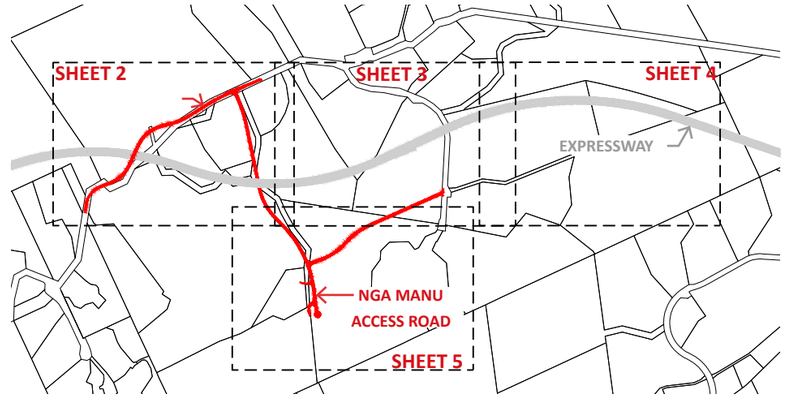
M2PP-121-D-PLNM-0012

Site Specific Management Plan 010 - [sectors 530-540-580]
MacKays to Peka Peka Expressway

18 August 2015 - CERTIFIED VERSION - REV F

NZ TRANSPORT AGENCY
WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor



SITE SPECIFIC MANAGEMENT PLAN SMITHFIELD [SSMP10 – SECTORS 530, 540, 580] -TABLE OF CONTENTS

APPENDICES

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.

Sector 530, Ngarara Road Bridge has been Certified separately (M2PP-121-D-PLNM-0012 Rev C, Certified 6 March 2015) Details relating to the Ngarara bridge sector are not included in this document.

Sector 550 is in a separate SSMP - SSMP 10 [550]

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

1. REVISION HISTORY

REVISION No	DATE	STATUS	ISSUED TO
Rev A	19 December 2014	Issue for information	KCDC , GWRC
Rev B – Ngarara Bridge Only	27 February 2015	Issue For Certification	KCDC , GWRC
Rev C – Ngarara Bridge Only	6 March 2015	Certified Version	KCDC , GWRC
Rev D	9 July 2015	Final Comment	KCDC , GWRC
Rev E	22 July 2015	For Certification	KCDC , GWRC
Rev F	18 August	Certified Issue	KCDC , GWRC

2. SSMP CERTIFICATION DETAILS

		Signature	Date
PREPARED BY M2PP ALLIANCE:	Frazer Baggaley (Landscape Architect)		23/7/2014
	Bron Faulkner (Landscape Architect)		25/7 2015
	Stephen Fuller (Ecologist)		28/7/2015
M2PP ALLIANCE APPROVAL	Stuart Waters (Sector Manager)		23/07/2015.
	Doug Stirrat (Design Manager)		23/7/15
	Dean Herrmann (Technical Director)		25/7/15
	Malory Osmond (Consents Manager)		23/7/15
CERTIFICATION	KCDC Consents and Compliance Manager [Reviewed by Julia Williams- Landscape, Deyana Popova -Urban Design, John Perkins- Traffic engineer]		17/8/15
	Al Cross (GWRC) [Reviewed by Adam Forbes, Ecology, GWRC]		18/8/15

2. INTRODUCTION

A. PURPOSE

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). Additional consent conditions resulting from the current Resource Consent Application for the changed design of the Kakariki Stream permanent diversion (WGN140305 [32943][32944]) set out matters relevant to this SSMP.

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.

The purpose of 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.

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) ii) as they relate to the details of the CWB.

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.

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 to give the best possible definition to the Project design elements as early as possible.

B. GENERAL PROJECT DESCRIPTION

REFER APPENDIX 1 SHEETS 1- 5

This SSMP includes the design changes made as part of the Notice of Requirement for an Alteration to the M2PP Expressway Designation – Smithfield and Ngarara Roads, confirmed in June 2015.

This SSMP also incorporates the details required of the draft regional consent conditions (as of 3 July 2015) for the proposed Kakariki Stream diversion adjacent to Nga Manu Nature Reserve and associated water permit and reclamation consent, (WGN140305 [32943][32944]).

This SSMP covers the area of the Expressway from Ngarara Road to just north of existing Smithfield Road. It includes an expressway bridge over the Nga Manu Access Road and Kakariki Stream. The CWB crosses the Kakariki Stream on a separate bridge. Creation of new wetlands and restoration of stream margins are significant ecological mitigation measures in the Smithfield area that are covered in this SSMP.

The Design includes the following main components:

- Focus areas for ecological mitigation planting, including wetland and stream creation and restoration.
- Creation of new flood storage area/ecological mitigation and two stormwater treatment wetlands.
- Realignment and restoration of Kakariki Stream in two locations, one at the expressway bridge and the other adjacent to Nga Manu Nature Reserve to provide space for a future local road to access KCDC's Waikanae North growth area east of the designation.
- Realignment and restoration of Smithfield drain
- Re-profiling and restoration of the stream margins within and beyond the designation.
- Realignment of Nga Manu Nature Reserve Access Road to pass under the expressway.
- Retention of significant vegetation and valued habitat.
- Retention of dune landforms, and other dunes affected by earthworks to be reshaped to tie in with adjoining landforms.
- Single span expressway bridge over Nga Manu Access Road and Kakariki Stream.
- New CWB on the west side of the expressway with bridge over Kakariki Stream.
- Severing of Smithfield Road- alternative access will be provided to properties via the new Smithfield Link Road and new bridge over Kakariki Stream.

C. SSMP EXISTING AREA DESCRIPTION

REFER APPENDIX 1 SHEETS 1- 5 AND ULDF SECTION 3.10

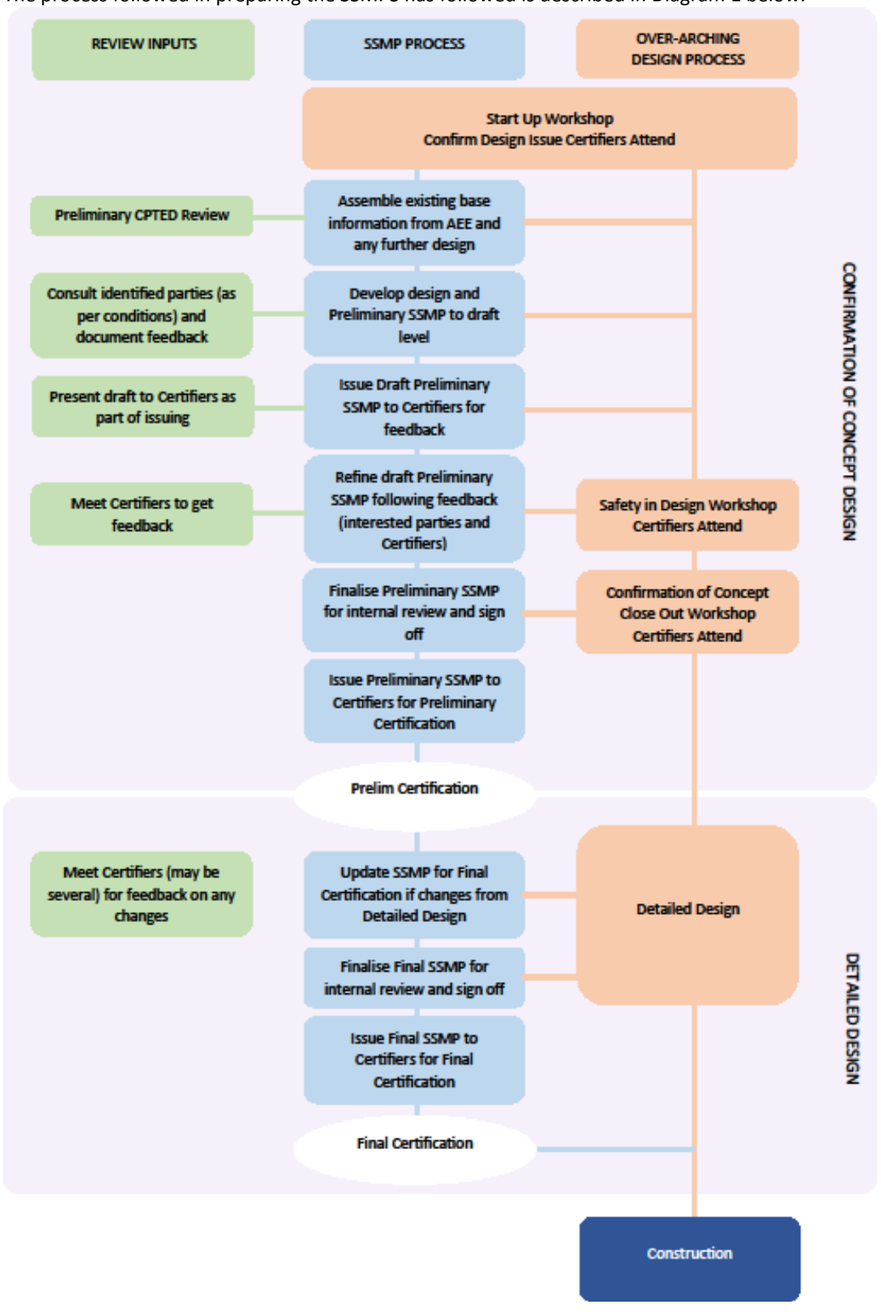
- The landscape character of this area is rural, dominated by open pasture on rolling dunes and flats, with small to medium stands of exotic forest and remnant coastal/lowland native forest. However, aspects of the design, in relation to the Nga Manu Access road recognise the inevitable change in landscape character of the surrounding area in the future, to become more urban, as the land zoned for urban growth is developed. There are three urban growth areas the vicinity of this

	SSMP, to the west and east of the expressway. - Waikanae North Development Zone (Plan Change 69, operative March 2009), Waikanae North Urban Edge (PC 79, operative March 2010), and the Ngarara Zone (Plan Change 80, operative March 2010). • This area has been identified as part of an ecological corridor linking the Kapiti Island and the coast to the mountains (i.e. Te Harakeke / Kawakahia Wetland, Nga Manu Nature Reserve and the Hemi Matenga Reserve of the eastern hills). • Kakariki Stream is a natural waterway but has been channelised along the current Nga Manu Access. Despite channelisation, Kakariki Stream has high quality upstream components, which contribute to its overall ecological value. It connects Nga Manu Nature Reserve to Te Harakeke Wetland. • Smithfield Drain is a highly modified drain cut through peatlands, which would have originally been extensive wetlands; it is regarded as having low ecological value. • Transmission lines run through this area; four pylons are located on dune crests within the offset storage area 11.

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 methods and 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** • Condition G42 outlines the extent of ecological mitigation for which SSEMPs are to be prepared. • The areas of valued terrestrial vegetation and habitats are set out in Condition G41c i) - ii). Those areas of terrestrial and wetland habitat between 13580 and 14970 include: - Ngarara wetland, and - Kakariki Stream riparian vegetation. • Condition G41e) requires, where practicable, the avoidance of areas of fernbird habitat which has been identified within the SSMP 10 area (i.e. Ngarara / Kakariki). • 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 SSMP10, the locations include: x) Ngarara Road, xi) Smithfield Road, • Condition DC.59A f) lists the matters to be provided and in summary includes detailed design for the benefit of pedestrians, cyclists and others: - Lighting; - Footpath and on-road cycle lane design (Provision for minimum dimensions of 1.5m on road and 2.0m footpaths); - Safe crossing points for CWB; - Visual treatment of structures and landscape (retaining walls, noise mitigation structures and landforms); - Local property access; - Landscape treatment (LMP and SSMLPs); - Bridge piers and abutment design (location of piers, scale and materials); - Signage; • Condition DC.59A g) requires preparation of a SSUDP for the Cycleway, Walkway and Bridle (CWB) path network and includes: - Final alignment and form of CWB. - Provision for a 3.0m wide two-way path - Connections to local street networks - Boardwalks;

Alteration to the Existing McKays to Peka Peka Expressway Designation in the Vicinity of Smithfield and Ngarara Roads, Waikanae, June 2015 **Refer** 'Simplified Detailed Planting Plan' SHEET 2019	- Lighting, safety provisions for crossing of local roads - CPTED review. • In addition, SSMP10 shall consider the following in relation to Condition 59A i) xi) Ngarara Road and Smithfield Road - 1. Horse use including appropriate footpath widths, surfacing and dismounting area. Network Integration Plan Condition DC.64 a) in relation to the CWB; Condition DC.64 b) ii) in relation to lighting. <u>Hearing Decision DC 1 iv)</u> 12. RM140203 – Notice of Requirement for an alteration to an existing designation: MacKays to Peka Peka at Smithfield and Ngarara Roads (New Zealand Transport Agency dated 13 October 2014); including: a) Request for further information: Notice of Requirement for Alteration to a Designation at Smithfield and Ngarara Roads (a letter from the New Zealand Transport Agency, 18 February 2015); b) Further information to the Notice of Requirement for Alteration to a Designation at Smithfield and Ngarara Roads (a letter from the New Zealand Transport Agency, 24 April 2015). c) Attachment 9c dated 8 June 2015, and attachment 15 dated 12 May 2015, annexures to the evidence of Boyden Evans, dated 8 June 2015. Where there is conflict between the documents lodged and the conditions, the conditions shall prevail. Where there is inconsistency between the information and plans lodged with the requirement, at the Board of Inquiry hearing, and in the approved alterations to the designation listed in iv) above, the most recent plans and information shall prevail. **Alterations to DC.57** DC.57 g) That in addition to the information required to be provided under DC.57 and in particular subclause f). "Site Specific Management Plan 10" shall be updated to include the details of the landscape design for the landscape mitigation outlined in the plans and documentation referred to in DC.1a)(iv)(12). **New condition DC.57B** DC.57B The consent holder shall not sell or dispose of any of the land within parcel Pt Lot 21 DP 20118, until a covenant is registered against the Computer Freehold Register for that land to provide for the ongoing protection of the visual mitigation planting and existing vegetation located outside the designation within the area identified on the plan titled 'Simplified Detailed Planting Plan' Attachment 15, dated 12 May 2015 (as referred to in condition DC.1a(iv)(12)(c)). **Ecological mitigation Conditions (Summary)** 20. Undertake ecological mitigation in accordance with 'Figure 1: Proposed Kakariki Diversion', dated 16 December 2014', provided to GWRC on 16 December 2014. 21. Identifies mitigation to be carried out; i. At least 483 lineal metres of riparian planting with a minimum width of 20m each side of the Kakariki Stream ii. Riparian planting along each side of the extension to the new intermittent stream channel known as the "Nga Manu Fish Pass" iii. A minimum of 0.36ha of wetland enrichment planting within the existing *Cyperus ustulatus* dominated wetland iv. Fencing and restoration planting of the small kohekohe lined tributary (approximately 80m in length upstream of the existing *Cyperus ustalatus* dominated wetland) v. Fencing of all mitigation planting. 22. As far as practicable, mitigation that reflects the indigenous habitat types and ecological functioning. 23. Mitigation not affected by construction to be completed within 1 year of commencing construction of the Kakariki Stream diversion channel and all other mitigation to be completed within 1 year within completion of diversion of water through the new Kakariki Stream channel. 24. Prepare and submit a Planting Plan, (as part of SSEMP), for; i. Fencing and early establishment of approximately 0.36 ha of wetland enrichment planting within the existing *Cyperus ustulatus* dominated wetland ii. Fencing and restoration planting of the small kohekohe lined tributary 25. Works shall not commence until planting plan has been certified. 26. Implement and comply with the requirements of the certified Early Planting Plan 27. & 29. Prepare and submit a Site Specific Ecological Management Plan (SSEMP) for certification prior to works beginning. 31. Implement and comply with the requirements of the certified SSEMP.
Kakariki Steam permanent diversion Conditions (3 July 2015) **Greater Wellington Regional Council WGN140305 [32943][32944]** Water permit to permanently divert the full flow of an approximate 300 lineal metre section of the Kakariki Stream. Land use consent to reclaim approximately 300 lineal metres of the Kakariki Stream	

3. CONSULTATION	
Alteration to the Existing MacKays to Peka Peka Expressway Designation at Smithfield and Ngarara Roads. June 2015	• Condition DC.57A a) requires consultation with residents in identified Landscape Focus Areas- There are no Landscape focus areas identified in SSMP 10 • SSLMP, SSEMP and SSUDP (under Conditions DC.57 e), G42C d) and DC.59A j)) requires consultation with the following parties: - Te Āti Awa ki Whakarongotai; - Kapiti Coast District Council (KCDC); and - Greater Wellington Regional Council (GWRC). - Nga Manu Nature reserve • The SSUDP condition (DC.59A j) viii) requires consultation with the following parties: - Kāpiti Cycling Incorporated and KCDC's CWB Advisory Group in respect of the CWB and any cycle or pedestrian connections. Extensive consultation has been undertaken with several nearby residents, KCDC staff and reviewers during the Alteration to Designation application preparation and hearing. Consultation has involved site visits and meetings to assess and discuss the urban design and visual effects of the design changes and the development of mitigation measures.

4. URBAN DESIGN	CONDITIONS – URBAN DESIGN	RESPONSES – URBAN DESIGN
A. LIGHTING	DC.59 f) i) Lighting for the benefit of pedestrians and cyclists DC.64 a), b), ii)	No lighting is proposed along the Expressway, the local roads or the CWB in this SSMP area, with the exception of 2 lights where the CWB meets Nga Manu Access Road (one at each of the stepped intersections) . The purpose of the light is to assist with way-finding at night and to alert CWB users that they are approaching a road. One street light will be provided at the junction of Ngarara and Nga Manu access roads. Conduit for future lighting will be provided under the Expressway bridge where it crosses over Nga Manu Access Road.
B. CWB REFER TO APPENDIX 1 SHEETS 2-18 & ALSO REFER TO CPTED REVIEW COMMENTS ON SHEETS 2-5	DC.59A f) ii) and iii) and DC59A g), DC.59A i) xi) and DC.57 c) DC.64 a), b), ii). • 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.	The CWB runs parallel to Expressway on the west side of the expressway (north of Ngarara Road). The CWB comprises a formed 3.0 m wide compacted gravel 'Kapiti Blue' path and where practicable a grass verge of up to 1.0m wide for horse riders. A paved 3.0m wide CWB runs along the southern side of the Nga Manu Access Road between the two CWB intersections. A 3.0m wide path connects the 4.4m wide path under the bridge deck to the CWB entrance on the south side of the Nga Manu access road. A short link will provide a CWB connection between the newly terminated end of Smithfield Road to the CWB. The CWB is also designed to provide access for maintenance vehicles, although this use will be infrequent. The CWB crosses the Kakariki Stream on a bridge approximately 20m long and 3.0m wide. It will be of steel truss construction with an exposed aggregate deck and welded mesh balustrades and handrail. The comments raised in the CPTED review of the Preliminary issue of this SSMP identified key design considerations. A subsequent CPTED assessment of this SSMP was undertaken (Dr Frank Stoks, 8 September 2014) with items raised as follows. These have all been addressed through the design process - No tall elements that could create 'outside rooms' or places to hide; - Clear sight lines at intersections; - Ensure clear views and lighting to exits of CWB; - Low planting adjacent to CWB (3-5m wide strip for the majority of the CWB) and bridge abutments ; - The 'tagability' of surface materials; - Minimise access to culverts from the CWB. SSMP 10 Specific CPTED review (3 December 2014) concluded that the design is low risk from a CPTED perspective. The review noted two points;

		1. The need for clear and legible mechanisms to assist the connections of the CWB where entrances are offset on Ngarara and Nga Manu Access roads. In both locations there will be a formed 3.0m wide CWB beside the road to physically and visually connect the CWB entrances, there will be signage at the entrances as well as the signature precast concrete entrance blocks. Together, these elements will provide clear guidance to CWB users who may be unfamiliar with the route. 2. Consider reasonable measures to minimise access to culverts from the CWB- Dense planting on the slopes around the culvert headwalls will provide a physical deterrent to access the culverts (as for sector 550). A second CPTED review was undertaken in April 2015 to consider design changes resulting from the NoR variation. In his April 2015 report, Dr Stoks considered the change to the bridge's south abutment from vertical to sloping with a toe wall was better from a CPTED perspective, similarly with having a 3.0m wide shared path located only on the southern side of the local road. He also outlined the reasons why lighting under the bridge should not be provided and why lighting should be provided at locations where the CWB meets the local road. However, in his report Dr Stoks recommends that lighting should be placed on the opposite sides of the path than shown on the plans he reviewed and outlined the reasons why this should be done. This recommendation has been adopted and the plans amended accordingly.
C. RETAINING WALLS AND NOISE MITIGATION STRUCTURES REFER TO APPENDIX 1 SHEETS 2 , 13, 14,	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.	There are no noise mitigation structures required in this SSMP. A 116m long retaining wall along the south bank of the Kakariki Stream provides flood protection to the Nga Manu access Road. The retaining wall varies in height along its length from 0m at each end and up to approximately 2.0m high under the Expressway bridge. The retaining wall will be MSE construction with a gabion facing to protect it from erosion. The face of the wall will not be visible to Nga Manu Access Road users, as it sits below the road level, and on the same side of the stream.
D. LOCAL PROPERTY ACCESS REFER TO APPENDIX 1 SHEETS 2-5	DC.59A f) v) Local property access to provide for existing and future needs.	The northern end of Smithfield Road will be severed by the Expressway. A new road (Smithfield Link Road) will provide a new access route to the severed Smithfield Road properties this will come off the Nga Manu Access Road with a new bridge over the realigned section of Kakariki Stream.
E. BRIDGE ABUTMENTS REFER TO APPENDIX 1 SHEETs 12,13,14	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.	*For details relating to the Ngarara bridge refer M2PP-121-D-PLNM-0012 Rev C)* The Expressway bridge over Nga Manu Access Road and Kakariki Stream is a 27.8m long (between the abutments) single span single deck bridge. The bridge has a 5.10m clearance over the Nga Manu Access Road. The abutments will be clad with precast concrete panels with an exposed aggregate finish. The southern abutment is a 70 deg spill through and the northern abutment is vertical. A 4.4m wide shared path under the bridge footprint is adjacent to the south abutment. The northern abutment is adjacent to the Kakariki Stream, with riprap at the toe sloping down to the stream bed.

5. LANDSCAPE + ECOLOGY	CONDITIONS – LANDSCAPE + ECOLOGY	RESPONSES – LANDSCAPE + ECOLOGY
A. DUNES AND DRYLAND VEGETATION REFER TO APPENDIX 1 SHEETS 2- 5 AND APPENDIX 1 DRAWINGS M2PP-53R-D-DWG-8701 – 8702 M2PP-54R-D-DWG-8701 – 8702 M2PP-58R-D-DWG-8701 – 8703	The Kakariki Stream riparian vegetation (comprising planted riparian revegetation with areas of *Carex geminata*) Ngarara wetland are identified as valued indigenous vegetation and habitats by Condition G.41 c).	The Ecological Management Plan (EMP) outlines the loss of 0.18 ha of a larger area of streamside vegetation along the Kakariki Stream. Detailed design has resulted in additional loss of this area, which now totals 1.12 ha as a result of the proposed realignment of the Nga Manu Access Road and associated diversion of the stream. The vegetation lost is planting that has been carried out historically by Nga Manu Nature Reserve on the true left bank of the stream adjacent to their Access Road. Additional mitigation has been provided for in this location. This change has been subject to additional assessments and application for consents. The Ecological Management Plan (EMP) identifies the loss of 0.01 ha of the dry buffering edge adjacent to the 2.7 ha Ngarara wetland. There is no change to this extent of clearance. All indigenous vegetation which is to be retained is identified on the 'Vegetation to be Retained' plans, which were certified for enabling works by KCDC on 5th March 2014 [drawings M2PP-53R-D-DWG-8701 – 8702 & M2PP-54R-D-DWG-8701 – 8702. Also refer M2PP-58R-D-DWG-8701 – 8703, yet to be certified].

	Condition DC.57 f) specifies exotic trees to be retained. Re-shaping of dune landforms disturbed by construction of the Expressway. Condition 20 (WGN140305) identifies the combined quantum of mitigation planting in the upper Kakariki. Condition 21 v (WGN140305) requires fencing of mitigation planting in the upper Kakariki. Condition 21 iv (WGN140305) identifies forest and wetland vegetation to be retained and protected in the upper Kakariki. Condition 27 a) i (WGN140305) identifies riparian trees and regenerating bush to be protected along Kakariki Stream.	This identified vegetation shall be demarcated and suitably protected during construction. Exotic trees to be retained are identified on the 'Vegetation to be Retained' plans, which were certified for enabling works by KCDC on 5th March 2014 [drawings M2PP-53R-D-DWG-8701 – 8702 & M2PP-54R-D-DWG-8701 – 8702. Also refer M2PP-58R-D-DWG-8701 – 8703, yet to be certified]. Dune landforms are addressed under the Landform section below. Final contouring of disturbed dunes will be incorporated into earthworks to replicate natural dune forms. Three areas of planting with a combined total of 2.36 ha will undergo enrichment, restoration, or riparian planting as described in the following. All mitigation planting in the Upper Kakariki (riparian, wetland and forest restoration) will be fenced to exclude domestic stock. An area of existing *Cyperus ustulatus* wetland, 0.36 ha in size in the upper Kakariki is to be protected during construction, fenced and enrichment planting carried out. A small kohekohe lined tributary approximately 80m long in a small gully north of Kakariki Stream is to be protected during construction, fenced and margin planting carried out to form a 5m wide fringe with a total area of 0.07 ha. Some planted and regenerating indigenous trees that lie within the riparian margin along Kakariki Stream may be able to be retained through construction. These will be identified and protected during construction as per the EMP. <u>This is a change from the NoR and Consent Package.</u>
B. STREAMS AND RIPARIAN WORKS REFER TO APPENDIX 1 SHEETS 2-8, DWGS M2PP-54R-D-DWG-8201-8204, M2PP-58R-D-DWG-8201-8203, M2PP-53R-D-DWG-8201-8202, AND APPENDIX 4.	Condition G.42 b) requires specific lengths of stream mitigation. Conditions G.43 b) relates to the potential revegetation of a section of Kakariki stream on NZTA land outside designation and to the West of Flood Offset Storage Area 11. Condition 21 i & ii (WGN140305) identifies riparian planting to be carried out in the upper Kakariki.	This SSMP includes two ecological mitigation areas. The first ecological mitigation area is to be formed in Flood Offset Storage Area 11 as set out in the consent conditions and the Ecological Management Plan as follows: *SSMP Kakariki / Smithfield* • Approximately 2,013 linear m of stream habitat will be formed (EMP: 2,350 m) within the mitigation area through the realignment of Smithfield drain and several branches of this drain, creating a much longer and meandering stream form which is integrated with wetlands. Along these formed stream channels will be approximately 6.23 ha of riparian planting (EMP: 8.8 ha). • Approximately 4.4 ha of indigenous terrestrial planting will also be undertaken in this area (EMP: 4.32 ha) to buffer the created wetlands and integrate the other areas of indigenous planting associated with Flood Offset Storage Area 11 and the Kakariki Stream riparian vegetation. • Note that two stormwater treatment wetlands (Wetland 11A & Wetland 12) are to be developed in this general location. They will not be formed in the mitigation area and are not included in the mitigation calculations. • Note that several existing farm access culverts in tributaries of Smithfield Drain are to be removed as part of this work, including a perched culvert in Smithfield Drain. The second mitigation area is Kakariki West as follows: • Approximately 405 m linear metres of stream habitat will be protected; • Approximately 1.6 ha of riparian planting will be carried out. The planting will average 20 m to either side of the stream and will not be less than 10 m to either side of the stream at any point. The third mitigation areas occurs within Kakariki Stream to the south of Smithfield link road and east of Nga Manu Access Road. It is associated with the diversion of the Kakariki Stream necessary for the realignment of the Nga Manu Access Road. This area is subject to separate consents and conditions. The formation of the area will be carried out as follows: • Approximately 285m of the existing Kakariki Stream along the Nga Manu Access Road will be diverted into a new channel, the diversion channel to be formed to mirror the or improve on the habitat of the existing channel.

		• As mitigation for stream works 483m of riparian mitigation planting will be carried within Kakariki Stream providing a total area of approximately 1.93 ha. The planting will average 20 m to either side of the stream and will not be less than 10 m to either side of the stream at any point. This planting will include the length of the new diversion channel, and a small channel which is to provide fish passage between Nga Manu Nature Reserve wetlands and Kakariki Stream. • We note that in several locations the width of riparian planting on the Nga Manu access road side (south side) is less than 20m. The total area of these constrained sections is 0.09 ha (904 m2). This area is met on the north side of Kakariki stream by additional riparian planting totalling 0.13 ha (1,289 m2). Refer to drawing M2PP-58R-D-DWG-8203. • Upstream of the diversion channel, the eroding banks of the deeply incised and modified Kakariki Stream will be 'pulled back' to create a wider floodplain which will also reduce stream bank erosion and provide some flood storage. The performance standard for wetland and riparian vegetation planting success is the same as that for terrestrial vegetation (i.e. 80% canopy cover at time of Final Completion over 80% of the area), as well as be sufficiently developed to affect the SEV measure. The performance standard for the wetland enrichment area in Upper Kakariki (WGN140305) is survival of a minimum of 80% of the wetland indigenous plant species. *NOTE: All ecological mitigation will be legally protected*
C. WETLANDS REFER TO APPENDIX 1 SHEETS 2-8, DWGS M2PP-54R-D-DWG-8201-8204, M2PP-58R-D-DWG-8201-8203, M2PP-53R-D-DWG-8201-8202, AND APPENDIX 4	Condition G.42 b) requires specific areas of wetland mitigation. Condition D.57 f)v) requires specific creation of fernbird habitat as part of the mitigation planting. Condition 21 iii (WGN140305) also identifies wetland restoration and mitigation to be carried out in the upper Kakariki.	The 0.01 ha of Ngarara wetland to be lost comprises the dry buffering edge adjacent to the 2.7 ha Ngarara wetland. The wetland proper will be avoided. Approximately 1.4 ha of wetland formation (EMP: 2.33 ha) and indigenous wetland planting will be undertaken as part of the development of the Flood Offset Storage Area 11. The new constructed wetlands will be designed to incorporate the required wetland and riparian mitigation planting as follows: • Wetland planting will comprise predominantly sedges, rushes and areas of manuka with scattered tree enrichment plantings of appropriate primary wetland species such as kahikatea etc. • The structure of these planting areas will incorporate the requirements for fernbird habitat (i.e. a low dense understory with a vegetation profile broken by emergent shrubs and trees). • The new ecological mitigation wetlands within Offset Storage 11 will be designed to function as ecological wetlands (with riparian tributaries formed as outlined above), while recognising flood storage and landscape and visual mitigation requirements. Planting height restrictions apply where transmission lines cross OSA11 and Kakariki Stream riparian zones. The ongoing monitoring of hydrology within the Smithfield Manuka Wetland will continue through the Groundwater Management Plan, which includes monitoring (data-loggers) on piezometers within this ecologically significant wetland as part of construction monitoring. An area of existing low value wetland on terraces adjacent to and north of Kakariki Stream will be enriched. This site has an area of 0.36 ha.
D. VEGETATION TO BE RETAINED REFER TO APPENDIX 1 SHEETS 2-5, DWGS M2PP-53R-D-DWG-8701-8702, M2PP-54R-D-DWG-8701-8703, M2PP-58R-D-DWG-8701-8703 , AND APPENDIX 4.	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 7.1.8. Identification of vegetation to be retained, including retention of as many significant trees as practicable and areas of regenerating indigenous vegetation and wetlands (see DWGS M2PP-53R-D-DWG-8701-8702 & M2PP-54R-D-DWG-8701-8703 for Sectors 530 & 540, which were certified for enabling works by KCDC on 5th March 2014 as part of the 'Vegetation to be Retained' plans).	The following sites require best endeavours to minimise loss of Valued Vegetation and habitat: 1. Kakariki Stream riparian vegetation. 2. Ngarara wetland. 3. Fernbird habitat (identified in Attachment 3, Map 3 of the EMP). 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 SSMP 10 and the extent and boundaries checked and confirmed on site by Project Ecologist / Project Landscape Architect. Much of the exotic vegetation has already been removed as part of enabling works in this area, as well as some indigenous vegetation within the construction zone, consistent with the Vegetation to be Retained Plans certified by KCDC. 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.

	Plans for Sector 580 are included in Appendix 1, (M2PP-58R-D-DWG-8701-8703) yet to be certified by KCDC. Two areas of valued vegetation as well as fernbird habitat identified within the SSMP where consent conditions require best endeavours to minimise vegetation loss / valued vegetation (Conditions G.41 c) and e)). Condition 27 a) i (WGN140305) also identifies identification of trees and regenerating vegetation along Kakariki Stream.	Exposed vulnerable edges of Valued Vegetation to be retained following clearing of adjoining vegetation will be identified by Project Ecologist/Project Landscape Architect and temporary protection measures installed (e.g. wind cloth or similar). Temporary fences shall be erected around individual trees to be retained to prevent disturbance or damage; fences to be aligned outside the tree 'drip zone'. Machinery, materials, fuel, and chemicals to be stored, even temporarily, well away, from fenced vegetation and wetland areas to avoid accidental spillage, contamination, and compaction. 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. Some planted and regenerating indigenous trees that lie within the riparian margin along Kakariki Stream may be able to be retained through construction. These will be identified prior to clearance of surrounding vegetation and appropriately marked as per the EMP.
E. VEGETATION TO BE CLEARED	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. Condition DC.53C a) iv) requires the avoidance of adverse effects on fernbird habitat arising from vegetation clearance.	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. Vegetation to be mulched and stockpiled shall exclude aggressive weed species that could result in potential ongoing management problems (e.g. blackberry, gorse, Cape ivy, German ivy, *Convolvulus* and willows). Stored mulch to be periodically inspected for evidence of aggressive weed species and if present sprayed with appropriate herbicide. The Project Ecologist/Project Landscape Architect shall observe any removal or modification of indigenous vegetation. The Project Ecologist shall be notified prior to the removal or modification of indigenous vegetation associated with fernbird habitat in order to undertake the necessary management actions, as outlined in the *'Avifauna Monitoring and Management Plan'* (Attachment 3 to the EMP). *Note: much of this vegetation has already been searched for fernbird immediately prior to clearance of vegetation as part of enabling works and will be reported as part of Annual Report.* All kanuka trees to be removed shall be stockpiled with ecological supervision for future use as part of ecological mitigation requirements. Depending on the time of removal, kanuka branches shall be retained for use as slash to assist with natural kanuka regeneration as part of buffer planting. *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.*
F. SALVAGE	Conditions G.34 m) and G.41 c) i) 1 set out the salvage requirements for vegetation in SSMP 10.	As far as practicable, all kanuka trees that are felled within this SSMP area shall be identified and stored for use as lizard habitat within the ecological mitigation areas. Larger woody debris from peat excavation associated with formation of the flood storage area and associated stream works shall be salvaged and placed within stream channels to assist with stream habitat enhancement. Any flax within Flood Storage Area 11 will be salvaged and re-used in restoration planting within the site.
G. INDIGENOUS FAUNA REFER TO APPENDIX 1, SHEETS 14	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). Conditions G.34 i) and the EMP (Appendix 3, section 7) – fernbird requirements for vegetation clearance and creation of habitat. There is a requirement (G.34b)v)) to avoid disturbance to *Threatened* and *At Risk* bird species in this area.	Within the SSMP site fish rescue associated with culvert installation or diversion will be carried out according to the EMP (TR 34 Section 10) Within this SSMP there are 5 culverts within perennial or intermittent streams that require consideration of fish passage/fish rescue. These culverts are as follows: • Culvert 30.3, 27m. Main alignment at chainage 14780. Flow balancing culvert; • Culvert 30.1, 20m. Smithfield link road. Flow balancing culvert; • Culvert 30, 29m. Nga Manu Access Road. Flow balance;

	There are no other requirements for rare or threatened fauna within this SSMP. Condition 27 (a) x (WGN140305) requires a method and reporting for fish rescue associated with diversion of Kakariki Stream.	• Culvert 30.6, 21m. Nga Manu Access Road. Flow balance; and • Culvert 30.5, 25m. Nga Manu Access Road, extension of existing, fish passage connecting Nga Manu to Kakariki Stream. Immediately prior to any stream 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. *Note: this includes installation of temporary culvert installation/upgrades.* Prior to livening of the temporary stream diversions 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 finalised and provided to GWRC in accordance with the EMP. 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. Any vegetation removal or disturbance within areas identified as fernbird habitat (see attachment 3, Map 3 of the EMP) shall consider the EMP requirements to determine if fernbird are present in those areas immediately prior to the vegetation removal or disturbance (refer to the *'Avifauna Monitoring and Management Plan',* Attachment 3 to the EMP). *Note: much of this vegetation has already been searched for fernbird immediately prior to clearance of vegetation as part of enabling works and will be reported as part of Annual Report.* Clearance of Kakariki Stream riparian vegetation, identified as fernbird habitat (see Attachment 3, Map 3, of the EMP) is required for the construction of the bridge over the stream. A structure to facilitate fernbird passage under the Expressway Bridge will be constructed (REFER to Sheet 14). A suitable design has been developed by the Project Ecologist for this purpose If works occur with the upper Kakariki fish rescue will be carried out as follows: Prior to and during the permanent diversion of streams including any temporary diversion required for culvert installation, all practicable steps shall be taken to isolate the diversion reach, and find, capture and relocate native fish from the affected reach either to the new diversion where habitat permits, or upstream or downstream (whichever is most appropriate) of the reclaimed channel. As many fish will be removed from the flowing stream prior to diversion as possible. This is necessary to reduce the risk of fish burrowing into sediments and banks and becoming unfishable as the reclaimed channel is dewatered. Capture of fish from the stream prior to any water diversion will include an active nocturnal location and capture, a passive nocturnal capture and an active daylight capture system. As soon as the diversion reach has been completed and at least 5 working days prior to livening of the new channel, a plan for capture and relocation of fish will be finalised and provided to GWRC. In general the plan will include the following steps (subject to refinement for each intermittent or perennial watercourse pending site conditions and scale of watercourse): • All capture and relocation shall be completed by a suitably qualified ecologist; • After the diversion is approved by GWRC three days prior to livening the diversion, the reach to be reclaimed will be isolated by nets or other permeable barriers in order to prevent fish movement while maintaining stream flows; • For two nights prior to livening the diversion, baited minnow traps and fyke nets will be placed in the reach to be reclaimed. One night prior to the diversion spot light active capture will be undertaken to locate and capture and remove fish. The numbers and locations of nets will be determined at the time according to stream depth, width and flow and included in the plan submitted to Council, All nets will be cleared in the morning. • Each morning the reach to be reclaimed will be fished by EFM. Fish will be captured using EFM and stopper nets. A multiple pass depletion method will be used whereby passes are repeated until no catches occur (with a pause in between); • The numbers and sizes of all fish caught, the habitat and an estimate of that habitats general area) from which they were caught, and their release locations will be recorded. • All native fish captured the day prior to diversion will be transferred upstream to appropriate habitat. On the day of diversion fish will be temporarily placed in holding tanks (which allow for natural water flow through) that will be put in shaded locations within the stream. No fish will be held for more than 12 hours;

	Condition 27 (a) xi. (WGN140305) requires a method to manage fish migration associated with diversion of Kakariki Stream.	• On the day of diversion, and following fish removal, the upper end of the reclaimed stream will be stopped and flows directed into the new diversion channel. At this time a digger will establish several "holes" in the bed to be drained so as to make deeper water refugia as the reach dries. • Soon after the flows have been diverted and stabilised in the diversion channel, and as the dewatering reach is dewatered the reach will be again searched for fish, especially the dug refugia holes. • Fish collected from the stream to be "closed" shall be recorded and counted from measured areas of habitat and by habitat type to give an existing density of fish species by habitat type. This estimate will inform the habitat carrying capacity of the new diversion habitat which will be set to half that of the "established" and fished out habitat density. • A number of the fish collected on the day of diversion (i.e. post diversion or just prior to diversion) shall be relocated to the new diversion channel commensurate with an estimate of half the habitat carrying capacity of the habitat from which they were just fished out from. The additional fish will be relocated to suitable habitat upstream of the diversion (from where they may in time re-colonise the diversion); • Any pest fish found shall be removed from the catchment and humanely euthanized. • An advisory note will be prepared and forwarded to The Manager, Environmental Regulation, Wellington Regional Council, within five days of completion of the relocation of fish. If works occur within the upper Kakariki and unnamed tributary outside the period from 1 March to 31 July a program and method to manage migration of native fishes will be developed in consultation with GWRC and referencing Hamer 2007, prior to undertaking any works.
H. LANDFORMS REFER TO APPENDIX 1 SHEETS 2-5 and Standard details: Dune Rounding Detail M2PP-23R-D-DWG-8904	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.	SSMP 10 includes an areas of relatively unmodified remnant dunes which will be modified to enable construction of the expressway, and will need to be re-shaped to help integrate the expressway and CWB into the surrounding landforms. 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 5) provide details on topsoil stripping and storage. The Project Landscape Architect will be involved in the design of final shaping of dune profiles to ensure 'natural' appearance. (REFER drawing provided 'FOR CONSTRUCTION': M2PP-23R-D-DWG-8904) Where seasonal conditions prevail, exposed sand areas will be hydroseeded once re-shaping is completed. Alternative treatment will be applied to exposed sand areas where hydroseeding is not feasible (e.g. polymer, organic mulch, straw / brush). All exposed sand areas will 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. The extent of earthworks will be pegged on site prior to construction providing an opportunity for KCDC's Landscape Reviewer to inspect the area.
I. WETLAND CREATION AND RESTORATION REFER TO APPENDIX 1 SHEETS 2-8, DWGS M2PP-54R-D-DWG-8201-8204, M2PP-58R-D-DWG-8201-8203, M2PP-53R-D-DWG-8201-8202, AND APPENDIX 4	Condition G. 41 c) ii) 4 - ecological mitigation wetlands within Flood offset Storage Areas OC, 2 and 3A created to mitigate permanent loss of wetlands.	The creation of an extensive network of linked ecological mitigation wetlands within Flood Offset Storage Area 11 requires large-scale 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: • 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 *Carex* and *Baumea* sedgeland with open water and scattered manuka and flax habitat to represent as far as practicable wetland and fernbird habitat being lost. • Scattered enrichment planting of kahikatea, swamp maire and pukatea in specific areas to accelerate natural plant succession and habitat. • The structure of these planting areas will incorporate the requirements for fernbird habitat (i.e. a low dense understory with a vegetation profile broken by emergent shrubs and trees).

	Condition D.57 f) v) requires specific creation of fernbird habitat as part of the mitigation planting. Condition 21 iii (WGN140305) also identifies wetland restoration and mitigation to be carried out in the upper Kakariki.	• The mitigation wetlands within Flood offset Storage Areas 11 will be integrated with stream channels, areas of riparian planting, and landscape planting on Expressway embankments. • In addition to meeting ecological function (including fernbird habitat), the final design and construction of the Flood offset Storage Area 11 shall consider hydrological, flood storage and the planted batter slopes below the expressway will fulfil landscape mitigation requirements. In addition 0.36 ha of low value *Cyperus ustulatus* dominated wetland on terraces adjacent to and immediately north of Kakariki Stream will be enriched with plantings of kahikatea positioned in scattered clusters across the site. The method is described in Section L. Wetland design and planting shall be supervised through the construction phase (and sign-off) by Project Ecologist, Project Landscape Architect and Project Hydrologist. Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist. Briefings through final design, site layout and prior to final completion shall be undertaken with GWRC. This SSMP area also includes the development of two new stormwater treatment wetlands outside of Flood Offset Storage Area 11, with pond depth and design to be developed in conjunction with Project Hydrologist. This does not form ecological mitigation requirements and has been designed to be separate to Flood Offset Storage Area 11.
J. STREAM CREATION AND RESTORATION REFER TO APPENDIX 1 SHEETS 2-8, DWGS M2PP-54R-D-DWG-8201-8204, M2PP-58R-D-DWG-8201-8203, M2PP-53R-D-DWG-8201-8202, AND APPENDIX4	Condition G.42 and G.42C - creation of large areas of new stream New conditions relate to the extension of works up the Kakariki as part of the Nga Manu Access and associated mitigation. These conditions are 27, a) ii), v) and 32 to 34.	Within this SSMP area, as part of the development of the new Flood Offset Storage Area 11 ecological wetlands, approximately 2,013 lineal metres of stream channel will be created and planted. In addition, approximately 285 linear metres of diversion channel will be formed and planted in the Kakariki Stream along the Nga Manu Access Road, and 198 m of Kakariki Stream to the east will be modified to reinstate a more natural stream form and planted. (This is a change from the NOR and Consent Package with more detail below.) This riparian habitat is integrated with the adjacent wetland planting as follows: • New stream channels will be formed with associated riparian planting. • The new stream channels shall maintain permanent water depth and shall form a 1 to 1.5m wide (average), 0.5m 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 stream channels shall have a flood plain with a sloping bund of varying width to accommodate flood detention requirements. • The riparian vegetation shall be established on both the flood plain on a raising bund feature immediately adjacent to the stream bank, and raised above the wetland vegetation which will be established in the floodplain (see indicative cross section, SHEETs 6-8). • As far as practicable, and in consultation with the stormwater engineer, new hard substrate material and other salvaged debris (e.g. logs, trunks etc. from peat excavation in this area) shall be incorporated into the stream channel design. • The new channels shall incorporate a 'natural' meander with gentle curvature. • If practicable, the new stream channel 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 of the Flood Offset Storage Area 11 stream diversion allows for fish access for swimming and climbing species from the Smithfield to the Kakariki Stream. • The design of the Nga Manu Access Road culvert will ensure continued fish passage between Nga Manu Nature Reserve and the Kakariki Stream. • Where possible existing watercourses that will be planted will be modified to create a flood berm to maintain flood conveyance. • Fish migration movement is required to be monitored post diversion (as set out in the EMP). • Stream design and planting shall be supervised through the construction phase (and sign-off) by Project Ecologist, Project Landscape Architect and Project Hydrologist.

	Condition 32 (WGN140305) relate to the design and construction of the diversion of the upper Kakariki. Condition 27 a) iv. & 42 (WGN140305) requires confirmation of turbidity monitoring at diversion channel livening of the upper Kakariki. Condition 34 & 35 (WGN140305) requires confirmation of fish passage requirements for the diversion of the upper Kakariki.	• Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist. • Briefings through final design, site layout and prior to final completion shall be undertaken with Regional Council. The design of the Kakariki diversion will provide the following channel dimensions, depth, velocity, meander, pool/riffle/run ratio, substrate, and bank shape. These details should not be fixed and should respond in part to site conditions during construction however, as a guide the SSEMP should have the following which will be added: • Substrate – 90% sands, 10% gravels; • Habitat ratios: runs 90%, pools 10% no riffles • Velocities: 0.1-0.5 ms-1 • Bank shape: trapezoid (replacing the current box) • Channel width – averaging 2m • Depth, at least 400mm average in runs and pools to an average of 1m • In terms of Meander the path will be as per the construction drawings and sufficient as to meet the required consented linear length (285m)" Representative cross sections of this area of stream, wetland and riparian planting are provided in plans M2PP-121-D-DWG-8501 to 8503. Within the SSMP 10 site at the livening of any diversion, or where works extend to the stream banks, turbidity monitoring as described in the EMP (TR 34 Section 8.4) will be carried out and reported against. Within the Upper Kakariki, at the livening of any diversion, or where works extend to the stream banks, turbidity monitoring will be carried out and reported against as follows; Turbidity Monitoring Methods • NTU will be measured using a portable TPS 90 FLT Field Lab multi-meter with logging functions (or a suitable alternative logging NTU device). The logger will be calibrated as per manufacturer's specifications. • A site downstream of the diversion will be identified for the temporary logger installation. It will be approximately 30m downstream of the lowest portion of the diversion to take account of suitable mixing zones. Note: In the case of the Muaupoko Stream, sediment monitoring of Waikanae River will be undertaken following livening of Muaupoko diversion. • The logger will record continuously for 24 hours prior to livening of the diversion to establish a baseline for that waterway. • The logger will record continuously through the day of the diversion to record the peak discharge, the duration of increased turbidity following diversion livening, and the point that turbidity returns to baseline levels. • The logger will record continuously for 3 days following livening of the diversion to confirm the channel is stable. • If readings are elevated downstream of the diversion a visual inspection will be carried out to locate the source within the diversion or determine if the elevated readings are otherwise related to the project. A separate hand held logger will be used to take spot NTU readings if there is any visible source of turbidity. If the source of turbidity is found to be within the diversion an adaptive management process will be triggered as described in section 6.2 (of Attachment 4 to the EMP). Thresholds • On the day of diversion livening, an NTU peak will occur, therefore an increase in NTU cannot be a trigger. • The trigger will therefore be the failure of the NTU to return to, or close to, baseline levels (within 20 %) within 6 hours of diverted water reaching the lower end of the diversion. • In the event that the NTU level fails to return to baseline levels within this period, the consent holder shall undertake response actions as detailed in the EMP as detailed in 6.5 below. Management response actions • The consent holder shall notify the Manager by email within 1 working day of any threshold breach being identified, providing details of the breach and response actions to be taken in accordance with the EMP. • An exceedance will trigger an adaptive management response seeking to rectify the cause of the ongoing turbidity. The methods and response will be determined on a case by case basis in agreement with the Manager.

		• The consent holder will continue to monitor NTU levels through any remedial actions and until the turbidity levels have stabilised as baseline levels. **Other** • The methodology for diversion monitoring will be continually refined (in consultation with the Manager) as the project evolves and more information is obtained regarding the response of diversions in low-lying, slow moving and groundwater fed streams within peat and sand substrates.
K. CULVERT INSTALLATION REFER TO APPENDIX 1 SHEETS 2-5	The Kakariki Stream is the hydrological connection between the Nga Manu Nature Reserve ponds, wetlands and swamp forest, and Te Harakeke wetlands. A number of freshwater fish species have been recorded within the stream. The following permanent culverts require fish passage and associated fish rescue: • Culvert 30.3– 27m. Main alignment at chainage 14780. Flow balancing culvert. • Culvert 30.5– 25m. Nga Manu Access Road, extension of existing, fish passage connecting Nga Manu to Kakariki Stream. Several flow balancing culverts are also required in this SSMP area. They are located beneath the main alignment (Culvert 30.3), beneath Smithfield Link Road (Culvert 30.3), and beneath Nga Manu Access road (Culverts 30, 30.1 & 30.6). These do not have fish passage or fish rescue requirements.	Culvert installation shall require the following in all culverts that require fish passage: • Culverts shall not constrict the normal base 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 in perennial or intermittent waterbodies 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. • At the livening of any culvert turbidity monitoring as described in the EMP will be carried out and reported against. Culvert installation shall be supervised through the construction phase (and sign-off) by Project Ecologist and Project Hydrologist. Briefing at the outset of construction to contractors by Project Ecologist and Hydrologist.
L. MITIGATION PLANTING REFER TO APPENDIX 1 SHEETS 2-5, & 19 DWGS M2PP-54R-D-DWG-8201-8204, M2PP-58R-D-DWG-8201-8203, M2PP-53R-D-DWG-8201-8202, AND APPENDIX 3	Conditions G.42 and DC.57 f) - Landscape and ecological mitigation requirements – In addition Condition 24 b) (WGN140305) requires plant spacings for planting for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows. Condition G.43 b); relates to riparian planting of Kakariki West. Condition 21 i & ii & 27 v (WGN140305) identifies riparian planting to be carried out along the upper Kakariki. Condition 21 iv (WGN140305) identifies a kohekohe fragment that requires restoration and protection in the upper Kakariki. Condition 21 iii (WGN140305) identifies wetland restoration to be carried out in the upper Kakariki.	There are four planting types within this SSMP required for landscape and visual and ecological mitigation as follows: • **Massed planting**: Massed planting comprises a general species that incorporates some species in adjoining wetlands. Plant grades will be a mix of 0.5 and 1.0 litre grades planted at 1.0m centres. • **Massed planting with enrichment:** comprises a significant proportion of the planting in SSMP 10. Enrichment planting will occur in the following planting season after massed planting; enrichment species plant grades shall be PB 18 or equivalent. Enrichment planting will be concentrated at the top of the expressway batters to encourage bird flight over the expressway. Enrichment plantings include species to enhance fernbird habitat. • **Ecological wetland and riparian mix:** Planting around existing wetland areas that are being retained shall include *Carex secta*, *Coprosma propinqua*, *Coprosma tenuicaulis* and manuka. Plant grades will be a mix of 0.5 and 1.0 litre (or equivalent) planted at 0.75m centres. • **Swales:** will be planted exclusively in oioi (*Apodasmia similis*). Edge planting to swales in the Smithfield area includes *Carex geminata*, *Cyperus ustulatus* (umbrella sedge) and flax to supplement fernbird habitat In addition to the west of the SSMP area, approximately 403 lineal metres of stream channel will be protected and planted. The locations of this planting is shown on plans M2PP-53R-D-DWG-8202 and M2PP-54R-D-DWG-8202. Riparian planting is required along 483m of Kakariki Stream providing a total area of approximately 1.93 ha and a small channel which provides fish passage between Nga Manu Nature Reserve wetlands and Kakariki Stream. This 1.92 ha of planting will use the massed planting with enrichment mix being used for all riparian planting within the Smithfield/Kakariki mitigation area. A small stand of kohekohe which lines a small gully approximately 80m long north of Kakariki Stream is to be protected during construction, fenced and restoration planting carried out. Fencing of the stand will typically follow, or will be no closer than, the drip line of the canopy trees. Restoration planting will take the form of margin planting using common and robust bush edges species, including kanono, red matipo, wineberry, tarata, lacebark, and kawakawa. No other physical works will be carried out at this site.

	Condition 22 (WGN140305) requires mitigation design to reflect the habitat being lost in the upper Kakariki. Condition 24 (WGN140305) require a planting plan for the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand. **New condition DC.57B** Alteration to the Existing McKays to Peka Peka Expressway Designation. Requirement to covenant an area of existing vegetation provide for the ongoing protection of the visual mitigation planting.	In the upper Kakariki 0.36 ha of low value *Cyperus ustulatus* dominated wetland will be enriched with plantings of kahikatea positioned in scattered clusters across the site. The number of plants will be based on an average spacing of 1 per 25m² (5m x 5m). The area will be fenced. No other physical works will be carried out at this site. The plant selection, planting types and enrichment requirements have been designed to develop vegetation communities that would have once been representative of these sites. The planting mixes have been designed to have high diversity of these plants. The landscape and visual assessment prepared for the Alteration to Designation application involved site visits to neighbouring properties, consultation with these residents and with KCDC's consultant landscape architect to develop planting measures to mitigate the visual effects of the expressway. Sheet 19 highlights the mitigation planting that has been agreed to. In particular there are two key areas of mitigation planting: **Visual Mitigation for 205 Ngarara Road** consists of additional planting into the gaps of a line of existing vegetation (Tasmanian blackwoods and kanuka). The existing vegetation and the proposed planting are on Crown land outside the expressway designation and will be covenanted to provide permanent protection. **Visual Mitigation planting for 292 Ngarara Road** consists of a double row of fast growing exotic trees (Tasmanian blackwoods) along approximately half the length of the southern side of the Nga Manu Access Road, west of the bridge; this will effectively screen the bridge when viewed from various parts of 292 Ngarara Road. This planting is within the expressway designation. Landscape and ecological success mitigation planting requirements and approvals are covered in Sections M - S below. Planting within the upper Kakariki is shown on plans M2PP-58R-D-DWG-8203.
M. PLANTING METHODS AND SPECIFICATIONS REFER TO APPENDIX 4	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). Condition 24 b) to d) & 27 vi (WGN140305) require landscaping details for planting of the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	Planting will be carried out as follows: • Planting shall be undertaken during a 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 (this is particularly likely for wetland and riparian planting to take account of high or low groundwater conditions). • With the exception of wetland and riparian planting which may need to coincide with low groundwater levels in late spring, no planting shall be undertaken outside the June-August planting window unless approved by Project Landscape Architect. • Planting substrate shall be a minimum of 300mm deep, consolidated, and free from rilling and erosion before mulch placement. • Organic mulch shall be placed over the area to be planted at least 2 weeks prior to planting to allow for settlement. Note: organic mulch shall not be used within the areas of wetland, riparian planting and stormwater treatment planting 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). • No planting shall be undertaken until site is approved by Project Landscape Architect and Project Ecologist (with regard to ecological mitigation planting) to be free of aggressive pest plant species. Planting shall be delayed in areas where aggressive pest plants are detected until these are removed or sufficiently controlled. • Plant supplier to confirm all plants are well hardened off prior to planting. • Species composition shall be in accordance with species percentages. • 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. • Plant selection shall take into account engineering and service constraints. • All planted areas shall be temporarily fenced to assist with plant protection. • Enrichment planting (excluding the enrichment of Cyperus wetlands in the upper Kakariki which can be carried out as soon as possible within the Winter 2017 planting season) 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.
N. WEED CLEARANCE REFER TO APPENDIX 4	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.	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.

	Condition 24 c) i. & 27 vii (WGN140305) requires weed control for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	
O. GROUND PREPARATION REFER TO APPENDIX 4	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). Condition 24 c) iii & 27 vii (WGN140305) requires a description of ground preparation for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	All areas to be planted shall be sprayed with a certified and approved herbicide. All areas to be planted shall be free of actively growing grass, weeds, and any extraneous material removed. Any localised rilling or erosion of planted areas shall be remedied prior to placement of approved soil mix. Project Landscape Architect to approve all finished earthwork areas prior to placement of approved soil mix. 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. Where existing roads are decommissioned the road formation will be removed and subsoil loosened before backfilling with approved soil mix.
P. MULCHING 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). Condition 24 c) iv & 27 vii (WGN140305) requires a description of mulching requirements for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	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). Mulch shall be left for 2 weeks to settle prior to commencement of any planting.
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). Condition 24 c) v & 27 vii (WGN140305) requires a description of plant supply for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows. Condition 24 c) v & 27 vii (WGN140305) requires plants to be eco-sourced for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	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 June-August 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.

	Condition 24 b) (WGN140305) requires a description of timing of planting for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	Within the upper Kakariki planting will be carried out as follows: • Wetland enrichment and restoration planting will be carried out in winter 2017. • Riparian planting along the Kakariki diversion will be carried out in winter 2017 subject to successful completion of construction.
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). Condition 24 d) & 27 viii (WGN140305) requires a description of planting maintenance for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	All planted areas shall be photographed on completion of planting and details recorded to be included as part of baseline information. Wetland and riparian planting shall be maintained for 4 years. Terrestrial planting, both indigenous and exotic shall be maintained for 3 years. Planting shall be maintained according to the maintenance plan as set out in the Landscape specifications (Appendix 4). Monitoring reports on plant survival and establishment and the frequency and success of the maintenance regime shall be completed by the Project Landscape Architect (in consultation with the Project Ecologist in relation to riparian planting) as follows: • 1 month after planting completed and then • 3 months • 6 months • 12 months • 2 years; and • Twice yearly thereafter until the end of the maintenance period. Monitoring reports shall include dates of visits, condition of vegetation, condition of fencing, issues arising, actions required, together with photographs. Monitoring reports on completion shall be provided to KCDC Landscape Reviewer. Monitoring reports shall cease to be prepared for those areas where the performance standards have been met ahead of the maintenance period. For the upper Kakariki planting maintenance will continue for 3 years after planting for terrestrial vegetation and 4 years after planting for wetland vegetation.
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. Condition 24 c) ii & 27 vii (WGN140305) requires pest animal management for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows.	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). For the plantings within the upper Kakariki pest animals include rabbits, possums and hares. Pest animal control for this SSEMP concludes as the completion of planting maintenance.
V. PROTECTION REQUIREMENTS REFER TO APPENDIX 4	Condition DC.57 c) and G.43 d) – temporary and permanent protection. Condition G.43 b) protection of land to be used for mitigation planting outside of the designation.	Temporary fences shall be erected as part of the protection of valued vegetation to be retained. All areas of ecological and landscape mitigation planting within the operational designation shall be fenced following planting, maintained and protected in accordance with the consent conditions as outlined in the EMP and LMP. The Consent Holder shall use its best endeavours to ensure appropriate covenants and/or encumbrances (or similar legal mechanism) are in place to ensure that the area of riparian mitigation in the Kakariki Stream outside the designation required for ecological mitigation under condition G.42 is protected on an ongoing basis.

W. LANDSCAPE AND ECOLOGICAL SUCCESS MONITORING – POST CONSTRUCTION	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): 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. 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). 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. Condition 40 and 41 (WGN140305) relate to success monitoring and reporting Condition 24 d) & 27 viii (WGN140305) requires a description of planting monitoring for the upper Kakariki planting of the 0.36 ha of wetland enrichment and 0.7 ha of restoration planting within the kohekohe stand as follows. Condition 27 iii (WGN140305) requires details of the SEV target score for the upper Kakariki. Condition 41 relates to reporting and SEV monitoring. Condition 34 a) (WGN140305) relates to the timing of inspection of fish passage success post construction of the diversion of the upper Kakariki. Condition 34 b) (WGN140305) relates to the timing of inspection of stream form and structures and velocities that might affect fish passage post construction of the diversion of the upper Kakariki. Condition 34 c) & d) (WGN140305) requires reports on the inspections above for the upper Kakariki and implement any measures to remedy	In relation to landscape and ecological mitigation planting, success measures are as follows: • 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. • In the upper Kakariki 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. • With regard to enrichment of the Cyperus wetland in the upper Kakariki, the mitigation success criterion will be >80% plant survival at year 4. Shelterbelts and amenity rural tree planting shall require 100% plant survival, with 100% of trees in full leaf at the time of Final Completion. In-stream surveys within the representative sections of the new constructed stream channels within the Flood offset Storage Area 11 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: • 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 of SEV values will be undertaken: - For the SSMP area at year 3 (one year before the end of plant maintenance) and 5 year time frames in accordance with the EMP: - For the Kakariki Stream diversion at 6 months, 2, 4, 6 and 8 years post livening. • Once the SEV (and other metrics) meet the standard for success (baseline measures), no further mitigation success measurement in regard to the waterway diversions shall be required. Following construction (and in particular following the creation and livening of the new channel reaches within Flood offset Storage Area 11), the success of the diversion created as aquatic habitat will require monitoring and potentially additional works to result in the anticipated aquatic biodiversity gains. As part of the SEV assessment, function shall be assessed via the SEV process which includes presence/absence of macro-invertebrates and fish as well as a range of physical habitat characteristics (including the success of the riparian re-vegetation). 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. The current SEV score (Stream Ecological Value) of the Kakariki Stream varies from 0.531 where riparian planting has been carried out to 0.476 where the stream lies in grazed pasture. The SEV target for the new stream channels to be created in Flood Offset Storage Area 11, the Kakariki Stream diversion, and the Kakariki Stream restoration are: • The new stream channels within the Flood Storage Area 11 identified in SHEETS 7 shall as a minimum meet the forecast SEV potential of 0.575 as outlined in the EMP (Attachment 4). • The new stream channel and restored upper channel of Kakariki Stream identified in SHEETS 8 shall meet the forecast SEV potential of 0.750 outlined in the EMP (Attachment 4). For the upper Kakariki planting monitoring will continue for 3 years after planting for terrestrial vegetation and 4 years after planting for wetland vegetation.

X. ADAPTIVE MANAGEMENT – POST CONSTRUCTION	Condition G.40 – adaptive management and condition DC.57 c)	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.

6. REFERENCES

- 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.
- Consent Conditions relating to the Kakariki Stream Diversion (WGN140305)
- Consent conditions relating to Alteration to Expressway designation June 2015

M2PP-121-D-PLNM-0012

Appendix 1: DRAWING SET

Site Specific Management Plan 010 - [sectors 530-540-580]
MacKays to Peka Peka Expressway

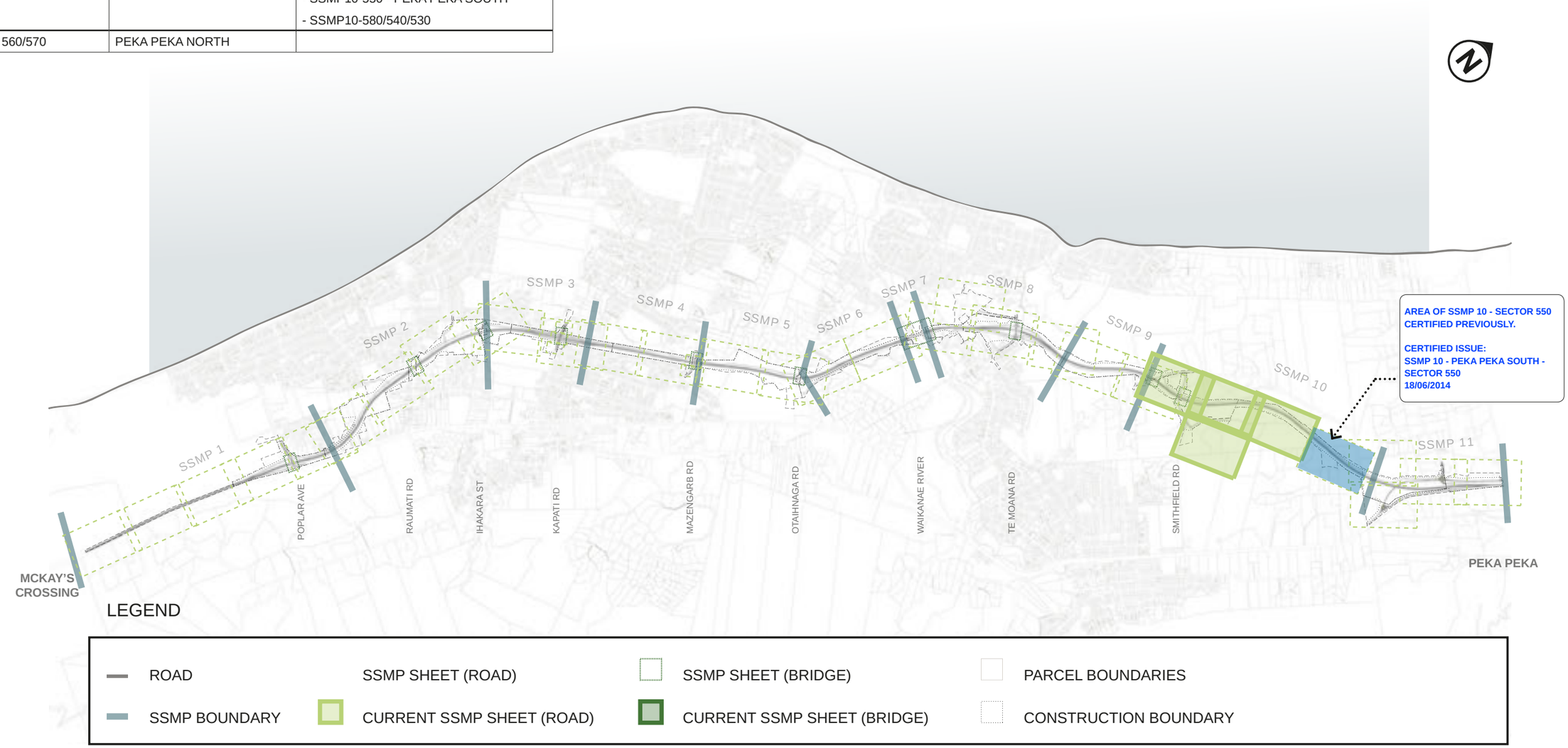
18 August 2015 - CERTIFIED ISSUE - REV F

NZ TRANSPORT AGENCY
WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor

Drawing Plotted:

SSMP#	SECTOR	NAME	NOTES
SSMP1	330/320	[RAUMATI SOUTH]	ISSUED IN TWO PARTS: -SSMP01-320 -SSMP01-330
SSMP2	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 THREE PARTS: - SSMP10-530- NGARARA BRIDGE ONLY - SSMP10-550 - PEKA PEKA SOUTH - SSMP10-580/540/530
SSMP 11	560/570	PEKA PEKA NORTH	



LEGEND

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

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:25,000	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
Reduced Scale (A3) 1:50,000	Dsg Verifier			
	Dwg Check			Date
	* 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

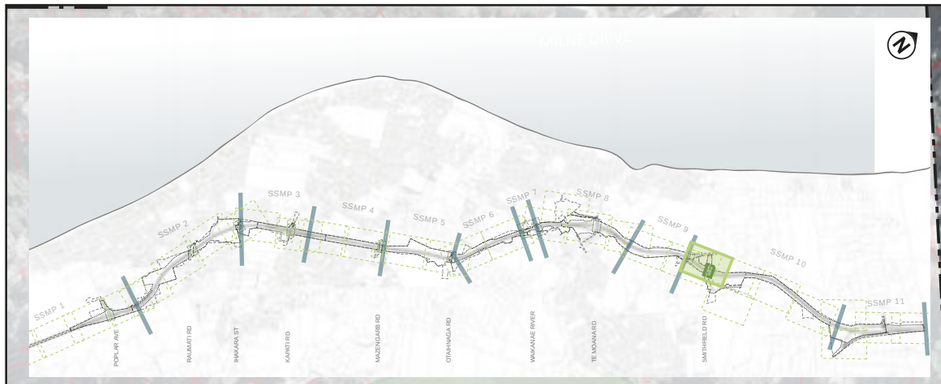
Title: SSMP 10 [530-540-580] - SHEET 1 LOCATION PLAN

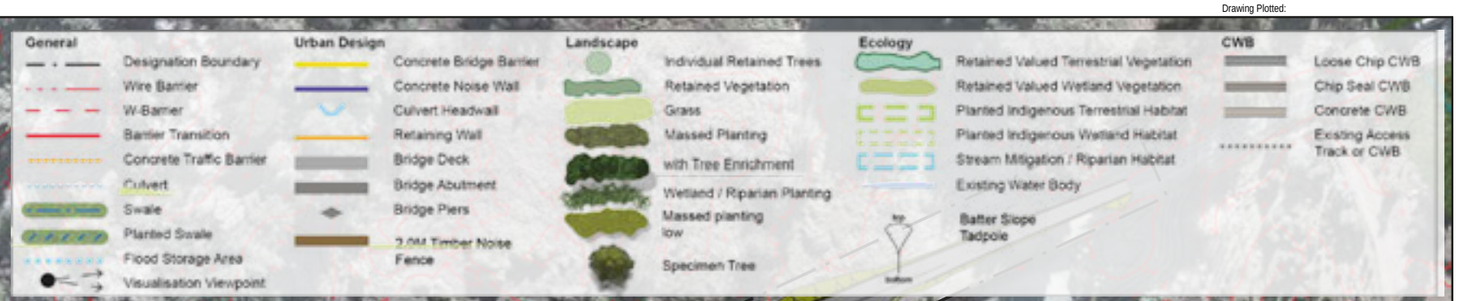
Drawing No: M2PP-121-D-DWG-8001

Rev. F

Document No.

Drawing Plotted:





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 'TAGGABITLY' OF MATERIALS AND SURFACES.
- LOW PLANTING AT BRIDGE ABUTMENTS.

SECTOR 530
SECTOR 520

NGARARA ROAD

SECTOR 580
SECTOR 540

NGA MANU ACCESS ROAD

REFER TO SHEET 9

REFER TO SHEET 10

REFER TO SHEET 13

REFER TO SHEET 14

SSMP 9

KAKARIKI STREAM OUTSIDE THE DESIGNATION (CONDITION 43 A + B) TO BE ECOLOGICAL MITIGATION TO BE PROTECTED

KAKARIKI STREAM RIPARIAN VEGETATION CONSENT CONDITION: G.41 c) i) 8

CS1 8501

CWB REFER SHEET 16

NORTH BOUND

SOUTH BOUND

M2PP PROPOSED ALIGNMENT

SECTOR 540
SECTOR 580

WETLAND 11A

AREA OF SSMP 10 INDICATED IN BLUE (SECTOR 530 NGARARA BRIDGE) CERTIFIED PREVIOUSLY.

ISSUED:
SSMP 10 - REV C
NGARARA BRIDGE ONLY
06/03/2015

FERNBIRD HABITAT

NGARARA WETLAND CONSENT CONDITION: G.41 c) ii) 7

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:1000	Design	FB	28.11.14	Approved For Construction*
Reduced Scale (A3) 1:2000	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date
	* 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: SSMP 10 [530-540-580] - SHEET 2
MASTER PLAN

Drawing No: M2PP-121-D-DWG-8101

Rev. F

Document No.

DETAIL DESIGN

Drawing Plotted:

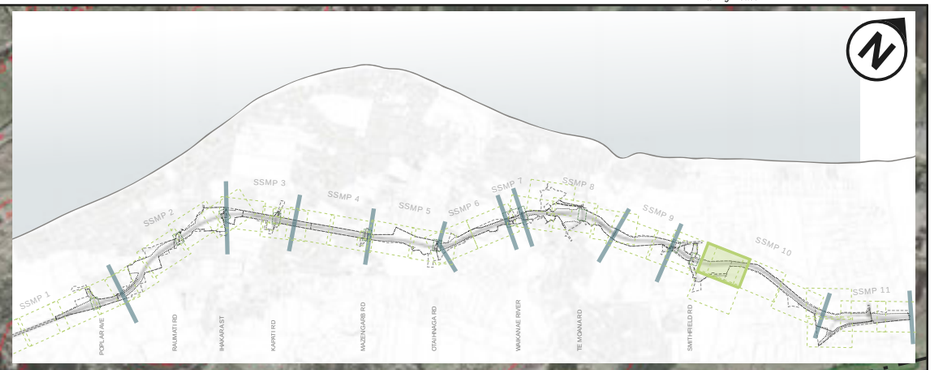
General
- Designation Boundary
- Wire Barrier
- W-Barrier
- Barrier Transition
- Concrete Traffic Barrier
- Culvert
- Swale
- Planted Swale
- Flood Storage Area
- Visualisation Viewpoint

Urban Design
- Concrete Bridge Barrier
- Concrete Noise Wall
- Culvert Headwall
- Retaining Wall
- Bridge Deck
- Bridge Abutment
- Bridge Piers
- 2.0M Timber Noise Fence

Landscape
- Individual Retained Trees
- Retained Vegetation
- Grass
- Massed Planting
- with Tree Enrichment
- Wetland / Riparian Planting
- Massed planting low
- Specimen Tree

Ecology
- 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

CWB
- Loose Chip CWB
- Chip Seal CWB
- Concrete CWB
- Existing Access Track or CWB



SMITHFIELD ROAD

CWB LINK TO SMITHFIELD ROAD

KAKARIKI STREAM OUTSIDE THE DESIGNATION (CONDITION 43 A + B) TO BE ECOLOGICAL MITIGATION TO BE PROTECTED

KAKARIKI STREAM RIPARIAN VEGETATION CONSENT CONDITION: G.41 c) i) 8

CS3 8502

WETLAND 12

CULVERT 30.4 (49.0M)

SMITHFIELD DRAIN

M2PP PROPOSED ALIGNMENT

NORTH BOUND

SOUTH BOUND

CWB REFER SHEET 16

CS2 8501

EXISTING POWERLINE PYLON

OFFSET STORAGE AREA 11

KAKARIKI STREAM

CULVERT 30.3 (27.0M)

SMITHFIELD LINK ROAD

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 'TAGGABITLY' OF MATERIALS AND SURFACES.
- LOW PLANTING AT BRIDGE ABUTMENTS.

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

DETAIL DESIGN

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:1000 Reduced Scale (A3) 1:2000	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			

* 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: SSMP 10 [530-540-580] - SHEET 3 MASTER PLAN

Drawing No: M2PP-121-D-DWG-8102

Rev. F

Document No.

DO NOT SCALE IF IN DOUBT ASK.

Drawing Plotted:

CWB REFER SHEET 16

CULVERT 30.4 (49.0M)

EXISTING POWERLINE PYLON

SECTOR 550 (SSMP 10)

SECTOR 540

SSMP 10 - 550

AREA OF SSMP 10 - SECTOR 550 CERTIFIED PREVIOUSLY.

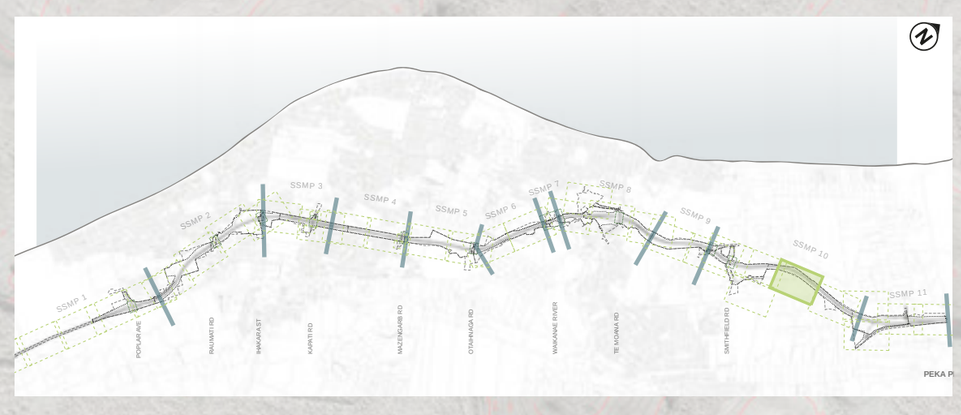
CERTIFIED ISSUE:
SSMP 10 - PEKA PEKA SOUTH - SECTOR 550
18/06/2014

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

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 'TAGGABITLY' OF MATERIALS AND SURFACES.
- LOW PLANTING AT BRIDGE ABUTMENTS.



General
- Designation Boundary
- Wire Barrier
- W-Barrier
- Barrier Transition
- Concrete Traffic Barrier
- Culvert
- Swale
- Planted Swale
- Flood Storage Area
- Visualisation Viewpoint

Urban Design
- Concrete Bridge Barrier
- Concrete Noise Wall
- Culvert Headwall
- Retaining Wall
- Bridge Deck
- Bridge Abutment
- Bridge Piers
- 2.0M Timber Noise Fence

Landscape
- Individual Retained Trees
- Retained Vegetation
- Grass
- Massed Planting
- with Tree Enrichment
- Wetland / Riparian Planting
- Massed planting low
- Specimen Tree

Ecology
- 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

CWB
- Loose Chip CWB
- Chip Seal CWB
- Concrete CWB
- Existing Access Track or CWB

DETAIL DESIGN

No.	Revision	By	Chk	Chk V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:1000	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
Reduced Scale (A3) 1:2000	Dsg Verifier			
	Dwg Check			Date
	* 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: SSMP 10 [530-540-580] - SHEET 4 MASTER PLAN

Drawing No: M2PP-121-D-DWG-8103

Rev. F

Document No.

Drawing Plotted:

NGA MANU ACCESS ROAD

KAKARIKI STREAM

SMITHFIELD LINK ROAD

KAKARIKI STREAM RIPARIAN VEGETATION CONSENT CONDITION: G.41 c) i) 8

WETLAND 11A

CULVERT 30 (29.0M)

CULVERT 30.1 (20.0M)

EXISTING POWERLINE PYLON

KOHEKOHE REMNANT TO BE RETAINED

CS2 8501

CULVERT 30.6 (21.0M)

CS4 8503

CULVERT 30.5 (24.0M)

NGA MANU NATURE RESERVE

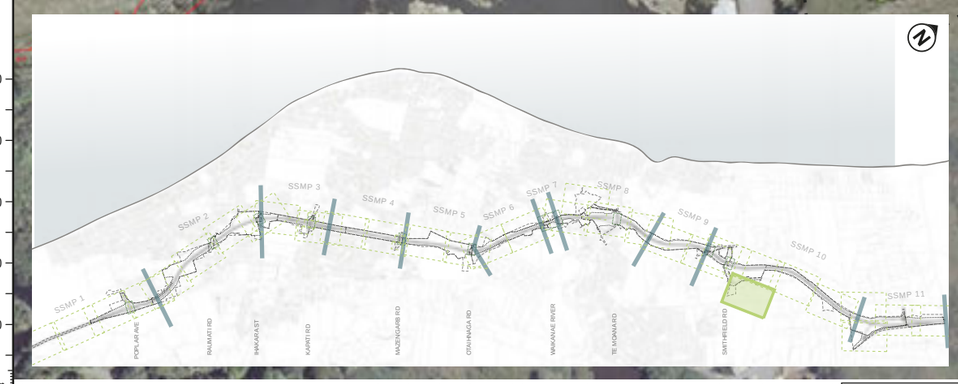
FENCING AND RESTORATION PLANTING OF KOHEKOHE LINED TRIBUTARY. PLANTING TO BE A 5M WIDE FRINGE ALONG THE DRIP LINE OF ROBUST PIONEER SPECIES. TOTAL AREA =0.07HA

FENCING AND WETLAND ENRICHMENT PLANTING WITHIN EXISTING CYPERUS DOMINANT WETLAND. ENRICHMENT KAHIKATEA POSITIONED IN SCATTERED CLUSTERS ACROSS THE SITE WITH AN AVERAGE SPACING OF 1 PER 25M2 (5MX5M)

CS5 8503

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 'TAGGABILTY' OF MATERIALS AND SURFACES.
- LOW LEVEL ORIENTATION LIGHT AT KAPITI CROSSING POINT.
- LOW PLANTING 5.0M WIDE FROM EDGE OF FOOTPATH ALONG MAZENGARB ROAD TO MAINTAIN LEGIBILITY AND ELIMINATE PLACES FOR HIDING.
- LOW PLANTING AT BRIDGE ABUTMENTS.



General
- Designation Boundary
- Wire Barrier
- W-Barrier
- Barrier Transition
- Concrete Traffic Barrier
- Culvert
- Swale
- Planted Swale
- Flood Storage Area
- Visualisation Viewpoint

Urban Design
- Concrete Bridge Barrier
- Concrete Noise Wall
- Culvert Headwall
- Retaining Wall
- Bridge Deck
- Bridge Abutment
- Bridge Piers
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Landscape
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- Retained Vegetation
- Grass
- Massed Planting
- with Tree Enrichment
- Wetland / Riparian Planting
- Massed planting low
- Specimen Tree

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- Retained Valued Wetland Vegetation
- Planted Indigenous Terrestrial Habitat
- Planted Indigenous Wetland Habitat
- Stream Mitigation / Riparian Habitat
- Existing Water Body
- Batter Slope Tadpole

CWB
- Loose Chip CWB
- Chip Seal CWB
- Concrete CWB
- Existing Access Track or CWB

A1 REPRODUCTION SCALE: 0mm 20 40 60 80 100

A3 REPRODUCTION SCALE: 0mm 10 20 30 40 50

DETAIL DESIGN

No.	Revision	By	Chk	Chk V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:1000	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
Reduced Scale (A3) 1:2000	Dsg Verifier			Date
	Dwg Check			
	* 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: SSMP 10 [530-540-580] - SHEET 5 MASTER PLAN

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

Rev. F

Document No.

Drawing Plotted:

CS1 - CROSS SECTION CH 13780

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

PLANTED SWALE | MASS PLANTED EMBANKMENT | NORTHBOUND EXPRESSWAY | SOUTHBOUND EXPRESSWAY | MASS PLANTED EMBANKMENT WITH ENRICHMENT | PLANTED SWALE | MASS PLANTED EMBANKMENT WITH ENRICHMENT

CWB 3.0M

SECTION REFERENCE PLAN - M2PP-121-D-GPH-8101

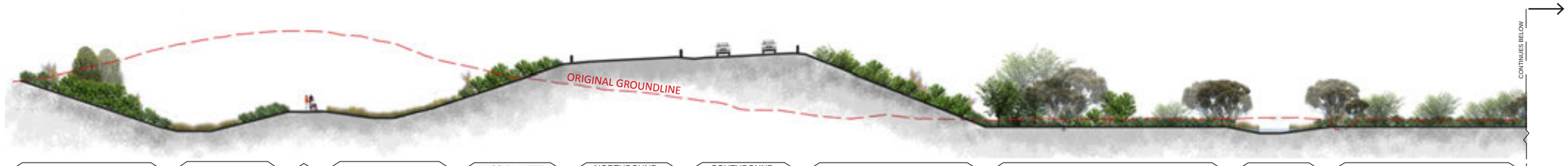
CS2 - CROSS SECTION CH 14160

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

SECTION REFERENCE PLAN - M2PP-121-D-GPH-810 2 / 8104

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm



MASS PLANTED EMBANKMENT | PLANTED SWALE | PLANTED SWALE | MASS PLANTED EMBANKMENT | NORTHBOUND EXPRESSWAY | SOUTHBOUND EXPRESSWAY | MASS PLANTED EMBANKMENT | MASS RIPARIAN PLANTING | WATERWAY | MASS RIPARIAN PLANTING

CWB 3.0M

OFFSET STORAGE AREA 11

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

RIPARIAN MASS PLANTING | WATERWAY | RIPARIAN MASS PLANTING | WATERWAY | RIPARIAN MASS PLANTING | GRASSED AREA AROUND TRANSMISSION TOWERS | RIPARIAN MASS PLANTING | SMITHFIELD LINK ROAD

OFFSET STORAGE AREA 11

MASS PLANTING WETLAND EDGE SPECIES

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN

Design	FB	28.11.14	Approved For Construction*
Drawn	VB	28.11.14	
Dsg Verifier			
Dwg Check			Date

* 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: SSMP 10 [530-540-580] - SHEET 6 SECTIONS

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

Rev. F

Document No.

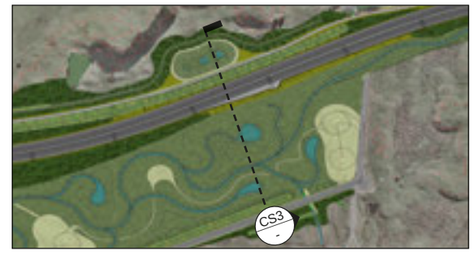
DETAIL DESIGN (DET)

Drawing Plotted:

CS3 - CROSS SECTION- CH 14440

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

SECTION REFERENCE PLAN - M2PP-121-D-GPH-8302



WETLAND 12 | CWB 3.0M | PLANTED SWALE | NORTHBOUND EXPRESSWAY | SOUTHBOUND EXPRESSWAY | RIPARIAN MASS PLANTING | TERMINAL POND

OFFSET STORAGE AREA 11

GRASSED WETLAND MAINTENANCE ACCESS

MASS PLANTED WITH ENRICHMENT

MASS PLANTED SWALE

MASS PLANTED WITH ENRICHMENT

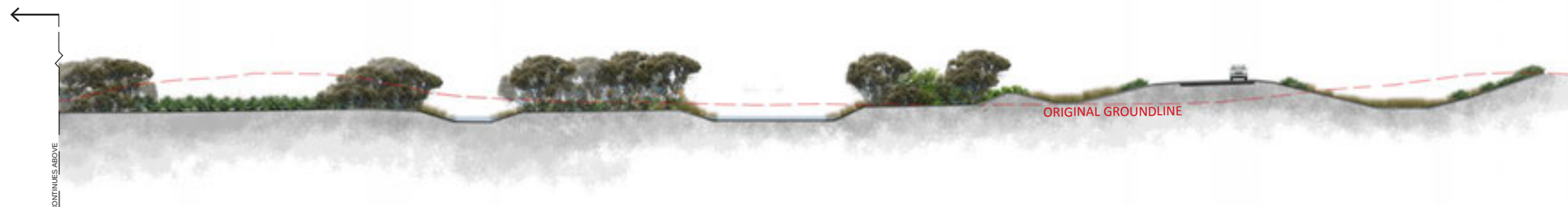
GRASSED WETLAND MAINTENANCE ACCESS

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm



RIPARIAN MASS PLANTING | WATERWAY | RIPARIAN MASS PLANTING | TERMINAL POND | RIPARIAN MASS PLANTING | PLANTED SWALE | SMITHFIELD LINK ROAD | PLANTED SWALE

OFFSET STORAGE AREA 11

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3)				
	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date
AS SHOWN	* 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: SSMP 10 [530-540-580] - SHEET 7 SECTIONS

Drawing No: M2PP-121-D-DWG-8502

Rev. F

Document No.

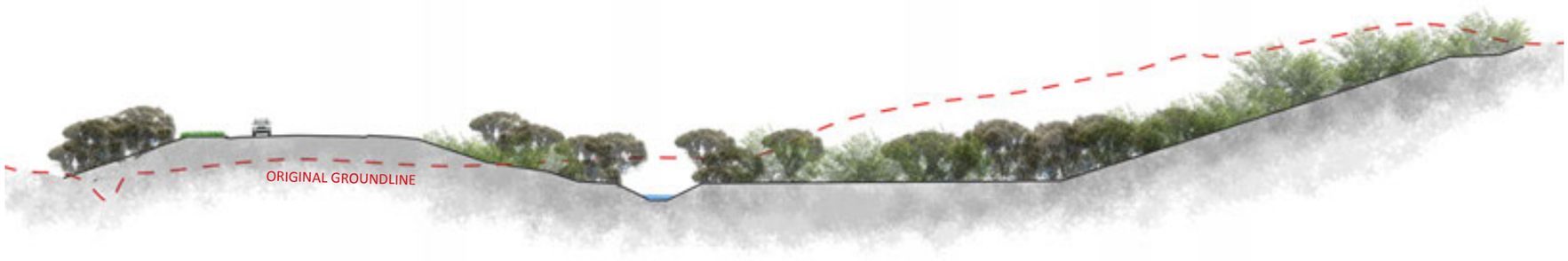
DETAIL DESIGN (DET)

Drawing Plotted:

CS4 - CROSS SECTION- NGA MANU LOCAL ROAD CH 740

FACING WEST SCALE - 1:125@A1 1:250@A3

SECTION REFERENCE PLAN - M2PP-121-D-GPH-8304



NGA MANU ACCESS ROAD | RIPARIAN PLANTING | KAKARIKI STREAM | RIPARIAN PLANTING

CS5 - CROSS SECTION- KAKARIKI STREAM AT NGA MANU

FACING WEST SCALE - 1:125@A1 1:250@A3

SECTION REFERENCE PLAN - M2PP-121-D-GPH-8304

RIPARIAN PLANTING | KAKARIKI STREAM | EXISTING CYPERUS WETLAND (RETAINED AND ENRICHED)

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			
	* 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: SSMP 10 [530-540-580] - SHEET 8 LOCAL ROAD SECTIONS

Drawing No: M2PP-121-D-DWG-8503

Rev. F

Document No.

DETAIL DESIGN (DET)

Drawing Plotted:

General
- Designation Boundary
- Wire Barrier
- W-Barrier
- Barrier Transition
- Concrete Traffic Barrier
- Culvert
- Swale
- Planted Swale
- Flood Storage Area

Urban Design
- Concrete Bridge Barrier
- Concrete Noise Wall
- Culvert Headwall
- Retaining Wall
- Bridge Deck
- Bridge Abutment
- Bridge Piers
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Landscape
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- Retained Vegetation
- Grass
- Massed Planting
- with Tree Enrichment
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- Massed planting low
- Specimen Tree

Ecology
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- Retained Valued Wetland Vegetation
- Planted Indigenous Terrestrial Habitat
- Planted Indigenous Wetland Habitat
- Stream Mitigation / Riparian Habitat
- Existing Water Body

Batter Slope Tadpole

CWB
- Loose Chip CWB
- Chip Seal CWB
- Concrete CWB
- Existing Access Track or CWB
- Horse Mounting Block - Locations TBC
- Cycleway painted surface - non slip

NGARARA ROAD

CWB LIGHT

CWB SIGNAGE REFER TO SHEET 17

TYPE 2 CWB ENTRANCE REFER TO SHEET 16

CWB REFER SHEET 16

AREA OF SSMP 10 INDICATED IN BLUE (SECTOR 530 NGARARA BRIDGE) CERTIFIED PREVIOUSLY.

REFER CERTIFIED ISSUE:
SSMP 10 - REV C
NGARARA BRIDGE ONLY
06/03/2015

SSMP 9

3.0M WIDE CWB

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk-V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
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C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:250	Design	FB	28.11.14	Approved For Consruction*
	Drawn	VB	28.11.14	
Reduced Scale (A3) 1:500	Dsg Verifier			Date
	Dwg Check			
	* 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

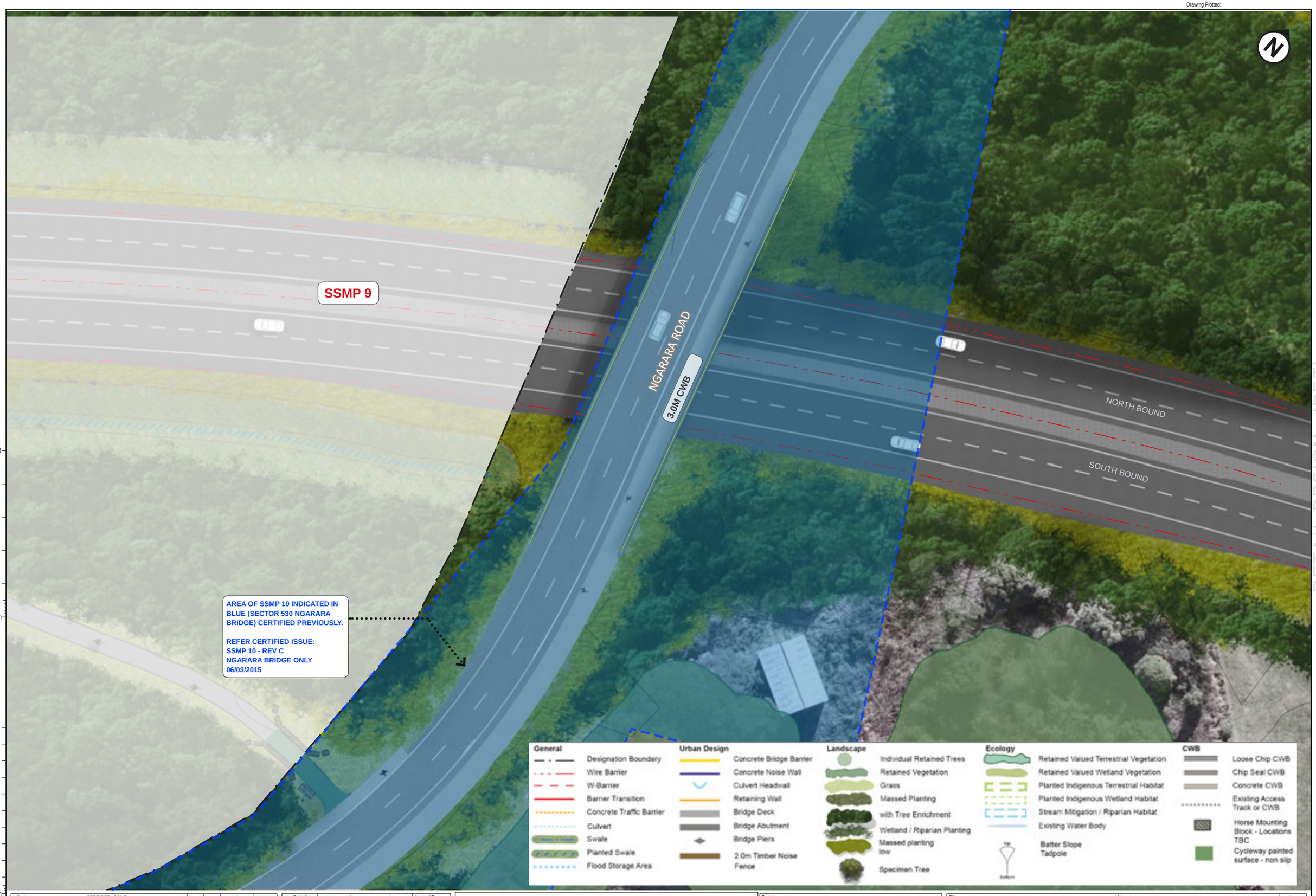
Title: SSMP10 [530-540-580] - SHEET 9 BRIDGE MASTERPLAN

Drawing No: M2PP-121-D-DWG-8301

Rev. F

Document No.

Drawing Plotted:



A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:250 Reduced Scale (A3) 1:500	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date
	* 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: SSMP10 [530-540-580] - SHEET 10 BRIDGE MASTERPLAN

Drawing No: M2PP-121-D-DWG-8302

Rev. F

Document No.

Drawing Plotted:

General
- Designation Boundary
- Wire Barrier
- W-Barrier
- Barrier Transition
- Concrete Traffic Barrier
- Culvert
- Swale
- Planted Swale
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Urban Design
- Concrete Bridge Barrier
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- Bridge Piers
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- Specimen Tree

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- Retained Valued Wetland Vegetation
- Planted Indigenous Terrestrial Habitat
- Planted Indigenous Wetland Habitat
- Stream Mitigation / Riparian Habitat
- Existing Water Body
- Batter Slope Tadpole (TOP / Bottom)

CWB
- Loose Chip CWB
- Chip Seal CWB
- Concrete CWB
- Existing Access Track or CWB
- Horse Mounting Block - Locations TBC
- Cycleway painted surface - non slip

NGA MANU ACCESS ROAD

3.0M WIDE CWB

KAKARIKI STREAM

KAKARIKI STREAM RIPARIAN VEGETATION CONSENT CONDITION: G.41 c) i) 8

CWB SIGNAGE REFER TO SHEET 17

CWB ENTRANCE TYPE 2REFER SHEET 16

CWB LIGHT

1.1M HIGH COMBINATION ROAD BARRIER REFER SHOWN DASHED RED REFER SHEET 14

CWB REFER SHEET 16

CWB SIGNAGE REFER TO SHEET 17

CWB REFER SHEET 16

CWB SIGNAGE REFER TO SHEET 17

CWB LIGHT

CWB STREAM BRIDGE REFER TO SHEET 15

MSE GABION WALL

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:250 Reduced Scale (A3) 1:500	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			
	* 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: SSMP10 [530-540-580] - SHEET 11 BRIDGE MASTERPLAN

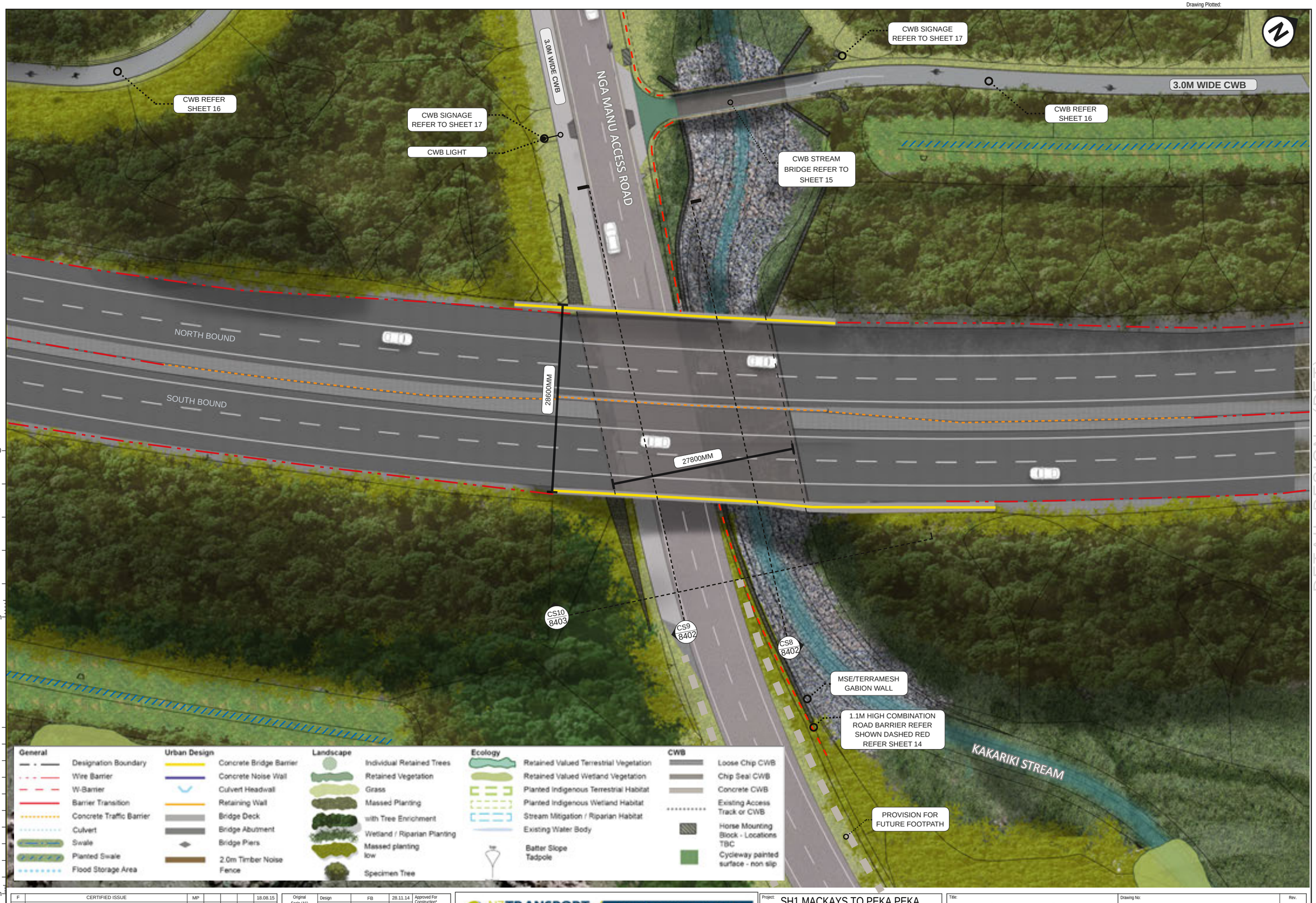
Drawing No: M2PP-121-D-DWG-8303

Rev. F

Document No.

DETAIL DESIGN (DET)

Drawing Plotted:



A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:250 Reduced Scale (A3) 1:500	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			

* 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: SSMP10 [530-540-580] - SHEET 12 BRIDGE MASTERPLAN

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

Rev. F

Document No.

DETAIL DESIGN (DET)

Drawing Plotted:

CS8 - CROSS SECTIONAL ELEVATION -NORTHERN ABUTMENT

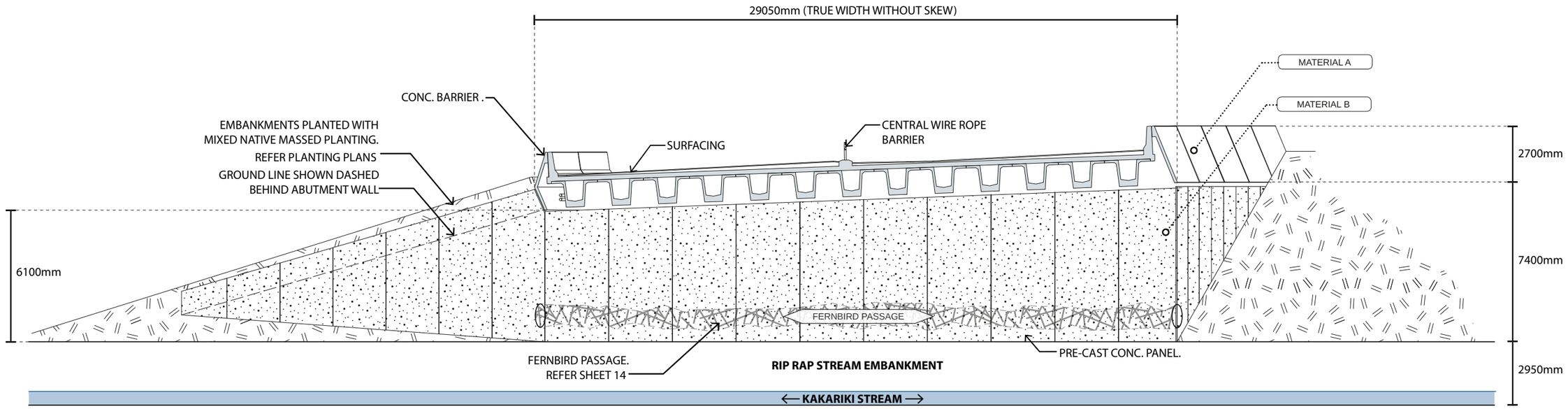
1:200@A3 FACING NORTH

MATERIAL A

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

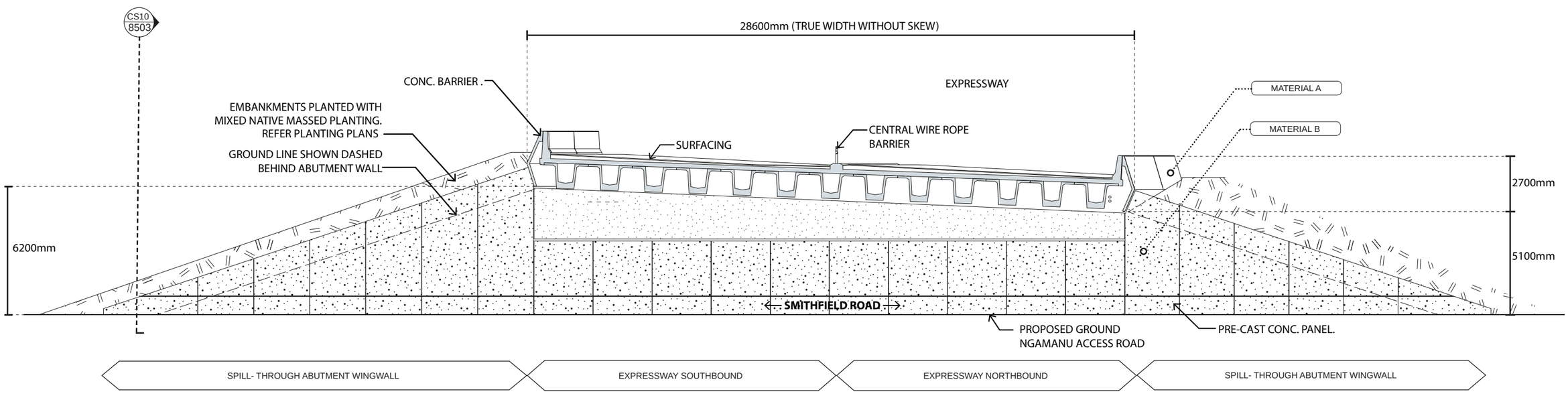
MATERIAL B

BRIDGE ABUTMENT: PRECAST CONCRETE PANEL WITH EXPOSED AGGREGATE FINISH AND MATT GRAFFITI PROTECTION-PENDING SAMPLE PANEL APPROVAL



CS9 - CROSS SECTIONAL ELEVATION

1:200@A3 FACING SOUTH



A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			
	* 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: SSMP 10 [530-540-580] - SHEET 13 BRIDGE MASTERPLAN

Drawing No: M2PP-121-D-DWG-8302

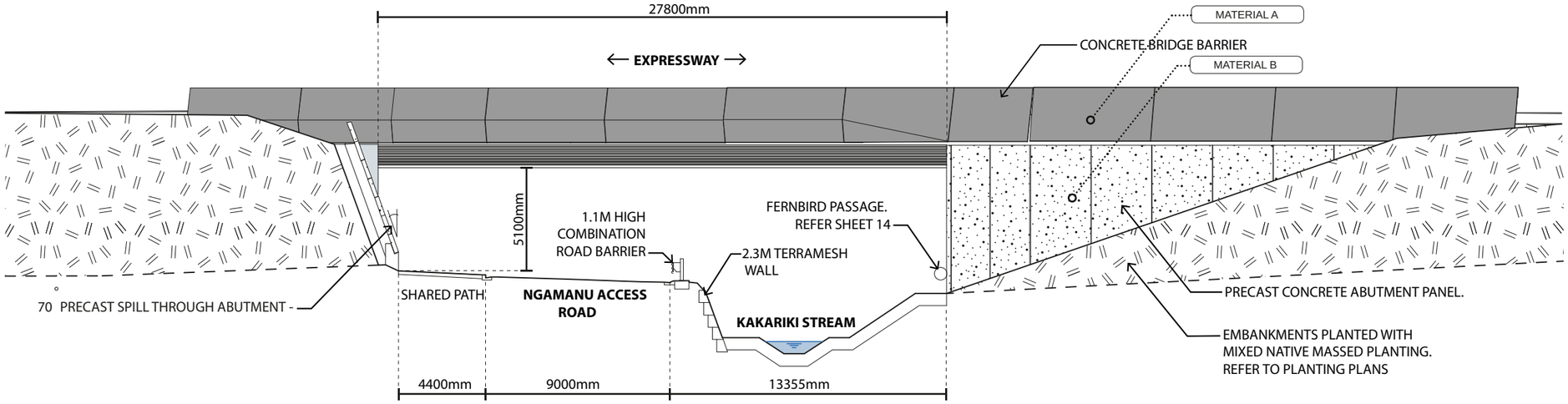
Rev. F

Document No.

DETAIL DESIGN (DET)

CS10 - CROSS SECTIONAL ELEVATION - EAST SIDE OF BRIDGE

1:250@A3 FACING WEST



MATERIAL A

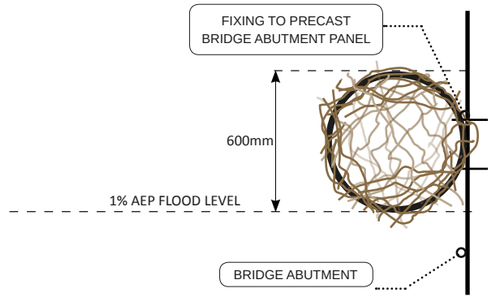
BRIDGE BARRIER: PRECAST CONCRETE WITH 2 COATS WHITE KIEM COATING & ANTI GRAFFITI PROTECTION-PENDING SAMPLE PANEL APPROVAL

MATERIAL B

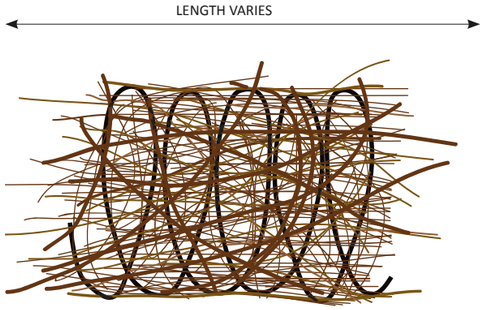
BRIDGE ABUTMENT: PRECAST CONCRETE PANEL WITH EXPOSED AGGREGATE FINISH AND MATT GRAFFITI PROTECTION-PENDING SAMPLE PANEL APPROVAL

EXAMPLE - 1.1M HIGH COMBINATION ROAD BARRIER

TYPICAL HEIGHT AND SIZE REQUIREMENTS DIAGRAM



WILLOW PASSAGEWAY - CONCEPT (NOT TO SCALE)



LEGEND

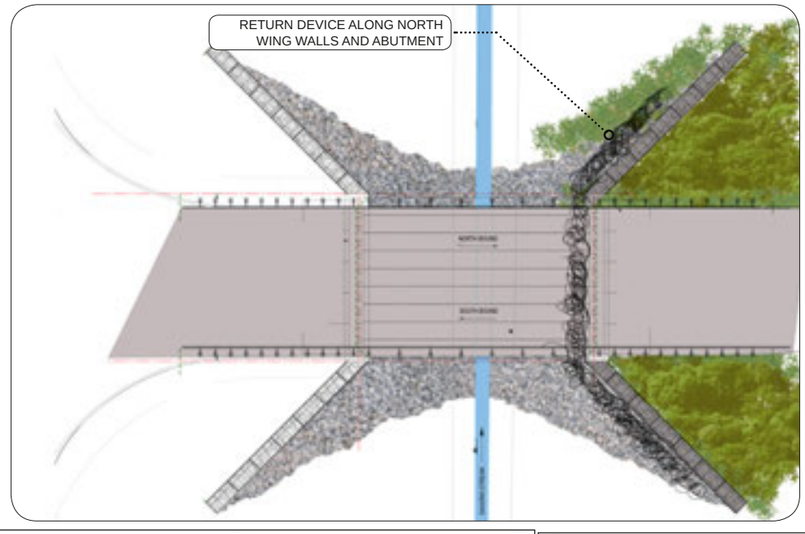
- CYLINDRICAL WIRE SPIRAL
- WILLOW WANDS INTER WEAVED AND FIXED WITH CABLE TIES

WILLOW PASSAGEWAY - PROTOTYPE)

NOTE: A MORE DENSE ARRANGEMENT OF WILLOW WANDS IS ENVISAGED IN THE FINAL PRODUCT THAN SHOWN IN THIS PHOTO - ECOLOGISTS TO ADVISE ON FINAL DESIGN.

INDICATIVE ELEVATION EG. CWB BRIDGE OVER KAKARIKI

INDICATIVE PLAN LAYOUT- EG. SMITHFIELD LINK ROAD BRIDGE OVER KAKARIKI



NOTES:

- WIRE SPIRAL 600MM DIAMETER OF 6MM ROUND BAR FORMED INTO A SPIRAL WITH 400MM PITCH, ATTACHED TO ABUTMENT WALLS ABOVE PEAK WATER FLOW.
- WILLOW WAND (3-4M) WOVEN THROUGH WIRE AND FIRMLY ATTACHED USING BLACK PLASTIC CABLE TIES.
- LOCATE DEVICE AS LOW AS POSSIBLE BUT ABOVE PEAK WATER FLOWS WITH THE ENDS CLOSE TO DIVARICATING VEGETATION GROWING ON EMBANKMENTS TO FACILITATE FERNBIRD ACCESS

FIXING

- CONSTRUCTOR TO INSTALL STAINLESS STEEL BRACKET WITH 2X M12 BOLTS ON CONCRETE PRECAST WALL WITH CLAMPS AT (NOM 600MM) CENTRES SUFFICIENT TO SECURELY LASH DEVICE TO GABION ROCK WALLS USING PLASTIC CABLE TIES.

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN	Design	FB	28.11.14	Approved For Construction* Date
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			
	* 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: SSMP10 [530-540-580] - SHEET 14 FERNBIRD PASSAGE DETAIL

Drawing No: M2PP-121-D-DWG-8303

Rev. F

Document No.

DO NOT SCALE IF IN DOUBT ASK.

DETAIL DESIGN

A1 REPRODUCTION SCALE 0mm 20 40 60 80 100

A3 REPRODUCTION SCALE 0mm 10 20 30 40 50

Drawing Plotted:

VS1- PERSPECTIVE OF TYPICAL CWB STREAM BRIDGE

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3)	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date
AS SHOWN	* 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: SSMP 10 - SHEET 15
CWB BRIDGE TYPICAL DETAIL

Drawing No: M2PP-121-D-DWG-8801

Rev. F

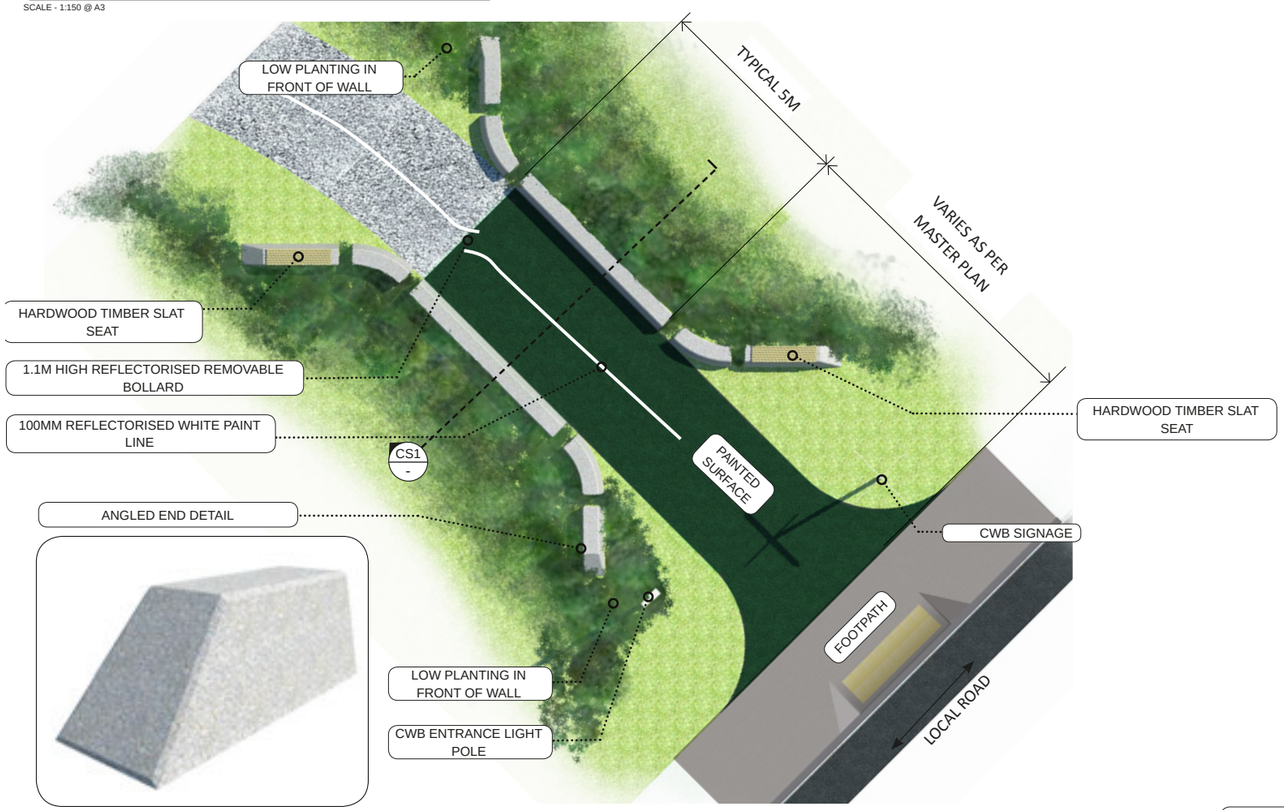
Document No.

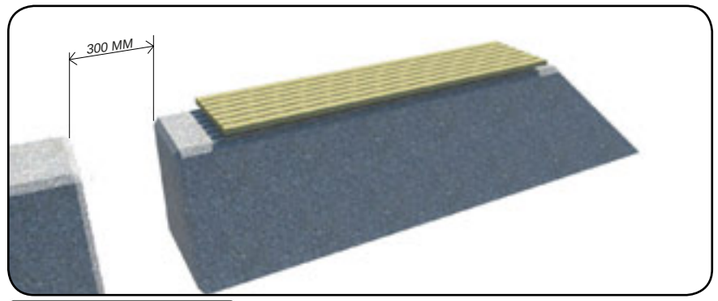
DETAIL DESIGN

Drawing Plotted:

CYCLEWAY ENTRANCE TYPE 2 - TYPICAL PLAN

SCALE - 1:150 @ A3





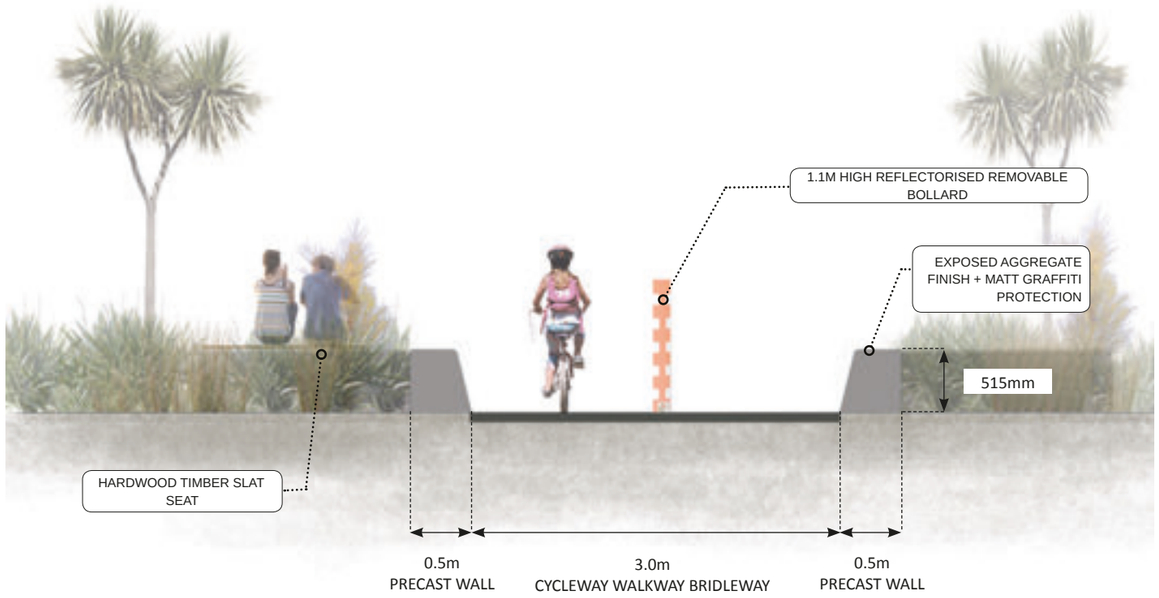
HARDWOOD TIMBER SLAT SEAT

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: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3)	Design	FB	28.11.14	Approved For Construction*
	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date
A3 SHOWN	* 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

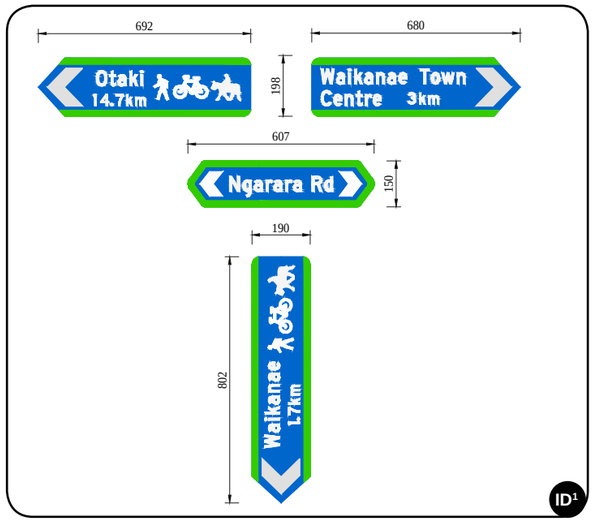
Title: SSMP 10 - SHEET 16 TYPE 2 CWB ENTRANCE

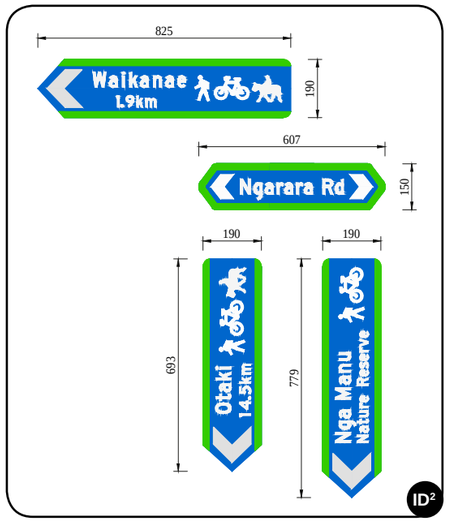
Drawing No: M2PP-121-D-DWG-8801

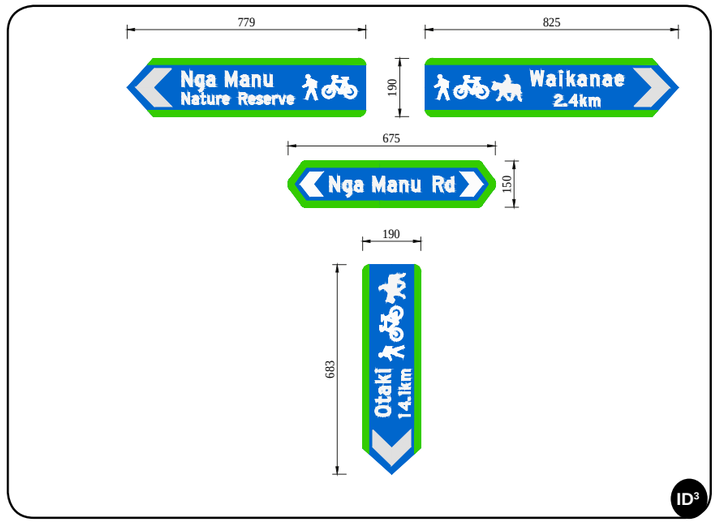
Rev. F

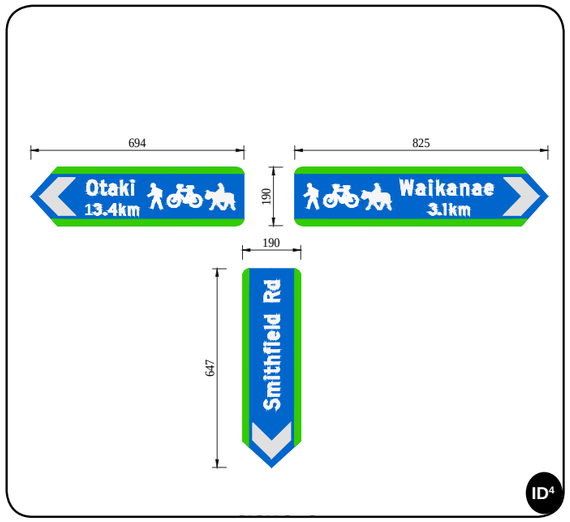
Document No.

DETAIL DESIGN (DET)

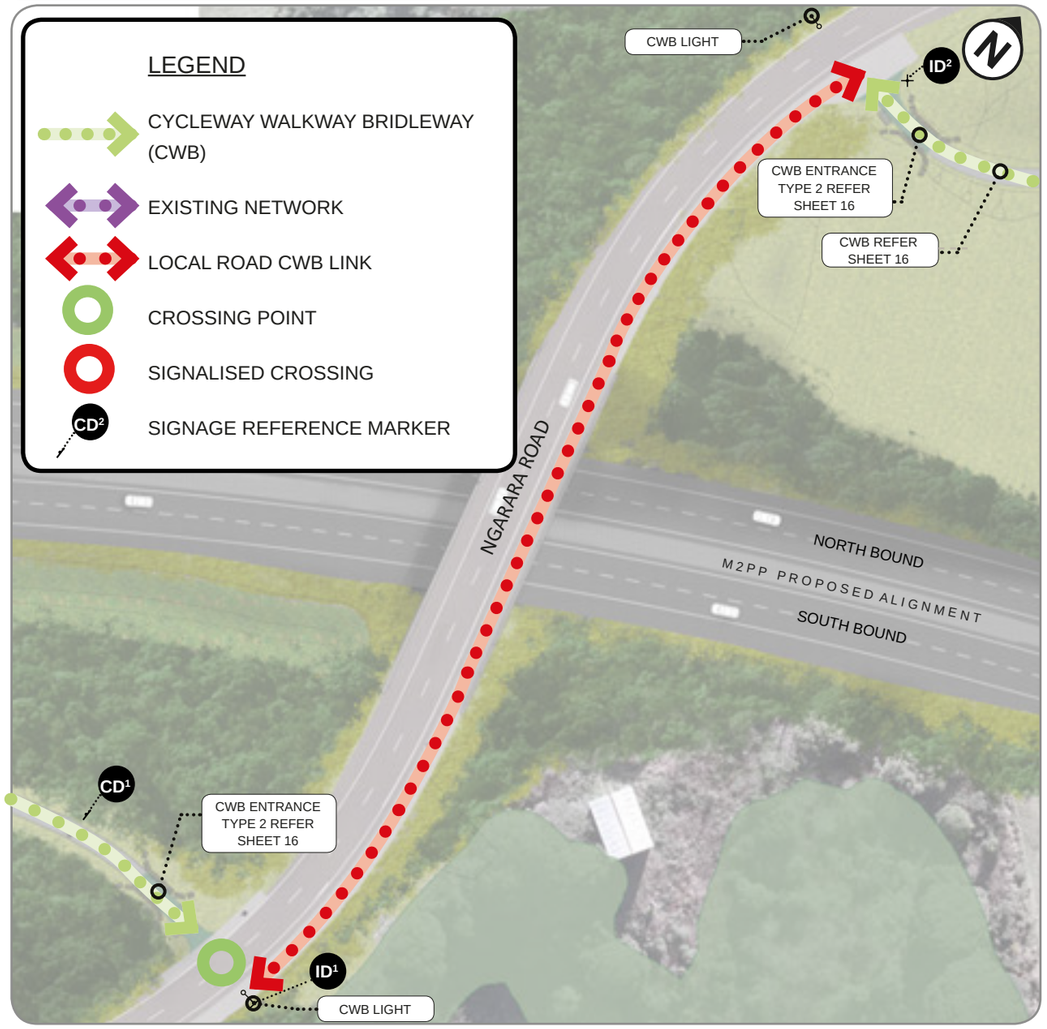




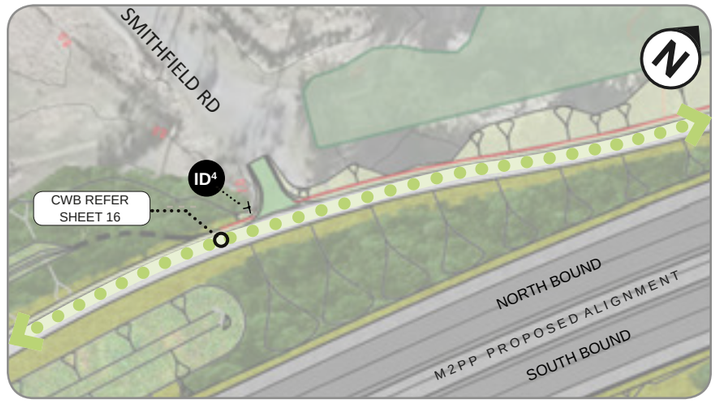




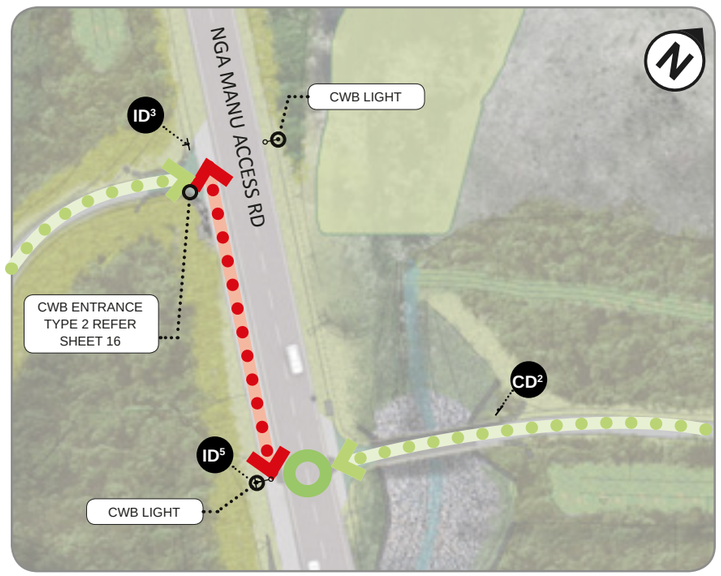
PLAN 001- CWB SIGNAGE ON NGARARA ROAD

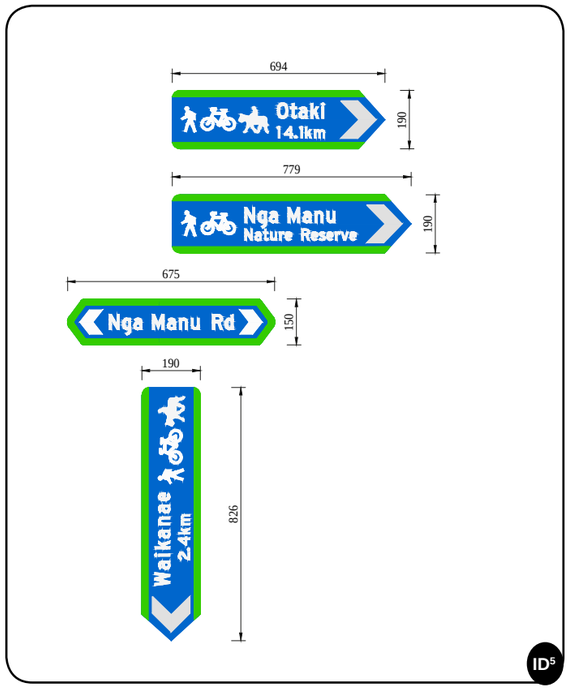


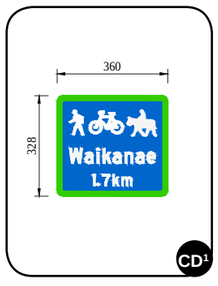
PLAN 002 - CWB SIGNAGE AT END OF SMITHFIELD ROAD

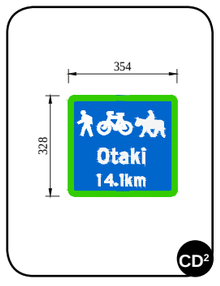


PLAN 003 - CWB SIGNAGE AT NGA MANU ACCESS ROAD









No.	Revision	By	Chk	Chk V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 1:500	Design	FB	28.11.14	Approved For Construction*
Reduced Scale (A3) 1:1000	Drawn	VB	28.11.14	
	Dsg Verifier			
	Dwg Check			Date

* 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: SSMP 10 - SHEET 17 TYPE 2 CWB ENTRANCE

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

Rev. F

Document No.

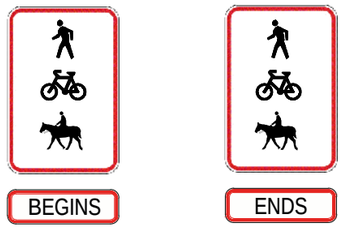
TYPICAL SIGN TYPES:

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



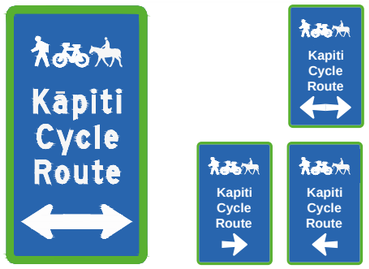
BE - Begins/Ends Signs are used to indicate the start and/or end point of a cycle route. They will include route specific information. Route Begins Signs should be installed on the left hand side of the CWB immediately beyond or adjacent to any advance information sign or at a logical starting point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

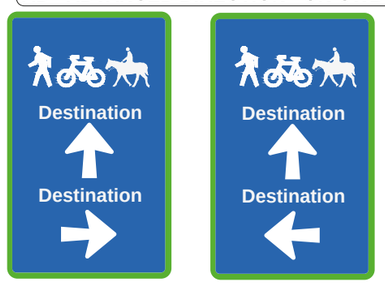
CD - CONFIRMATION DIRECTION

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 Giveway (GW) signs should to 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 incorporateted onto an existing post.

A1 REPRODUCTION SCALE 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
F	CERTIFIED ISSUE	MP				18.08.15
E	ISSUE FOR CERTIFICATION	MP				27.07.15
D	FINAL COMMENT	MP				09.07.15
C	CERTIFIED ISSUE - **NGARARA BRIDGE ONLY**	MP				06.03.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN

Design	FB	28.11.14	Approved For Construction*
Drawn	VB	28.11.14	
Dsg Verifier			
Dwg Check			Date

* 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: SSMP 10 - SHEET 18 TYPICAL SIGNAGE

Drawing No: M2PP-121-D-DWG-8901

Rev. F

Document No.

Drawing Plotted: 10:18 AM MONDAY 24 AUGUST 2015

LEGEND

- EXPRESSWAY DESIGNATION
- PROPOSED ALTERATION TO DESIGNATION
- EXISTING VEGETATION - RETAINED
- MASSED PLANTING WITH TREE ENRICHMENT
- MASSED PLANTING - LOW
- MASSED SWALE PLANTING
- RIPARIAN PLANTING
- WETLAND PLANTING
- GRASSED
- SHELTER BELT / SCREEN PLANTING
- AREA PROPOSED TO BE PROTECTED BY NZTA BY WAY OF COVENANT
- PLANTING ALTERED AS NOTED

1:4000

307 NGARARA ROAD

INCREASED PLANTING DUE TO ADDITIONAL EARTHWORKS AS A RESULT OF DETAILED DESIGN WHICH ARE VISIBLE FROM 307 NGARARA ROAD

ELEVATION OF LAND CLARIFIED BY PREPARATION OF 3D BRIDGE MODEL. PLANTING PROVIDES FURTHER SCREENING OF BRIDGE FOR 292 AND 307 NGARARA ROAD

283 NGARARA ROAD

INCREASED PLANTING ON SWALE AND ASSOCIATED BATTER SLOPES ADDED TO THE SOUTH OF NGA MANU ACCESS ROAD DURING DETAILED DESIGN. VISIBLE FROM 292 NGARARA ROAD.

292 NGARARA ROAD

ADDITIONAL SCREEN PLANTING PROPOSED AS VISUAL MITIGATION FOR 292 NGARARA ROAD. SCREEN PLANTING ALSO VISIBLE FROM 283 NGARARA ROAD.

NGA MANU ACCES ROAD

SMITHFIELD LINK ROAD

EXPRESSWAY

NGARARA ROAD

KAKARIKI STREAM

ELEVATION OF LAND RAISED BY ALTERED ABUTMENT AND WING WALL DESIGN. PLANTING PROVIDES FURTHER SCREENING OF BRIDGE FOR 205, 283 AND 292 NGARARA ROAD

PLANTING PROPOSED IN GAPS AND COVENANT OVER AREA TO PROVIDE ADDITIONAL SCREENING OF BRIDGE FOR 205 NGARARA ROAD

NGA MANU NATURE RESERVE

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
B	ISSUE FOR CERTIFICATION	MP				22.07.15
A	FINAL COMMENT	MP				08.07.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN	Design	SD	12.05.15	Approved For Construction* Date
	Drawn	MP	12.05.15	
	Dsg Verifier			
	Dwg Check			
	* 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: SSMP 10 - SHEET 19 SIMPLIFIED DETAILED PLANTING PLAN

Drawing No: M2PP-121-D-DWG-8905

Rev. B

Document No.

DETAIL DESIGN (DET)

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	Nga Manu Access Road bridge is consistent in form to that of other expressway bridges, The barrier/fascia panel remains consistent with other proposed bridges. The form of the abutments being; vertical abutment to the north and 70 degree spill-through abutment on the south and abutment finish ensures Nga Manu continues to resister as part of a 'family' of bridges.
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 a visually simple structure and sits across the landscape as a horizontal element. The bridge is not seen as making a statement in its own right. The barrier/ fascia panel form, material and colour (a white wash, applied concrete coating) are consistent with other bridges and help to emphasise and reinforce the horizontal nature of the bridge barrier.
3. Unite the bridge elements of pier, cross head, deck and barrier as one sculptural form and ensure services are concealed from view	The bridge fascia panel and abutment form is consistent with other proposed bridges. the principle of united bridge deck, abutment and barrier remains upheld. These components look to create clean lines that conceal the 'structural' elements.
4. Ensure the form of the bridges from the underside is visually appealing to recognise the primacy of the local roads user's experience in design consideration	The proposed bridge provides an appropriate level of openness and scale to the space beneath the bridge. The vertical abutment on the north side of the bridge adjacent to the Kakariki Stream is consistent with other bridges on the Expressway with a stream or river; Waikanae, Te Moana, and Wharemauku bridges. The scale and form of the south abutment is consistent with other local roads of similar character in Otaihanga and Mazengarb
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)	Not relevant
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	As a result of comments from KCDC, and the Crime Prevention Through Environmental Design (CPTED) assessment by Dr Stoks, the New Proposed Design includes single light poles at each intersection of the CWB with the Local Road. These light the area around the CWB intersections notifying motorists and CWB users that they are entering a potential conflict area, and make hazards in the area more visible. They will also act as way finding devices marking points of entry/egress. The CPTED assessment noted that with the absence of lighting on the local road and on the Expressway above the bridge, lighting under the bridge will draw undue attention to the bridge and potentially encourage loitering and make it a target for graffiti and vandalism. As a result, there will be no lighting under the bridge. However, a conduit will be provided in the bridge structure to allow future lighting to be installed when urban development occurs and there is an increased number of users.
7. Use architectural lighting to emphasise the sculptural forms of the bridges and light units that are readily serviceable from the ground	As above
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	The proposed bridge components; barriers, abutments, beams are consistent with the components on other expressway bridges. The proposed bridge use the same systematic approach to allow repetition of parts 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	The proposed finish on the Nga Manu Access Road Bridge barriers will be fair faced concrete with a white wash, applied concrete coating to ensure colour and tonal uniformity between panels. The bridge abutment will be constructed with precast concrete panels with an exposed Otaki pebble finish. The underside of the deck will be fair faced concrete without the applied white wash coating to help make these elements visually recessive relative to the barrier. Matt graffiti protection to be applied to all bridge elements surfaces.
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	The design of the bridge forms at Nga Manu Access Road has seen the consideration of all the contributing factors of visual amenity, structural design in high seismic zone, and constructibility

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
A	ISSUE FOR CERTIFICATION	FB				27.07.15

Original Scale (A1) 2 x SHOWN Reduced Scale (A3) AS SHOWN	Design	FB	17.07.15
	Drawn	FB	17.07.15
	Dsg Verifier		
	Dwg Check		

Approved For Construction* Date

* 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: SSMP 10 - SHEET 20 ULDF BRIDGE DESIGN PRINCIPLES SUMMARY

Drawing No: M2PP-121-D-DWG-8905

Rev. A

Document No.

DETAIL DESIGN (DET)

- **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.

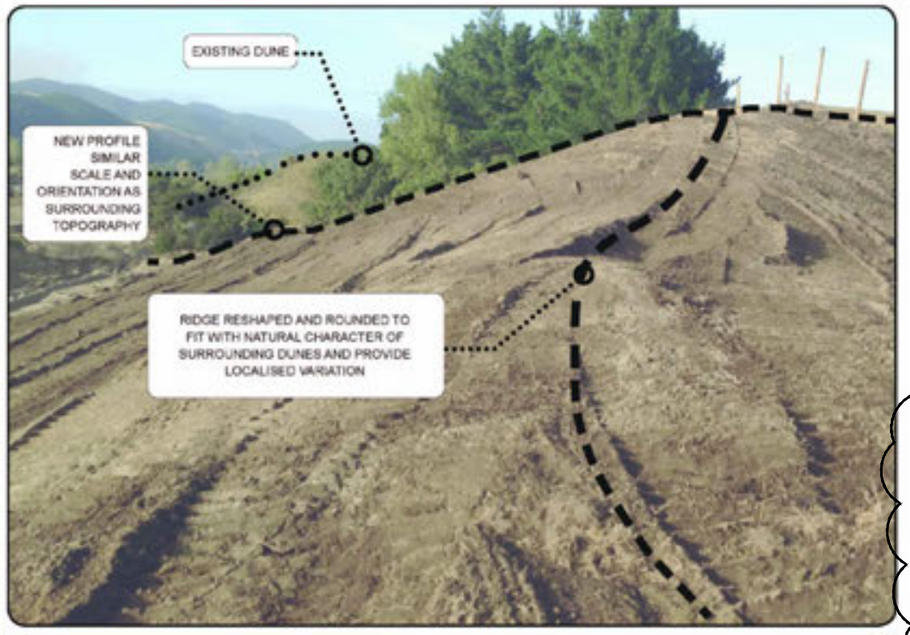
-Re-shaping of dunes to achieve a 'natural' appearance is likely to require extending earthworks into surrounding topography.

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

No.	Revision	By	Chk	Chk.V	Appd	Date
2	REVISED BASED ON GEOTECHNICAL INPUT	MP	MP	BF	DS	07.08.14
1	FOR CONSTRUCTION	MP	GFB	DH	DC	07.05.14

Original Scale (A1) NTS	Design	B FAULKNER	24.04.14	Approved For Construction* P BRADSHAW
Reduced Scale (A3) NTS	Drawn	V BILLETT	24.04.14	
	Dsg Verifier	B EVANS	05.05.14	
	Dwg Check	G F-B	05.05.14	Date 09.05.14
	* 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: STANDARD DETAILS DUNE ROUNDING DETAIL	Drawing No: M2PP-23R-D-DWG-8904	Rev. 2

Document No. M2PP-23R-D-DWG-8904.DWG

DO NOT SCALE IF IN DOUBT ASK.

A1 REPRODUCTION SCALE 0mm 20 40 60 80 100

A3 REPRODUCTION SCALE 0mm 10 20 30 40 50

Drawing Plotted: 07 Aug 2014 05:01 p.m.

- **This guidance does not negate the requirement for the landscape architect to sign off these works prior to spreading topsoil.**
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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.

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-Natural appearance. Avoid uniform, engineered profiles.

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

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
2	REVISED BASED ON GEOTECHNICAL INPUT	MP	MP	BF	DS	07.08.14
1	FOR CONSTRUCTION	MP	GFB	DH	DC	07.05.14

Original Scale (A1) NTS	Design	B FAULKNER	24.04.14	Approved For Construction* P BRADSHAW Date 09.05.14
Reduced Scale (A3) NTS	Drawn	V BILLETT	24.04.14	
	Dsg Verifier	B EVANS	05.05.14	
	Dwg Check	G F-B	05.05.14	
	* 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: STANDARD DETAILS DUNE ROUNDING DETAIL

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

Rev. 2

Document No. M2PP-23R-D-DWG-8904.DWG

Drawing Plotted: 27 Jul 2015 04:41 p.m.

KEY

PLANTING TYPE / PLANTING MIX / AREA CODE — e.g. MT A 1 / 43R-8201 — PLANTING BOUNDARY — ASSOCIATED SHEET NUMBER

- MP MASSED PLANTING
- ML MASSED PLANTING - LOW
- MT MASSED PLANTING - TREE ENRICHMENT
- MS MASSED PLANTING - SWALE
- TF TREES - FORESTRY GRADE
- TS TREES - SPECIMEN GRADE
- TP TREES - POLE GRADE
- TREE WIND SHELTER
- EXISTING VEGETATION TO BE RETAINED
- GL GRASS - LOW
- GS GRASS - SWALE
- GR GRASS - ROUGH
- WP WETLAND PLANTING
- RP RIPARIAN PLANTING
- OVERHEAD WIRES CLEARZONE
- DESIGNATION

NOTES:

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

EXPRESSWAY NORTHBOUND
EXPRESSWAY SOUTHBOUND
NGARARA ROAD
CYCLEWAY WALKWAY BRIDLEWAY
OH
520
530
540
1360
1320
1370
MT F 1 53R-8201
ML A 3 53R-8201
GL A 4 53R-8201
GL A 3 53R-8201
ML A 2 53R-8201
ML B 1 53R-8201
MT F 2 53R-8201
MS A 1 53R-8201
MT F 3 53R-8201
GR A 2 53R-8201
ML A 1 53R-8201
GL A 2 53R-8201
GR A 1 53R-8201
GL A 1 53R-8201
ML B 2 53R-8201
MS A 2 53R-8201
ML B 3 53R-8201
MT F 4 53R-8201
MS A 3 53R-8201
COMPLETELY REMOVE ROAD FORMATION, RIP / LOOSEN SUBSOIL AND BACKFILL WITH LIGHTLY COMPACTED TOPSOIL AS SPECIFIED
PLANT SPECIES SUITED TO WETTER GROUND IN THIS DEPRESSION
PROVISION FOR PEDESTRIAN ACCESS TO SCRUFFY DOME
PLANT SHRUBS AND GRASSES UNDER ELECTRICAL OVERHEAD WIRES MARKED AS ** ON SCHEDULE
MATCHLINE REFER: M2PP- 52R -D-DWG-8203
MATCHLINE REFER: M2PP- 53R -D-DWG-8202
MATCHLINE REFER: M2PP- 54R -D-DWG-8201
MATCHLINE: REFER BELOW
MATCHLINE: REFER ABOVE

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
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
Reduced Scale (A3) 1:1000	Drawn	M POWELL	30.09.14
	Dsg Verifier	B. CHAPPELL	29.01.10
	Dwg Check	A. POINTON	29.01.15

Approved For Construction* D STIRRAT Date 21.07.15

* 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: NGARARA ROAD CROSSING PLANTING PLANS SHEET 1

Drawing No: M2PP-53R-D-DWG-8201

Rev. 1

530 540 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

Document No. M2PP-53R-D-DWG-8201.DWG

Drawing Plotted: 30 Jul 2015 01:29 p.m.

KEY

PLANTING TYPE
PLANTING MIX
AREA CODE
PLANTING BOUNDARY
MT A 1 / 43R-8201
ASSOCIATED SHEET NUMBER

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

NOTES:

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

NGARARA ROAD

GR A 1 / 53R-8202
GL A 1 / 53R-8202
GL A 2 / 53R-8202
530
580
TF A 1 / 53R-8202
MS A 1 / 53R-8202
MS F 1 / 53R-8202
MT D 1 / 53R-8202
RP C 1 / 53R-8202
RP C 2 / 53R-8202
RP C 3 / 53R-8202

INCREASE EMBANKMENT SLOPE LOCALLY TO AVOID TREE

NGA MANU ACCESS ROAD

COMPLETELY REMOVE ROAD FORMATION, RIP / LOOSEN SUBSOIL AND BACKFILL WITH LIGHTLY COMPACTED TOPSOIL AS SPECIFIED

EXOTIC TREES AND WEEDS SHALL BE REMOVED FROM THE PLANTING AREA PRIOR TO PLANTING RIPARIAN SPECIES

KAKARIKI STREAM OUTSIDE THE DESIGNATION (CONDITION 43 A + B) TO BE ECOLOGICAL MITIGATION TO BE PROTECTED

MATCHLINE REFER: M2PP- 53R -D-DWG-8201

MATCHLINE REFER: M2PP- 54R -D-DWG-8201

MATCHLINE REFER: M2PP- 54R -D-DWG-8202

580
540
530
580

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

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
2	FOR CONSTRUCTION - REVISED AS NOTED, REDLINE INCLUDED	MP				.07.15
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
Reduced Scale (A3) 1:1000	Drawn	M POWELL	30.09.14
	Dsg Verifier	B. CHAPPELL	29.01.15
	Dwg Check	A. POINTON	29.01.15

Approved For Construction* D STIRRAT Date 21.07.15

* 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: NGARARA ROAD CROSSING PLANTING PLANS SHEET 2

Drawing No: M2PP-53R-D-DWG-8202

Rev. 2

Document No. M2PP-53R-D-DWG-8202.DWG

Drawing Plotted: 27 Jul 2015 04:55 p.m.

MATCHLINE REFER: M2PP- 53R -D-DWG-8201

MATCHLINE REFER: M2PP- 53R -D-DWG-8202

CYCLEWAY WALKWAY BRIDLEWAY

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

NGA MANU ACCESS ROAD

MATCHLINE REFER: M2PP- 54R -D-DWG-8202

MATCHLINE REFER: M2PP- 58R -D-DWG-8201

GL A 1 54R-8201
ML A 1 54R-8201
MT F 1 54R-8201
GL A 2 54R-8201
ML A 2 54R-8201
MS A 1 54R-8201
MT F 2 54R-8201
ML B 2 54R-8201
ML B 1 54R-8201
MS A 2 54R-8201
MT F 3 54R-8201
GL A 3 54R-8201
TF A 1 54R-8201

1380
1390
1400

540
580
540
580

PLANTING TO FILL GAPS IN EXISTING VEGETATION OUTSIDE DESIGNATION AS PART OF AGREEMENT WITH NEARBY LANDOWNERS

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

KEY

PLANTING TYPE
PLANTING MIX
AREA CODE
PLANTING BOUNDARY
MT A 1 43R-8201
ASSOCIATED SHEET NUMBER

- MP MASSED PLANTING
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- TREE WIND SHELTER
- EXISTING VEGETATION TO BE RETAINED
- GL GRASS - LOW
- GS GRASS - SWALE
- GR GRASS - ROUGH
- WP WETLAND PLANTING
- RP RIPARIAN PLANTING
- DESIGNATION

NOTES:

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

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
Reduced Scale (A3) 1:1000	Drawn	M POWELL	30.09.14
	Dsg Verifier	B.FAULKNER	28.01.15
	Dwg Check	A.POINTON	19.12.14

Approved For Construction* D STIRRAT Date 21.07.15

* 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: SMITHFIELD SECTION PLANTING PLANS SHEET 1

Drawing No.: M2PP-54R-D-DWG-8201

Rev.: 1

Document No. M2PP-54R-D-DWG-8201.DWG

DO NOT SCALE IF IN DOUBT ASK.

Drawing Plotted: 30 Jul 2015 01:29 p.m.

MATCHLINE REFER: M2PP- 53R -D-DWG-8202

MATCHLINE REFER: M2PP- 54R -D-DWG-8203

COMPLETELY REMOVE ROAD FORMATION, RIP / LOOSEN SUBSOIL AND BACKFILL WITH LIGHTLY COMPACTED TOPSOIL AS SPECIFIED

RIPARIAN PLANTING EXTENDED TO CONNECT WITH ADDITIONAL MITIGATION OUTSIDE OF DESIGNATION

NGA MANU ACCESS ROAD

RIP RAP

MATCHLINE REFER: M2PP- 54R -D-DWG-8201

MT D 1 54R-8202
RP C 2 54R-8202
RP C 1 54R-8202
MS A 1 54R-8202
GL A 1 54R-8202
RP C 3 54R-8202
RP C 4 54R-8202
MT F 1 54R-8202
GL A 3 54R-8202
ML A 1 54R-8202
MS A 2 54R-8202
GR A 1 54R-8202
MS A 3 54R-8202
MT F 2 54R-8202
ML B 1 54R-8202
ML B 2 54R-8202
GL A 2 54R-8202
RP C 5 54R-8202
RP C 6 54R-8202
MT D 2 54R-8202

1 54R-8401

540
580
540

1390
1400
1414
14200

CYCLEWAY WALKWAY BRIDLEWAY
EXPRESSWAY NORTHBOUND
EXPRESSWAY SOUTHBOUND
MAINTENANCE TRACK
KAKARIKI STREAM
PEDESTRIAN MAINTENANCE ACCESS
FORD

COMPLETELY REMOVE ROAD FORMATION, RIP / LOOSEN SUBSOIL AND BACKFILL WITH LIGHTLY COMPACTED TOPSOIL AS SPECIFIED

MATCHLINE REFER: M2PP- 58R -D-DWG-8201

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

KEY

PLANTING TYPE / PLANTING MIX AREA CODE / PLANTING BOUNDARY — MT A 1 / 43R-8201 — ASSOCIATED SHEET NUMBER

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3. A 1.5m OFFSET FROM THE VERGE HAS BEEN MADE TO ACCOMODATE THE EXTENT OF SUBBASE. THE ACTUAL OFFSET IS TO BE CONFIRMED ON SITE.

No.	Revision	By	Chk	Chk.V	Appd	Date
2	FOR CONSTRUCTION - REVISED AS NOTED, REDLINE INCLUDED	MP				.07.15
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
	Drawn	M POWELL	30.09.14
Reduced Scale (A3) 1:1000	Dsg Verifier	B.FAULKNER	28.01.15
	Dwg Check	A.POINTON	19.12.14

Approved For Construction* D STIRRAT Date 21.07.15

* 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: SMITHFIELD SECTION PLANTING PLANS SHEET 2

Drawing No: M2PP-54R-D-DWG-8202

Rev. 2

540 580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

Document No. M2PP-54R-D-DWG-8202.DWG

Drawing Plotted: 27 Jul 2015 04:55 p.m.

MATCHLINE REFER: M2PP- 54R -D-DWG-8202

MATCHLINE REFER: M2PP- 54R -D-DWG-8204

KEY

PLANTING TYPE
PLANTING MIX
AREA CODE
PLANTING BOUNDARY
MT A 1
43R-8201
ASSOCIATED SHEET NUMBER

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

NOTES:

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

PROPOSED ALTERED DESIGNATION BOUNDARY

MS A 1 54R-8203
GR A 1 54R-8203
WP D 1 54R-8203
MAINTENANCE ACCESS
WP G 1 54R-8203
WP G 2 54R-8203
WP F 1 54R-8203
WETLAND 12
MT F 1 54R-8203
ALLOWANCE FOR CONCRETE V-CHANNEL
ML A 2 54R-8203
ML A 1 54R-8203
ML C 1 54R-8203
GL A 1 54R-8203
ML C 2 54R-8203
CYCLEWAY WALKWAY BRIDLEWAY
MT F 2 54R-8203
MS A 2 54R-8203
ML B 1 54R-8203
EXPRESSWAY NORTHBOUND
EXPRESSWAY SOUTHBOUND
14300
14400
14500
14600
ML B 2 54R-8203
PEDESTRIAN MAINTENANCE ACCESS
MT D 1 54R-8203

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

MATCHLINE REFER: M2PP- 53R -D-DWG-8202

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
Reduced Scale (A3) 1:1000	Drawn	M POWELL	30.09.14
	Dsg Verifier	B.FAULKNER	28.01.15
	Dwg Check	A POINTON	19.12.14

Approved For Construction* D STIRRAT Date 21.07.15

* 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: SMITHFIELD SECTION PLANTING PLANS SHEET 3

Drawing No: M2PP-54R-D-DWG-8203

Rev. 1

540

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

Document No. M2PP-54R-D-DWG-8203.DWG

Drawing Plotted: 27 Jul 2015 04:56 p.m.

MATCHLINE REFER: M2PP- 54R -D-DWG-8204

KEY

PLANTING TYPE
PLANTING MIX
AREA CODE
PLANTING BOUNDARY
MT A 1
43R-8201
ASSOCIATED SHEET NUMBER

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

NOTES:

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

ALLOWANCE FOR CONCRETE V-CHANNEL DRAIN
MT D 1 54R-8204
GR A 1 54R-8204
ML C 1 54R-8204
ML B 1 54R-8204
CYCLEWAY WALKWAY BRIDLEWAY
EXPRESSWAY NORTHBOUND
EXPRESSWAY SOUTHBOUND
14600
14700
14800
14900
GR A 2 54R-8204
GR A 3 54R-8204
GL A 54R-8204
ML B 2 54R-8204
MT D 2 54R-8204
PEDESTRIAN MAINTENANCE ACCESS
RP J 1 54R-8204
RP J 2 54R-8204
ALLOWANCE FOR RIP RAP
MS C 1 54R-8204
GR A 4 54R-8204
MAINTENANCE TRACK
540
550

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

MATCHLINE REFER: M2PP- 58R -D-DWG-8202

540 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
	Drawn	M POWELL	30.09.14
Reduced Scale (A3) 1:1000	Dsg Verifier	B.FAULKNER	28.01.15
	Dwg Check	A.POINTON	19.12.14
* Refer to Revision 1 for Original Signature			

Approved For Construction* D STIRRAT Date 21.07.15

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: SMITHFIELD SECTION PLANTING PLANS SHEET 4

Drawing No: M2PP-54R-D-DWG-8204

Rev. 1

Document No. M2PP-54R-D-DWG-8204.DWG

DO NOT SCALE IF IN DOUBT ASK.

Drawing Plotted: 27 Jul 2015 04:40 p.m.

MATCHLINE REFER: M2PP- 54R -D-DWG-8201

MATCHLINE REFER: M2PP- 54R -D-DWG-8202

MATCHLINE REFER: M2PP- 58R -D-DWG-8202

MATCHLINE REFER: M2PP- 58R -D-DWG-8203

KAKARIKI STREAM

COMPLETELY REMOVE ROAD FORMATION, RIP / LOOSEN SUBSOIL AND BACKFILL WITH LIGHTLY COMPACTED TOPSOIL AS SPECIFIED

MAINTENANCE TRACK

FORD

NO PLANTING. PEDESTRIAN MAINTENANCE ACCESS

WETLAND 11A

KAKARIKI STREAM RIPARIAN VEGETATION
CONDITION G.41 c) i) 8.

REALIGNED SMITHFIELD DRAIN

TRANSMISSION TOWER PLATFORM

TRANSMISSION TOWER PLATFORM

MAINTENANCE ACCESS

NGA MANU ACCESS ROAD

SMITHFIELD LINK ROAD

PLANT SHRUBS AND GRASSES UNDER ELECTRICAL OVERHEAD WIRES MARKED AS ** ON SCHEDULE

540

580

NOTE: PLANTING NEAR HIGH VOLTAGE TRANSMISSION LINES TO BE DONE IN ACCORDANCE WITH THE ELECTRICITY (HAZARDS FROM TREES) REGULATIONS 2003

GL GRASS - LOW
GS GRASS - SWALE
GR GRASS - ROUGH
WP WETLAND PLANTING
RP RIPARIAN PLANTING
OVERHEAD WIRES CLEARZONE
DESIGNATION

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

KEY

PLANTING TYPE
PLANTING MIX
AREA CODE
PLANTING BOUNDARY
ASSOCIATED SHEET NUMBER
MT A 1 43R-8201

MP MASSED PLANTING
ML MASSED PLANTING - LOW
MT MASSED PLANTING - TREE ENRICHMENT
MS MASSED PLANTING - SWALE

TF TREES - FORESTRY GRADE
TS TREES - SPECIMEN GRADE
TP TREES - POLE GRADE
TREE WIND SHELTER
EXISTING VEGETATION TO BE RETAINED

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

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1)	1:500	Reduced Scale (A3)	1:1000

Design	S DUNN	30.09.14	Approved For Construction*
Drawn	M POWELL	30.09.14	D STIRRAT
Dsg Verifier	B FAULKNER	28.01.15	
Dwg Check	A POINTON	04.02.15	Date 21.07.15

* 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: SMITHFIELD LOCAL ROADS PLANTING PLANS SHEET 1

Drawing No: M2PP-58R-D-DWG-8201

Rev. 1

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

Document No. - M2PP-58R-D-DWG-8201.DWG

Drawing Plotted: 27 Jul 2015 04:40 p.m.

KEY

PLANTING TYPE / PLANTING MIX / AREA CODE — e.g. MT A 1 / 43R-8201 — PLANTING BOUNDARY — ASSOCIATED SHEET NUMBER

- MP MASSED PLANTING
- ML MASSED PLANTING - LOW
- MT MASSED PLANTING - TREE ENRICHMENT
- MS MASSED PLANTING - SWALE
- TF TREES - FORESTRY GRADE
- TS TREES - SPECIMEN GRADE
- TP TREES - POLE GRADE
- TREE WIND SHELTER
- EXISTING VEGETATION TO BE RETAINED
- GL GRASS - LOW
- GS GRASS - SWALE
- GR GRASS - ROUGH
- WP WETLAND PLANTING
- RP RIPARIAN PLANTING
- OVERHEAD WIRES CLEARZONE
- DESIGNATION

NOTES:

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

MATCHLINE REFER: M2PP- 58R -D-DWG-8201

MATCHLINE REFER: M2PP- 54R -D-DWG-8203

MATCHLINE REFER: M2PP- 54R -D-DWG-8204

14600

NO PLANTING - PEDESTRIAN MAINTENANCE ACCESS

REALIGNED SMITHFIELD DRAIN

TRANSMISSION TOWER PLATFORM

TRANSMISSION TOWER PLATFORM

NO PLANTING - PEDESTRIAN MAINTENANCE ACCESS

SMITHFIELD LINK ROAD

PLANT SHRUBS AND GRASSES UNDER ELECTRICAL OVERHEAD WIRES MARKED AS ** ON SCHEDULE

OH

HV

WP K 1 58R-8202
WP L 1 58R-8202
WP G 1 58R-8202
WP M 1 58R-8202
WP M 2 58R-8202
WP M 3 58R-8202
WP L 2 58R-8202
WP G 2 58R-8202
WP G 3 58R-8202
WP L 3 58R-8202
WP L 4 58R-8202
WP M 4 58R-8202
WP M 5 58R-8202
WP M 6 58R-8202
WP M 7 58R-8202
RP J 1 58R-8202
RP J 2 58R-8202
RP J 3 58R-8202
RP J 4 58R-8202
RP J 5 58R-8202
RP J 6 58R-8202
GR A 1 58R-8202
GR A 2 58R-8202
GR A 3 58R-8202
MS A 1 58R-8202
MS A 2 58R-8202
MS A 3 58R-8202
MS C 1 58R-8202
GL A 1 58R-8202
GL A 2 58R-8202
MT D 1 58R-8202

540
580

NOTE: PLANTING NEAR HIGH VOLTAGE TRANSMISSION LINES TO BE DONE IN ACCORDANCE WITH THE ELECTRICITY (HAZARDS FROM TREES) REGULATIONS 2003

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

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
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1)	1:500	Reduced Scale (A3)	1:1000

Design	S DUNN	30.09.14	Approved For Construction* D STIRRAT Date 21.07.15
Drawn	M POWELL	30.09.14	
Dsg Verifier	B FAULKNER	28.01.15	
Dwg Check	A POINTON	04.02.15	

* 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

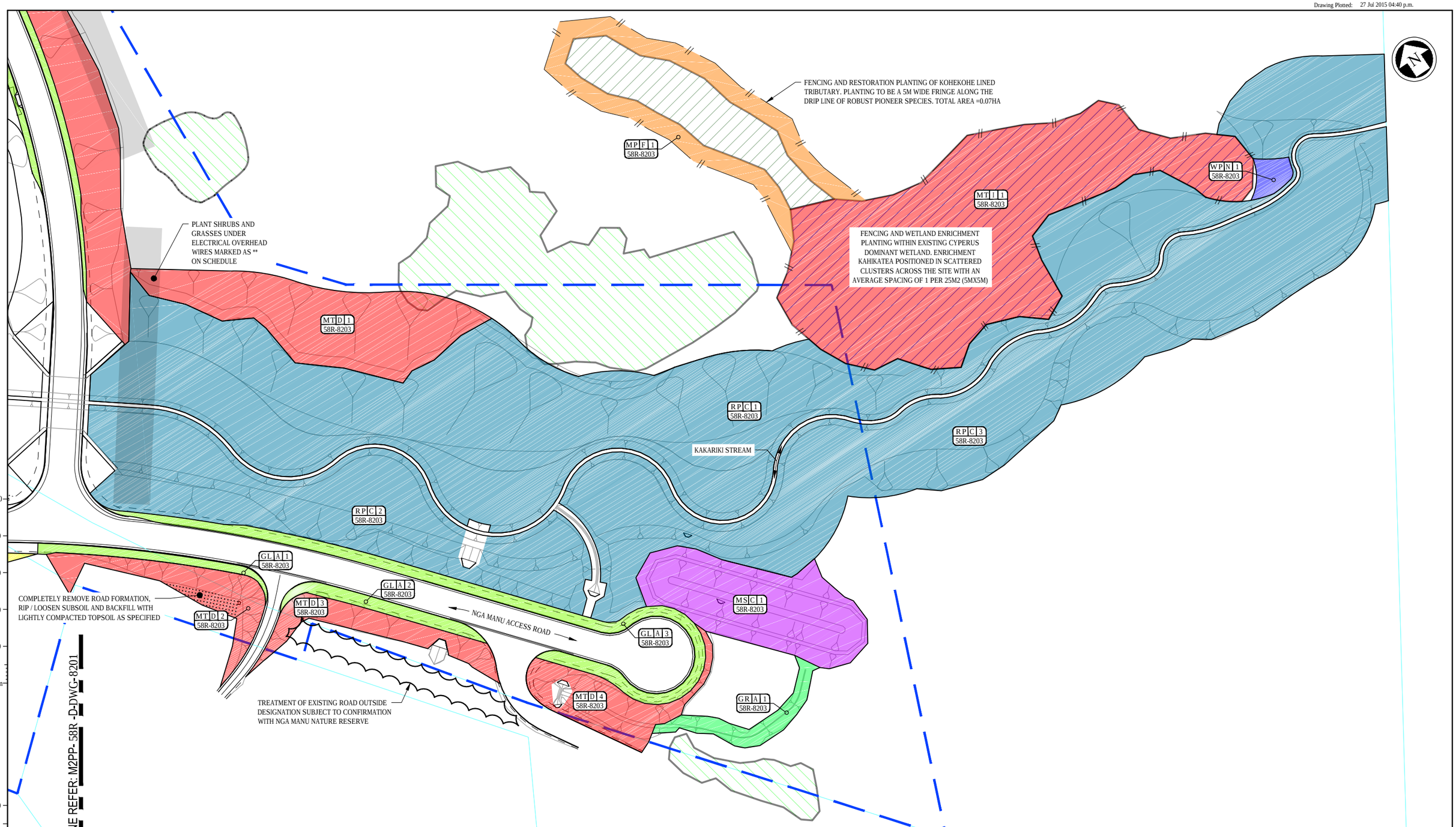
Title: SMITHFIELD LOCAL ROADS PLANTING PLANS SHEET 2

Drawing No: M2PP-58R-D-DWG-8202

Rev. 1

Document No. M2PP-58R-D-DWG-8202.DWG

Drawing Plotted: 27 Jul 2015 04:40 p.m.



KEY

- PLANTING TYPE / PLANTING MIX / AREA CODE: MT A 1 / 43R-8201
- PLANTING BOUNDARY
- ASSOCIATED SHEET NUMBER

- MP MASSED PLANTING
- ML MASSED PLANTING - LOW
- MT MASSED PLANTING - TREE ENRICHMENT
- MS MASSED PLANTING - SWALE
- TF TREES - FORESTRY GRADE
- TS TREES - SPECIMEN GRADE
- TP TREES - POLE GRADE
- TREE WIND SHELTER
- EXISTING VEGETATION TO BE RETAINED
- GL GRASS - LOW
- GS GRASS - SWALE
- GR GRASS - ROUGH
- OVERHEAD WIRES CLEARZONE
- WP WETLAND PLANTING
- RP RIPARIAN PLANTING
- DESIGNATION

NOTES:

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

580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) 1:500	Design	S DUNN	30.09.14
	Drawn	M POWELL	30.09.14
Reduced Scale (A3) 1:1000	Dsg Verifier	B FAULKNER	28.01.15
	Dwg Check	A POINTON	04.02.15

Approved For Construction* D STIRRAT Date 21.07.15

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY WAKA KOTAHI

MacKays to Peka Peka Wellington Northern Corridor

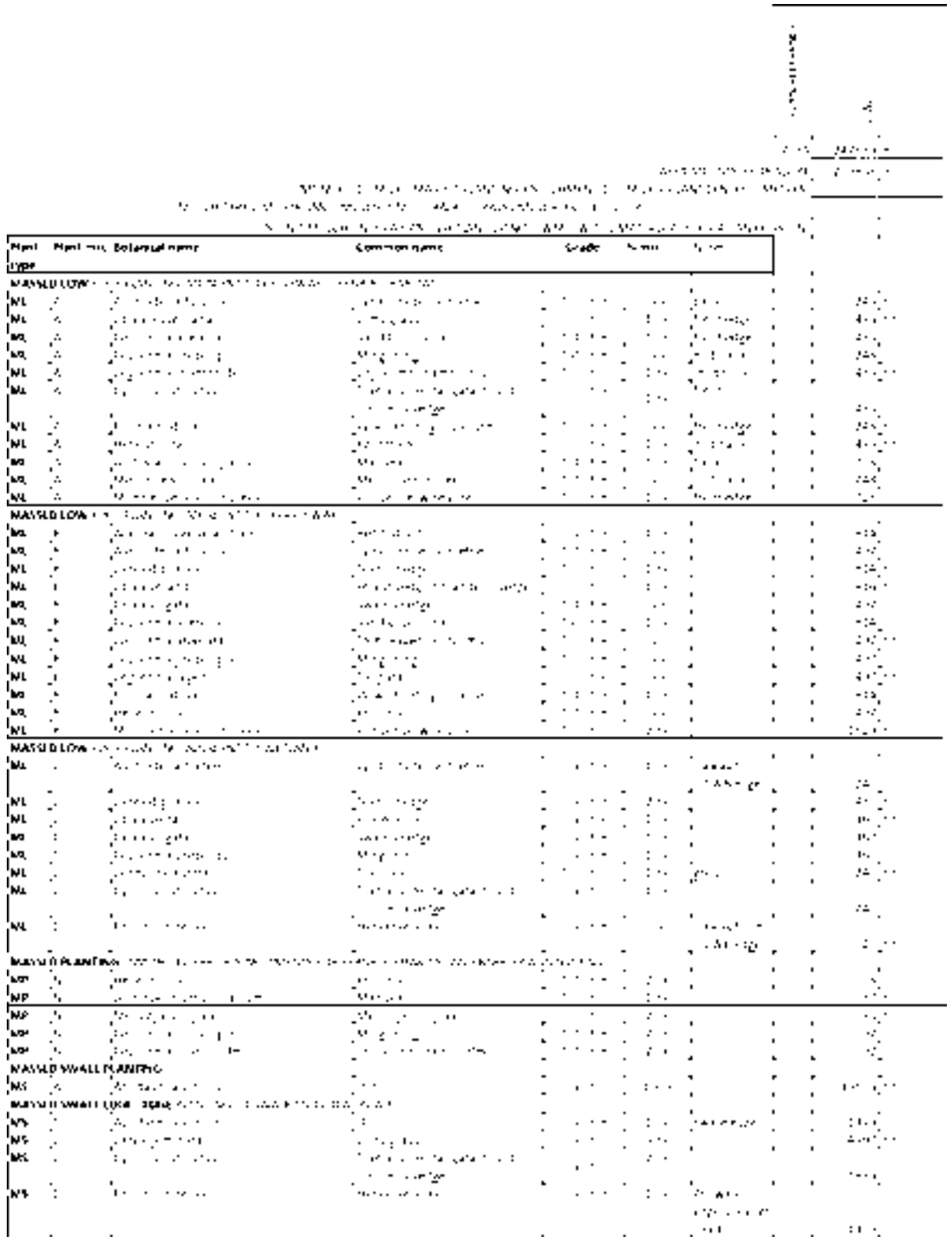
Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY RP 1012/0.00 TO 1023/5.00

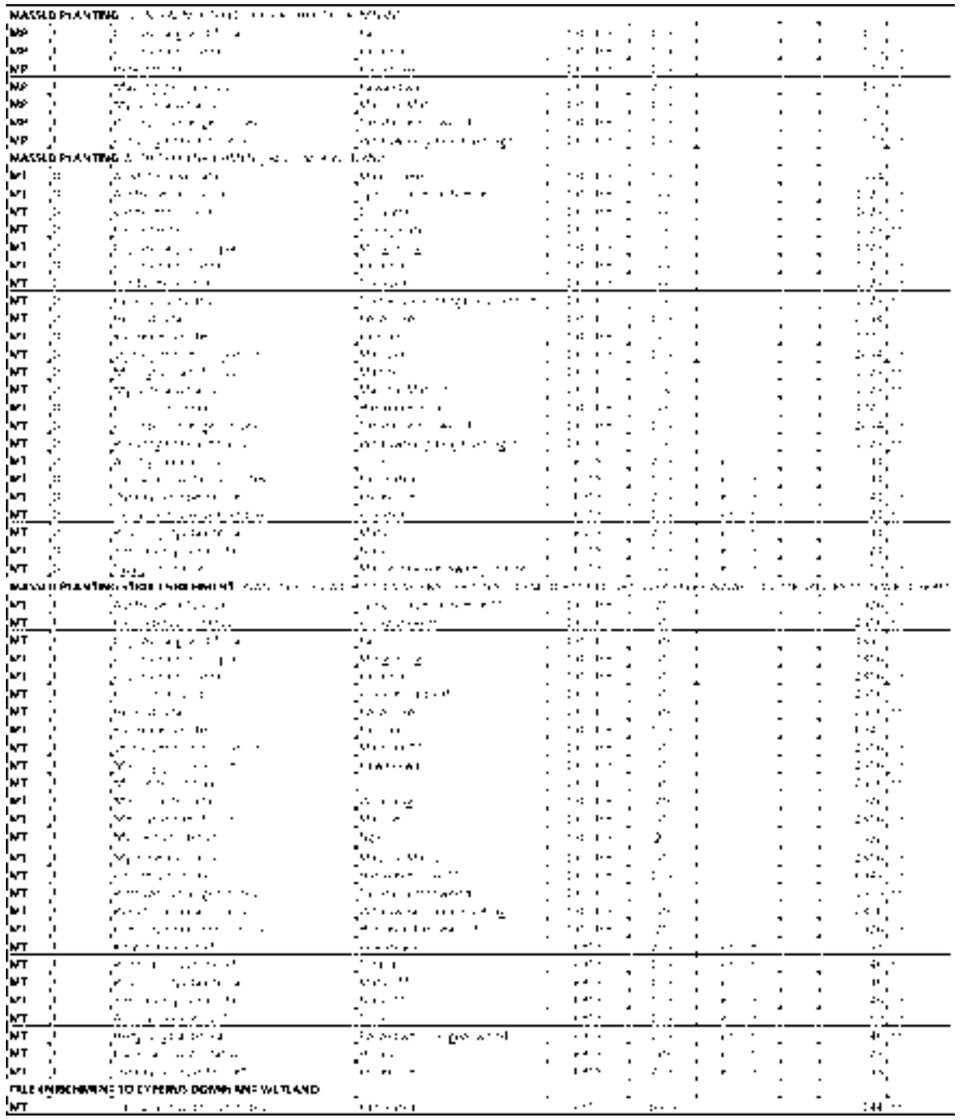
Title: SMITHFIELD LOCAL ROADS PLANTING PLANS SHEET 3

Drawing No: M2PP-58R-D-DWG-8203

Rev. 1

Document No. M2PP-58R-D-DWG-8203.DWG





NOTE: SEE M2PP-54R-D-DWG-8212 FOR ADDITIONAL PLANT TOTALS

A1 REPRODUCTION SCALE
100
80
60
40
20
0mm

A3 REPRODUCTION SCALE
50
40
30
20
10
0mm

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
2	FOR CONSTRUCTION - LOWER KAKARIKI PLANTING ADDED	MP				.07.15
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) NTS
Reduced Scale (A3) NTS

Design	S DUNN	22.09.14	Approved For Construction* D STIRRAT
Drawn	M POWELL	22.09.14	
Dsg Verifier	B.FAULKNER	28.01.15	
Dwg Check	A.POINTON	05.02.15	Date 21.07.15

* 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: SMITHFIELD SECTION PLANTING SCHEDULE SHEET 1

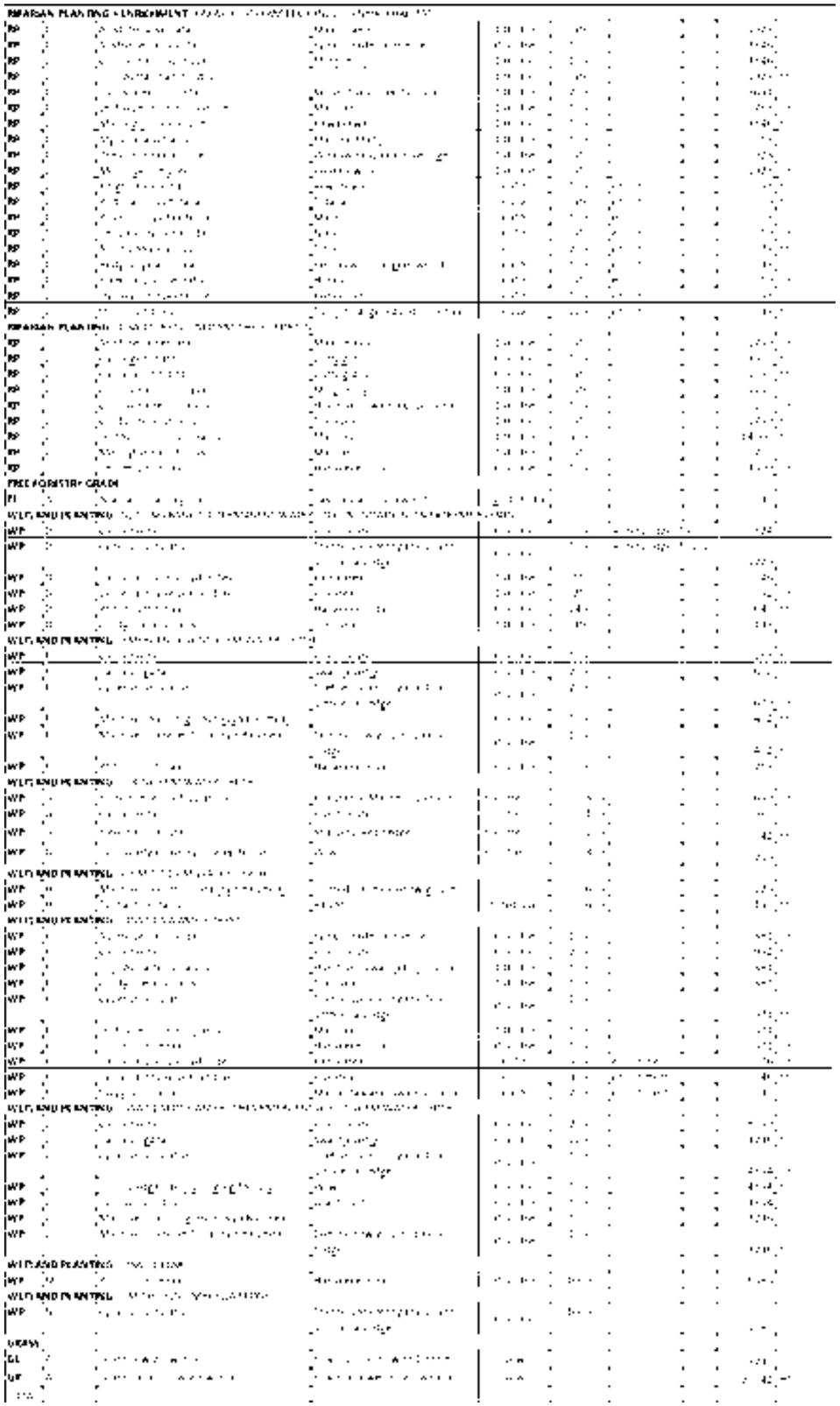
Drawing No: M2PP-54R-D-DWG-8211

Rev. 2

Document No. M2PP-54R-D-DWG-8211.DWG

DO NOT SCALE

IF IN DOUBT ASK.



A1 REPRODUCTION SCALE
100
80
60
40
20
0mm

A3 REPRODUCTION SCALE
50
40
30
20
10
0mm

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
2	FOR CONSTRUCTION - LOWER KAKARIKI PLANTING ADDED	MP				.07.15
1	FOR CONSTRUCTION	MP	AJP	DGS	SW	21.07.15

Original Scale (A1) NTS
Reduced Scale (A3) NTS

Design	S DUNN	22.09.14	Approved For Construction* D STIRRAT
Drawn	M POWELL	22.09.14	
Dsg Verifier	B FAULKNER	28.01.15	
Dwg Check	A POINTON	03.02.15	Date 21.07.15

* 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: SMITHFIELD SECTION PLANTING SCHEDULE SHEET 2

Drawing No: M2PP-54R-D-DWG-8212

Rev. 2

Document No. M2PP-54R-D-DWG-8212.DWG

DO NOT SCALE

IF IN DOUBT ASK.

Drawing Plotted: 13 Jul 2015 11:20 a.m.

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:

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.

RETAIN

MATCHLINE REFER: BELOW

MATCHLINE REFER: ABOVE

520

530

540

NGARARA ROAD

CYCLEWAY (CWB)

NGARARA ROAD (EXISTING)

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

13600

13700

ADDITIONAL VEGETATION REMOVED (BRIDGE POSITION / ALIGNMENT ADJUSTED)

ADDITIONAL VEGETATION REMOVED FOR ELECTRICAL LINES WITH KCDC APPROVAL

MATCHLINE REFER: M2PP- 54R -D-DWG- 8701

MATCHLINE REFER: M2PP- 53R -D-DWG- 8702

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - REVISED AS NOTED, INCLUDES REDLINE	MP	AJP	DH	SW	13.07.15
2	FOR KCDC CERTIFICATION - REVISED AS NOTED	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - FENCING	MP	GFB	DH	SW	08.05.14

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	S DUNN	29.04.14
Drawn	M POWELL	29.04.14
Dsg Verifier	B FAULKNER	05.05.14
Dwg Check	G F-B	05.05.14

Approved For Construction* P BRADSHAW Date 09.05.14

* 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: NGARARA ROAD CROSSING VEGETATION TO BE RETAINED SHEET 1

Drawing No: M2PP-53R-D-DWG-8701

Rev. 3

Document No. M2PP-53R-D-DWG-8701.DWG

Drawing Plotted: 21 Jul 2015 11:04 a.m.

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.

RETAIN

NGARARA ROAD

530

580

RETAIN

RETAIN

RETAIN

FURTHER VEGETATION RETENTION ON ADJACENT PROPERTY

MATCHLINE REFER: M2PP- 53R -D-DWG- 8701

100 80 60 40 20 0mm A1 REPRODUCTION SCALE

RETAIN

580

540

MATCHLINE REFER: M2PP- 54R -D-DWG-8701

50 40 30 20 10 0mm A3 REPRODUCTION SCALE

KAKARIKI STREAM RIPARIAN VEGETATION
CONDITION G.41 c) i) 8.

ADDITIONAL VEGETATION TO BE RETAINED

SMITHFIELD ROAD

RETAIN

RETAIN

ADDITIONAL VEGETATION REMOVED

RETAIN

KAKARIKI STREAM RIPARIAN VEGETATION
CONDITION G.41 c) i) 8.

MATCHLINE REFER: M2PP- 54R -D-DWG-8702

530 580

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

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

No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - REVISED AS NOTED, INCLUDES REDLINE	MP	AJP	DS	SW	20.07.15
2	FOR KCDC CERTIFICATION - REVISED AS NOTED	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - FENCING	MP	GFB	DH	SW	08.05.14

Original Scale (A1) 1:500	Design	S DUNN	29.04.14
Reduced Scale (A3) 1:1000	Drawn	M POWELL	29.04.14
	Dsg Verifier	B FAULKNER	05.05.14
	Dwg Check	G F-B	05.05.14

Approved For Construction*: P BRADSHAW Date 09.05.14

*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

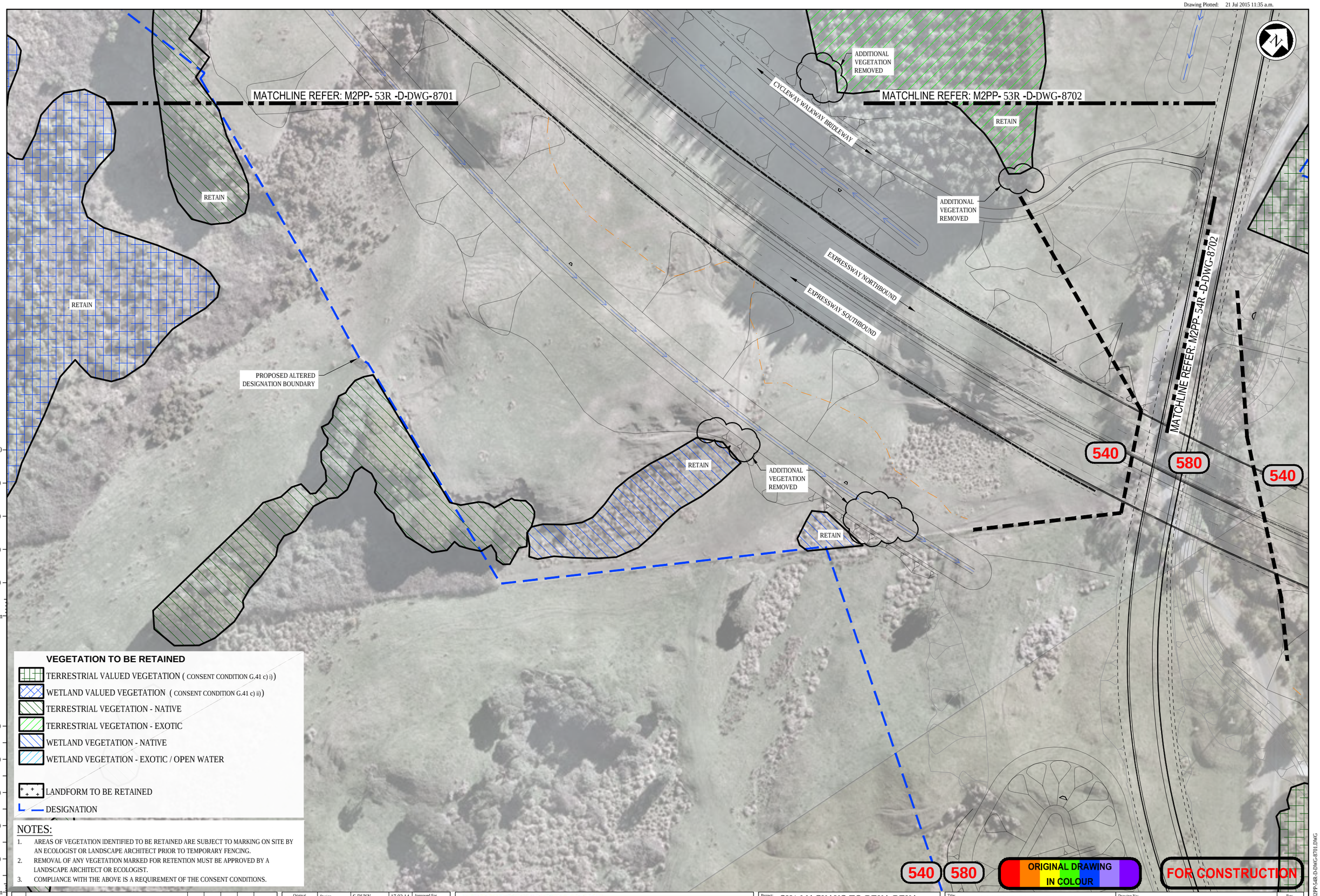
Title: NGARARA ROAD CROSSING VEGETATION TO BE RETAINED SHEET 2

Drawing No: M2PP-53R-D-DWG-8702

Rev. 3

Document No. M2PP-53R-D-DWG-8702.DWG

Drawing Plotted: 21 Jul 2015 11:35 a.m.



A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

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:

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.

No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - REVISED AS NOTED, INCLUDES REDLINE	MP	AJP	DS	SW	20.07.15
2	FOR KCDC CERTIFICATION - REVISED AS NOTED	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - HAUL ROAD	MP	GFB	DH	SW	17.03.14

Original Scale (A1) 1:500	Design	S.DUNN	17.02.14
	Drawn	M.POWELL	17.02.14
Reduced Scale (A3) 1:1000	Dsg Verifier	B. FAULKNER	17.03.14
	Dwg Check	G. F-B	17.03.14

Approved For Construction* P. BRADSHAW Date 18.03.14

* 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: SMITHFIELD SECTION VEGETATION TO BE RETAINED SHEET 1

Drawing No: M2PP-54R-D-DWG-8701

Rev. 3

Document No. M2PP-54R-D-DWG-8701.DWG

Drawing Plotted: 21 Jul 2015 11:37 a.m.

MATCHLINE REFER: M2PP- 53R -D-DWG-8702

MATCHLINE REFER: M2PP- 54R -D-DWG-8703

MATCHLINE REFER: M2PP- 54R -D-DWG-8701

MATCHLINE REFER: M2PP- 58R -D-DWG-8701

RETAIN

KAKARIKI STREAM RIPARIAN VEGETATION
CONDITION G.41 c) i) 8.

ADDITIONAL VEGETATION REMOVED

RETAIN

ADDITIONAL VEGETATION REMOVED

KAKARIKI STREAM RIPARIAN VEGETATION
CONDITION G.41 c) i) 8.

ADDITIONAL VEGETATION REMOVED

RETAIN

13900

14000

14100

14200

540

580

540

CYCLEWAY WALKWAY BRIDLEWAY

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE

100 80 60 40 20 0mm

50 40 30 20 10 0mm

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

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No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - REVISED AS NOTED, INCLUDES REDLINE	MP	AJP	DS	SW	20.07.15
2	FOR KCDC CERTIFICATION - REVISED AS NOTED	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - HAUL ROAD	MP	GFB	DH	SW	17.03.14

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	S.DUNN	17.02.14	Approved For Construction* P. BRADSHAW
Drawn	M.POWELL	17.02.14	
Dsg Verifier	B. FAULKNER	17.03.14	
Dwg Check	G. F-B	17.03.14	Date 18.03.14

* 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: SMITHFIELD SECTION
VEGETATION TO BE RETAINED
SHEET 2

Drawing No: M2PP-54R-D-DWG-8702

Rev. 3

540 580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

Document No. M2PP-54R-D-DWG-8702.DWG

Drawing Plotted: 21 Jul 2015 11:39 a.m.

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

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MATCHLINE REFER: M2PP- 54R -D-DWG-8702

MATCHLINE REFER: M2PP- 54R -D-DWG-8704

RETAIN

CYCLEWAY WALKWAY BRIDLEWAY

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

14300

14400

14500

14600

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

MATCHLINE REFER: M2PP- 53R -D-DWG-8702

No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - MAIN WORKS, INCLUDES REDLINE	MP	AJP	DS	SW	20.07.15
2	FOR KCDC CERTIFICATION	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - HAUL ROAD	MP	GFB	DH	SW	17.03.14

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	S.DUNN	17.02.14	Approved For Construction* P. BRADSHAW
Drawn	M.POWELL	17.02.14	
Dsg Verifier	B. FAULKNER	17.03.14	
Dwg Check	G. F-B	17.03.14	Date 18.03.14

* 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: SMITHFIELD SECTION
VEGETATION TO BE RETAINED
SHEET 3

Drawing No: M2PP-54R-D-DWG-8703

Rev. 3

540

ORIGINAL DRAWING IN COLOUR

FOR CONSTRUCTION

Document No. M2PP-54R-D-DWG-8703.DWG

DO NOT SCALE IF IN DOUBT ASK.

Drawing Plotted: 21 Jul 2015 11:34 a.m.

MATCHLINE REFER: M2PP- 54R -D-DW(G-8703

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
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- LANDFORM TO BE RETAINED
- DESIGNATION

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RETAIN

CYCLEWAY WALKWAY BRIDLEWAY

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

14600 14700 14800 14900

540 550

A1 REPRODUCTION SCALE 0mm 100 80 60 40 20

A3 REPRODUCTION SCALE 0mm 50 40 30 20 10

No.	Revision	By	Chk	Chk.V	Appd	Date
3	FOR CONSTRUCTION - MAIN WORKS, INCLUDES REDLINE	MP	AJP	DS	SW	20.07.15
2	FOR KCDC CERTIFICATION	MP	AJP	DH	SW	30.01.15
1	FOR CONSTRUCTION - ENABLING WORKS - HAUL ROAD	MP	GFB	DH	SW	17.03.14

Original Scale (A1) 1:500 Reduced Scale (A3) 1:1000	Design	S.DUNN	17.02.14	Approved For Construction* P. BRADSHAW Date 18.03.14
	Drawn	M.POWELL	17.02.14	
	Dsg Verifier	B. FAULKNER	17.03.14	
	Dwg Check	G. F-B	17.03.14	
	* 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: SMITHFIELD SECTION VEGETATION TO BE RETAINED SHEET 4

Drawing No: M2PP-54R-D-DWG-8704

Rev. 3

540 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

Document No. M2PP-54R-D-DWG-8704.DWG

Drawing Plotted: 21 Jul 2015 11:06 a.m.

MATCHLINE REFER: M2PP- 54R -D-DWG-8702

RETAIN

RETAIN

540

580

SMITHFIELD LINK ROAD

RETAIN

KCDC HERITAGE TREE

RETAIN

NGA MANU ACCESS ROAD

MATCHLINE REFER: M2PP- 58R -D-DWG-8703

MATCHLINE REFER: M2PP- 58R -D-DWG-8702

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

VEGETATION TO BE RETAINED

- TERRESTRIAL VALUED VEGETATION (CONSENT CONDITION G.41 c) i))
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- DESIGNATION

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No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DS	SW	20.07.15

Original Scale (A1) 1:500	Design	S.DUNN	24.09.14
	Drawn	M.POWELL	24.09.14
Reduced Scale (A3) 1:1000	Dsg Verifier	B.FAULKNER	28.01.15
	Dwg Check	A.POINTON	02.02.15

Approved For Construction* D STIRRAT Date 20.07.15

* 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: SMITHFIELD LOCAL ROADS VEGETATION TO BE RETAINED SHEET 1

Drawing No: M2PP-58R-D-DWG-8701

Rev. 1

540 580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

Document No. M2PP-58R-D-DWG-8701.DWG

Drawing Plotted: 21 Jul 2015 11:07 a.m.

MATCHLINE REFER: M2PP- 54R -D-DWG-8703

MATCHLINE REFER: M2PP- 58R -D-DWG-8701

540

580

SMITHFIELD LINK ROAD

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

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
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540 580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DS	SW	20.07.15

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	S.DUNN	24.09.14	Approved For Construction*
Drawn	M.POWELL	24.09.14	D STIRRAT
Dsg Verifier	B.FAULKNER	28.01.15	
Dwg Check	A.POINTON	02.02.15	Date 20.07.15

* 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: SMITHFIELD LOCAL ROADS VEGETATION TO BE RETAINED SHEET 2

Drawing No: M2PP-58R-D-DWG-8702

Rev. 1

Document No. M2PP-58R-D-DWG-8702.DWG

Drawing Plotted: 21 Jul 2015 11:09 a.m.

MATCHLINE REFER: M2PP- 58R -D-DWG-8702

NGA MANU ACCESS ROAD

RETAIN

RETAIN

RETAIN KOHEKOHE REMNANT & FENCE OFF FROM STOCK

RETAIN CYPERUS WETLAND & FENCE OFF FROM STOCK

KAKARIKI STREAM

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

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
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580 ORIGINAL DRAWING IN COLOUR FOR CONSTRUCTION

No.	Revision	By	Chk	Chk.V	Appd	Date
1	FOR CONSTRUCTION	MP	AJP	DS	SW	20.07.15

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	S.DUNN	24.09.14	Approved For Construction* D STIRRAT Date 20.07.15
Drawn	M.POWELL	24.09.14	
Dsg Verifier	B.FAULKNER	28.01.15	
Dwg Check	A.POINTON	02.02.15	

* 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: SMITHFIELD LOCAL ROADS VEGETATION TO BE RETAINED SHEET 3

Drawing No: M2PP-58R-D-DWG-8703

Rev. 1

Document No. M2PP-58R-D-DWG-8703.DWG

DO NOT SCALE IF IN DOUBT ASK.

Appendix 2: CONSULTATION, FEEDBACK AND RESPONSES

Site Specific Management Plan 010 - [sectors 530-540-580] MacKays to Peka Peka Expressway

18 August 2015 - CERTIFIED ISSUE - REV F

NZ TRANSPORT AGENCY WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor

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;
- Kāpiti Cycling Incorporated;
- Implementation Group of the Kāpiti Coast District Council Advisory on Cycleways, Walkways and Bridleways
- Nga Manu Nature Reserve.

COMMENTS ON DRAFT Rev D SSMP 10: SMITHFIELD 14 July 2015
***KCDC REVIEWERS COMMENTS** [JW=Julia Williams- Landscape Architect; DP = Deyana Popova-Urban Designer;*

A series of reviews and comments of the draft document were undertaken in December 2014 prior to the design changes associated with the Alteration to Designation Application and Hearing. These earlier reviews and comments (not included here) have been superseded by the design changes and further consultation with KCDC reviewers.

Condition Reference	*Condition Detail*	*Reviewer/ commenter*	*KCDC Reviewer's comment*	*reference in SSMP*	*Management Plan Author's response*
		JW	Page 7 SSMP should include full wording of Smithfield/Ngarara Hearing Decision DC 1 iv) 12 NoR, possibly also full reference to document set referred to in condition		Full text added
		JW	Page 8 CWB entry points. Reference in table to 'signature gabion blocks'		Change made in text- updated to precast blocks
		DP	Sheet 2. Plans on Sheet 2 dated 26.11/2014, while the consented design subject to the hearing sent out 24 April 2015 as 'Further information to the Notice of Requirement for Alteration to a Designation at Smithfield and Ngarara Roads' (M2PP-54K-D-SKT-0004) is dated 20.3/2015. The drawings are of different scale and it's difficult to compare but it appears the alignment of Nga Manu access road as shown in Sheet 2 does not reflect the revised alignment as per the hearing.		The Sheet 2, Rev D issued 09/07/2015 has been amended to reflect directly the design presented at the NOR hearing. The scale of the plan is to the same scale as all other SSMP masterplan drawings.
		JW	CWB entrance north of Nga Manu Access Rd. Will paint finish be carried north over the bridge (to be consistent with typical entry detail)? Note new element of combination road barrier as detailed in Sheet 14. Not sure why there is quite such an extent of it along Nga Manu Access Road. Is this to stop cars going into the stream? It is unclear which side of the barrier the future footpath will be and this should be included in the text/label		The paint will not be carried over the bridge, the bridge itself will provide a visual signal to slow down. This is a road safety requirement and is to prevent vehicles and cyclists on the local road from entering the stream corridor The future path goes between the combination barrier and road. Approx. extent shown on sheet 12 Note: no future footpath under the footprint of the bridge
		DP	Sheets 12, 13, 14 - Bridge plans – there is no technical drawing of the bridge in plan view which is usually included in other SSMPs – to this end including the plan presented at the hearing (M2P-54E-SKT-0011) or Attachment 10, dated 24 April of the plan presented at the hearing) would be helpful		The plan issued for the NOR does not provide any more 'technical' information than provided on sheet 12 of the SSMP. Sheet 12 is generated from the same CAD base as the NOR plan. Sheet 12 has now been dimensioned as per the NOR plan. The Sheet 12 plan provides reference lines to the section and elevation were further dimensional information can be found

		DP	I suggest that a summary version of the assessment of the proposed bridge against the ULDF principles (as per the report for the hearing) is included for consistency with other SSMPs. Otherwise, the bridge plans re: Smithfield Rd bridge appear to be consistent with the approved at the hearing		ULDF/bridge principle summary added to the SSMP refer to SSMP - Sheet 20
		JW	Sheet 16The 1.1m reflectorized removable bollard is a new feature. Has this been shown to the Stakeholder groups?		The Sheet 16 image is incorrect and generated before the final lighting design was complete. Light pole position as per the plans on Sheets 2 – 5, 9-12 and 17. Light pole removed from the sheet 16 image.
		JW	Planting plans Not yet amended to include revised planting plans consistent with Sheet 20 Simplified Detailed Planting Plan, M2PP-121-D-DWG-8905		Final plans and schedules included.
		JW	M2PP-58R-D-DWG-8201 Rev 1 No sure why interface of Road and riparian planting (east of CWB entry) doesn't extend up to edge of road as it does further east up to the bridge Or should there be rough grass in this area. ie why is it this funny shape?		There is a barrier directly adjacent to the kerb for the stretch of the Nga Manu access road leading up to and below the bridge. This doesn't leave sufficient space for a mown grass strip at the road edge (unlike the section to the west of the CWB Stream bridge which does have space)."
		JW	Appendix 2: Consultation. We would wish to see consultation records with Kāpiti Cycling Incorporated and KCDC's CWB Advisory Group in respect of the redesigned CWB entrance (SSMP10 SHEET 16)		Cycle groups have been consulted- Refer table below

COMMENTS ON DRAFT ISSUE SSMP 10: SMITHFIELD
KAPITI CYCLING INC. Lynn Sleath
IMPLEMENTATION GROUP OF KCDC ADVISORY ON CYCLEWAYS, WALKWAYS AND BRIDLEWAYS: Ruth Halliday, Jan Nisbet, Sue Emirali, Feriel Falconer
Combined meeting held 9 December 2014 also present; Stuart Kilmister

Condition Reference	*Condition Detail*	*Reviewer/ commenter*	*Comment*	*reference in SSMP*	*Management Plan Author's response*
DC 59A j) viii	SSMP prepared in consultation with…	CWB Advisory Group & Kapiti Cyling Inc	Request that horse graphic is included on CWB signage as well as cycle and pedestrians, in order that CWB users will be aware that horses are entitled to use the CWB and mat be encountered along the route.		KCDC's CWB Strategy document (Kapiti Coast Cycleways, Walkways and Bridleways Strategy 2009) does not address signage specifically, but clearly supports equestrian use of the CWB. From a health and safety perspective all users of the CWB should be made aware that they may encounter horses being either ridden or lead. Horse graphics to be included on signage.
		& Kapiti Cyling Inc	Confirmed – no further comments.		

FURTHER *COMMENTS ON REVISED CWB ENTRANCE STRUCTURES July 2015*

KAPITI CYCLING INC. Lynn Sleath
IMPLEMENTATION GROUP OF KCDC ADVISORY ON CYCLEWAYS, WALKWAYS AND BRIDLEWAYS: Jan Nisbet,

Condition Reference	*Condition Detail*	*Reviewer/ commenter*	*Comment*	*reference in SSMP*	*Management Plan Author's response*
		CWB Advisory Group & Kapiti Cyling Inc & Kapiti Cyling Inc	No formal comments	SHEET	Email response that the revised structures look safer.

COMMENTS ON Draft ISSUE SSMP 10: SMITHFIELD **TE ATIAWA KI WHAKARONGATAI Representatives-** Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Ann-Maree Bukholt, Mahina a rangi Baker **The comments below have been confirmed by Te Atiawa at the design workshop on 5 December 2014**					
General comments to be applied to all SSMP's					
Condition Reference	*Condition Detail*	*Reviewer/ commenter*	*Comment*	*reference in SSMP*	*Management Plan Author's response*
57 e) i	SSMP to be prepared in consultation with Te Atiawa ki Whakarongatai General comment to be applied to SSMP 1 – SSMP 10	M2PP Alliance	A workshop was held with Te Atiawa on the 23 October 2014. The workshop had two key focus areas: 1. Te Atiawa to review and comment on the SSMPs. Provide formal comment. 2. Identify key opportunities for input into the design of the elements within the expressway with a focus on the CWB and interpretation signage. Agree a methodology, deliverables and program. 3. Alliance to prepare a draft design framework by the end of November 2014 and hold a second workshop with Te Atiawa		In addition, the Alliance design team are working with Te Atiawa ki Whakarongatai to develop design of some elements along the expressway and 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. This process is on-going (at 5.12.14)
57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai and Takamore Trust General comment to be applied to all SSMPs	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	Te Atiawa request that in general terms the design of the expressway meets tangata whenua values. There is to be a particular focus on water bodies, terrestrial and wetland planting, however It is important to Te Atiawa that iwi expectations are also met in regards to: • Design/aesthetic values of built elements • Ecological values • Landuse and the physical environment • Cultural and historical values		See previous comments
57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai and Takamore Trust General comment to be applied to all SSMP's	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	Te Atiawa request input into the naming of new waterbodies created as part of the project. (such as the new wetlands to the south of the Wharemauku Stream currently referred to as flood storage area 2)		See previous comments
57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai and Takamore Trust	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	Where possible planting within the expressway is to consider Iwi values in regards but not limited to: • Maori customary practice, kaupapa Māori • Flax cultivation (pā harakeke) • Mahinga kai • Planting for medicinal use rongoā māori		See previous comments
57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai SSMP 10 (Sector 530, 540, 580) – Smithfield) specific comment 23/10/2014	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	Te Atiawa would like to have input into the planting of the wetlands to the north east of the Nga Manu access road overbridge (Wetland Storage Area 11) to ensure there are groupings/ areas of planting that meet iwi expectations/values with regard to: • Flax cultivation (pā harakeke) • Mahinga Kai • Planting for medicinal use rongoā māori Maori customary practice, kaupapa Māori		

57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai SSMP 10 (Sector 530, 540, 580) – Smithfield) specific comment 23/10/2014	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	There is a good opportunity to provide interpretive signage that identifies the numerous layers new and old within this area • Ecology/wetland restoration, biodiversity, species protection • Historical • Cultural • Iwi Values • Land use Nga Manu |Nature Reserve		
57 e) i	SSMPs to be prepared in consultation with Te Atiawa ki Whakarongatai SSMP 10 (Sector 530, 540, 580) – Smithfield) specific comment 23/10/2014	Hemi Sundgren, Ann-Maree Bukholt, Mahina a rangi Baker, Te Atiawa ki Whakarongatai	Te Atiawa would like to be involved with the naming of the CWB stream bridge. Potential for the name 'Kakariki' to be included as part of the Kakariki CWB Stream bridge to acknowledge the importance of the Kakariki Stream to Te Atiawa		

SSMP 10: SMITHFIELD
NGA MANU NATURE RESERVE – ongoing liaison with NZTA and Alliance design team

Meeting #1- 20 August 2014
Meeting #2- 12 November 2014

Condition Reference	*Condition Detail*	*Reviewer/ commenter*	*Comment*	*reference in SSMP*	*Management Plan Author's response*
G.42C d) 1v	SSEMP shall be prepared in consultation with.		Nga Manu Nature reserve would like to be involved with the design, development and longterm management of the Kakariki Stream and the adjacent wetlands (offset storage area 11).		NZTA will retain long-term ownership of the wetland, as part of the Expressway stormwater management infrastructure. The Alliance landscape and ecology designers, and NZTA representatives have met twice with Nga Manu representatives to discuss the opportunities and receive feedback on the wetland/stream design.

COMMENTS ON PRELIMINARY ISSUE SSMP10: [Sectors 530-540-580]
GWRC REVIEWERS COMMENTS *[AF=Adam Forbes, ecologist]*

Topic	*Reviewer/ commenter*	*GWRC Reviewer's comment*	*reference in SSMP*	*Management Plan Author's response*
Retention of existing planted indigenous vegetation along the Kakariki Stream/Nga Manu Access Road	*AF*	"The first paragraph states: "any residual kanuka or mahoe trees that can be retained through construction will be identified and protected during construction". This is excellent; only I note there are a number of other species present, include mature puriri, which are valuable from an ecological perspective (due to their structure and food resources provided). Please specify if there are opportunities to retain species additional to kanuka and mahoe."	5. Landscape and Ecology. Page 9	*Text updated.*
Length of stream mitigation	*AF*	Mitigation lengths and areas are inconsistent with the resource consent conditions relating to the Kakariki Stream diversion. Please revise this section to reflect relevant resource consent requirements, including:	B. Streams and Riparian Works & C. Wetlands. Page 10	*Amended.*

		• Riparian planting length, width, area. • In stream mitigation treatments (woody debris, boulders). • Wetland planting area and location. • Protection and restoration of kohekohe remnant. • Early planting. • All other aspects required by condition of consent to be specified within this SSEMP.		
Salvage	*AF*	Could it please be included that the existing mature flax within Flood Storage Area 11 will be salvaged and reused in restoration planting of this area?	D. Salvage. Page 11	*Added.*
SEV Target Score	*AF*	An incorrect SEV target score is stated (0.58). Through discussions with Boffa Miskell during the Kakariki Stream diversion resource consent application a restoration target score for the Kakariki Stream diversion was agreed as 0.75. Please amend SSMP accordingly.	J. Stream Creation and Restoration Page 14	*Text Amended*
SEV Target Score	*AF*	Use of the wording "but at least exceed the current SEV condition of the Smithfield Drain" and "but at least exceed the current SEV condition of…" suggest that there is no firm requirement to attain the restoration target SEV score. Please amend the text so that it is clear that the SEV target score will be met, and that otherwise, additional mitigation will be required.	W. Landscape and Ecological Success. Monitoring – Post Construction. Page 18	*Text amended.*
Depth of ponds	*AF*	Depth cross-section across Offset Storage Area 11. Please include in SSMP a typical cross section diagram to show the depth of pond areas proposed. The purpose of this is to ensure that pond areas are of sufficient depth to mitigate against adverse water quality effects at are commonly associated is expansive shallow ponds.	Request made during site visit	*See plans M2PP-121-D-DWG-8501 to 8503*
Mitigation shortfalls	*AF*	The -375.8 m linear shortfall in freshwater stream habitat is noted.	Appendix 4	*No action required.*

COMMENTS ON PRELIMINARY ISSUE SSMP10: [Sectors 530-540-580] ***GWRC REVIEWERS COMMENTS** July 2015*				
Topic	*Reviewer/ commenter*	*GWRC Reviewer's comment*	*reference in SSMP*	*Management Plan Author's response*
General question.	*af*	Is SSMP 10 submitted to meet the requirements for the Early Planting Plan? If not, ok – if yes, then actual fence locations are not provided, the planting program is not specific for this purpose, monitoring and methods of legal protection are unlikely to be adequately specified.		Yes, it is intended to include early retirement planting. • The fenceline's have been added to Plan M2PP-58r-D-DWG-8203 (PLANTING PLANS SHEET 3). • A planting programme is included in section 5.R. • Monitoring and methods for legal protection are specified in new Conditions 43-46. It has been agreed these are not required to be repeated in the SSEMP
2B.	*af*	General Project Description (p. 3), second bullet point refers to 8.6 ha of ecological mitigation. It is unclear which type of mitigation this 8.6 ha is, and how it equates to the estimated areas shown on the Kakariki/Smithfield General Location Plan, contained in the EMP. Does		The area (8.6 ha) has been deleted from the introduction. Sufficient discussion of areas is provided in subsequent sections.

		this relate to the required 8.8 ha of indigenous riparian planting? Please clarify.		
5B.	*af*	Streams and Riparian Works (p. 10), first bullet point refers to 2,205 linear m of stream habitat formation, yet the Kakariki/Smithfield General Location Plan, contained in the EMP requires a minimum of 2,350 lineal m of stream mitigation. There is therefore an apparent 145 m length discrepancy. It is unclear how this discrepancy is addressed in SSEMP 10. Likewise, the first bullet point states 4.39 ha of riparian planting will be created in the mitigation area, whereas the EMP requires 8.8 ha of indigenous riparian planting. Further, 7.47 ha of indigenous terrestrial planting is specified in the SSEMP, whereas only 4.32 ha is required in the EMP. Please clarify within text how the EMP mitigation quantum for this mitigation area are met, and any under or oversupply of mitigation proposed through SSMP 10.		We understood that this issue has been discussed before and an understanding had been reached. However, to confirm. The EMP was based on a very early design. In every certified SSMP to date the lengths and areas of mitigation determined through detailed design have varied to some degree from those listed in the EMP, some increasing, some decreasing. We understood that GWRC agreed these unders and overs were acceptable as long as the final quantum of mitigation required by condition G.42 was met at the conclusion of the project. This is the approach that has been taken to previous certified SSMPs. We are in the process of reviewing and finalising mitigation achieved as part of the final SSMP (SSMP 11 Peka Peka). We will provide this wrap up together with solutions to any shortfalls once detailed design for Peka Peka has been completed. Note: we have now finalised mitigation lengths and areas, and some further changes have been made to these numbers as a result.
	af	Regarding the mitigation for the 483 m of Kakariki Stream works, please specify at bullet two, where the riparian mitigation area is stated, that the riparian width will be a minimum of 20 m each side of the Kakariki Stream (as per draft conditions – 22 (i) in my copy).		As has been discussed on several occasions the width of riparian planting will be, on average, 20m either side of the stream. However it will vary continuously with the meander of the stream, so that it is often narrower on one side and wider on the other. This variability, according to all regional and national guidelines will not adversely affect the functional gains of the riparian planting as long as it does not reduce below 5 m. For the purpose of this SSEMP we propose 10m as a minimum self-sustaining width for this site. This is a pragmatic approach that responds to the real world realities of the site where we are creating a meander in a site constrained by a straight road and series of dunes, and it does not reduce the potential value of the riparian restoration. The following text has been added to 5.B. to clarify this point: *"The planting will average 20m to either side of the stream and will not be less than 10 m at any point …"*
5J.	*af*	Stream Creation and Restoration (p. 13), the length quoted 2,350 m is consistent with EMP but inconsistent with SSMP 10 5B – as queried above. Please address.		The number has been finalised and is 2,049 m.
5L.	*af*	Mitigation Planting (p. 15), in reference to "massed planting" and "ecological wetland and riparian mix", plant grades given are 0.5 and 1.0 litre. However, G.42C, and draft Kakariki condition 28 (vii) (numbering in my copy of draft conditions) require all plants to be at least PB6 at the time of planting. PB6 is 3.6 litres. In relation to enrichment, SSEMP 10 specifies PB 18 or equivalent (10.8 litres), whereas draft condition 25 c v specifies at least 0.5 or 1.0 litres. Based on BOI conditions, all plants should be of grade PB6 (3.6 Litres), unless otherwise agreed. The 10 litre/PB18 for enrichment planting is appropriate. I have attached a table that compares Litre with PB. Note BP x 0.6 = L. Have plant grades less than PB6 been agreed in writing as per BOI condition requirement?		Greater Wellington and KCDC have certified the LMP which specified the grades now being used (Attachment 2: Planting, page 8). Following certification of the LMP, Greater Wellington and KCDC have certified all previous SSMPs with these grades listed in the schedules as per the LMP. We have assumed this is acknowledgement of the Managers approval of the plant grade. The most important consideration is the success of the planting. Best practice revegetation processes consistently use smaller grades for the best environmental result. Please note that PB6 is a non-standard plant size that we have never used and is not optimal in most sites. It was originally requested by GWRC Rivers for planting along the Waikanae River (and made its way into conditions as a result). But agreement was subsequently reached with GWRC Rivers to use more standard plant grades at the

				Waikanae River; 1 ltr for mass planting, PB18 for enrichment, and 0.5 ltr for grasses, sedges, etc.
	af	There is an area measurement missing in the first sentence following the last bullet point: "…total area of approximately … and a small channel…" Please amend.		The following text has been added to 5.L. *"a total area of approximately 1.93 ha and a small …"*
5M.	*af*	Planting Methods and Specifications (p. 16). It is stated that enrichment planting is undertaken in 2 year two – need to clarify that this relates to massed plantings, not the existing Cyperus wetland enrichment planting that will be enrichment planted as part of early mitigation works.		The following text is added to 5.M. *"Enrichment planting (excluding the enrichment of Cyperus wetlands in the upper Kakariki which can be carried out immediately) 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."*
5S.	*af*	Plant Maintenance (p. 17). Will "blanking" be undertaken during the maintenance period? Please include as a maintenance activity here.		Blanking is a fundamental element of all planting contracts. It is always undertaken, it is not discretionary. For M2PP this requirement is detailed in the Landscape Specifications which have been reviewed by both GWRC and KCDC, and have been appended to every SSMP.
5W.	*af*	Landscape and Ecological Success Monitoring – Post Construction (p. 18). "Canopy cover" not "canopy closure" will be measured, please amend. There is no mitigation success criterion provided for the enrichment planting within the 0.36 ha Cyperus wetland. Please add a specific mitigation success criterion for this enrichment planting mitigation treatment - >80% plant survival at year 4.		Canopy closure is used in the certified EMP and will be used for the Smithfield Mitigation site. Canopy cover will be used for Kakariki. For enrichment planting 80% plant survival at year 4 is consistent with the EMP and has been added to 5.W.
Appendix 3 Mitigation Table.	*af*	Table 2A: Ecological Mitigation Areas – Kakariki Smithfield mitigation requirements are said to still be based on "EMP calculation" – and by implication, therefore, not on detailed design. Is it indeed the case that the SSMP is not based on detailed design in this regard? Please clarify and amend/advise as required.		Numbers have been revised.
Other	*af*	In accordance with draft condition 28: • Regarding the Kakariki Stream diversion, the SSMP does not provide adequate details of velocity, meander, pool/riffle/run ratio, nor substrate.		The following text has been added to section 5.J. "The design of the Kakariki diversion will be based on the following channel dimensions, depth, velocity, meander, pool/riffle/run ratio, substrate, and bank shape. These details should not be fixed and should respond in part to site conditions during construction however, as a guide the SSEMP should have the following which will be added: • Substrate – 90% sands, 10% gravels; • Habitat ratios: runs 90%, pools 10% no riffles • Velocities: 0.1-0.5 ms^{-1} • Bank shape: trapezoid (replacing the current box) • Channel width – averaging 2 m • Depth, at least 400 mm average in runs and pools to an average of 1 m • In terms of Meander the path will be as per the construction drawings and sufficient as to meet the required consented linear length (285 m)"

	af	• Regarding the Kakariki Stream diversion, the SSMP does not provide the locations, monitoring methods, and reporting procedures for diversion turbidity monitoring.		A new section relating to turbidity monitoring in the upper Kakariki has been created and the turbidity monitoring methods from the EMP has been cut and paste into that section (5.J).
	af	• Please specify the timing of each mitigation planting area.		The following text is added to 5.R. Planting Programme / Staging "Within the upper Kakariki planting will be carried out as follows: • Wetland enrichment and restoration planting will be carried out in winter 2017. • Riparian planting along the Kakariki diversion will be carried out in winter 2017 subject to successful completion of construction."
	af	• Please specify monitoring and methods of physical and legal protection.		See response to General Comment.
	af	• Methods and reporting requirements for fish rescue (not deferring to EMP).		A new section relating to fish rescue in the upper Kakariki has been created and the fish rescue methods from the EMP has been cut and paste into that section (5.G).
	af	• Specific program and method to manage migration of native fishes outside the period 1 March to 31 July, in consultation with GWRC.		A sentence has been added to Section 5.G as follows "If works occur within the upper Kakariki and unnamed tributary outside the period from 1 March to 31 July a program and method to manage migration of native fishes will be developed in consultation with GWRC and referencing Hamer 2007."

Appendix 3: ECOLOGICAL MITIGATION TABLE

Site Specific Management Plan 010 - [sectors 530-540-580] MacKays to Peka Peka Expressway

18 August 2015 - CERTIFIED ISSUE - REV F

NZ TRANSPORT AGENCY WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor

M2PP Explanation of Changes to Mitigation Requirements and Availability

These tables compare consented habiatat loss and mitigation requirements, with the locations and quantums 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 subseqent 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		
Mahoe Vegetation Along Drain 7		0.35		
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**	**4.09**	**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)		**Reference**
Raumati Manuka Wetland	0.02				Updated by Detailed Design
Southern Otaihanga Wetland	0.86				Updated by Detailed Design
Northern Otaihanga Wetland	0.41				Updated by Detailed Design
El Rancho Wetland	0.34				Updated by Enabling Works
Scattered cabbage trees	0.01	1.80			AEE Calc
Tuku Rakau Forest	0.06	0.47			Updated by Enabling Works
Ngarara Mahoe		0.92			Updated by Enabling Works
Otaihanga Kanuka Forest		0.06			Updated by Detailed Design
Mahoe Vegetation Along Drain 7		0.62			Updated by Detailed Design
Raumati Road Kanuka		0.54			Updated by Detailed Design
Waikanae River Riparian		0.22			Updated by Detailed Design
Kakariki Stream Riparian		0.64			Updated by Enabling Works
Permanent Culverts (inc armouring)			1,119		AEE Calc
Diversions			1,525		AEE Calc
Bridges (armouring)			327		AEE Calc
Revised Total Loss	**1.70**	**5.27**	**2,971**		
Difference consented and actual	**-0.10**	**1.18**	**0.00**		

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**
+ Kakariki Consents	**0.36**	**0.07**	**483**	**1.9**
Combined Total (G.42)	**9.86**	**7.67**	**7123**	**25.53**
Raumati Manuka	2.07	1.15	330	1.14
Drain 7	3.92	0	1,560	6.32
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
Upper Kakariki (NEW)	0.36	0.07	483	1.93
Hadfield / Paetawa	0	1.65	1,375	5.25
Total Available Mitigation Area/Length	**9.82**	**11.53**	**6,613**	**25.67**
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	**5.4**	**7.6**	**5,240**	**17.7**	**Recalculated**
+ Flood storage areas 2A & 3	**4.1**	**0**	**1,400**	**5.9**	
+ Kakariki Consents	**0.36**	**0.07**	**483**	**1.9**	
Combined Total (G.42)	**9.86**	**7.67**	**7,123**	**25.5**	**Updated total**
Raumati Manuka	2.4	1.2	317	1.2	Updated by Detailed Design
Drain 7	5.5	0.0	1,712	5.4	Updated by Detailed Design
Otaihanga Wetlands	1.8	3.6	438	1.6	Updated by Detailed Design
Muaupoko	0.0	0.0	72	0.2	Updated by Detailed Design
Kakariki / Smithfield	1.4	4.4	2,416	6.2	Updated by Detailed Design
Upper Kakariki (NEW)	0.36	0.07	483	1.93	New Consents
Hadfield / Paetawa	0.0	1.7	1,375	5.3	EMP calc
Total Available Mitigation Area/Length	**11.5**	**10.8**	**6,813**	**21.8**	
Surplus / Shortfall	**1.6**	**3.1**	**-310**	**-3.8**	
Revised Situation	Surplus	Surplus	Shortfall	Shortfall	

Appendix 4: LANDSCAPE SPECIFICATION

Site Specific Management Plan 010 - [sectors 530-540-580]
MacKays to Peka Peka Expressway

SEE SEPARATE A4 BOUND DOCUMENT.

NZ TRANSPORT AGENCY
WAKA KOTAHI

MacKays to Peka Peka
Wellington Northern Corridor