

M2PP-121-D-PLNM-0009

Site Specific Management Plan 009 - Ngarara [Sector 520 - Te Moana Rd to Ngarara Rd]
MacKays to Peka Peka Expressway

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**SITE SPECIFIC MANAGEMENT PLAN SSMP 9: [SECTOR 520]
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SITE SPECIFIC MANAGEMENT PLAN 9 NGARARA [SECTOR 520]

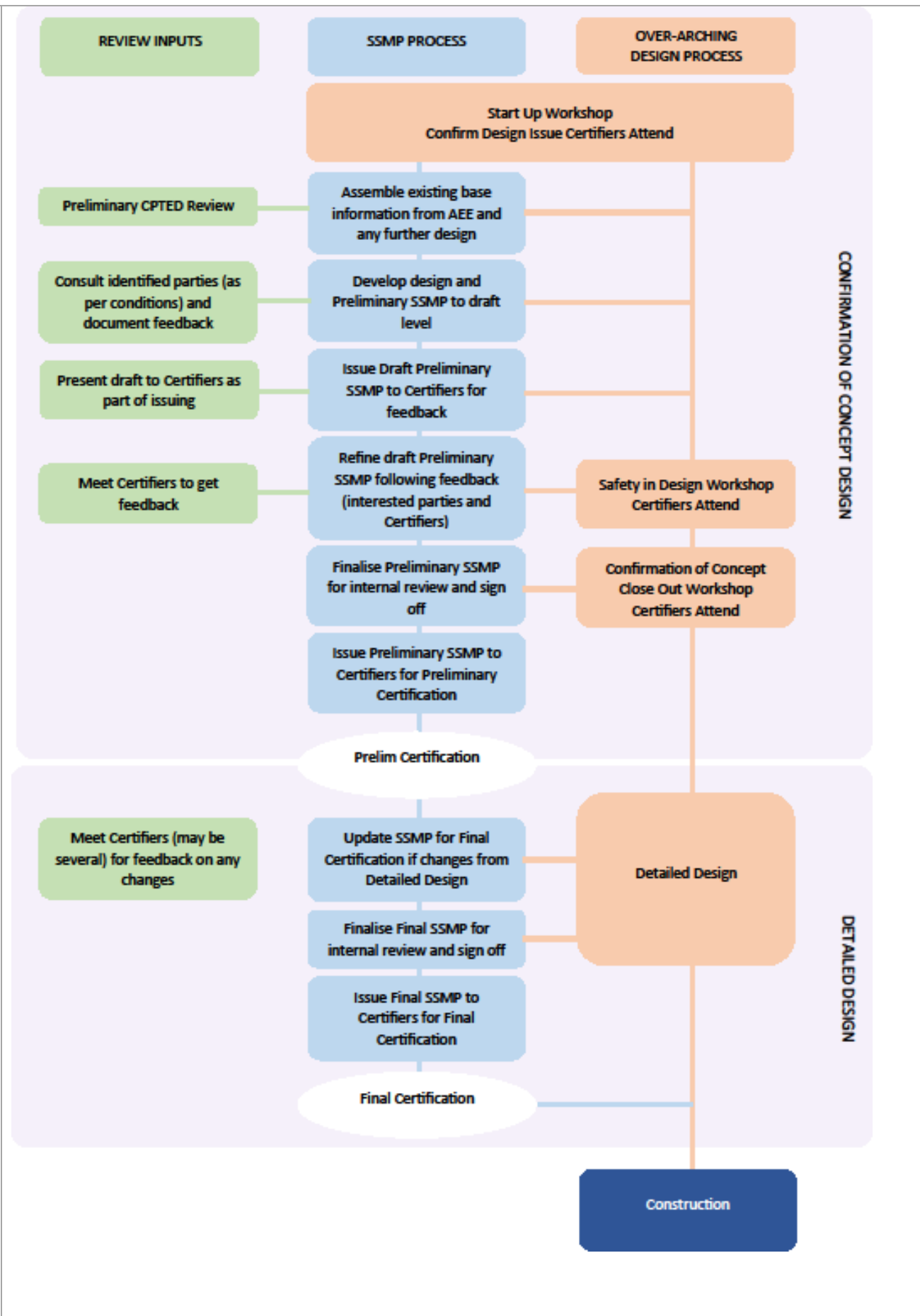
Note: The boundaries of SSMP 9 and SSMP 10 have been amended because of the close interrelationship between construction Sectors 530, 540, 550 and 580. As a result, Sector 530, which was originally part of SSMP 9, will now be incorporated as part of SSMP 10. This means that SSMP 9 comprises one sector only, Sector 520, which is covered in this draft issue.

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 CERTIFICATION DETAILS		Signature	Date
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	Steve Dunn (Landscape Architect)		05/08/2014
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M2PP ALLIANCE APPROVAL	Stuart Waters (Sector Manager)		05/08/2014
	Peter Bradshaw (Design Manager)	 Printed as P. Bradshaw	6/08/2014
	Dennis Hunt (Technical Director)		6 August 2014
	Malory Osmond (Consent Manager)		5/8/2014
CERTIFICATION	Andrew Guerin (KCDC) [Reviewed by Julia Williams, Landscape Architect and Deyana Popova, Urban Designer]		1/9/2014

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 each 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>SSMP 9 covers the Expressway north of Te Moana Road to Ngarara Road; it comprises one sector (Sector 520). This document incorporates two interrelated SSMPs, covering landscape, and the cycle, walking and bridleway (CWB). The intention of combining these SSMPs is to ensure integration between all disciplines, to maximise the benefits of mitigation works within each sector and to reduce reporting and monitoring requirements. The consent conditions (DC.64) also require the preparation of a Network Integration Plan (NIP). This SSMP shall address the requirements of DC.64 a) and b) ii) as they relate to the details of the CWB.</p> <p>SSMPs are to be prepared in consultation with various stakeholders including iwi, interest and residents' groups as directed by conditions. Appendix 2 describes the matters raised in consultation and the responses made.</p> <p>The SSMPs have been prepared through an iterative process to allow discussion between the Alliance 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, 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><i>Note: this SSMP does not include any ecological mitigation requirements. <u>The Kakariki / Smithfield SSEMP Site mitigation requirements set out in the Ecological Management Plan (Figure 6) are located north of this area in Sector 540 and will be detailed in the appropriate SSMP.</u></i></p>
B. SSMP PROJECT DESCRIPTION REFER APPENDIX 1 SHEETS 2-4	<p>The Expressway through SSMP 9 traverses a tract of high dunelands, originally part of Ngarara Farm. The Expressway through this sector will cut through the dunes just north of a large area of regenerating indigenous mahoe forest (outside of this sector). The Expressway avoids the more ecologically significant sites, wetlands and areas of indigenous vegetation in this area. Construction of the Expressway in this sector comprises the following:</p> <ul style="list-style-type: none"> • Large cuts up to 10-16m high. • Creation of stormwater wetlands 10B and 10E • Construction of two offset flood storage areas (10C and 10F area beside culvert 26 discharge point 10D) • One culvert to accommodate Ngarara Creek, a perennial watercourse. • Planted stormwater swales along both sides of the Expressway; • CWB located on the eastern side of the Expressway; • Wire rope barrier along both sides of Expressway and along the median; • Loss of known North Island fernbird habitat in a small number of locations around the Ngarara Creek. • Extensive eco-sourced massed planting with tree enrichment along both sides of the Expressway. • Wetland plantings at stormwater wetland margins

<p>C. SSMP EXISTING AREA DESCRIPTION</p> <p>REFER APPENDIX 1 SHEETS 2-4</p>	<ul style="list-style-type: none"> • An area of the most intact and complex dunelands along the alignment with dune sequences up to 20m higher than the surrounding ground. • Land use is primarily pastoral farmland (Ngarara Farm) with some smaller rural residential lifestyle blocks on adjoining areas (eg Ferndale subdivision). • Ngarara Creek, a perennial watercourse, flows through the area – via the Ti Kouka and Te Harekeke / Kawakahia wetland complexes downstream of the Expressway. • Ngarara Wetland, Ti Kouka Wetland and Te Harekeke / Kawakahia Wetland are located within/adjacent to this SSMP area – all of which are listed in the Kapiti Coast District Plan as significant natural areas. Ti Kouka Wetland and Te Harekeke / Kawakahia Wetland are protected by a QE II National Trust open space covenant. • Scattered areas of regenerating indigenous vegetation, including coastal/lowland forest remnants and regenerating scrub. • The northern end of this SSMP area on both sides of the Ngarara Creek includes an area of known habitat for the North Island fernbird. • Pine woodlots harvested from large areas of dunes on Ngarara Farm in 2008-09 prior to plan change (now mostly now rough pasture and slash). • Groups of tall rural shelter and amenity trees. • Extensive areas of blackberry in dune hollows and interdunal areas. • The wider SSMP area is identified as part of ecological corridor linking the coast to the mountains, (including the Kakariki Stream to the north of this SSMP area). 	
<p>D. PROCESS</p>	<p>DIAGRAM 1 – SSMP DEVELOPMENT PROCESS</p> <p>The process followed in preparing the SSMPs has followed is described in Diagram 1 below.</p>	
<p>4. URBAN DESIGN</p>	<p>CONDITIONS – URBAN DESIGN</p>	<p>RESPONSES – URBAN DESIGN</p>
<p>A. LIGHTING</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. 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>B. CWB</p> <p>REFER TO APPENDIX 1 SHEETS 2- 5</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 a grass verge of up to 1.0m wide for horse riders on the non-expressway side of the 3.0m path..</p> <p>The CWB is located on the eastern side of the Expressway, in SSMP 9.</p> <p>The CWB does not intersect with local roads in this sector.</p> <p>Vegetation planted adjacent to the CWB will be low growing, with the exception at particular locations, of taller vegetation to be planted between the CWB and wetlands or at the upper edge of high embankments as a safety barrier and to separate users from environmental hazards.</p> <p>A formal CPTED assessment of the plans and drawings was carried out; comments are included on SHEET 3. A key issue raised was to minimise access to the culverts from the CWB; this has been achieved by dense planting.</p>
<p>C. RETAINING WALLS AND NOISE MITIGATION STRUCTURES</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 no retaining walls or noise mitigation structures in Sector 520.</p>
<p>D. LOCAL PROPERTY ACCESS</p>	<p>DC.59A f) v)</p>	<p>No additional provision for local property access is required in Sector 520.</p>



**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 (A SSEMP is not required for this sector)

- SSEMPs are to be prepared for each ecological mitigation area set out in Condition G42.
- There are no ecological mitigation areas in SSMP 9. However, this SSMP is adjacent to an area of identified Valued Terrestrial Vegetation (Ngarara Mahoe, condition G.41 c) i) 7) and an identified perennial watercourse, Ngarara Creek.
- Condition G.34 i), G.41 e) and G.41 A requires detail on how adverse effects on the North Island fernbird population will be avoided during construction and operation of the project.

Urban Design (A SSUDP is not required for this sector)

- Condition DC.59A e) requires SSUDPs to be prepared for locations where the Expressway interacts with local vehicular and non-vehicular pedestrian/cyclist movement.
- DC.59A f) lists the matters to be provided and in summary includes detailed design of for the benefit of pedestrians, cyclists and others:
 - 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 SSLMPs);
 - Bridge piers and abutment design (location of piers, scale and materials);
 - Signage;
- ConditionDC.59A g) requires preparation of a SSUDP for the Cycleway, Walkway and Bridal (CWB) path network and include:
 - Final alignment and form of CWB.
 - Provision for a 3.0m wide two-way path
 - Connections
 - Boardwalks;
 - Lighting, safety provisions for crossing of local roads

	<ul style="list-style-type: none"> - CPTED review. <p>Network Integration Plan (<i>not required, the CWB does not intersect local road</i>)</p> <p>Condition DC.64 a) in relation to the CWB; Condition DC.64 b) ii) in relation to lighting.</p>	
3. CONSULTATION	<ul style="list-style-type: none"> • This is not a Landscape Focus Area so there are no consent requirements for SSLMP consultation with individual residents. • SSLMP and SSUDP (under Conditions DC.57 e), DC.57A, and DC.59A j), G42 d)) requires consultation with the following parties: <ul style="list-style-type: none"> - Te Āti Awa ki Whakarongotai; - Kapiti Coast District Council (KCDC). - Residents associations for the affected area • 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. 	
	Local property access to provide for existing and future needs.	
E. BRIDGE ABUTMENTS	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	There are no bridge abutments in Sector 520.

5. LANDSCAPE + ECOLOGY	CONDITIONS – LANDSCAPE + ECOLOGY	RESPONSES – LANDSCAPE + ECOLOGY
A. DUNES AND DRYLAND VEGETATION REFER TO APPENDIX 1 SHEETS 2- 4	<p>Condition G.41 c) identifies valued indigenous vegetation.</p> <p>Condition G.34 i), G.41 e) and G.41 A requires detail on how adverse effects on the North Island Fernbird population will be avoided during construction and operation of the project.</p> <p>Condition DC.57 f) identification of vegetation to be retained.</p> <p>Re-shaping of dune landforms disturbed by construction of the Expressway.</p>	<p>The dunes in Sector 520 are up to 20m higher than the surrounding ground. Construction of the Expressway will require significant modification of the dunes throughout this sector. Considerable re-shaping will be required to integrate the Expressway with the surrounding landscape. Dune landforms are addressed under the Landform section below. Final contouring of disturbed dunes will be incorporated into earthworks to tie in with adjoining natural dune forms.</p> <p>The extent of this tree removal within the designation corridor is shown on the 'Vegetation To be Retained' plans, which have been certified by KCDC.</p> <p>Groups of exotic shelter and amenity trees will be removed as part of site preparation during construction of the Expressway and associated works.</p> <p>An additional area of regenerating mahoe bordering the Ferndale subdivision has been identified and fenced off from construction.</p>
B. STREAMS AND RIPARIAN WORKS REFER TO APPENDIX 1 SHEETS 2-3	<p>Condition G.38D a) iii)</p> <p>Condition G.42 b) requires specific lengths of stream mitigation.</p> <p>.</p>	<p><i>Note: no ecological mitigation works to be undertaken in this SSMP – and the Smithfield/Kakariki SSEMP Site set out in the Ecological Management Plan is located north of this area in Sector 520.</i></p> <p><i>Note: the area surrounding Ngarara Creek has been identified as confirmed habitat for North Island fernbird. Refer section below.</i></p>

		<p>Ngarara Creek, which is a formed drain within deep peat is traversed by a permanent culvert within this SSMP area. Ngarara Creek is a perennial watercourse that drains downstream through the Ti Kouka Wetland before entering the regionally significant Harekeke /Kawakahia Wetland, which is protected by a QEII Open Space Covenant.</p> <p>In the vicinity of the Expressway, Ngarara Creek has a bed of silts and peats with an average width of 1.6m and depth between 0.1m and 0.27m; riparian vegetation comprises almost entirely blackberry with scattered Carex, mahoe and ferns.</p> <p><u>A detailed methodology will be developed in conjunction with GWRC for the temporary diversion and culvert installation works to ensure fish passage through Ngarara Creek is maintained and effects on water quality are minimized consistent with the EMP requirements. This will include as a minimum:</u></p> <ul style="list-style-type: none"> • Maintaining fish passage and consideration of migratory fish requirements. • Sediment monitoring via in-stream logger is required at temporary diversion creation and livening as set out in the EMP • Erosion and sediment control is important to minimize downstream effects on the Te Harakeke / Kawakahia Wetland downstream. • Fish salvage shall be undertaken prior to dewatering (as set out in the EMP).
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<p>C. WETLANDS</p>	<p>Condition G.42 requires specific areas of wetland mitigation.</p> <p>Condition G.41 c) identifies valued indigenous vegetation and wetlands.</p>	<p><i>There are no ecological mitigation requirements within this SSMP.</i></p> <p>Ngarara Wetland is a peat-dominated dune depression with no hydrological connections to other water bodies. It is approximately 2.7ha and is listed in the Kapiti Coast District Plan as an Ecosite (K066).</p> <p>Ngarara Wetland is manuka-dominated with edges of Carex sedgeland and regenerating kahikatea forest east of Ngarara Road. It is one of the few wetlands on the Kapiti Coast where uncommon mistletoe, <i>Korthalsella salicornioides</i> is present. The area is regarded as having moderate biodiversity values. The Ngarara Wetland also provides confirmed habitat for the North island fernbird.</p> <p>Two significant indigenous wetlands are located downstream of Ngarara Creek and this SSMP area. (and the ultimate receiving environment for any run-off) – the Ti Kouka Wetland and Te Harakeke / Kawakahia Wetland. Careful attention to erosion and sediment control shall be taken in this SSMP area.</p>
<p>D. SALVAGE</p>	<p>Condition G.34 m) sets out the salvage requirements for vegetation.</p>	<p>There is no plant salvage proposed in Sector 520. However, any large kanuka identified by the Project Ecologist or Landscape Architect to be removed from the footprint shall be cut into discs and retained for use as lizard habitat in this and other sectors.</p> <p>There may also be opportunities to salvage logs or stumps excavated from the peat as part of the construction works to be set aside to be used in creek channels and in other waterways as part of the ecological mitigation requirements in adjacent Sectors (i.e Smithfield/Kakariki). Addition of salvaged logs into waterway channels would have to comply with the stormwater design for that waterbody.</p>
<p>E. VEGETATION TO BE RETAINED</p> <p>REFER TO APPENDIX 1 SHEETS 2-3, and M2PP-D-DWG-8701-03</p>	<p>Conditions: DC.57 f) i) and DC.42C c) i) and G.34m) – identification of vegetation to be retained.</p> <p>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>Vegetation to be Retained plans were certified by KCDC on 24 February 2014. A stand of 10 year old ngaio located just outside the Expressway footprint (planted by Ngarara Farm) has been identified to be retained. The fence to protect these trees has been installed around the stand as opposed along the designation, which has enabled all of these trees to be retained.</p> <p>In addition to vegetation specifically identified to be retained, there are opportunities to protect and retain other vegetation, both native and exotic; often these are individual or small groups of ‘desirable’ trees (i.e. they have landscape, visual or amenity value in terms of the contribution and potential they could make in helping to integrate the Expressway into its landscape setting).</p> <p>The vegetation to be retained shall be defined on site and boundaries checked and confirmed by the Project Ecologist/Project landscape Architect. Vegetation clearance boundaries shall be delineated by marker tape pegs or by marking perimeter trees. A boundary fence along the designation has been installed through the stand without impacting on the trees.</p> <p>Temporary fences shall be erected around individual trees to prevent disturbance or damage; fences to be aligned outside the tree ‘drip zone’.</p> <p>Machinery, materials, fuel, and chemicals to be stored, even temporarily, well away, from fenced vegetation to avoid accidental spillage, contamination, and compaction.</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.</p> <p>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>Areas of indigenous and exotic vegetation within the Expressway footprint will be cleared. Trees and woody vegetation to be cleared shall be mulched and stockpiled.</p> <p>Clearing of vegetation along the proposed fence line proceeded in accordance with the certified Vegetation to be Retained plans. The protective fence to adhered closely to the vegetation edge pattern as opposed to simply following the designation boundary.</p>

		<p>Care shall be taken to exclude aggressive weed species from vegetation to be removed and mulched that could result in potential ongoing management problems (e.g. blackberry, gorse, <i>Convolvulus</i>).</p> <p>Stored mulch to be periodically inspected for evidence of aggressive weed species and if present sprayed with appropriate herbicide.</p>
G. INDIGENOUS FAUNA	<p>Conditions DC.53 a) iv), DC.57 f) v), G.34 v) i), G.38 a), b) & d), G.40 40 b) i), G.41 e) and G.41 A a), b), c) and d) all relate to fernbird and the avoidance of adverse effects on fernbird habitat, monitoring of fernbird, and the mitigation required.</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).</p>	<p>The North Island fernbird was observed in this SSMP area during ecological investigations. Fernbird is the only species of avifauna identified in consent conditions as requiring specific management and monitoring within this SSMP area. Fernbird is nationally threatened species whose population is declining due to loss of habitat and predation.</p> <p>In accordance with the EMP and consent conditions, any areas of potential fernbird habitat outlined in the EMP will be surveyed prior to vegetation clearance outside of the fernbird breeding season. To date, much of this vegetation clearance has been undertaken as part of the enabling works through this SSMP area with supervision by the Project Ecologist, including the Kakariki Stream, Ngarara Creek and adjacent to the Ngarara Wetland.</p> <p>The planting design includes areas of vegetation that will be suitable as fern bird habitat.</p> <p>The brown mudfish survey, which had to be undertaken prior to the commencement of any diversion work was carried out in December 2012. Additional mudfish sampling was carried out during December 2013-January 2014; no mudfish were trapped or recorded as documented in the EMP.</p> <p>Immediately prior to any temporary stream diversion in the Ngarara Creek (as part of permanent culvert construction works), the section of watercourse subject to works shall be isolated by bunds (or other method specified), and fish present shall be safely captured for translocation by accepted methods as provided in the EMP.</p> <p>Prior to livening of the diverted section of the Ngarara Creek, an extensive fish capture and removal will be required as set out on 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 / installation.</p>
H. LANDFORMS REFER TO APPENDIX 1 SHEETS 2-4 and M2PP-23R-D-DWG-8904	<p>Condition DC.57 c) - SSLMPs shall be consistent with the Landscape Management Plan, ULDF (Technical Report 5), the Ecological Management Plan, the relevant Site Specific Urban Design Plan, and the Network Integration Plan as relevant.</p>	<p>The Expressway cuts through a series of high dunes through most of this sector. The top and faces of the cuts will be rounded as far as possible to help integrate the Expressway and CWB into the surrounding dune landforms.</p> <p>The project Landscape Architect will be involved in design of final shaping of dune profiles to ensure 'natural' rounding is achieved. A Standard detail has been developed explaining and illustrating how this shaping should be carried out (Reference M2PP-23R-D-DWG-8904).</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>Where seasonal conditions prevail hydroseeding of exposed sand areas once re-shaping is completed. Alternative treatment to exposed sand areas where hydroseeding not feasible (eg organic mulch, straw / brush).</p> <p>All exposed sand areas shall be temporarily protected during re-shaping to limit erosion from wind and rain and also to minimise dust issues in adjoining properties.</p>

<p>I. WETLAND CREATION AND RESTORATION</p>		<p><i>There are no ecological wetlands to be created or restored in Sector 520.</i></p> <p>There are two stormwater treatment wetlands (10B and 10E) and two offset flood storage areas which will be planted with wetland species.</p>
<p>J. STREAM CREATION AND RESTORATION</p>		<p><i>N/A There are no ecological mitigation requirements within this SSEMP.</i></p>
<p>K. CULVERT INSTALLATION REFER TO APPENDIX 1 SHEETS 2-4.</p>	<p>The Ngarara Creek is the main stem of a series of drains that traverse the area. It is a channelized waterway. The drain runs through pasture, is partially fenced from stock but stock access is apparent. Ngarara Creek is regularly cleared by KCDC to maintain flows.</p> <p>Within this Sector 520 there is one culvert within a perennial drain that requires consideration of fish passage/fish rescue as follows:</p> <ul style="list-style-type: none"> • Culvert 26 (89.5.0m) 	<p>Prior to stream works within the Ngarara Creek, the Project Ecologist shall visit each culvert/diversion location and confirm presence of fish to determine the fish rescue/culvert installation / diversion methodology.</p> <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.</i></p> <p>Prior to livening of the new drain diversions and associated culverts, 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 (including for temporary culverts and diversions).</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>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 to ensure fish passage for existing 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>L. MITIGATION PLANTING REFER TO APPENDIX 1 SHEETS 2,4 and M2PP-52R-D-DWG-8201-03 and APPENDIX 4</p>	<p>Conditions DC.57 f) - Landscape mitigation requirements -</p>	<p>Planting in Sector 520 is primarily required for landscape mitigation.</p> <p>The location of Sector 520 makes it a potential 'stepping stone' in the east-west corridor linking Kapiti Island and the Tararua Ranges. Consequently the planting comprises massed planting of mixed locally sourced native species. Enrichment planting of canopy species will occur throughout the Sector.</p> <p>There are three planting types in Sector 520:</p> <p>Massed planting: illustrate typical planting layout and species composition. Massed planting in this sector comprises two types- kanuka dominated on the drier sites, especially on those</p>

		<p>that are west-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.</p> <p>The entire Sector will have enrichment planting which will occur in the following planting season after mass planting, plant grades shall be PB 18 or equivalent.</p> <p>Swales: will be planted exclusively in oioi.</p> <p>Stormwater wetland species mix: Plant grades will be a mix of 0.5 and 1.0 litre (or equivalent) planted at 0.75m centres.</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 (1 June until the 1 September). 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 this 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 placed in the planted swales or in wetlands below the water level..</i></p> <p>No planting shall be undertaken until site is approved by Project Landscape Architect. Planting shall be delayed in areas 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.</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-</p>	<p>100mm of organic mulch shall be placed to all areas to be planted.</p> <p>Mulch shall be left for 2 weeks to settle prior to commencement of any planting.</p>

	construction and Construction. Ecological Management Plan sections 3.9 and 4 (Attachment 1)	
Q. PLANT SUPPLY REFER TO APPENDIX 4	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)	All indigenous plants shall be sourced from Manawatu Ecological Region, with a focus on the Foxton Ecological District. All plants shall be hardened off prior to planting.
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)	Planting shall be staged according to completion of construction works. No planting shall be carried out in areas where there is a risk of damage from adjoining construction activities. Construction Manager shall confirm areas where construction is completed and area is ready for planting. Planting shall be completed only within 1 June-1 September planting window unless otherwise approved by Project Landscape Architect. All areas to be planted shall be photographed and details recorded to form part of baseline information.
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)	Terrestrial planting, shall be maintained for 3 years. Wetland planting on the edge of stormwater wetlands will be maintained for 4 years. Planting shall be maintained according to the maintenance plan as set out in the Landscape Specifications (Appendix 4). Monitoring reports on plant survival and establishment and the frequency and success of the maintenance regime shall be completed by the Project Landscape Architect (in consultation with the Project Ecologist in relation to riparian planting) as follows: <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. Monitoring reports shall include dates of visits, condition of vegetation, condition of fencing, issues arising, actions required, together with photographs. Monitoring reports on completion shall be provided to KCDC Landscape Reviewer. Monitoring reports shall cease to be prepared for those areas where the performance standards have been met ahead of the maintenance period.
T. PEST PLANT MANAGEMENT REFER TO APPENDIX 4	DC.57 f), G.42C c) and G.43 d) – control of pest plants.	Weed surveys shall be carried out annually in spring to track the introduction of weeds and their spread and to recommend appropriate management in accordance with the GWRC Regional Pest Management Strategy (2002-22).
U. PEST ANIMAL MANAGEMENT REFER TO APPENDIX 4	DC.57 f), G.42C c) and G.43 d) – control of pest animals.	Pest monitoring shall be carried out annually in spring to track the introduction of browsing animal pests and their spread and to recommend appropriate management in accordance with the GWRC Regional Pest Management Strategy (2002-22).

<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 vegetation identified on the certified plans to be retained.</p> <p>All areas of landscape and ecological 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>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>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>G.40, G.42C c), G.42A and DC. 57 c) - not relevant to this SSMP</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. • Invasive terrestrial weed species successfully controlled.
<p>X. ADAPTIVE MANAGEMENT – POST CONSTRUCTION</p>	<p>Condition G.40 – adaptive management and condition DC.57 c)</p>	<p>In the event that mitigation planting does not achieve the objectives within the consent timeframes, the Project Ecologist and Project Landscape Architect will prepare a report, including recommendations for remedial work or additional mitigation, and ongoing monitoring and reporting through the Adaptive Management process.</p>
<p>6. REFERENCES</p>	<ul style="list-style-type: none"> • Ecological Management Plan (EMP), July 2013. • Landscape Management Plan (LMP), July 2013 • Urban and Landscape Design Framework, Technical Report 5, MacKays to Peka Peka Expressway • Assessment of Landscape and Visual Effects, including Appendices A and B, Technical Report 7 • Assessment of Ecological Impacts Report, including Technical Reports 27 – 31 (Terrestrial Vegetation and Habitats, Herpetofauna, Avifauna, Freshwater and Marine), • Assessment of Hydrology and Stormwater Effects, Technical Report 22. 	

M2PP-121-D-PLNM-0009

Appendix 1: DRAWING SET

Site Specific Management Plan 009 - Ngarara [Sector 520 - Te Moana Rd to Ngarara Rd]
MacKays to Peka Peka Expressway

01 SEPTEMBER 2014 - CERTIFIED ISSUE - REV B

SSMP#	SECTOR	NAME	NOTES
SSMP1	310/320	RAUMATI SOUTH	
SSMP2	330/340/350	RAUMATI NORTH	
SSMP3	360/370/380	WHAREMAUKU BASIN	
SSMP4	410/420	KAPITI MAZENGARB	
SSMP5&6	430/440/460	OTAIHANGA NORTH&SOUTH	
SSMP7	470	WAIKANAE RIVER	
SSMP8	480/510	TE MOANA	
SSMP9	520	NGARARA	
SSMP10	530/540/550/580	PEKA PEKA SOUTH	ISSUED IN TWO PARTS: -SSMP10-550 -SSMP10-530/540/580
SSMP11	560/570	PEKA PEKA NORTH	



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

A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	CERTIFIED ISSUE - REV B	VB		SW		04/08/14

Original Scale (A1)	Design	SD	04/08/14	Approved For Construction*
1:25,000	Drawn	MP	04/08/14	Date
Reduced Scale (A3)	Design Verifier			
1:50,000	Dwg Check			

* Refer to Revision 1 for Original Signature

Project	SH1 MACKAYS TO PEKA PEKA EXPRESSWAY RP 1012/0.00 TO 1023/5.00
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Title	SSMP 9 [520] - SHEET 1 LOCATION PLAN
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Drawing No.	M2PP-520-D-GPH-8001
Rev.	B



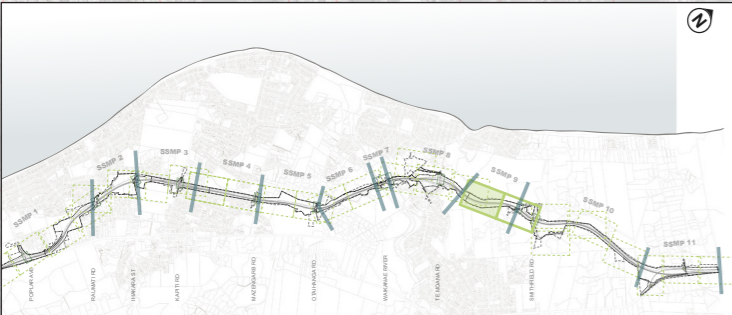
KEY CPTD CONSIDERATIONS:

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



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm



General	Urban Design	Landscape	Ecology
--- Designation Boundary	Concrete Bridge Barrier	Individual Retained Trees	Retained Valued Terrestrial Vegetation
- - - Wire Barrier	Concrete Noise Wall	Retained Vegetation	Retained Valued Wetland Vegetation
- - - W-Barrier	Culvert Headwall	Grass	Planted Indigenous Terrestrial Habitat
--- Barrier Transition	Retaining Wall	Massed Planting	Planted Indigenous Wetland Habitat
--- Concrete Traffic Barrier	Bridge Deck	with Tree Enrichment	Stream Mitigation / Riparian Habitat
--- Culvert	Bridge Abutment	Wetland / Riparian Planting	Existing Water Body
--- Swale	Bridge Piers	Massed planting low	Batter Slope
--- Planted Swale	2.0M Timber Noise Fence	Specimen Tree	Tadpole
● Visualisation Viewpoint			

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	CERTIFIED ISSUE - REV B	VB		SW		04/08/14

Original Scale (A1)	Design	SD	04/08/14	Approved For Construction*
1:1000	Drawn	MP	04/08/14	
Reduced Scale (A3)	Design Check			
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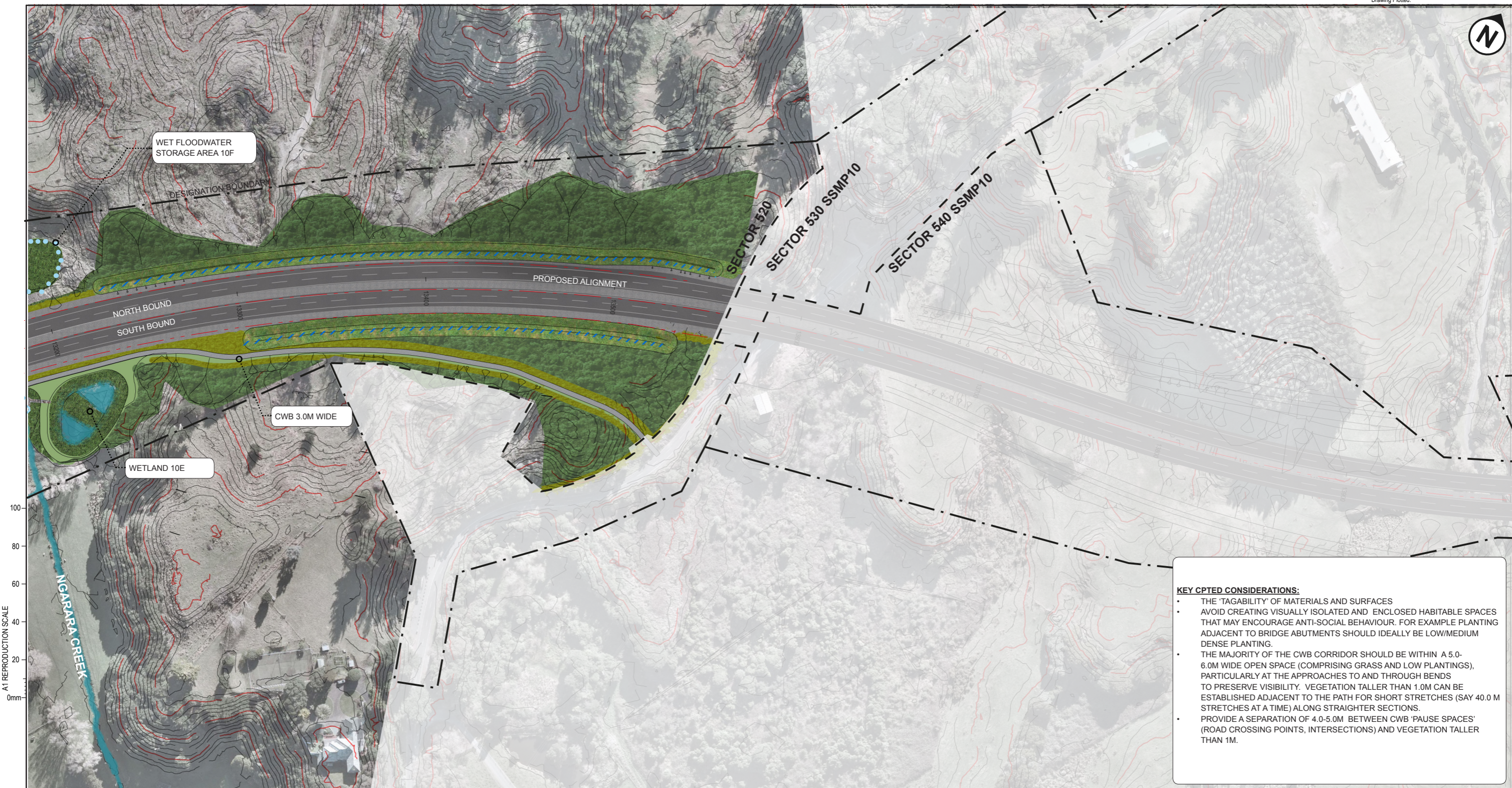


Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
RP 1012/0.00 TO 1023/5.00

Title: SSMP 9 [520] - SHEET 2
MASTERPLAN

Document No: M2PP-520-D-GPH-8101

Rev: B

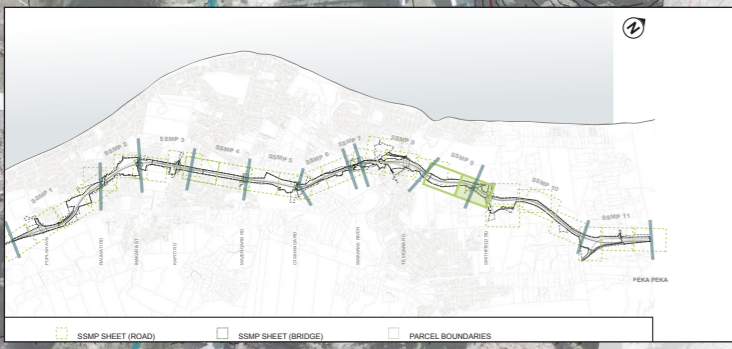


A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

- KEY CPTED CONSIDERATIONS:**
- THE 'TAGABILITY' OF MATERIALS AND SURFACES
 - AVOID CREATING VISUALLY ISOLATED AND ENCLOSED HABITABLE SPACES THAT MAY ENCOURAGE ANTI-SOCIAL BEHAVIOUR. FOR EXAMPLE PLANTING ADJACENT TO BRIDGE ABUTMENTS SHOULD IDEALLY BE LOW/MEDIUM DENSE PLANTING.
 - THE MAJORITY OF THE CWB CORRIDOR SHOULD BE WITHIN A 5.0-6.0M WIDE OPEN SPACE (COMPRISING GRASS AND LOW PLANTINGS), PARTICULARLY AT THE APPROACHES TO AND THROUGH BENDS TO PRESERVE VISIBILITY. VEGETATION TALLER THAN 1.0M CAN BE ESTABLISHED ADJACENT TO THE PATH FOR SHORT STRETCHES (SAY 40.0 M STRETCHES AT A TIME) ALONG STRAIGHTER SECTIONS.
 - PROVIDE A SEPARATION OF 4.0-5.0M BETWEEN CWB 'PAUSE SPACES' (ROAD CROSSING POINTS, INTERSECTIONS) AND VEGETATION TALLER THAN 1M.

<p>General</p> <ul style="list-style-type: none"> --- Designation Boundary - - - Wire Barrier - - - W-Barrier --- Barrier Transition - - - Concrete Traffic Barrier --- Culvert --- Swale --- Planted Swale ••• Flood Storage Area ••• Visualisation Viewpoint 	<p>Urban Design</p> <ul style="list-style-type: none"> --- Concrete Bridge Barrier --- Concrete Noise Wall --- Culvert Headwall --- Retaining Wall --- Bridge Deck --- Bridge Abutment --- Bridge Piers --- 2.0M Timber Noise Fence 	<p>Landscape</p> <ul style="list-style-type: none"> • Individual Retained Trees • Retained Vegetation • Grass • Massed Planting • with Tree Enrichment • Wetland / Riparian Planting • Massed planting low • Specimen Tree 	<p>Ecology</p> <ul style="list-style-type: none"> • Retained Valued Terrestrial Vegetation • Retained Valued Wetland Vegetation • Planted Indigenous Terrestrial Habitat • Planted Indigenous Wetland Habitat • Stream Mitigation / Riparian Habitat • Existing Water Body • Batter Slope • Tadpole
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No.	Revision	By	Chk	Chk.V	Appd	Date
B	CERTIFIED ISSUE - REV B	VB		SW		04/08/14

Original Scale (A1)	Design	SD	04/08/14	Approved For Construction*
1:1000	Drawn	MP	04/08/14	Date
Reduced Scale (A3)	Design Verifier			
1:2000	Dwg Check			

* Refer to Revision 1 for Original Signature



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

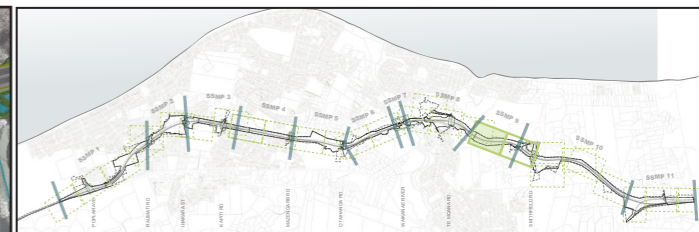
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MASTERPLAN

Drawing No.: M2PP-520-D-GPH-8102
Rev: B

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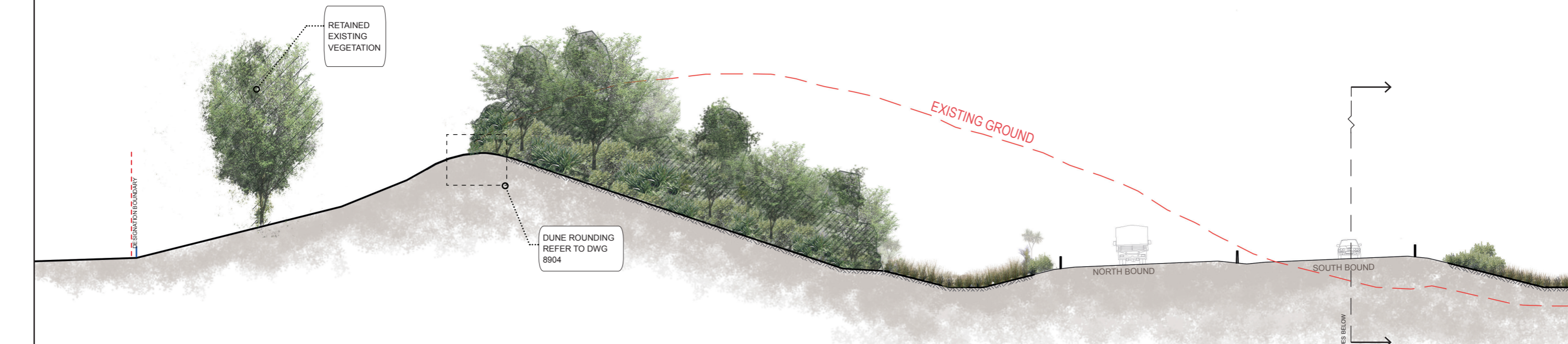
REFER TO-M2PP-520-D-GPH-8101

REFER TO-M2PP-520-D-GPH-8001



CS1 - CROSS SECTION-THROUGH EXPRESSWAY AND WETLAND

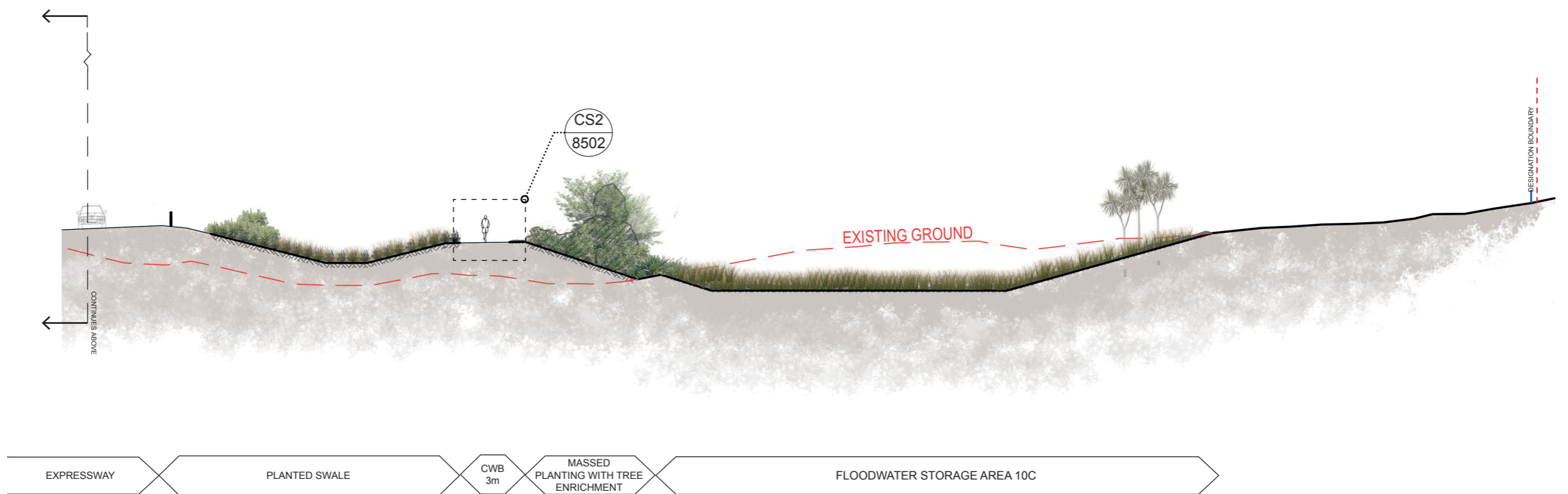
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A1 REPRODUCTION SCALE
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A3 REPRODUCTION SCALE
0mm 10 20 30 40 50



DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	CERTIFIED ISSUE - REV B	VB		SW		04/08/14

Original Scale (A1)	Design	SD	04/08/14	Approved For Construction*
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Reduced Scale (A3)	Design Check			
1:2000				



Project:	SH1 MACKAYS TO PEKA PEKA EXPRESSWAY RP 1012/0.00 TO 1023/5.00
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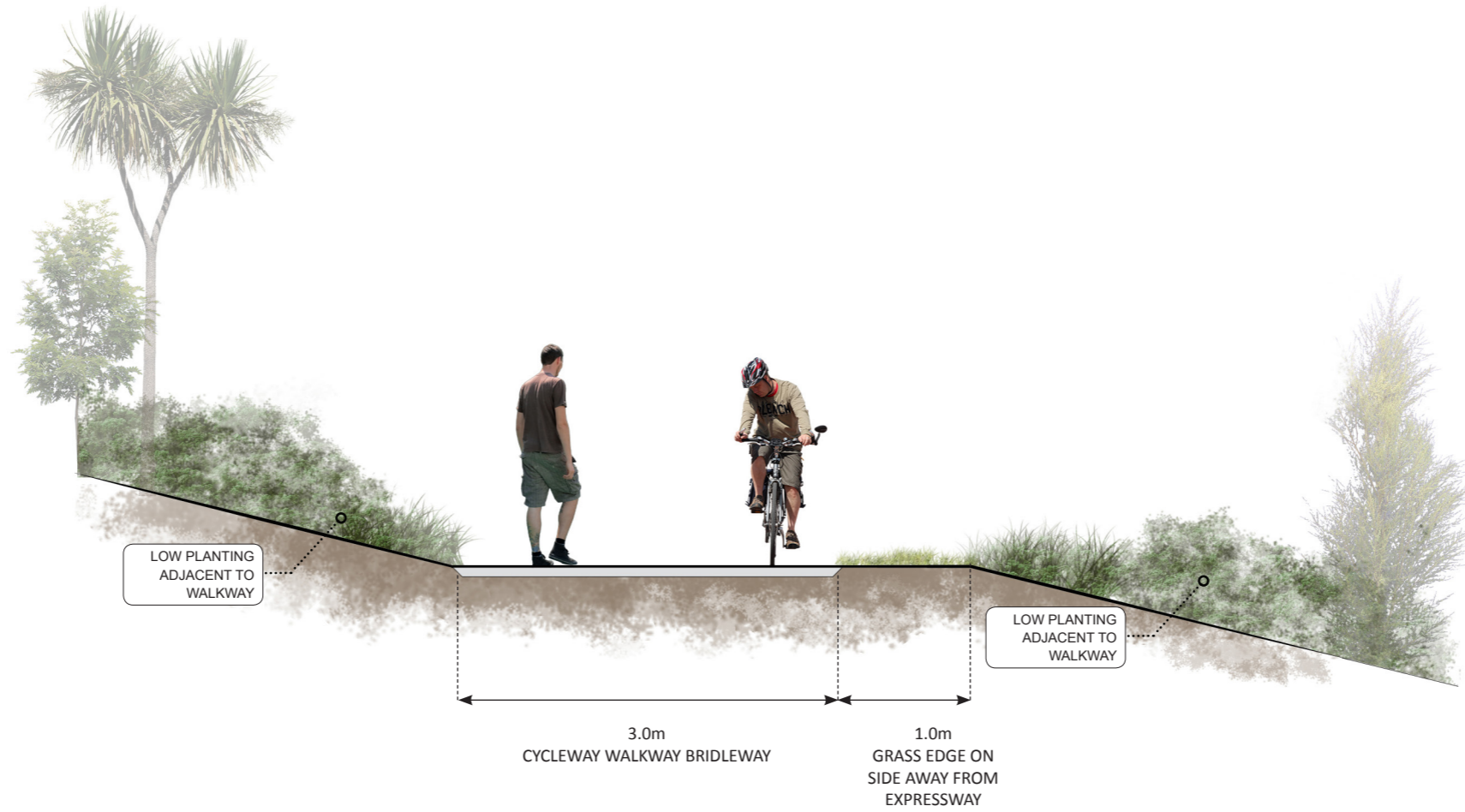
Title:	SSMP 9 [520] - SHEET 4 ROAD AND WETLAND SECTION
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Drawing No:	M2PP-520-D-GPH-8501
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Rev.	B
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CS2 - TYPICAL CYCLEWAY SECTION

SCALE - 1:50



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
B	CERTIFIED ISSUE - REV B	VB		SW		04/08/14

Original Scale (A1)	Design	SD	04/08/14	Approved For Construction*
1:1000	Drawn	MP	04/08/14	
Reduced Scale (A3)	Design Verifier			Date
1:2000	Dwg Check			

* Refer to Revision 1 for Original Signature

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

Title: SSMP 9 [520] - SHEET 5
TYPICAL CWB SECTION

Drawing No: M2PP-520-D-GPH-8502

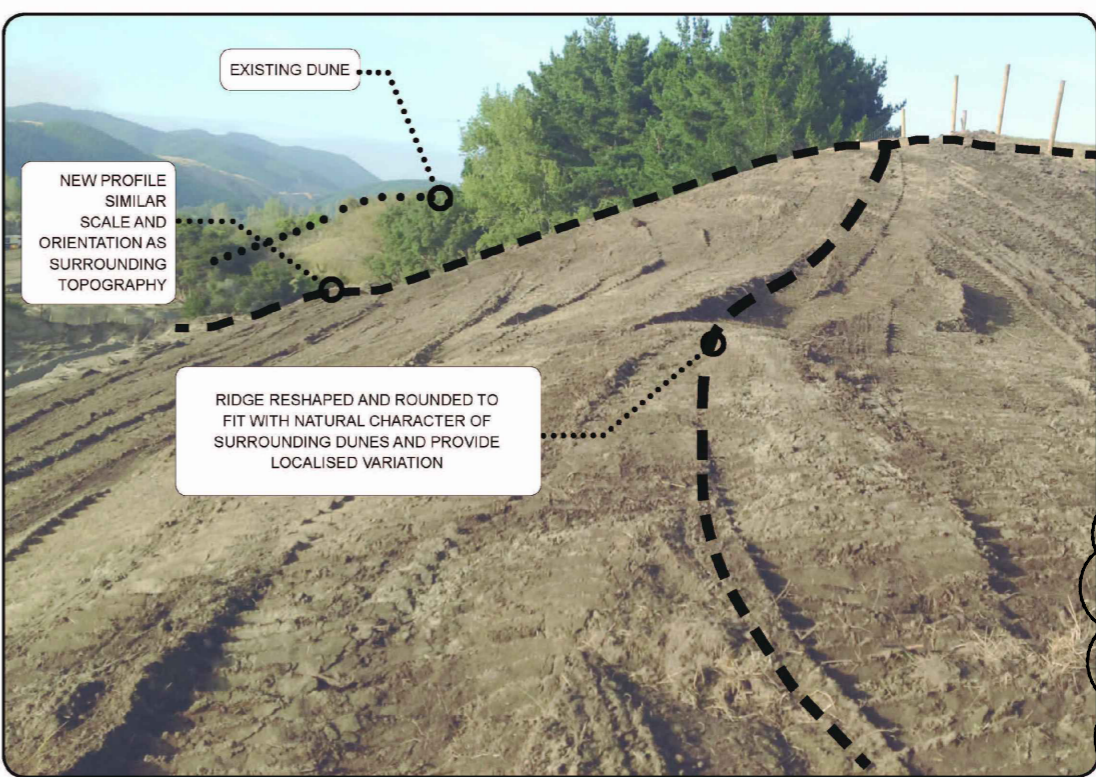
Rev. B

Best Practice Examples from Sector 460

Below are examples of successful dune rounding conducted in sector 460 (western side of alignment between approx. chainage 9700-10,000).



-Seamless blending with landforms beyond designation
-Rounding and gradients are a continuation of adjoining landforms



-Dune rounding at edge of boundary fits with existing profile
-Rounding and gradients are at a similar character and scale to surrounding landforms
-Horizontal shaping and undulation with similar character to surrounding dune context
-During dune rounding, form a positive fall across the earthworks and ensure there are no ruts, sags or ground depressions to avoid water collecting and potentially destabilising the slope.



-Natural appearance. Avoid uniform, engineered profiles.

**ORIGINAL DRAWING
IN COLOUR
FOR CONSTRUCTION**

- **This guidance does not negate the requirement for the landscape architect to sign off these works prior to spreading topsoil.**
- The obligation to round earthwork cuts in the dune country, avoiding a geometric engineered finish, is a requirement of the consent conditions, the UDLF and the LMP (see below).
- Ideally, this shaping should have been incorporated into the earthworks design model, for implementation on site via the Trimble system. However, inclusion of flowing contours proved unworkable in the MX model so it was agreed that 'on site' instruction by the Design Team with the Construction Team was the best approach.
- Earthworks in sector 460 have been completed to a standard that meets the consent design requirements. Consequently, the dune shaping in 460 (depicted at right) is the design standard for 'dune rounding' for the entire M2PP project.

Consent Conditions

Condition DC.57 b) The purpose of each SSLMP shall be to help ensure detailed landscape design of the Project accords with the principles set out in the Urban and Landscape Design Framework (Technical Report 5) in order to achieve the outcomes and standards required under Condition DC.53C, having regard to the local character and context and ecological conditions within each sector or stage of the route. SSLMPs are required for all sectors/stages of the Expressway.

Condition DC.57 f) Each SSLMP shall include details of landscape design, including the following matters:
xi) Consideration of:
A. The landforms and character, including streams;

UDLF(Urban Design and Landscape Framework)

The dunes are the 'signature' landforms encountered along the Expressway corridor. In the first instance the route alignment seeks to avoid significant dunes if possible. However, loss or modification of some dunes will be inevitable in places given the confined corridor available and the scale of the Expressway footprint. Integrating the Expressway linear form into the dune landforms is a key design objective.

Design Concept
The dune forms and other natural landform features have been avoided as best they can in the alignment of the Expressway. However, the Expressway will create change to landforms and the approach will be to 'naturalise' the changes as far as practicable, to integrate those changes with local topographical patterns.

- Design Principles**
The following principles will apply to the landform design:
3. Design or modify landforms to acknowledge and reflect the local topographical pattern (scale, orientation, profile).
 5. Shape (roll off) the tops of cut/ fill faces so the faces integrate with the existing dune profiles as far as practicable and minimise risk of water and wind erosion.
 6. Shape visual and noise mitigation bunds to appear as 'natural' landform, avoiding engineered appearances unless these forms are a component of a designed 'land art' formation.

LMP(Landscape Management Plan)

Attachment 2: Principles, Methods and Procedures (pg.6)
Ensure finished earthworks physically and visually relate to adjoining landforms and that they reflect the Design Principles as set out in the Urban and Landscape Design Framework.

- Shape noise and visual mitigation bunds to appear as 'natural' landforms where practicable.
- Avoid unnecessary disturbance to natural landforms.
- Re-shaping of dunes to achieve a 'natural' appearance is likely to require extending earthworks into surrounding topography.

A1 REPRODUCTION SCALE
0mm
20
40
60
80
100

A3 REPRODUCTION SCALE
0mm
10
20
30
40

No.	Revision	By	Chk	Chk.V	Appd	Date
2	REVISED BASED ON GEOTECHNICAL INPUT	MP				
1	FOR CONSTRUCTION	MP	GFB	DH	DC	07.05.14

Original Scale (A1)	Design	Drawn	24.04.14	Approved For Construction
NTS	B FAULKNER	V BILLETT	24.04.14	P BRADSHAW
Reduced Scale (A3)	Design Verifier	05.05.14	Date	
NTS	B EVANS	G F-B	05.05.14	

* Refer to Revision 1 for Original Signature



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









Title: STANDARD DETAILS
DUNE ROUNDING DETAIL

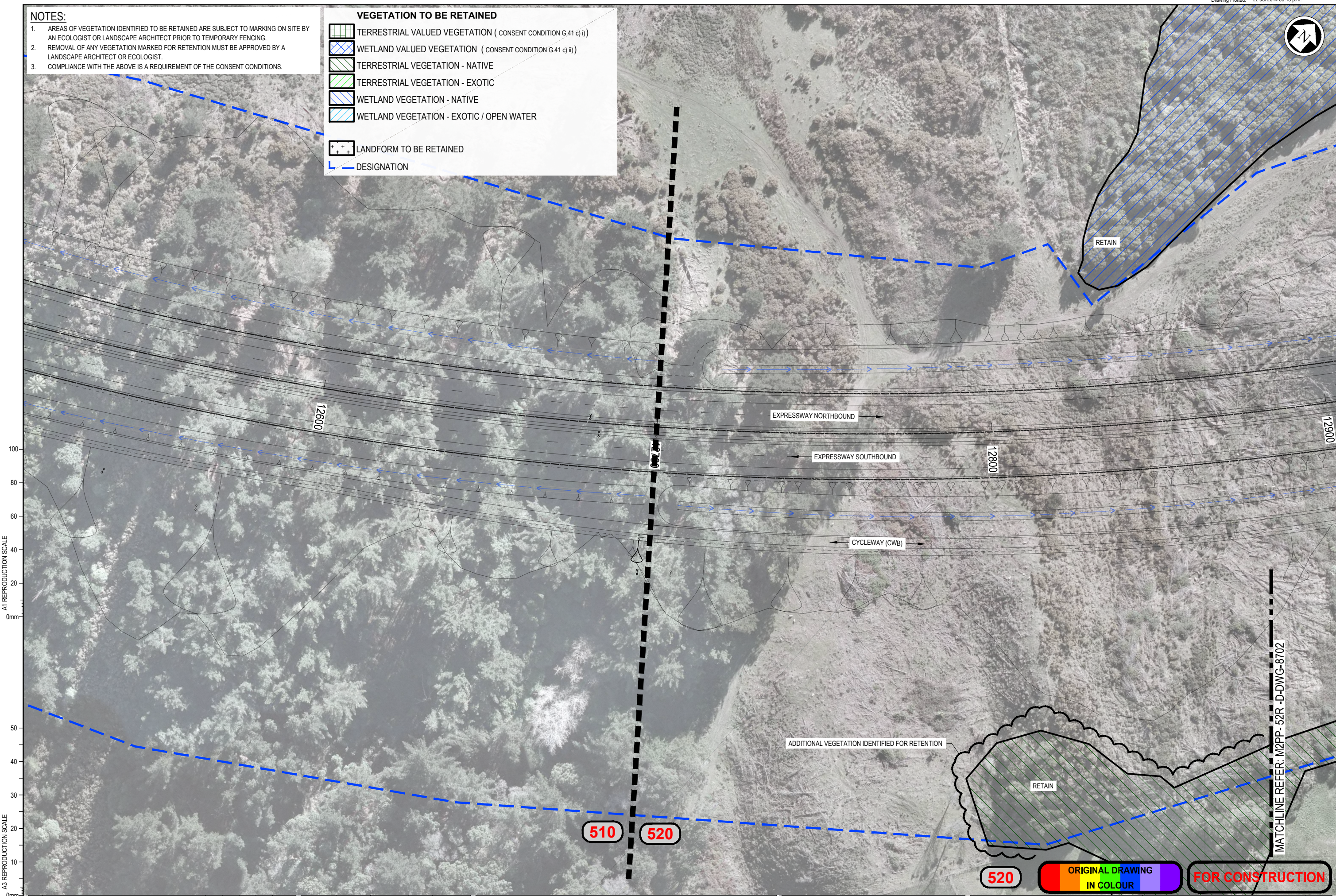
Drawing No: M2PP-23R-D-DWG-8904
Rev: 2

NOTES:

1. AREAS OF VEGETATION IDENTIFIED TO BE RETAINED ARE SUBJECT TO MARKING ON SITE BY AN ECOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO TEMPORARY FENCING.
2. REMOVAL OF ANY VEGETATION MARKED FOR RETENTION MUST BE APPROVED BY A LANDSCAPE ARCHITECT OR ECOLOGIST.
3. COMPLIANCE WITH THE ABOVE IS A REQUIREMENT OF THE CONSENT CONDITIONS.

VEGETATION TO BE RETAINED

-  TERRESTRIAL VALUED VEGETATION (CONSENT CONDITION G.41 (c) i))
-  WETLAND VALUED VEGETATION (CONSENT CONDITION G.41 (c) ii))
-  TERRESTRIAL VEGETATION - NATIVE
-  TERRESTRIAL VEGETATION - EXOTIC
-  WETLAND VEGETATION - NATIVE
-  WETLAND VEGETATION - EXOTIC / OPEN WATER
-  LANDFORM TO BE RETAINED
-  DESIGNATION



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

No.	Revision	By	Chk	Chk-V	Appd	Date
+	WORKING REVISION- REVISED AS NOTED	MP				
1	FOR CONSTRUCTION - ENABLING WORKS	MP	GFB	DH	SW	21.03.14

Original Scale (A1)	Design	Drawn	29.01.14	Approved For Construction
1:500	S. DUNN	M. POWELL	29.01.14	P. BRADSHAW
Reduced Scale (A3)	Design Verifier	B. FAULKNER	21.03.14	Date 21.03.14
1:1000	Dwg Check	G. F-B	21.03.14	

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY
WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA VEGETATION TO BE RETAINED
SHEET 1

Drawing No: M2PP-52R-D-DWG-8701
Rev: +

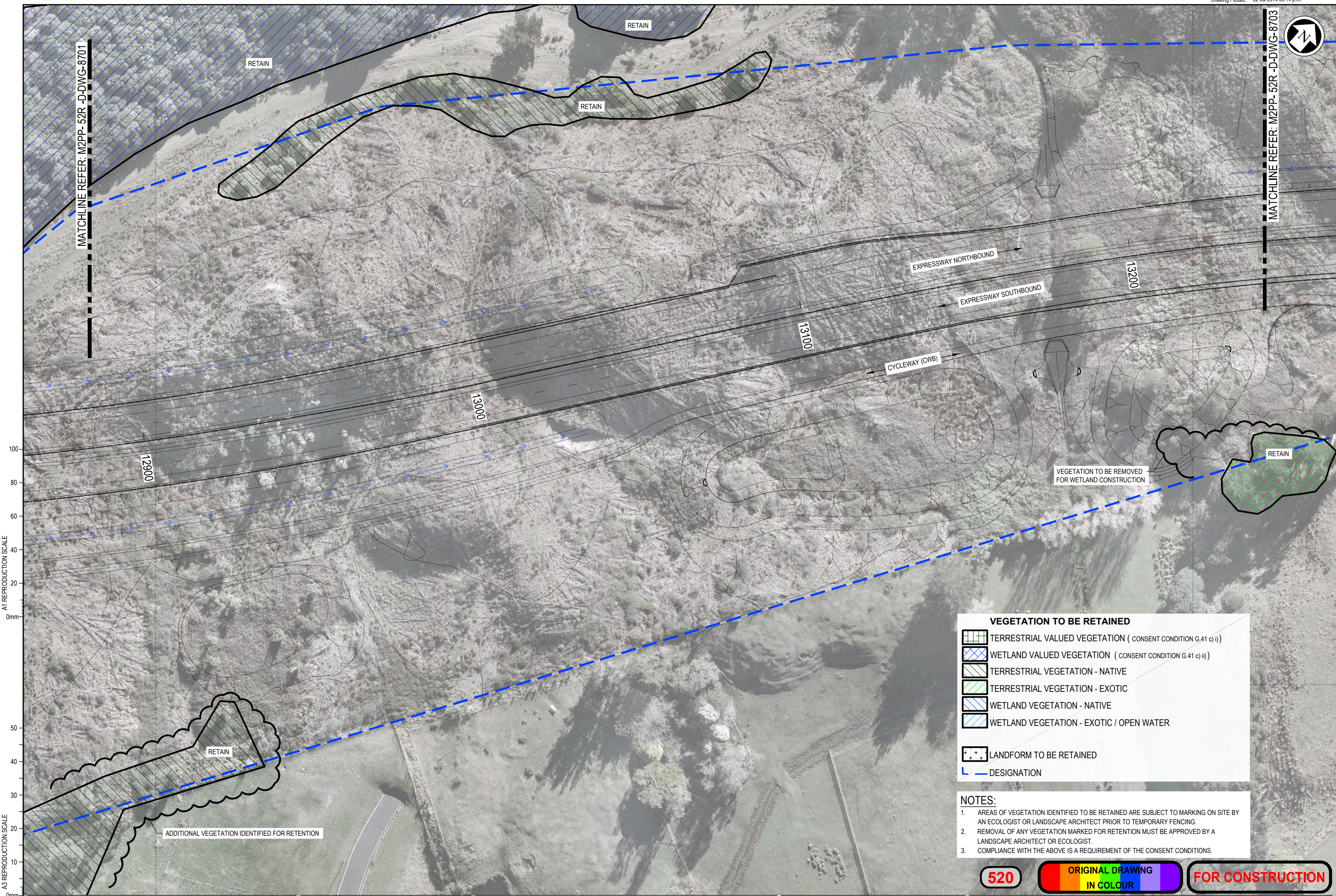
ORIGINAL DRAWING
IN COLOUR

FOR CONSTRUCTION



MATCHLINE REFER: M2PP-52R-D-DWG-8701

MATCHLINE REFER: M2PP-52R-D-DWG-8703



A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

VEGETATION TO BE RETAINED

- TERRESTRIAL VALUED VEGETATION (CONSENT CONDITION G.41 c) ii)
- WETLAND VALUED VEGETATION (CONSENT CONDITION G.41 c) ii)
- TERRESTRIAL VEGETATION - NATIVE
- TERRESTRIAL VEGETATION - EXOTIC
- WETLAND VEGETATION - NATIVE
- WETLAND VEGETATION - EXOTIC / OPEN WATER
- LANDFORM TO BE RETAINED
- DESIGNATION

NOTES:

1. AREAS OF VEGETATION IDENTIFIED TO BE RETAINED ARE SUBJECT TO MARKING ON SITE BY AN ECOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO TEMPORARY FENCING.
2. REMOVAL OF ANY VEGETATION MARKED FOR RETENTION MUST BE APPROVED BY A LANDSCAPE ARCHITECT OR ECOLOGIST.
3. COMPLIANCE WITH THE ABOVE IS A REQUIREMENT OF THE CONSENT CONDITIONS.

520

**ORIGINAL DRAWING
IN COLOUR**

FOR CONSTRUCTION

No.	Revision	By	Chk	Chk-V	Appd	Date
1	FOR CONSTRUCTION - ENABLING WORKS	MP	GFB	DH	SW	21.03.14

Original Scale (A1)	Design	Drawn	Checked	Approved For Construction
1:500	S. DUNN	M. POWELL	B. FAULKNER	P. BRADSHAW
Reduced Scale (A3)				
1:1000				



MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA
VEGETATION TO BE RETAINED
SHEET 2

Drawing No: M2PP-52R-D-DWG-8702

Rev: +

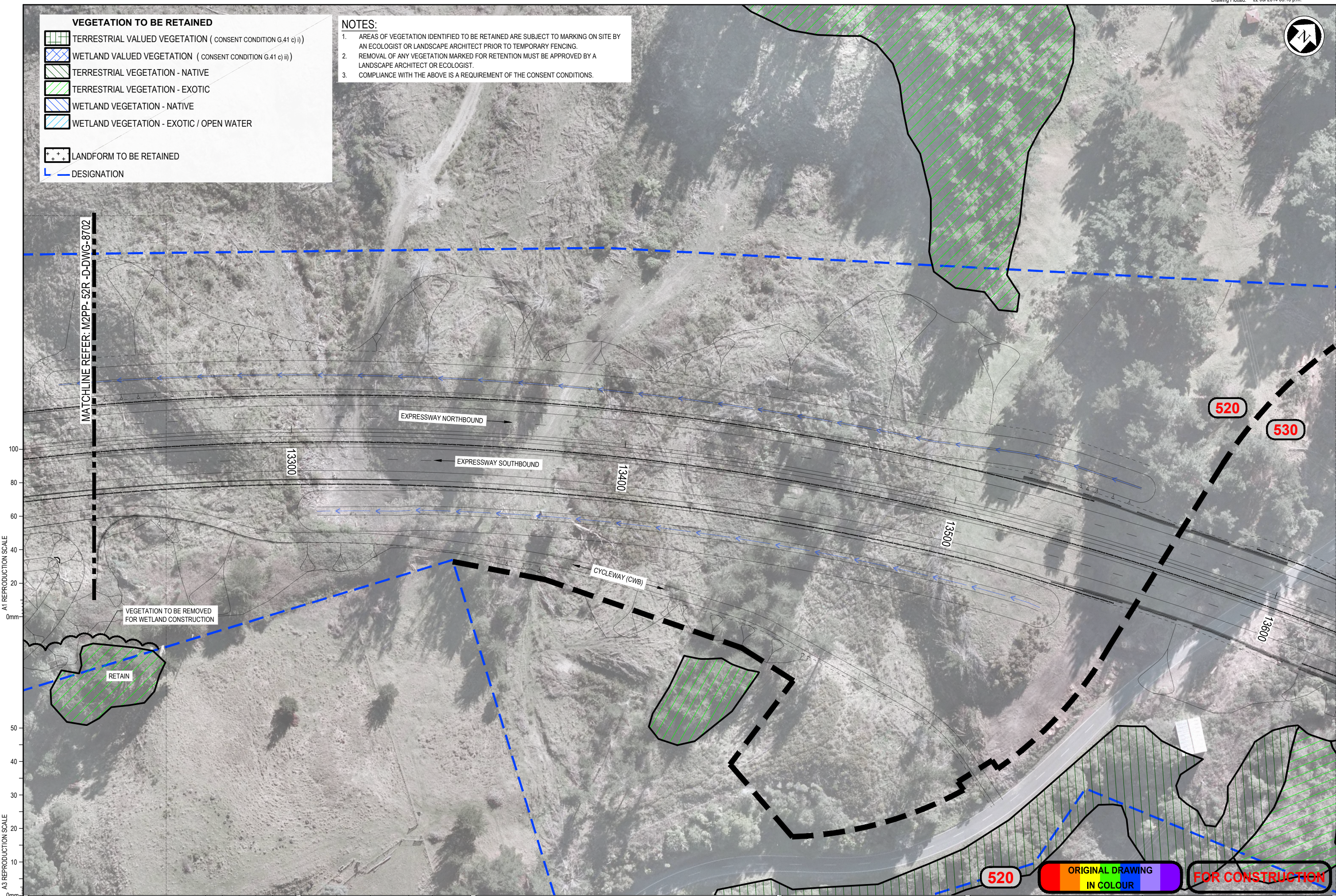


VEGETATION TO BE RETAINED

	TERRESTRIAL VALUED VEGETATION (CONSENT CONDITION G.41 c) i)
	WETLAND VALUED VEGETATION (CONSENT CONDITION G.41 c) ii)
	TERRESTRIAL VEGETATION - NATIVE
	TERRESTRIAL VEGETATION - EXOTIC
	WETLAND VEGETATION - NATIVE
	WETLAND VEGETATION - EXOTIC / OPEN WATER
	LANDFORM TO BE RETAINED
	DESIGNATION

NOTES:

- AREAS OF VEGETATION IDENTIFIED TO BE RETAINED ARE SUBJECT TO MARKING ON SITE BY AN ECOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO TEMPORARY FENCING.
- REMOVAL OF ANY VEGETATION MARKED FOR RETENTION MUST BE APPROVED BY A LANDSCAPE ARCHITECT OR ECOLOGIST.
- COMPLIANCE WITH THE ABOVE IS A REQUIREMENT OF THE CONSENT CONDITIONS.



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

No.	Revision	By	Chk	Chk-V	Appd	Date
+	WORKING REVISION - REVISED AS NOTED	MP				
1	FOR CONSTRUCTION - ENABLING WORKS	MP	GFB	DH	SW	21.03.14

Original Scale (A1)	1:500	Design	S. DUNN	29.01.14	Approved For Construction
Drawn	M. POWELL	29.01.14	P. BRADSHAW		
Dwg Verifier	B. FAULKNER	21.03.14			
Dwg Check	G. F-B	21.03.14	Date	21.03.14	



MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA VEGETATION TO BE RETAINED
SHEET 3

Drawing No: M2PP-52R-D-DWG-8703

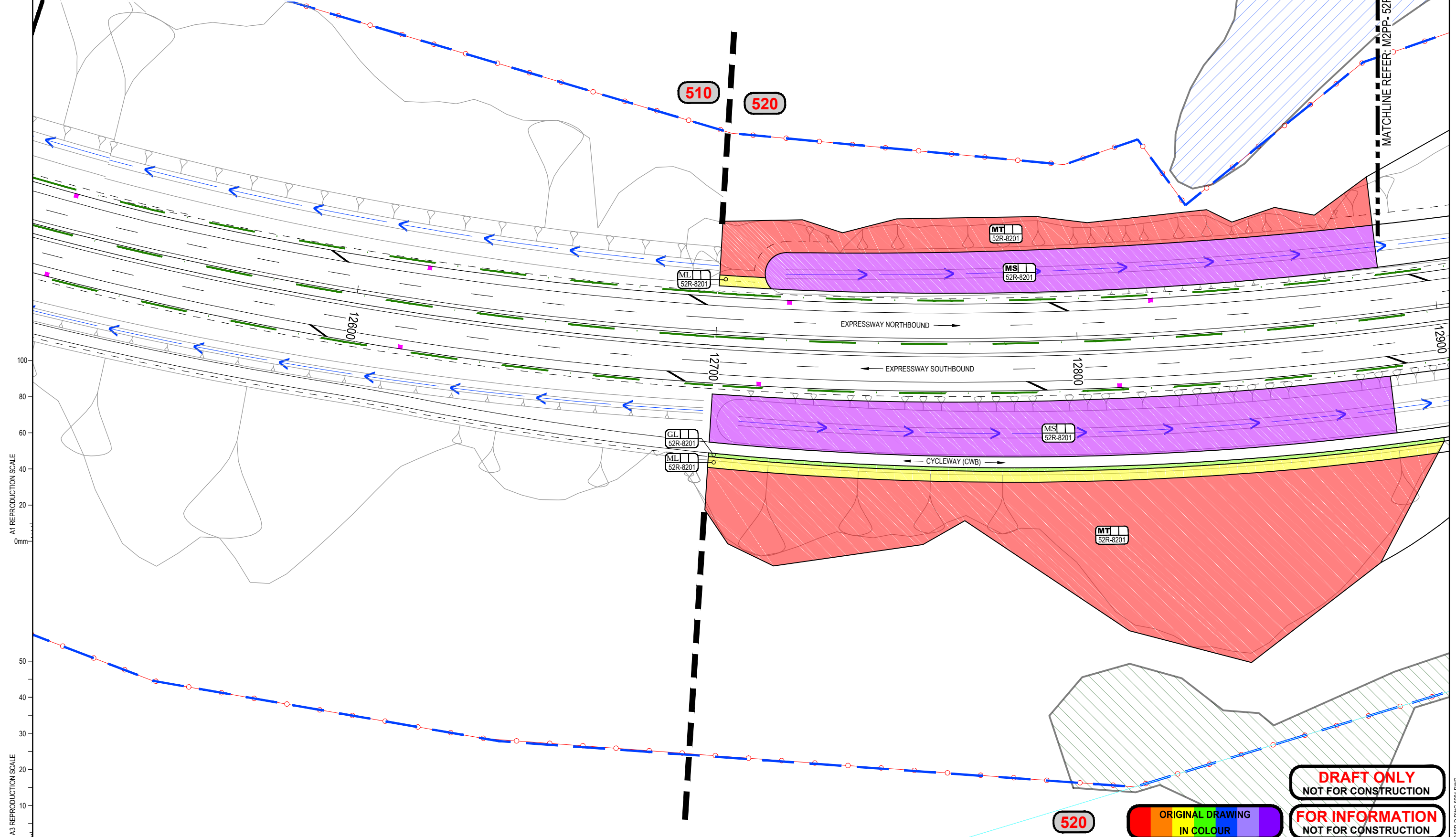
Rev: +

KEY

PLANTING TYPE PLANTING MIX AREA CODE	MASSED PLANTING	TREES - FORESTRY GRADE	GRASS - LOW	WETLAND PLANTING
PLANTING BOUNDARY	MASSED PLANTING - LOW	TREES - SPECIMEN GRADE	GRASS - SWALE	RIPARIAN PLANTING
ASSOCIATED SHEET NUMBER	MASSED PLANTING - TREE ENRICHMENT	TREES - POLE GRADE	GRASS - ROUGH	
	MASSED PLANTING - MEDIAN			
	MASSED PLANTING - SWALE			
	EXISTING VEGETATION TO BE RETAINED			
				DESIGNATION

NOTES:

- REFER TO PLANTING SCHEDULES (8211) FOR PLANT MIX DETAILS.
- REFER TO STANDARD PLANTING DETAILS (8900 SERIES) FOR PLANTING DETAIL.
- A 1.5m OFFSET FROM THE VERGE HAS BEEN MADE TO ACCOMMODATE THE EXTENT OF SUBBASE. THE ACTUAL OFFSET IS TO BE CONFIRMED ON SITE.



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
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No.	Revision	By	Chk	Chk.V	Appd	Date

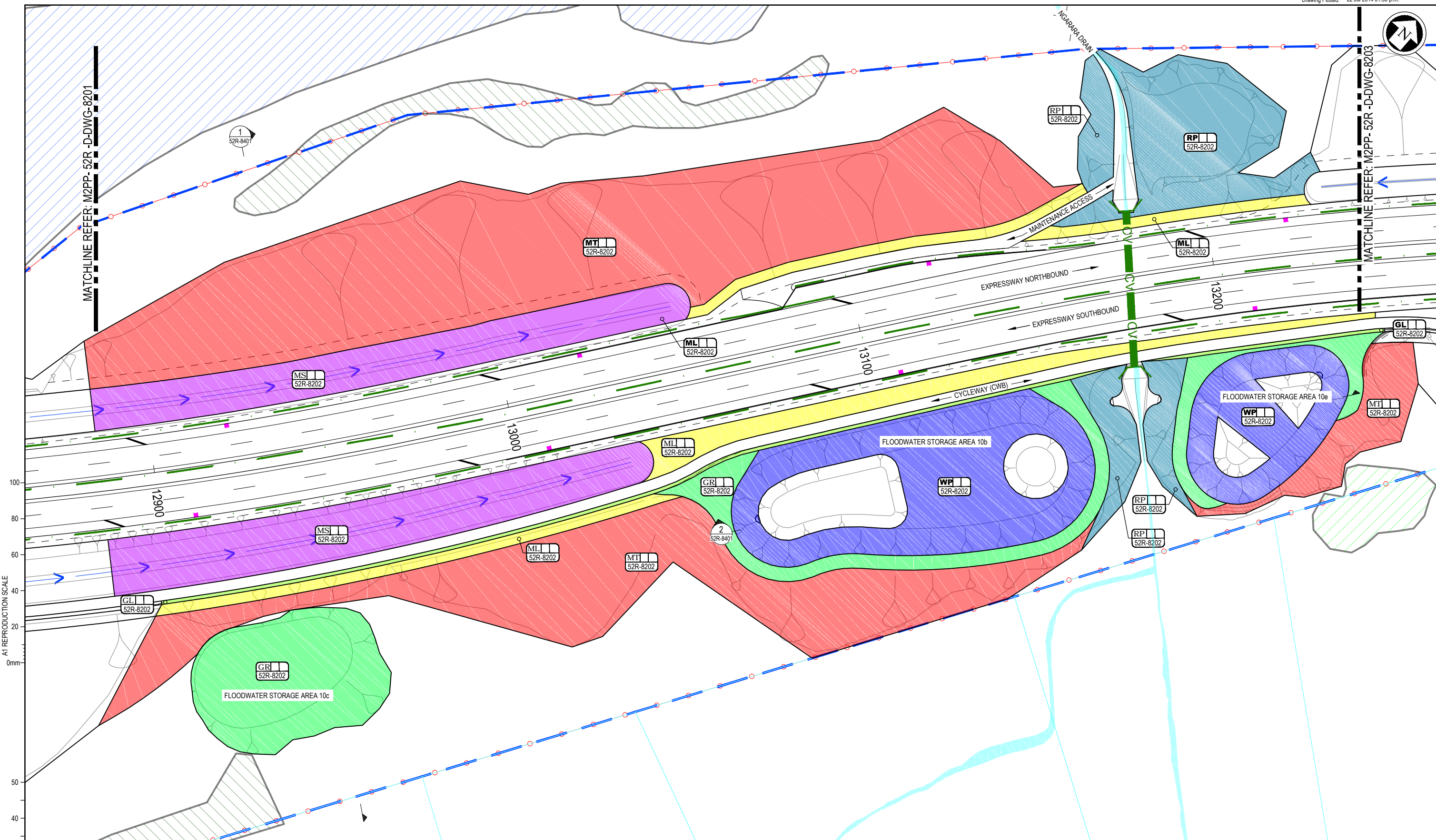
Original Scale (A1)	1:500	Design	S DUNN	17.06.14	Approved For Construction*
Drawn	M POWELL	17.06.14			
Reduced Scale (A3)	1:1000	Design Verifier			
		Dwg Check			
		* Refer to Revision 1 for Original Signature			

NZ TRANSPORT AGENCY
WAKA KOTAHĀ

MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA PLANTING PLANS SHEET 1	Drawing No: M2PP-52R-D-DWG-8201	Rev: +
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A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

KEY

	MASSED PLANTING - TREE ENRICHMENT
	MASSED PLANTING - SWALE
	MASSED PLANTING - LOW
	MASSED PLANTING - MEDIAN
	MASSED PLANTING
	PLANTING BOUNDARY
	PLANTING MIX AREA CODE
	ASSOCIATED SHEET NUMBER

	TREES - FORESTRY GRADE
	TREES - SPECIMEN GRADE
	TREES - POLE GRADE
	EXISTING VEGETATION TO BE RETAINED

	GRASS - LOW
	GRASS - SWALE
	GRASS - ROUGH
	WETLAND PLANTING
	RIPARIAN PLANTING
	DESIGNATION

NOTES:

- REFER TO PLANTING SCHEDULES (8211) FOR PLANT MIX DETAILS.
- REFER TO STANDARD PLANTING DETAILS (8900 SERIES) FOR PLANTING DETAIL.
- A 1.5m OFFSET FROM THE VERGE HAS BEEN MADE TO ACCOMMODATE THE EXTENT OF SUBBASE. THE ACTUAL OFFSET IS TO BE CONFIRMED ON SITE.

No.	Revision	By	Chk	Chk.V	Appd	Date
+	FOR INFORMATION					

Original Scale (A1)	1:500	Design	S DUNN	17.06.14	Approved For Construction
Reduced Scale (A3)	1:1000	Drawn	M POWELL	17.06.14	Date
		Design Verifier			
		Dwg Check			
		* Refer to Revision 1 for Original Signature			



MacKays to Peka Peka
Wellington Northern Corridor

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

520

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NOT FOR CONSTRUCTION

Title: TE MOANA TO NGARARA PLANTING PLANS SHEET 2

Drawing No:	M2PP-52R-D-DWG-8202	Rev.	+
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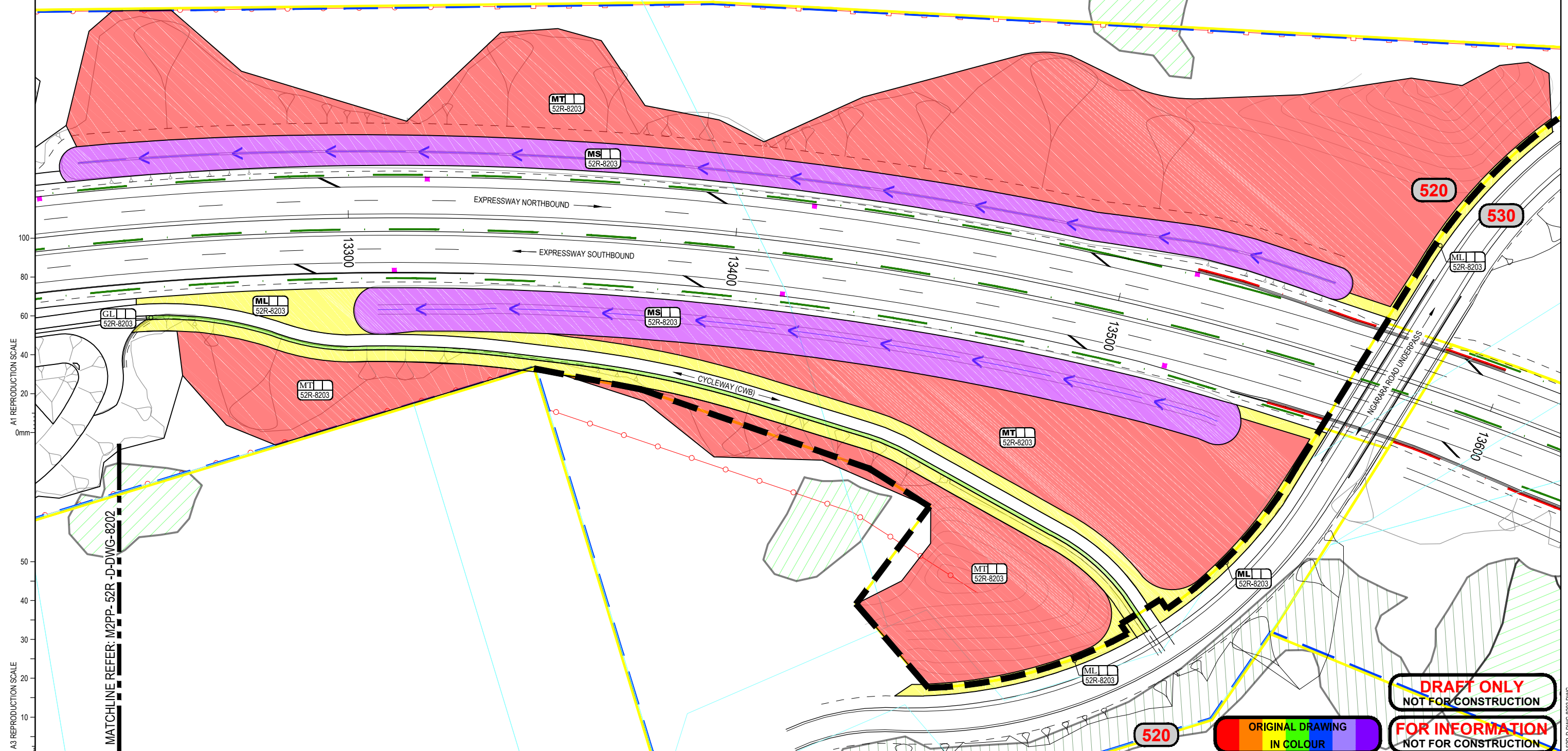


KEY

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	EXISTING VEGETATION TO BE RETAINED		DESIGNATION
MS MASSED PLANTING - SWALE			

NOTES:

- REFER TO PLANTING SCHEDULES (8211) FOR PLANT MIX DETAILS.
- REFER TO STANDARD PLANTING DETAILS (8900 SERIES) FOR PLANTING DETAIL.
- A 1.5m OFFSET FROM THE VERGE HAS BEEN MADE TO ACCOMMODATE THE EXTENT OF SUBBASE. THE ACTUAL OFFSET IS TO BE CONFIRMED ON SITE.



A1 REPRODUCTION SCALE
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A3 REPRODUCTION SCALE
0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
+	FOR INFORMATION					

Original Scale (A1)	1:500	Design	S DUNN	17.06.14	Approved For Construction*
Drawn	M POWELL	17.06.14			
Reduced Scale (A3)	1:1000	Design Verifier			
		Dwg Check			
		* Refer to Revision 1 for Original Signature			



MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA PLANTING PLANS SHEET 3
Drawing No: M2PP-52R-D-DWG-8203
Rev: +

SECTOR 520 (Te Moana to Ngarara Road) PLANT SCHEDULE

Plan reference	
TOTAL	
Area	0
Area adjusted for slope	0
plant centres (metres)	0.00
Mulch type OM = Organic mulch, GM = graded gravel mulch, N = No mulch (in riparian / wetland zones)	0

Plant type	Plant mix	Botanical name	Common name	Grade	% mix	Notes		
MASSED PLANTING +TREE ENRICHMENT								
MT	F	Austroderia fulvida	syn Cortaderia, toetoe	1.0 litre	2%			no
MT	F	Carex lessoniana	Cutty grass	1.0 litre	5%			no
MT	F	Carpodetus serratus	Putaputaweta	1.0 litre	5%			no
MT	F	Coprosma areolata	Thin leaved Coprosma	1.0 litre	5%			no
MT	F	Coprosma grandifolia	Kanono	1.0 litre	4%			no
MT	F	Coprosma robusta	Karamu	1.0 litre	5%			no
MT	F	Griselinia lucida	Puka, Broadleaf	1.0 litre	5%			no
MT	F	Hebe stricta	Koromiko	1.0 litre	5%			no
MT	F	Kunzea ericoides	Kanuka	1.0 litre	15%			no
MT	F	Leptospermum scoparium	Manuka	1.0 litre	5%			no
MT	F	Macropiper excelsum	Kawakawa	1.0 litre	5%			no
MT	F	Melicope ternata	Wharangi	1.0 litre	2%			no
MT	F	Melicactus ramiflorus	Mahoe	1.0 litre	5%			no
MT	F	Myoporum laetum	Ngaio	1.0 litre	2%			no
MT	F	Myrsine australis	Mapou, Matipo	1.0 litre	5%			no
MT	F	Phormium tenax	Harakeke, Flax	1.0 litre	15%			no
MT	F	Pittosporum eugenioides	Tarata, lemonwood	1.0 litre	3%			no
MT	F	Pseudopanax arboreus	Whauwhaupaku, Fivefinger	1.0 litre	5%			no
MT	F	Pseudopanax crassifolius	Horoeka, Lancewood	1.0 litre	2%			no
MT	F	Knightia excelsa	Rewarewa	PB18	enrich			no
MT	F	Podocarpus totara	Totara	PB18	enrich			no
MT	F	Prumnopitys taxifolia	Matai	PB18	enrich			no
MT	F	Dacrycarpus dacrydioides	Kahikatea	PB18	enrich			no
MT	F	Rhopalostylis sapida	Nikau	PB18	enrich			no
MT	F	Alectryon excelsus	Titoki	PB18	enrich			no
MT	F	Hedycarya arborea	Porokawhiri, Pigeonwood	PB18	enrich			no
MT	F	Elaeocarpus dentatus	Hinau	PB18	enrich			no
MT	F	Dysoxylum spectabile	Kohekohe	PB18	enrich			no
MASSED LOW EDGE PLANTING, ADJACENT TO CYCLEWAY (430)								
ML	A	Acaena novae-zelandiae	Red bidibidi	1.0 litre	10%	front edge		no
ML	A	Austroderia fulvida	syn Cortaderia, toetoe	1.0 litre	5%	back		no
ML	A	Carex dipsacea	Treasel sedge	1.0 litre	10%	front edge		no
ML	A	Carex solandri	Forest sedge, Solander's sedge	1.0 litre	10%	front edge		no
ML	A	Carex virgata	Swamp sedge	1.0 litre	5%	mid back		no
ML	A	Coprosma areolata	Thin leaved Coprosma	1.0 litre	5%	back		no
ML	A	Coprosma propinqua	Mingimingi	1.0 litre	5%	mid back		no
ML	A	Coprosma repens	Taupata	1.0 litre	10%	mid back		no
ML	A	Ficinia nodosa	Wiwi, Knobby club rush	1.0 litre	10%	front edge		no
ML	A	Hebe stricta	Koromiko	1.0 litre	10%	back		no
ML	A	Muehlenbeckia complexa	Pohuehue, wire vine	1.0 litre	20%	front edge		no
MASSED SWALE PLANTING								
MS	A	Apodasmia similis	Oioi	0.5 litre	100			no

Plant type	Plant mix	Botanical name	Common name	Grade	% mix	Notes		
RIPARIAN PLANTING - EDGE TO NARARA DRAIN / CULVERT 26								
RP	H	Carex geminata	Cutty grass	0.5 litre		upper edge		no
RP	H	Carex lessoniana	Cutty grass	0.5 litre		lower edge		no
RP	H	Cordyline australis	Ti kouka	1.0 litre				no
WETLAND PLANTING - EMERGENT 0.0 TO 0.3M WATER DEPTH								
WP	F	Carex virgata	Swamp sedge			0 - 0.3m zone		no
WP	F	Cyperus ustulatus	Toetoe upokotangata, Giant umbrella sedge			0 - 0.3m zone		no
WP	F	Machaerina rubiginosa (syn Baumea)				0 - 0.3m zone		no
WP	F	Machaerina teretifolia (syn Baumea)	Common twig rush, pakih sedge			0 - 0.3m zone		no
WP	F	Phormium tenax	Harakeke, Flax			0 - 0.3m zone		no
WETLAND PLANTING - 0.3 TO 0.6M WATER DEPTH								
WP	G	Bolboschoenus fluviatilis	Kukuraho, Marsh club rush			0.3-0.6m zone		no
WP	G	Carex secta	Pukio, Purei			0 - 0.3-0.6m zone		no
WP	G	Eleocharis acuta	Sharp spiked sedge			0 - 0.3-0.6m zone		no
WP	G	Juncus edgariae (syn J gregifolius)	Wiwi			0 - 0.3-0.6m zone		no
WETLAND PLANTING - 0.6M TO 1.0M WATER DEPTH								
WP	H	Typha orientalis	Raupo	limited use		0.3-0.6-1.1m zone		no
WP	H	Machaerina articulata (syn Baumea)	Jointed baumea or twig rush			0.3-0.6-1.1m zone, wet and seasonal dry		no
GRASS								
GL	A	Grass low grow mix	sown, close mow to 100mm	sow				0 m ²
GS	A	Grass swale - (low grow mix)	sown, mow 100 - 200	sow				0 m ²
GR	A	Grass rank - (low grow mix)	sown, allowed to grow rank,	sow				0 m ²
TOTAL								

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

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No.	Revision	By	Chk	Chk.V	Appd	Date
+	WORKING REVISION	MP				

Original Scale (A1)	Design	S DUNN	21.07.14	Approved For Construction*
NTS	Drawn	M POWELL	21.07.14	Date
Reduced Scale (A3)	Drawn			
NTS	Check			



MacKays to Peka Peka
Wellington Northern Corridor

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

Title: TE MOANA TO NGARARA PLANTING SCHEDULE

Drawing No: M2PP-52R-D-DWG-8211

Rev. +

Appendix 2: CONSULTATION, FEEDBACK AND RESPONSES

Site Specific Management Plan 009 - Ngarara [Sector 520 - Te Moana Rd to Ngarara Rd]
MacKays to Peka Peka Expressway

01 SEPTEMBER 2014 - CERTIFIED ISSUE - REV B

The following tables set out the responses to comments raised by reviewers and those parties consulted in regard to the preliminary issue of Sector 520 (SSMP 9). 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 are:

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

COMMENTS ON PRELIMINARY ISSUE SSMP 9 [Sector 520] KCDC REVIEWERS COMMENTS [JW=Julia Williams- Landscape Architect; K=Stu Kilmister-CWB Planner]					
Condition Reference	Condition Detail	Reviewer/ commenter	KCDC Reviewer's comment	Reference in SSMP	Management Plan Author's response
	CWB	SK	No comments to make on SSMP 9		
		JW	Some minor changes to cross-section and graphic required		Noted and changes made to plans
	Consultation	JW	No comment back yet from local iwi.		This has been followed up via Alliance Comms team.
	Consultation	JW	Is there a local resident association such as the Ferndale people? Would it be worth at least running the plans past the Ferndale Trust?		There are no relevant Residents Associations for this SSMP .(Condition DC.57 e) vi))
	CPTED Review	JW	Generic CPTED review undertaken		Sector specific review has also been undertaken see comments Page 9, Urban Design B CWB

COMMENTS ON PRELIMINARY ISSUE SSMP 9 [Sector 520] TE ATIWA KI WHAKARONGATAI [HS=Hemi Sundgren]					
Condition Reference	Condition Detail	Reviewer/ commenter	Comment	Reference in SSMP	Management Plan Authors' response
57 e) i	SSMP to be prepared in consultation with Te Atiawa ki Whakarongatai				SSMP Issued for comment 29/7/14, no formal comments received 20/8/14. despite follow up email reminders requesting feedback on 6/8 and 14/8/14 The Alliance design team are working with Te Atiawa ki Whakarongatai to develop design of some elements along the CWB corridor. This work considers the whole Expressway route. The first stage, currently underway, will identify the particular locations of significance to Te Atiawa. If these locations occur within this SSMP area, landscape elements or features will be designed and incorporated into the CWB corridor, in consultation with Te Atiawa representatives.

COMMENTS ON PRELIMINARY ISSUE SSMP 9: [Sector 520] KAPITI CYCLING INC. [LS] Lynn Sleath IMPLEMENTATION GROUP OF THE KAPITI COAST DISTRICT COUNCIL, advisory on Cycleways, walkways and Bridleways [JN] Jan Nisbet					
Condition Reference	Condition Detail	Reviewer / commenter	Comment	reference in SSMP	Management Plan Author's response

DC59A.f ii and iii and DC59A.g, DC59Ai(xi) and DC.57 c)	CWB	LS , JN	No comments to make on SSMP 9		
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Appendix 3: LANDSCAPE SPECIFICATION

Site Specific Management Plan 009 - Ngarara [Sector 520 - Te Moana Rd to Ngarara Rd]
MacKays to Peka Peka Expressway

01 SEPTEMBER 2014 - CERTIFIED ISSUE - REV B

SEE SEPARATE A4 BOUND DOCUMENT.

