

M2PP-121-D-PLNM-0008

RETAINING WALL ADDENDUM

Site Specific Management Plan 008 - [sectors 480/510]
MacKays to Peka Peka Expressway

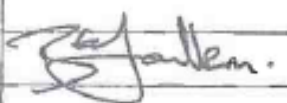
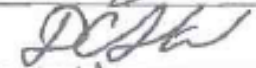

17 AUGUST 2015 - CERTIFIED ISSUE

SITE SPECIFIC MANAGEMENT PLAN 8 RETAINING WALL- LANDSCAPE AND URBAN DESIGN ADDENDUM

This document forms an Addendum to *Site Specific Management Plan 8 Rev C, Certified 31 March 2015 M2PP-121-D-MPL-0008. (Certified SSMP 8).*

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
Revision A	13.07.2015	Draft for comment	KCDC officers
Revision B	12.08.2015	For Certification	KCDC officers
Revision C	17.08.2015	Certified Issue	KCDC officers

2. SSMP CERTIFICATION DETAILS		Signature	Date
PREPARED BY M2PP ALLIANCE:	Bron Faulkner (Landscape Architect)		10/8/2015
	Frazer Baggaley (Landscape Architect)		11/08/15
M2PP ALLIANCE APPROVAL	Doug Stirrat (Design Manager)		10/8/15
	Dean Hermann (Technical Director)		10/8/15
	Malory Osmond (Consents Manager)		10/8/15
CERTIFICATION	KCDC Consents and Compliance Manager [Reviewed by Julia Williams, Landscape, KCDC and Deyana Popova Urban Design, KCDC, John Perkins Traffic engineer]		17/8/15

2. INTRODUCTION	This document forms an Addendum to Site Specific Management Plan 8 Rev C, Certified 31 March 2015 M2PP-121-D-MPL-0008. (Certified SSMP 8). The details in this document relate solely to the retaining wall and should be read in conjunction with the Certified SSMP 8. Consequently only relevant sections of the SSMP are included.
A. PURPOSE	Approximately 300m of the Expressway south of the Te Moana Road interchange, between chainage 11150 to 11450, has been realigned to avoid encroaching on private property to the east of the expressway. The retaining walls are a necessary part of this alignment.
B. GENERAL PROJECT DESCRIPTION REFER SHEETS 1-6	Two retaining walls will retain the batter slope on the eastern side and the CWB will be located between the lower and upper retaining walls. An MSE retaining wall will support the western edge of the expressway where it passes the pond.
C. SSMP EXISTING AREA DESCRIPTION	Refer Certified SSMP 8
D. PROCESS	Refer Certified SSMP 8
E. CONDITIONS OF CONSENT [SUMMARY]	There are no specific conditions that relate to the retaining walls.
3. CONSULTATION	Consultation with the Tuku Rakau collective, Takamore Trust and Te Atiawa Ki Whakarongotai has been integral to the design of the retaining walls, and in development of the patterns and textures that are proposed to be applied to the faces of the retaining walls.

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)	The CWB through this section of the route is not lit. The expressway interchange lighting extends past the retaining walls, which will light the walls in part. Additional lighting through the site is not provided.
B. CWB	DC.59A f) ii) and iii) and DC59A g), DC.59A i) xi) and DC.57 c) DC.64 a), b), ii). <ul style="list-style-type: none"> • Footpath and on road cycle lane on-road (2.0m and 1.5m) • Intersection of the CWB and Local Roads to be safe for crossing • Alignment of CWB • Provision for a 3.0 m wide two-way path that is generally parallel with Expressway • Locations for connections (immediate and future) • Boardwalks • Lighting and safety provisions for local road crossings • CPTED review 	The CWB remains at a level grade along the top of the lower retaining wall and for a short distance passes close to the upper wall. A CPTED review (13 May 2015) was undertaken to consider the retaining walls. The review concluded that the proposed retaining walls would be low risk from the CPTED perspective, based on the following (summarised) comments. The retaining walls have a high degree of visibility from the expressway and surrounding areas, as such they are potentially attractive as a 'billboard' for large scale graffiti; However, a number of design factors serve to mitigate the risk; <ul style="list-style-type: none"> • Iwi patterns transform the retaining wall elements away from bland surfaces into an art work of quality, reflective of community ownership and worthy of respect; • The upper wall will not be illuminated. The lower wall will only be partially illuminated expressway lights directed onto the roadway; • The walls require a reasonable effort to access – they are not subject to opportunistic spontaneous defacement in the manner often experienced by surfaces that are located in well-populated areas along busy pedestrian routes. • Surfaces will be treated with an anti-graffiti coating • The lower wall and much of the upper wall will be accessible e.g. by means of a mobile work platform ('cherry picker') to assist with graffiti removal if needed A small change in the alignment of the CWB made to minimise the extent of the upper retaining wall introduces some curvature on the CWB and a point where the view ahead is lost for a short distance. I do not consider this to be a significant risk from the CPTED point of view because: <ul style="list-style-type: none"> • The loss of views ahead are momentary; • The curves are gradual; • There are no intrinsically risky areas on or adjoining the CWB throughout the area where the retaining walls are and the CWB curves
C. RETAINING WALLS AND NOISE MITIGATION STRUCTURES REFER SHEETS 1-6	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.	Two retaining walls will retain the batter slope on the eastern side of the expressway and the CWB will be located between the lower and upper retaining walls. The lower concrete panelled retaining wall is 86m long 4m high adjacent to the carriageway. The curved upper retaining wall is 58m long, with a curved top and a max height of 6.2m reducing to 1.1m at both ends. Designs/textures for the wall faces have been designed in collaboration with iwi and will be applied to the faces of the concrete panels. The designs will represent tangata whenua values and recognise the cultural significance of the area. The MSE retaining wall will on the eastern edge of the pond is designed to support vegetation such as grasses on the top and upper faces of the wall. Refer FIGURE 6
D. LOCAL PROPERTY ACCESS	DC.59A f) v)	N/A

	Local property access to provide for existing and future needs	
E. BRIDGE ABUTMENTS	DC.59A f) iv) Bridge piers and abutments design to address the location of piers and the treatment of abutments to address their scale and materials	N/A Refer Certified SSMP 8
F. OTHER URBAN DESIGN CONDITIONS	There are no conditions specifically relating to the retaining wall. However, ULDF objectives and principles have been applied where practicable.	The wall has been designed to integrate into the surrounding landscape as much as possible. The shape and form of the top wall responds to the shape of the sand dune it protects. Consideration has been given to the scale and proportion of the walls with particular attention given to ensuring the CWB users experience is not compromised. The shape of the top wall opens out and tapers vertically at the ends minimising the length of CWB that runs directly adjacent to the wall. The wall has been designed in accordance with the CPTED principles and has been reviewed by an external CPTED consultant.

5. LANDSCAPE + ECOLOGY	CONDITIONS – LANDSCAPE + ECOLOGY	RESPONSES – LANDSCAPE + ECOLOGY
A. DUNES AND DRYLAND VEGETATION	Tuku Rakau Forest (regenerating broadleaved low forest east of Takamore Urupa) is identified as valued indigenous vegetation by Condition G.41 c). Condition DC.57 f) specifies exotic trees to be retained. Re-shaping of dune landforms disturbed by construction of the Expressway.	The expressway cuts through a large dune. The western side will be finished as a planted batter slope and the east will be retained by two walls.
B. STREAMS AND RIPARIAN WORKS		N/A
C. WETLANDS		Refer Ecology Addendum to Certified SSMP8
D. SALVAGE		Refer Certified SSMP 8
E. VEGETATION TO BE RETAINED	Conditions: DC.57 f) i) and DC.42C c) i) and G.34m) – identification of vegetation to be retained. Refer: Landscape Management Plan, sections 8.21 to 8.28 and Attachment 2: Principles, Methods and Procedures: Pre-construction. Ecological Management Plan, sections 7.1 to 7.18. Three sites have been identified within the SSMP where consent conditions require best endeavors to minimise vegetation loss / valued vegetation.	Refer Certified SSMP 8
F. VEGETATION TO BE CLEARED	Conditions: DC.57 f) i) and DC.42C c) i) identification of vegetation to be removed.	Refer Certified SSMP 8

	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.	
G. INDIGENOUS FAUNA		N/A
H. LANDFORMS	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.	The curved profile of the top wall will allow better visual integration with the landform. The face of upper wall is also curved to follow the existing contour of the land and this will more effectively help to integrate it with the dune landform.
I. WETLAND CREATION AND RESTORATION	Condition G. 41 c) ii) 4.	Refer Ecology Addendum to Certified SSMP8
J. STREAM CREATION AND RESTORATION		N/A
K. CULVERT INSTALLATION		N/A
L. MITIGATION PLANTING REFER M2PP-48R-D-DWG-8202-Rev 2 (attached)	Conditions G.42 and DC.57 f) - Landscape and ecological mitigation requirements -	<p>Ecological mitigation will comprise 1510m² dry dune revegetation planting and 920m² wetland planting. (Refer Ecology Addendum)</p> <p>The planting will comprise massed indigenous planting in the spaces above and between the walls. The planting in front of the upper wall is proposed to be low in stature to ensure that the iwi collective design is not obscured.</p> <p>Refer Certified SSMP 8 for the planting types within this SSMP:</p> <p>Massed planting: Massed planting in this sector comprises two types- a general species mix that is used extensively on the embankments along the route. Plant grades will be a mix of 0.5 and 1.0 litre grades planted at 1.0m centres.</p> <p>Massed planting with enrichment: comprises a significant proportion of the planting in SSMP 8. Enrichment planting will occur in the following planting season after massed planting; enrichment species plant grades shall be PB 18 or equivalent.</p>
M. PLANTING METHODS AND SPECIFICATIONS		Refer Certified SSMP 8
N. WEED CLEARANCE		Refer Certified SSMP 8
O. GROUND PREPARATION		Refer Certified SSMP 8
P. MULCHING		Refer Certified SSMP 8
Q. PLANT SUPPLY		Refer Certified SSMP 8

R. PLANTING PROGRAMME / STAGING		Refer Certified SSMP 8
S. PLANT MAINTENANCE		Refer Certified SSMP 8
T. PEST PLANT MANAGEMENT		Refer Certified SSMP 8
U. PEST ANIMAL MANAGEMENT		Refer Certified SSMP 8
V. PROTECTION REQUIREMENTS		Refer Certified SSMP 8
W. LANDSCAPE AND ECOLOGICAL SUCCESS MONITORING – POST CONSTRUCTION		Refer Certified SSMP 8
X. ADAPTIVE MANAGEMENT – POST CONSTRUCTION		Refer Certified SSMP 8

6. REFERENCES	<ul style="list-style-type: none"> • Ecological Management Plan (EMP), July 2013. • Landscape Management Plan (LMP), July 2013 • Urban and Landscape Design Framework, Technical Report 5, MacKays to Peka Peka Expressway • Assessment of Landscape and Visual Effects, including Appendices A and B, Technical Report 7 • Assessment of Ecological Impacts Report, including Technical Reports 27 – 31 (Terrestrial Vegetation and Habitats, Herpetofauna, Avifauna, Freshwater and Marine), • Assessment of Hydrology and Stormwater Effects, Technical Report 22. 	
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CONSULTATION

<i>IWI Consultation Record- Development of wall design and surface patterns</i>			
Consultation with the Tuku Rakau collective, Takamore Trust and Te Atiawa Ki Whakarongotai has been integral to the design of the retaining walls and their surface patterns.			
			<i>Management Plan Author's response</i>
	Date	Meeting	
	9/9.2014	Initial meeting with Tuku Rakau collective, Takamore Trust and Te Atiawa Ki Whakarongotai	
	28/02/2015	Collective Hui with Takamore Trust, and the Tuku Rakau Collective to present developed concept ideas and agree on a concept to be develop further to final concept	
	27/03/2015	Meet with Rakairoa Hori at the Alliance Ihakara Street office to review his progress with establish a final concept. Provide technical advice. Confirm the approach for the upcoming presentation	
	28/03/2015	Collective Hui with Takamore Trust, Te Ati Awa, and the Tuku Rakau Collective to present the final concept and gain approval to proceed into detail design.	
	01/04/2015	Meet with Rakairoa Hori to further resolve the approach for the pattern of the bottom wall	
	12/6/2015	Issue detailed design of patterns to Hemi Sundgren for comment. Feedback received	

<i>COMMENTS ON DRAFT</i>			
<i>KCDC REVIEWERS COMMENTS [JW=Julia Williams- Landscape Architect; DP = Deyana Popova-Urban Designer SK= Stu Kilmester</i>			
<i>Draft issue for Comment 20 July 2015</i>			
<i>Page</i>		<i>Reviewers Comments</i>	<i>Management Plan Author's response</i>
Figure 3		Require detail on Terramesh retaining wall	Cross section added- Figure 6
		Require updated planting plans	Planting plans now provided



LEGEND

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

A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

C	CERTIFIED ISSUE	MP			17.08.15	
B	ISSUE FOR CERTIFICATION	MP			12.08.15	
A	ISSUE FOR COMMENT	FB			13.07.15	
No.	Revision	By	Chk	Chk.V	Appd	Date

Original Scale (A1)	1:25000	Design Drawn		Approved For Construction*	
Reduced Scale (A3)	1:50000	Design Verifier		Date	
		Design Check			

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

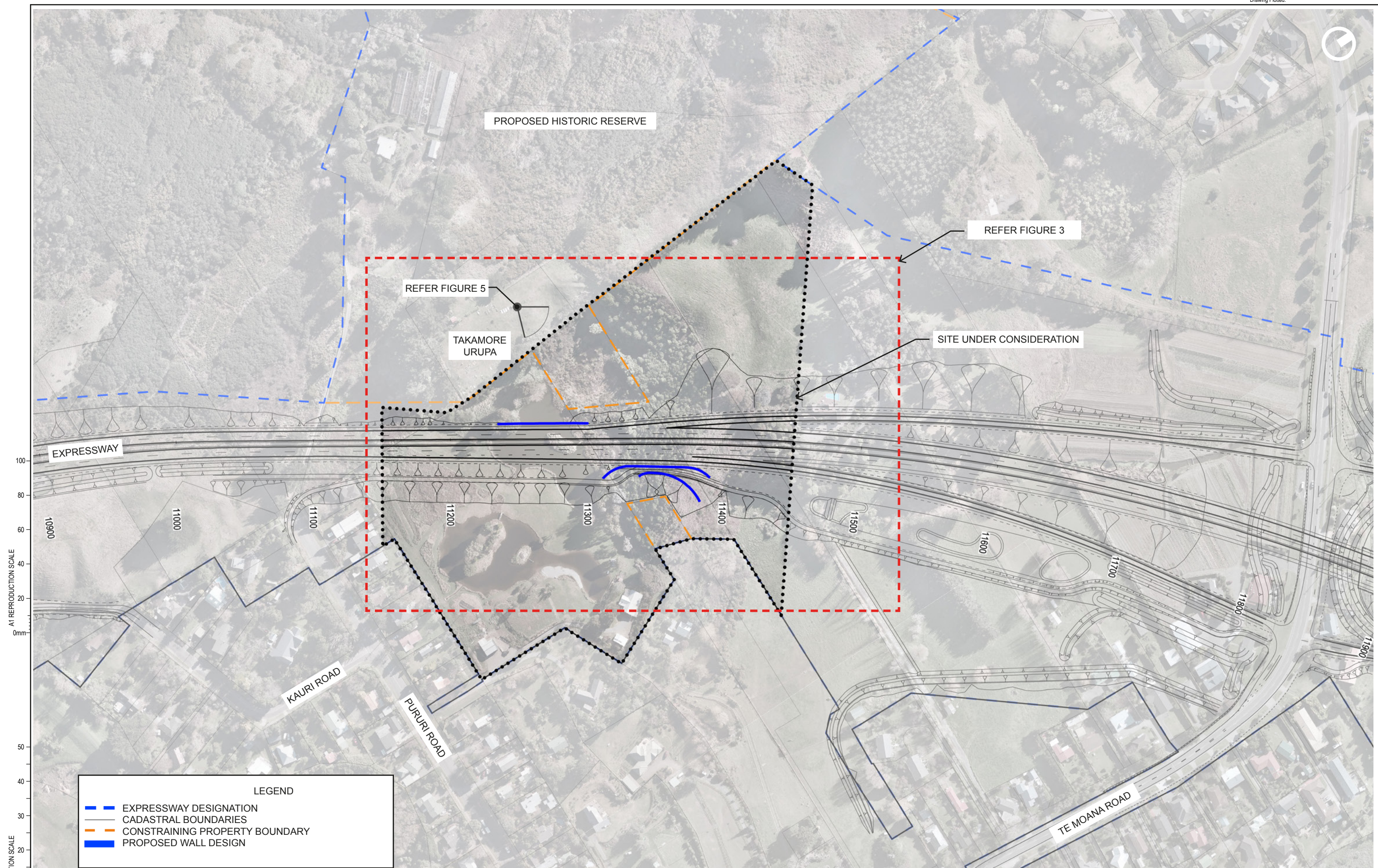
Title: SSMP 8 ADDENDUM - FIGURE 1
LOCATION PLAN

Drawing No: M2PP-121-D-DWG-8002

Rev. C

DETAIL DESIGN (DET)

Document No.



A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

LEGEND	
	EXPRESSWAY DESIGNATION
	CADASTRAL BOUNDARIES
	CONSTRAINING PROPERTY BOUNDARY
	PROPOSED WALL DESIGN

No.	Revision	By	Chk	Chk.V	Appd	Date
C	CERTIFIED ISSUE	MP				17.08.15
B	ISSUE FOR CERTIFICATION	MP				12.08.15
A	ISSUE FOR COMMENT	FB				13.07.15

Original Scale (A1)	Design Drawn	Approved For Construction*
1:1250		
Reduced Scale (A3)	Design Verifier	Date
1:2500	Design Check	



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

Title: SSMP 8 ADDENDUM - FIGURE 2
CONTEXT PLAN

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

Rev.

DETAIL DESIGN (DET)



TAKAMORE URUPA
(GAZETTED RESERVE)

TUKU RAKAU FOREST

TUKU RAKAU WETLAND

REFER TO ECOLOGY ADDENDUM
PREPARED FOR RETAINING WALL

PROPOSED HISTORIC RESERVE

PLANTED TERRAMESH WALL MAX
2.5M HIGH (REFER SHEET 3)

POND

CS1

NORTHBOUND OFF-RAMP

EXPRESSWAY NORTHBOUND

EXPRESSWAY SOUTHBOUND

11500

11400

11300

11200

SOUTHBOUND ON-RAMP

CYCLEWAY WALKWAY BRIDLEWAY (ON NOISE BUND)

CS1

FOR RETAINING WALL PLANTING DETAIL REFER
TO REVISED PLANTING PLANS CERTIFIED
SSMP 8 - M2PP-48R-D-DWG-8202

A1 REPRODUCTION SCALE
0mm

A3 REPRODUCTION SCALE
0mm

- VEGETATION TO BE RETAINED**
- EXOTIC VEGETATION - RETAINED
 - TERRESTRIAL VALUED VEGETATION - RETAINED
 - WETLAND VALUED VEGETATION - RETAINED
- LANDSCAPE PLANTING**
- MASSED PLANTING
 - MASSED PLANTING WITH TREE ENRICHMENT
 - LOW MASSED PLANTING
 - WETLAND PLANTING
 - GRASS
- ECOLOGICAL MITIGATION PLANTING**
- DRY DUNE REVEGETATION
 - WETLAND REHABILITATION AND PLANTING

- LEGEND**
- EXPRESSWAY DESIGNATION
 - CONSTRAINING PROPERTY BOUNDARIES
 - PROPOSED WALL LOCATIONS

No.	Revision	By	Chk	Chk.V	Appd	Date
C	CERTIFIED ISSUE	MP				17.08.15
B	ISSUE FOR CERTIFICATION	MP				12.08.15
A	ISSUE FOR COMMENT	FB				13.07.15

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



Mackays to Peka Peka

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

Title: SSMP 8 ADDENDUM - FIGURE 3
DETAIL PLAN

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

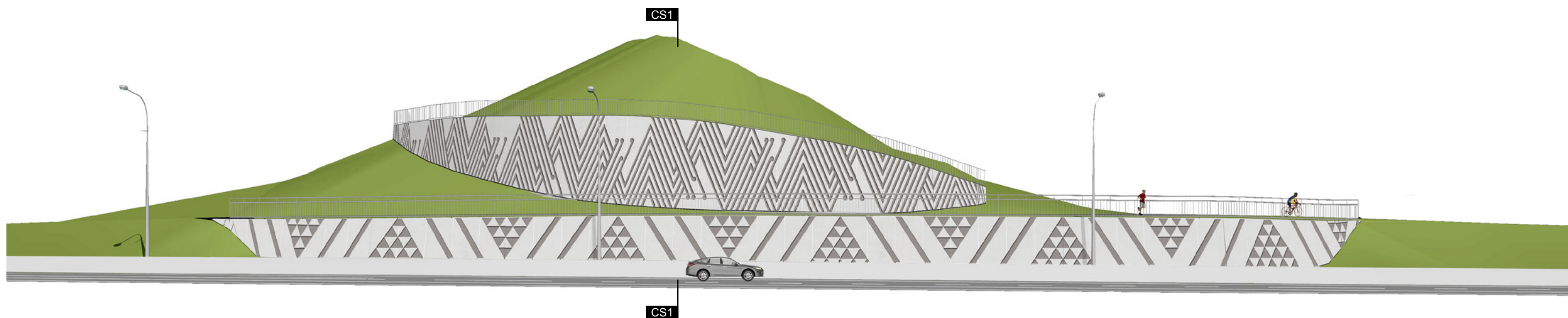
Rev: C

DETAIL DESIGN (DET)

Document No.

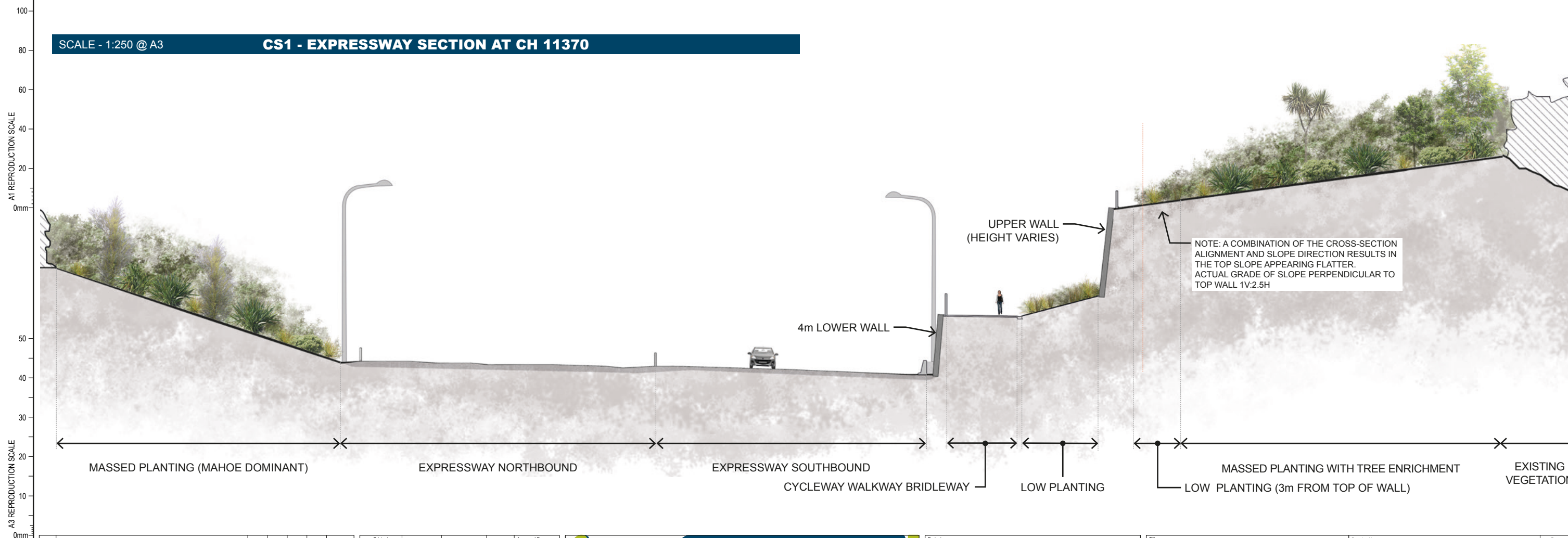
SCALE - 1:250 @ A3

E1 - WALL ELEVATION - FACING SOUTH EAST



SCALE - 1:250 @ A3

CS1 - EXPRESSWAY SECTION AT CH 11370



No.	Revision	By	Chk	Chk.V	Appd	Date
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B	ISSUE FOR CERTIFICATION	MP				12.08.15
A	ISSUE FOR COMMENT	FB				13.07.15

Original Scale (A1)	Design	Approved For Construction*
1:125	Drawn	Date
Reduced Scale (A3)	Design Verifier	Date
1:250	Design Check	Date



Mackays to Peka Peka

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

Title: SSMP 8 ADDENDUM - FIGURE 4 SECTION AND ELEVATION

Drawing No: M2PP-121-D-DWG-8505

Rev: C

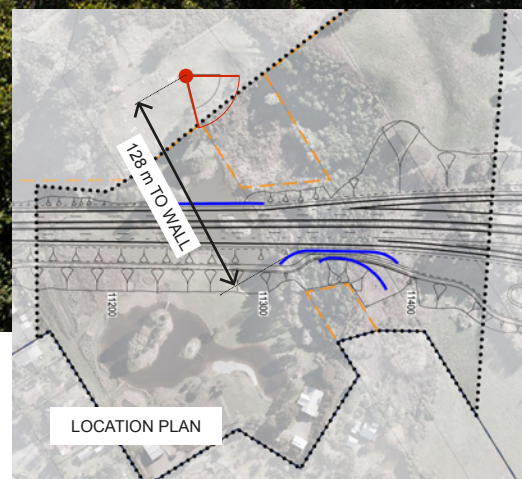
DETAIL DESIGN (DET)

PROPOSED DESIGN SIMULATION - FACING EAST FROM TAKAMORE URUPA



A1 REPRODUCTION SCALE
100
80
60
40
20
0mm

A3 REPRODUCTION SCALE
50
40
30
20
10
0mm



SIMULATION DATA
Location (NZTM): 1771013.2E, 5473465.8N
Elevation: 21m
Camera: Nikon D2x
Taken: 12 Feb 2015 14:10pm
Lens: 35mm (52mm equivalent)
Field of View: 90 degrees (5 images stitched)

No.	Revision	By	Chk	Chk.V	Appd	Date
C	CERTIFIED ISSUE	MP				17.08.15
B	ISSUE FOR CERTIFICATION	MP				12.08.15
A	ISSUE FOR COMMENT	FB				13.07.15

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

* Refer to Revision 1 for Original Signature



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

Title: SSMP 8 ADDENDUM - FIGURE 5 SIMULATION

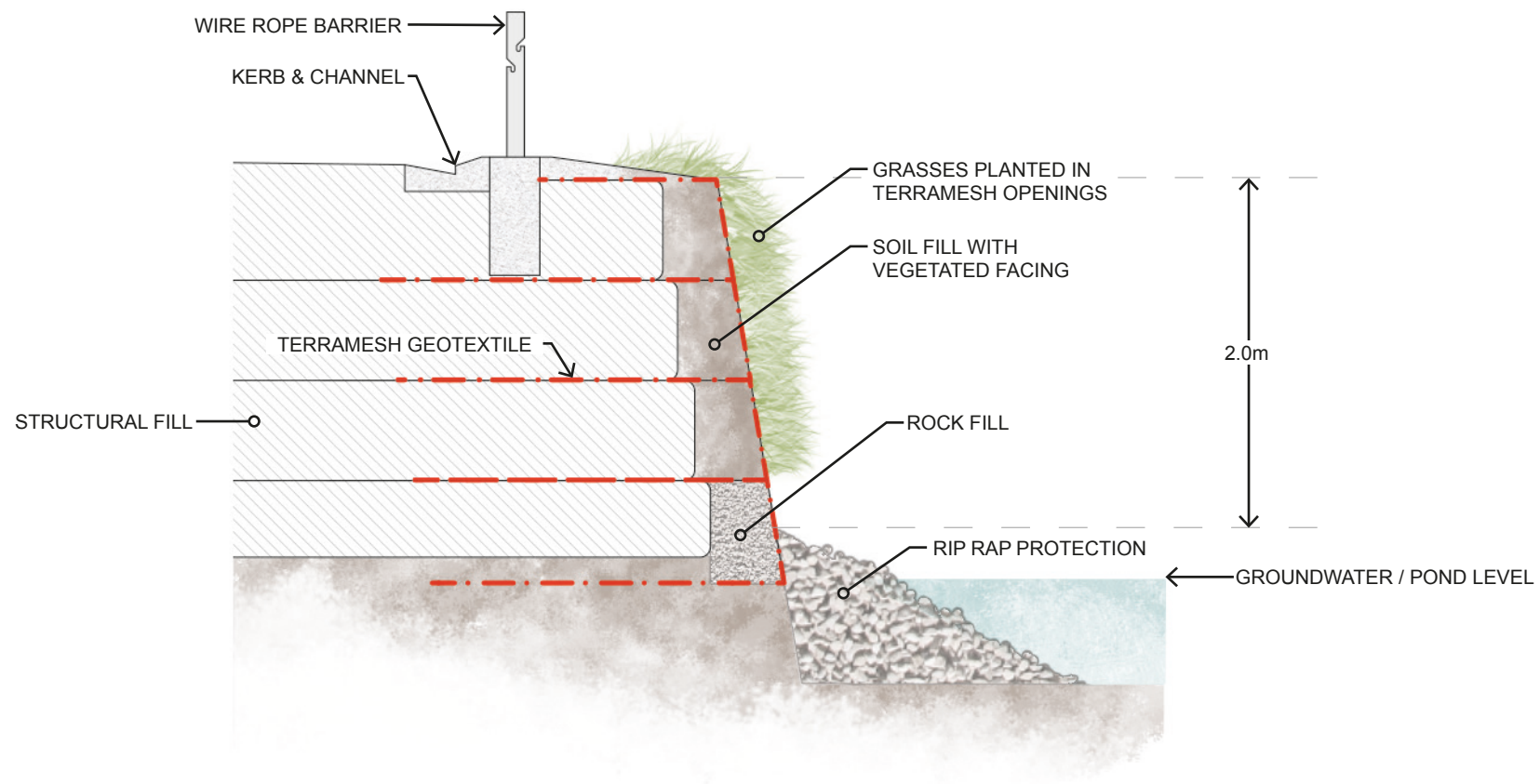
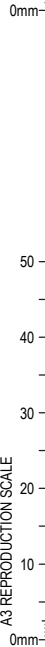
Drawing No: M2PP-121-D-DWG-8802

Rev. C

DETAIL DESIGN (DET)

A1 REPRODUCTION SCALE

A3 REPRODUCTION SCALE



DETAIL DESIGN (DET)

No.	Revision	By	Chk	Chk.V	Appd	Date
C	CERTIFIED ISSUE	MP				17.08.15
B	ISSUE FOR CERTIFICATION	MP				12.08.15
A	ISSUE FOR COMMENT	FB				13.07.15

Original Scale (A1)	Design	Approved For Construction*
1:20	Drawn	Date
Reduced Scale (A3)	Design Verifier	
1:40	Design Check	

* Refer to Revision 1 for Original Signature

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

Title: SSMP 8 ADDENDUM - FIGURE 6
MSE WALL SECTION

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

Rev. C