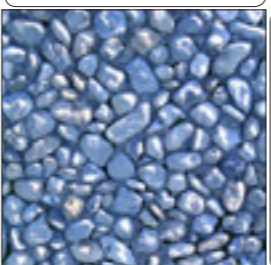
FACING WEST SCALE - 1:200@A3

MATERIAL A



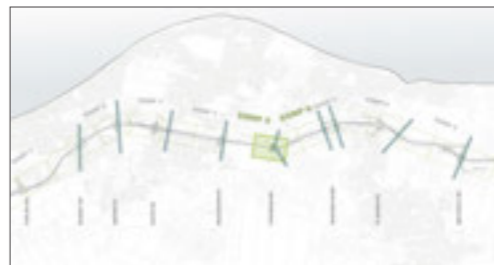
BRIDGE BARRIER:
PRECAST
CONCRETE WITH
2 COATS WHITE
KIEH COATING &
ANTI GRAFFITI
PROTECTION-
PENDING SAMPLE
PANEL APPROVAL

MATERIAL B

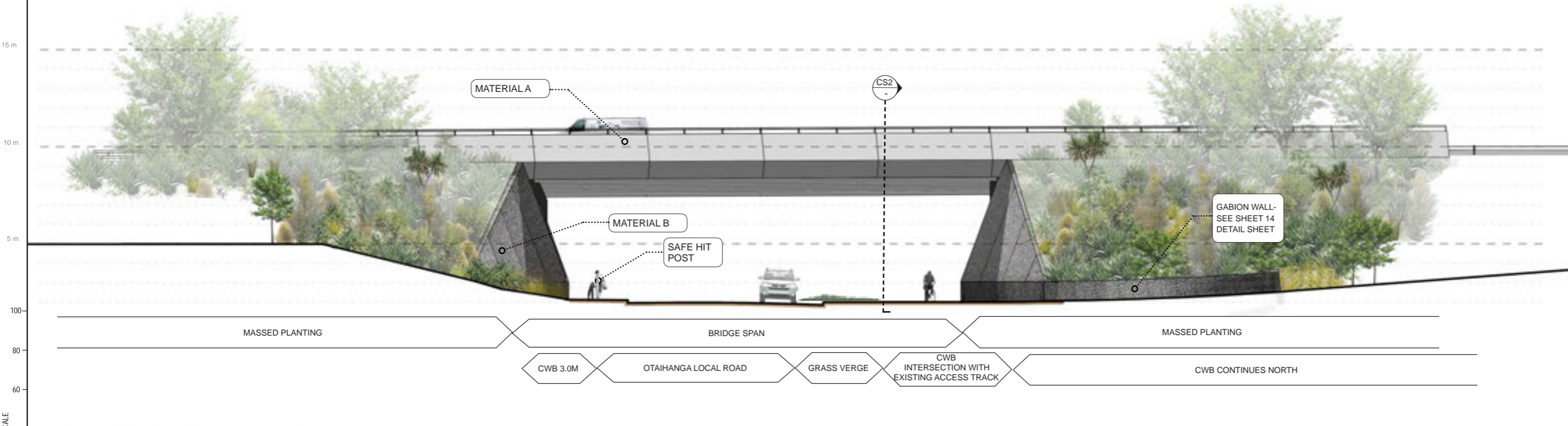


BRIDGE ABUTMENT:
PRECAST
CONCRETE PANEL
WITH INLAYED OTAKI
PEB 40MM STONE
AND MATT GRAFFITI
PROTECTION-
PENDING SAMPLE
PANEL APPROVAL

SSMP LOCATION MAP-M2PP-121-D-GPH-8056

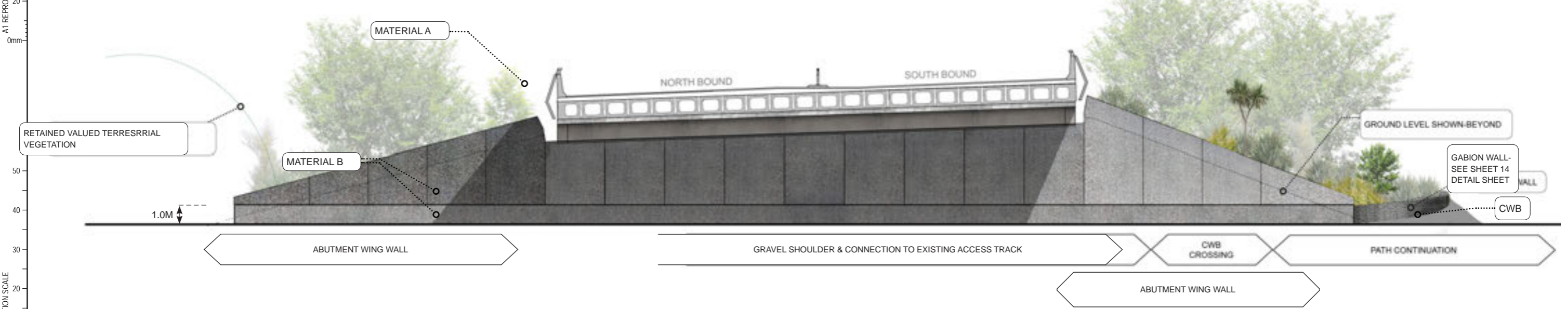


SITE CONTEXT PLAN-M2PP-121-D-GPH-8301



CS2-CROSS SECTIONAL ELEVATION-ABUTMENT

FACING NORTH SCALE=1:200@A3 1:200@A3



FOR CERTIFICATION		AS SHOWN		Original Scale (A1)		Design		Approved For Construction	
PRELIMINARY ISSUE		20.12.13		20.12.13		Drawn		Date	
Revision		19.09.13		Reduced Scale (A3)		Design Check			
No.	By	Chk	Chk.V	Appd	DMS	SHOWN	* Refer to Revision 1 for Original Signature		



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

Title: SSMP 5 & 6 - SHEET 8 LONG SECTIONS

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

Rev: B

DETAIL DESIGN (DET)

VS1-VISUALISATION-OTAIHANGA OVERPASS-LOOKING EAST



PROPOSED SITUATION AFTER 10 YEARS

A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

DETAIL DESIGN (DET)

SSMP LOCATION MAP-M2PP-121-D-GPH-8056



SITE CONTEXT PLAN-M2PP-121-D-GPH-8301



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature



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

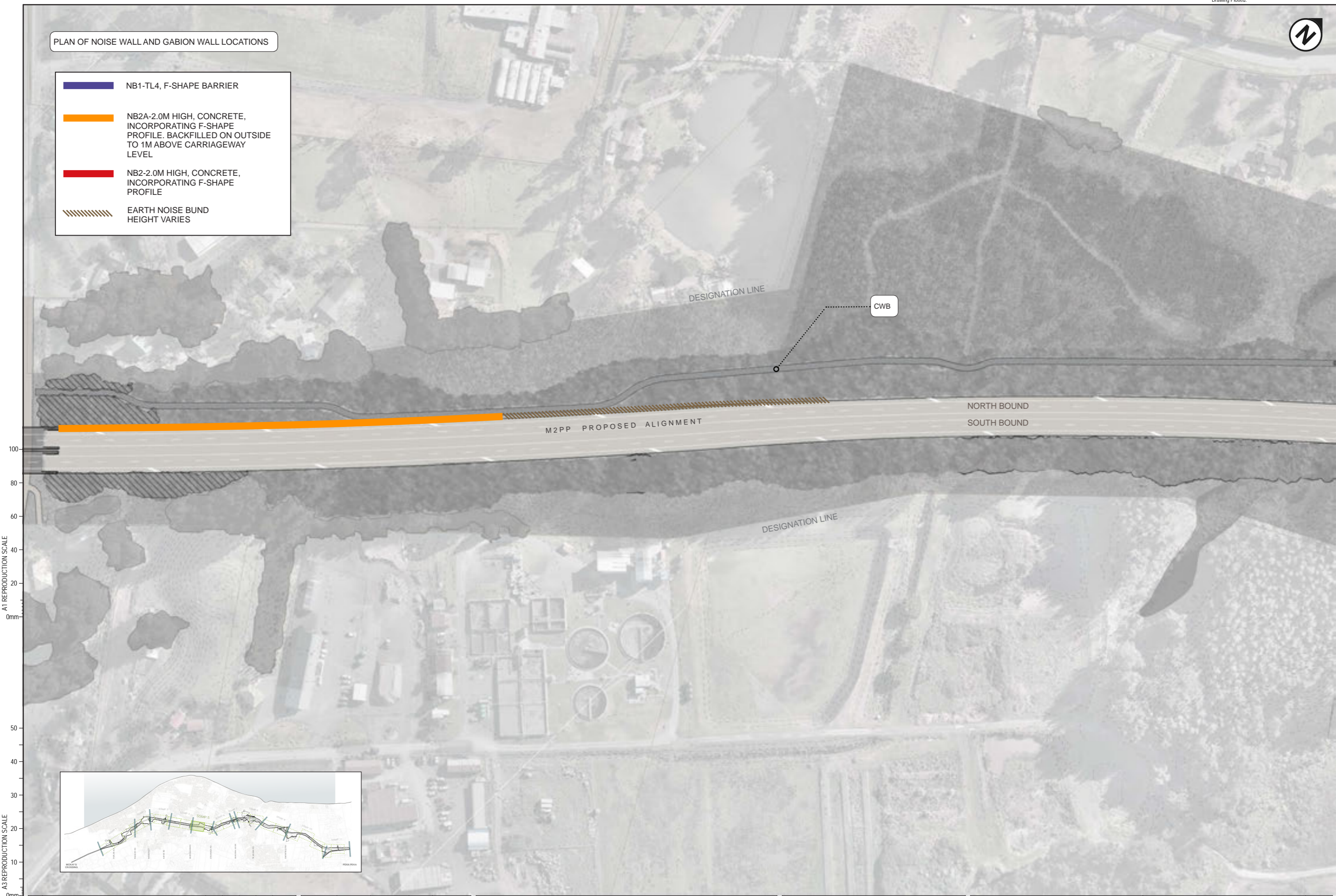
Title: SSMP 5 & 6 - SHEET 9
BRIDGE VIEW

Drawing No: M2PP-121-D-GPH-8801
Rev: B



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
- EARTH NOISE BUND HEIGHT VARIES



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
C	POST-CERTIFICATION ALTERATION FOR CERTIFICATION	MP				-
B	PRELIMINARY ISSUE					20.12.13
A						19.09.13

Original Scale (A1)	Design Drawn	Approved For Construction*
Reduced Scale (A3)	Design Verifier	Date
	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 5 & 6 - SHEET 10
NOISE WALL LOCATIONS

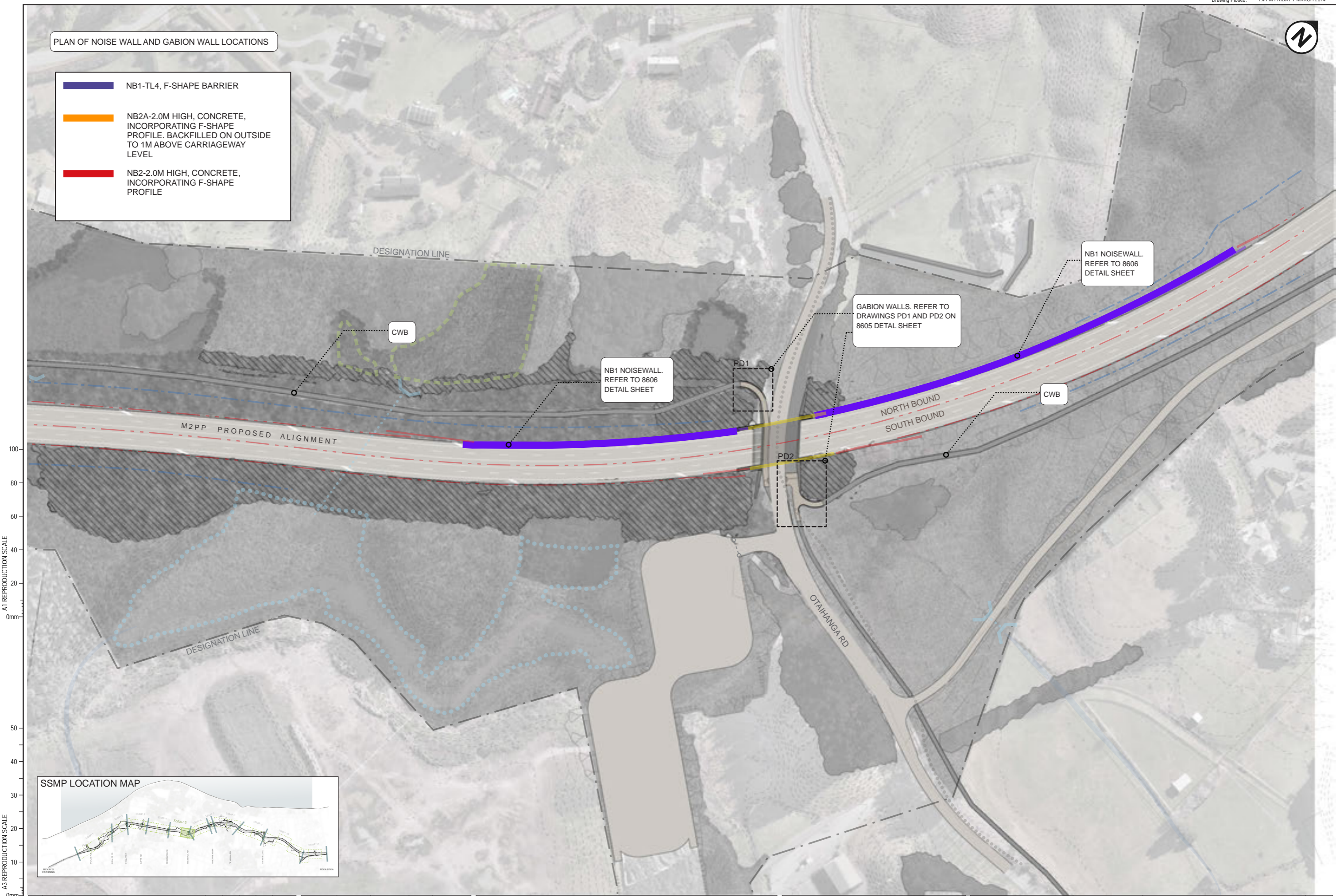
Drawing No: M2PP-121-D-GPH-8601

Rev. B



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



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE



DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Approved For Construction
1:25	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:50	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 5 & 6 - SHEET 11
NOISE WALL LOCATIONS

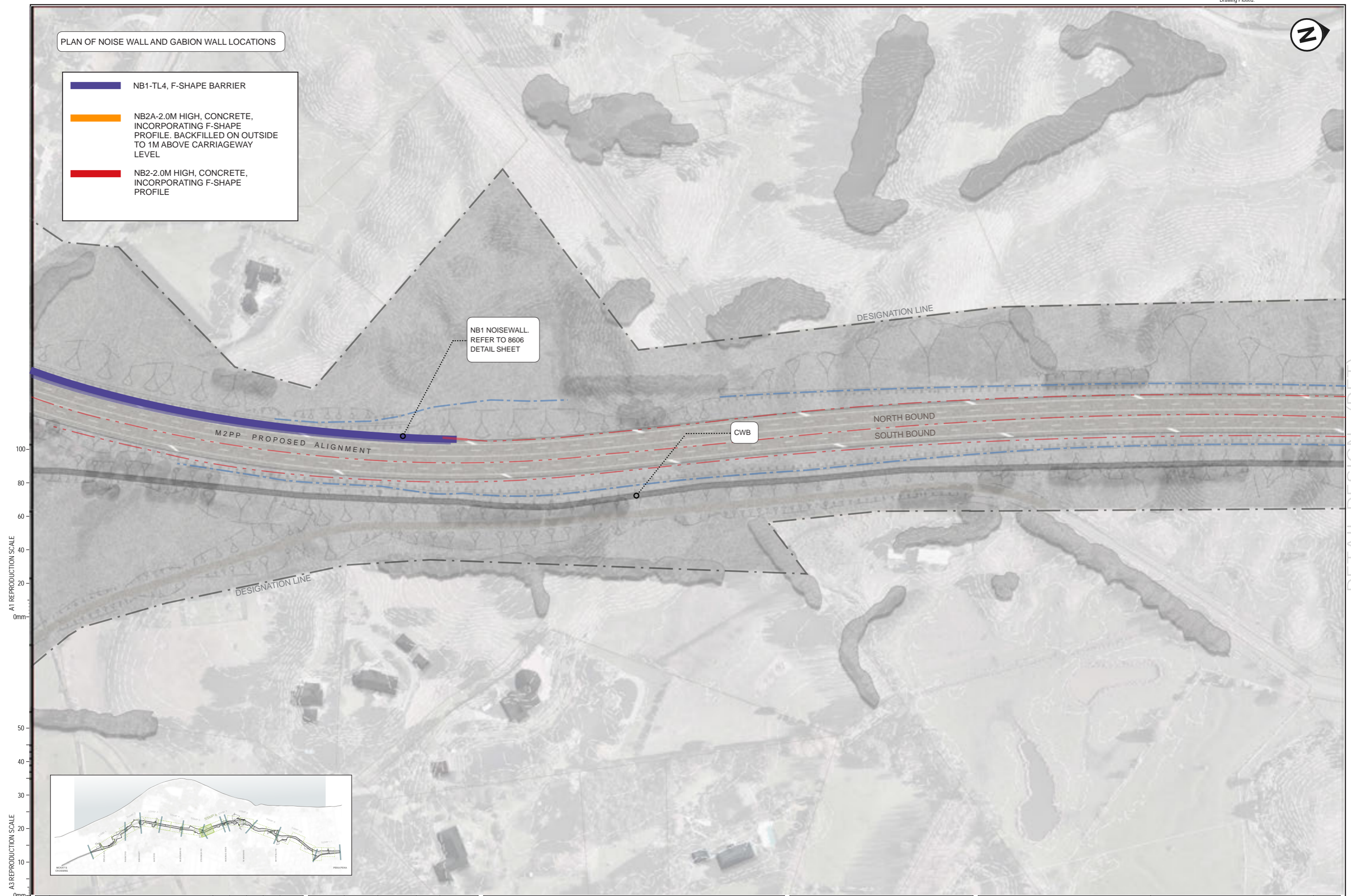
Drawing No: M2PP-121-D-GPH-8602

Rev: B



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



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50



DETAIL DESIGN (DET)

B	FOR CERTIFICATION				20.12.13
A	PRELIMINARY ISSUE				19.09.13
No.	Revision	By	Chk	Chk.V	Appd

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



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




Title: SSMP 5 & 6 - SHEET 12
NOISE WALL LOCATIONS

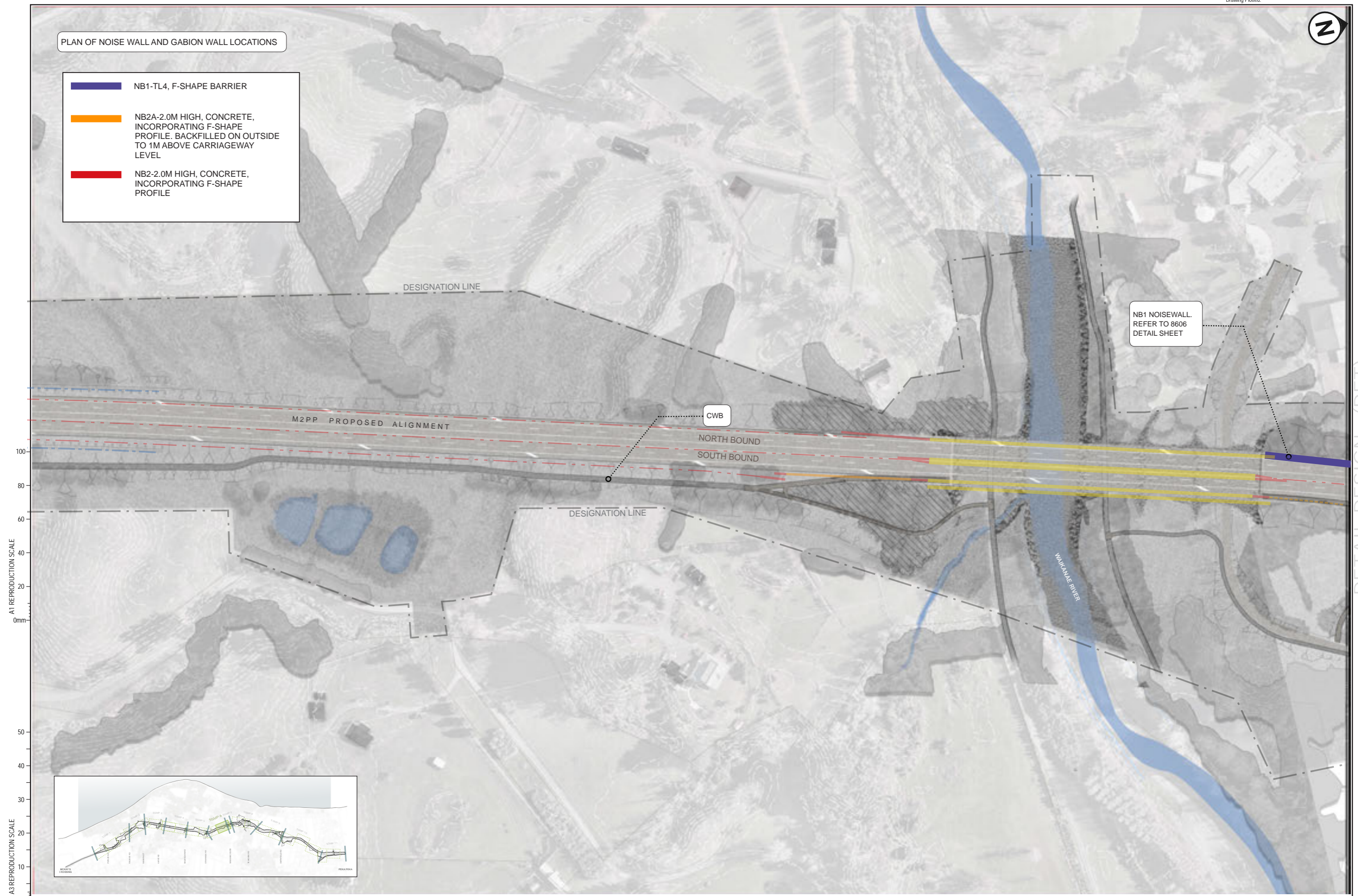
Drawing No: M2PP-121-D-GPH-8603

Rev. B



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



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm



DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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



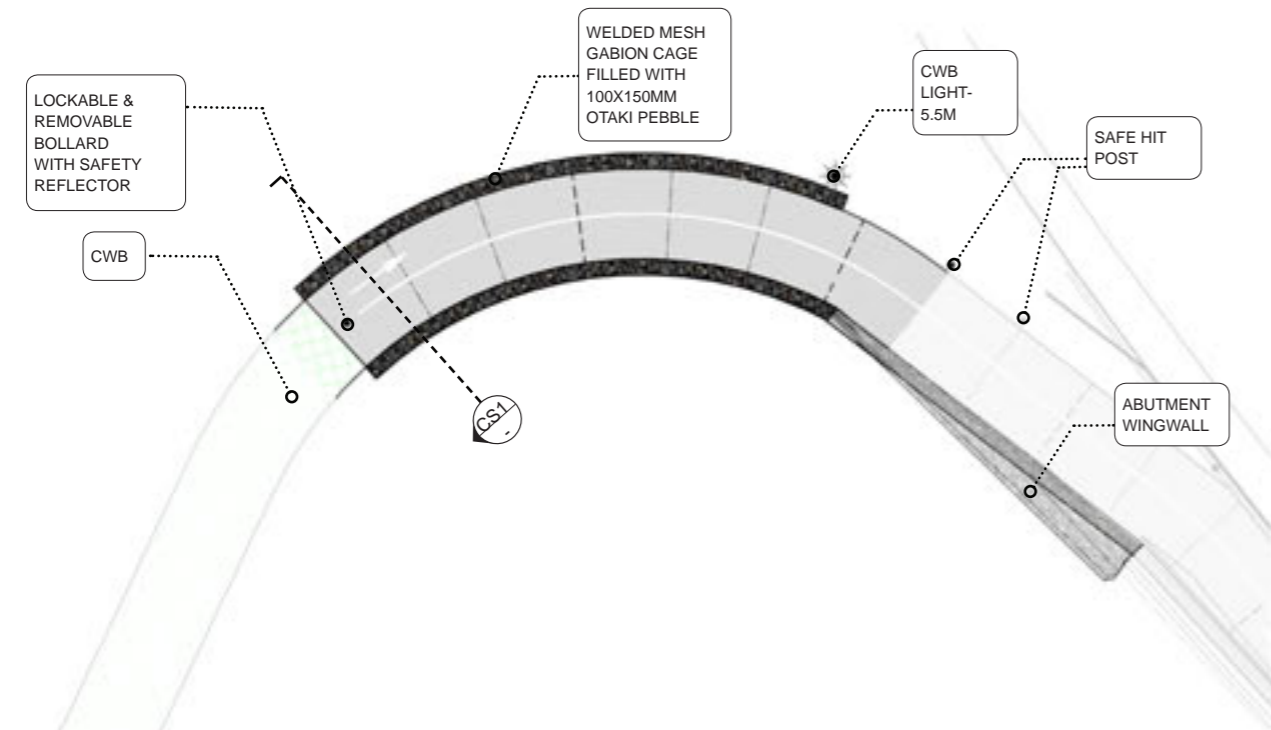
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 13
NOISE WALL LOCATIONS

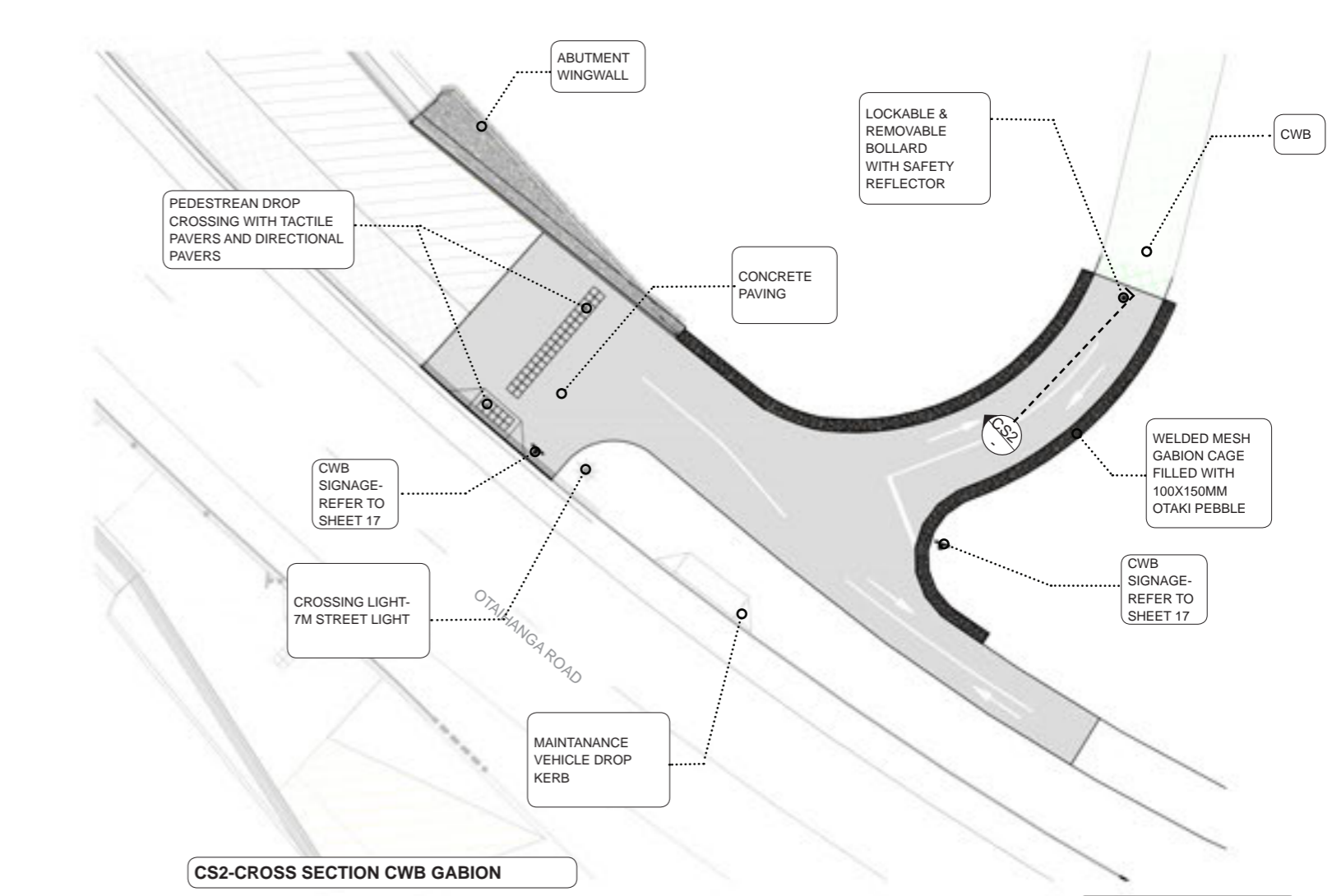
Drawing No: M2PP-121-D-GPH-8604

Rev: B

PD1-TYPICAL GABION BARRIER



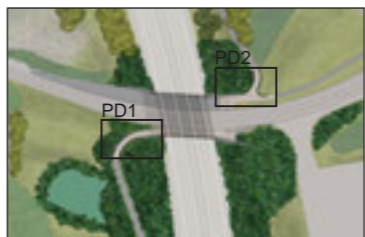
PD2-TYPICAL GABION BARRIER



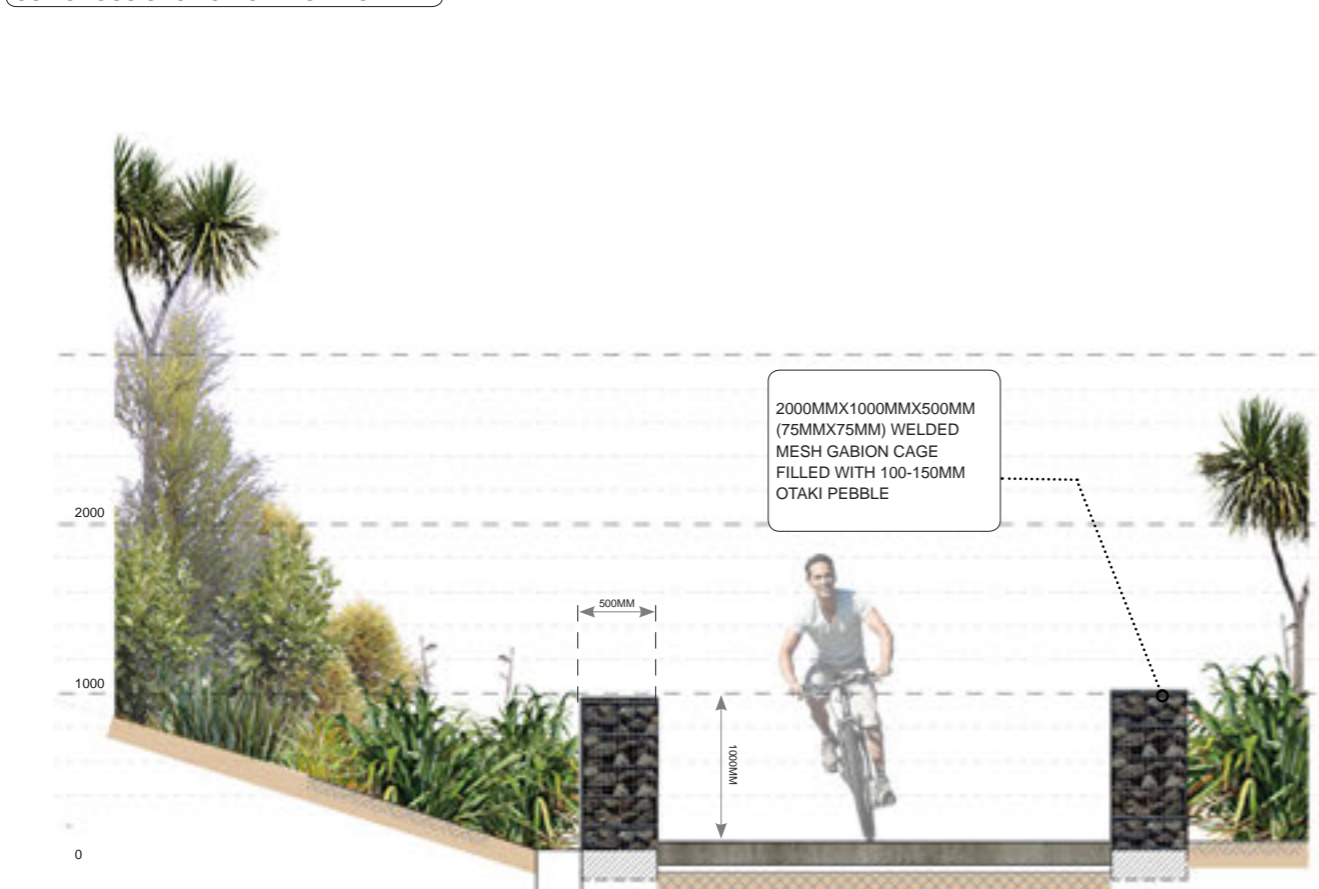
SSMP LOCATION MAP-M2PP-121-D-GPH-8056



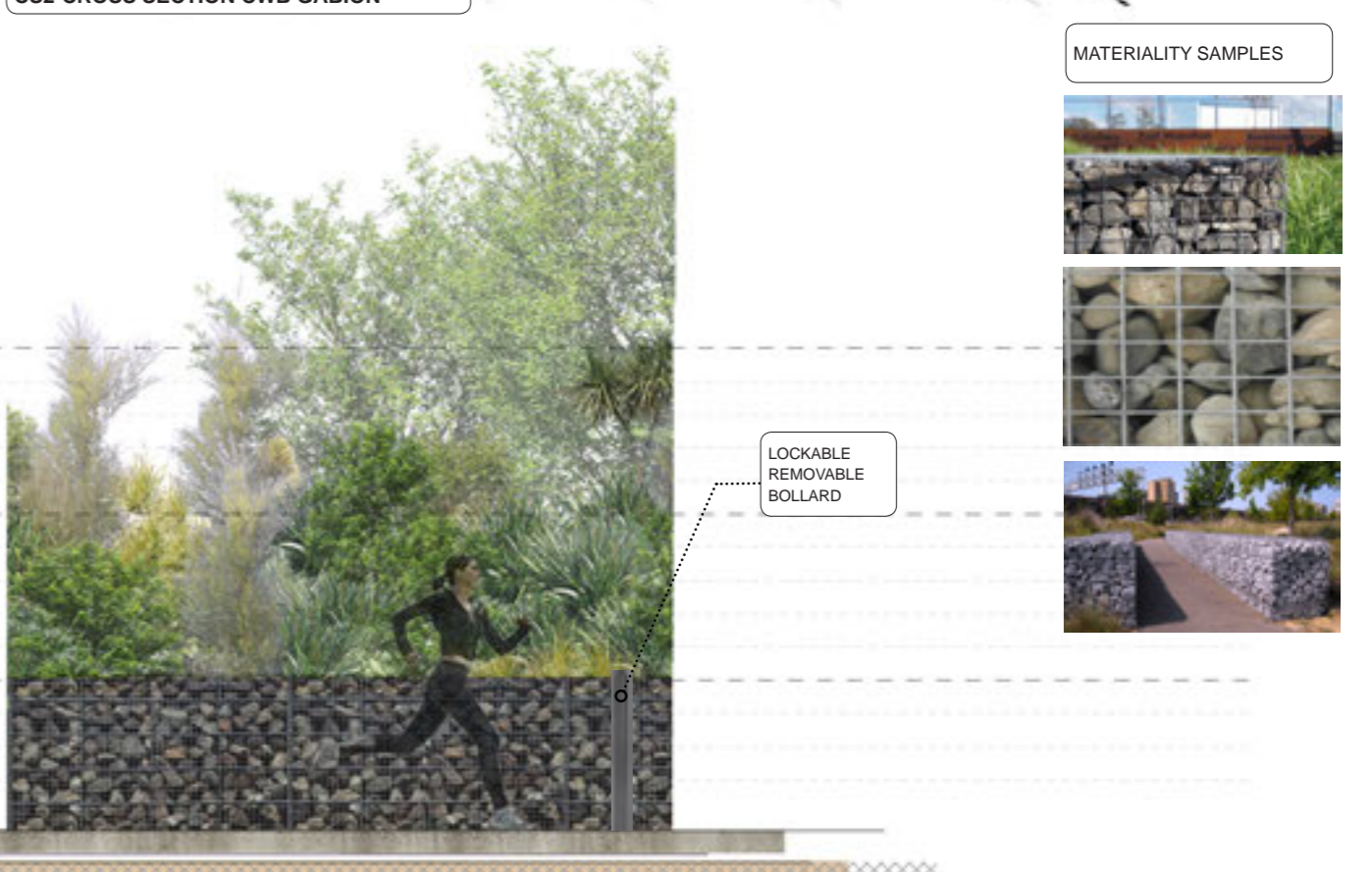
M2PP-121-D-GPH-8301



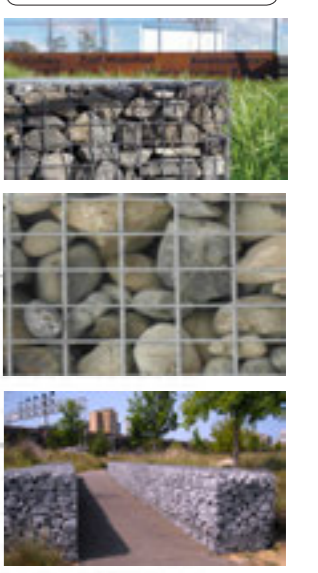
CS1-CROSS SECTION CWB GABION



CS2-CROSS SECTION CWB GABION



MATERIALITY SAMPLES



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature

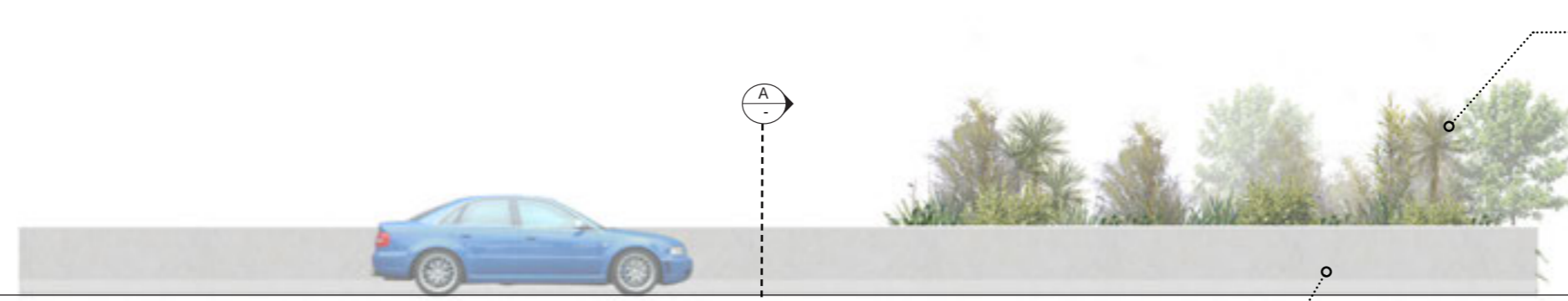


Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 14
GABION WALL DETAILS

Drawing No: M2PP-121-D-GPH-8605
Rev: B

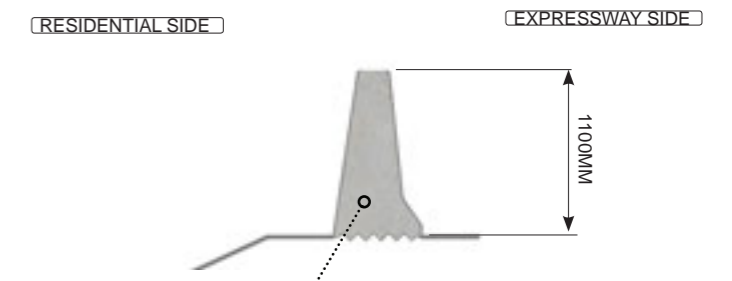
ELEVATION 1 - NOISE WALL NB1(TL4)- EXPRESSWAY SIDE



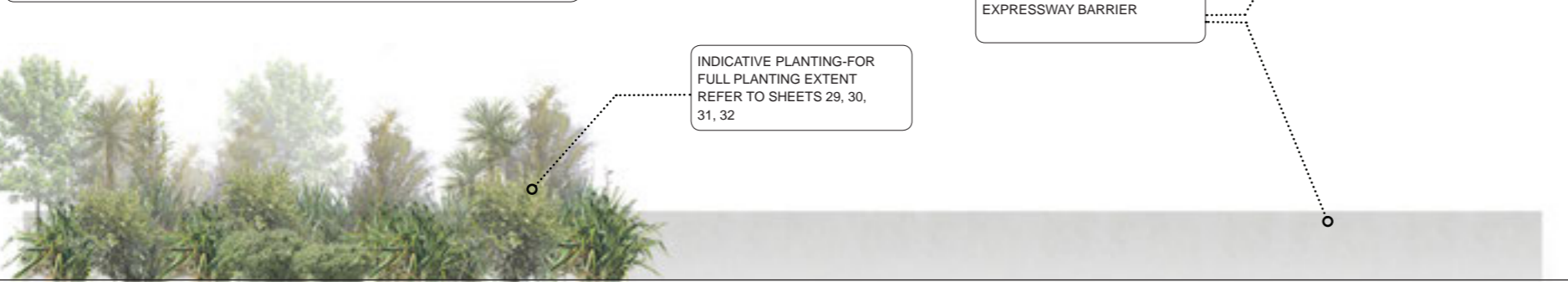
INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO SHEETS 29, 30, 31, 32

SECTION A - NOISE WALL NB1 (TL4)

SCALE - 1:25@A3



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



INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO SHEETS 29, 30, 31, 32

TL4 FAIR FACED CONCRETE EXPRESSWAY BARRIER

TL4 FAIR FACED CONCRETE EXPRESSWAY BARRIER

VISUALISATION EXPRESSWAY SIDE



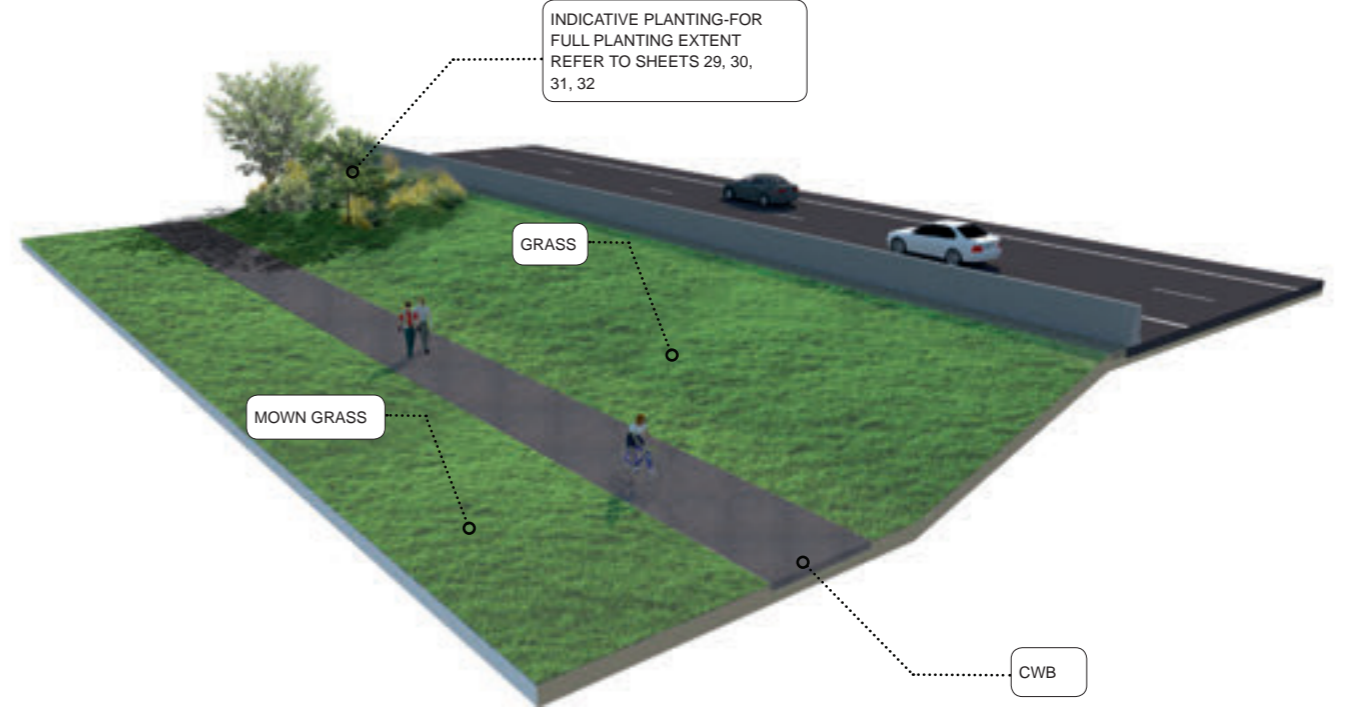
INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO SHEETS 29, 30, 31, 32

MOWN GRASS

GRASS

CWB

VISUALISATION RESIDENTIAL SIDE



INDICATIVE PLANTING-FOR FULL PLANTING EXTENT REFER TO SHEETS 29, 30, 31, 32

GRASS

MOWN GRASS

CWB

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

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Drawn	Approved For Construction?
Reduced Scale (A3)	Design Verifier	Checked	Date
	Design Check		

* Refer to Revision 1 for Original Signature

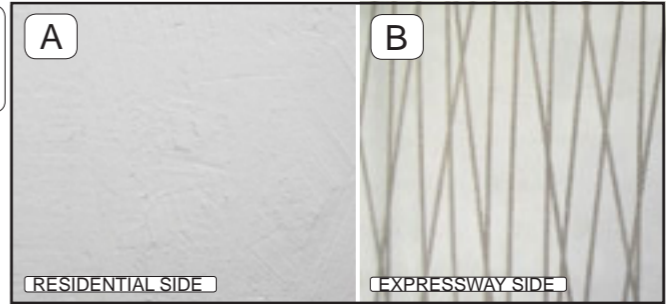
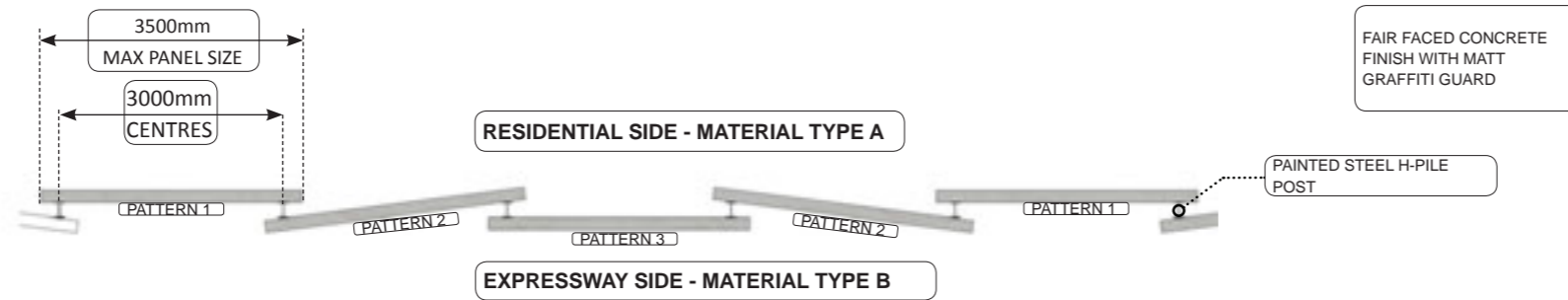


Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 15 NOISE WALL NB1

Drawing No: M2PP-121-D-GPH-8606

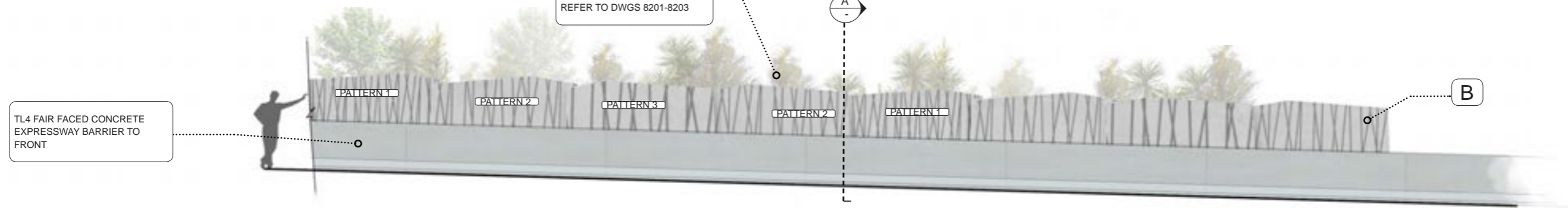
Rev. B



-FAIR FACED CONCRETE WITH EXPOSED CONCRETE PATTERN.
-CONCRETE PATTERN: VERTEX BY GRAPHIC CONCRETE
-3 PATTERN SIZES:
- PATTERN 1: SMALL
- PATTERN 2: MEDIUM
- PATTERN 3: LARGE

ELEVATION 1 - NOISE WALL NB2 & NB2A - EXPRESSWAY SIDE

SCALE 1:100 @ A3

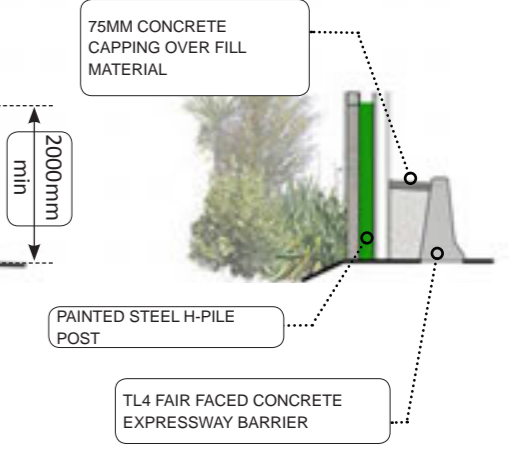


ELEVATION 2 - NOISE WALL NB2 & NB2A - RESIDENTIAL SIDE

SCALE 1:100 @ A3

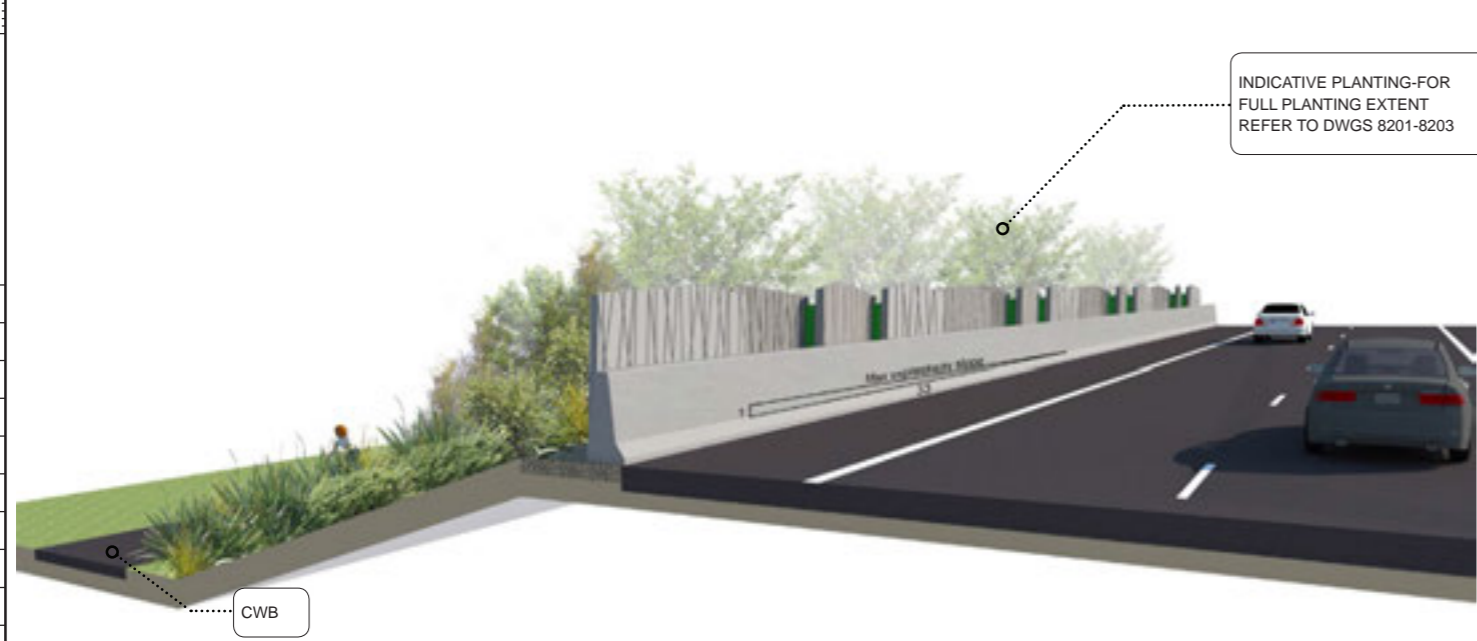


SECTION A - NOISE WALL NB2 & NB2A - 2M



VISUALISATION-RESIDENTIAL SIDE

VISUALISATION-EXPRESSWAY SIDE



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

D	POST CERTIFICATION AMMENDMENT	MP			01.09.15
C	CERTIFIED ISSUE				29.01.14
B	FOR CERTIFICATION				20.12.13
A	PRELIMINARY ISSUE				19.09.13
No.	Revision	By	Chk	Chk.V	Appd

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

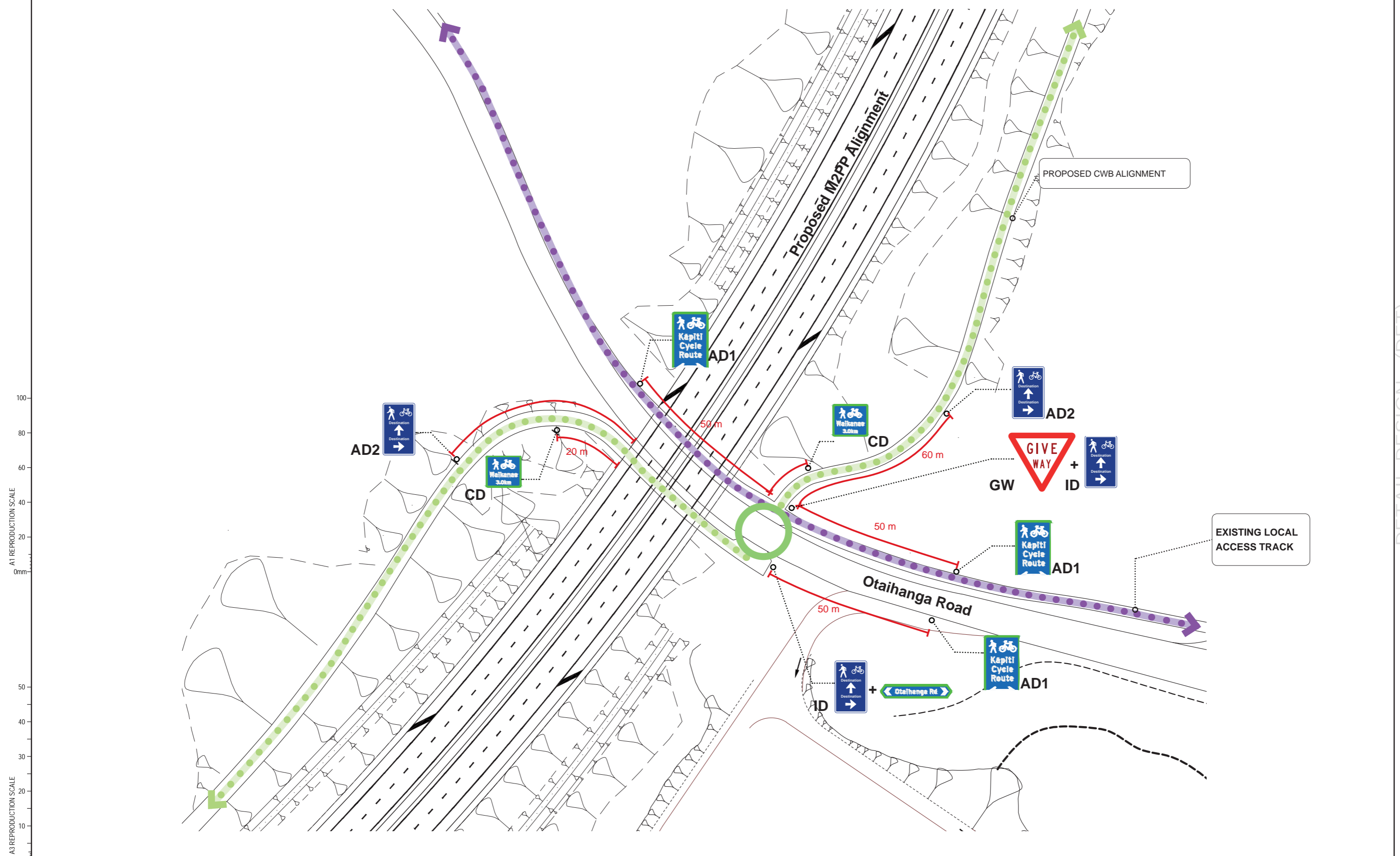


Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 16
NOISE WALL NB2 - 2M

Drawing No: M2PP-121-D-GPH-8607
Rev: D

INTERSECTION TYPE C - LOCAL ROAD CROSSING - OTAIHANGA ROAD



No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY
MacKays to Peka Peka
 Wellington Technological Centre

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

Title: SSMP 5 & 6 - SHEET 17
 CWB SIGNAGE PLAN

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

Rev: B

DETAIL DESIGN (DET)

Document No.

TYPICAL SIGN TYPES:

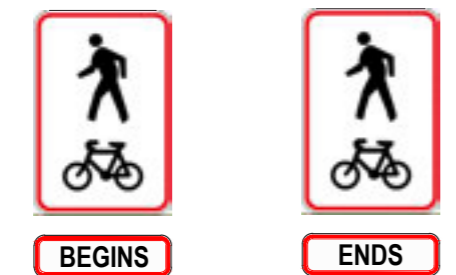
AI - ADVANCED INFO SIGNS

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



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.

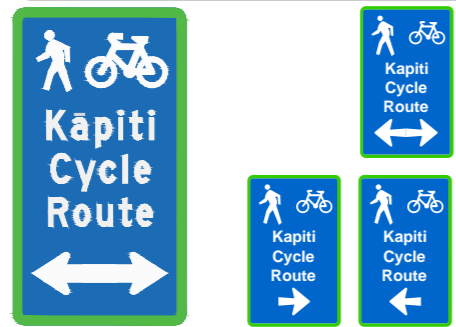
ID - INTERSECTION DIRECTION



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

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.

CD - CONFIRMATION DIRECTION

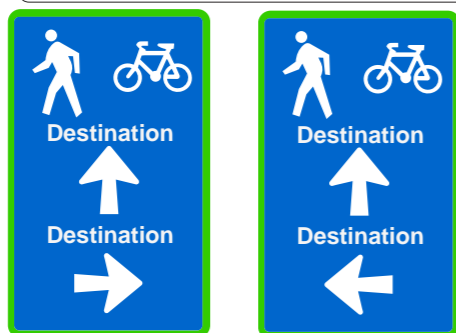


CD - The Confirmation Direction Sign is used to confirm the direction/ destination of travel after an intersection it is intended to provide assurance to cyclists. The CD sign features a straight ahead arrow and should include both Information about the destination and the distance.

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.

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.

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

B	FOR CERTIFICATION								20.12.13
A	PRELIMINARY ISSUE								19.09.13
No.	Revision	By	Chk	Chk.V	Appd	Date	NS		

Original Scale (A1)	Design	-	Approved For Construction?
Drawn	-	-	Date
Reduced Scale (A3)	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 5 & 6 - SHEET 18
	CWB SIGN TYPE SUMMARY

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



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

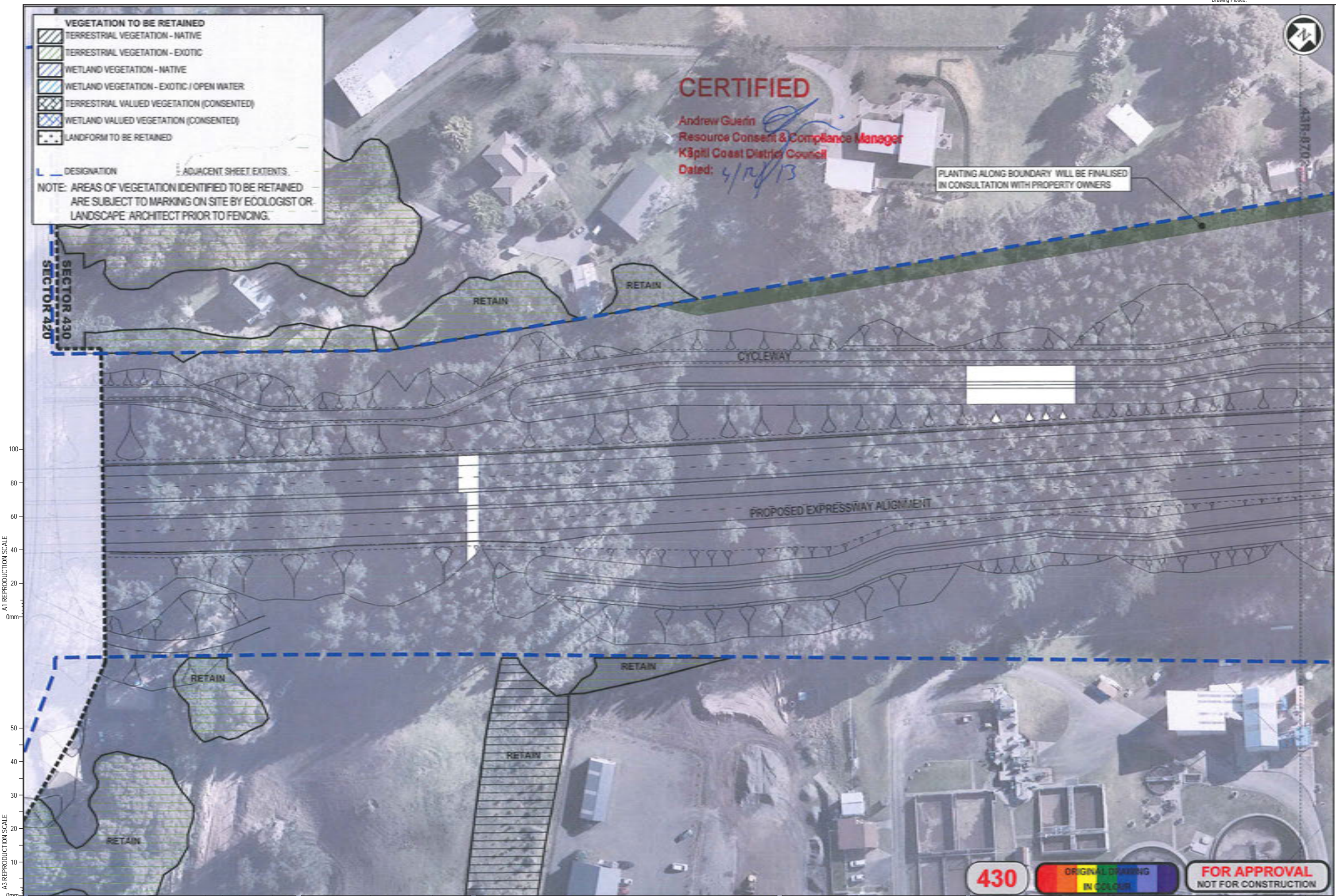
DESIGNATION ADJACENT SHEET EXTENTS

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
 Kaipō Coast District Council
 Dated: 4/12/13

PLANTING ALONG BOUNDARY WILL BE FINALISED IN CONSULTATION WITH PROPERTY OWNERS



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

430

ORIGINAL DRAWING
IN COLOUR

FOR APPROVAL
NOT FOR CONSTRUCTION

No.	Revision	By	CHK	CHK.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Approved For Construction*
1:500	Drawn	
Reduced Scale (A3)	Drawn	
1:1000	Checked	

* Refer to Revision 1 for Original Signature

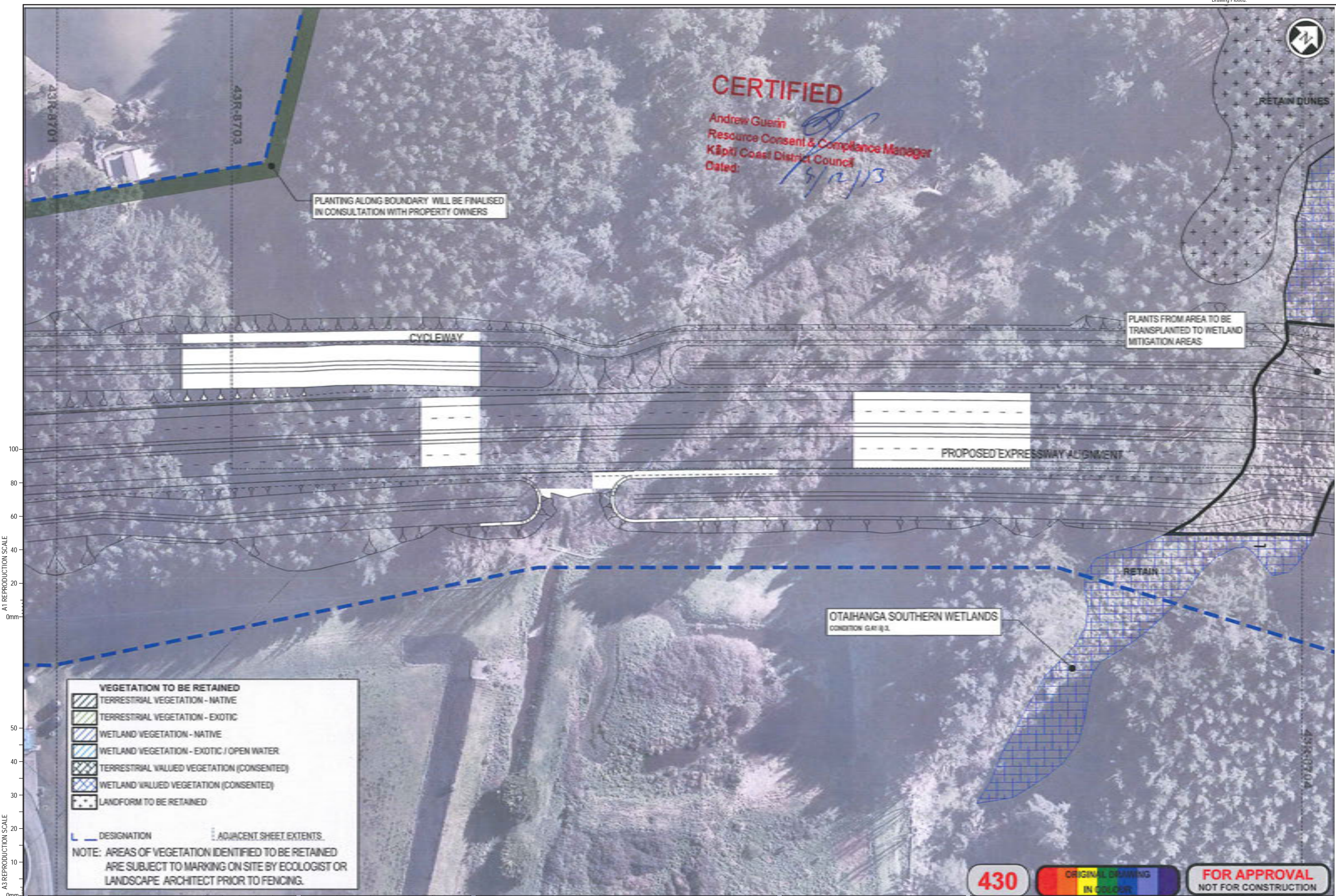
NZ TRANSPORT AGENCY
 WAIKATO REGIONAL COUNCIL

MacKays to Peka Peka
 Wellington Healthcare Corridor

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

Title: SSMP 5 & 6 - SHEET 19
 VEGETATION TO BE RETAINED

Drawing No: M2PP-43R-D-DWG-8701
 Rev: B



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No.	Revision	By	CHK	CHK.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

NZ TRANSPORT AGENCY
 WAIKATO REGIONAL COUNCIL








MacKays to Peka Peka
 Wellington Northern Corridor

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

430 ORIGINAL DRAWING IN COLOUR **FOR APPROVAL NOT FOR CONSTRUCTION**

Title: SSMP 5 & 6 - SHEET 20 VEGETATION TO BE RETAINED	Drawing No: M2PP-43R-D-DWG-8702	Rev: B
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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: 4/12/13

PLANTING ALONG BOUNDARY WILL BE FINALISED IN CONSULTATION WITH PROPERTY OWNERS

PLANTS FROM AREA TO BE TRANSPLANTED TO WETLAND MITIGATION AREAS

OTAIHANGA SOUTHERN WETLANDS
 CONDITION C41 B3

430 ORIGINAL DRAWING IN COLOUR FOR APPROVAL NOT FOR CONSTRUCTION

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

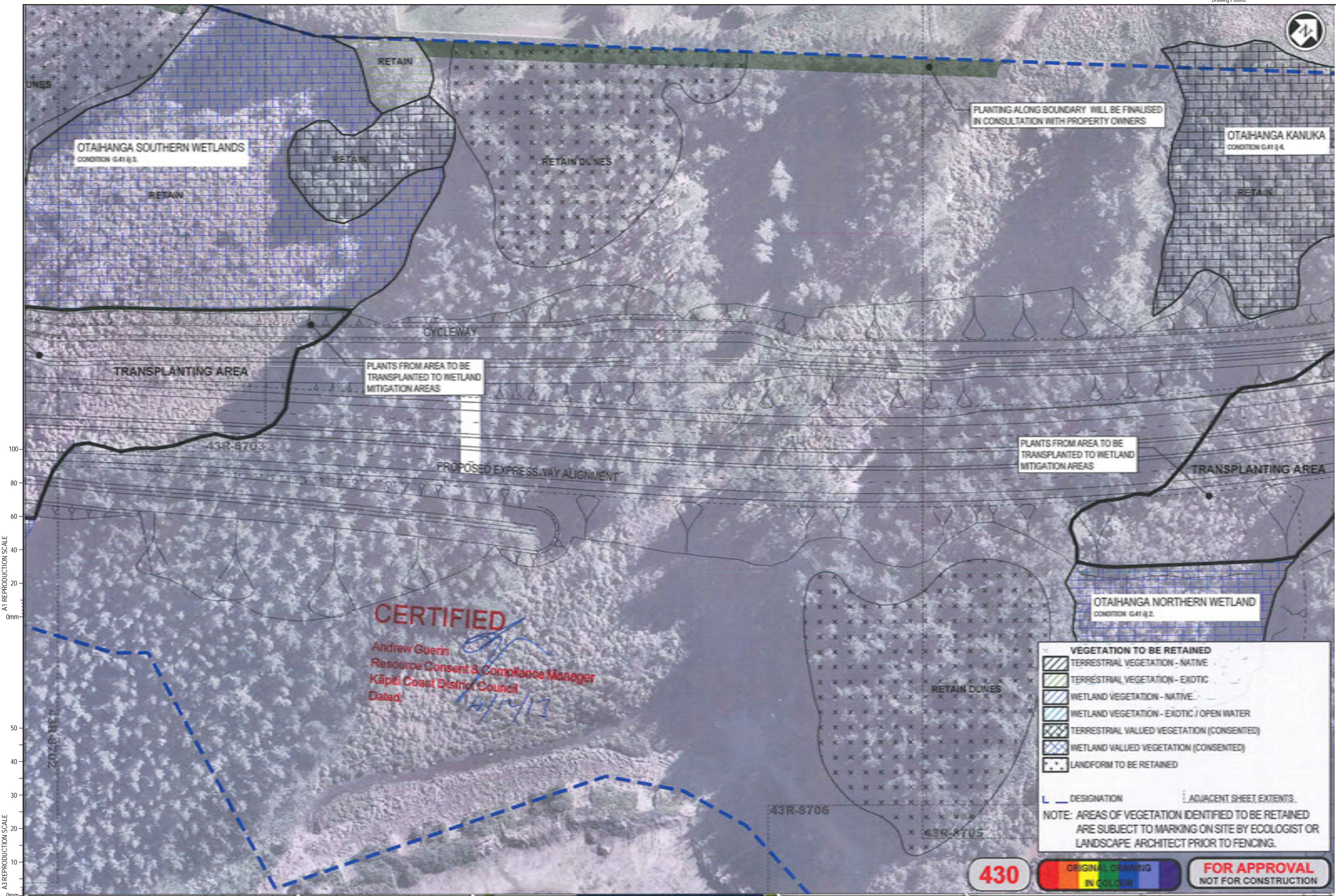
* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY MacKays to Peka Peka
 Waiarapa Regional Council

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

Title: SSMP 5 & 6 - SHEET 21
 VEGETATION TO BE RETAINED

Drawing No: M2PP-43R-D-DWG-8703
 Rev: B



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

CERTIFIED
 Andrew Guerin
 Resource Consent & Compliance Manager
 Kāpiti Coast District Council
 Dated: 14/04/13

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.

430 ORIGINAL DRAWING IN COLOUR FOR APPROVAL NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

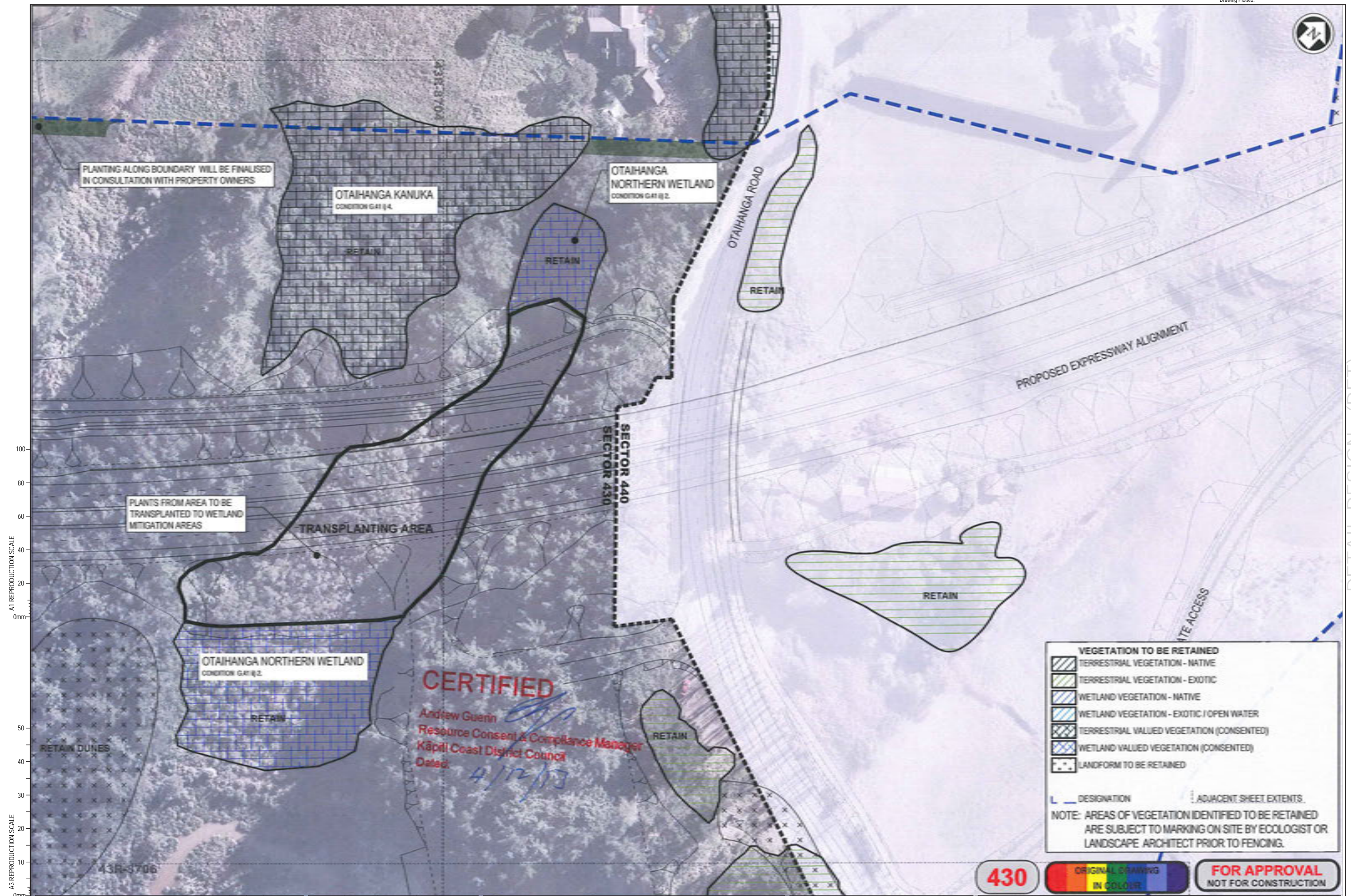
* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY MacKays to Peka Peka
 Wairarapa Regional Council Wellington Northern Corridor

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

Title: SSMP 5 & 6 - SHEET 22
 VEGETATION TO BE RETAINED

Drawing No: M2PP-43R-D-DWG-8704
 Rev: B



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: 4/12/13

430

**ORIGINAL DRAWING
 IN COLOUR**

**FOR APPROVAL
 NOT FOR CONSTRUCTION**

A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY
 MacKays to Peka Peka
 Wellington Northern Corridor

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

Title: SSMP 5 & 6 - SHEET 23
 VEGETATION TO BE RETAINED

Drawing No: M2PP-43R-D-DWG-8705
 Rev: B



43R-8705

43R-8704

PINES REMOVED IN APPROXIMATELY 2011, NOW REGENERATING SCRUB

RETAIN DUNE

RETAIN

CERTIFIED

Andrew Guerin
Resource Consent & Compliance Manager
Kāpiti Coast District Council
Dated: 4/12/13

SECTOR 440
SECTOR 430

OTAHANGA ROAD

RETAIN

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

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.

430 ORIGINAL DRAWING IN COLOUR **FOR APPROVAL NOT FOR CONSTRUCTION**

No.	Revision	By	CHK	CHK.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY **MacKays to Peka Peka**
WELLINGTON HEALTHCARE CORRIDOR

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

Title: SSMP 5 & 6 - SHEET 24
VEGETATION TO BE RETAINED

Drawing No: M2PP-43R-D-DWG-8706
Rev: B

DETAIL DESIGN (DET)



VEGETATION TO BE RETAINED

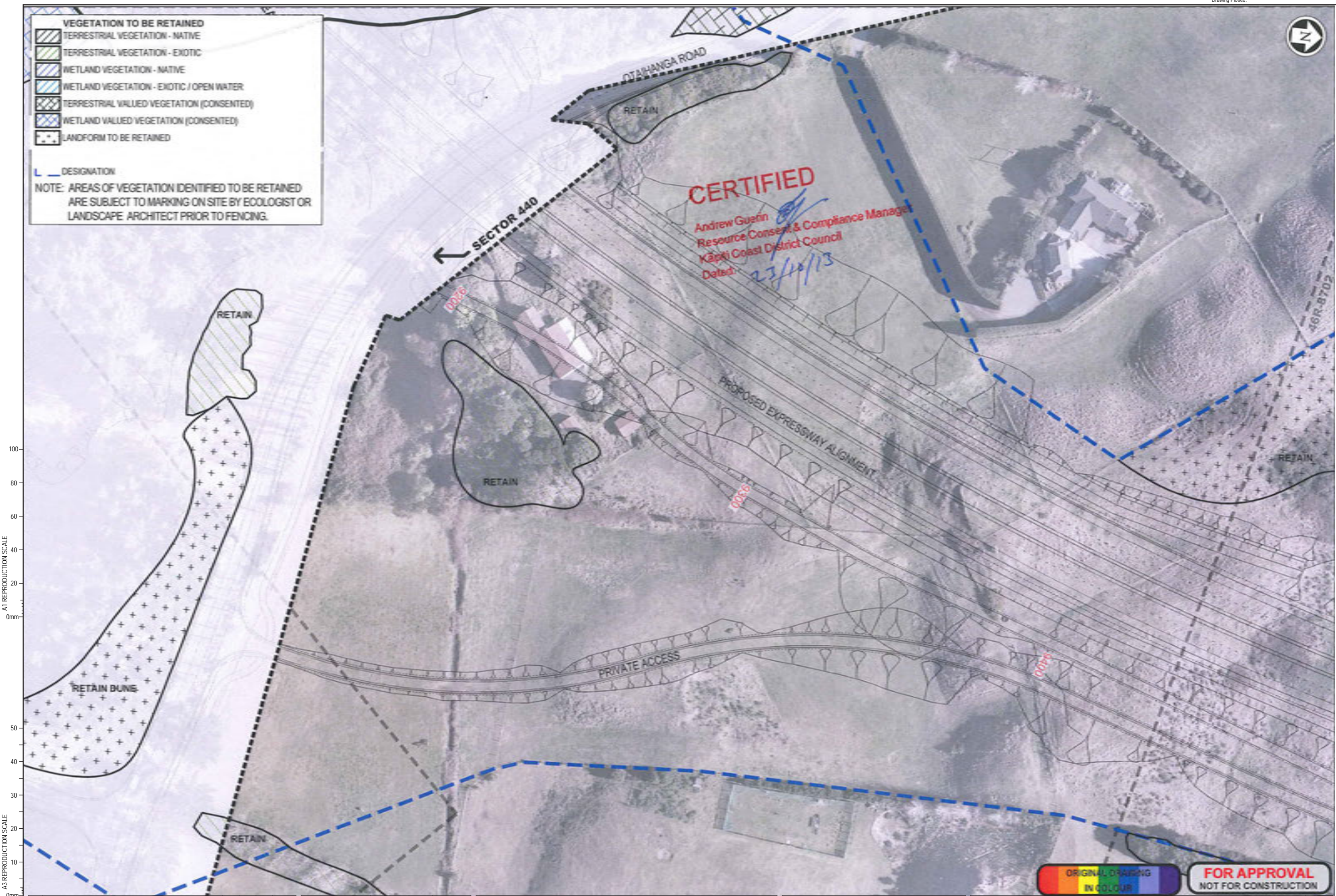
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- TERRESTRIAL VALUED VEGETATION (CONSENTED)
- WETLAND VALUED VEGETATION (CONSENTED)
- LANDFORM TO BE RETAINED

DESIGNATION

DESIGNATION

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
 Kaipōi Coast District Council
 Dated: 23/10/13



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

ORIGINAL DRAWING
IN COLOUR

FOR APPROVAL
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

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

Title: SSMP 5 & 6 - SHEET 25
 VEGETATION TO BE RETAINED

Drawing No: M2PP-46R-D-DWG-8701

Rev: B



VEGETATION TO BE RETAINED

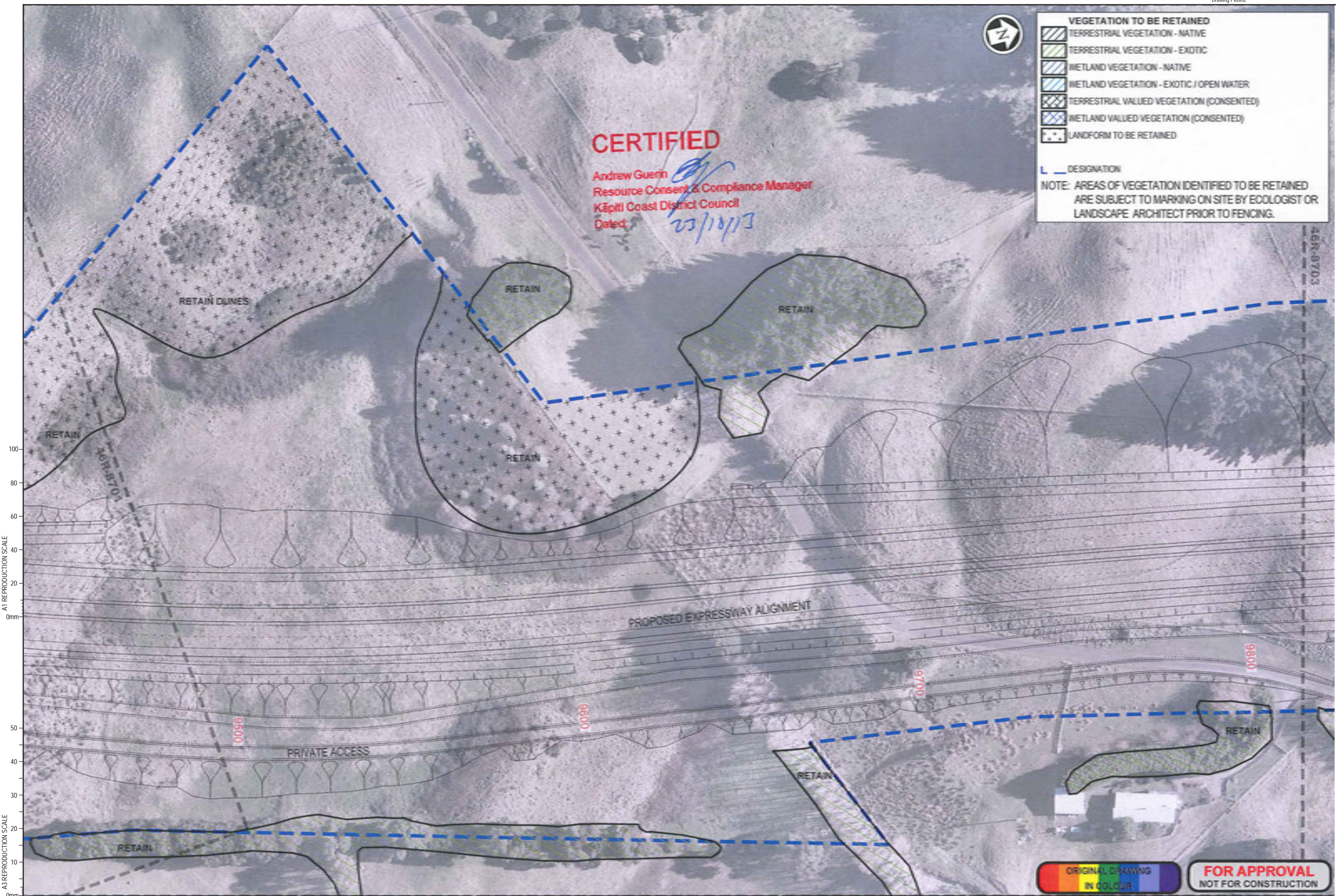
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- TERRESTRIAL VALUED VEGETATION (CONSENTED)
- WETLAND VALUED VEGETATION (CONSENTED)
- LANDFORM TO BE RETAINED

L DESIGNATION

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: 25/10/13



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

ORIGINAL DRAWING IN COLOUR

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

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NZ TRANSPORT AGENCY
 WAIKATA KŌHĀRI

MacKays to Peka Peka
 Wellington Northern Corridor

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

Title: SSMP 5 & 6 - SHEET 26
 VEGETATION TO BE RETAINED

Drawing No: M2PP-46R-D-DWG-8702
 Rev: B

VEGETATION TO BE RETAINED

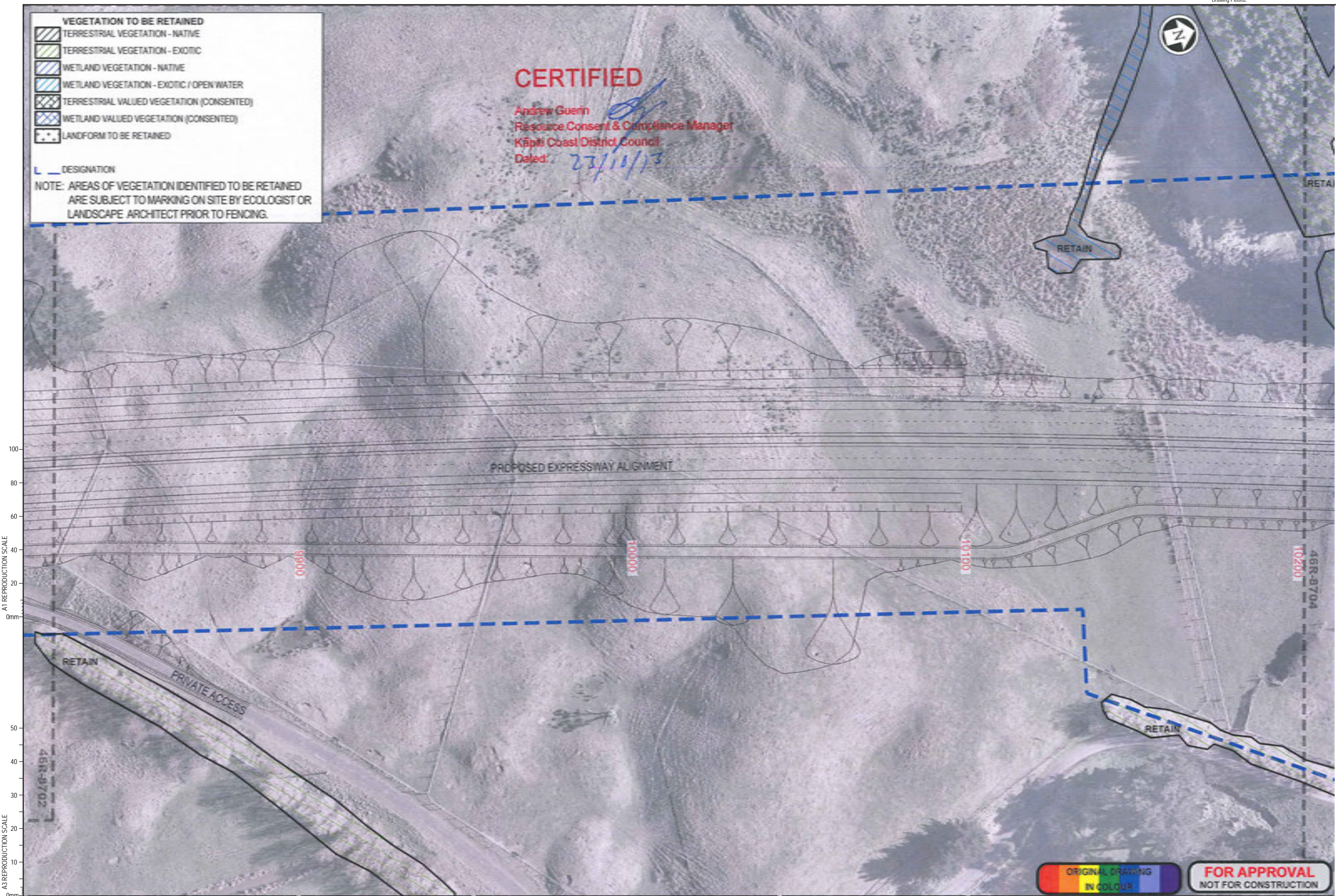
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- TERRESTRIAL VALUED VEGETATION (CONSENTED)
- WETLAND VALUED VEGETATION (CONSENTED)
- LANDFORM TO BE RETAINED

DESIGNATION

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: 23/10/13



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

ORIGINAL DRAWING IN COLOUR

FOR APPROVAL NOT FOR CONSTRUCTION

No.	Revision	By	CHK	CHK.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

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NZ TRANSPORT AGENCY **MacKays to Peka Peka**

WELLINGTON TRANSPORT CORP

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

Title: SSMP 5 & 6 - SHEET 27
 VEGETATION TO BE RETAINED

Drawing No: M2PP-46R-D-DWG-8731
 Rev: B



VEGETATION TO BE RETAINED

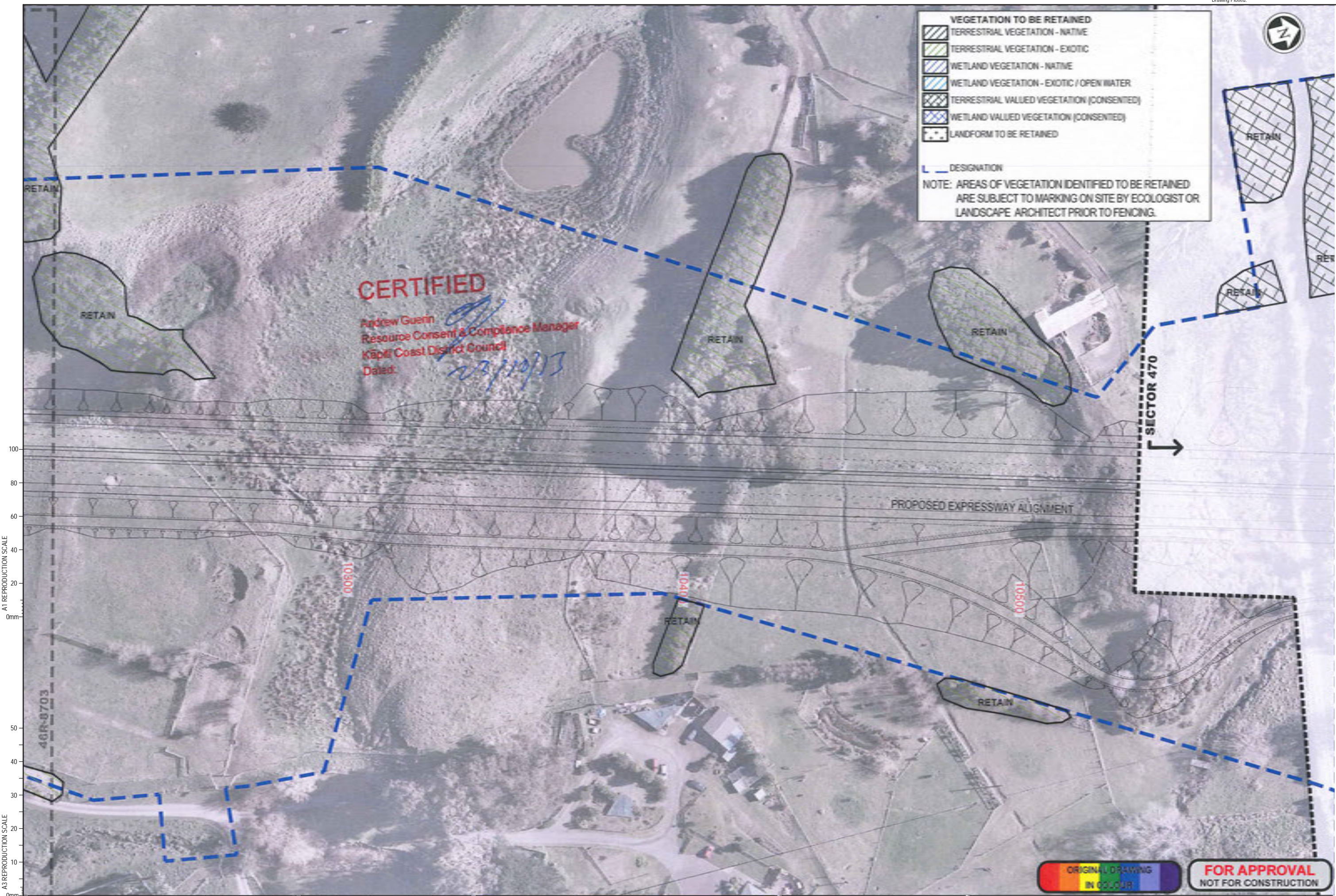
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- TERRESTRIAL VALUED VEGETATION (CONSENTED)
- WETLAND VALUED VEGETATION (CONSENTED)
- LANDFORM TO BE RETAINED

DESIGNATION

———

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
 Kaipiti Coast District Council
 Dated: 23/10/13



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

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No.	Revision	By	CHK	CHK.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

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NZ TRANSPORT AGENCY
 WAIKATO REGION

MacKays to Peka Peka
 Wellington Healthcare Corridor

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

Title: SSMP 5 & 6 - SHEET 28
 VEGETATION TO BE RETAINED

Drawing No: M2PP-46R-D-DWG-8704
 Rev: B



KEY

MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WPI WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING	
MT MASSED PLANTING - TREE ENRICHMENT	TP TREES - POLE GRADE	GR GRASS - ROUGH		

PLANTING TYPE
PLANTING MIX
AREA CODE

MT A 1
43R-8201

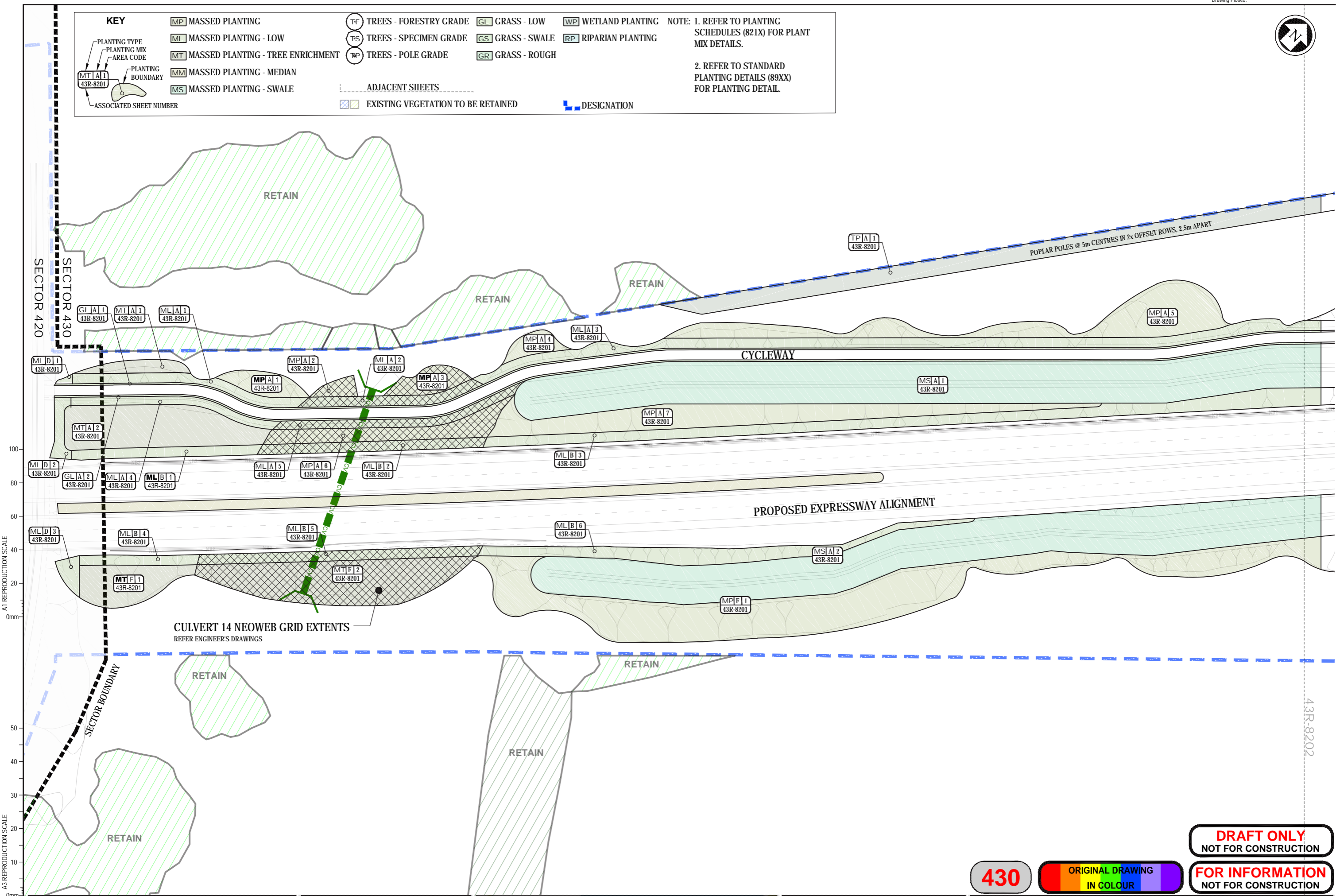
PLANTING BOUNDARY

ASSOCIATED SHEET NUMBER

ADJACENT SHEETS

EXISTING VEGETATION TO BE RETAINED

DESIGNATION



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

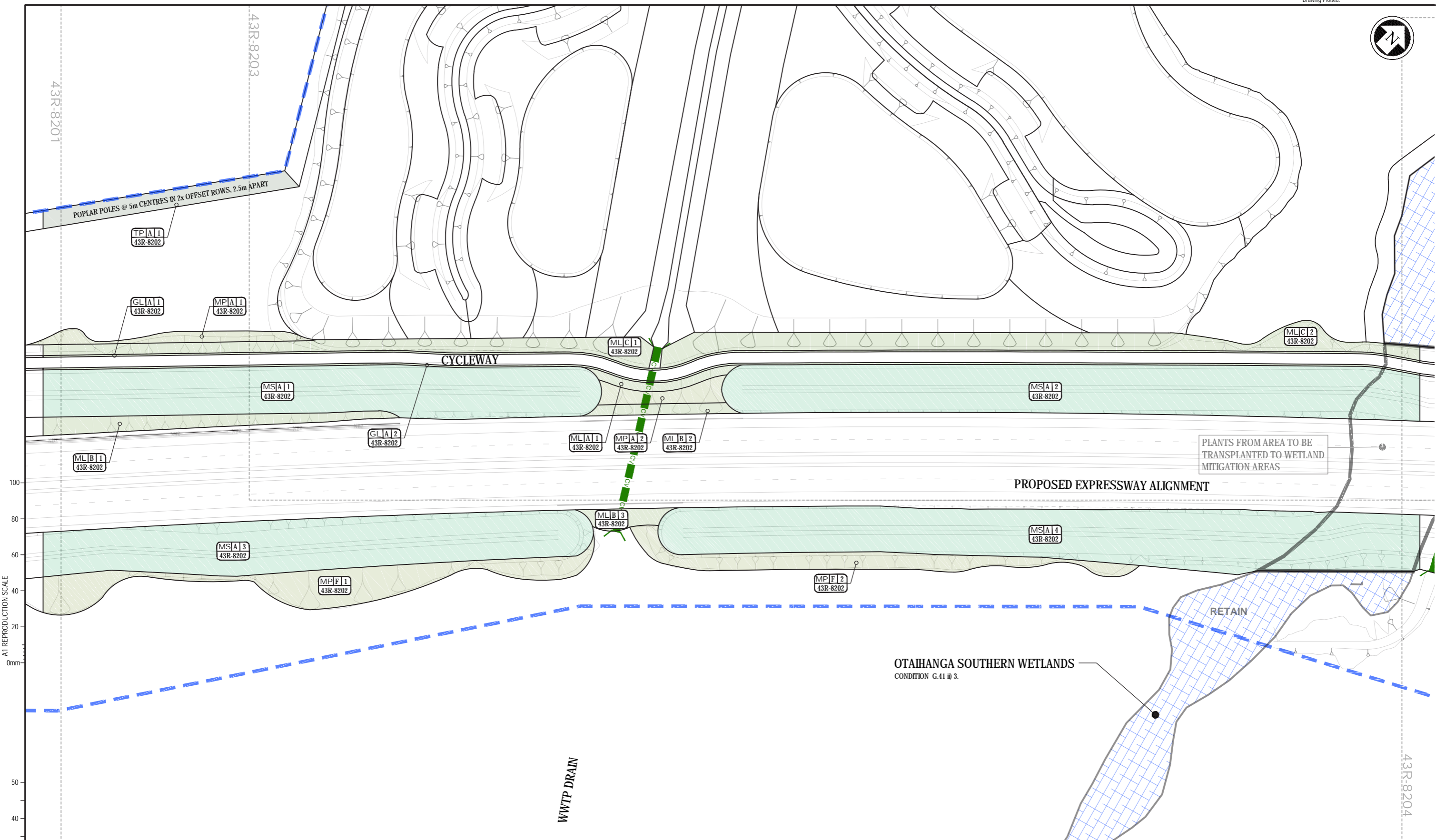
Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:1000	Design Check	
	* Refer to Revision 1 for Original Signature	

NZ TRANSPORT AGENCY
MacKays to Peka Peka
Wellington Transport and Infrastructure Commission

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

Title: SSMP 5 & 6 - SHEET 29
PLANTING PLANS

Drawing No: M2PP-43R-D-DWG-8201
Rev: B



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

KEY

PLANTING TYPE	PLANTING MIX AREA CODE	PLANTING BOUNDARY	ASSOCIATED SHEET NUMBER	MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
ML MASSED PLANTING - LOW	MT MASSED PLANTING - TREE ENRICHMENT	MM MASSED PLANTING - MEDIAN	MS MASSED PLANTING - SWALE	TS TREES - SPECIMEN GRADE	TP TREES - POLE GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING	
ADJACENT SHEETS				EXISTING VEGETATION TO BE RETAINED	DESIGNATION			

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430 ORIGINAL DRAWING
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B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13
No.	Revision	By	Chk	Chk.V	Appd	Date

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



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

Title: SSMP 5 & 6 - SHEET 30
PLANTING PLANS

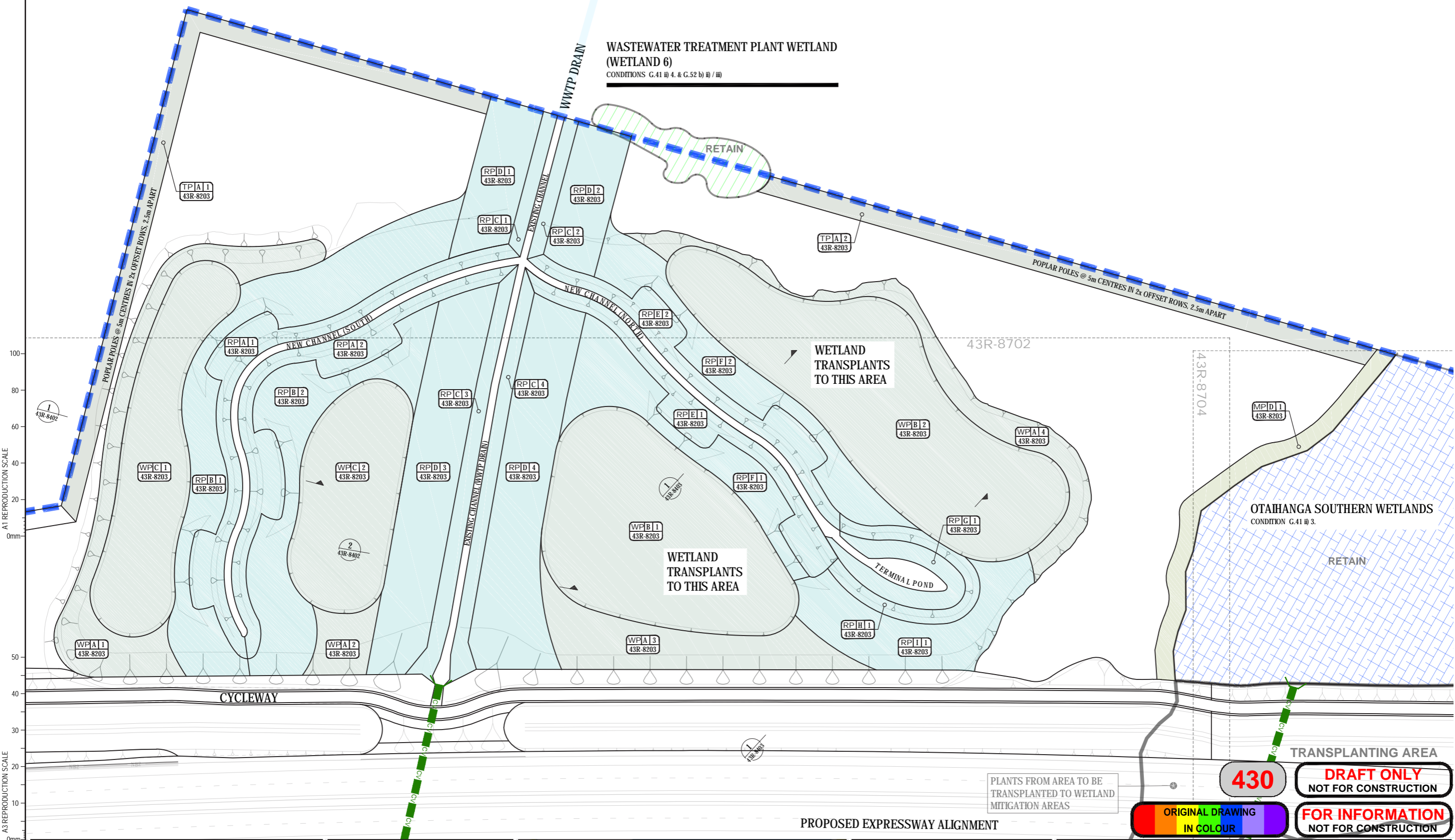
Document No.: M2PP-43R-D-DWG-8202
Rev: B

DETAIL DESIGN (DET)



KEY

MT PLANTED TYPE 43R-8201	MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING		
MT MASSED PLANTING - TREE ENRICHMENT	TP TREES - POLE GRADE	GR GRASS - ROUGH			
MM MASSED PLANTING - MEDIAN					
MS MASSED PLANTING - SWALE					
	ADJACENT SHEETS				
	EXISTING VEGETATION TO BE RETAINED				
		DESIGNATION			



430

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

NZ TRANSPORT AGENCY

MacKays to Peka Peka

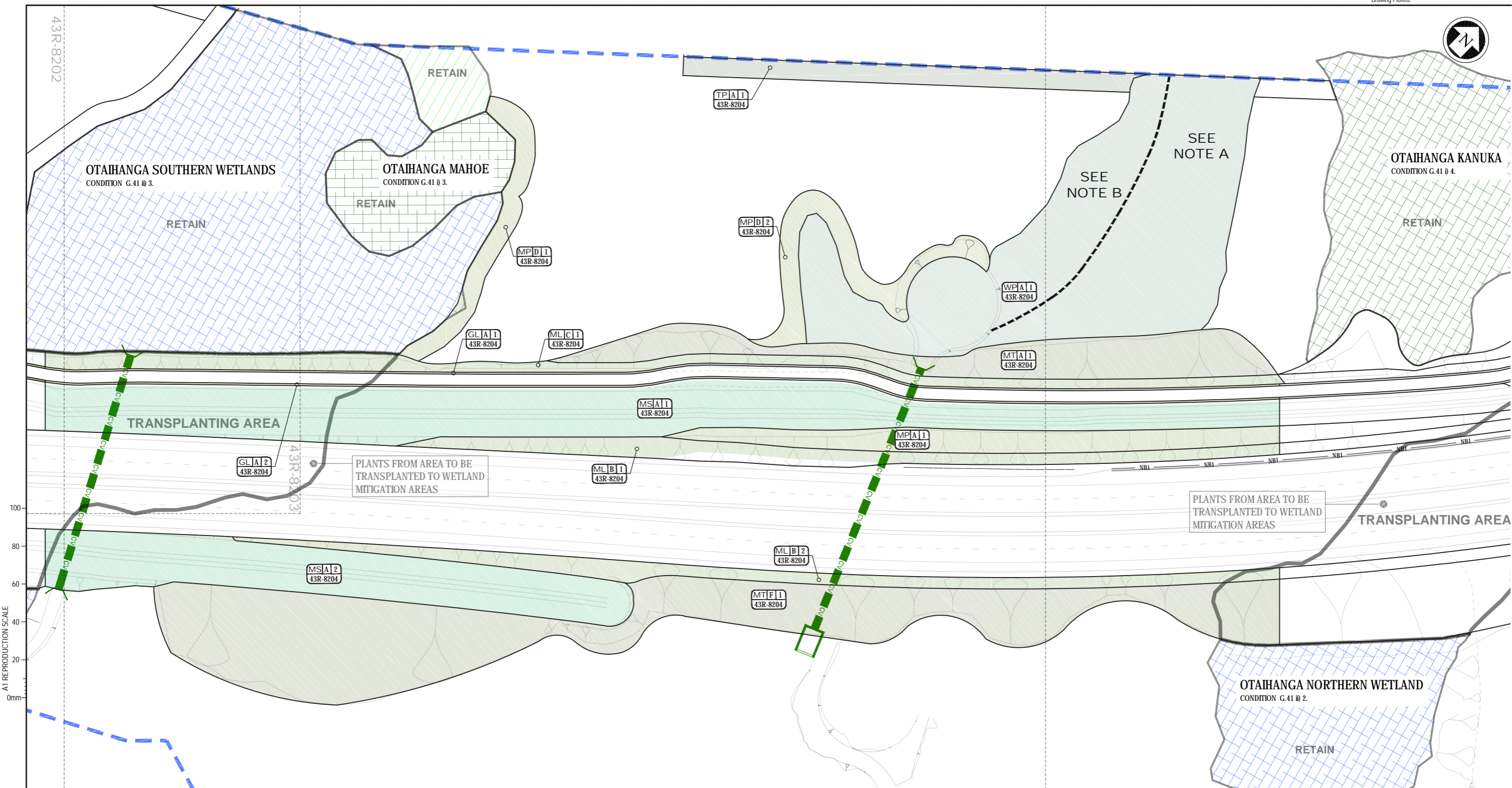
Wellington Transport Infrastructure Commission

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

Title: SSMP 5 & 6 - SHEET 31
PLANTING PLANS

Drawing No: M2PP-43R-D-DWG-8203
Rev: B

DETAIL DESIGN (DET)



A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50

KEY

- MP MASSED PLANTING
- ML MASSED PLANTING - LOW
- MT MASSED PLANTING - TREE ENRICHMENT
- MM MASSED PLANTING - MEDIAN
- MS MASSED PLANTING - SWALE
- TF TREES - FORESTRY GRADE
- TS TREES - SPECIMEN GRADE
- TP TREES - POLE GRADE
- GL GRASS - LOW
- GS GRASS - SWALE
- GR GRASS - ROUGH
- WP WETLAND PLANTING
- RP RIPARIAN PLANTING
- ADJACENT SHEETS
- EXISTING VEGETATION TO BE RETAINED
- DESIGNATION

NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS.

2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.

NOTE A: REMOVE BLACKBERRY AND WEED WITH TOP LAYER OF WET ZONE PRIOR TO PLANTING

NOTE B: REMOVE FALLEN PINE AND WEED FROM SANDY DRY SECTIONS OF WETLAND AND REPLACE TOP 300mm WITH PEAT / SOIL MIX PRIOR TO REPLANTING. FORM HUMP AND HALLOW 'LUMPY' GROUND TO ALLOW PLANTING OF NEW WOODY VEGETATION ON DRIER HUMPS.

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature



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

430

ORIGINAL DRAWING
IN COLOUR

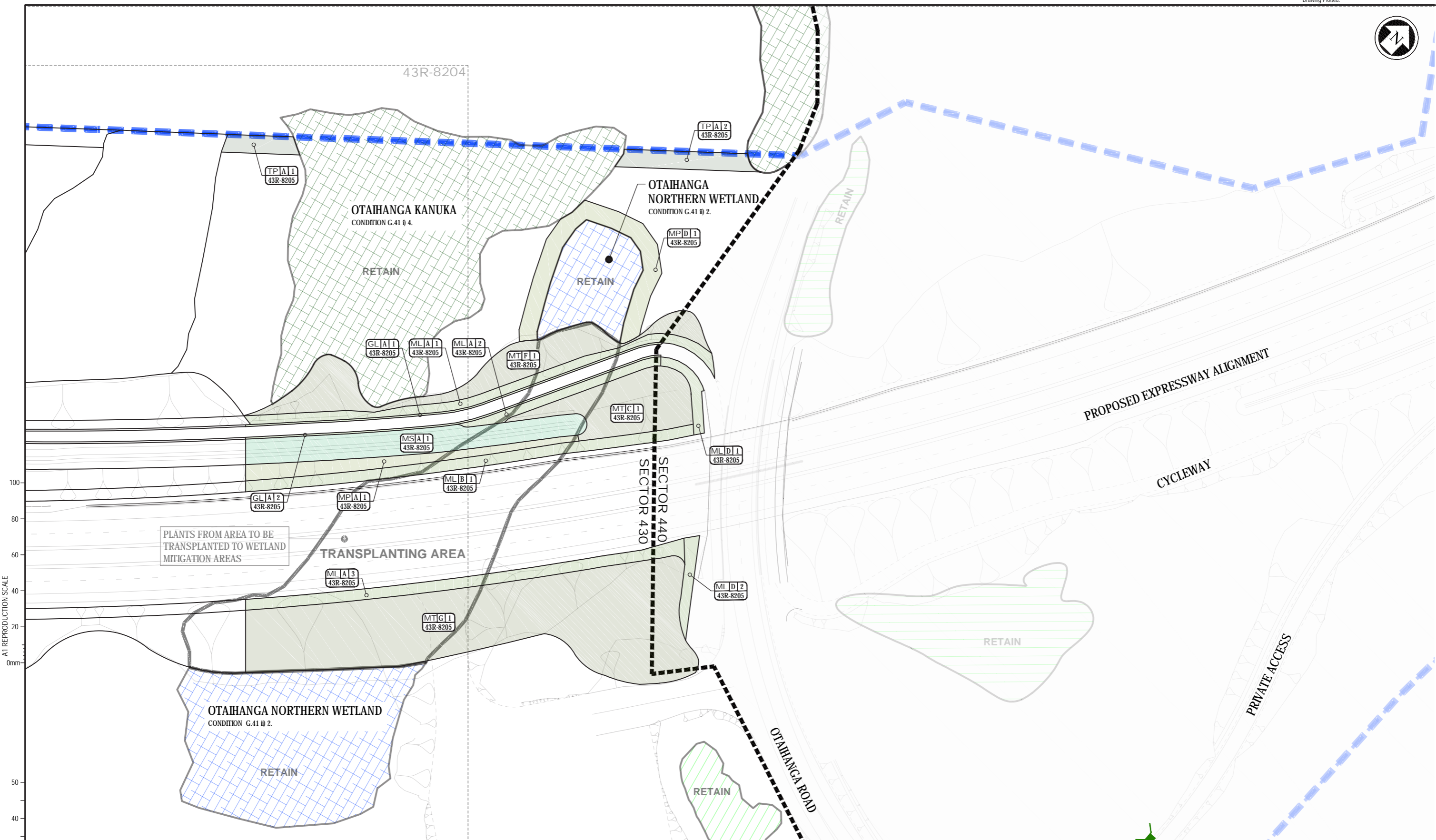
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Title: SSMP 5 & 6 - SHEET 32
PLANTING PLANS

Drawing No: M2PP-43R-D-DWG-8204
Rev: B

DETAIL DESIGN (DET)



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

KEY 	MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
	ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING	
	MT MASSED PLANTING - TREE ENRICHMENT	TP TREES - POLE GRADE	GR GRASS - ROUGH		
	MM MASSED PLANTING - MEDIAN				
MS MASSED PLANTING - SWALE					
	ADJACENT SHEETS		EXISTING VEGETATION TO BE RETAINED		DESIGNATION

B	FOR CERTIFICATION				20.12.13
A	PRELIMINARY ISSUE				19.09.13
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	Design Check	
	* Refer to Revision 1 for Original Signature	



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

430

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IN COLOUR

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Title: SSMP 5 & 6 - SHEET 33
 PLANTING PLANS

Drawing No: M2PP-43R-D-DWG-8205
 Rev: B

DETAIL DESIGN (DET)



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

KEY

MP	MASSED PLANTING	TF	TREES - FORESTRY GRADE	GL	GRASS - LOW	WP	WETLAND PLANTING
ML	MASSED PLANTING - LOW	TS	TREES - SPECIMEN GRADE	GS	GRASS - SWALE	RP	RIPARIAN PLANTING
MT	MASSED PLANTING - TREE ENRICHMENT	TP	TREES - POLE GRADE	GR	GRASS - ROUGH		
MM	MASSED PLANTING - MEDIAN						
MS	MASSED PLANTING - SWALE						

NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS.
2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.

ADJACENT SHEETS

EXISTING VEGETATION TO BE RETAINED

DESIGNATION

440 ORIGINAL DRAWING IN COLOUR

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NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	
Reduced Scale (A3)	Design Verifier	
1:1000	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 5 & 6 - SHEET 34 PLANTING PLANS

Drawing No: M2PP-44R-D-DWG-8201
Rev: B

DETAIL DESIGN (DET)



KEY

MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING
ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING
MT MASSED PLANTING - TREE ENRICHMENT	TP TREES - POLE GRADE	GR GRASS - ROUGH	
MM MASSED PLANTING - MEDIAN			
MS MASSED PLANTING - SWALE			

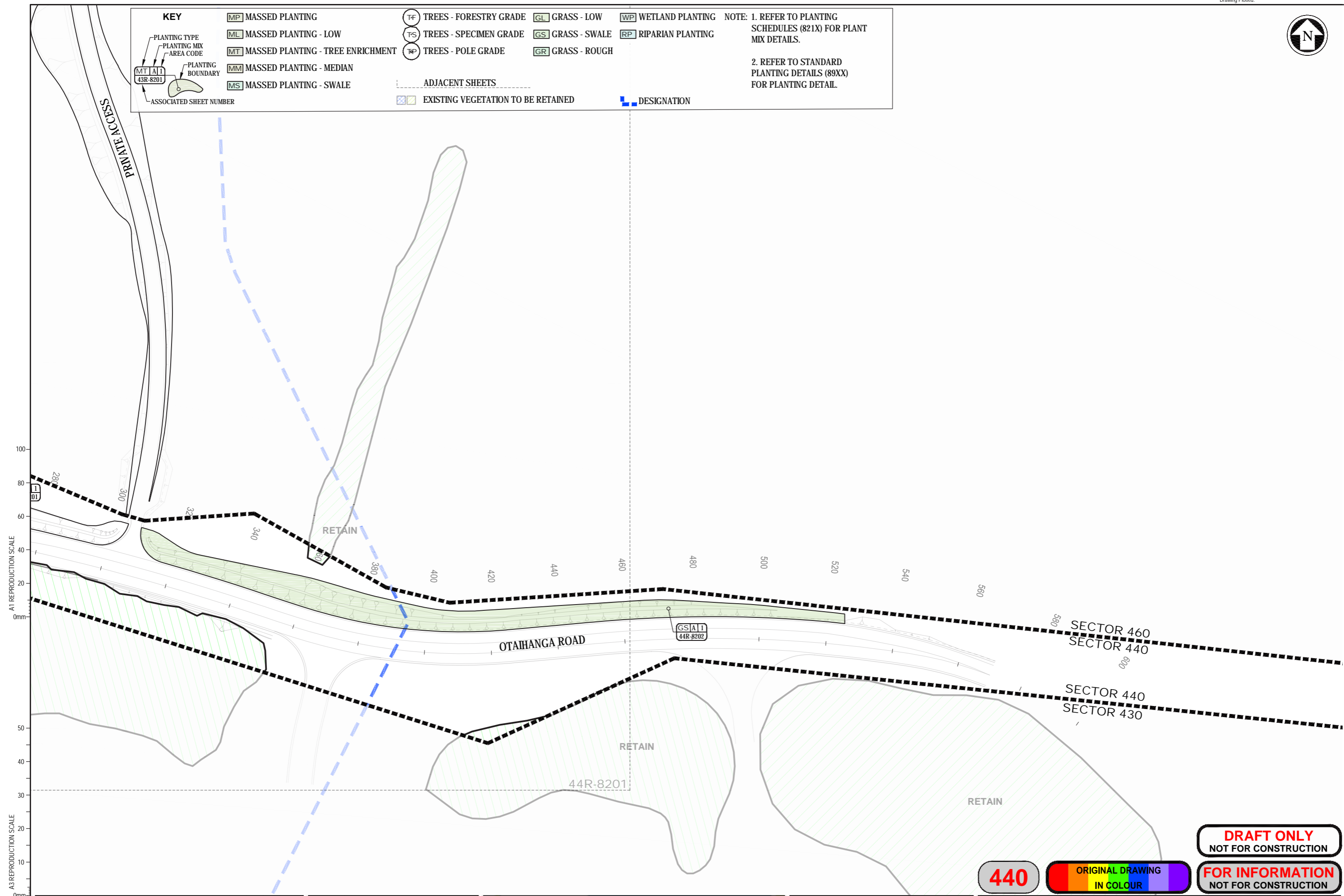
NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS.
2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.

ADJACENT SHEETS

EXISTING VEGETATION TO BE RETAINED

DESIGNATION

PLANTING TYPE
PLANTING MIX AREA CODE
PLANTING BOUNDARY
ASSOCIATED SHEET NUMBER



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

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440

ORIGINAL DRAWING
IN COLOUR

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

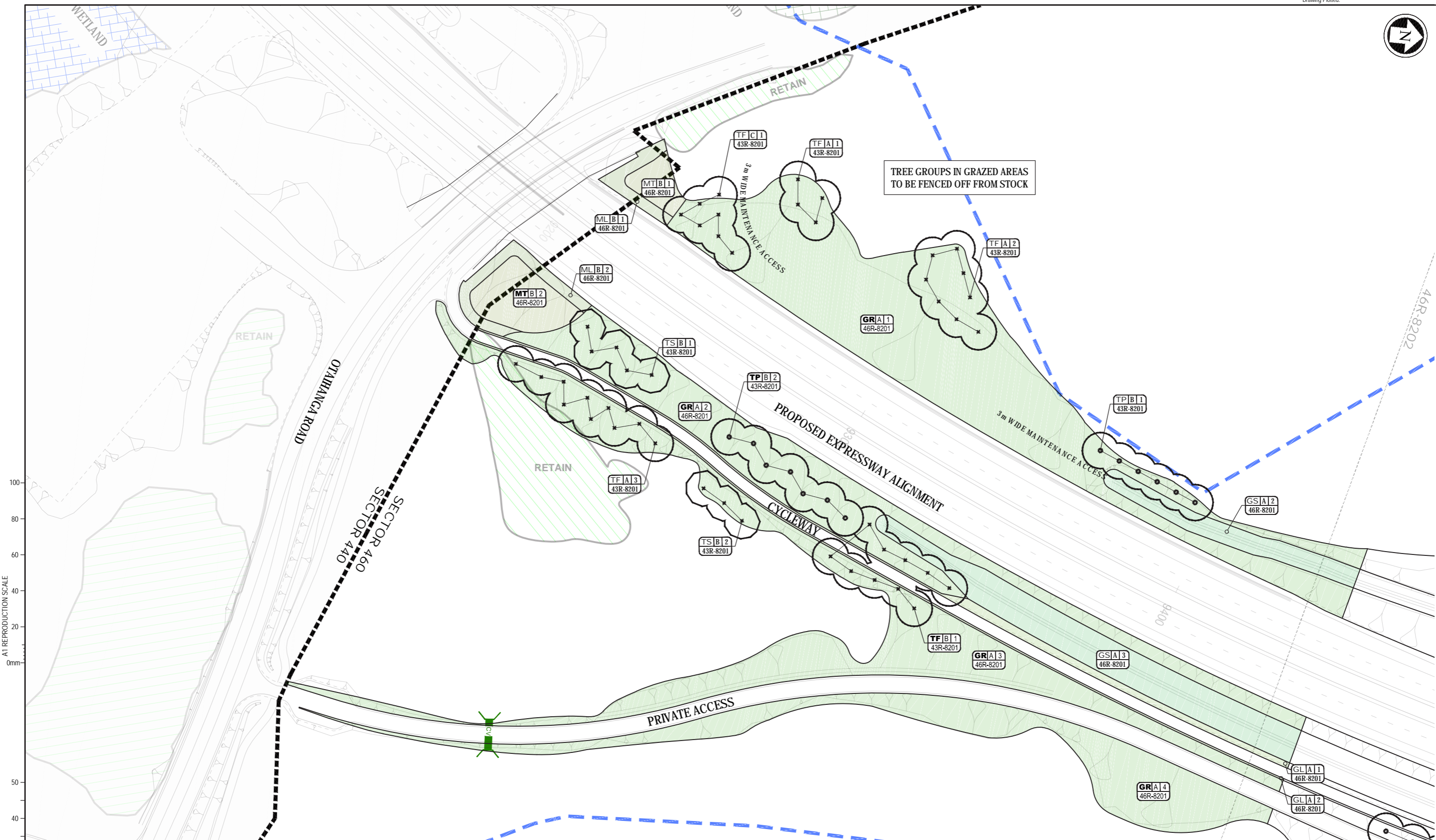
Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:1000	Design Check	
	* Refer to Revision 1 for Original Signature	



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

Title: SSMP 5 & 6 - SHEET 35
PLANTING PLANS

Drawing No: M2PP-44R-D-DWG-8202
Rev: B



A1 REPRODUCTION SCALE
0mm 20 40 60 80 100

A3 REPRODUCTION SCALE
0mm 10 20 30

KEY

MT MASSED PLANTING - TREE ENRICHMENT	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING
ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING
MM MASSED PLANTING - MEDIAN	TP TREES - POLE GRADE	GR GRASS - ROUGH	
MS MASSED PLANTING - SWALE			

NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS.
2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.

ADJACENT SHEETS: EXISTING VEGETATION TO BE RETAINED DESIGNATION

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature



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

460

ORIGINAL DRAWING
IN COLOUR

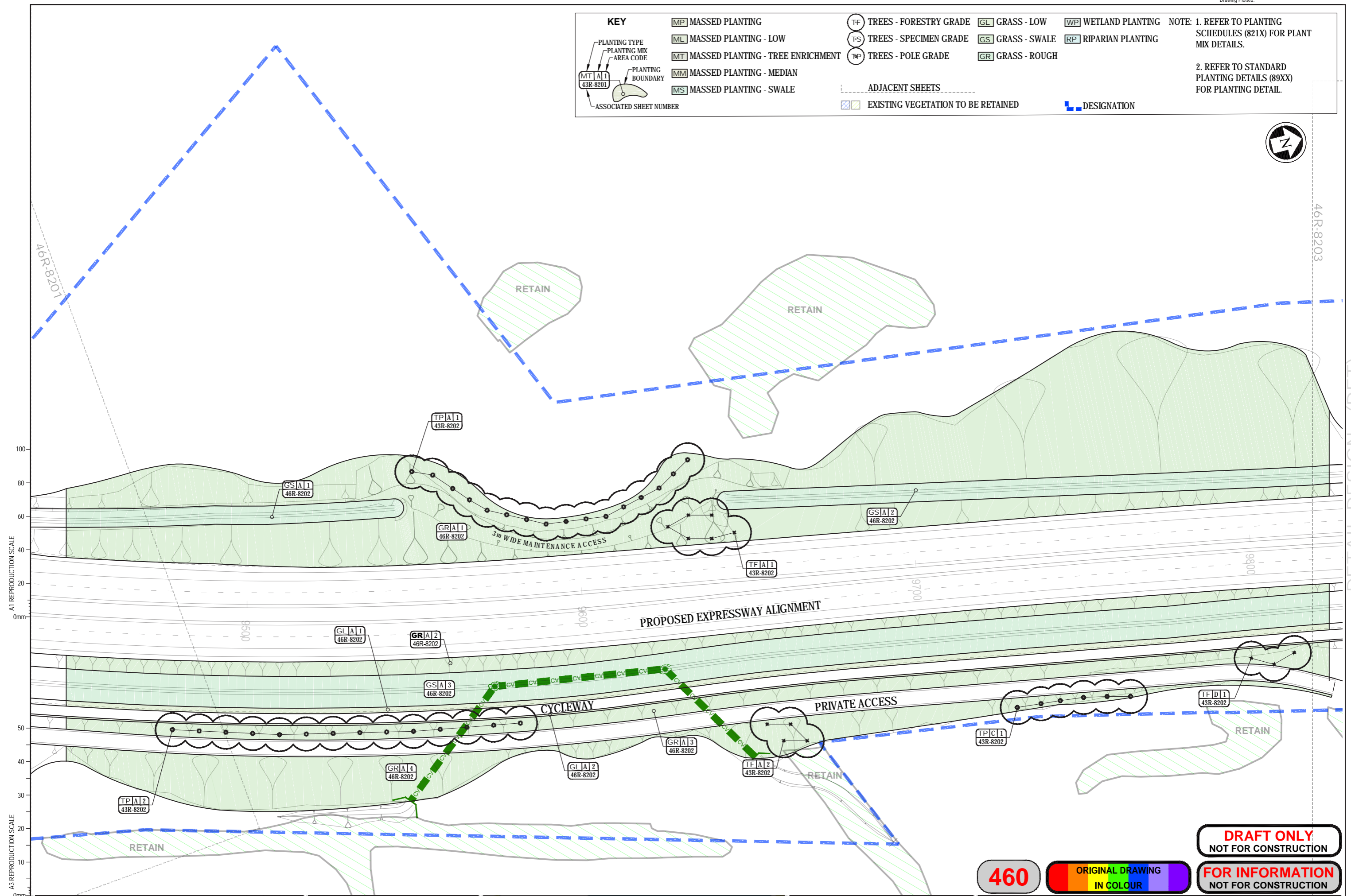
Title: SSMP 5 & 6 - SHEET 36
PLANTING PLANS

Document No.: M2PP-46R-D-DWG-8201
Rev: B

DETAIL DESIGN (DET)

KEY

PLANTING TYPE PLANTING MIX AREA CODE	MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
PLANTING BOUNDARY	ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING	
ASSOCIATED SHEET NUMBER	MT MASSED PLANTING - TREE ENRICHMENT	TP TREES - POLE GRADE	GR GRASS - ROUGH	ADJACENT SHEETS	
	MM MASSED PLANTING - MEDIAN			EXISTING VEGETATION TO BE RETAINED	DESIGNATION
	MS MASSED PLANTING - SWALE				



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

DETAIL DESIGN (DET)

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460 ORIGINAL DRAWING
IN COLOUR

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No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

Original Scale (A1)	Design	Approved For Construction
1:500	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:1000	Design Check	
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Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 37
PLANTING PLANS

Drawing No: M2PP-46R-D-DWG-8202
Rev: B



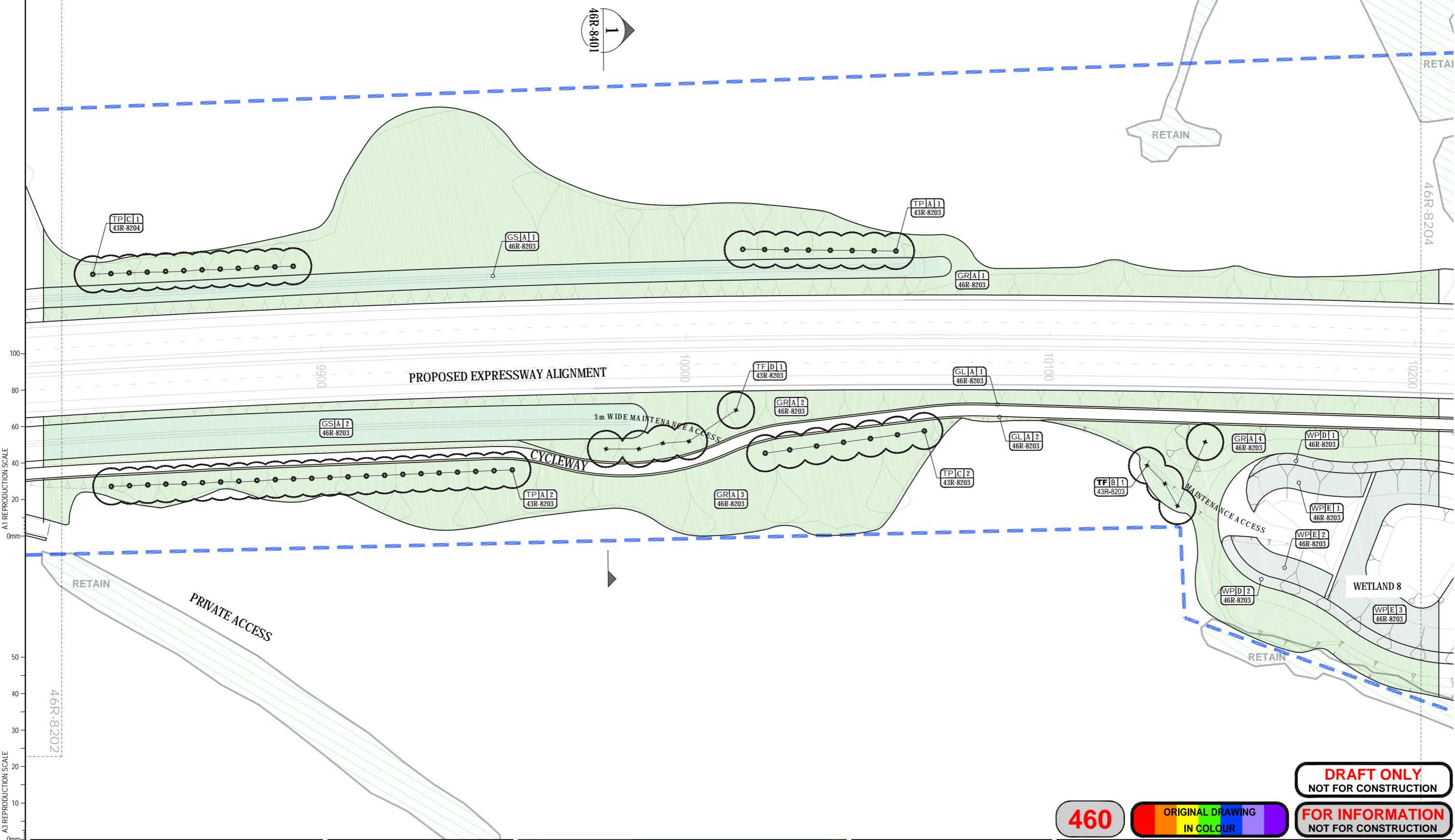
KEY

MT MASSED PLANTING - TREE ENRICHMENT	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING
ML MASSED PLANTING - LOW	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING
MM MASSED PLANTING - MEDIAN	TP TREES - POLE GRADE	GR GRASS - ROUGH	
MS MASSED PLANTING - SWALE			

NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS.
2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.

ADJACENT SHEETS: EXISTING VEGETATION TO BE RETAINED: DESIGNATION:

PLANTING TYPE: PLANTING MIX AREA CODE: PLANTING BOUNDARY: ASSOCIATED SHEET NUMBER:



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
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

* Refer to Revision 1 for Original Signature



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

460

ORIGINAL DRAWING
IN COLOUR

DRAFT ONLY
NOT FOR CONSTRUCTION

FOR INFORMATION
NOT FOR CONSTRUCTION

Title: SSMP 5 & 6 - SHEET 38
PLANTING PLANS

Drawing No: M2PP-46R-D-DWG-8203
Rev: B

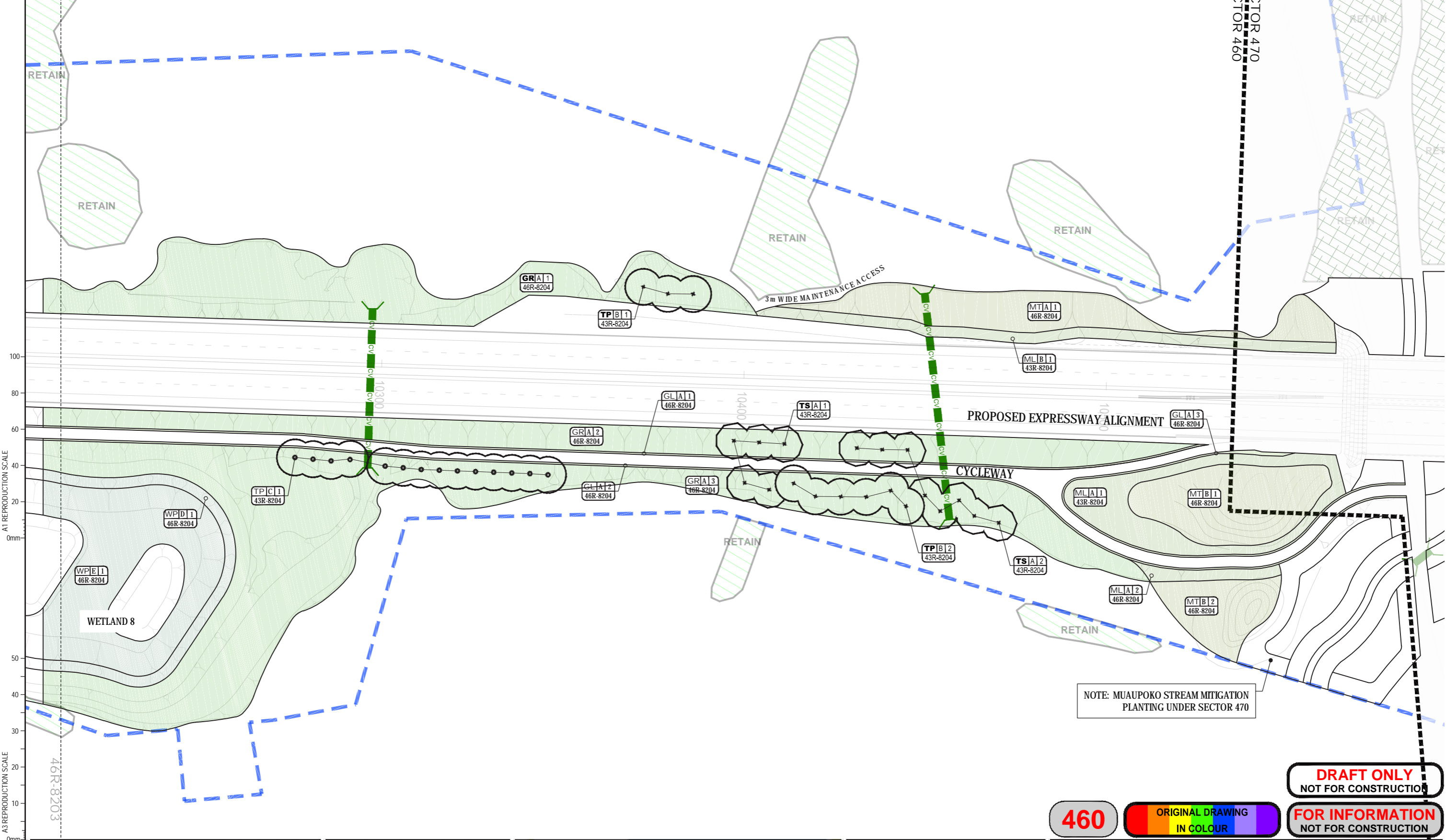


KEY

PLANTING TYPE PLANTING MIX AREA CODE	MP MASSED PLANTING	TF TREES - FORESTRY GRADE	GL GRASS - LOW	WP WETLAND PLANTING	NOTE: 1. REFER TO PLANTING SCHEDULES (821X) FOR PLANT MIX DETAILS. 2. REFER TO STANDARD PLANTING DETAILS (89XX) FOR PLANTING DETAIL.
MM MASSED PLANTING - MEDIAN	TS TREES - SPECIMEN GRADE	GS GRASS - SWALE	RP RIPARIAN PLANTING		
MS MASSED PLANTING - SWALE	TP TREES - POLE GRADE	GR GRASS - ROUGH			

PLANTING BOUNDARY
ASSOCIATED SHEET NUMBER

ADJACENT SHEETS
 EXISTING VEGETATION TO BE RETAINED
 DESIGNATION



NOTE: MUAUPOKO STREAM MITIGATION PLANTING UNDER SECTOR 470

DRAFT ONLY
NOT FOR CONSTRUCTION

460 ORIGINAL DRAWING
IN COLOUR

FOR INFORMATION
NOT FOR CONSTRUCTION

A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

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

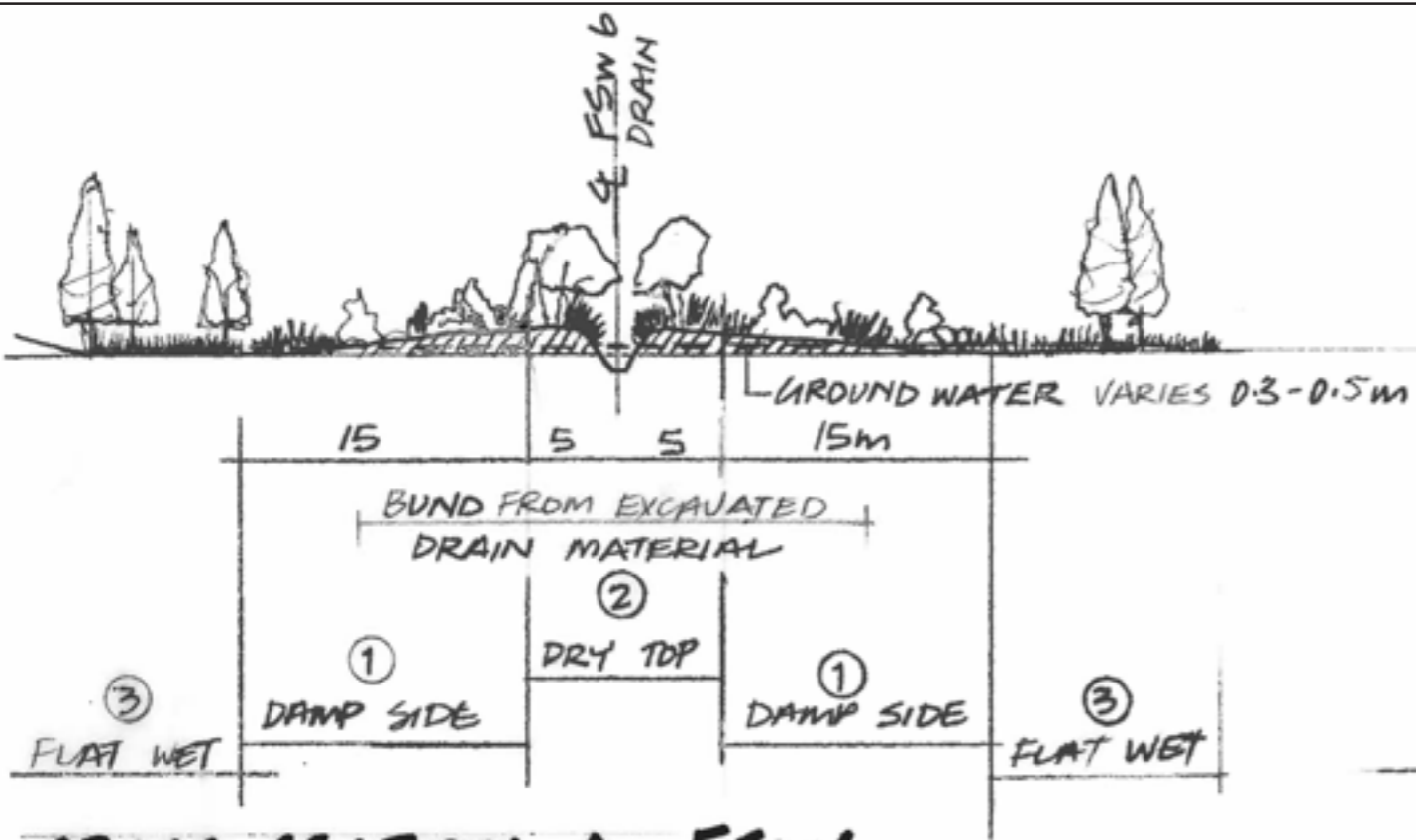


Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

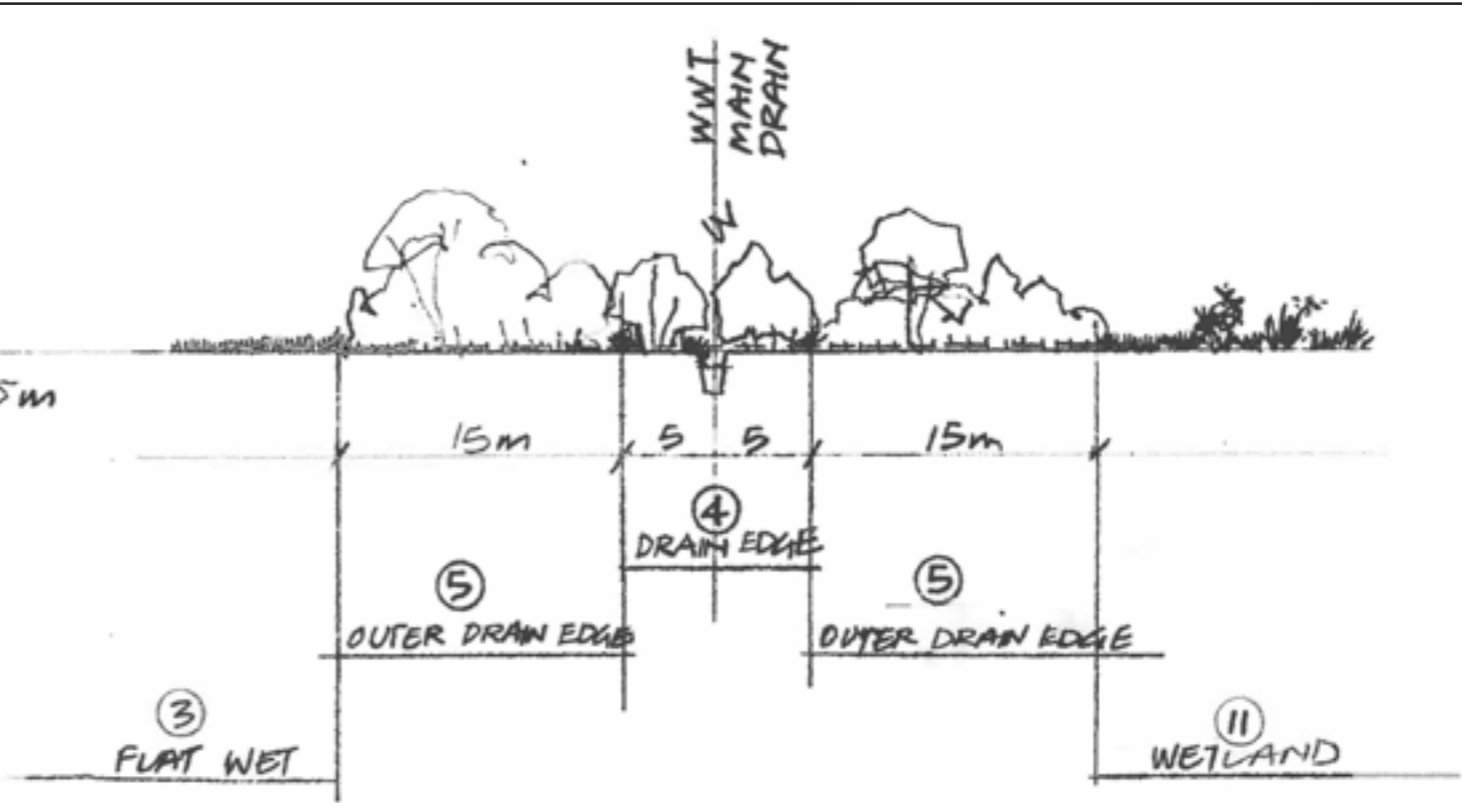
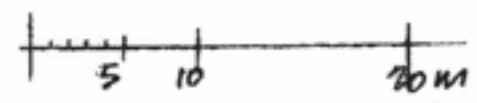
Title: SSMP 5 & 6 - SHEET 39
PLANTING PLANS

Document No.: M2PP-46R-D-DWG-8204
Rev: B

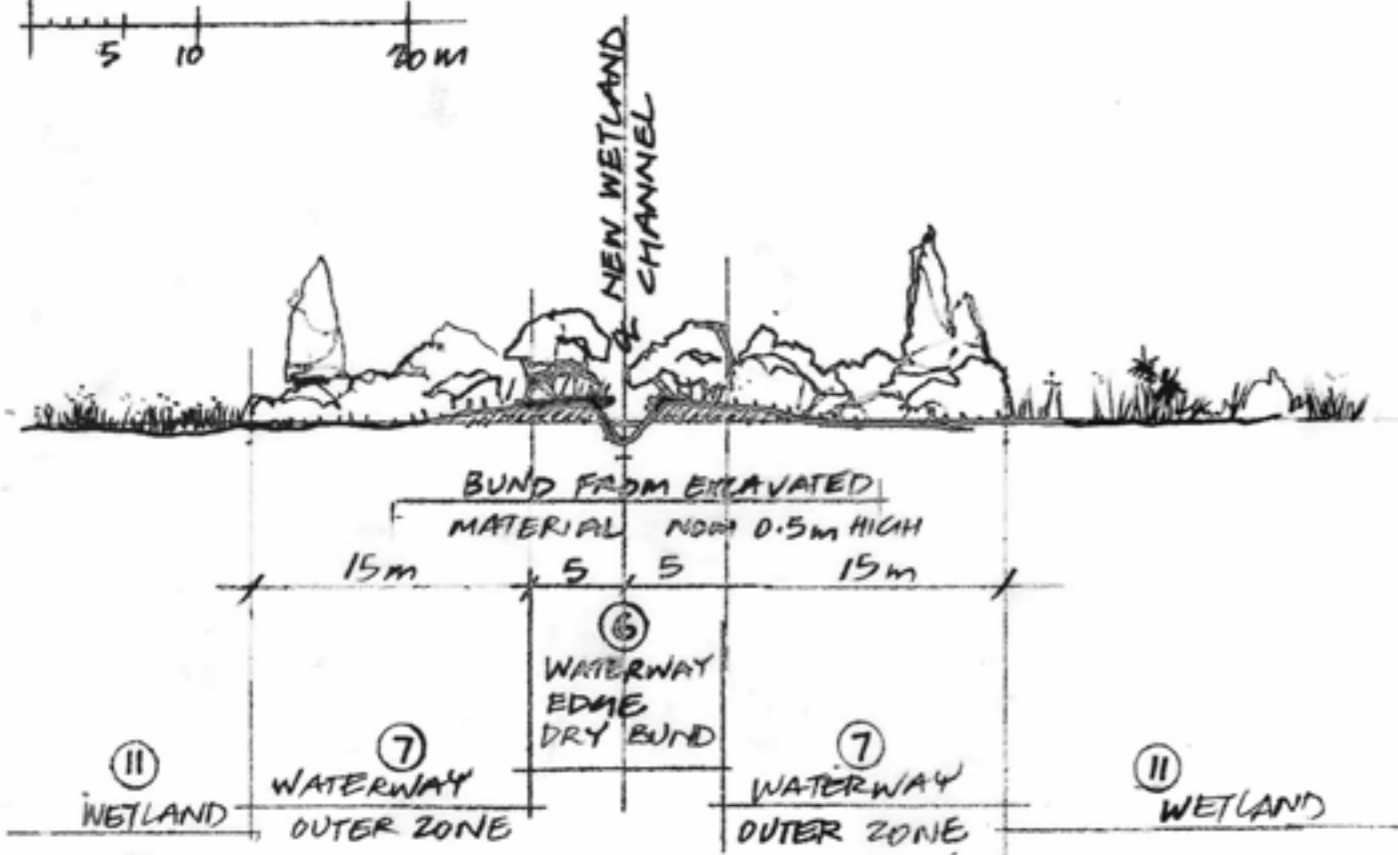
DETAIL DESIGN (DET)



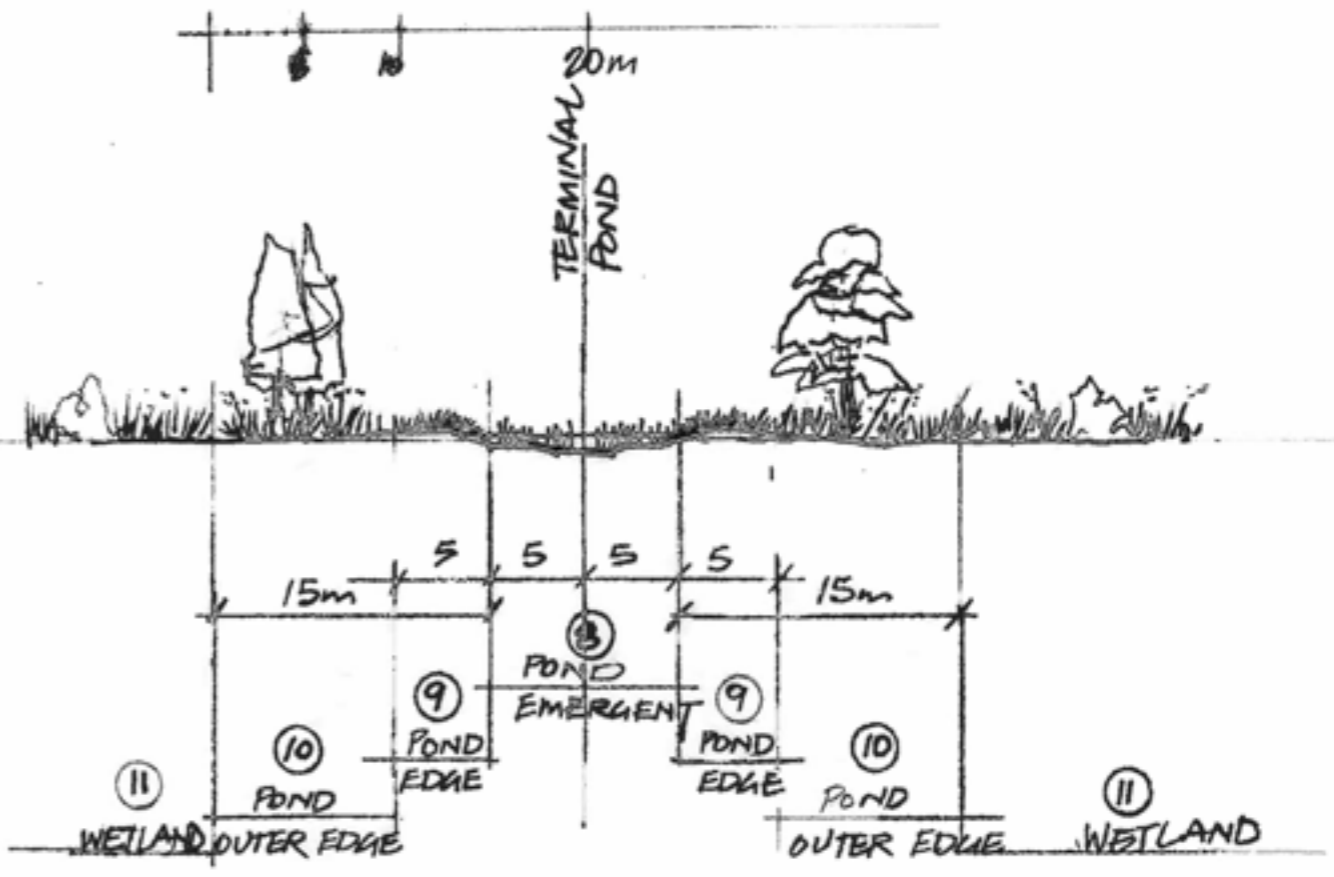
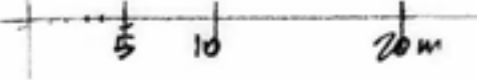
CROSS SECTION A · FSW6



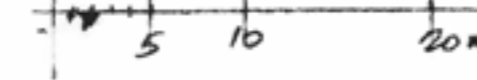
CROSS SECTION B · WWT MAIN DRAIN



CROSS SECTION C · NEW WETLAND (ECO)



CROSS SECTION D · TERMINAL POND



A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	FOR CERTIFICATION					20.12.13
A	PRELIMINARY ISSUE					19.09.13

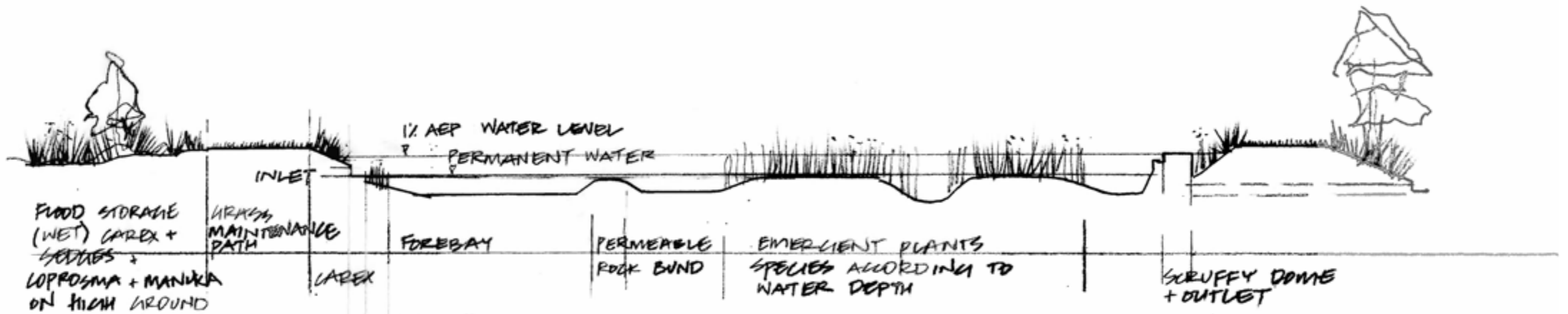
Original Scale (A1)	Design	Approved For Construction
AS SHOWN	Drawn	Date
Reduced Scale (A3)	Design Verifier	
AS SHOWN	Design Check	
	Refer to Revision 1 for Original Signature	



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

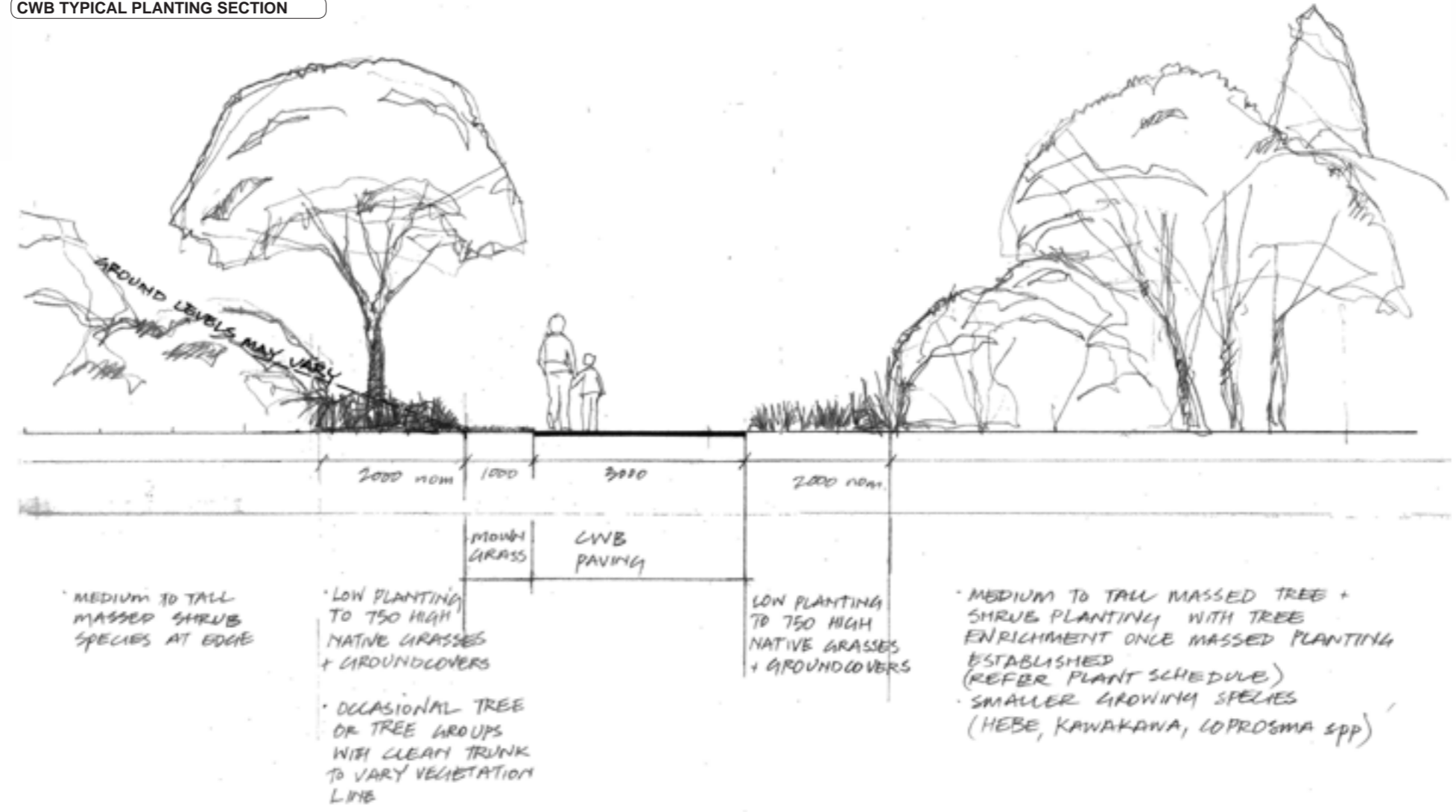
Title: SSMP 5 & 6 - SHEET 40
WETLAND PLANTING SECTIONS

Drawing No: M2PP-121-D-GPH-8603
Rev: B



CROSS SECTION - WB

CWB TYPICAL PLANTING SECTION



MEDIUM TO TALL MASSES SHRUB SPECIES AT EDGE

LOW PLANTING TO 750 HIGH NATIVE GRASSES + GROUNDCOVERS

OCCASIONAL TREE OR TREE GROUPS WITH CLEAR TRUNK TO VARY VEGETATION LINE

LOW PLANTING TO 750 HIGH NATIVE GRASSES + GROUNDCOVERS

MEDIUM TO TALL MASSES TREE + SHRUB PLANTING WITH TREE ENRICHMENT ONCE MASSES PLANTING ESTABLISHED (REFER PLANT SCHEDULE)
SMALLER GROWING SPECIES (HEBE, KAWAKAWA, LOPROSMA spp)

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

B	FOR CERTIFICATION				20.12.13
A	PRELIMINARY ISSUE				19.09.13
No.	Revision	By	Chk	Chk.V	Appd

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

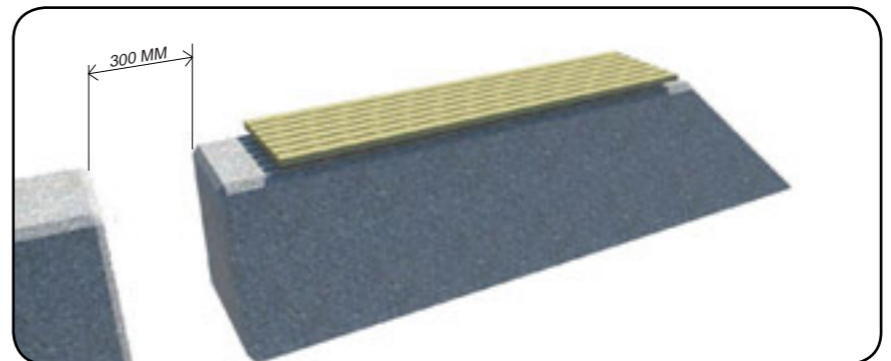
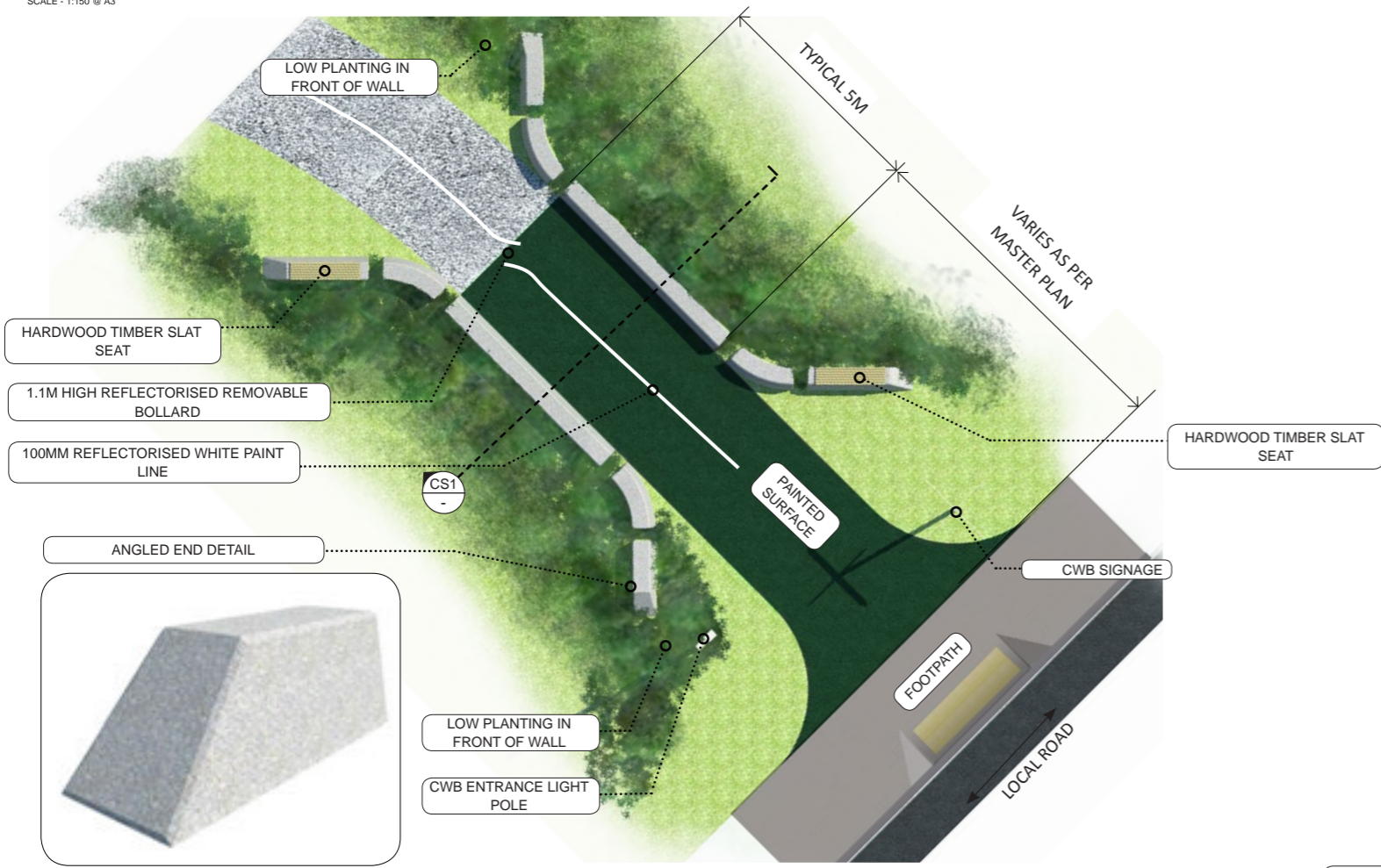
Project SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 5 & 6 - SHEET 41
PLANTING SECTIONAL DETAILS

Drawing No:	Rev.
M2PP-121-D-GPH-8603	B

CYCLEWAY ENTRANCE TYPE 2 - TYPICAL PLAN

SCALE - 1:150 @ A3



HARDWOOD TIMBER SLAT SEAT



HARDWOOD TIMBER SLAT SEAT EXAMPLE

GROUND LEVEL VIEW OF TYPICAL TYPE 2 CYCLEWAY ENTRANCE

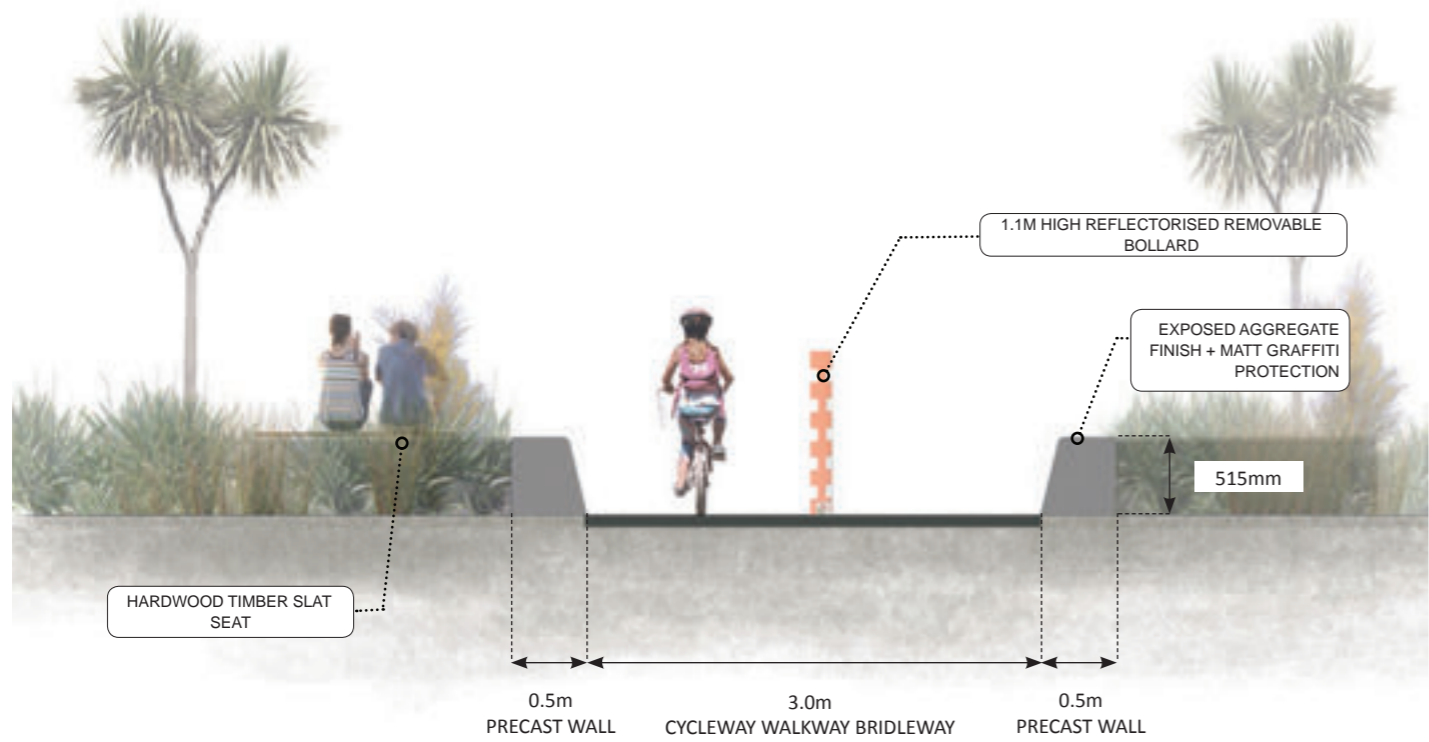


CS1 - CYCLEWAY ENTRANCE TYPE 2 - TYPICAL SECTION

SCALE - 1:50 @ A3

A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40
50



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

Original Scale (A1)	Design	Drawn	FB	01.09.15	Approved For Construction*
Reduced Scale (A3)	Design Verifier	MP		01.09.15	Date
	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 5 & 6 - SHEET 43
TYPE 2 CWB ENTRANCE

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

DETAIL DESIGN (DET)

TYPICAL SIGN TYPES:

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.

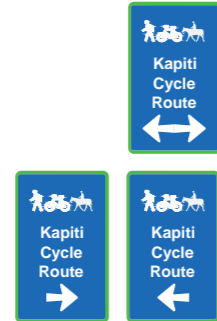
ID - INTERSECTION DIRECTION



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

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.

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.

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.

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

0mm

50

40

30

20

10

0mm

A3 REPRODUCTION SCALE

D	POST CERTIFICATION AMMENDMENT	MP			01.09.15
C	CERTIFIED ISSUE				29.01.14
B	FOR CERTIFICATION				20.12.13
A	PRELIMINARY ISSUE				19.09.13
No.	Revision	By	Chk	Chk.V	Appd

Original Scale (A1)	Design	-	Approved For Construction*
NTS	Drawn	-	Date
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 5 & 6 - SHEET 18
	CWB SIGN TYPE SUMMARY

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

Appendix 2: CONSULTATION, FEEDBACK AND RESPONSES

Site Specific Management Plans 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

M2PP-121-D-MPL-0006

29 JANUARY 2014

The following tables set out the responses to comments raised by reviewers and those parties consulted in regard to the preliminary SSMP. 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 Otaihanga are:

- Te Āti Awa ki Whakarongotai;
- KCDC;
- GWRC;
- Kāpiti Cycling Incorporated; and
- Implementation Group of the Kāpiti Coast District Council Advisory on Cycleways, Walkways and Bridleways

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA					
KCDC REVIEWERS COMMENTS [JW=Julia Williams- Landscape Architect; DP = Deyana Popova-Urban Designer; Stu Kilmister-CWB Planner; Shona Myers-ecologist – provided as document and also meeting notes					
Condition Reference	Condition Detail	Reviewer/commenter	KCDC Reviewer's comment	reference in SSMP	Management Plan Author's response
DC.1	Plans will generally comply with the plan set presented in the AEE	JW	There are inconsistencies with the Landscape and Visual Plans in the AEE: On Sheet 3, an area of vegetation just north of Otaihanga Road in the vicinity of the CWB is no longer shown. On Sheet 5, an area of vegetation to be retained east of Wetland 8, on the edge of the designation is no longer shown.	Sheet 3 Sheet 5	Plans have been amended to address these issues. Note: since the AEE areas of the pine forest adjacent to Otaihanga Road have been removed by others, including, we suspect a small number of kanuka trees. This has influenced the vegetation community mapping that formed the basis of these SSMP areas.
DC.7A e)	SSMPs shall be consistent with the relevant Management Plan and/or the UDLF	JW	Should the third paragraph on "Planting Methods and Specifications" read: Organic mulch shall be placed over the area to be planted at least 2 weeks prior to planting to allow for settlement. <i>Note: organic mulch shall be not used within the areas of wetland and stormwater treatment that are subject to temporary or permanent inundation. For these areas, alternative plant protection techniques will be used (e.g. staking and propriety mapping mechanisms).</i>	Page 24 / Section 5.M	This section has been amended to address this issue.
DC.59A(f)(i)	Lighting for the benefit of pedestrians and cyclists	JW	Require information on lighting	Page 10 / Section 4.A	The lighting of the CWB will include: lighting under the bridges where there is frequent walking and cycling activity (urban areas), an overhead light at each intersection of the local roads and CWB to make drivers and CWB users aware of each other's movements, and lighting of the CWB in the urban section (Leinster to Mazengarb Roads) to provide for way-finding and comfort for users. The details of whether these lights are low level (bollard) or overhead on poles (approx 4.0m high) is being worked through with

					KCDC. All lighting is to be scaled and light levels responsive to standards
		JW	Overall signage concept needs to be finalised in conjunction with local details		Agreed – consultation with KCDC on signage graphics and locations of signs has occurred and these details have been added.
DC.59A(g)(ii)	Minimum 3.0m wide CWB path	JW	The CWB does not meet this condition as is it only 2.5m wide.	Page 10 / Section 4.B	Plans and text have been amended to show 3.0m wide surfaced (seal or Kapiti blue) wide main line CWB. Will be provision alongside 3.0m for horses in rural areas with grass verge 1.0m wide where practicable, without changes to cuts and fill.
DC.57(f)	Each SSLMP shall include details of vegetation retention and proposed planting	JW	<i>"Changes have been made re the Otaihanga pine plantation. I approve of removing all remaining pines once the canopy has been opened. I note that landscape plan, at the time of the meeting on 27-09-13, was to remove all pines, plant the perimeter of the wetland edge, establish quick growing shelter belt vegetation on the private property boundaries (2 rows) and revegetate the remaining area (formerly shown as pine in the AEE plans) in slow growing grass species. Current regrowth in areas cleared a year ago is self-sown mahoe up to 1m tall. Provided the blackberry is kept under control, natural revegetation will occur on these grassed areas if the grass is not maintained."</i>	Page 17 / Section 5.F	Agree in part, and SSMP amended to reflect removal of pines and landscape, visual and ecological buffer planting proposed following pine removal (as outlined in SSMP). Consultation with some adjoining landowners has occurred. Most of the re-growth observed following pine removal has been inkweed, blackberry, gorse and tree lucerne - with only small areas of mahoe and karamu regeneration surrounding the Otaihanga Northern Wetland.
G.41	Areas of valued terrestrial and ecological vegetation	SM	No details provided on area of Kanuka forest to be cleared. <i>"I understand the area of loss may be able to be reduced from AEE, and I support this."</i>	Page 13 / Section 5.A	Agree, SSMP section and graphics updated to reflect revised amount of clearance.
G.42	Mitigation planting	SM	It would be useful to know what percentage of the total proposed ecological planting is represented by the 1.76ha riparian and 1.4ha wetland planting proposed here. <i>"I support minimising the amount of wetland vegetation and habitat affected"</i>	Page 14-15 / Section 5.B & C	Agree, revised to include a new Appendix 5 to illustrate percentage of mitigation across Expressway within this SSMP area.
G.34(m)	Salvage of elements of any valued habitat of indigenous flora and fauna	SM	Area of salvage planting still to be specified	Page 20 / Section 5.I	Agree, updated in terms of estimates of wetland plants for salvage (following advice from constructors on methodology).
DC.64(d)(iv)	Minimising effects of the CWB	SM	Details of minimisation of effects on kanuka still to be specified	Page 13 / Section 5.A	Agree, this section has been updated.
		JW	What is the difference between Wetland Planting, Planted Indigenous Wetland Habitat, and Ecological Wetland Planting	Sheets 2 - 6	No difference, these are all indigenous wetland planting areas.

		SM	"Project will include planting of wetland habitat (new wetland on sheet 2 of SSEMP) as well as salvage and translocation of wetland plants to new wetland and remaining parts of northern and southern Otaihanga wetlands (App 3 of SSEMP). Terminology needs to be consistent through the plan."	Sheet 2 and Appendix 3	Areas of salvaged wetland plants (<i>Carex</i> spp. and <i>Baumea</i> spp.) will be incorporated into new formed wetlands as part of the planting.
G.41(c)(ii) / G.42	Mitigation planting	JW	"The AEE ecological mitigation planting around the WWTP drain (SSMP plan Sheet 2) bears no resemblance to the planting shown on the AEE Mitigation Planting plans page 12 [TR7 Appendix A, Figure 5]. I don't know if the outcome is better or worse than the original plans."	Page 19 / Section 5.1 Sheet 2	AEE mitigation plans were illustrative in nature, with details to be confirmed in conjunction with detailed design (and ecological, stormwater input). Key design intent was to incorporate ecological mitigation requirements within this SSMP ecological mitigation focus area. And this is shown on the plans.
G.41(c)(ii) / G.42	Mitigation planting / New wetland adjacent to the WWTP Drain to mitigate permanent loss of wetlands	SM	The SSMP identifies planting around the WWTP Drain as being in a stormwater storage area, the function should be primarily ecological and not stormwater "Proposed wetland planting is in similar area to that identified in Fig 4, page 91 of EMP and F-2 of Matiu Parks evidence. Page 19 of SSEMP describes planting as being <i>Baumea</i> and <i>Carex</i> sedgeland and scattered manuka habitat with enrichment planting of <i>kahikatea</i> , <i>swamp maire</i> and <i>pukatea</i> which I support. SSEMP however identifies this wetland planting as being in stormwater storage area – function should be primarily ecological and not stormwater."	Page 19 / Section 5.1 Sheet 2	As agreed by GWRC and KCDC ecological reviewers in development of EMP, these areas have multiple functions in terms of flood storage requirements to maintain hydraulic neutrality, landscape and visual mitigation as well as ecological mitigation requirements. As agreed during certification of the EMP, these areas have been designed to function as ecological mitigation areas with a number of ecological success measures to be demonstrated as part of ecological and landscape sign-off. Noting this, maintaining the other roles of flood storage and landscape and visual amenity are critical.
DC.7A, DC.57A & DC.59A	SSUDPs and SSLMPs must be consistent with the ULDF	JW	ULDF 5.10.1: Plans don't show or indicate landform to be retained although this was shown on the Vegetation to be Retained plans eg M2PP-46R-D-DWG-8701 Sheet 1. Would be useful to indicate this on the landscape plans.	Sheet 2 - 6	The Vegetation To Be Retained plans for this SSMP area have been submitted to KCDC and these illustrate the updated landforms to be retained.
		JW	ULDF 5.10.4: The ULDF proposed a standard slope of 1:3. Cross-section 1 (east of southbound lane) shows 1:1.67	Sheet 9	Cross section 1 has been amended to reflect the current design as shown on the plans.
		JW	ULDF 5.10.5: "Stuart Kilmister reports limited success re hydroseeding on dunes over summer. Is there a fallback position if hydroseeding does not succeed?"	Page 18 / Section 5.H	The Landscape Specification (Appendix 3) sets out the details for hydro-seeding and notes that if environmental conditions are unfavourable alternative methods shall be used (e.g. applying organic mulch directly on to sand faces, or using straw worked into the surface, etc).
		JW	ULDF: 5.11.2: Remove <i>Vitex lucens</i> from Planting Schedule - not a local species and considered a weed	Sheet 22	Agree, SSMP amended to delete this species.
		JW	ULDF 5.7.3: Direct sight lines along local roads to and under bridges to be finalised		Sight lines are shown in the SSMP on Sheet 6.
		JW	ULDF 5.7.4: Details to be provided on the scale and shape of abutments to provide an openness along with consented and proposed abutment forms and gradients		Spill-through abutments are provided with abutment angle reduced to 70 degrees, refer Appendix 3.

		JW	ULDF 5.7.5: Requires detail on how gabion forms and precast panels with stone facing will be integrated under bridges and on transition from abutments to landscape context.		Gabion walls replaced with pre-cast concrete panels with exposed aggregate finish. Gabion walls used as a transition marker at CWB intersection. These will tie into side of bridge abutment.
		JW	ULDF 5.7.7: No detail has been provided on how the spaces beneath bridges will be lit to enhance the quality of the space including natural light penetration		No lighting will be installed under bridges in rural areas (including Otaihanga Road bridge). However, there will be two pole lights at the end of the cycleway at the intersection with Otaihanga Road.
		JW	ULDF 5.7.12: Prefer Option 2 on Sheet 12 over Option 1. Page 12 notes that "a wide space of 6.0m width is provided for CWB on the south side of Otaihanga Road under the bridge", should this read 3.3m?	Sheet 12 and Page 12	Confirm that this should read 3.0m (minimum).
		JW	ULDF 5.9.4: How is the textured upper half of the noise wall shown on sheet 12 integrated in the low barrier? How is the transition from 2m barrier to 1.1m barrier handled?	Sheet 12	Both the bridge abutment pre-cast panel and the 1.0m upstand at the toe will be finished with an exposed aggregate.
		JW	ULDF: 5.13 Median Barriers: On sheet 9, cross section 1, is it planting or grass in the 3m median strip? It looks too narrow to plant or maintain.	Sheet 9	There is no planting in the median in SSMPs 5 & 6. Median planting will occur only where the median is 6.0m wide and the road is straight; if there is a 6.0m wide median but the road is on a curve, there cannot be any planting because it will restrict sightlines.
DC.57	The SSLMPs shall be consistent with the LMP	JW / SM	LMP 8.41.3: How is the interface between the Otaihanga Kanuka and Mass Planting Area 2 treated? Will existing kanuka have the perimeter buffered by kanuka planting? Is there any problem with the proposed planting seeding into the kanuka stand? <i>"I understand effects on Otaihanga will be significantly minimised which is supported. Any plantings need to be appropriate and eco-sourced"</i>	Sheet 17	The intention here is to use kanuka slash from any trees lost within the Otaihanga Kanuka Area for the buffer area (area cleared) as far as practicable (depends on how much is available - as focus is to minimise loss) and then buffer plant this area with kanuka dominated species mix. Ecological observations suggest that exotic grasses and broadleaved vegetation are likely to restrict future regeneration of this area - so the kanuka species mix is supported.
DC.57	The SSLMPs shall be consistent with the EMP	SM	EMP 7.7.3 & 7.1.3: Further details needed with regard to EMP 7.7.3 Wetlands and 7.1.3 Indigenous Vegetation		Uncertain as to nature of comment.
DC.59A(g)	The SSUDP prepared for the CWB shall include certain information	SK	The footpath under the Otaihanga over bridge identified as 2.0m does not meet condition DC59B ii which states Austroads is the appropriate design guide with an absolute minimum standard for a shared path is 2.2m in fact it should be built to a reasonable minimum of 2.5m wide with a barrier to separate vehicle traffic from pedestrians and cyclists	Sheet 8	Agreed – CWB under Otaihanga Bridge will be minimum of 3.0m

SK	The identified crossing point does not adequately show how recommended guidelines for sight lines are achieved particularly from the northern over bridge abutment when looking westbound (towards the sea). I understand the minimum recommended sight line is 73m in a 60km/hr zone and 115m in an 80kmhr zone – this requirement should be confirmed and shown how it can be achieved in this location. If the Alliance cannot achieve the appropriate sight lines we would like to offer a possible solution by placement of a central refuge over the throat of the site office driveway. I understand that the sand dune will be reinstated once the site office shuts down so the widened pavement immediately outside the site office driveway could conceivably contain a central pedestrian refuge, which the CWB path could be redirected too.		Agreed – the sight lines have been described on plan to demonstrate that these can be met.
SK	The geometry on the cycle way curves are not shown. As we don't know the design speed of the cycle way we cannot be sure what the radii is on the curve leading under the southern abutment, and if it will be fit for purpose. We assume a cycleway design speed of 15-25kmhr but this detail is lacking from the design drawings		The design standards are those from AUSTRROADS. The provision for curves will meet these standards.
SK	Sheet 12 shows two CWB options under the southern abutment; with or without gabion treatment. We support removal of the gabion to create additional width (3.3m max shown) We recommend 2.5-2.8m with a vehicle proof barrier to provide further separation	Sheet 12	Agreed – the gabion will be removed to allow more space for CWB. It is not agreed that a vehicle proof barrier is appropriate. A raised kerb is proposed and frangible marker poles installed at the kerb edge between the CWB and the road carriageway. A solid barrier is considered inappropriate as it will generate a sense of entrapment beneath the bridge, will take up further width of space to be of 'vehicle proof' construction, cause a build-up of rubbish on the path and may restrict sight lines.
SK	Sheet 21 shows the notional CWB path at 2.5m wide with a 1m grass verge for equestrians. We believe the Condition DC59G ii states 3.0m will be provided on the CWB path parallel with the expressway. This is not shown in the drawings. We believe the shared pathway should be 3m wide	Sheet 21	Agreed – plans and text amended to show 3.0m wide surfaced (seal or Kapiti blue) wide main line CWB. Will be provision alongside 3.0m for horses in rural areas with grass verge 1.0m wide where practicable without changes to cuts and fill.
SK	We are unsure to what extent lighting is provided at the crossing point and /or under the Otaihanga Road overbridge		No lighting is proposed on the CWB or on the Expressway itself in this rural location. However, a pole light is proposed at the thresholds of the CWB with Otaihanga Road to act as orientation points, recognizing the change in position of the

				<p>CWB from the west to east sides of the Expressway as suggested by CPTED review.</p> <p>It is anticipated that cyclists using the CWB at night will have lights for their own safety and to light their way ahead.</p> <p>There is no existing street lighting on Otaihanga Road and no new lighting is proposed.</p>
		JP	<p>Suggested points for consideration regarding the conflict area between cyclists and vehicles on Otaihanga Road Crossing:</p> <ul style="list-style-type: none"> * Loop activated flashing cycle warning signs on both sides of the crossing point * Provision of a physical barrier separating the shared path from the traffic lane on the south side of Otaihanga Road 	<p>As noted above; the safety at Otaihanga Road CWB crossing will be provided for by the sightlines to give drivers and people using the CWB visibility to each other's movements across the road, a static warning sign to alert drivers to the crossing point from each direction, a kerb line to the CWB from Otaihanga Road to discourage drivers from driving onto the CWB, and upright marker posts on the kerb line to reinforce the separation and provide definition to the road edge and CWB space for users.</p>

Table added 12 February 2014

<i>COMMENTS ON CERTIFICATION ISSUE SSMP5+6:OTAIHANGA</i>			
<i>KCDC REVIEWERS COMMENTS</i>			
<i>Page</i>		<i>KCDC Comments</i>	<i>Management Plan Author's response</i>
9	Consultation	Not complete: Iwi group to respond.	Response included in Appendix 2
Sheet 4	Final designation	There is no final designation marked on the plans and no indication of what will sit on the 'boundary'. I assume that there will be stock in this rural zone so will a 7-wire fence be used? In this area between Otaihanga Road and Waikanae Bridge, it may make sense to have the fence on the western side of the private driveway. Either way, some indication of fence type and location is required.	<p>The final designation boundary is to be confirmed once construction is completed. Condition DC.2 requires the width of the designation to be reviewed and any areas of land that are not required for the operation, maintenance, off-set mitigation and storage areas are removed from the designation. DC.2 c) requires that we give notice to Council of the final designation.</p> <p>The Alliance has developed 2 types of fencing specifications for final boundary treatment in rural areas:</p> <ul style="list-style-type: none"> • 7 wire stock fence • Deer fence <p>In urban areas:</p> <ul style="list-style-type: none"> • 1.8m galvanised chain link • 1.8m timber fence
Sheet 6	Otaihanga Construction Yard	One issue that councillors were very concerned pre hearing about was the reinstatement of the dune landform along the frontage of the yard once it was decommissioned at the end of construction, particularly the dune at the entrance to yard. The plan shows the entry revegetated but not the reinstatement of the dune.	Note added to Sheet 6 as Revision C
Sheet 42	Plant schedule	No percentages for mix for MP1 and MP 2 edge plantings	Schedule updated, issued as Revision C
Page 19	Mitigation Planting	Massed planting (and this is a question rather than a criticism)– aren't the drier slopes those that are west facing cf east facing	Correction made

Page 7	Appendix 3 Bridge Summary	Under ULDF Principles Summary, text for principle 7 has to be edited (for typos) and also the word 'Textured' needs to be removed as it is not intended. <i>DP Notes; I have confirmed this with Dean and Frazer at one of our meetings</i>	Cannot change wording of Principle 7. 'textured' removed from assessment column, sheet replaced
Page 3	Appendix 3 Bridge Summary	Add material finishes	Material finishes not to be included on this plan. Surface finishes shown on Sheet 8.
Appendix 4	Landscape Specifications	There is no formal process for incorporating the final soil mix details/ proportions into the specification and this information will be useful for Council. It would be useful for the Council to have a copy of the final topsoil mixes and the locations where they are used for future reference.	KCDC will be provided with the final soil composition ratios once confirmed with the Alliance construction team. These will be sent through separately (i.e. will not form part of the Landscape Specifications)
Appendix 4	Landscape Specifications	Specification document C5010 – Landscaping – Maintenance Only has been dropped from the Specification set that will be used by the Constructor as essentially it is only relevant for post construction maintenance. However reference to it is embedded throughout the Landscaping Specifications M2PP-220-D-SPC-120.	Correction made

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA					
GWRC REVIEWERS COMMENTS [PW=Philippa Crisp, AF=Adam Forbes]					
Condition Reference	Condition Detail	Reviewer/commenter	GWRC Reviewer's comment	reference in SSMP	Management Plan Author's response
G. 41 c)	Identification of valued indigenous vegetation.	AF	Can the proposed extent of loss (ha) of the Otaihanga Kanuka Forest be confirmed? It appears that detailed design has determined a changed extent of loss. However, no specific detail is provided as to what the change is. As a consequence is there any change to the nature and/or amount of mitigation required, and are there any resource consent or consultative requirements due to this change?	Page 13. Section 5A.	Agree, SSMP has been updated with final details. A lesser are of the Otaihanga Kanuka Forest will be affected than was originally proposed at issue of resource consent.
G.41 c)	Identification of valued indigenous vegetation.	AF	It is noted that no vegetation clearance is proposed to the Otaihanga Mahoe site.	Page 13. Section 5A.	Agree, no modification is required to this valued area of vegetation.
G.42 & DC.57 f)	Mitigation planting.	AF	It is not clear how kanuka slash will be used in buffer planting around Valued Vegetation to be retained – specifically in the buffer planting treatment around the newly exposed edges of Otaihanga Kanuka. The SSMP states "kanuka slash...will be used around immediate edges as temporary protection". Can you please clarify what is intended here? Does this mean the kanuka slash be used as part of measures to protect the remaining forest from physical disturbance, or does it mean the slash be used to protect planted specimens (or is there another protective use)? Please confirm – will planted specimens (i.e. the kanuka dominant species mix) be planted within/amongst areas of slash? Also, will specific provision be made for any kanuka slash holding seed at the time of felling to be specifically used as a kanuka seed source when arranging slash within the buffer planting treatment? How far will buffer planting typically extend from the newly cleared kanuka forest edge?	Page 23. Section 5.L. Bullet 3— "Buffer planting around..."	Agree, SSMP text amended to better reflect the intent of the kanuka slash to assist with establishing kanuka edge planting around the Otaihanga Kanuka Forest. Extent of buffer planting identified on SSMP drawings.
G. 42. b)	Specific areas/length of mitigation, especially planting.	AF	It is noted that the proposed area of stream mitigation planting is 0.01 ha less than the amount stated in the EMP. Can the reason for this shortfall please be provided, with an explanation of how that amount will be included at this or another site?	Page 14. Section 5.B. Second bullet.	This section has been amended to demonstrate how any shortfall in mitigation will be undertaken with this SSMP area or others.

G. 42C	Details of new stream.	AF	With regard to the new stream, please confirm (details not given in SSMP): - distance in meters of new stream to be created. - area (ha) of proposed riparian planting. - target SEV score for the new stream channel.	Pages 20 & 21. Section 5.J.	Agree, final areas now included on distance in metres of new stream to be created, area (ha) of proposed riparian planting and target SEV score for new stream channel.
G. 42 & DC. 57 f)	Mitigation planting.	AF	With regard to the proposed boundary planting, Killalea Drive, where fast growing exotic tree species are proposed—it is noted that poplar and willow are being considered. Has consideration been given to incorporating a suitable type of flowering gum tree? With careful selection this planted area would then provide a winter nectar source for nectar feeding birds and insects of the area.	Page 24. Section 5.L.	Pine removal extent and nature of buffer planting (if any) is being agreed with KCDC. Consultation with several of the neighbours has occurred and this has involved discussion on suitable tree species; various eucalypt species and several other tree species are being considered.
G 42.	Mitigation planting and habitat replacement.	AF	Regarding the proposed wetland on the WWTP drain—on comparison of the configuration of mitigation types presented in the EMP ("SSEMP SITES – GENERAL LOCATION PLAN OTAIHANGA WETLANDS") with the SSMP 5 & 6 – Sheet 2 Masterplan, there appear to be differences in the layout of mitigation zones. Such as, the SSMP shows a Flood Storage Area. This area is not shown on the corresponding EMP plan. Further, the EMP plan proposes the southern parts of the proposed wetland area as terrestrial mitigation planting (light green hashed) however the SSMP shows this area as ecological wetland planting and riparian planting. A brief explanation of how these changes have come about would be appreciated, along with confirmation that specific required areas (ha) of mitigation are still provided for/incorporated in the changes.	SSMP 5 & 6 – Sheet 2 Masterplan & EMP SSEMP Sites – General Location Plan Otaihanga Wetlands	In general as agreed through the BOI process and in developing the EMP, the intent of most of the wetland mitigation areas within the SSMP sites was for these areas to be located within offset flood storage areas. Agree there has been a change in this location, but the intent of the detailed design was to rationalise these areas - and this has been done through the incorporation of flood storage areas and new planted wetlands (and through following stormwater modelling). The full extent of ecological mitigation planting has been updated to reflect these changes (and changes from the EMP).
G. 42C	SSMP content	AF	In accordance with Condition G.42C c) vii), please provide specifics for monitoring and maintenance processes relating to control of plant and animal pests, and planting maintenance.	Page 28. Section 5.U.	These aspects are all addressed in the Landscape Specifications in Appendix 4.
G. 42C	SSMP content	AF	In accordance with Condition G.42C c) iii), please provide areas and lengths of mitigation areas where that data is not already part of the SSMP 5 & 6.	-	Refer updated information in SSMP and Appendix 5.

DC. 57 f) & G. 42C c)	Planting methods and specifications	AF	In the third paragraph it appears there is a word missing which actually reverses the meaning of the paragraph. The Note reads "Organic mulch shall be used within the areas of wetland..." — it is suggested that this Note should read: "Organic mulch shall NOT be used within area of wetland...". Please either amend accordingly or confirm that this correction is not necessary.	Page 24. Section 5.M.	Agree, the text has been amended to reflect this error.
Various	-	AF	Please provide the missing Appendices relevant to Section 5. M – V inclusive.	Pages 24 – 28.	Agree, revised Appendices now included.
DC. 57 f) & G. 42 c)	Plant maintenance.	AF	Please advise whether a standard protocol (photopoint monitoring?) will be used for photographing restoration areas (planted areas). If not a standard protocol – what will be the basic approach to this monitoring to ensure the data is consistently useful in the future?	Page 27. Section 5.S.	Photopoints will not be formally used but site photographs of planting will be taken regularly during site inspections as part of monitoring planting. As outlined in the EMP and LMP, there are a range of plant success measures that will be used, predominantly 80% canopy cover achieved and successfully maintained. In terms of ecological parameters, these are set out in the EMP and include a number of measures.
Various	Mitigation success monitoring.	AF	Proposed methods for annual weed survey, annual pest monitoring, and landscape and ecological success monitoring – post construction, are not provided in the SSMP. For example, in relation to landscape and ecological mitigation planting—how will the success measures (e.g. 80% canopy closure or natural colonisation by non-planted indigenous species) be determined— e.g., transect or plot based survey or another method?	Pages 28 & 29. Section 5.V.	These are outlined in the EMP, LMP and maintenance schedule (Landscape Specifications in Appendix 4), predominantly using visual inspections tailored to various planting types (e.g. wetland plant canopy success will be different to terrestrial).
N/A	N/A	PC	Should be Foxton, not Manawatu Ecological District?	Page 26	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.
		PC	Weedy species – Japanese cedar and <i>Salix matsudana</i> – sterile clones?	Sheet 22	<i>Salix matsudana</i> x <i>alba</i> 'Moutere' has been specified, which is a sterile clone. A limited amount of Japanese cedar (<i>Cryptomeria japonica</i>) has been specified as it is part of the character of this area; there are several large existing Japanese cedar trees, which have been planted for amenity in this rural lifestyle area.

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA – ADDITIONAL COMMENTS on 7 December 2013					
GWRC REVIEWERS COMMENTS [AF=Adam Forbes, ecologist]					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/commenter</i>	<i>GWRC Reviewer's comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
		AF	Appendix 5, Table 1A is missing the 'A' in its labelling	Appendix 5 Ecological Mitigation Table	Amended table title to refer to '1A'.
			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.		Three new sections added 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 (these being the largest ecological mitigation sites).

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA – ADDITIONAL COMMENTS, CERTIFICATION ISSUE on 15 January 2014					
GWRC REVIEWERS COMMENTS [AF=Adam Forbes, ecologist]					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/commenter</i>	<i>GWRC Reviewer's comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
G.42 & DC.57 f)	Mitigation Planting	AF	As noted in earlier comments it is not clear how kanuka slash will be used in buffer planting around Valued Vegetation	Pages 21 and 22, Section F. Vegetation to be Cleared.	This section has been expanded to explain the process and supervision of the work by the Project Ecologist.
G.42 b)	Specific areas / length of mitigation, especially planting.	AF	Shortfalls in Stream Habitat mitigation proposed – Freshwater and Riparian. This matter, now and ongoing, needs to be addressed (i.e. a plan going forward on how will the required mitigation be provided for within the bounds of available space.	Pages 16-17 Streams and Riparian Works and page 19, Wetlands	This has been addressed by providing information and details (i.e. increased stream length and associated riparian planting is proposed within either: Drain 7/Wharemauku Ecological Mitigation Area; the Kakariki/Smithfield Ecological Mitigation Area; the lower Ngarara Stream downstream of Ngarara Road; or the upper Kakariki Stream upstream of the Designation.

G.42	Mitigation planting and habitat enhancement.	AF	As per comments raised in re relation to Preliminary Issue of SSMPs 5 & 6 (see table above).	Pages 16-17 Streams and Riparian Works and page 19, Wetlands	As per comments above.
Various	Planting specifications	AF	Planting Specification not provided with SSMP.	Appendix 4	Landscape Specification has been issued as Draft as part of SSMP; Specification is currently undergoing internal review and will be supplied when internal review has been completed.

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA KAPITI CYCLING INC.					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/commenter</i>	<i>Comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
DC59A.f ii and iii and DC59A.g, DC59Ai(xi) and DC.57 c)	CWB		Suggest that as an additional safety feature, the Alliance researches the availability of smart warning signs. We believe that there are products that detect the presence of a cyclist approaching on the CWB, and then provide a signal to a variable message sign set up to provide the standard MOTSAM 'cyclist' symbol in a yellow flashing mode	Page 10	It is not proposed to install additional warning signs as design engineers have determined that the sightlines and static warning signs provide for safe crossing.
DC59A.f ii and iii and DC59A.g, DC59Ai(xi) and DC.57 c)	CWB		We suggest that the end of the CWB where it meets the road on the north side should incorporate the latest treatment used by KCDC for the nearby Otaihanga Road crossing beside the Main Trunk Rail Line. This includes a pair of steel crash barriers arranged to provide a physical message to cyclists, together with raised surfacing and words to warn of the proximity of traffic. On the south side we prefer Option 2 of Drawing Sheet 12 for the abutment details because it provides a more generous CWB width. Between the CWB and road edge some protection is desirable, but we do not support a concrete wall that would only detract from the open feeling beneath the bridge. Instead we suggest that the suitable edge treatment would be via bollards or lightweight frangible posts as used currently by the NZTA as a psychological barrier on some central medians.	Sheet 8	Agreed that a threshold treatment is desirable – details to be further determined to ensure this is consistent. Originally proposed use of gabion for thresholds, but this may be change to hold rails or bollards. Agreed also that marker posts rather than a solid barrier to the edge of Otaihanga Road to separate the CWB from road carriageway is appropriate

DC59A.f ii and iii and DC59A.g, DC59Ai(xi) and DC.57 c)	CWB		Shows new CWB signs which we support. However, the use of “Kapiti Cycle Route” as the title may need a rethink as KCDC currently uses a similar title “Kapiti Coast Cycle Route” to mark the coastal route along the beach suburbs from Raumati to Peka Peka via Otaihanga.	Sheet 14	Agreed that the signs nomenclature needs to be related to KCDC network – the signage is being worked through with KCDC.
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COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA					
Implementation Group of KCDC Advisory on Cycleways, Walkways and Bridleways: [JN= Jan Nisbet]					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/ commenter</i>	<i>Comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
DC.59	CWB	JN	Provision of an off road route available to horses	SHEETS 2-6 and 17-18	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 17-18	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 walkers and cyclists but not horses. KCDC to advise on an alternative name for the route.

COMMENTS ON PRELIMINARY ISSUE SSMP5+6:OTAIHANGA					
FRIENDS OF WAIKANA E RIVER: [FF= Ferial Falconer, Chair]					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/ commenter</i>	<i>Comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
DC.59	CWB	FF	Width of CWB inconsistent with consent conditions.	E. Conditions of Consent [Summary] and page 12	Text and plans have been amended accordingly and are consistent with what was agreed with KCDC and with the consent conditions.
	N/A	FF	Water body in right hand corner of sheet – where is the outlet? Also Otaihanga Drain – where is the outlet?	Sheet 3	Water body shown, which is outside the designation is a farm drain. The outlet is uncertain but it is assumed that it flows into the Muaupoko Stream. The Otaihanga drain flows into a network of drains and drainage channels. It is a site of regular water contamination testing by the Alliance.

Table added 3 February 2014

COMMENTS ON PRELIMINARY ISSUE SSMP5 &6: TE ATIAWA KI WHAKARONGATAI					
<i>Condition Reference</i>	<i>Condition Detail</i>	<i>Reviewer/ commenter</i>	<i>Comment</i>	<i>reference in SSMP</i>	<i>Management Plan Author's response</i>
57 e) i	SSMP to be prepared in consultation with Te Atiawa ki Whakarongatai		No specific comments on the SSMP were received. However, the scope and detail of input by Te Atiawa ki Whakarongatai into the design of some Expressway elements is currently being discussed with the Alliance.		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 5&6 and 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

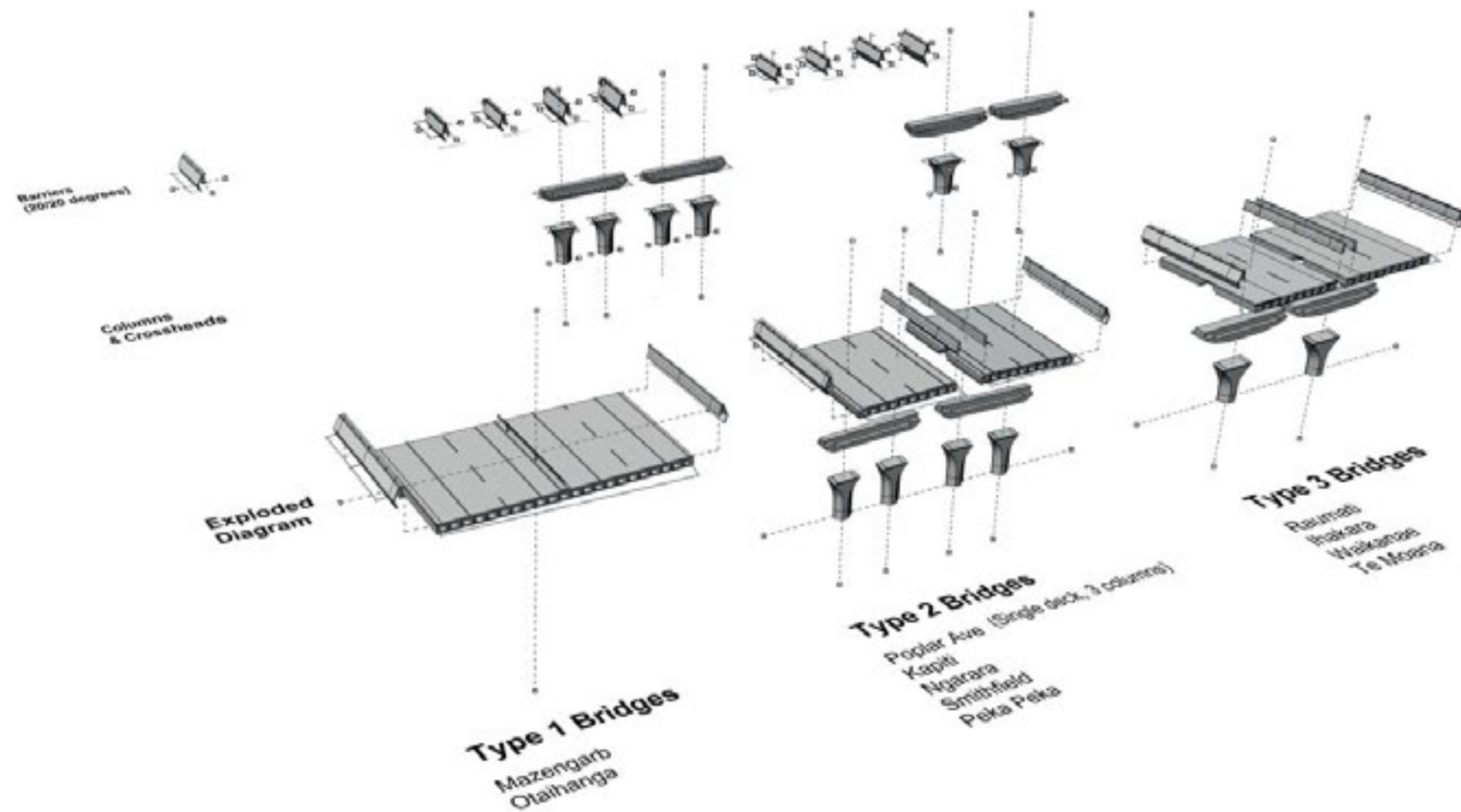
Site Specific Management Plans 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

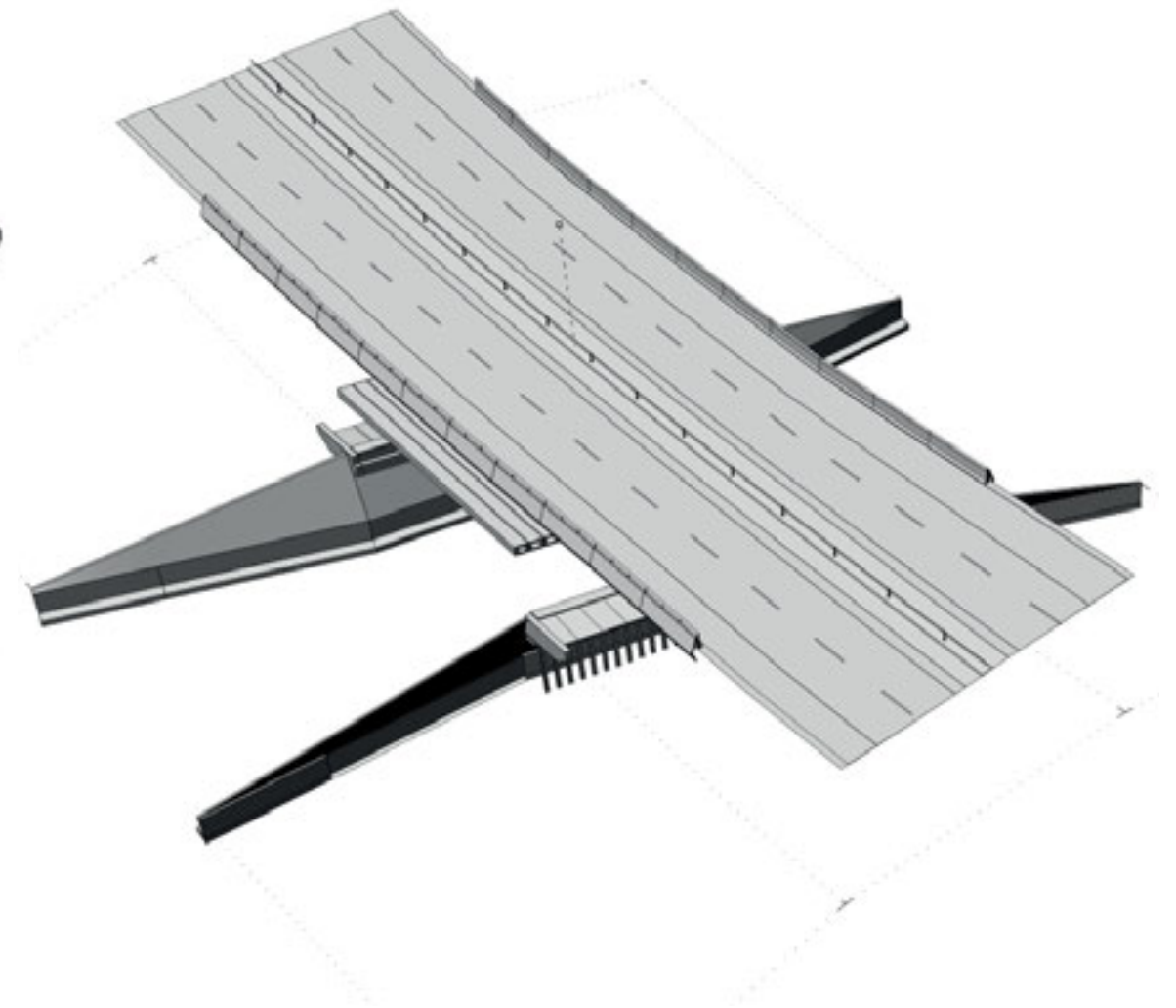
M2PP-121-D-MPL-0006

29 JANUARY 2014

Bridges as a series of components



Proposed Otaihanga exploded isometric



Design Objectives

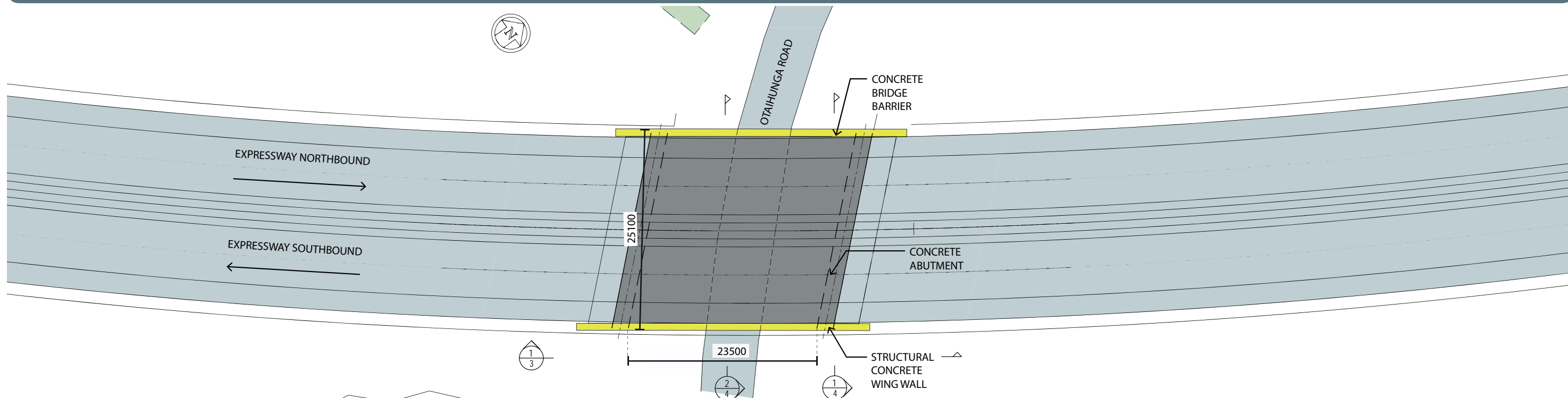
With reference to the Urban and Landscape Design Framework (Technical Report 5) (ULDF) there are five design objectives for the bridges and their respective contexts. These five objectives are overarching aims for the project and have been extracted from the Design Concept statements in two sections 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.

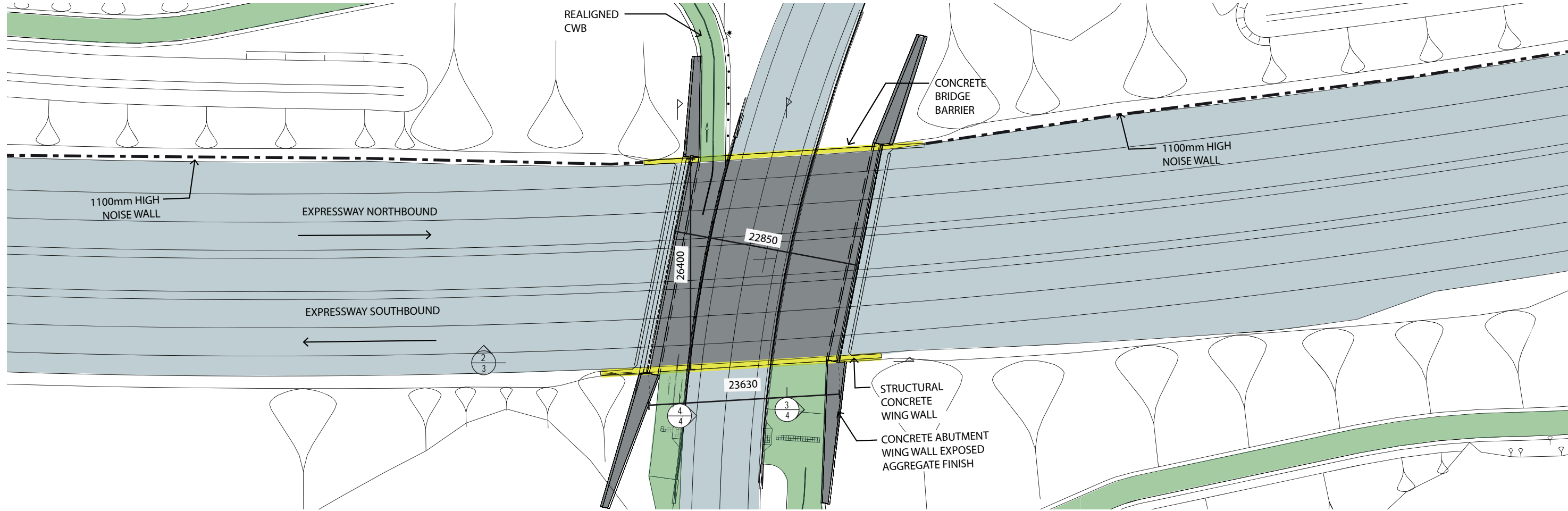
As is typical in a design evaluation process, any aspects of design that do not align with the design principles would be elevated to consideration against the design objectives.

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- OTAIHUNGA ROAD BRIDGE - 1:500@A3



PROPOSED PLAN- OTAIHUNGA ROAD BRIDGE- 1:500@A3

Design development

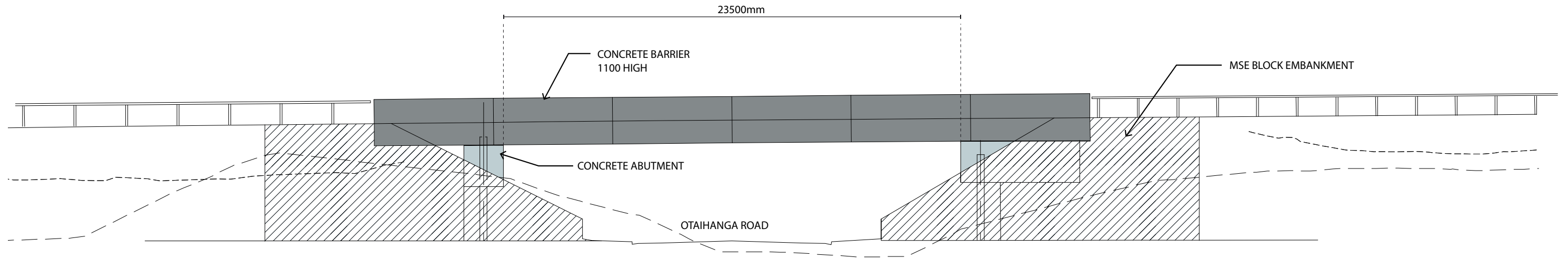
1. Change in position of crossing
2. Width of bridge
3. More detail provided for abutment treatment
4. Cycleway integration to local road

5. Concrete noise walls 1.m high (same height as bridge barrier)

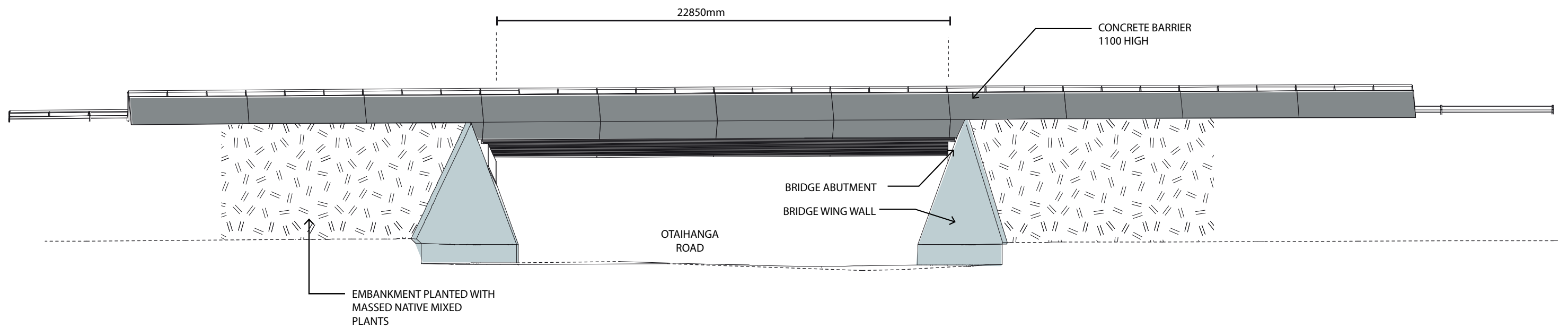
Rationale

1. Improve sight distance on local road and cycleway
2. Improve sight distance on expressway
3. Extended bridge abutments tie in with and retain the proposed embankment. Designed as one long continuous element they

- lead pedestrians though and under the bridge connecting one side to the other.
4. To improve connection of cycleway with local road
5. Noise mitigation



1. AEE ELEVATION - OTAIHANGA ROAD BRIDGE EAST ELEVATION (LOOKING WEST) - 1:200@A3



2. PROPOSED ELEVATION - OTAIHANGA ROAD BRIDGE EAST ELEVATION (LOOKING WEST) - 1:200@A3

Design development

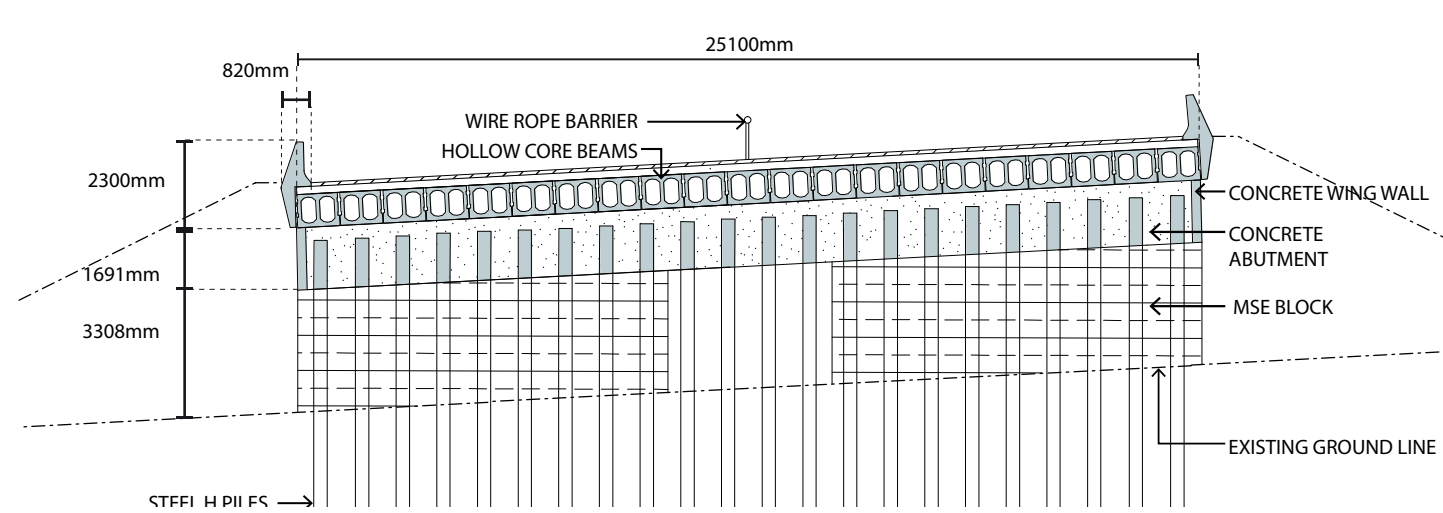
1. Local road reserve width increased
2. On road cycleway provided
3. Abutment steepened
4. Abutment treatment identified. Gabions removed

5. Footpath widened to 3m south of Otaihanga Road from under the bridge

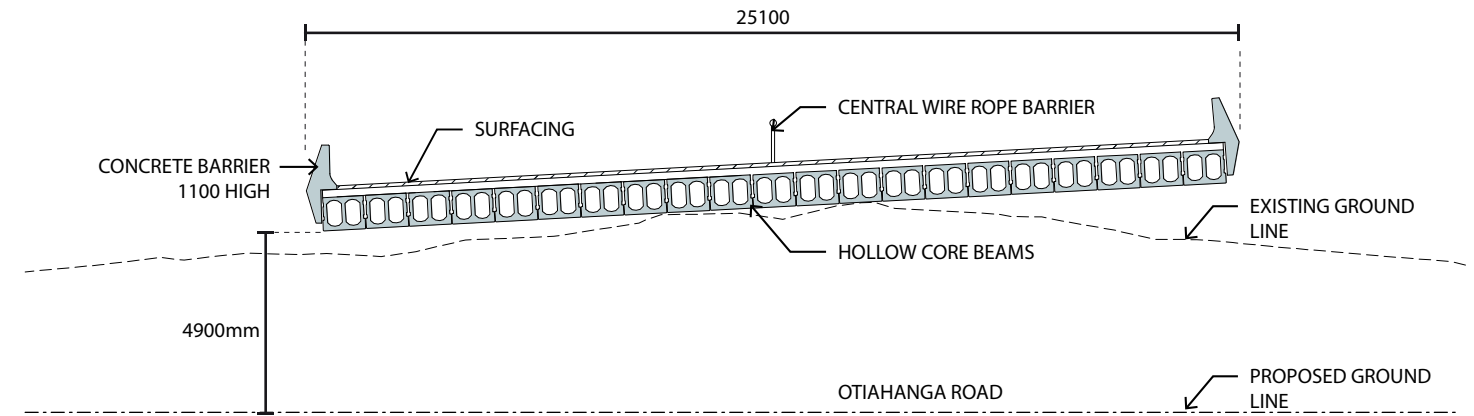
Rationale

1. Improve sight distance, increased opening under bridge
2. To improve connection of cycleway with local road
3. To provide wider road for sight distance without increasing bridge spans and depth of beams/size of barriers

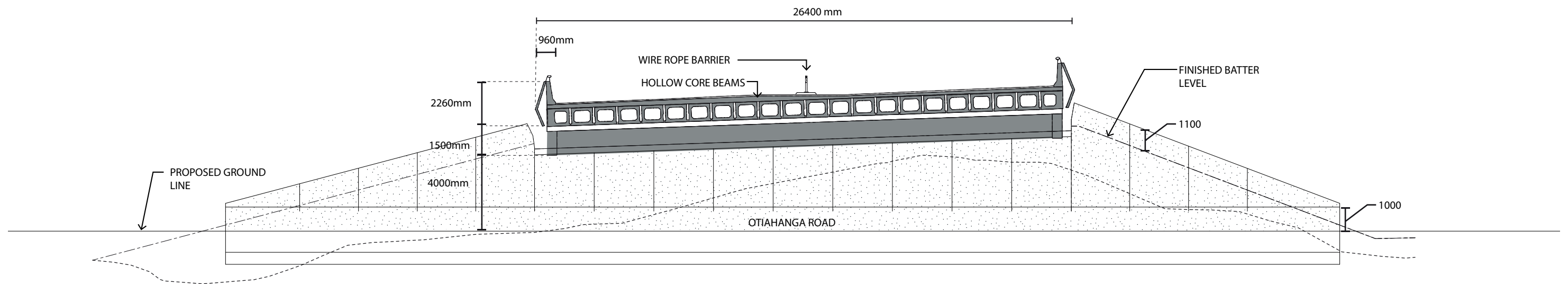
4. Gabion baskets removed to allow for a wider footpath/ cycleway on south side of Otaihanga road
5. Southern footpath to form part of CWB. Consistent width required



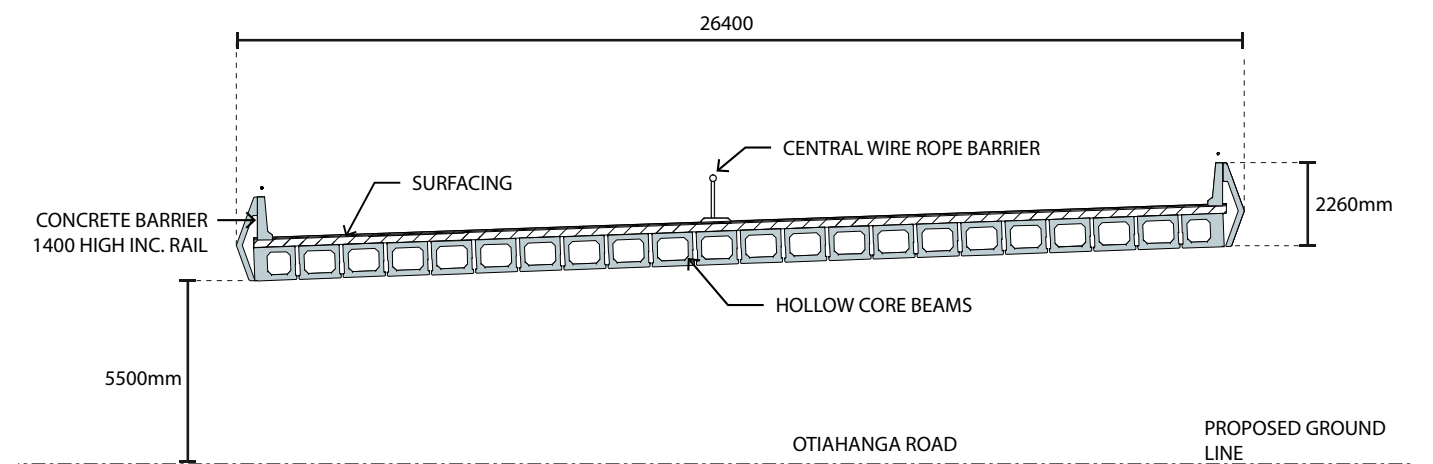
1. AEE SECTIONAL ELEVATION - OTIAHANGA ROAD BRIDGE NORTH ABUTMENT - 1:200@A3



2. AEE SECTIONAL ELEVATION - OTIAHANGA ROAD BRIDGE (LOOKING NORTH) - 1:200@A3



3. PROPOSED SECTIONAL ELEVATION - OTIAHANGA ROAD BRIDGE NORTH ABUTMENT - 1:200@A3



4. PROPOSED SECTIONAL ELEVATION - OTIAHANGA ROAD BRIDGE (LOOKING NORTH) - 1:200@A3

Design development

1. More information provided for the bridge abutment
2. Abutment steepened

Rationale

1. Extended bridge abutments tie in with and retain the proposed embankment. Designed as one long continuous element they lead pedestrians though and under the bridge connecting one side to the other.
2. To provide wider road for sight distance without increasing bridge spans and depth of beams/size of barriers



AEE VISUALISATION - OTAIHANGA ROAD BRIDGE (NORTH SIDE OF OTAIHANGA ROAD LOOKING EAST)



PROPOSED VISUALISATION - OTAIHANGA ROAD BRIDGE (NORTH SIDE OF OTAIHANGA ROAD LOOKING EAST)

Elements

AEE Design

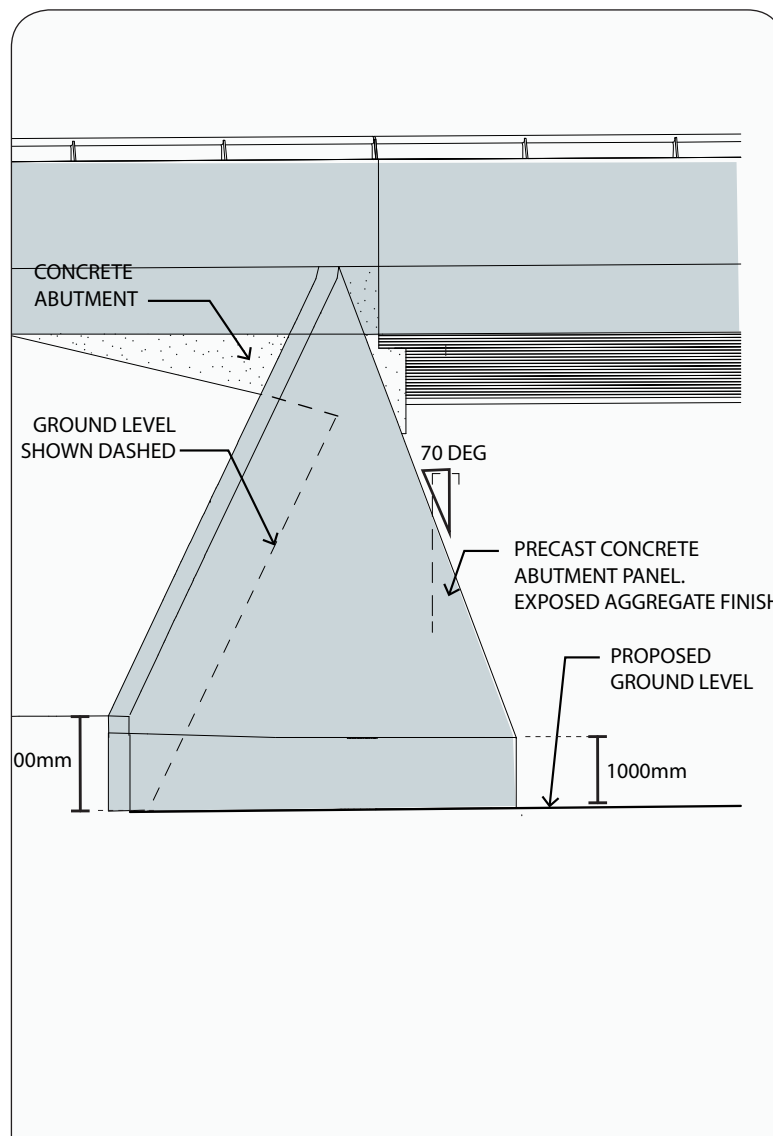
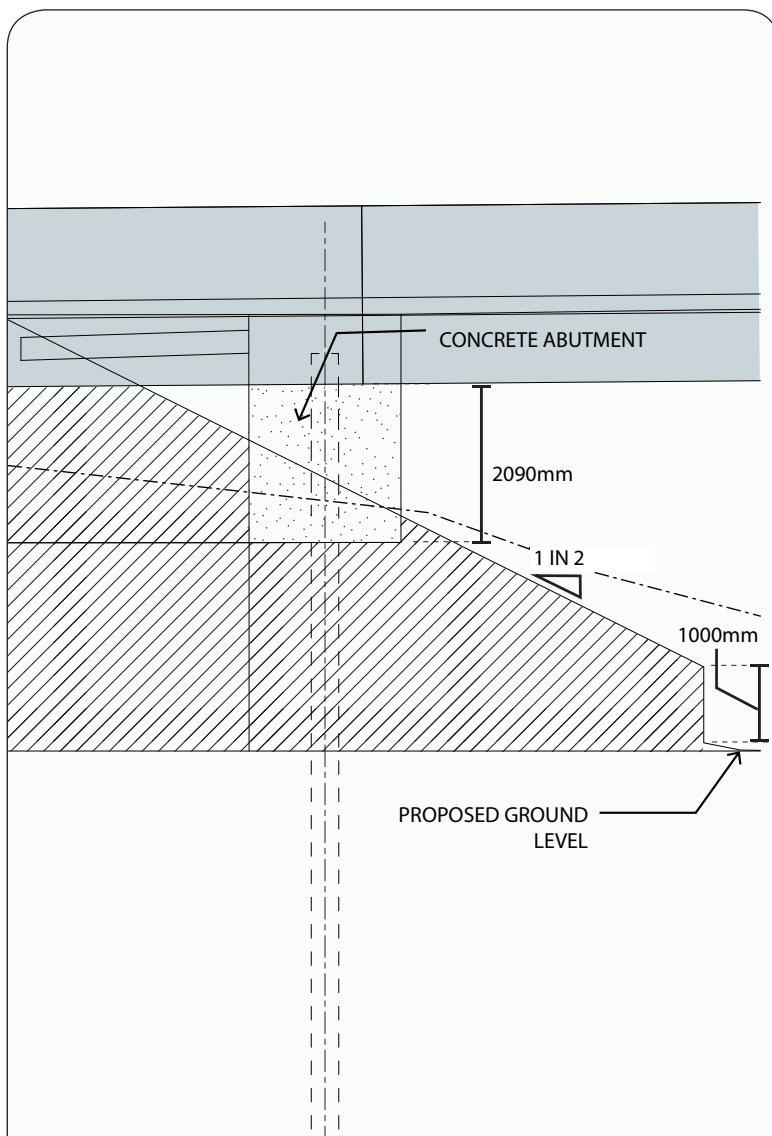
Current Design

Developments

Why?

ULDF Principles

Abutment Elevation 1:100@A3

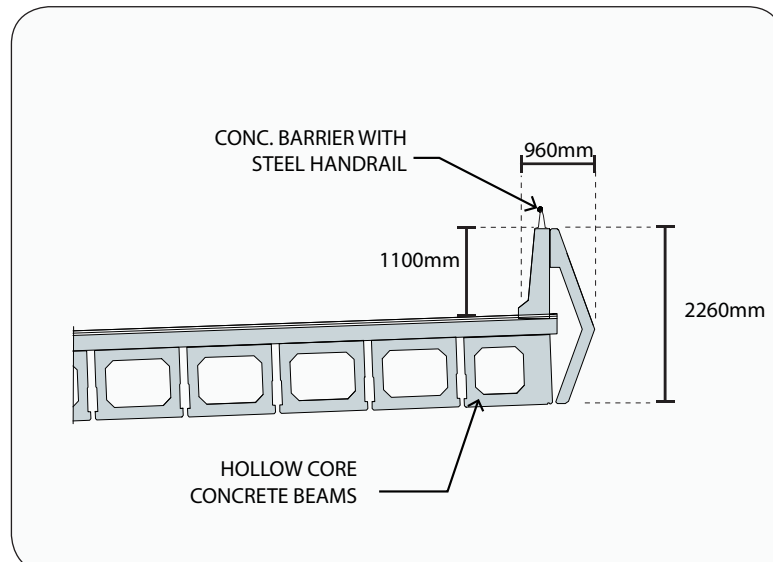
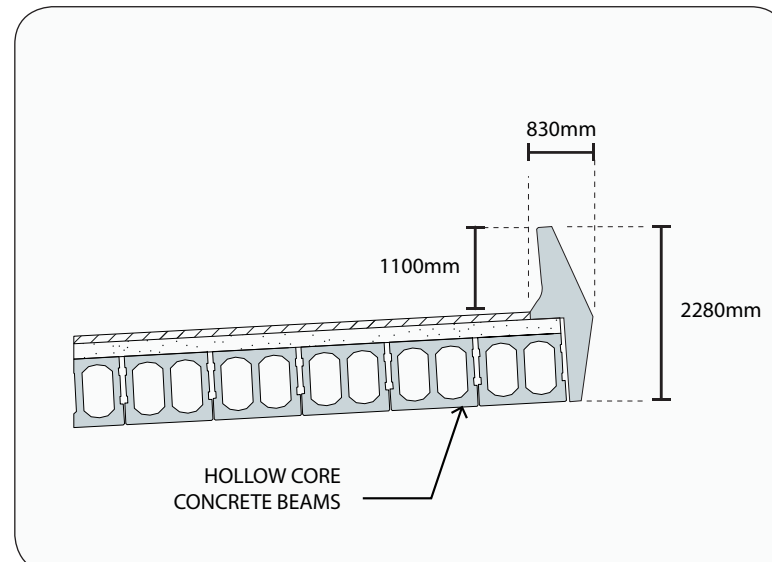


1. More information provided for the bridge abutment
2. Spill through abutment angel reduced.
3. Handrail shown on top of barrier

1. Lack of resolution in the AEE. Abutment design developed. Extended bridge abutments tie in with and retain the proposed embankment. Designed as one long continuous element they lead pedestrians though and under the bridge connecting one side to the other.
2. Improvements to local road design. Wider local road and hard shoulder, improved sightlines without increasing bridge spans and depth of beams/size of barriers
3. Safety requirement for cyclists using the expressway

1. 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

Cross Head & barrier junction 1:100@A3



1. Reduced barrier height
2. Handrail shown on top of barrier

1. Bridge deck and beam development
2. Safety requirement for cyclists using the expressway

1. 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 as in AEE being a visually simple structure and sits across the landscape as an horizontal element. The bridge has moved in plan to the west to enable improved sight lines from drivers to the CWB crossing point of the local road.
3. Unite the bridge elements of pier, cross head, deck and barrier as one sculptural form and ensure services are concealed from view	Proposed bridge form remains as in the AEE – has no piers and the form is generally consistent with other bridge forms – will appear as part of same family given barrier form.
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	Proposed bridge remains as in AEE and 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 with the ground in concert with the local road interface design of abutment forms and materials (refer to local road interface design principles)	Proposed bridge remains as in AEE with no piers. The abutment forms remain as sloping faces. These have steepened from the AEE design, but this has allowed for a widened space at the local road level increasing the availability of width for footpath and CWB as well as providing for require sight lines for local road crossings by cyclists and walkers.
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	Proposed bridge not intended to be lit beneath, as in AEE, as this is not a high use walking and cycling route. However, the sloping abutment and no piers means there is some natural light penetration to the space beneath the bridge.
7. Use architectural lighting to emphasise the sculptural forms of the bridges and light units that are readily serviceable from the ground	Proposed bridge remains, as in AEE, with no architectural sculptural forms beneath in the form of piers to be lit. There is some potential that remain to light the external barrier, but the rural location suggests a low key unlit approach is more appropriate.
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, as in the AEE, remains of the same systematised approach to allow repetition at other locations and improves the efficiency of construction.
9. Use textured finishes within the bridge elements surfaces' to provide a crafted finish – avoid printed forms	Proposed Otaihanga bridge will have a textured and coloured barrier that distinguishes this as a string horizontal element. The other elements (deck underside) will be simple concrete that makes them visually recessive relative to the barrier.
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 types best suited to the location	Not relevant
12. Locate bridge piers associated with bridge watercourse crossings away from riparian edges to prevent need to armour stream edges	Not relevant
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	Proposed bridge form at Otaihanga Road has seen the consideration of all the contributing factors of visual amenity, safe CWB crossing, structural design in high seismic zone, and constructability.



Appendix 4: LANDSCAPE SPECIFICATION

Site Specific Management Plans 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

M2PP-121-D-MPL-0006

29 JANUARY 2014

SEE SEPARATE A4 BOUND DOCUMENT.

Appendix 5: ECOLOGICAL MITIGATION TABLE

Site Specific Management Plans 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

M2PP-121-D-MPL-0006

29 JANUARY 2014

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

Appendix 6: WETLAND PLANT SALVAGE

Site Specific Management Plans 005 + 006 - Otaihanga North and South [COMBINED]

MacKays to Peka Peka Expressway

M2PP-121-D-MPL-0006

29 JANUARY 2014

MacKay's to Peka Peka Expressway Alliance:
Otaihanga Wetlands Indigenous Vegetation/Habitat Salvage Requirements

Consent conditions

Resource consent condition G.34 m) requires *"The salvage of elements of any valued habitat of indigenous flora and fauna identified in condition G.41 that is being lost as a result of the Project where practicable, including provision for transfer of elements of the affected habitat to ecological mitigation sites. This should include as a minimum: felled logs, Carex, Baumea and associated soils;"*

On this basis, the Ecological Management Plan (EMP) requires that during indigenous vegetation clearance within wetlands, consideration must be given to the salvage of components of any wetland vegetation that is to be cleared. The EMP states that salvage requirements will be detailed in the Site Specific Landscape Management Plans (SSLMP) and/or the applicable SSEMP. The EMP also states that salvage is to include mulch, logs, soils and duff, and any plants that are likely to survive translocation to a new site. These species are to be identified in the SSMPs.

Prior to preparing the ecological components of the SSMP for the Otaihanga – Mazengarb area, this document has been prepared for the construction team to identify which wetlands have indigenous vegetation and to guide the construction methodology and timing in respect of wetland vegetation clearance and restoration of wetlands.

Based on our interpretation of the consent requirements above, wetland species are required to be transplanted from the Otaihanga Northern and Otaihanga Southern Wetlands, these being listed areas of valued vegetation in Condition G.41.

Translocation site/s

The intention is to pre-load the Otaihanga Northern Wetland (the site where wetland plant translocation is required) first as part of construction in this section. Given the 'unresolved' issues with potential contaminants in the Otaihanga Central Wetland, we consider it would be preferable to avoid the use of this central wetland for the transplanted species required as part of the ecological mitigation/planting requirements for the Project, instead focusing on the early development of the 'WWTP Wetland' (located just north of the Waste Water Treatment Plant (WWTP) Drain). The Otaihanga Central Wetland mitigation will need to be undertaken at some stage (as required by consent conditions), and potentially in conjunction with any contaminant management requirements (if any).

The creation of the WWTP Wetland will involve the initial scraping off of existing blackberry and weeds and immediate topsoil approximately to a depth of approximately 300 – 600mm (or until surface water/ saturated peat is located). Once this level has been determined, the scraped area will then be formed into a restored wetland, with associated contouring, raised areas and low points.

All the wetland plants to be salvaged from the Otaihanga Northern Wetland can then be transplanted to this new area to resolve any contaminant issues or further translocation issues.

All the wetland plants to be salvaged from the Otaihanga Southern Wetland can also be transplanted into this new WWTP wetland. No plants are required to be transplanted from the Otaihanga Central Wetland site –given dominance of weed species (and associated seed sources) and potential contaminated soil issues.

Ecological, landscape and stormwater/hydrological input will be required for the detailed design, of this wetland and incorporation with the WWTP Drain (to provide for fish passage). As part of the construction of the new WWTP Wetland, the site would have good access to assist with wetland plant translocation.

Wetland plant translocation

Consistent with consent condition G.34 m, best endeavours must be used to try and transplant as many of the wetland plants as possible from the areas of wetland located under the Expressway Embankment. The large trees in the wetland are manuka and as they are very unlikely to survive transplanting we have not included them to be translocated (refer photographs below). The consent condition specifies *Carex* and *Baumea* (refer photographs below).



Photo 1: *Carex* species (foreground of photo) to be transplanted (photo taken in vicinity of Expressway location in Northern Otaihanga Wetland). . Manuka are taller species in background of photo.



Photo 2: *Carex* and *Baumea* species (in the foreground) to be transplanted (photo taken in vicinity of Expressway location in Southern Otaihanga Wetland). . Taller plants in background are manuka with pine beyond.

The *Carex* and *Baumea* plants to be translocated are approximately 1.0m high and they have a relatively large rootmass within the peat. We envisage that the edge plants can be scooped out of the wetland with an excavator bucket and placed onto a flat deck truck/trailer and then be transplanted in trailer loads to the planting site. Alternatively, all plants could be removed by hand with a good cutting blade to slice through roots (with ecological briefing/supervision).

Given these are wetland plants and therefore do not tolerate dry environments for too long, all transplanted specimens should be replanted within a short time period (ie less 48 hours but depends on weather and prevailing environmental conditions).

More detail on the translocation methodology and specifications as part of the overall wetland design in this area will be developed as part of detailed design.

Matiu Park
Principal | Ecologist

25 June 2013
(Updated 16 December 2013)

- ⬢ Notified designation
- ⬢ Likely long term designation
- ⬢ Construction footprint
- Valued Wetlands
- ⋯ Vegetation affected
- Wetland condition monitoring location

STEP 4: Restore western section of Otaihanga Central Wetland once contaminated site issues / construction complete

OTAIHANGA NORTHERN WETLAND

STEP 2: Transplant wetland plants from area of northern Otaihanga wetland under footprint to new constructed WWTP Wetland

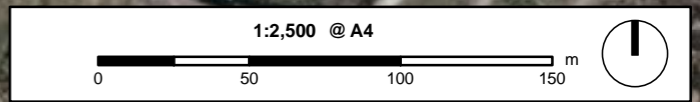
STEP 1: Clear vegetation and create new WWTP Wetland here (TRANSLOCATION SITE FOR WETLAND PLANTS)

OTAIHANGA CENTRAL WETLAND (POTENTIALLY CONTAMINATED)

STEP 3: Transplant wetland plants from area of southern Otaihanga wetland under footprint to new constructed WWTP Wetland

OTAIHANGA SOUTHERN WETLAND

INDICATIVE AREA
Location of new mitigation wetland



June 25, 2013 W09181B_WET_Wetlands_A3.mxd