Drawing File 8/07/2013 4:27:24 p.m.

SSP 8

0 25 50 100 m

Construction Designation

Permanent Designation

Indicative Footprint - Otaihanga Yards

Construction Section

Riparian Mitigation Planting

Wetland Mitigation Planting

SS UDMP

SS LMP

No.	Revision	By	Chk	Appd	Date
2	MANAGEMENT PLANS	PM	BF	BF	08-07-13
1	MANAGEMENT PLANS	PM	BF	BF	01-05-13

Original Scale (A1): VARIOUS
Reduced Scale (A3):

Design | Drawn | Dsg Verifier | Dwg Check | Approved For | Date

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY WAKA KOTAHI

Mackays to Peka Peka

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
FOR INFORMATION

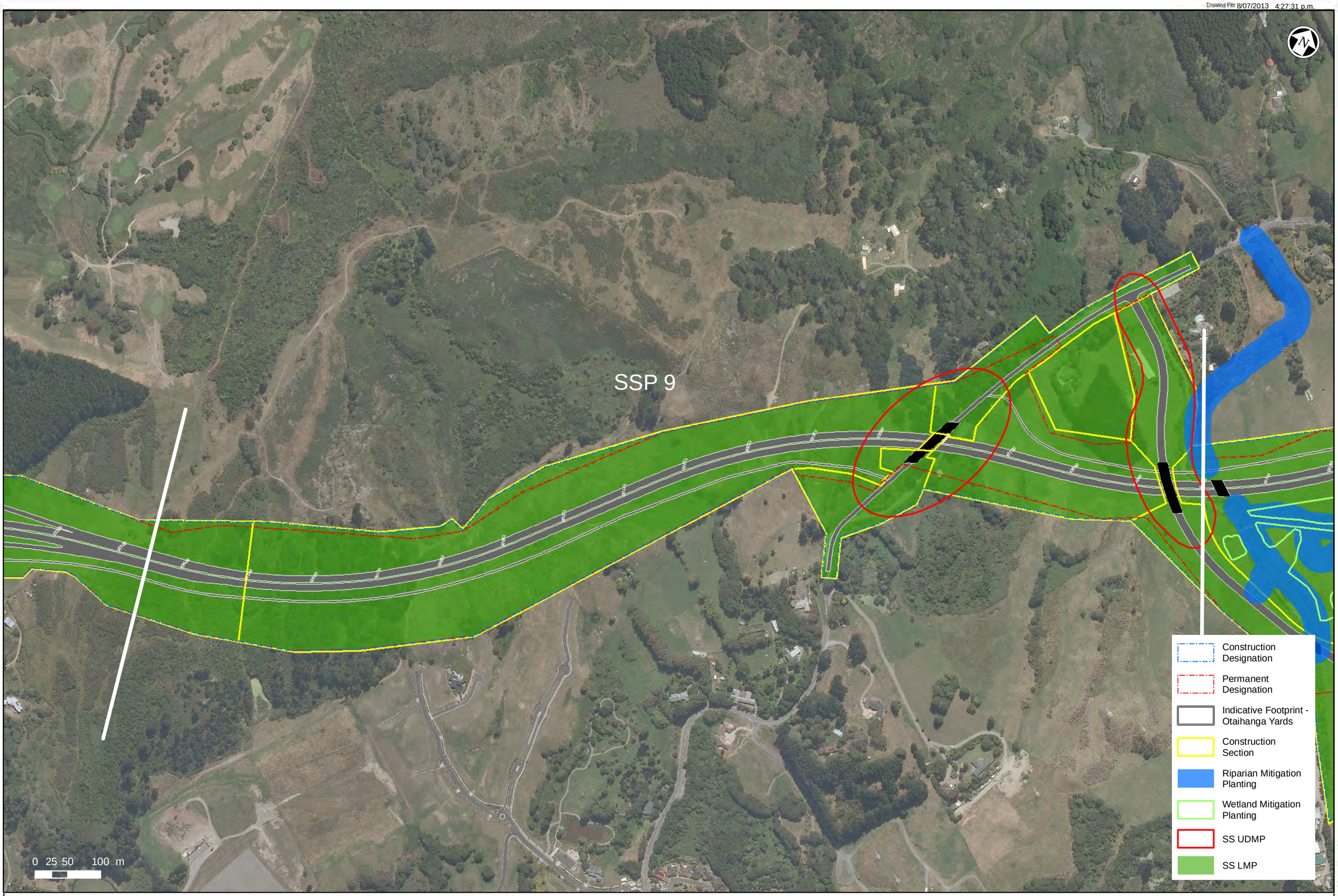
Title: SITE SPECIFIC MANAGEMENT PLAN OPTIONS

Document Set#

Drawing No: M2PP-12R-D-GPH-0001 Rev

Sheet 7 of 10

Drawing File 8/07/2013 4:27:31 p.m.



No.	Revision	By	Chk	Appd	Date
2	MANAGEMENT PLANS	PM	BF	BF	08-07-13
1	MANAGEMENT PLANS	PM	BF	BF	01-05-13

Original Scale (A1): VARIOUS
Reduced Scale (A3):
Design | Drawn | Dsg Verifier | Dwg Check | Approved For | Date
* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY WAKA KOTAHI
Mackays to Peka Peka

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
FOR INFORMATION

Title: SITE SPECIFIC MANAGEMENT PLAN OPTIONS

Document Set:
Drawing No: M2PP-12R-D-GPH-0001
Sheet 8 of 10
Rev

Document No. W091818_LSC_MgtPlan_A3dp

DO NOT SCALE IF IN DOUBT ASK

Drawing File 8/07/2013 4:27:40 p.m.

SSP 10

0 25 50 100 m

- Construction Designation
- Permanent Designation
- Indicative Footprint - Otaihanga Yards
- Construction Section
- Riparian Mitigation Planting
- Wetland Mitigation Planting
- SS UDMP
- SS LMP

No.	Revision	By	Chk	Appd	Date
2	MANAGEMENT PLANS	PM	BF	BF	08-07-13
1	MANAGEMENT PLANS	PM	BF	BF	01-05-13

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

NZ TRANSPORT AGENCY
Mackays to Peka Peka

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY
FOR INFORMATION

Title: SITE SPECIFIC MANAGEMENT PLAN OPTIONS

Document Set:
Drawing No: M2PP-12R-D-GPH-0001
Sheet 9 of 10
Rev:

Document No. W091818_LSC_MgtPlan_A3dp

DO NOT SCALE IF IN DOUBT ASK

Drawing Plo 8/07/2013 4:27:47 p.m.

SSP 11

Construction Designation
Permanent Designation
Indicative Footprint - Otaihanga Yards
Construction Section
Riparian Mitigation Planting
Wetland Mitigation Planting
SS UDMP
SS LMP

0 25 50 100 m

No.	Revision	By	Chk	Appd	Date
2	MANAGEMENT PLANS	PM	BF	BF	08-07-13
1	MANAGEMENT PLANS	PM	BF	BF	01-05-13

Original Scale (A1) VARIOUS Reduced Scale (A3)

Design | Drawn | Dsg Verifier | Dwg Check | Approved For | Date

* Refer to Revision 1 for Original Signature

NZ TRANSPORT AGENCY WAKA KOTAHI

Mackays to Peka Peka

Project: SH1 MACKAYS TO PEKA PEKA EXPRESSWAY

FOR INFORMATION

Title: SITE SPECIFIC MANAGEMENT PLAN OPTIONS

Document Set#

Drawing No: M2PP-12R-D-GPH-0001 Rev

Sheet 10 of 10

DO NOT SCALE IF IN DOUBT ASK.

Document No: W09181B_LSC_MgtPlan_A3dp

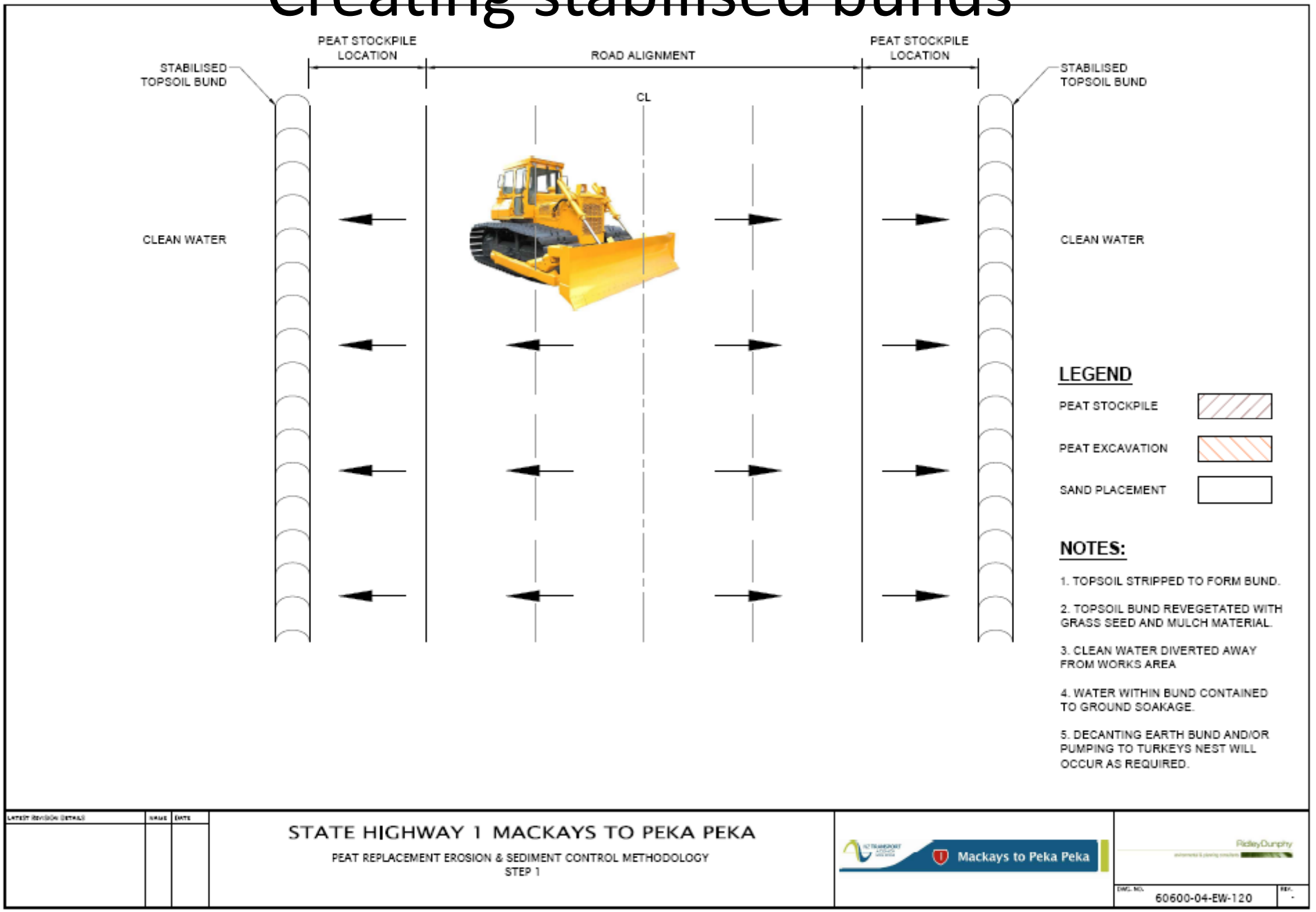
Attachment 4: Summary of Proposed Landscape Mitigation' (Superseded by Attachment 2).

This table; 'Summary of Proposed Landscape Mitigation' was originally included in the draft Landscape Management Plan, CEMP, Appendix T that formed part of the AEE. The Principles, methods and Procedures contained in Attachment 2 expand on the details set out in 'Summary of Proposed Landscape Mitigation'.

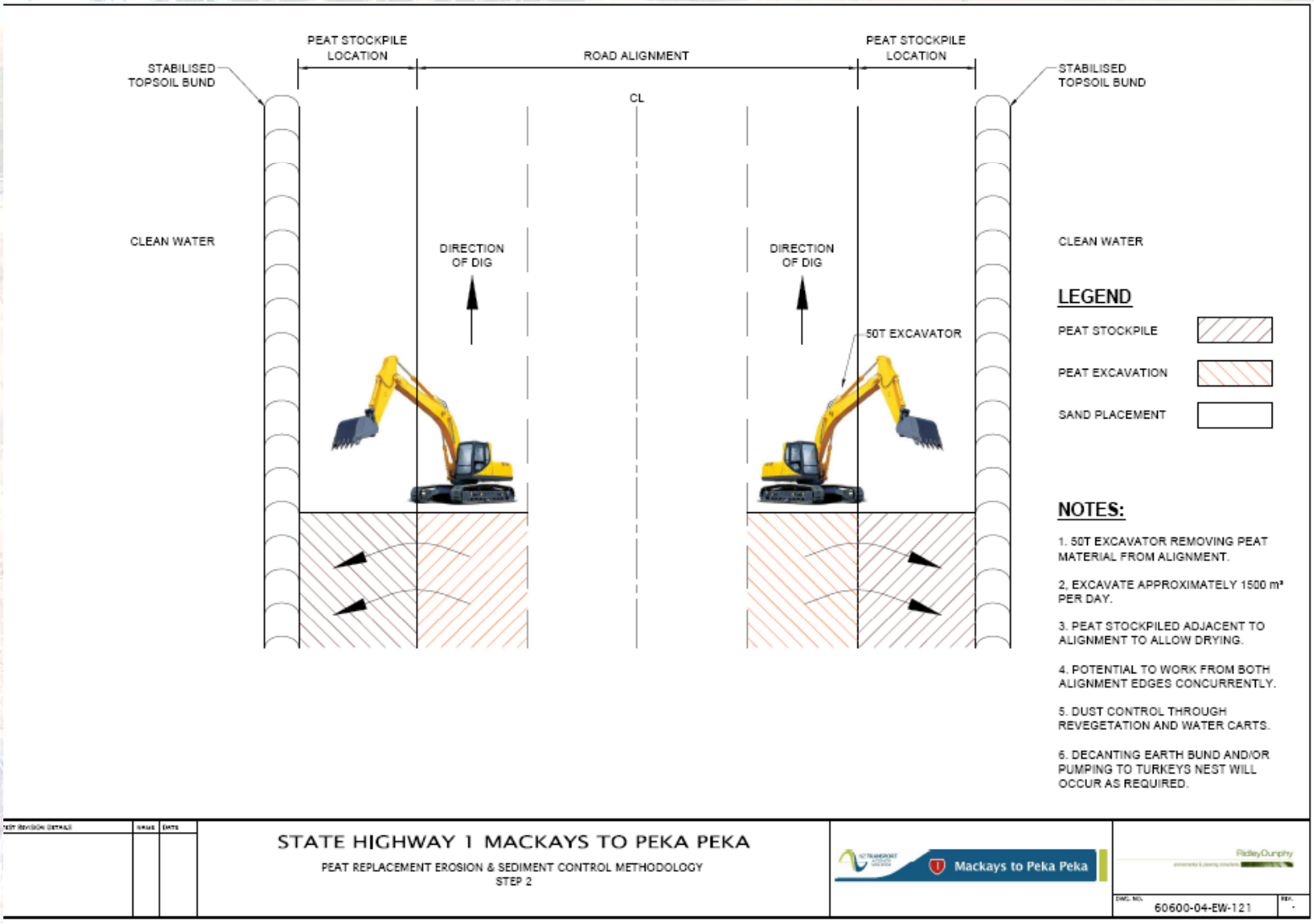
Attachment 5: Earthworks Diagrams

This series of diagrams is from the Erosion and Sediment Control Plan, CEMP.

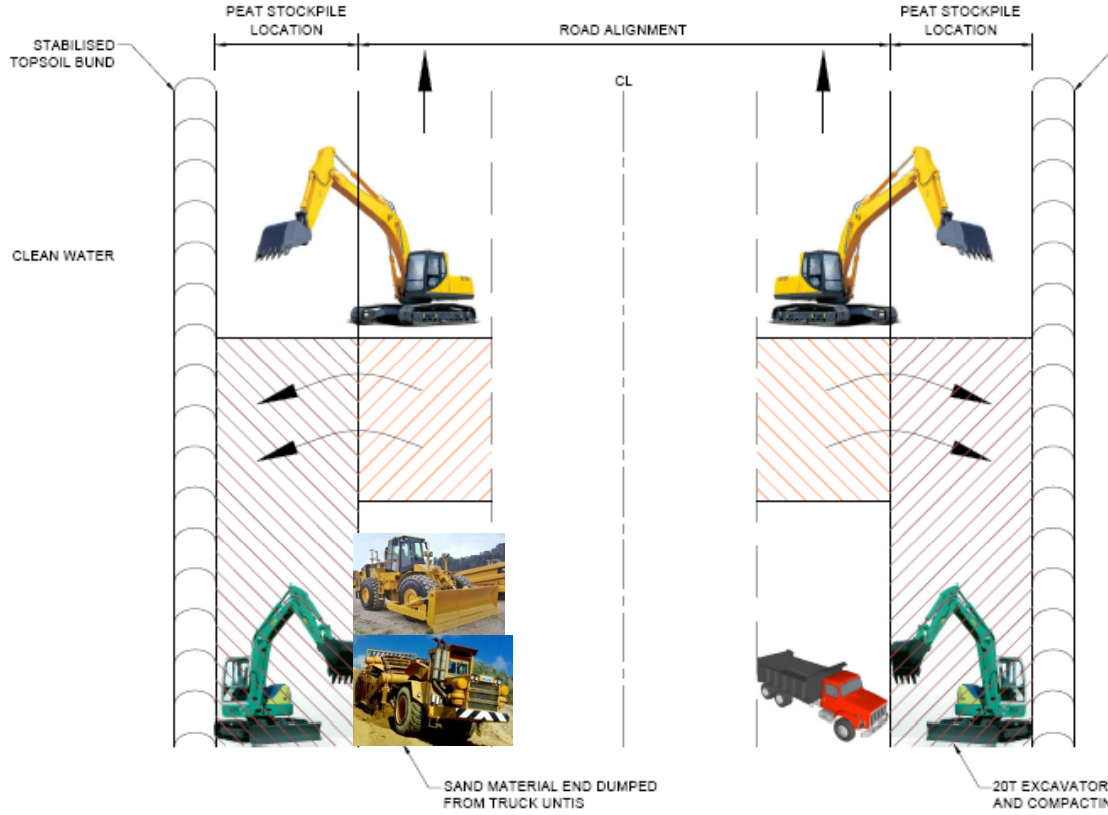
Creating stabilised bunds



Peat excavation to stockpile off swamp pads



Sand backfill with scrapers and rubbertyred dozer for compaction
20 tonner shaping peat stockpile



LEGEND

PEAT STOCKPILE

PEAT EXCAVATION

SAND PLACEMENT

NOTES:

1. SAND MATERIAL END DUMPED FROM TRUCK UNITS INTO EXCAVATION OR IF SAND RESOURCE AVAILABLE POTENTIAL FOR "PUSHING" SAND INTO EXCAVATION.
2. UTILISE STABILISED ROAD ACCESS AT ALL TIMES AND BACKFILLED WITH SAND SURFACE.
3. EXCAVATION AND BACKFILLING WILL BE CONCURRENT SUCH THAT NO OPEN EXCAVATION AT END OF DAY.
4. BACKFILL WILL BE TO A MINIMUM OF WATER TABLE LEVEL.
5. ONGOING SHAPING AND COMPACTING OF PEAT STOCKPILE WITH 20T EXCAVATOR.
6. DECANTING EARTH BUND AND/OR PUMPING TO TURKEYS NEST WILL OCCUR AS REQUIRED.

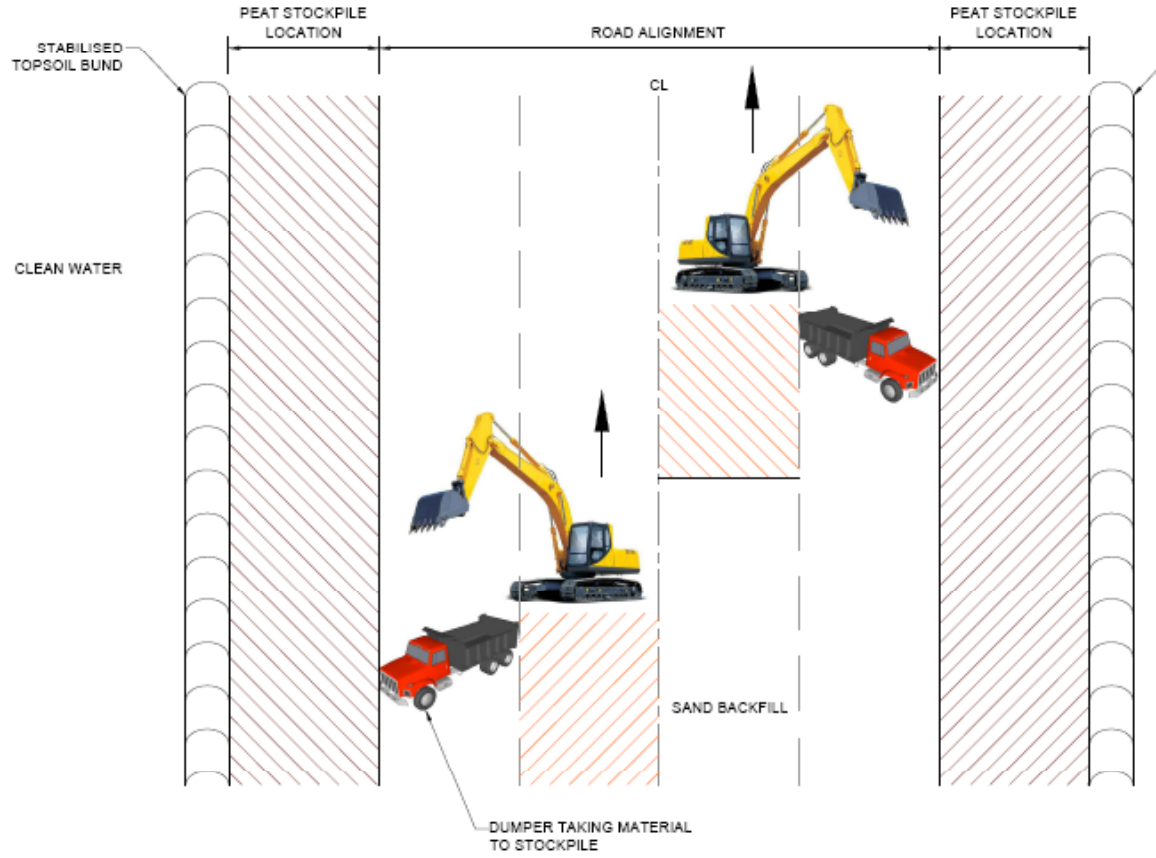
STATE HIGHWAY 1 MACKAYS TO PEKA PEKA

PEAT REPLACEMENT EROSION & SEDIMENT CONTROL METHODOLOGY
STEP 3

Mackays to Peka Peka

60600-04-EW-122

Continue peat excavation.
Load on dumpers and cart to stockpile or dump.



LEGEND

- PEAT STOCKPILE
- PEAT EXCAVATION
- SAND PLACEMENT

NOTES:

1. PEAT EXCAVATION COMMENCES ON REMAINING PART OF THE ALIGNMENT.
2. PEAT PLACED IN DUMPERS WHICH TRANSFER PEAT TO STOCKPILE.
3. SAND BACKFILL AS PER PREVIOUS STAGES.
4. UTILISE SAND PLATFORM AS STABILISED HAUL ROAD AT ALL TIMES.
5. PEAT REMOVAL FROM STOCKPILES AS DRYING ALLOWS TO AUTHORISED LOCATIONS.
6. DECANTING EARTH BUND AND/OR PUMPING TO TURKEYS NEST WILL OCCUR AS REQUIRED.

STATE HIGHWAY 1 MACKAYS TO PEKA PEKA

PEAT REPLACEMENT EROSION & SEDIMENT CONTROL METHODOLOGY
STEP 4

Mackays to Peka Peka

60600-04-EW-123

Attachment 6: Urban and Landscape Design Framework

The following pages are from the Corridor Design section of the Urban and landscape Design Framework (UDLF) that formed part of the AEE. These cover:

5.6 General Cross Sectional Design

5.7 Local Road Interfaces Design

5.8 Bridge Design

5.9 Noise Design

5.10 Landscape – Landforms Design

5.11 Landscape – Planting Design

5.12 Pedestrian, Cycle and Bridleway Design

5.13 Road Furniture Design

5.6 General Cross Sectional Design

The MacKays to Peka Peka Expressway is some 16 km in length. Along this length there are a variety of contextual conditions and these have been considered along with the essential functional and geometric design requirements in determining the standard cross section.

Several options were considered which included various median widths and embankment slopes.

Key Design Considerations

- the function of the Expressway as a safe and effective 110kmh design speed national highway route
- The RoNS guidelines for median widths
- the implications of a the width of the road footprint given the need for extensive ground improvements - the wider the footprint the larger the cost
- the desire to address the apparent width of the Expressway in the landscape
- the number of bridges required and the way in which these relate to local road crossings and any variations in median width
- the provision of a reasonably consistent driver experience for the Expressway user
- the degree to which the road width affects landforms
- the relationship between embankment slope batters and the amount of fill material required.

The decision made regarding cross section was to adopt two standard median widths (6 metres in the southern section and 4 metres in the north) with typically 1:3 batter slopes off the road edge or for cuts.

The reasons this cross section was preferred was because:

- it allows for wider median in urban areas with consequent space to plant and reduce the visual scale of the Expressway
- it allows for the Expressway over bridges to be split into two side by side and allows for light to local road below
- the embankment slope batter allows for runoff areas reducing the need for road side barriers - it is noted that NZTA requirements are being reviewed on this
- the narrower median width in the north end reduces the footprint in the areas where the ground improvements would be most extensive
- the narrower median in the north end reduces the footprint and thus the extent of the cut batters required

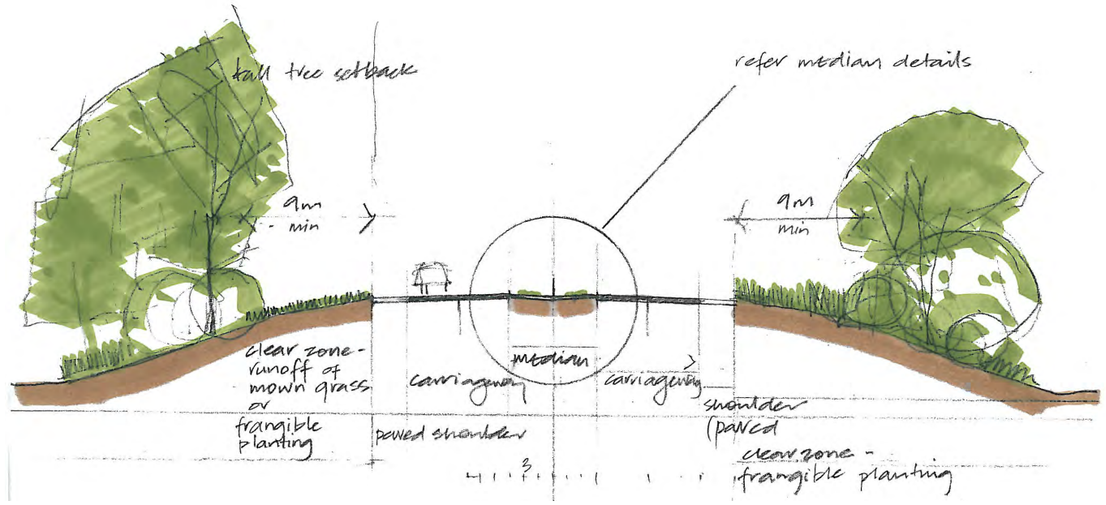


Figure 84 Preferred standard cross section showing 6m planted median

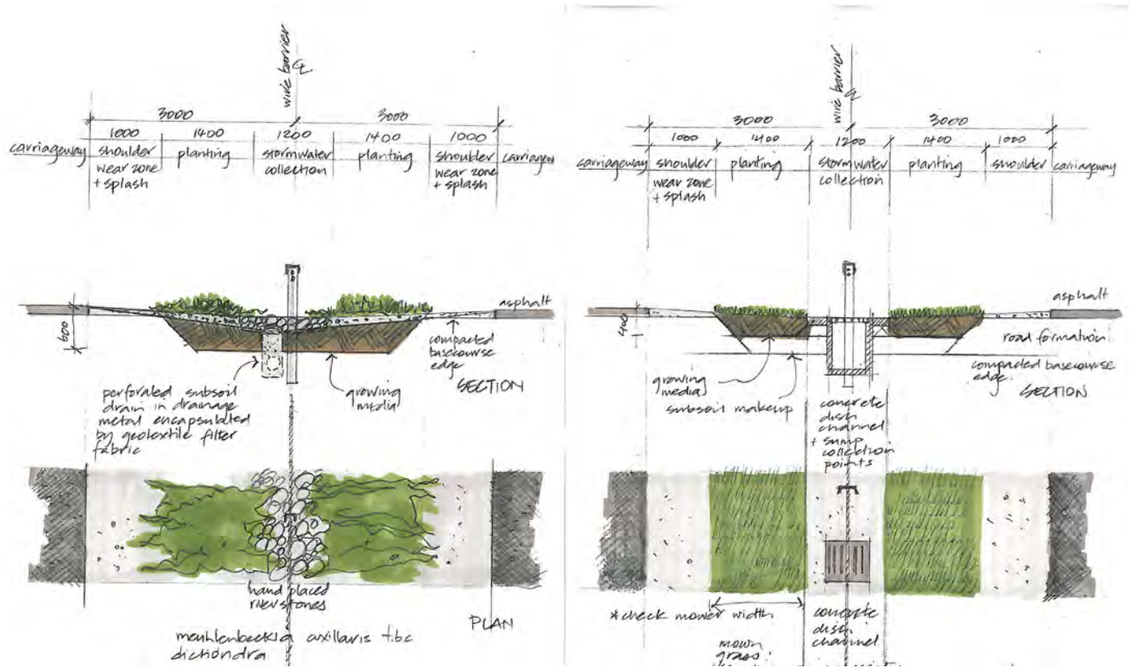


Figure 85 Options for median planting treatment for 6m width - low planting on the left or grass on the right.

5.7 Local Road Interface Design

There are seven locations where the Expressway crosses over a local road:

- Poplar Avenue
- Raumati Road
- Ihakara Street (future)
- Kāpiti Road
- Mazengarb Road
- Otaihanga Road
- Te Moana Road

Additionally there are two locations where the local road crosses over the Expressway:

- Ngarara Road
- Smithfield Road

Bridges which are not over local roads, but over waterways include the Waikanae as the largest, Wharemauku in tandem with the Ihakara Street extension, Waimeha and other smaller streams/drains to the north.

Design Concept

The concept for the local road interface design is that the public spaces of the roads and streets should take primacy over the experience for the Expressway user. It is people walking, cycling and driving on the local road that will interact with the spaces leading up to and under the Expressway -these need to be design and treated as public open spaces in their own right.

In designing for these crossings all make provision will be made for walking and cycling within the road reserve areas provided for, with the expectation that horses will utilise footpath and berm areas. For bridges over the Expressway (Ngarara and Smithfield Roads) provision is also made for a wider footpath that will provide space for horse use.

Design Principles

The following principles will apply to the design of these interface locations:

1. Recognise that the scale, form and materials should provide some consistency in approach given the frequency of local road interfaces with the Expressway
2. Provide for interaction in design of the Expressway local road interfaces with that of the bridge structures (see Bridge Principles) in terms of process and the consideration of use, materials, and forms
3. Direct sight lines along the local road to and under the bridges should be maintained and hiding places eliminated to provide walkers, cyclists and others not in vehicles with a clear and safe passage
4. Manage the scale of the abutments and their shape to provide an openness to the space beneath the bridge
5. Design the bridge approaches along local roads to lead users up to, beneath, and then beyond the bridge space so it reads as a continuous experience
6. Reference the particular characteristics of the landscape at each bridge approach to provide local identity in the landscape design treatment
7. 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
8. Utilise colours and materials for the space beneath the bridge over local roads that provide brightness, detail and texture to assist the visual amenity of the space
9. Ensure the surfaces and spaces beneath the bridges over local roads can be readily maintained and will not trap litter or attract graffiti
10. Provide for a simple and efficient construction to recognise that local road must continue to be functional during construction
11. Maintain adequate local road reserve widths to provide for existing and likely future upgrades and improvements and provide for interaction with KCDC in this respect
12. Provide for direct pedestrian and cyclist passage across Expressway on and off ramps to match desire lines and eliminate free turns at these intersections with local roads.

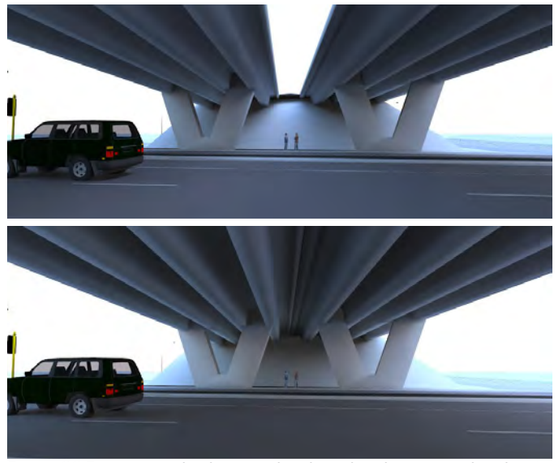


Figure 86 Expressway bridge over local road with a gap and without - use a gap where frequent local road use to allow natural down light

Figure 89 Concept of wrapping the under bridge abutments out into the landscape beyond

Figure 90 Existing landscape character can be retained - bend of the road, dune forms, scale and type of vegetation, path locations - continues local identity

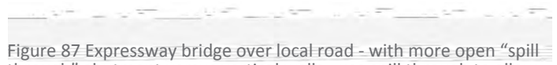


Figure 87 Expressway bridge over local road - with more open "spill through" abutment versus vertical walls - use spill through to allow more openness

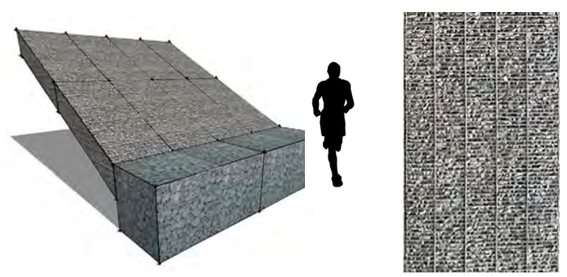


Figure 88 Use of materials that have a texture, do not attract graffiti and are easily maintained - proposed gabion basket - fill can be small stones or other granular materials that reflect the granular nature of sand dune country through which the Expressway passes

Figure 91 At local roads the surfaces can be treated differently and bright colours used to lighten the space

5.8 Bridge Design

As noted with regard to the local road interface design principles, there are bridges over local roads as well as local roads over the Expressway. There are also places for pedestrian bridges over the Expressway and bridges along the cycleway/walkway — the latter of these is addressed under the cycleway/walking design principles.

There has been some advancement of the design to enable some definition to the bridge forms and concept. This is described below with Principles to follow.

Design Concept

The Expressway is a new feature in the landscape and by its nature is strongly horizontal — the expression of that horizontality is acknowledged whilst also recognising that it hovers over the ground where it crosses local roads.

Where bridges interface with local roads the concept is to translate its supporting armature of columns and beams into a single and fluid shape to simplify the appearance of the structure rather than drawing attention to it — this is a sculptural approach.

More fluid forms are representative of natural shapes in the dune landscape and knits with the probable concrete material use planned for this project as it can be readily shaped.

The design of the bridges as a series of components that together form a whole allows for the bridges to be conceived as single kits of parts. It also allows for the components to be repeated and the same approach reused at the multiple crossings to register as a 'family' of bridges.

Using concrete prefabricated parts will allow fine levels of quality control, cost benefits and significant improvements in construction time at the crossings.

Components and Materiality

The typical bridge components include the edge barrier, cross head, deck and support piers. The intention is to use standard barrier (TL5 or the like), deck (super "T" or hollow core) and cross heads, but to sheath these and tie them into a seamlessly sculpted column. The concrete material should also be considered in terms of its texture and colour.

Design Principles

The following principles will apply to the design of the bridges:

1. Make the bridges generally consistent in their form so they register as a 'family' and provide some visual continuity within the local environment
2. Express the bridges as simple forms that sit across the changes in landscape and are not seen as strong statements in their own right
3. Unite the bridge elements of pier, cross head, deck and barrier as one sculptural form and ensure services are concealed from view
4. Ensure the form of the bridges from the underside is visually appealing to recognise the primacy of the local road user's experience in design consideration
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)
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
7. Use architectural lighting to emphasise the sculptural forms of the bridges and light units that are readily serviceable from the ground
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
9. Use textured finishes within the bridge elements' surfaces to provide a crafted finish - avoid printed forms
10. Repeat the bridge design concepts within the design of pedestrian bridges recognising that these may be able to utilise lighter weight materials
11. Develop each bridge crossing design considering the pier types best suited to that location
12. Locate bridge piers associated with bridge watercourse crossings away from riparian edges to prevent need to armour stream edges
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 for the Project

Figure 92 Dune shapes are sculptural and provide a point of reference — the play of light and shade provide relief

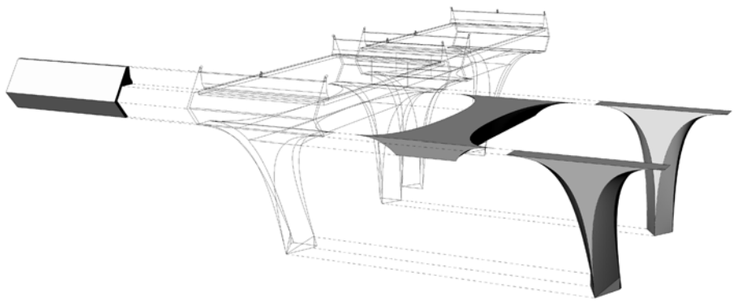


Figure 93 By considering the main elements of a concrete bridge that can be manipulated the barrier, cross head and pier present opportunities to be seen as one united form

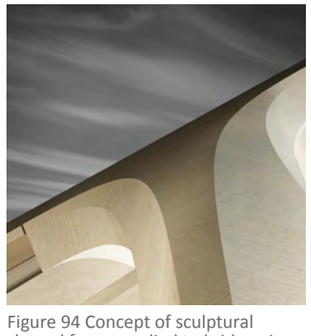


Figure 94 Concept of sculptural shaped forms applied to bridge pier

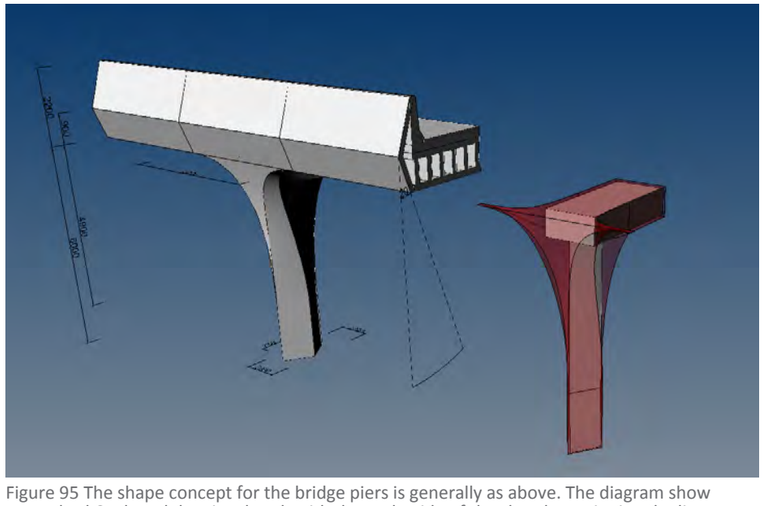


Figure 95 The shape concept for the bridge piers is generally as above. The diagram show a standard 6m length barrier sheath with the underside of the sheath continuing the line vertically to generate the incline of the pier. The intersection of the barrier sheath and the pier top hide the end of the crosshead. A void in the angle of the barrier sheath provides for deck drainage or other conduits. The angles and length of components will be determined in detailed design.

5.9 Noise Design

The context for the Expressway varies in character along its length and includes rural as well as urban interfaces. The existing SH1 and other local roads currently generate noise, but although adding the Expressway may reduce noise from SH1 there will be increased and new noise to areas that have otherwise been relatively quiet.

It is recognised from public consultation and consultation with KCDC that noise and its management is an important aspect of the Expressway design that needs to be well provided for.

Design Concept

The Expressway by its nature will change the noise environment. The noise generated by the Expressway will be addressed in two ways. First the approach will be to design the road surface to use asphalt that minimises noise at source (i.e. from wheels running on the road). Secondly shapes and forms that act as barriers to block noise between the Expressway and the potential receivers will be integrated into the landscape.

It is proposed that a standardised system of noise management shapes and forms will be produced that can be applied along the route in different configurations. This will provide a consistent visual, construction and maintenance regime for the Expressway and its context. The system in terms of its materiality will relate to the other structures on the route such as at bridge locations to reinforce the identity of the Expressway. Advantage will be taken of the corridor width, changes in ground level, and general intended planting density to treat the shapes and forms as integral to the landscape.

Components and Materiality

The typical noise management components include:

- Open Grade Porous Asphalt [OGPA] throughout the urban areas and extending north to approximately Smithfeild Road to reduce noise generation at point source
- the ground will be shaped to provide rises and extensions to natural land forms to block noise - these are planted
- gabion baskets forms in various heights with ramped and planted ground behind to visually integrate with context (Type B)
- standard concrete bridge barrier design (see bridge design) to block noise emanating from the over bridges (Type C)
- residential property timber panel boundary fences to incorporate noise reducing construction specifications (Type A)

Design Principles

The following principles will apply to the noise design:

1. Utilise both OGPA and landforms as the first choice for noise reduction.
2. Integrate noise reduction structures within the landscape by utilising gabion baskets as a standard form, ramping of the ground to the rear, and planting.
3. Prioritise the visual experience for the residential properties the structures are intended to protect and minimise the shading on these properties.
4. Modulate the ground built up to the rear of noise reduction structures to allow the top edge of gabion structures to be read and to prevent people accessing the tops of higher gabions from behind.
5. Where there is sufficient space, consider off-setting the longer gabions in places to reduce their wall like appearance and allow planting in between.
6. Examine the potential to avoid barriers inside gabions walls to reduce additional road side clutter and maintenance.
7. Where barriers are required, utilise wire rope type barriers and offset the gabion from the back of the shoulder the 1m required to allow for impact displacement.
8. Examine further the approach to integrate noise barriers as part of the Paraparaumu interchange.

Figure 96 (Left and below)

Shows three different fence type images and Type A cross-section

TYPE A: Timber or panelled type fence on residential boundary - can be planted with climbers or against with trees and shrubs. The fences can be offset to break up long lengths of wall. Clear panels can also be inserted. Needs specific design to ensure noise attentuating qualities.

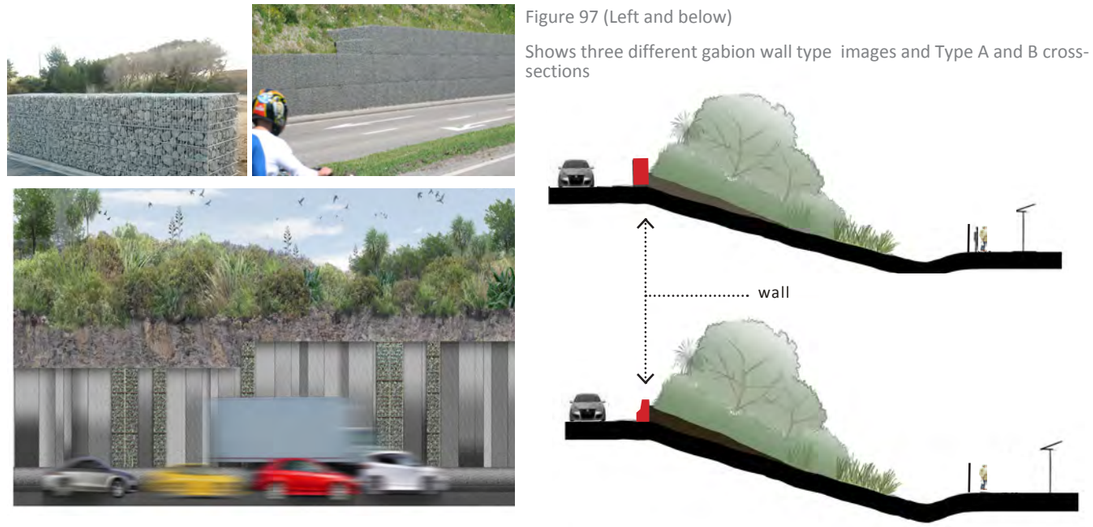


Figure 97 (Left and below)

Shows three different gabion wall type images and Type A and B cross-sections

TYPE B: Gabion basket type wall - maybe gabion facing with solid wall. TYPE C: use of standard slipform concrete barrier. For both types the land form behind the wall will be built up to mask the wall height from the adjacent properties and this slope planted.

Figure 98 (Above) Cross-section describes the building up of the ground to use the rise as part of the noise reduction block. This section is north of Leinster Ave with the Expressway on the right and residential property to the far left. The cycle path and service lane are part way up the slope.