



Australian Government



# Coffs Harbour Bypass Project

Amendment Report

Volume 4A. Appendix E (Chapters 1-2)







## **Appendix E**

Supplementary urban design,  
landscape character and visual  
impact assessment (Chapters 1-2)





## Appendix E

# Supplementary Urban Design, Landscape Character and Visual Impact Assessment Report

---

Coffs Harbour Bypass

May 2020

ARUP



Prepared by

**ARUP**  
Arup Pty Limited  
Level 4, 108 Wickham Street  
Fortitude Valley, QLD 4006  
Australia  
Tel: +61 7 3023 6000

Document information	
Report Title	Coffs Harbour Bypass
Subtitle	EIS UDLCVIA Supplementary Report (Appendix E)
Filename	CHB-AR-UL-EIS-UDR-7.0
Date	May 2020

Revision	Date	Details
1.0	January 2020	Draft Issue
2.0	March 2020	Second Issue
3.0	May 2020	Final Issue

Revision details		Date
Prepared By	Penny Hall / Chris Madigan	May 2020
Reviewed By	Lillian O’Mahony / Olivia Short	May 2020
Approved By	Toby Heys	May 2020



THIS PAGE WAS INTENTIONALLY LEFT BLANK



# Contents

## 01 Introduction

- 1.1 Project overview
- 1.2 Design changes
- 1.3 Purpose of report

## 02 Urban design concept

- 2.1 Urban design concept
- 2.2 Landscape planting design
- 2.3 Interchange design
- 2.4 Noise attenuation
- 2.5 Retaining walls
- 2.6 Bridges

## 03 Landscape character and visual impact assessment

- 3.1 Purpose and approach
- 3.2 Landscape character impact assessment
- 3.3 Visual impact assessment

## 04 Management of impacts

- 4.1 Management of construction impacts
- 4.2 Management of operational impacts
- 4.3 Management measures

## 05 Conclusion

- 5.1 Embedded mitigation
- 5.2 Assessment

## Appendices

- A Crime Prevention Through Environmental Design (CPTED)
- B Overshadowing analysis
- C Coastal view analysis



An aerial photograph of a complex highway interchange with multiple overpasses and ramps, surrounded by dense green forest and some cleared land. A large orange rectangular box is overlaid on the upper right portion of the image, containing the chapter title.

# 01

## Introduction

---





FIG 1.1 PROJECT ALIGNMENT AND CONTEXT

## 1.1 Project overview

Transport for New South Wales (TfNSW) is seeking approval for the Coffs Harbour Bypass (the project). The approval is being sought under Division 5.2 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) as Critical State Significant Infrastructure (CSSI).

The project includes a 12 km bypass of Coffs Harbour from south of Englands Road to Korora Hill in the north and a 2 km upgrade of the existing highway between Korora Hill and Sapphire. The project would provide a four-lane divided highway that bypasses Coffs Harbour, passing through the North Boambee Valley, Roberts Hill and then traversing the foothills of the Coffs Harbour basin to the west and north to Korora Hill.

The key features of the project include:

- Four-lane divided highway from south of Englands Road roundabout to the dual carriageway highway at Sapphire
- Bypass of the Coffs Harbour urban area from south of Englands Road intersection to Korora Hill
- Upgrade of the existing Pacific Highway between Korora Hill and the dual carriageway highway at Sapphire
- Grade-separated interchanges at Englands Road, Coramba Road and Korora Hill

- A one-way local access road along the western side of the project between the southern tie-in and Englands Road, connecting properties to the road network via Englands Road
- A new service road, located east of the project, connecting Solitary Islands Way with James Small Drive and the existing Pacific Highway near Bruxner Park Road
- Three tunnels through ridges at Roberts Hill (around 190 m long), Shephards Lane (around 360 m long), and Gatelys Road (around 450 m long)
- Structures to pass over local roads and creeks as well as a bridge over the North Coast Railway
- A series of cuttings and embankments along the project
- Tie-ins and modifications to the local road network to enable local road connections across and around the alignment
- Pedestrian and cycling facilities, including a shared path along the service road tying into the existing shared path on Solitary Islands Way, and a new pedestrian bridge to replace the existing Luke Bowen footbridge with the name being retained



# 1.2 Design changes

- Relocation of the Kororo Public School bus interchange
- Noise attenuation, including low noise pavement, noise barriers and at-property treatments as required
- Fauna crossing structures including glider poles, underpasses and fencing
- Ancillary work to facilitate construction and operation of the project, including
  - Adjustment, relocation and/or protection of utilities and services
  - New or adjusted property accesses as required
  - Operational water quality measures and retention basins
  - Temporary construction facilities and work including compound and stockpile sites, concrete/asphalt batching plant, sedimentation basins and access roads (if required).

The environmental impact statement (EIS) was exhibited by the Department of Planning, Industry and Environment for 47 days from 11 September 2019 to 27 October 2019. TfNSW has amended several aspects of the project as exhibited in the EIS. These changes have been developed in response to:

- Consultation with the community and landowners during the EIS public exhibition period (11 September 2019 to 27 October 2019)
- Submissions received during the EIS public exhibition period
- Continued development and refinement of the concept design and consultation with government agencies
- Consultation with the community, landowners and stakeholder groups during the design changes display period (27 November 2019 to 13 December 2019).

The proposed design changes are:

- Englands Road interchange
- North Boambee Valley vertical alignment
- Coramba Road bus stop
- Coffs Creek flood mitigation
- Korora Hill interchange
- Kororo Public School bus interchange and Luke Bowen footbridge
- Pine Brush Creek and Williams Creek realignment
- Water quality basins.

The proposed construction changes are:

- Additional blasting
- New and revised ancillary sites
- Revised traffic management
- Construction sediment basins.

The concept design has incorporated the design and construction changes identified above and is referred to as the amended design.



# 1.3 Purpose of report

An urban design, landscape character and visual impact assessment was prepared in support of the EIS for the project (refer to Urban Design, Landscape Character and Visual Impact Assessment Report, Arup 2019). The purpose of the assessment was to address the SEARs for the project’s construction and operation relevant to urban design and visual amenity.

Following exhibition of the EIS, receipt of submissions and further consultation with community and stakeholders, several design and construction changes have been made to the project.

This Supplementary Urban Design, Landscape Character and Visual Impact Assessment has been prepared to assess the impacts of the design and construction changes for the project. This supplementary assessment only includes information that has changed since the EIS and should be read in conjunction with the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).

The design changes relevant to this supplementary assessment include:

- Englands Road interchange
- North Boambee Valley vertical alignment
- Coramba Road bus stop
- Coffs Creek flood mitigation
- Korora Hill interchange
- Kororo Public School bus interchange and Luke Bowen footbridge
- Pine Brush Creek and Williams Creek realignment.

The construction changes relevant to this supplementary assessment include:

- New and revised ancillary sites.

The following table provides a brief description of the chapters within the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019) submitted as part of the EIS, and a description of how these have been addressed as part of this supplementary report.

EIS Urban Design, Landscape Character and Visual Impact Assessment Report	Supplementary Urban Design, landscape Character and Visual Impact Assessment
<b>Chapter 1 - Introduction</b>  This section provided the project overview, structure, SEARs, policy planning and guidance which describes the state and local policy and legislation relevant to the urban design, landscape character and visual amenity of the project	<b>Chapter 1 - Introduction</b>  The proposed design changes since the issue of the EIS do not impact the purpose, guidance or policy.  This supplementary report includes updates to the project overview and report structure
<b>Chapter 2 - Methodology</b>  This section outlined the methodology used for the urban design, landscape character and visual impact assessment.	 There has been no change to the methodology used for the urban design, landscape character and visual impact assessment reported in the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).  Not included within this supplementary report.
<b>Chapter 3 - Context analysis</b>  This section provided the relevant information gained through investigation of the project and outlined the associated opportunities and issues for the urban and rural landscape addressed in the development of the overall design principles and concept design for the project.	 The proposed design changes since the issue of the EIS do not affect the context analysis.  Not included within this supplementary report.
<b>Chapter 4 - Urban design strategy</b>  This section described the high level urban design strategy and principles, and landscape design approach for the project.	 There has been no change to the urban design strategy from the strategy reported in the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).  Not included within this supplementary report.
<b>Chapter 5 - Urban design concept</b>  In response to the SEARs, this section describes the proposed urban design concept in more detail including location specific urban design outcomes, principles and future design requirements.	<b>Chapter 2 – Urban design concept</b>  The urban design concept plans prepared for the EIS have been updated to incorporate the design changes identified in Section 1.2.  The landscape planting design was updated in response to comments received from Coffs Harbour City Council on the use of specific species in planting mixes. The planting design concept plans have been updated to incorporate the design changes identified in Section 1.2 and the changes to the planting mixes.  Interchange designs have been updated to incorporate the changes to the Englands Road and Korora Hill interchanges.  Changes to noise walls because of the amended design and the updated noise and vibration assessment are documented in Section 2.4. There is no change to the urban design strategy for noise walls.  Changes to retaining walls because of the amended design are documented in Section 2.5. There is no change to the urban design strategy for retaining walls. Changes to bridges because of the amended design are documented in Section 2.6. There is no change to the urban design strategy for bridges.

EIS Urban Design, Landscape Character and Visual Impact Assessment Report	Supplementary Urban Design, landscape Character and Visual Impact Assessment
<b>Chapter 6 - Landscape character and visual impact assessment</b> This section described the landscape character zones for the project and provides an assessment of the impacts of the project on the landscape character zones.	<b>Chapter 3 - Landscape Character and Visual Impact Assessment (LCVIA)</b> The landscape character zone impact assessment has been updated for the landscape character zones affected by the amended design.
<b>Chapter 7 - Visual impact assessment</b> This section provided the visual impact assessment for the project.	<b>Chapter 3 - Landscape Character and Visual Impact Assessment (LCVIA)</b> The visual impact assessment has been updated for the representative viewpoints affected by the amended design
<b>Chapter 8 - Management of impacts</b> This section described relevant construction and operational management measures to be applied to the project to reduce the identified visual and landscape character impacts.	<b>Chapter 4 - Management of impacts</b> This section includes updates to the management and mitigation measures associated with the amended design.
<b>Chapter 9 - Conclusions</b> Provides the integrated design outcomes to conclude the report.	<b>Chapter 5 - Conclusion</b> This amendment report includes updates to the conclusion for the design and assessment associated with the proposed design changes for the project.
<b>Chapter 10 - Appendices</b>	<b>Chapter 6 - Appendices</b>
<b>Appendix A - CPTED</b>	<b>Appendix A – CPTED</b>  This includes an updated CPTED assessment for the proposed design changes to the Kororo Public School bus interchange and Coramba Road bus stop.
<b>Appendix B - Residual Land</b>	No change
<b>Appendix C - Overshadowing analysis</b>	<b>Appendix B - Overshadowing analysis</b>  This includes the updated overshadowing analysis for the amended design.
<b>Appendix D - Coast view analysis</b>	<b>Appendix C - Coastal view analysis</b>  This includes the updated coastal views analysis for the amended design.
<b>Appendix E - Assessment Criteria</b>	No change





FIG 1.2 **ENGLANDS ROAD INTERCHANGE**



FIG 1.3 **CORAMBA ROAD INTERCHANGE**





FIG 1.4 KORORO PUBLIC SCHOOL BUS INTERCHANGE AND LUKE BOWEN FOOTBRIDGE



FIG 1.5 KORORA HILL INTERCHANGE



THIS PAGE WAS INTENTIONALLY LEFT BLANK



An aerial photograph of a multi-lane highway interchange with several overpasses, set against a backdrop of dense green forests and rolling hills. A semi-transparent blue rectangle is overlaid on the right side of the image, containing the text '02' and 'Urban design concept'.

# 02

## Urban design concept

---



THIS PAGE WAS INTENTIONALLY LEFT BLANK



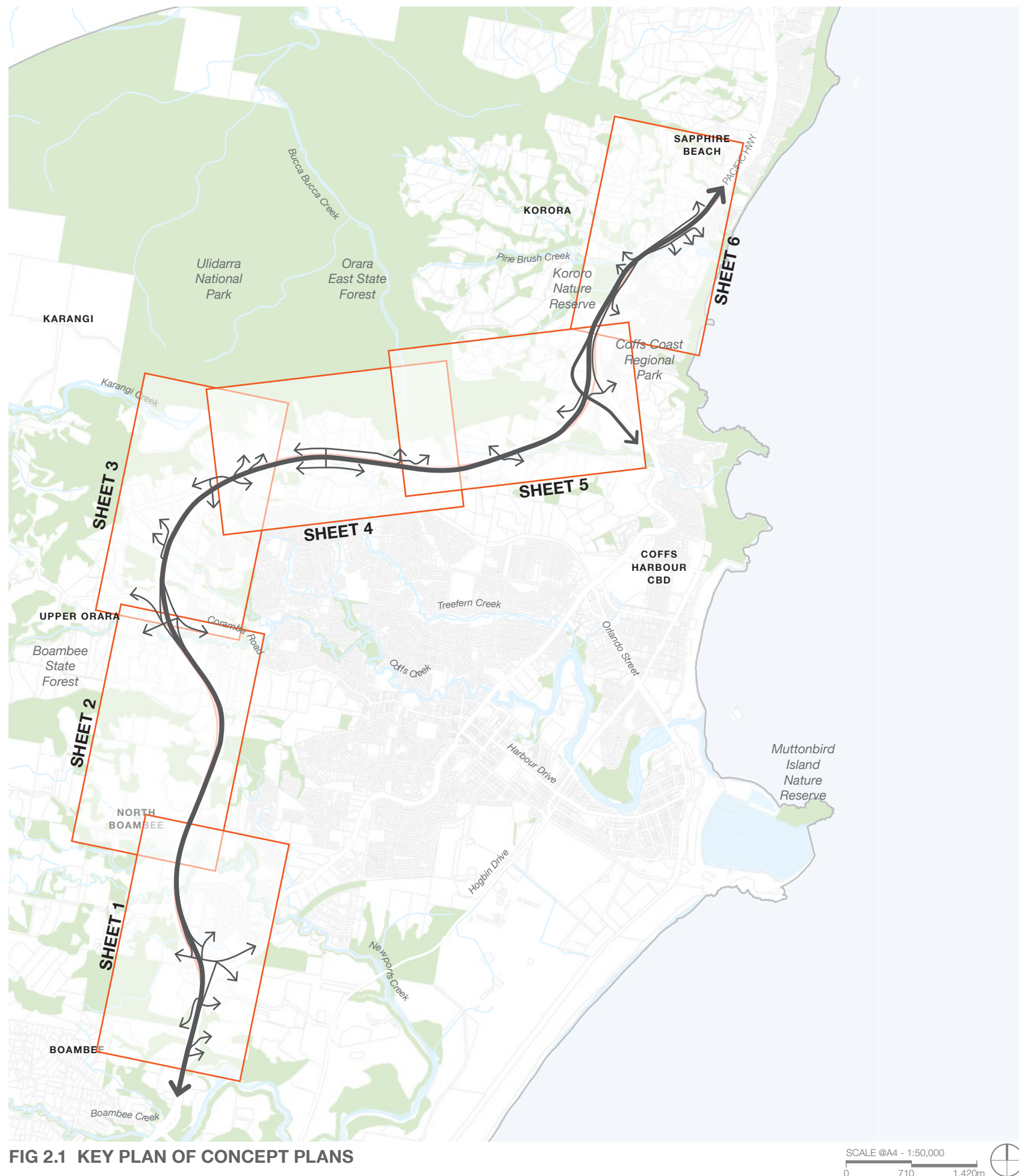


FIG 2.1 KEY PLAN OF CONCEPT PLANS

## 2.1 Urban design concept

The urban design concept prepared in support of the EIS has not changed. This chapter documents the updated urban design concept and schedules in response to the design changes identified in Section 1.2.

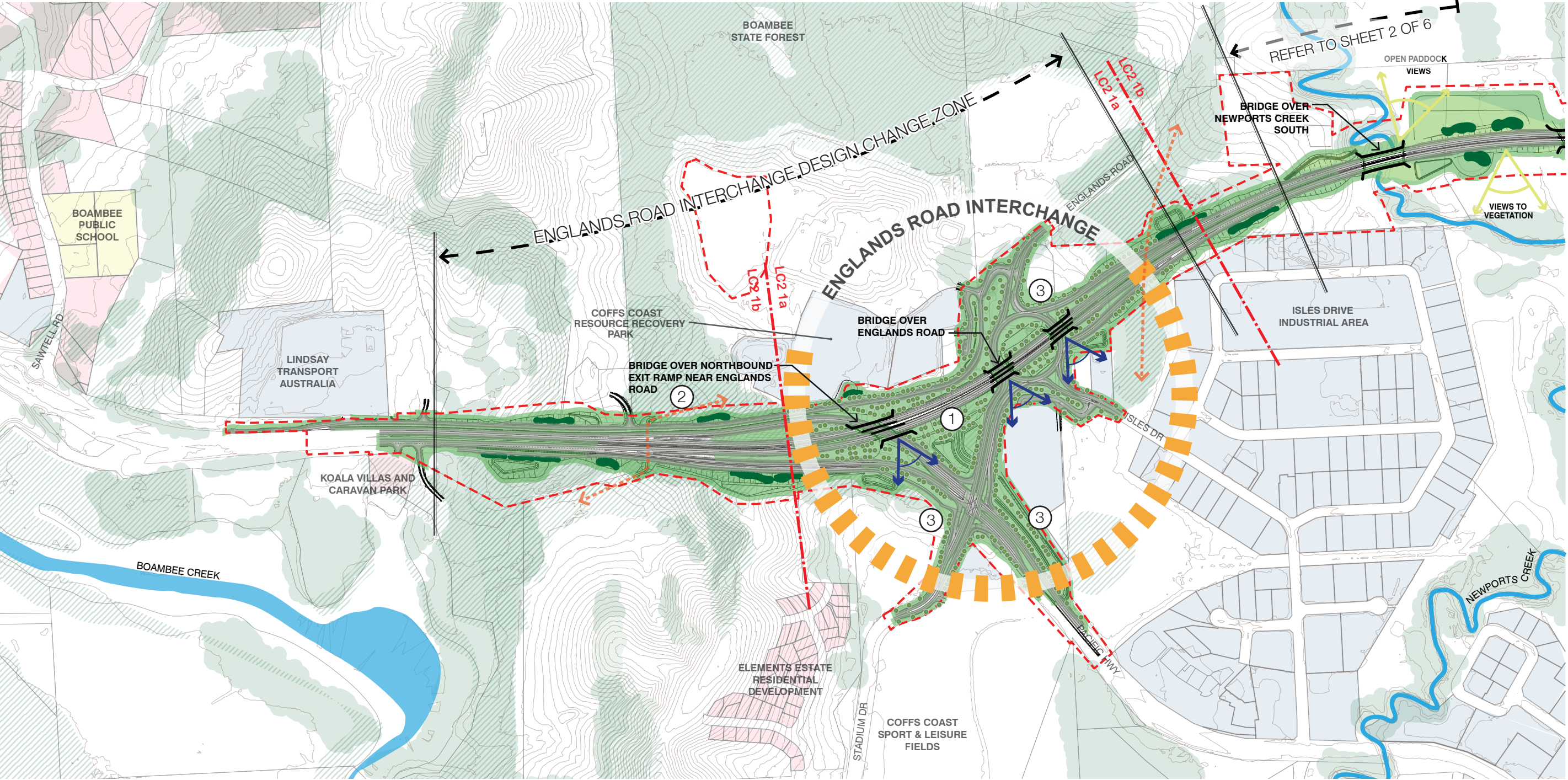
Urban design concept updates include:

- Updates to the concept plans
- Revised species within plant communities in response to Coffs Harbour City Council comments (refer to Section 2.2 for the updated planting mixes)
- Updated planting plans for the proposed design changes (refer to Section 2.2 for the updated planting mixes)
- Updated noise wall locations, length and height as a result of updates to the noise and vibration assessment for the project (refer to Section 2.4 for changes to the noise walls)
- Updated retaining wall number, locations, length and height (refer to Section 2.5 for changes to the retaining walls)
- Updated bridge design – type and category (refer to Section 2.6 for changes to the bridges).

The concept plans provided in this report only include the sheets where there is a design change. The 'missing sheets' are unchanged from the EIS and can be found in Urban Design, Landscape Character and Visual Impact Assessment Report, Arup 2019.

The plans provided in this chapter include markers to show the approximate extent of the design changes. These are referred to as 'design change zone'.



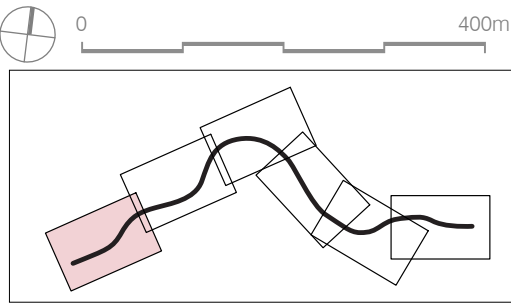
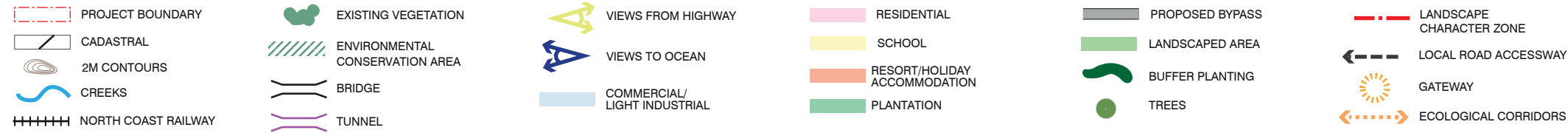


① Englands Road interchange
 ② Boambée State Forest
 ③ Pacific Highway and Englands Road
 Design Change Zone

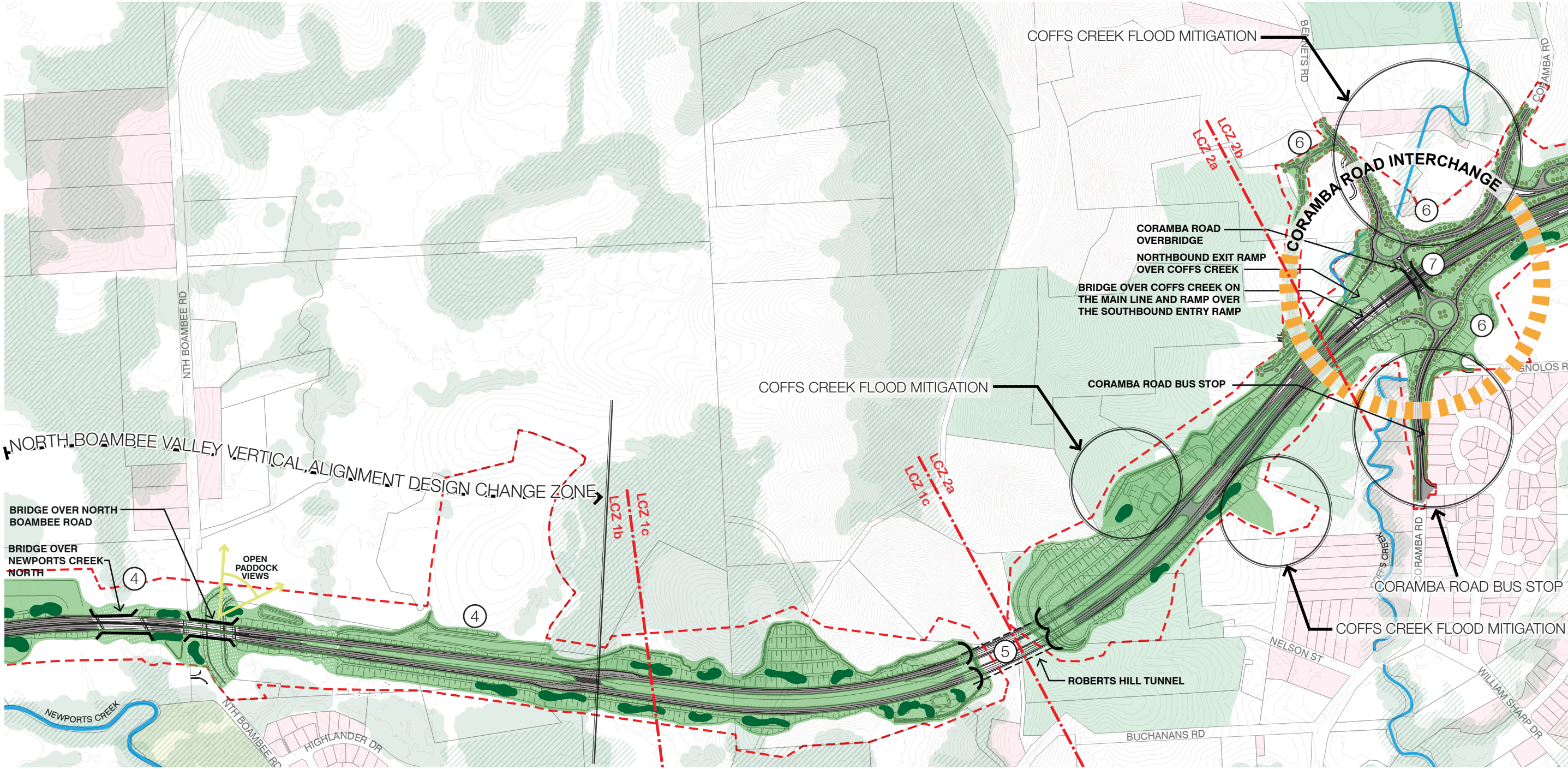
Establish the southern gateway to Coffs Harbour to create a sense of arrival or departure. Opportunity to provide landscape mounds integrated with planting as a gateway landscape feature. Enhance views from ramp structures through position of mounding vegetation, to frame vistas and enhance user experience

Use species for surrounding remnant forest and transition into new vegetation to connect planting.

Integrate design with the landscape setting and provide sufficient screening of structure and new roads where visible from surrounding residential properties







- ④ Newports Creek and North Boambee Valley

Retaining open views to rural pasture-land through low ground cover/grassland planting. 2H:1V vegetated cutting and batters. Use vegetation to frame the highway and enhance driver legibility of the road.
- ⑤ Roberts Hill tunnel

Vegetating the 2H:1V portal facade of the tunnel.
- ⑥ Bennetts Road and Coramba Road

Integrate design with landscape setting and provide sufficient screening at structures and new roads where visible from surrounding residential properties.
- ⑦ Coramba Road interchange

Provide a natural soft landscape designed approach.  
Provision of planting materials and species to be sympathetic to the local area reflecting the landscape typologies that can be experienced from the road.

PROJECT BOUNDARY

CADASTRAL

2M CONTOURS

CREEKS

NORTH COAST RAILWAY

EXISTING VEGETATION

ENVIRONMENTAL CONSERVATION AREA

BRIDGE

TUNNEL

VIEWS FROM HIGHWAY

VIEWS TO OCEAN

COMMERCIAL/LIGHT INDUSTRIAL

RESIDENTIAL

SCHOOL

RESORT/HOLIDAY ACCOMMODATION

PLANTATION

PROPOSED BYPASS

LANDSCAPED AREA

BUFFER PLANTING

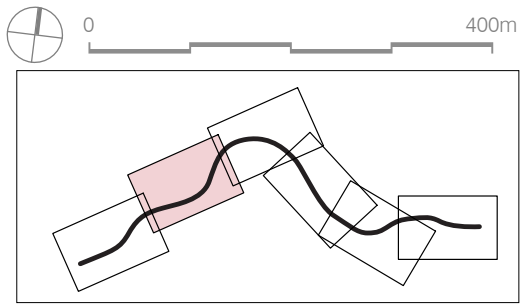
TREES

LANDSCAPE CHARACTER ZONE

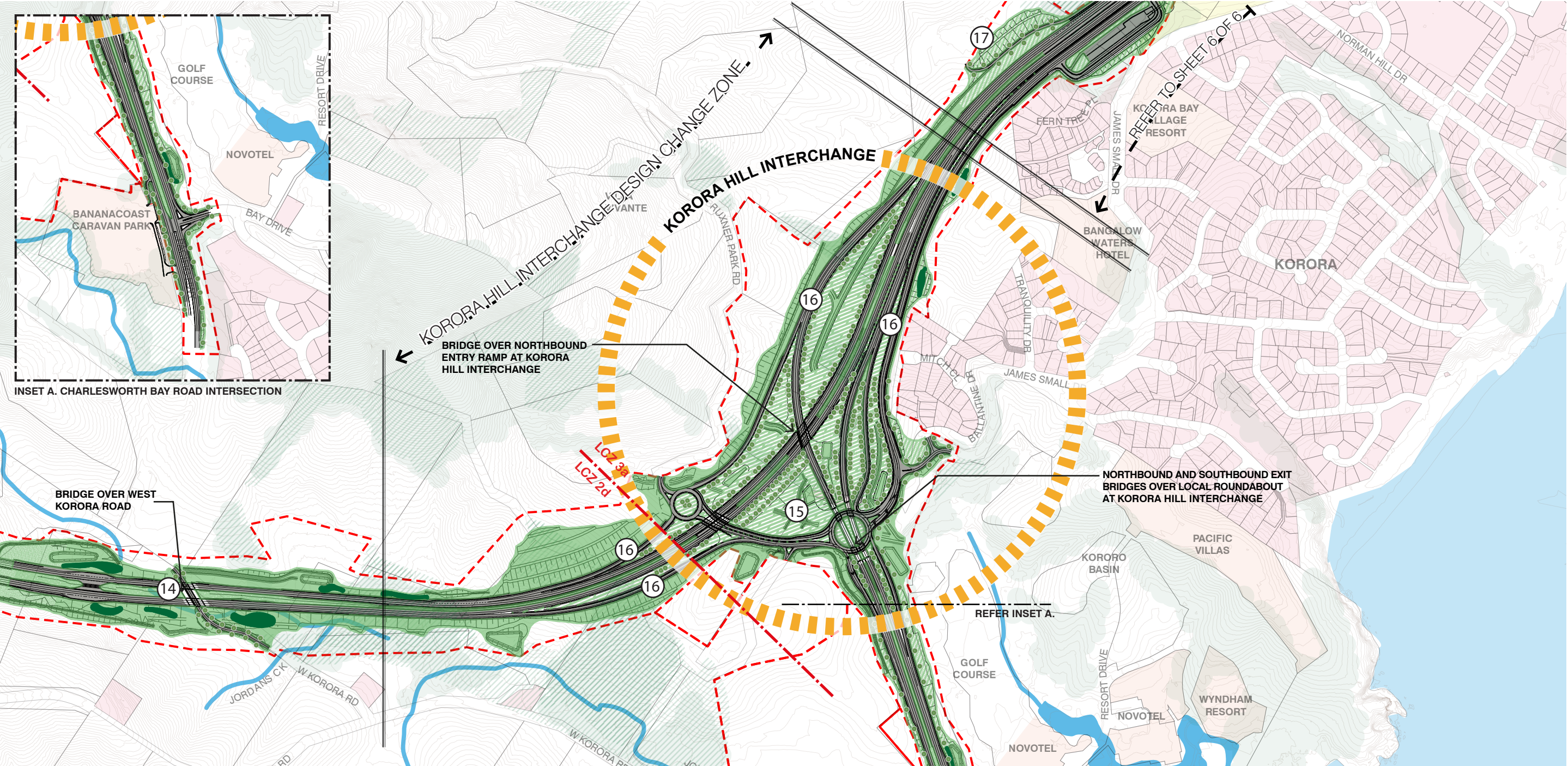
LOCAL ROAD ACCESSWAY

GATEWAY

ECOLOGICAL CORRIDORS







**14** Bridge over West Korora Road

Views to and under the bridge to enhance driver experience and road users to the landscape.

**15** Korora Hill interchange

Creating a sense of arrival or departure and establishing the Northern Gateway to Coffs Harbour. The landscape design narrative will interpret the escarpment meeting the coastline through plant selection and arrangements. Walls to provide identifiable gateway to Coffs Harbour.

**16** Korora Hill interchange on and off ramps

Enhancing views from ramp structures through positioning of vegetation, mounding and artworks to frame/enhance user experience.

**17** Connecting Ecological Corridors: Ulidarra to Kororo Reserve

Revegetating slopes with species found in the local remnant forest patches to create a continuous ecological corridor from Ulidarra to Kororo Nature Reserve.

PROJECT BOUNDARY

CADASTRAL

2M CONTOURS

CREEKS

NORTH COAST RAILWAY

EXISTING VEGETATION

ENVIRONMENTAL CONSERVATION AREA

BRIDGE

TUNNEL

VIEWS FROM HIGHWAY

VIEWS TO OCEAN

COMMERCIAL/LIGHT INDUSTRIAL

RESIDENTIAL

SCHOOL

RESORT/HOLIDAY ACCOMMODATION

PLANTATION

PROPOSED BYPASS

LANDSCAPED AREA

BUFFER PLANTING

TREES

LANDSCAPE CHARACTER ZONE

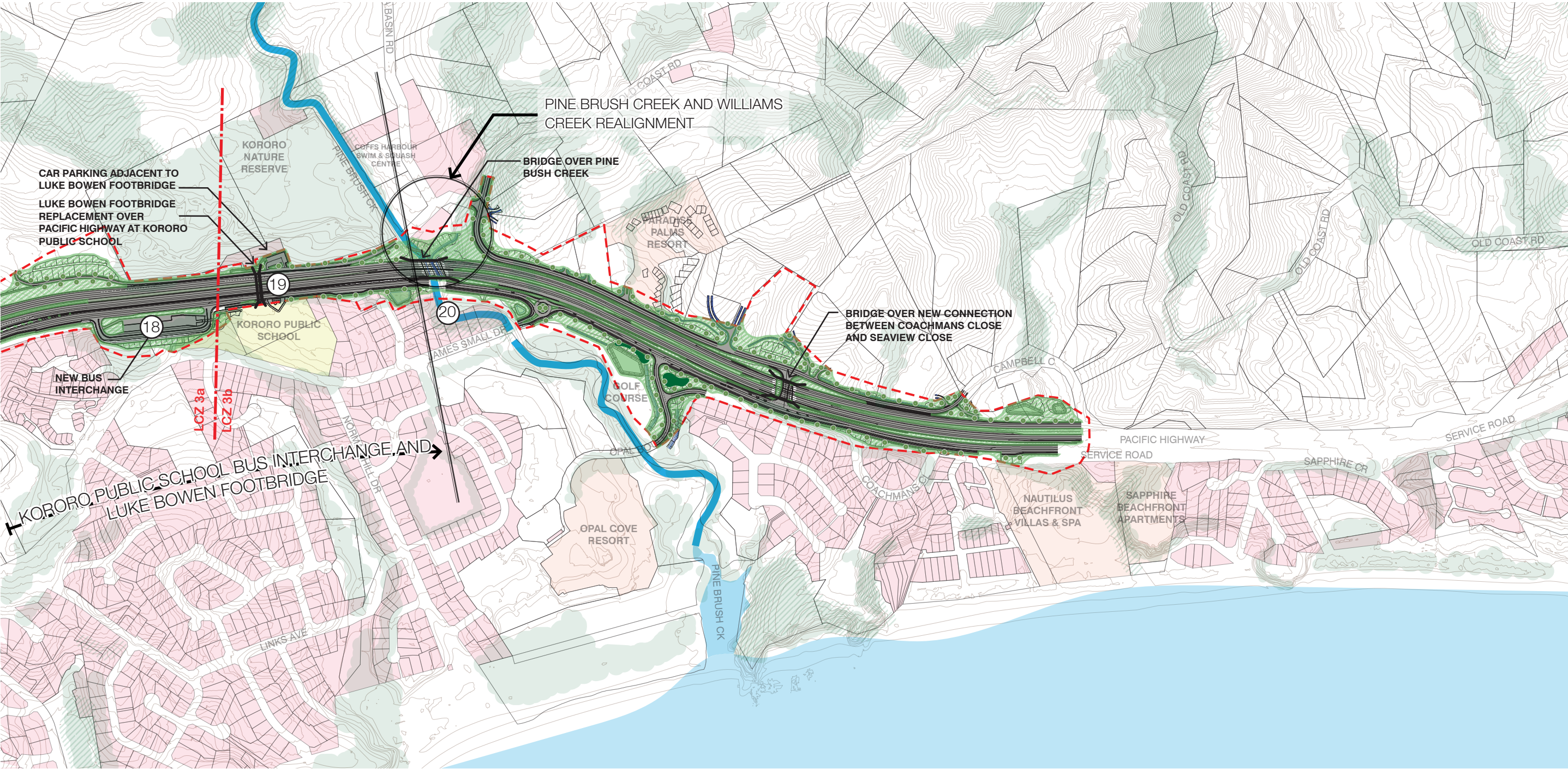
LOCAL ROAD ACCESSWAY

GATEWAY

ECOLOGICAL CORRIDORS

0 400m





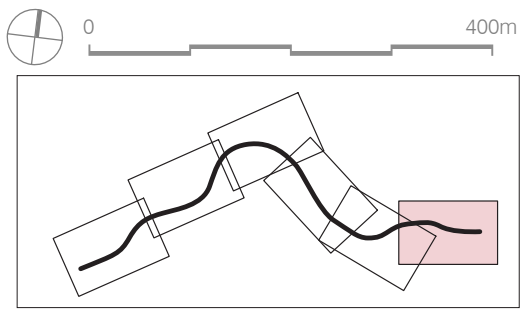
**18 Kororo Public School Bus Interchange**  
Opportunity to integrate vertical retaining wall with recessive urban design treatments and dense screening vegetation. Use of materials sympathetic to the local surroundings.

**19 Luke Bowen footbridge**  
Architecturally designed bridge to provide link across highway to Kororo Public School and bus interchange. A landmark and gateway to Coffs Harbour. Enhanced safety and connectivity with a interchange facility.

**20 Pine Bush Creek**  
Opportunities to integrate ecological enhancements. Consider wider landscape to identify areas of remnant native forest or habitats. Use locally sourced rocks, logs and stumps around water courses to recreate and enhance habitats.

Design Change Zone

- |                     |                                 |                             |                              |                 |                          |
|---------------------|---------------------------------|-----------------------------|------------------------------|-----------------|--------------------------|
| PROJECT BOUNDARY    | EXISTING VEGETATION             | VIEWS FROM HIGHWAY          | RESIDENTIAL                  | PROPOSED BYPASS | LANDSCAPE CHARACTER ZONE |
| CADASTRAL           | ENVIRONMENTAL CONSERVATION AREA | VIEWS TO OCEAN              | SCHOOL                       | LANDSCAPED AREA | LOCAL ROAD ACCESSWAY     |
| 2M CONTOURS         | BRIDGE                          | COMMERCIAL/LIGHT INDUSTRIAL | RESORT/HOLIDAY ACCOMMODATION | BUFFER PLANTING | GATEWAY                  |
| CREEKS              | TUNNEL                          | PLANTATION                  | PLANTATION                   | TREES           | ECOLOGICAL CORRIDORS     |
| NORTH COAST RAILWAY |                                 |                             |                              |                 |                          |





## 2.2 Landscape planting design

The landscape planting design has been updated consistent with the proposed design changes for the project, as outlined in chapter 1.2.

Species within plant communities have been updated in response to Coffs Harbour City Council (CHCC) comments. The particular species identified for removal and replacement are as followed:

- *Elaeocarpus reticulatus* (remove)
- *Strelitzia nicolai* (remove)
- *Melicope elleryana* (remove)
- *Acmena smithii* (remove)
- *Hymenosporum flavum* (remove)  
to be replaced with *Xanthostemon chrysanthus*
- Introduce additional native species to portal mix in direct response to CHCC comments. Species include *Grevillea moonlight* and *Coconut Ice*.

The following plant communities have been amended to incorporate the changes noted above:

- Englands Road interchange
- Open forest mix
- Korora Hill interchange planting
- Portal planting
- Local road mix
- Median planting mix.

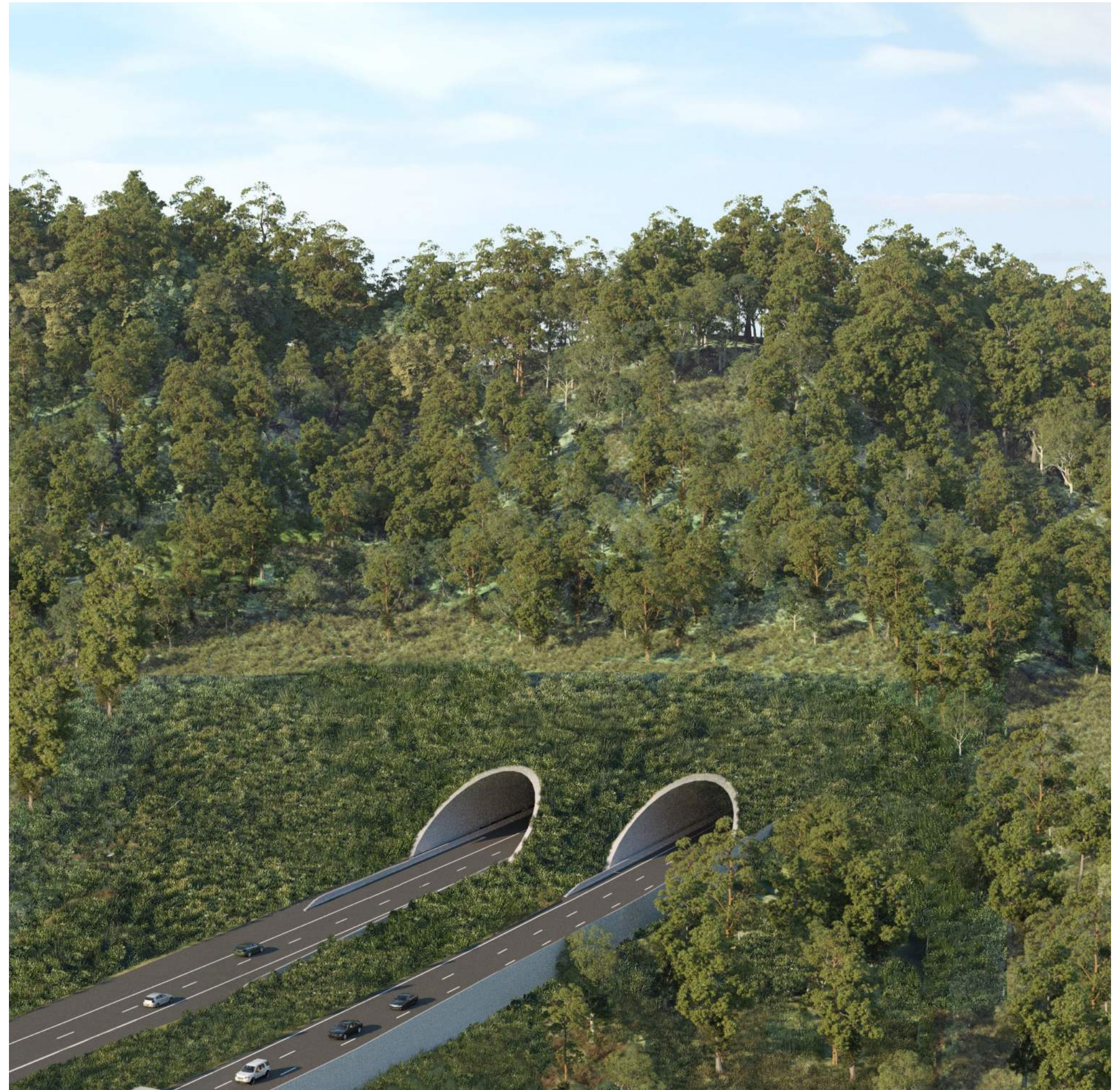


FIG 2.2 ARTIST IMPRESSION OF GATELYS ROAD TUNNEL SOUTHERN PORTAL



Pictorial representation of plant communities

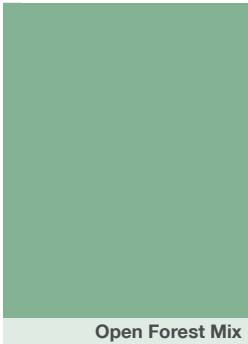
Open forest mix

Design changes made to the open forest mix include:

The removal of *Elaeocarpus reticulatus* (Blueberry Ash) and *Eucalyptus pilularis* (Blackbutt)



Eucalyptus saligna



Open Forest Mix



Eucalyptus resinifera subsp. hemilampra



Syncarpia glomulifera



Eucalyptus propinqua



Cryptocarya glaucescens



Polyscias sambucifolia



Archirhodomyrtus beckleri



Persoonia stradbokensis



Acacia melanoxylon



Dodonaea triquetra



Leucopogon lanceolatus



Dianella caerulea



Pratia purpurascens



Imperata cylindrica



Lomandra longifolia



Entolasia stricta



Hibbertia scandens

Botanic Name	Common Name
Trees	
<i>Allocasuarina torulosa</i>	Forest Oak
<i>Angophora costata</i>	Smooth-barked Apple
<i>Corymbia intermedia</i>	Pink Bloodwood
<i>Eucalyptus carnea</i>	Thick-leaved Mahogany
<i>Eucalyptus microcorys</i>	Tallowwood
<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum
<i>Eucalyptus resinifera</i> subsp. <i>hemilampra</i>	Red Mahogany
<i>Eucalyptus saligna</i>	Sydney Blue Gum
<i>Eucalyptus siderophloia</i>	Grey Ironbark
<i>Eucalyptus signata</i>	Scribbly Gum
<i>Syncarpia glomulifera</i>	Turpentine
Shrubs	
<i>Archirhodomyrtus beckleri</i>	Rose Myrtle
<i>Cryptocarya glaucescens</i>	Jackwood
<i>Dodonaea triquetra</i>	Hop Bush
<i>Leucopogon lanceolatus</i>	Lance Beard-heath
<i>Persoonia stradbokensis</i>	Geebung
<i>Polyscias sambucifolia</i>	Ash Elderberry
Grasses and Groundcovers	
<i>Calochlaena dubia</i>	Soft Bracken
<i>Dianella caerulea</i>	Flax Lily
<i>Entolasia stricta</i>	Wiry Panic
<i>Hibbertia scandens</i>	Guinea Flower
<i>Imperata cylindrica</i>	Blady Grass
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Oplismenus aemulus</i>	Basket Grass
<i>Pratia purpurascens</i>	White Root

Note: The planting list is indicative only. Planting selection to be confirmed during detailed design.



Local road mix

Design changes made to the local road mix include:

The removal of *Acmena smithii* (Lilly Pilly) and *Hymenosporum flavum* (Native Frangipani). These have been replaced with *Callistemon viminalis* (Bottlebrush) and *Xanthostemon chrysanthus* (Golden Penda) respectively.

Median planting mix

Design changes made to the median planting mix include:

The removal of *Melicope elleryana* (Pink Melicope).



Botanic Name	Common Name
Trees	
Backhousia citriodora	Lemon Scented Myrtle
Banksia integrifolia	Coastal Banksia
Brachychiton acerifolius	Illawarra Flame Tree
Brachychiton discolor	Lace Bark
Caesalpinia ferrea	Leopard Tree
Cupaniopsis anarcardioides	Tuckeroo
Xanthostemon chrysanthus	Golden Penda
Callistemon viminalis	Bottlebrush
Understorey	
Dianella caerulea	Flax Lily
Hibbertia scandens	Guinea Flower
Leucopogon lanceolatus	Lance Beard-heath
Lomandra longifolia	Mat Rush
Persoonia stradbokensis	Geebung
Pratia purpurascens	White Root
Trochocarpa laurina	Tree Heath

Note: The planting list is indicative only. Planting selection to be confirmed during detailed design.

Added species since EIS 2019



Pictorial representation of plant communities

Feature and Portal planting

■ Englands Road interchange

Design changes made to the Englands road interchange mix include:

The removal of *Eucalyptus pilularis* (Blackbutt) and *Elaeocarpus reticulatus* (Blueberry Ash).



Botanic Name	Common Name
Coastal Forest	
Trees	
Angophora costata	Smoothbarked Apple
Corymbia intermedia	Pink Bloodwood
Eucalyptus resinifera subsp. hemilampra	Red Mahogany
Eucalyptus signata	Scribbly Gum
Syncarpia glomulifera	Turpentine
Understorey	
Blechnum cartilagineum	Gristle Fern
Calochlaena dubia	Soft Bracken
Dianella caerulea	Flax Lily
Dodonaea triquetra	Hop Bush
Imperata cylindrica	Blady Grass
Leucopogon lanceolatus	Beard Heath
Lomandra longifolia	Spiny-headed Mat-rush
Notelaea longifolia	Mock Olive
Persoonia stradbokensis	Geebung
Polyscias sambucifolia	Ash Elderberry
Pteridium esculentum	Bracken Fern

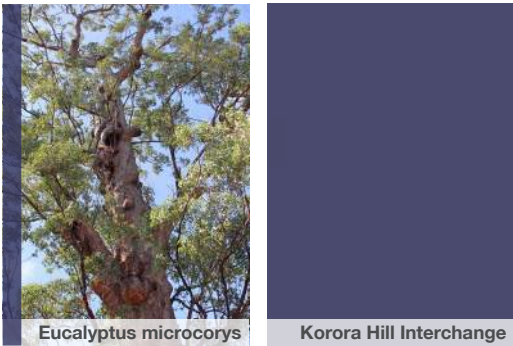
Note: The planting list is indicative only. Planting selection to be confirmed during detailed design.



Pictorial representation of plant communities

■ Korora Hill interchange planting

Design changes made to the korora hill interchange mix include:  
  
The removal of Eucalyptus pilularis (Blackbutt) and Strelitzia nicolai (Giant Bird of Paradise).



Botanic Name	Common Name
Coastal Forest	
Trees	
Eucalyptus microcorys	Tallowwood
Lophostemon confertus	Brush Box
Syncarpia glomulifera	Turpentine
Understorey	
Archirhodomyrtus beckeri	Rose Myrtle
Blechnum cartilagineum	Gristle Fern
Cryptocarya glaucescens	Jackwood
Cryptocarya microneura	Murrogun
Cryptocarya rigida	Forest Maple
Cyathea australis	Tree Ferns
Imperata cylindrica	Blady Grass
Lomandra longifolia	Mat Rush
Synoum glandulosum	Scentless Rosewood
Pseuderanthemum variabile	Pastel Flower
Pteridium esculentum	Bracken Fern
Rhodamnia rubescens	Scrub Turpentine

Note: The planting list is indicative only. Planting selection to be confirmed during detailed design.



# Pictorial representation of plant communities

## ■ Portal planting

The portal planting design would include species that mimic the distinct character of the adjoining planting, whilst giving consideration to ongoing maintenance and management requirements. In locations where portals are situated within both agricultural land and bushland, species will be considered to maintain the existing abrupt transition, and not blur this existing character. Species such as philodendron martianum and calathea lutea will be considered, complementing the form of the adjoining banana plantation. Bushland species such as Grevillea Moonlight or Coconut Ice will be considered, reinforcing the native plating palette. As the planting transitions from the adjoining vegetation towards the road, the planting palette will consider hard tussocky grass species, such as Lomandra longifolia. The planting design at these locations will be given careful consideration during detailed design to ensure a sympathetic design response.

*Note: The planting suggestions are indicative only. Planting selection to be confirmed during detailed design.*

□ Added species since EIS 2019





## Planting design concept plans

The following plans at 1:4000 scale illustrate the proposed planting in response to the design changes identified in Section 1.2.

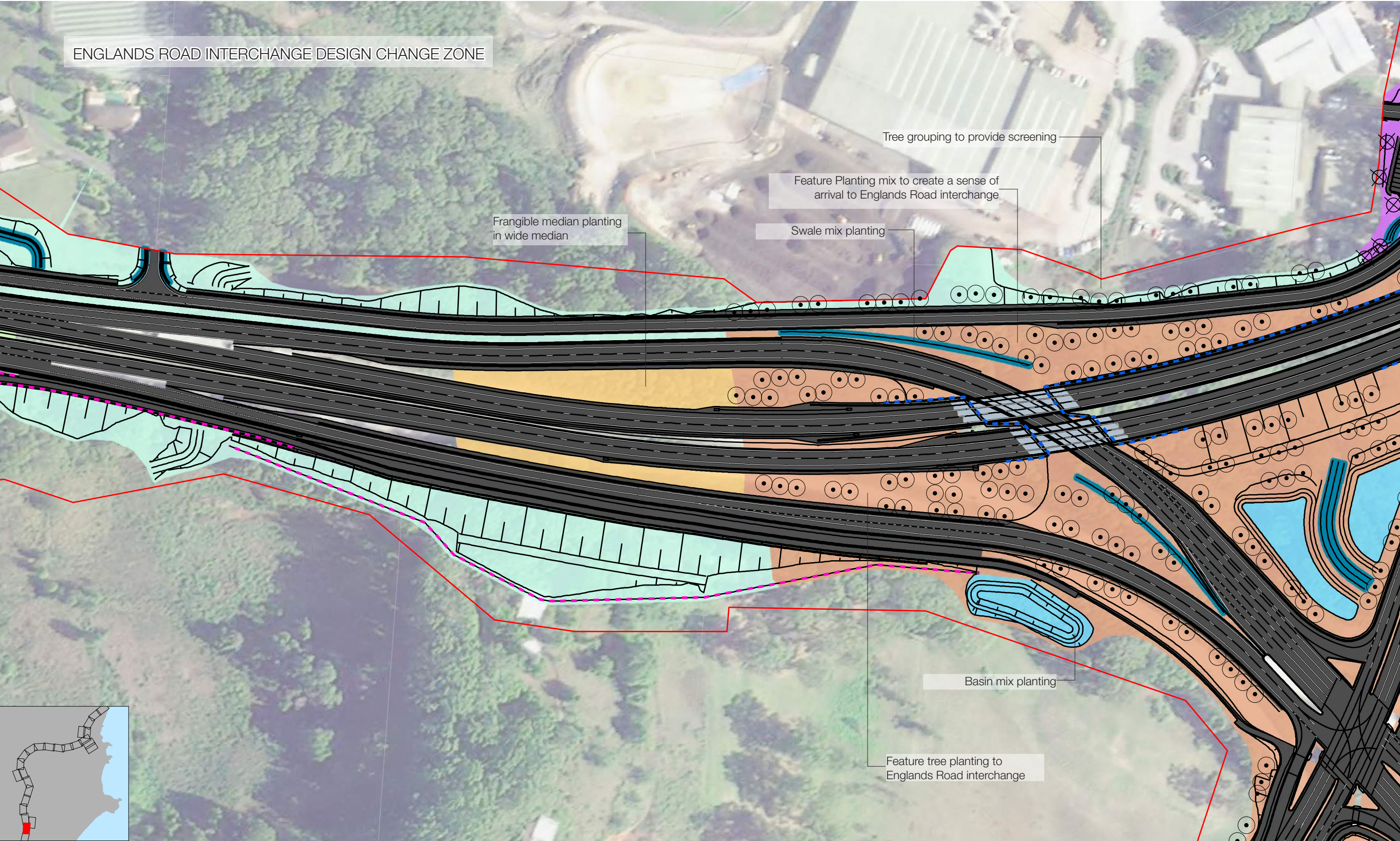
The planting concepts plans do not include ancillary sites, however it is assumed that these areas will be reinstated to their current condition on completion of the project, subject to landowner agreement.

The planting design concept plans provided in this report only include the sheets where there is a design change. The 'missing sheets' are unchanged from the EIS and can be found in Urban Design, Landscape Character and Visual Impact Assessment Report, Arup 2019.



FIG 2.3 ARTIST IMPRESSION OF ENGLANDS ROAD INTERCHANGE





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping

- Local Road Planting Mix
- Median Planting
- Feature Planting

- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix

- Grass Mix
- Corridor Frangible Mix

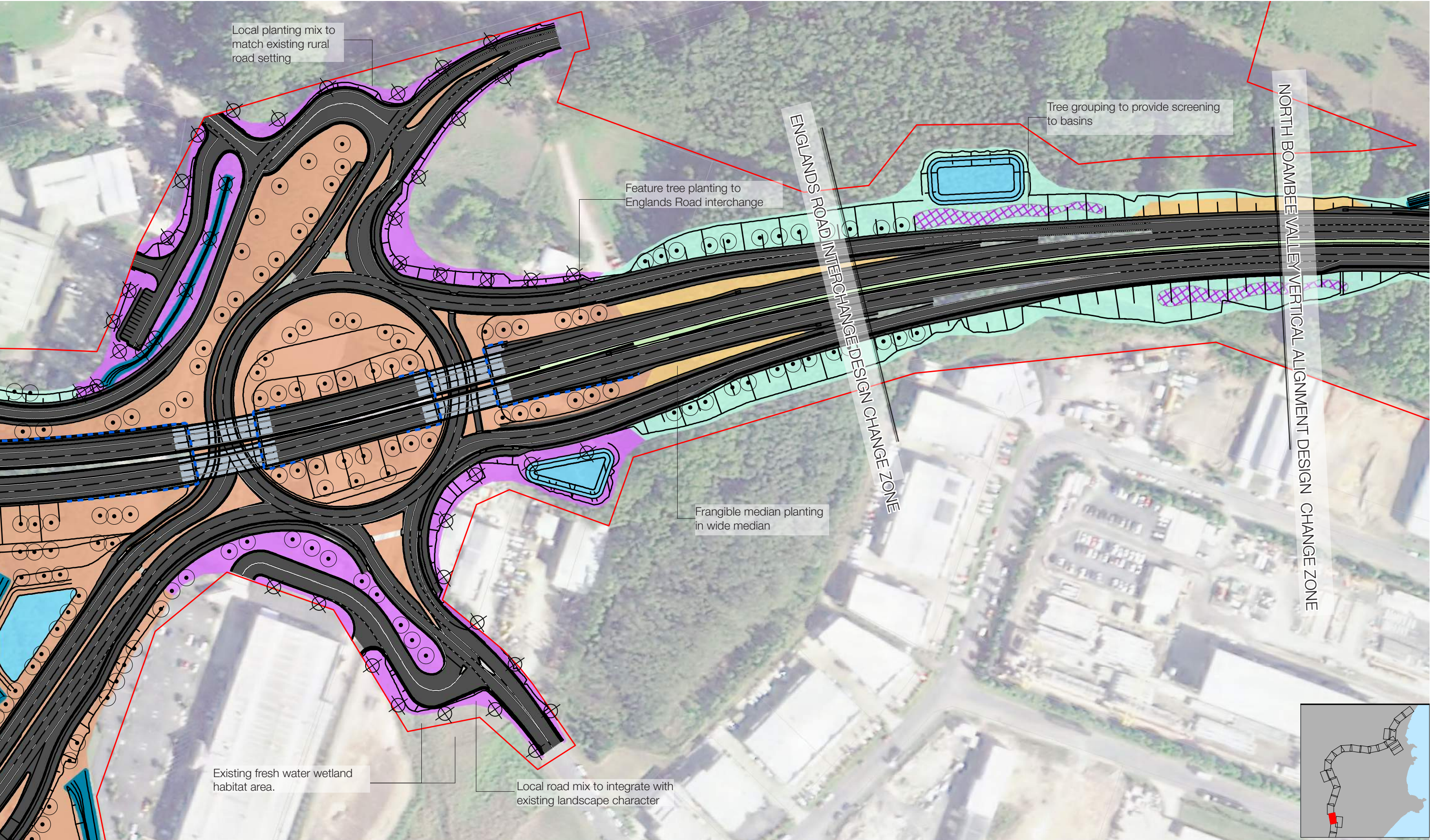
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

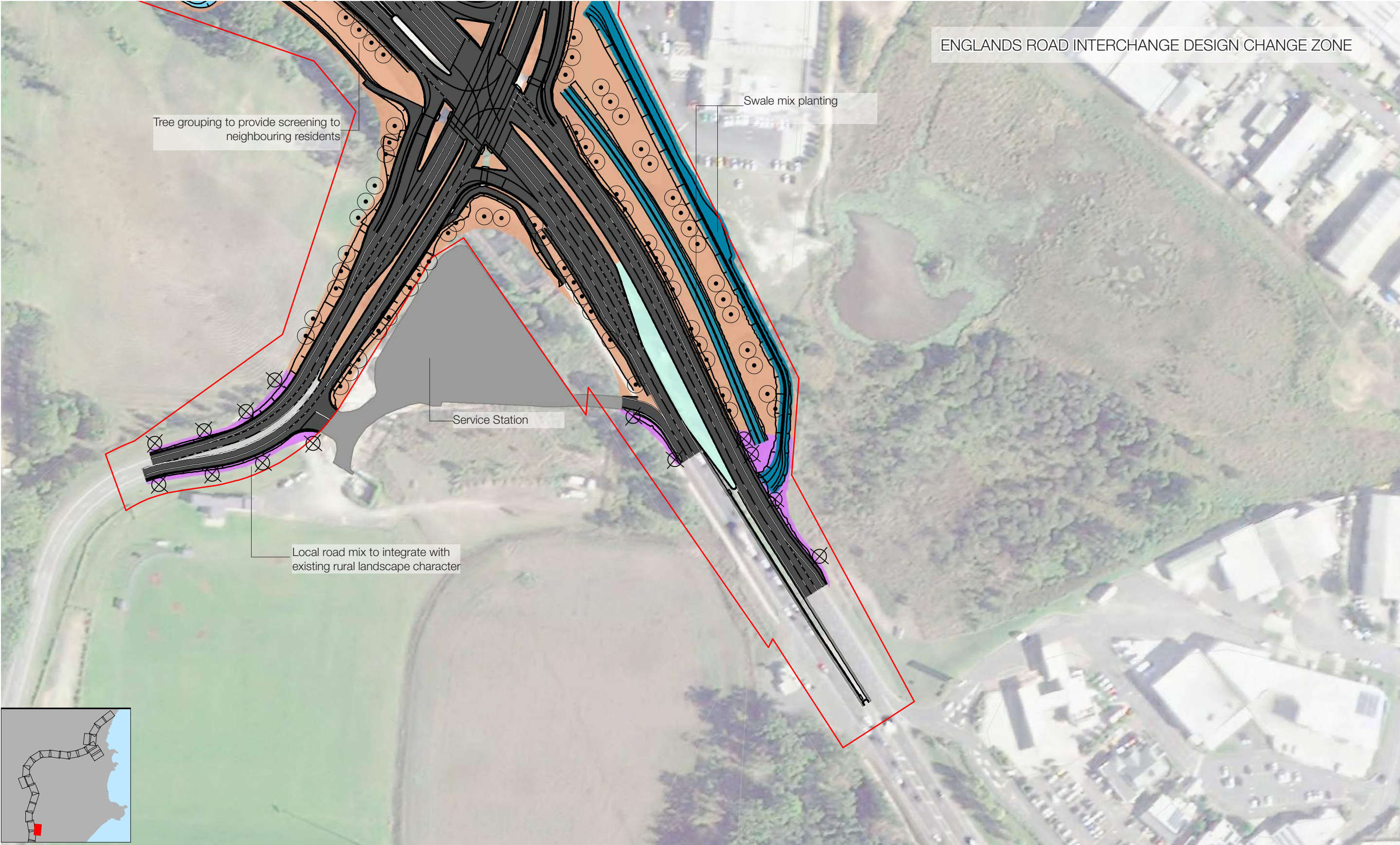
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

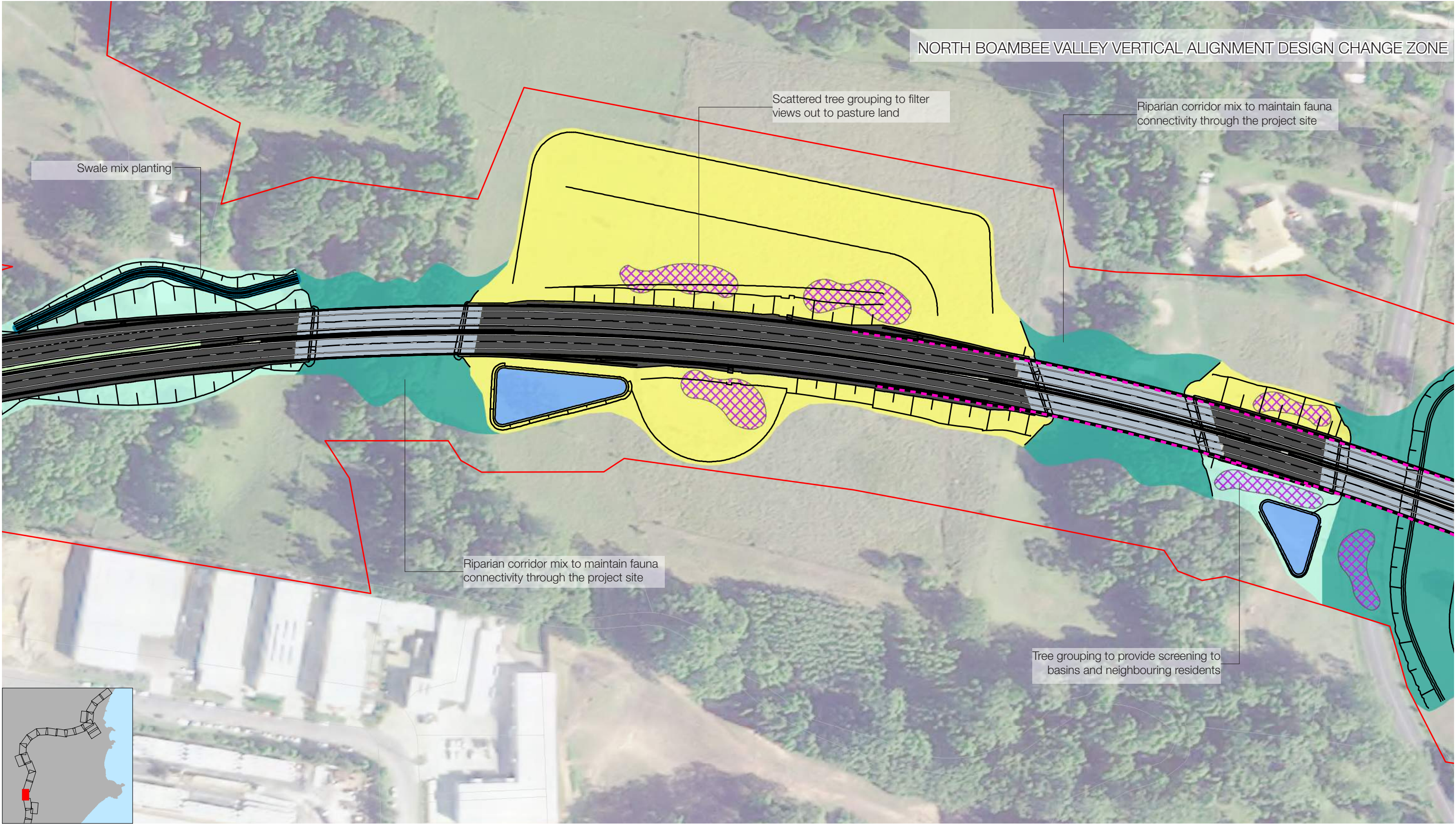
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint	Planting:	Local Road Planting Mix	Riparian Corridor	Seeding:	Grass Mix
Retaining Wall	Feature Trees	Median Planting	Swale Planting	Lowland Rainforest Mix	Corridor Frangible Mix
Noise Wall	Street Trees	Feature Planting	Basin Planting Mix	Wet Sclerophyll Forest Mix	
	Tree Grouping		Portal Planting	Open Forest Mix	

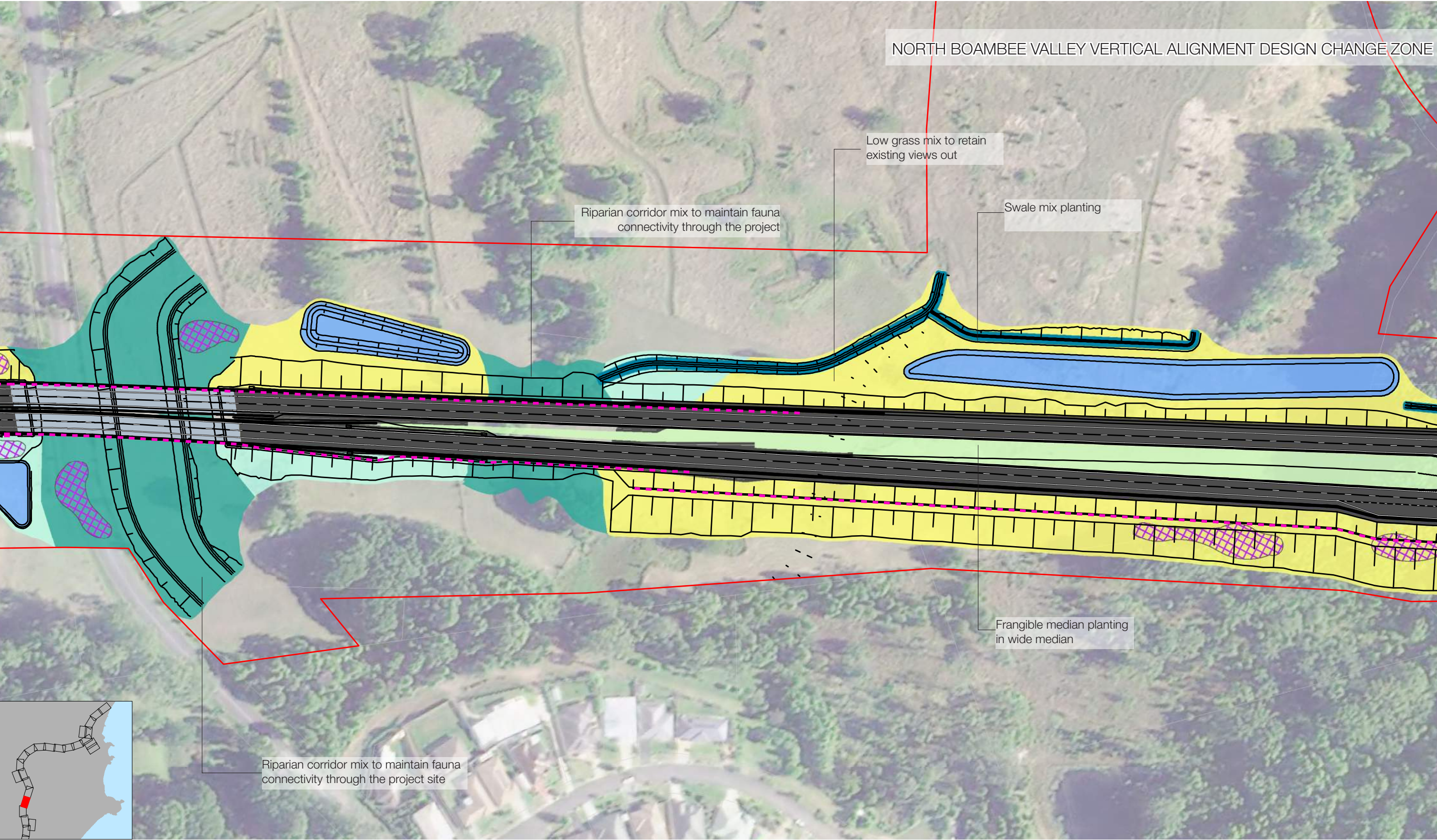
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

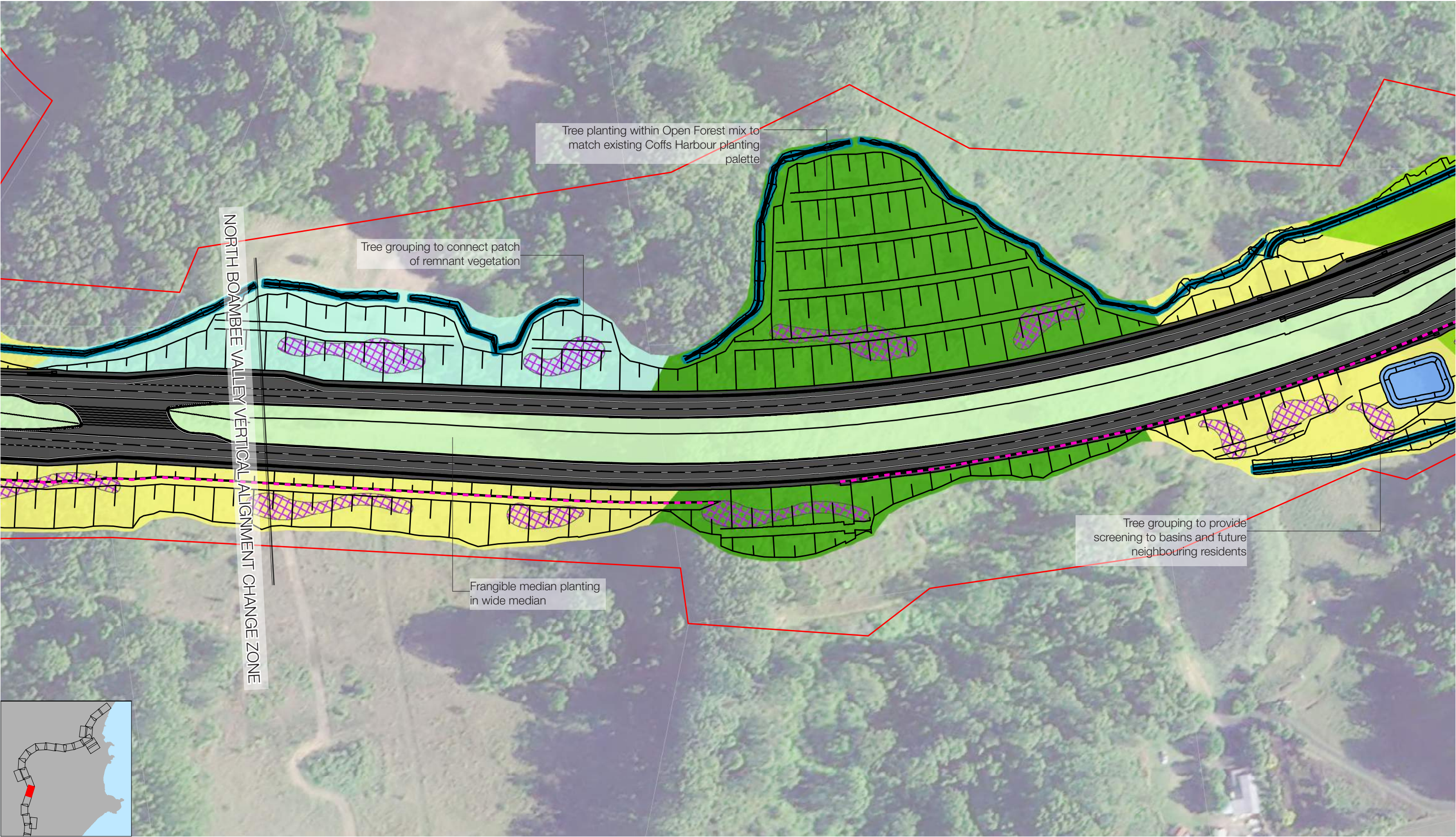
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

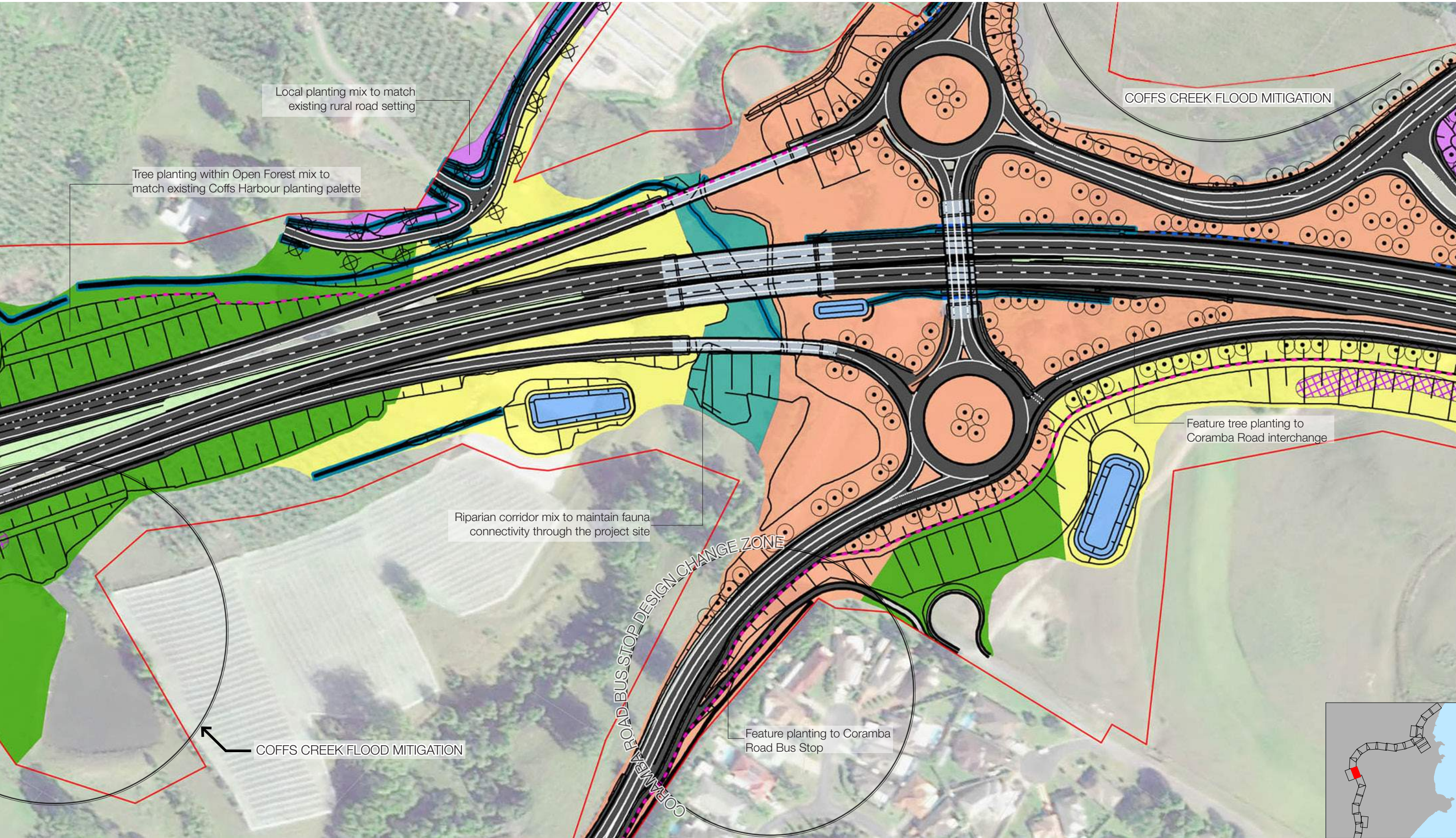
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping

- Local Road Planting Mix
- Median Planting
- Feature Planting

- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix

- Grass Mix
- Corridor Frangible Mix

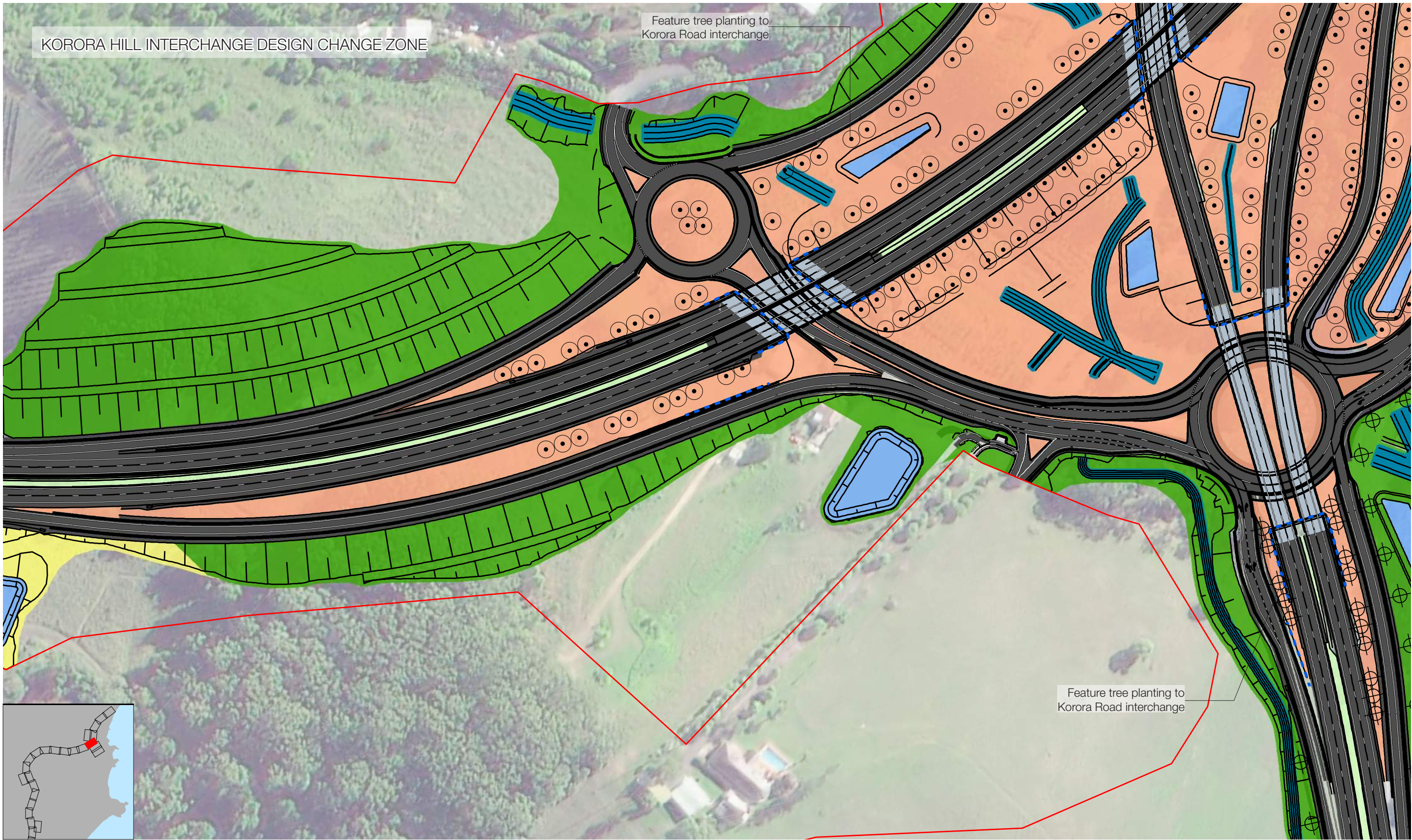
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

**Planting:**

- Construction footprint
- Retaining Wall
- Noise Wall
- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

**Seeding:**

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

- Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

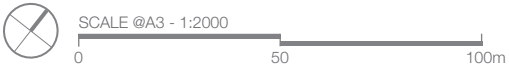
0 50 100m



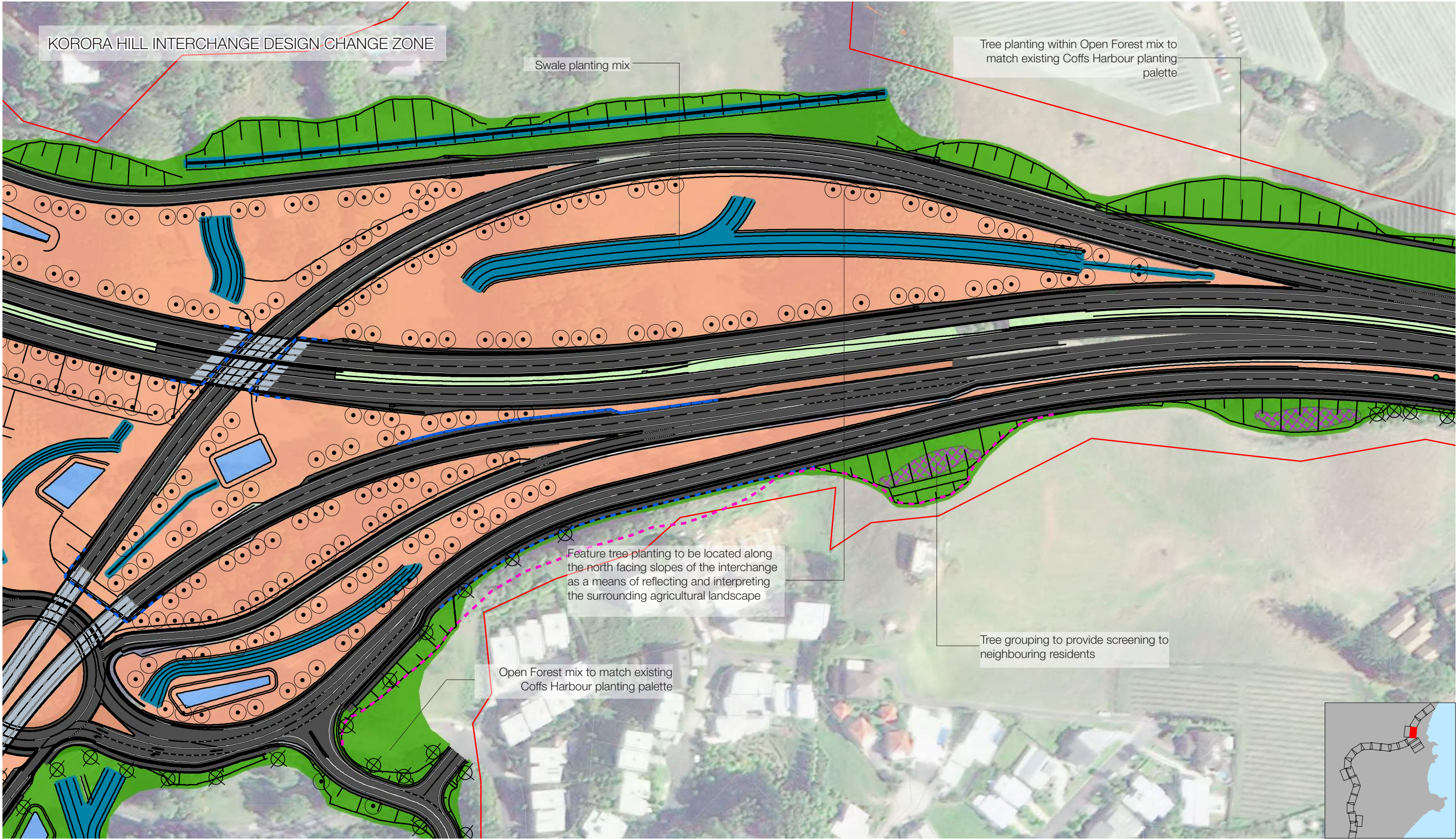


Legend

Construction footprint		Planting:		Seeding:		Design Change Zone	
Construction footprint	Feature Trees	Local Road Planting Mix	Riparian Corridor	Lowland Rainforest Mix	Grass Mix	*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.	
Retaining Wall	Street Trees	Median Planting	Swale Planting	Wet Sclerophyll Forest Mix	Corridor Frangible Mix		
Noise Wall	Tree Grouping	Feature Planting	Basin Planting Mix	Open Forest Mix			
			Portal Planting				







**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping
- Local Road Planting Mix
- Median Planting
- Feature Planting
- Riparian Corridor
- Swale Planting
- Basin Planting Mix
- Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix
- Grass Mix
- Corridor Frangible Mix

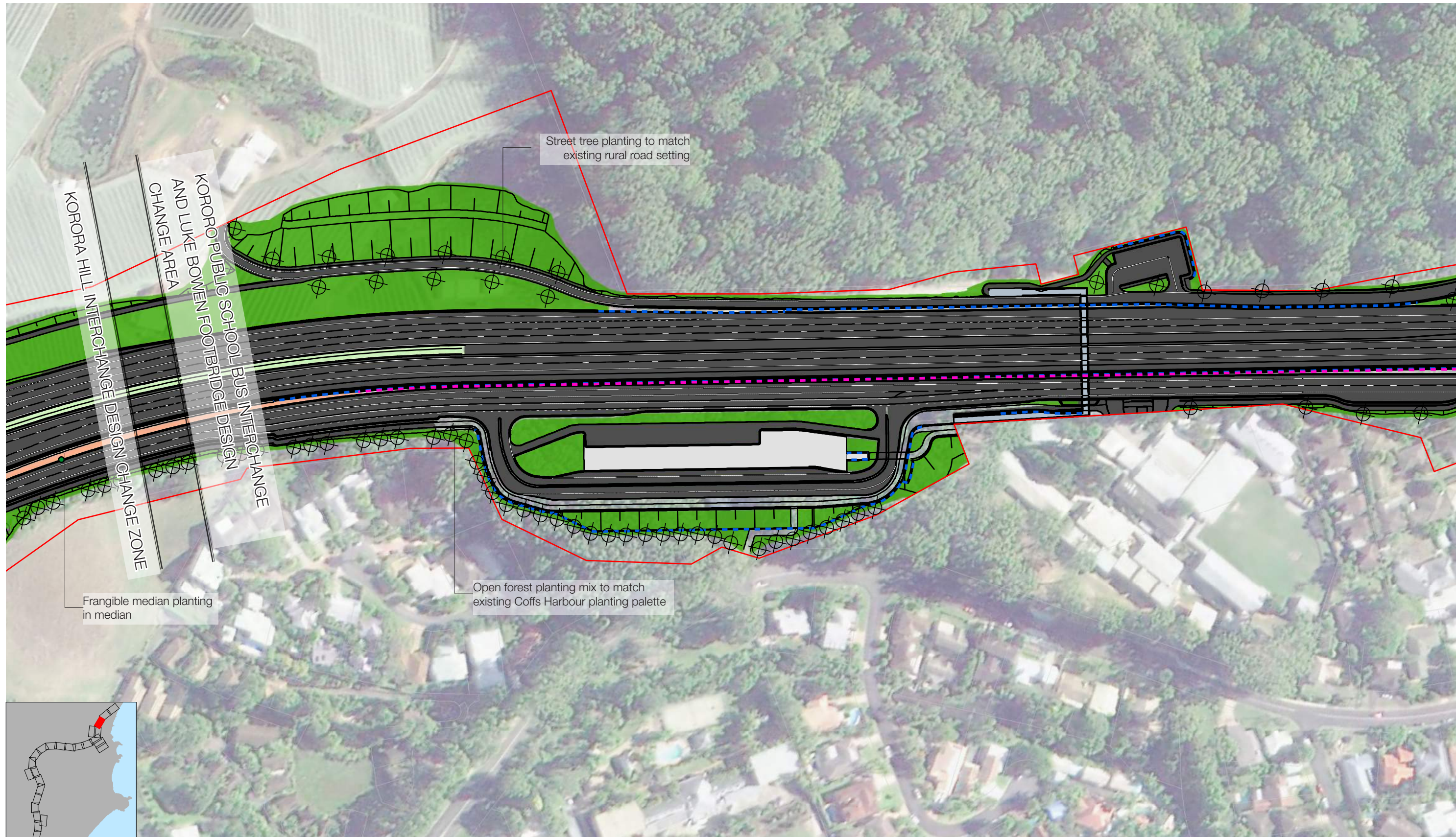
Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m





Legend

Construction footprint	Planting:	Local Road Planting Mix	Riparian Corridor	Seeding:	Grass Mix
Retaining Wall	Feature Trees	Median Planting	Swale Planting	Lowland Rainforest Mix	Corridor Frangible Mix
Noise Wall	Street Trees	Feature Planting	Basin Planting Mix	Wet Sclerophyll Forest Mix	
	Tree Grouping		Portal Planting	Open Forest Mix	

Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.







**Legend**

Construction footprint

Retaining Wall

Noise Wall

Planting:

- Feature Trees
- Street Trees
- Tree Grouping

Local Road Planting Mix

Median Planting

Feature Planting

Riparian Corridor

Swale Planting

Basin Planting Mix

Portal Planting

Seeding:

- Lowland Rainforest Mix
- Wet Sclerophyll Forest Mix
- Open Forest Mix

Grass Mix

Corridor Frangible Mix

Design Change Zone

\*Median planting extent to be reviewed during detailed design in line with TfNSW guidelines for clear zones, road furniture and maintenance requirements.

SCALE @A3 - 1:2000

0 50 100m



THIS PAGE WAS INTENTIONALLY LEFT BLANK



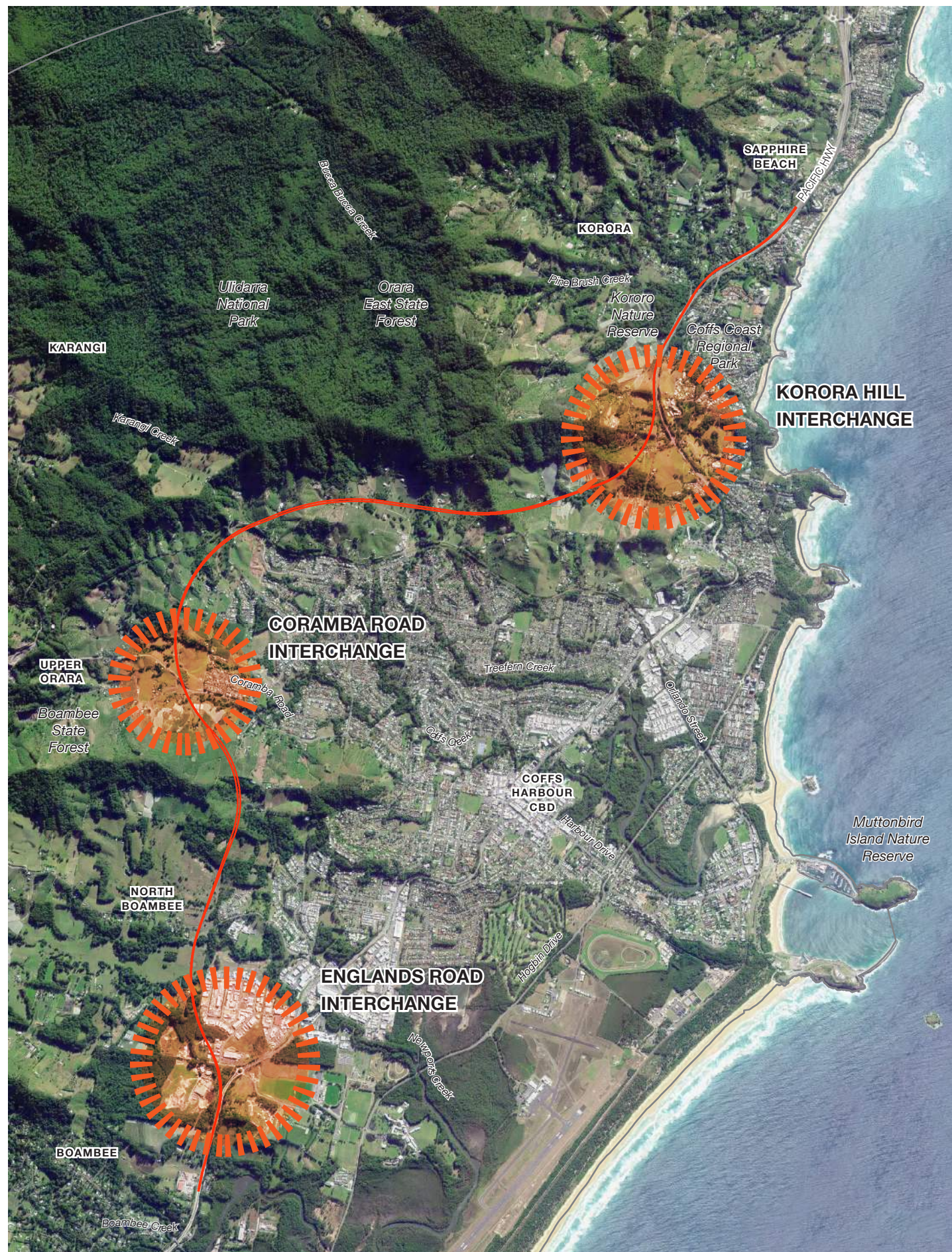


FIG 2.4 INTERCHANGES

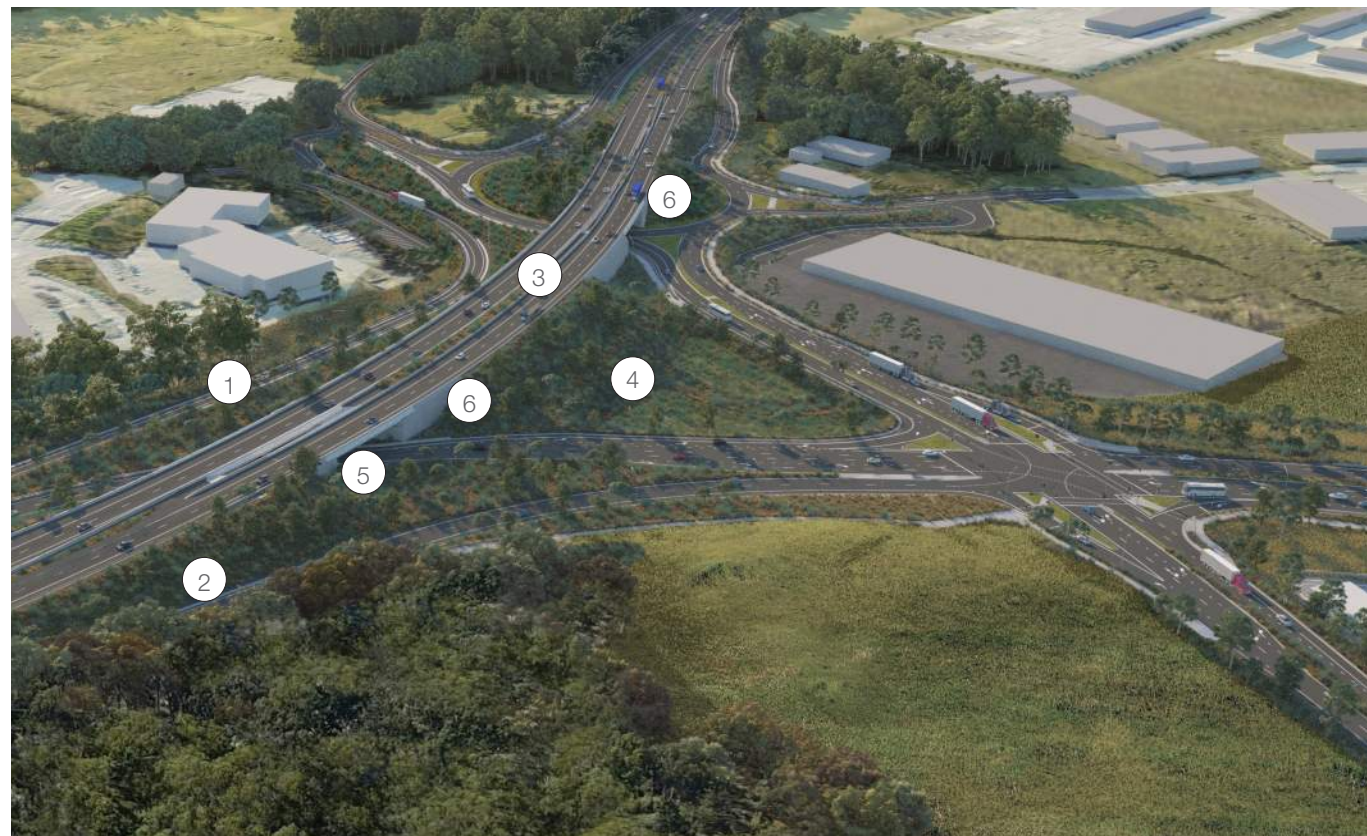
SCALE @A4 - 1:50,000  
0 710 1,420m

## 2.3 Interchange design

The urban and landscape design strategy and concept for the interchanges for the proposed design changes is consistent with the strategy outlined in the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).

This section documents the changes to the highway interchanges - Englands Road interchange and the Korora Hill interchange. The urban and landscape design for the Coramba Road interchange is documented in the Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).





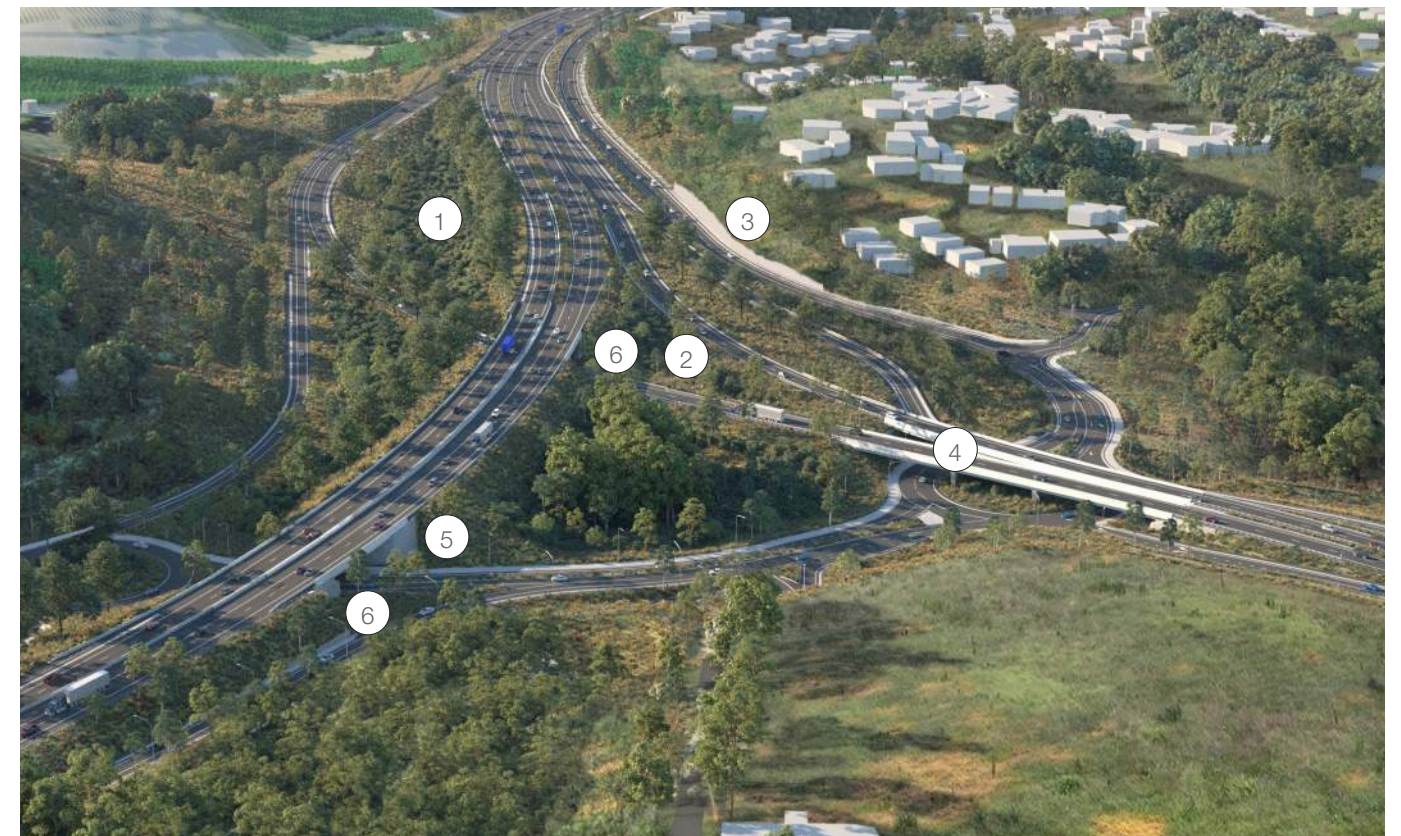
**FIG 2.5 INDICATIVE CONCEPT OF ENGLANDS ROAD INTERCHANGE**

Key features of the urban design concept for the proposed Englands Road interchange include:

1. Vertical planting along edge of roads to delineate road curves and turns.
2. Structured clumps of trees (different species mix to other interchanges) laid out geometrically or in a pattern throughout interchanges to signify gateway and transitions and frame views where possible.
3. Vegetated median to match interchange planting.
4. Elevated slopes laid out with patterned planting

and mounded topographies. Tree planting to be kept below level of highway to allow views across wider landscapes.

5. Under highway bridge structures to provide a gateway experience and be sympathetic to the context through use of materials and design structural from.
6. Frame views through design of structures to feature landscape planting celebrating arrival / exit experience



**FIG 2.6 INDICATIVE CONCEPT OF KORORA HILL INTERCHANGE**

Key features of the urban design concept for the proposed Korora Hill interchange include:

1. Structured clumps of trees (different species mix to other interchanges) laid out geometrically or in a pattern throughout interchanges to signify gateway and transitions and frame views where possible.
2. Revegetation between structures where possible to soften visual impact.
3. Retaining walls to be sympathetic to context through restrained use of materials and patterning, soften walls with planting along front.

4. Architectural lighting or installations under overpass to reduce overshadowing effect and mitigate visual impacts of structures.

5. Design of structures to be sympathetic to landscape and context through use of materials and design of forms.
6. Frame views through design of structures to feature landscape planting celebrating arrival / exit experience





PATTERNED WALLS PROVIDE VISUAL INTEREST THAT CAN RELATE TO CONTEXT AND DISCOURAGE GRAFFITI VANDALISM.

## 2.4 Noise attenuation

The urban design strategy and concept for the noise walls is consistent with the strategy outlined in the EIS report, Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).

This section documents the changes to the noise walls as a result of the design changes identified in Section 1.2. The noise walls have either been; amended, removed or added in response to the updated noise assessment prepared for the amended design. This has been captured in table 2.1.



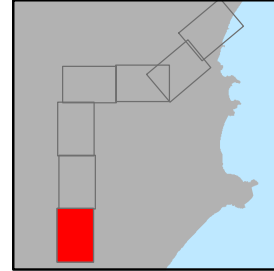
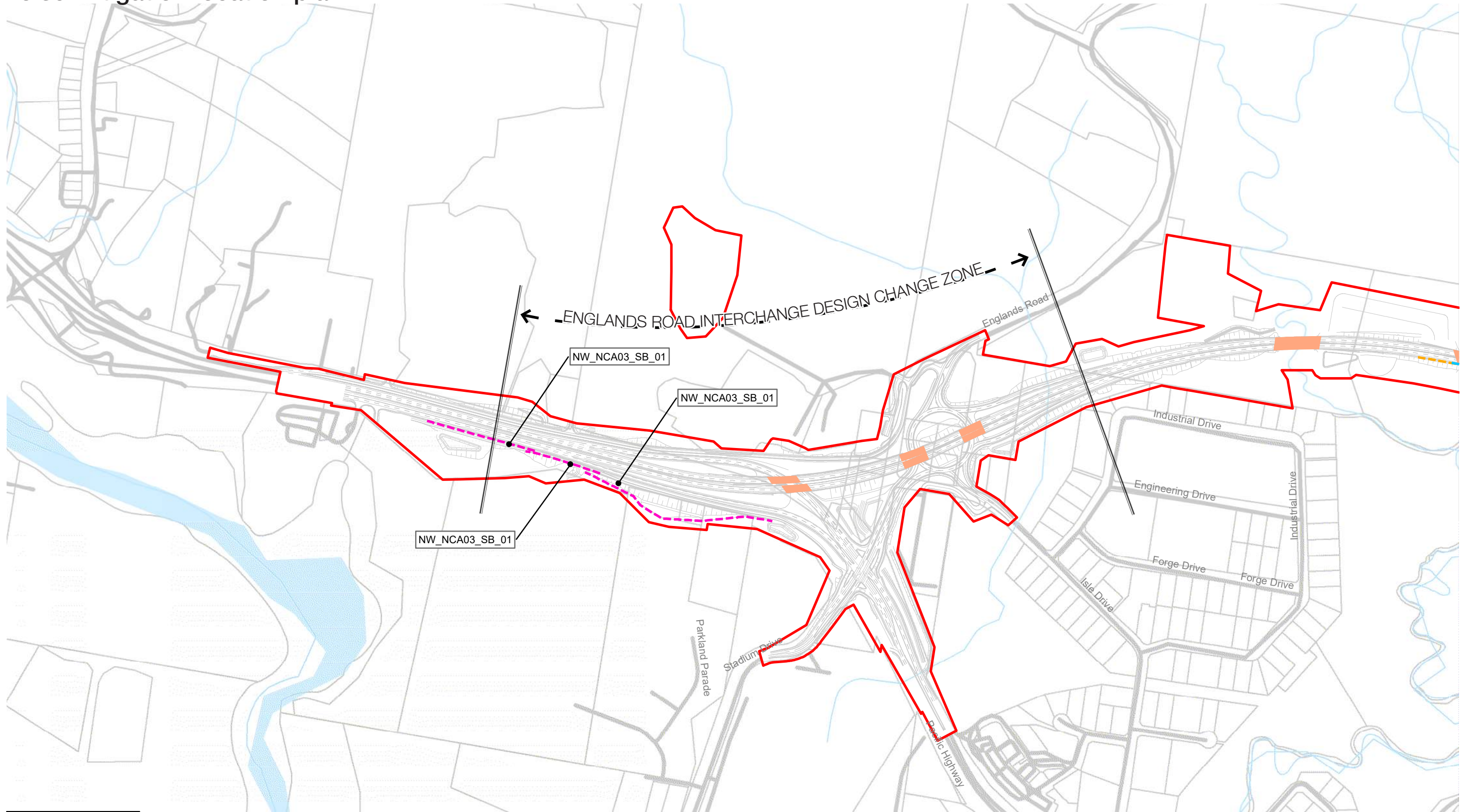
Noise Walls location and category/context

Table 2.1 NOISE ATTENUATION

Noise Wall No.	Approx. Chainage	EIS / Amended Design difference in length (m)	EIS / Amended Design difference in height (m)	Construction Type	Proposed Finish (Subject to Detailed Design)
NW_NCA03_SB_01 (comprising of three sections)	9830 - 10055, 10040 - 10200 & 10165- 10590	-10	0.0	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall Vegetated to both sides of wall where possible
NW_NCA06_SB_01* (comprising of six sections)	11900 - 11985, 11970 - 12105, 11950 - 12140, 12135 - 12480, 12450 - 13205 & 13265 -13650	-180	0.0	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall Vegetated to both sides of wall where possible
NW_NCA13_SB_01 (comprising of two sections)	14500 - 14685 & 14525 - 15450	10	1.0	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall Vegetated to both sides of wall where possible
NW_NCA14_SB_01 (comprising of three sections)	15450 -16365, 16465 - 16550 & 16740 - 16990	-90	0.5	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall Vegetated to both sides of wall where possible
NW_NCA14_SB_01	16540 - 16745	-10	0.5	Transparent clear panel, vertical steel post facing off highway, on barrier	Transparent
NW_NCA18_SB_01* (comprising of two sections)	17820 - 18390 & 18465 - 18870	-100	0.5	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall Vegetated to both sides of wall where possible
NW_NCA25_SB_01	21630 - 22150	70	2.0	Existing pre-cast concrete noise wall to be relocated and the height increased by 2m	Existing noise wall
NW_NCA26_SB_01* (comprising of two sections)	22150 - 22395 & 22370 - 22725	-70	0.0	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Pattern on noise wall to both the highway and residential sides of the wall
NW_NCA28_SB_01* (comprising of three sections)	22725 - 23035, 23065 - 23145 & 23130 - 23650	-10	0.5	Pre-cast concrete vertical panel, overlapped to hide vertical steel post on both sides, on ground	Transition from Transparent to Solid at interface with existing Noise Wall

\* Opportunity for combined solid and transparent noise wall





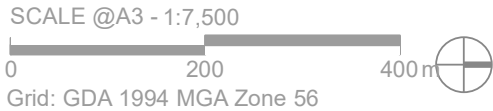
Legend

- Construction footprint
- Bridge
- Tunnel

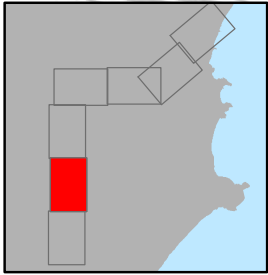
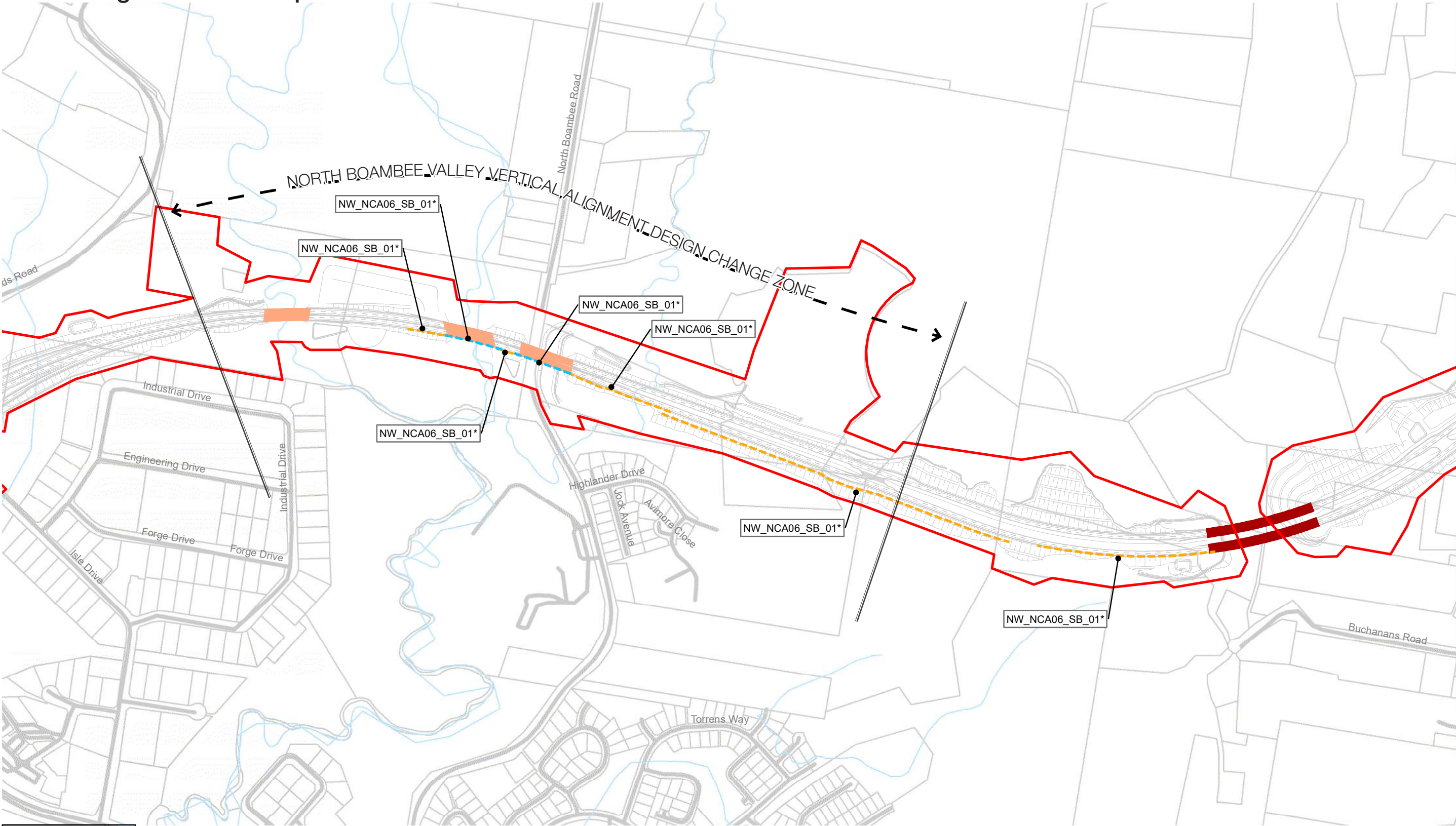
Noise wall type

- Solid - Amended height
- Solid - Amended length
- Solid - Amended length and height
- Transparent - Amended length
- Transparent - Amended length and height

- \* Opportunity for combined solid and transparent noise wall
- Design Change Zone







Legend

- Construction footprint
- Bridge
- Tunnel

Noise wall type

- Solid - Amended height
- Solid - Amended length
- Solid - Amended length and height
- Transparent - Amended length
- Transparent - Amended length and height

\* Opportunity for combined solid and transparent noise wall

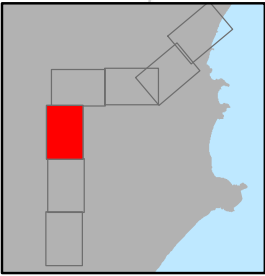
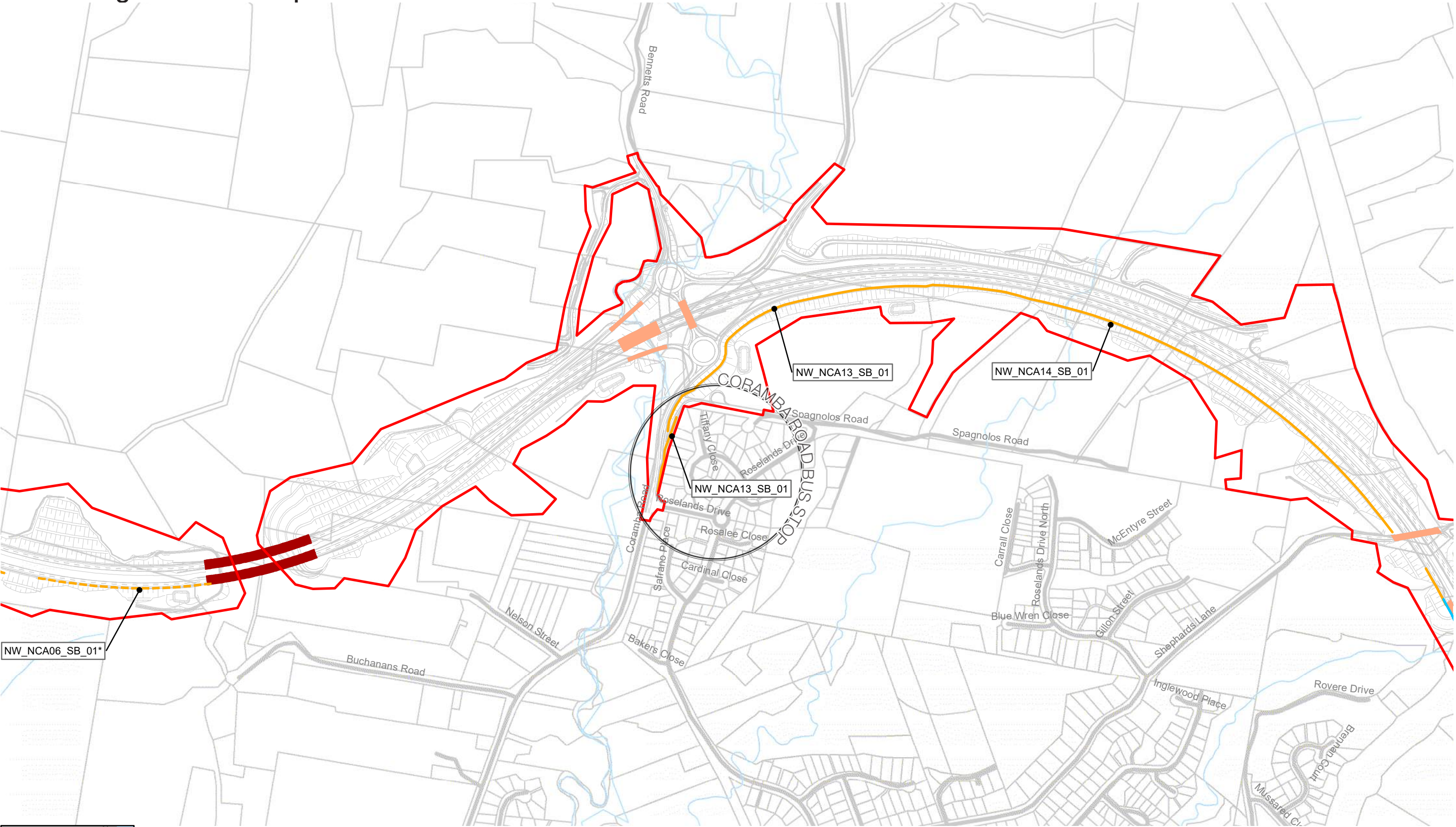
Design Change Zone

SCALE @A3 - 1:7,500



Grid: GDA 1994 MGA Zone 56





- Legend**
- Construction footprint
  - Bridge
  - Tunnel
- Noise wall type**
- Solid - Amended height
  - Solid - Amended length
  - Solid - Amended length and height
  - Transparent - Amended length
  - Transparent - Amended length and height

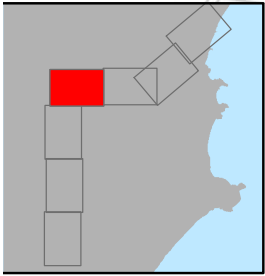
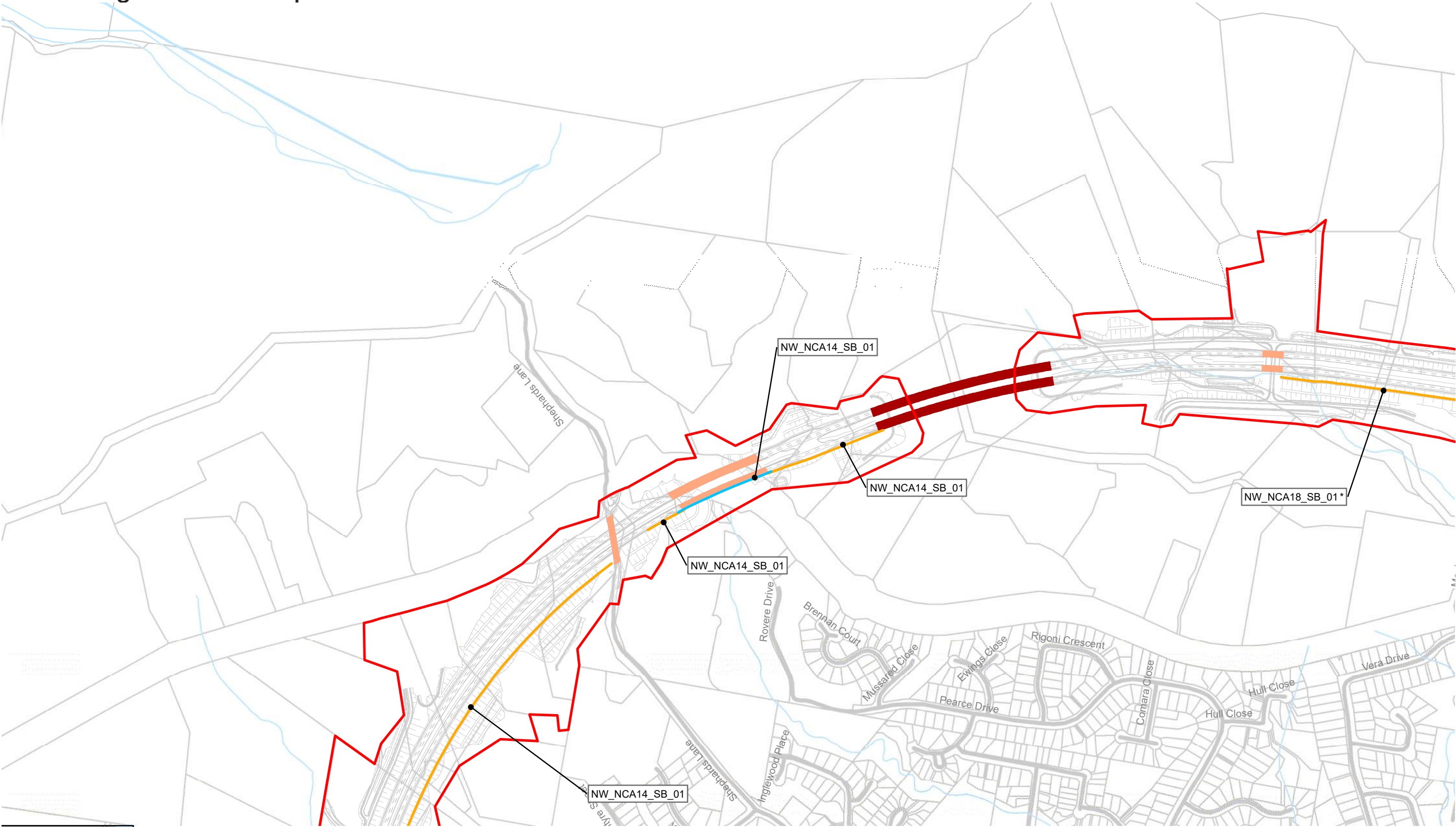
- \* Opportunity for combined solid and transparent noise wall
- Design Change Zone

SCALE @A3 - 1:7,500

0 200 400m

Grid: GDA 1994 MGA Zone 56





Legend

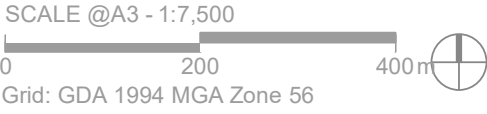
- Construction footprint
- Bridge
- Tunnel

Noise wall type

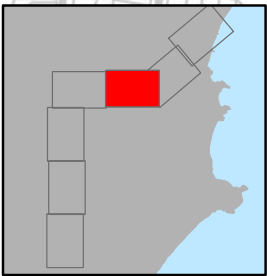
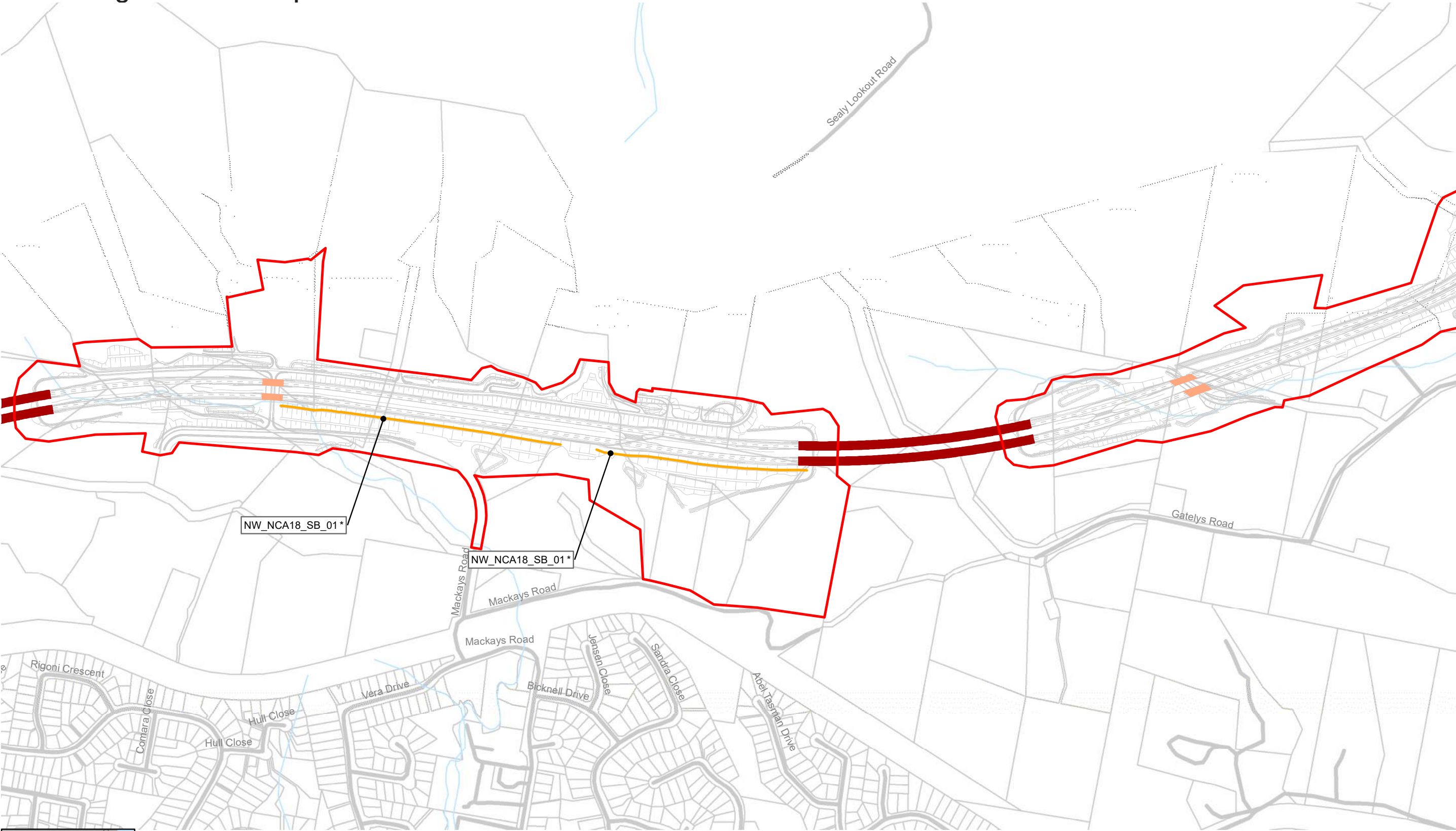
- Solid - Amended height
- Solid - Amended length
- Solid - Amended length and height
- Transparent - Amended length
- Transparent - Amended length and height

\* Opportunity for combined solid and transparent noise wall

Design Change Zone







Legend

- Construction footprint
- Bridge
- Tunnel

Noise wall type

- Solid - Amended height
- Solid - Amended length
- Solid - Amended length and height
- Transparent - Amended length
- Transparent - Amended length and height

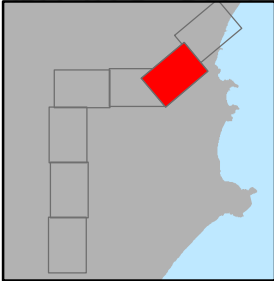
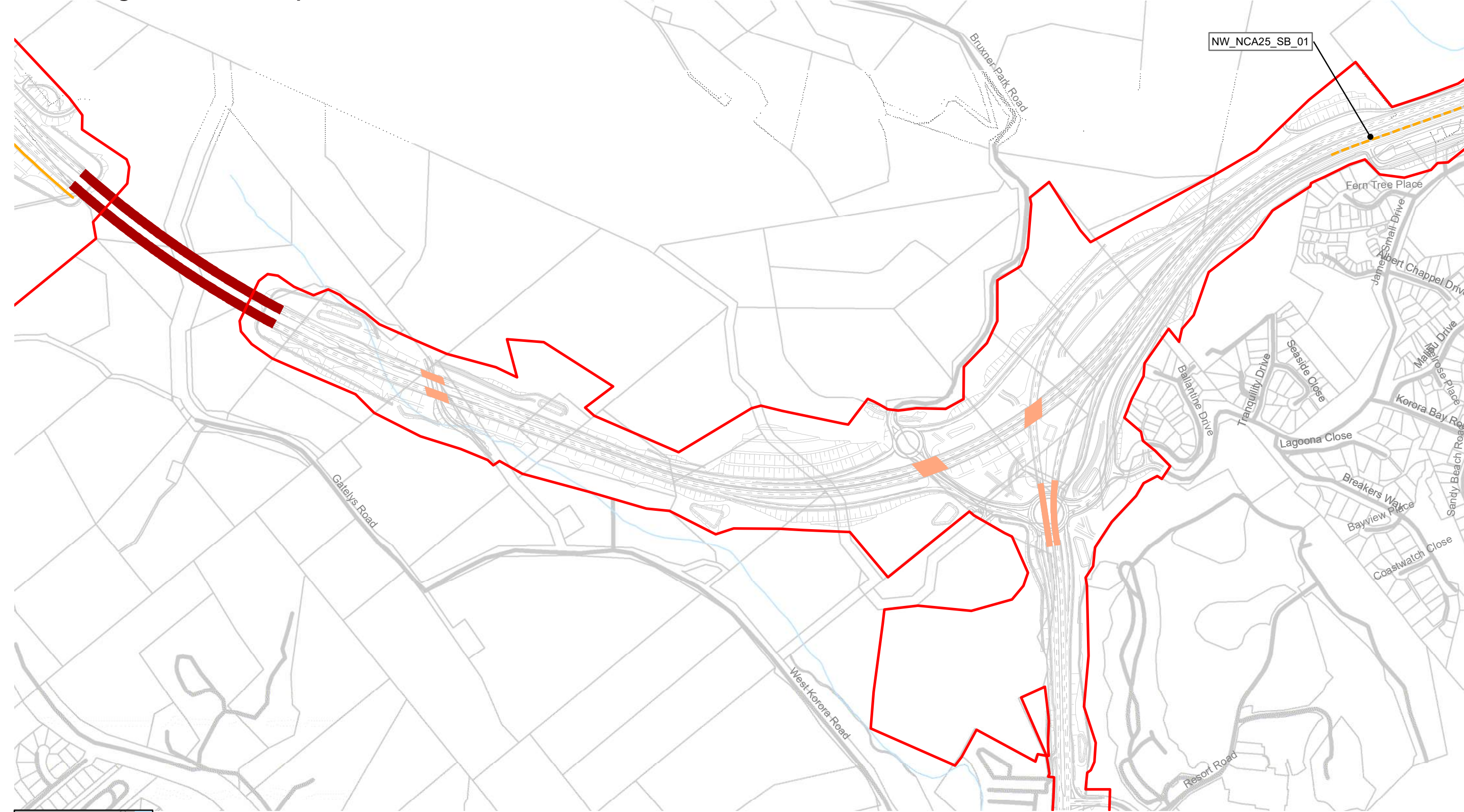
- \* Opportunity for combined solid and transparent noise wall
- Design Change Zone

SCALE @A3 - 1:7,500

0 200 400m

Grid: GDA 1994 MGA Zone 56





Legend

- Construction footprint
- Bridge
- Tunnel

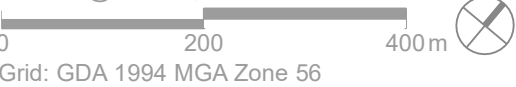
Noise wall type

- Solid - Amended height
- Solid - Amended length
- Solid - Amended length and height
- Transparent - Amended length
- Transparent - Amended length and height

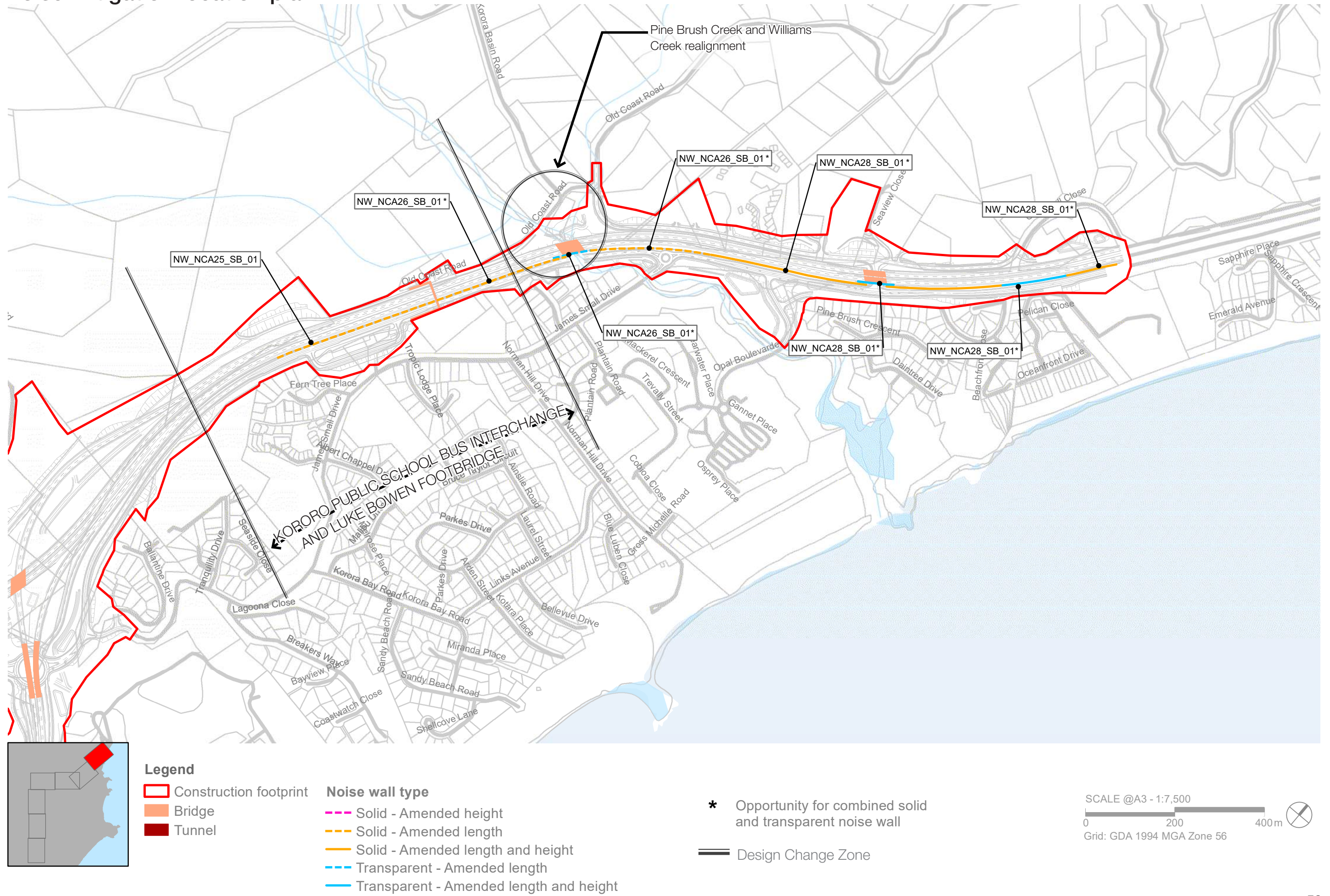
\* Opportunity for combined solid and transparent noise wall

Design Change Zone

SCALE @A3 - 1:7,500











## 2.5 Retaining walls

The urban design strategy and concept for the retaining walls is consistent with the strategy outlined in the EIS report, Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).

This section documents the changes to the retaining walls as a result of the design changes identified in Section 1.2 areas. The retaining walls have either been; amended, removed or added, in response to these design changes. This has been captured in table 2.2..



Retaining walls location and category/context

Table 2.2 RETAINING WALLS

RW No.	Approx. Chainage	State change	EIS / Amended Design difference in length (m)	EIS / Amended Design difference in height (m)	Location description	Structural wall type
RW-RW01	22515 - 22675	Amended	-367.7	-1.4	Mainline - Western side	Reinforced concrete wall
RW-RW03	23210 - 23420	Replacement	-	-	-	-
RW-RW04	21655 - 22317	Replacement	-	-	-	-
RW-RW05	22900 - 23085	Replacement	-	-	-	-
RW-RW18	23070 - 23088	Amended	6	-0.9	Fernleigh Avenue southern side under BR22	Bridge abutment wall
RW-RW19	23118 -23130	Amended	7	-2.8	Fernleigh Avenue southern side under BR22	Bridge abutment wall
RW-RW41	21945 - 21990	Amended	-136.6	4.3	Kororo Public School bus interchange eastern side	Reinforced soil wall
RW-RW44	21030 - 21212	Amended	131.8	6.6	Service road	Reinforced concrete wall
RW-RW45	23228 - 23360	Amended	19.5	3.1	Local access road on western side (Seaview Close)	Reinforced concrete wall
RW-RW46	21400 - 21500 & 21600 - 21700	Replacement	-	-	-	-
RW-RW50	23275 - 23374	Amended	-78.1	-2	Coachmans Close	Reinforced concrete wall
RW-RW51	21780 - 21810	New	-	-	Kororo Public School bus interchange eastern side	Reinforced soil wall
RW-RW52	21810 - 21950	New	-	-	Kororo Public School bus interchange eastern side	Reinforced soil wall
RW-RW53	21980 - 21990	New	-	-	Kororo Public School bus interchange underpass	Reinforced concrete wall
RW-RW56	21980 - 21990	New	-	-	Kororo Public School bus interchange underpass	Reinforced concrete wall
RW-RW57	22000 - 22010	New	-	-	Kororo Public School bus interchange underpass	Reinforced concrete wall
RW-RW59	22050 - 22100	New	-	-	Luke Bowen footbridge eastern side	Reinforced concrete wall
RW-RW100	14730 -14745	Amended	-0.5	-0.5	Mainline under Coramba Road interchange	Bridge abutment wall
RW-RW101	14805 - 14880	Amended	-0.2	-0.2	Mainline western side	Reinforced concrete wall
RW-RW102	14952 - 15100	Amended	-0.7	-0.1	Mainline western side	Reinforced concrete wall
RW-RW107	16390 - 16400	New	-	-	Shephards Lane eastern side	Bridge abutment wall
RW-RW108	16390 - 16400	New	-	-	Shephards Lane eastern side	Bridge abutment wall
RW-RW114	18512 - 18523	New	-	-	Mackays Road	Reinforced concrete wall
RW-RW200	14730 - 14745	New	-	-	Mainline under Coramba Road interchange	Bridge abutment wall
RW-RW202	21823 -21920	New	-	-	Mainline western side	Reinforced concrete wall
RW-RW203	21920 - 22230	New	-	-	Mainline western side	Reinforced concrete wall
RW-RW204	10590 - 10810	New	-	-	Mainline western side	Reinforced soil wall
RW-RW303	23245 - 23420	Replacement	-31.8	-1.3	Mainline western side	Reinforced concrete wall
RW-RW304	21662 - 22395	Replacement	1	-0.8	Mainline western side	Combined noise wall and retaining wall
RW-RW305	22900 - 23083	Replacement	0.62	0.3	Mainline western side	Combined noise wall and retaining wall
RW-RW306	23130 - 23343	Replacement	-0.6	-0.6	Mainline western side	Combined noise wall and retaining wall



Retaining walls location and category/context

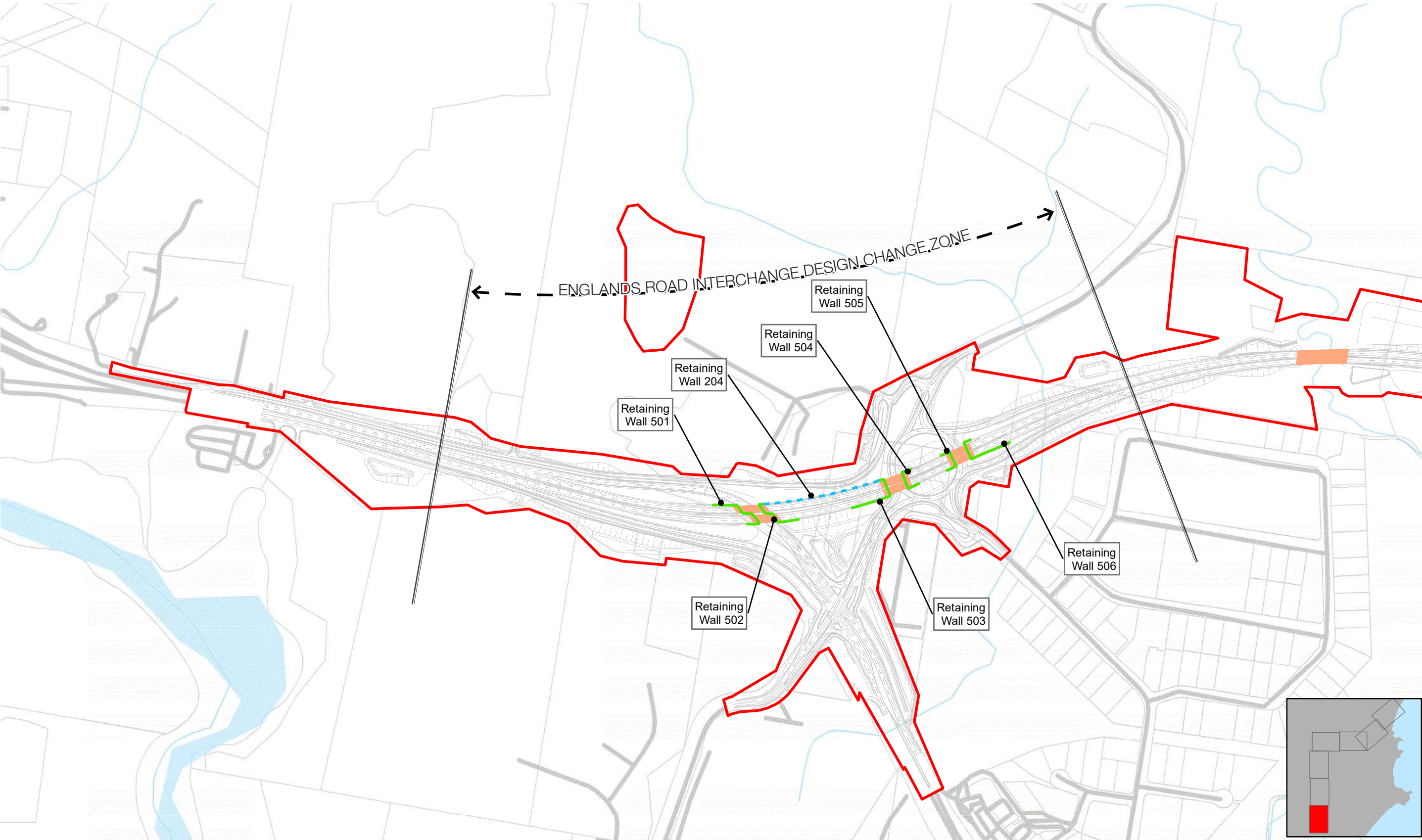
Table 2.2 RETAINING WALLS (continued)

RW No.	Approx. Chainage	State Change	EIS / Amended Design difference in length (m)	EIS / Amended Design difference in height (m)	Location description	Structural wall type
RW-RW401	20811 - 20829	New	-	-	Pacific Highway approach to Korora Hill roundabout	Reinforced concrete wall
RW-RW402	20624 - 20668	New	-	-	Korora Hill interchange southbound on ramp	Reinforced concrete wall
RW-RW403	21004 - 21167	New	-	-	Korora Hill interchange southbound on ramp	Reinforced concrete wall
RW-RW404	20801 - 20808	New	-	-	Pacific Highway approach to Korora Hill roundabout	Reinforced concrete wall
RW-RW501	10500 - 10575	New	-	-	Englands Road interchange BR01	Bridge abutment wall
RW-RW502	10600 - 10650	New	-	-	Englands Road interchange BR01	Bridge abutment wall
RW-RW503	10750 - 10810	New	-	-	Englands Road interchange BR02	Bridge abutment wall
RW-RW504	10850 - 10870	New	-	-	Englands Road interchange BR02	Bridge abutment wall
RW-RW505	10930 - 10950	New	-	-	Englands Road interchange BR25	Bridge abutment wall
RW-RW506	10990 - 11060	New	-	-	Englands Road interchange BR25	Bridge abutment wall
RW-RW507	20640 - 20660	New	-	-	Korora Hill interchange BR17	Bridge abutment wall
RW-RW508	20700 - 20720	New	-	-	Korora Hill interchange BR17	Bridge abutment wall
RW-RW509	20880 - 20900	New	-	-	Korora Hill interchange BR18	Bridge abutment wall
RW-RW510	20926 - 20965	New	-	-	Korora Hill interchange BR18	Bridge abutment wall
RW-RW511	20813 - 20835	New	-	-	Korora Hill interchange BR19	Bridge abutment wall
RW-RW512	20856 - 20900	New	-	-	Korora Hill interchange BR19	Bridge abutment wall
RW-RW515	22091 - 22133	New	-	-	Kororo Public School western carpark	Reinforced soil wall
RW-RW601	21990 - 21995	New	-	-	Kororo Public School bus interchange underpass	Reinforced concrete wall

Summary statement:

- Replacement walls = 4 (With no change in height and length.)
- New walls = 31
- Replaced walls = 3 (There has been a name change but with minimal change in height and length.)
- Amended walls with minimal change = 3
- Amended walls with notable change = 8 (comprising of a change in height >2m or change in length >5m)





**Legend**

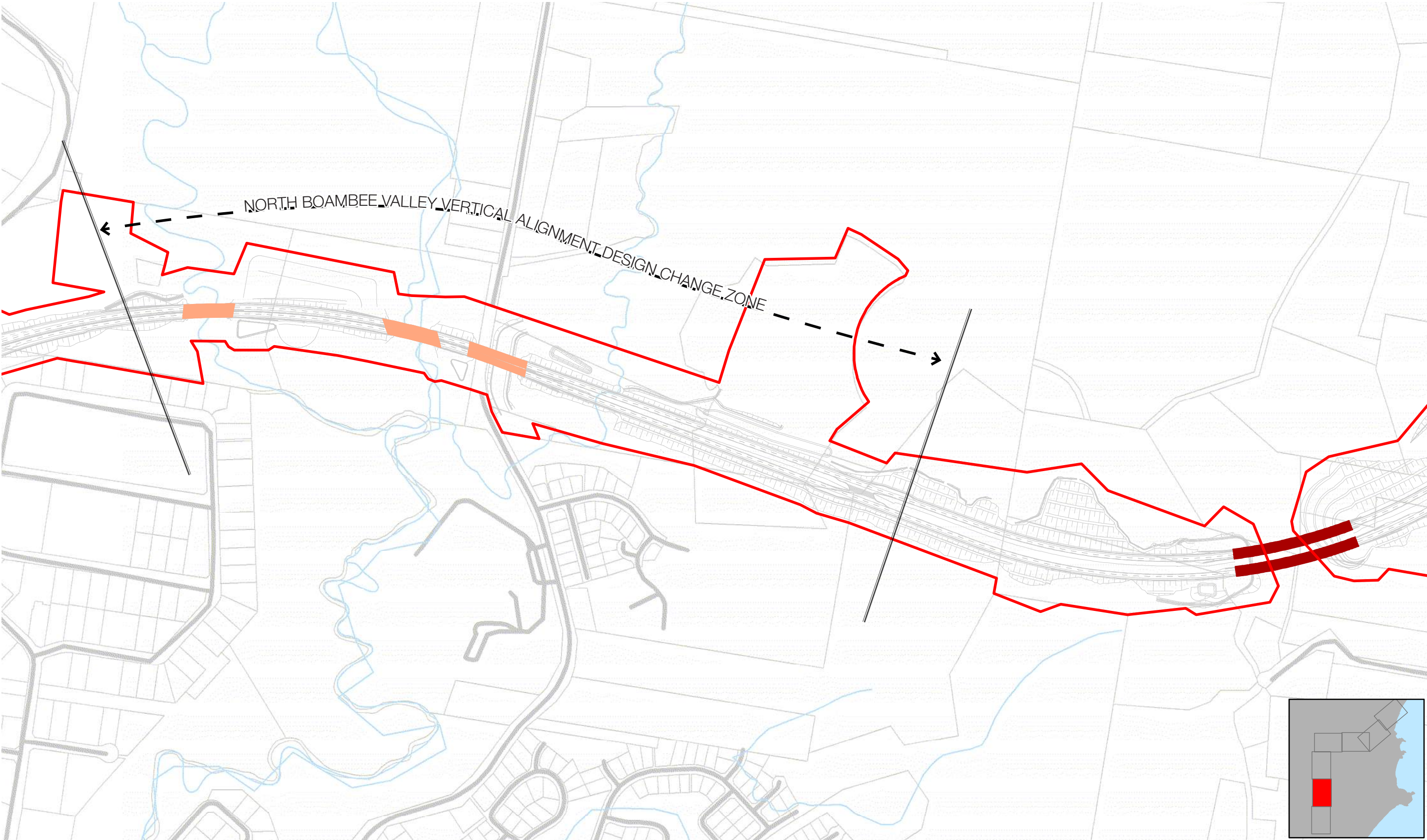
Reinforced concrete wall facing the highway	Reinforced soil wall facing the highway	Bridge portal/abutment walls	Construction Footprint
Reinforced concrete wall facing away from the highway	Reinforced soil wall facing away from the highway	Combined noise wall and retaining wall	Tunnel
			Bridge
			Design Change Zone

SCALE @A3 - 1:7,280

0 195 390 m

Grid: GDA 1994 MGA Zone 56





Legend

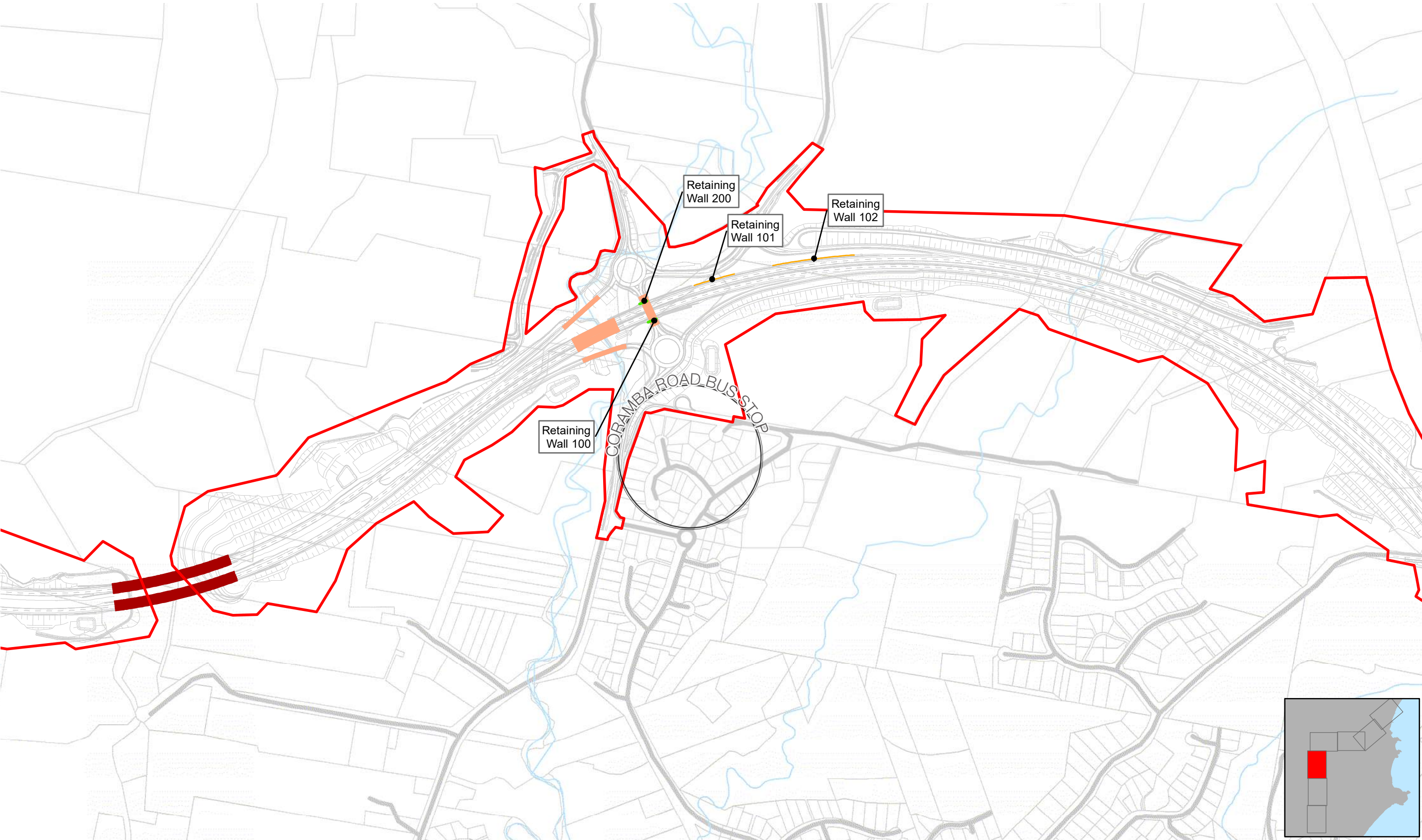
- |   |   |  |   |
|---|---|--|---|
| Orange line: Reinforced concrete wall facing the highway                  | Blue line: Reinforced soil wall facing the highway                  | Green line: Bridge portal/abutment walls             | Red outline: Construction Footprint     |
| Orange dashed line: Reinforced concrete wall facing away from the highway | Blue dashed line: Reinforced soil wall facing away from the highway | Magenta line: Combined noise wall and retaining wall | Dark red line: Tunnel                   |
|   |   |  | Orange rectangle: Bridge                |
|   |   |  | Thick dark red line: Design Change Zone |

SCALE @A3 - 1:7,280



Grid: GDA 1994 MGA Zone 56



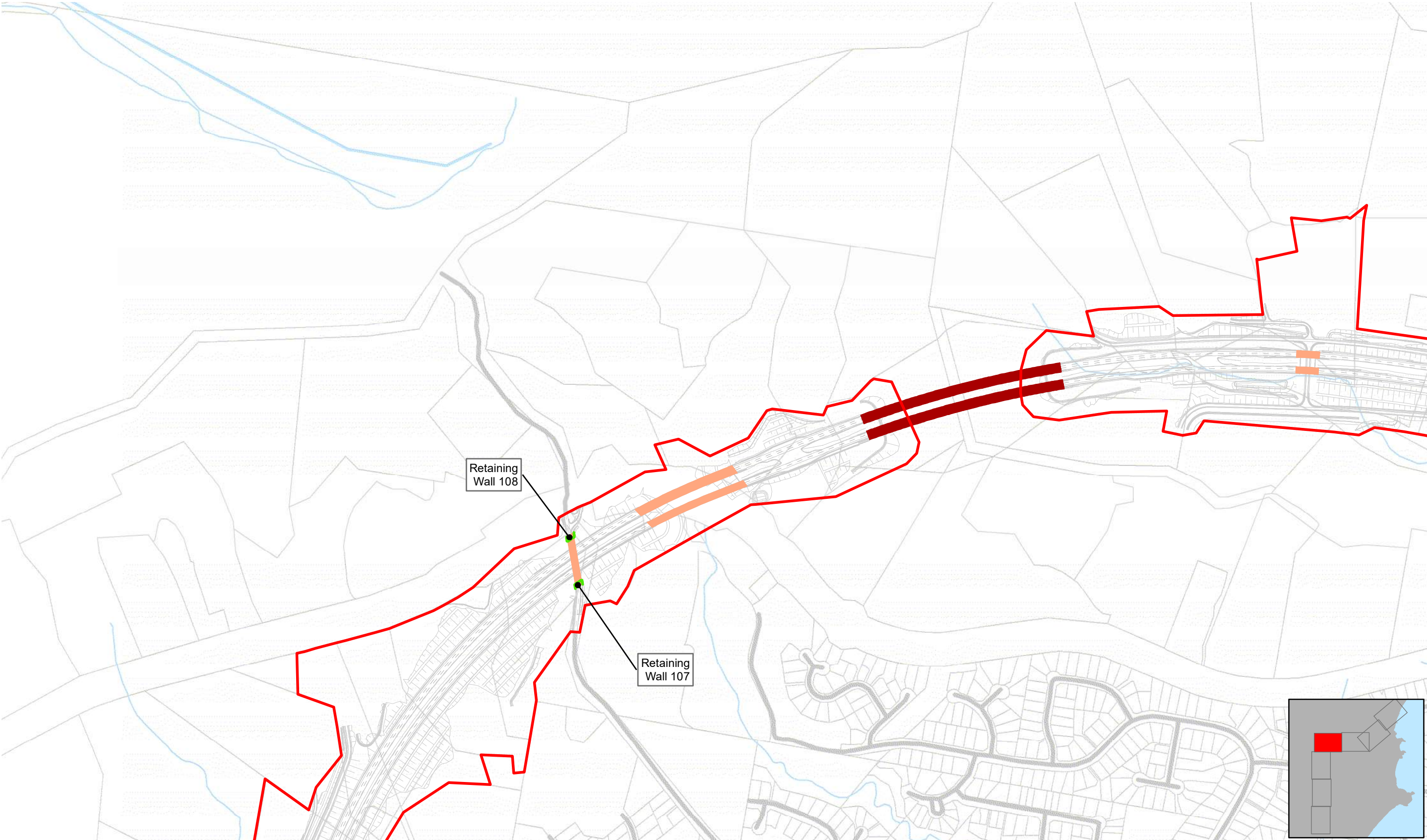


Legend

- |   |   |  |                        |
|---|---|--|------------------------|
| Reinforced concrete wall facing the highway           | Reinforced soil wall facing the highway           | Bridge portal/abutment walls           | Construction Footprint |
| Reinforced concrete wall facing away from the highway | Reinforced soil wall facing away from the highway | Combined noise wall and retaining wall | Tunnel                 |
|   |   |  | Bridge                 |
|   |   |  | Design Change Zone     |

SCALE @A3 - 1:7,280  
0 195 390m  
Grid: GDA 1994 MGA Zone 56

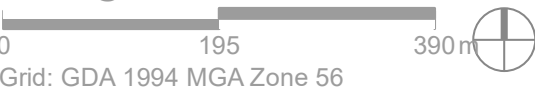




Legend

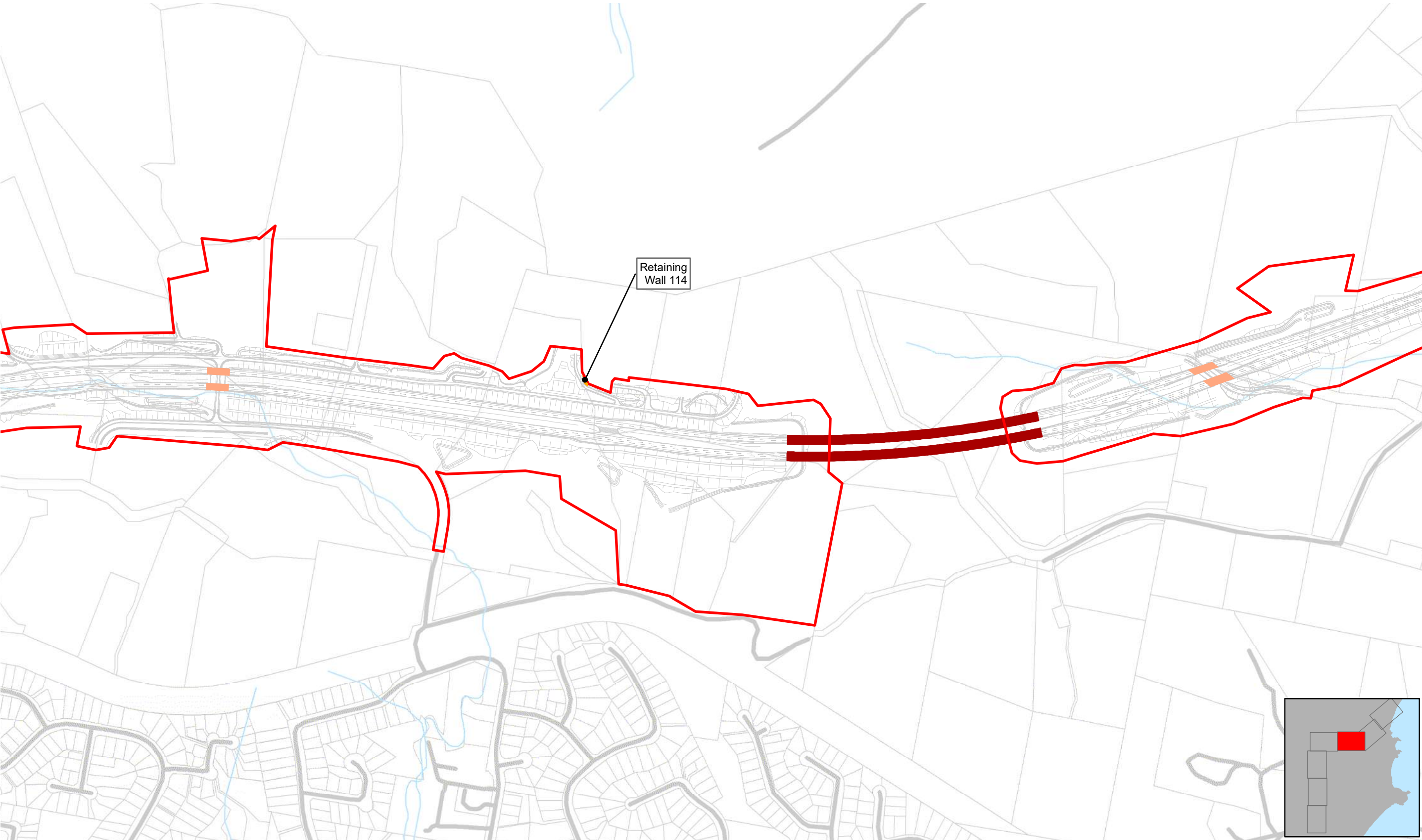
- |   |   |  |                        |
|---|---|--|------------------------|
| Reinforced concrete wall facing the highway           | Reinforced soil wall facing the highway           | Bridge portal/abutment walls           | Construction Footprint |
| Reinforced concrete wall facing away from the highway | Reinforced soil wall facing away from the highway | Combined noise wall and retaining wall | Tunnel                 |
|   |   |  | Bridge                 |
|   |   |  | Design Change Zone     |

SCALE @A3 - 1:7,290



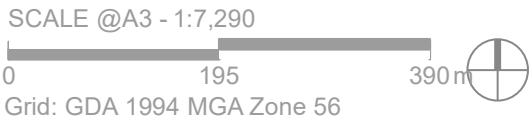
Grid: GDA 1994 MGA Zone 56



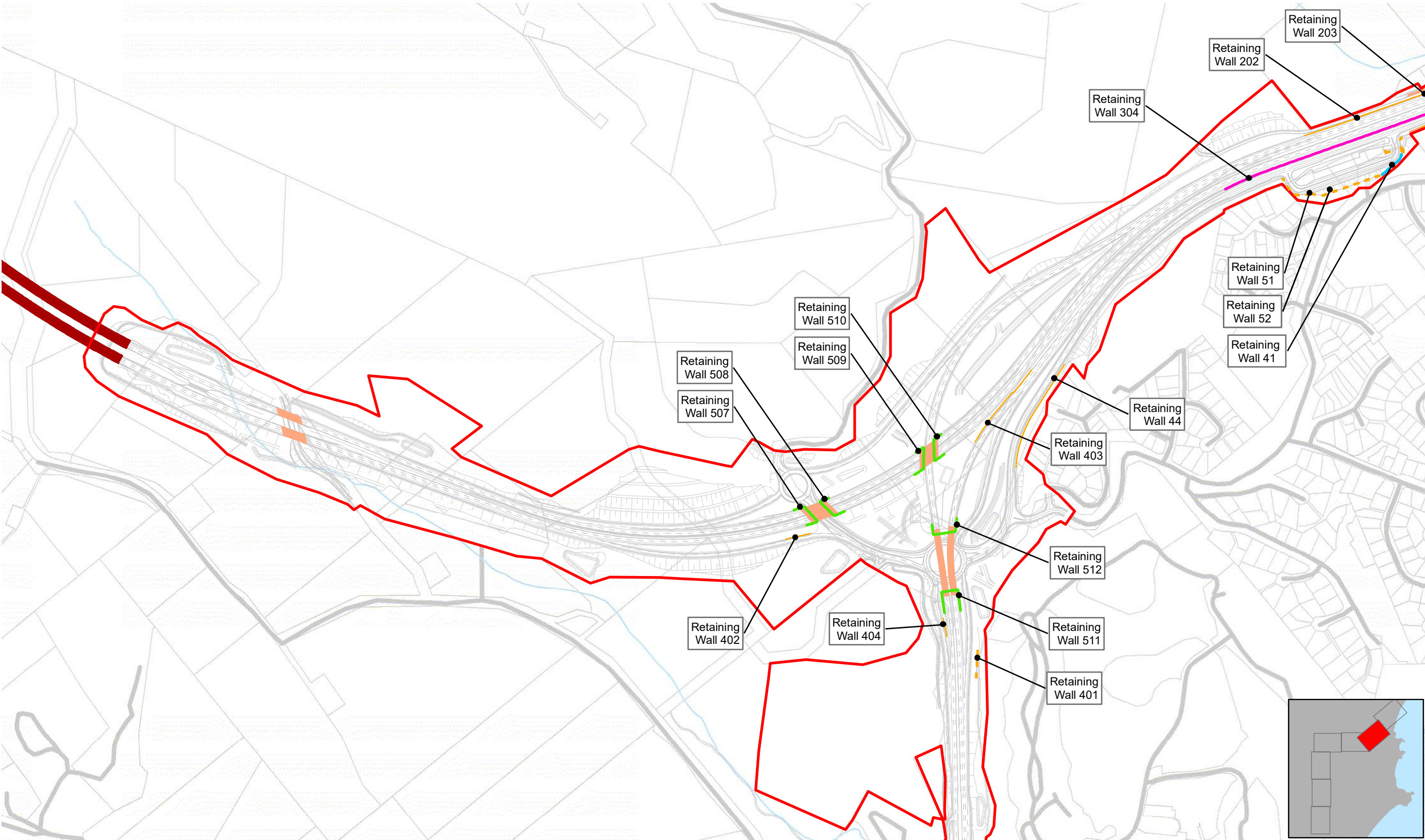


Legend

- |   |   |  |                        |
|---|---|--|------------------------|
| Reinforced concrete wall facing the highway           | Reinforced soil wall facing the highway           | Bridge portal/abutment walls           | Construction Footprint |
| Reinforced concrete wall facing away from the highway | Reinforced soil wall facing away from the highway | Combined noise wall and retaining wall | Tunnel                 |
|   |   |  | Bridge                 |
|   |   |  | Design Change Zone     |





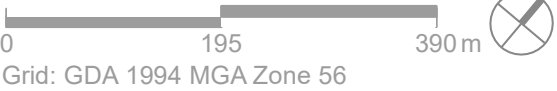


Legend

- Reinforced concrete wall facing the highway
- Reinforced soil wall facing the highway
- Reinforced concrete wall facing away from the highway
- Reinforced soil wall facing away from the highway
- Bridge portal/abutment walls
- Combined noise wall and retaining wall

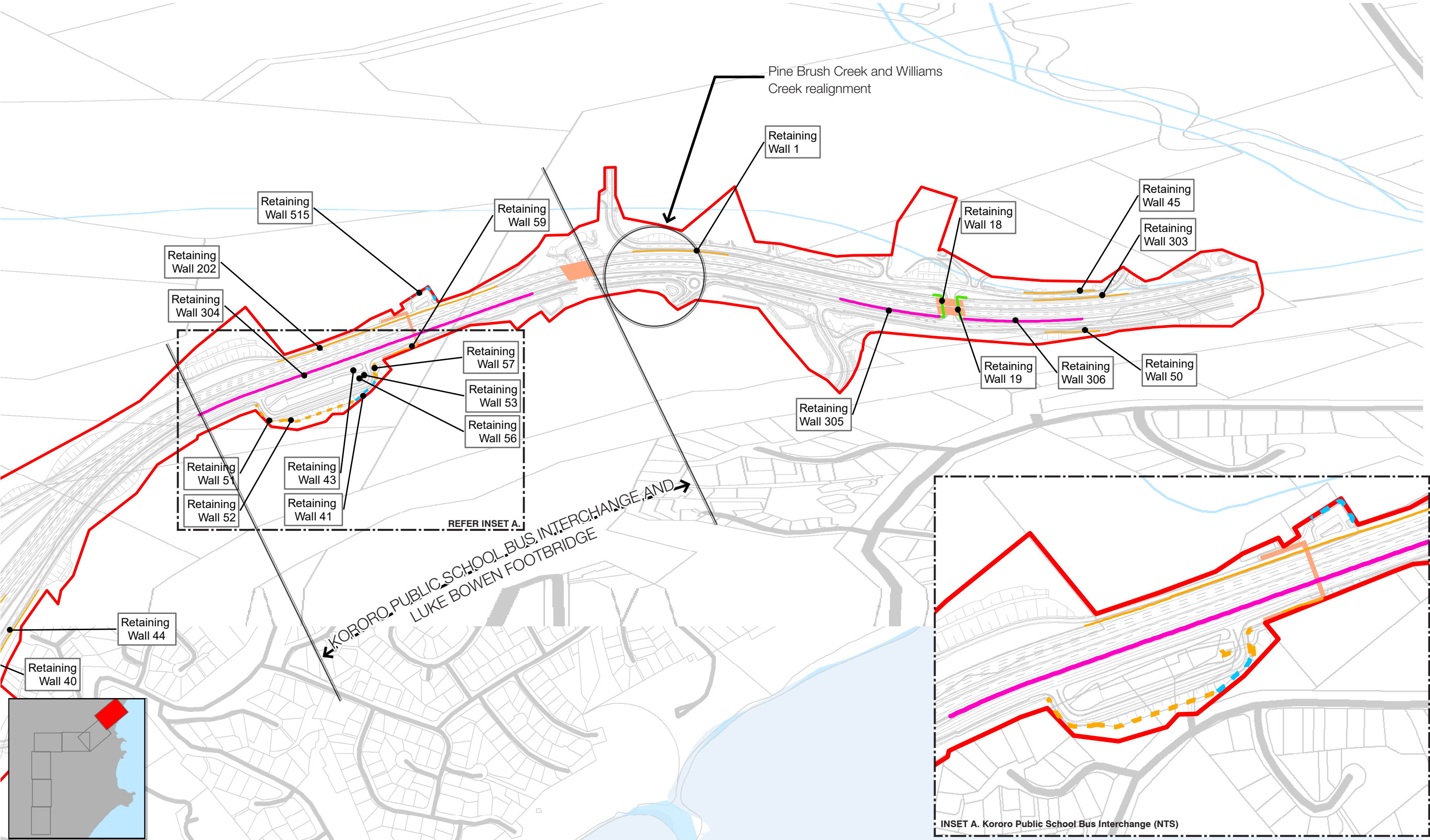
- Construction Footprint
- Tunnel
- Bridge
- Design Change Zone

SCALE @A3 - 1:7,310



Grid: GDA 1994 MGA Zone 56









## 2.6 Bridges

The urban design strategy and concept for the bridges is consistent with the strategy outlined in the EIS report, Urban Design, Landscape Character and Visual Impact Assessment Report (Arup 2019).

This chapter documents the changes to the bridges as a result of the vertical and horizontal design change at the 5 key areas. The bridges have either been; amended, removed or added, in response to these design changes. This has been captured in table 2.3.

**FIG 2.7** CORAMBA ROAD INTERCHANGE



Bridge Location and category/context

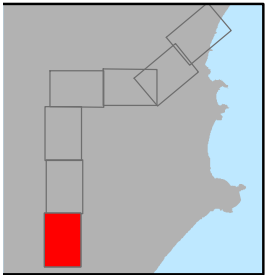
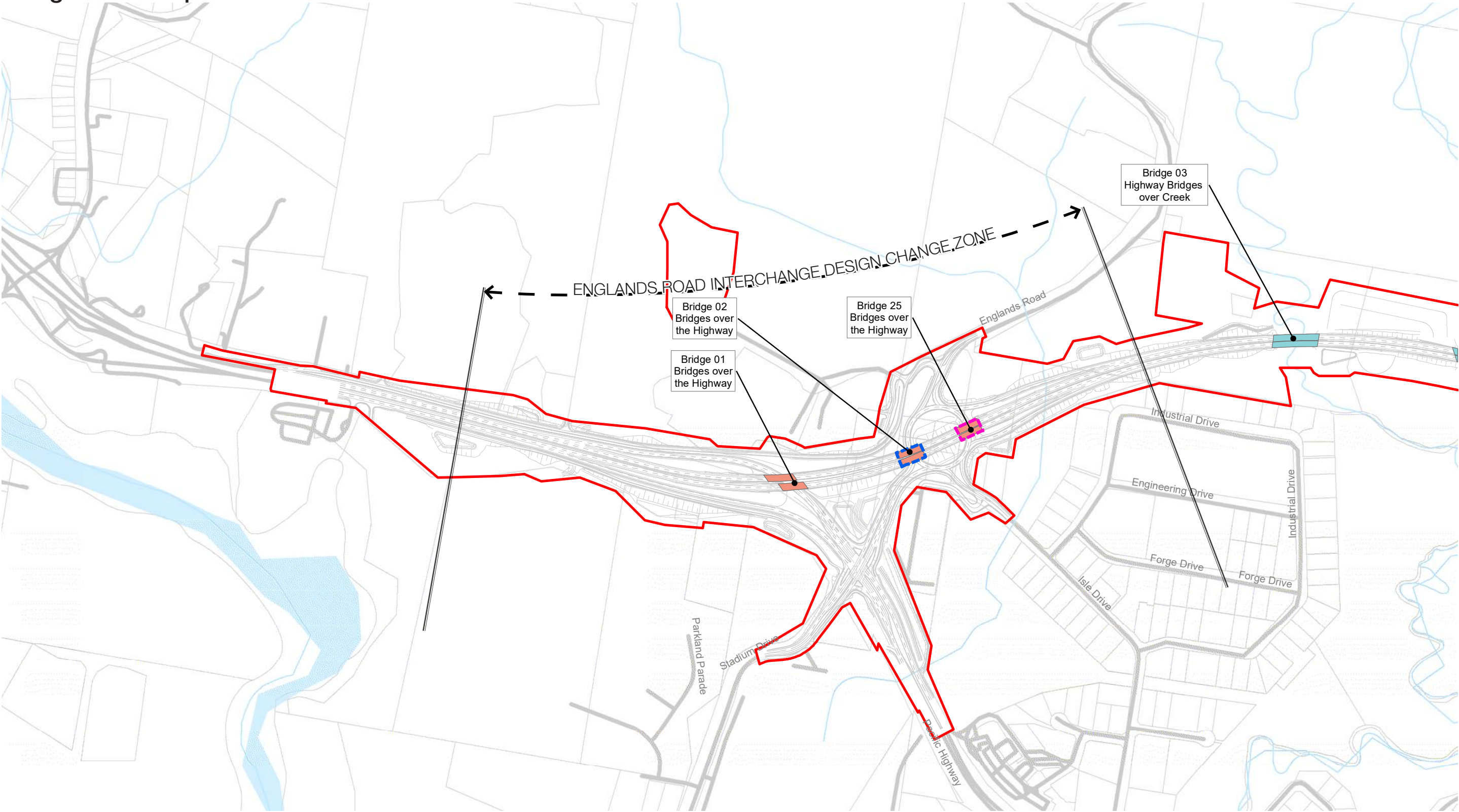
Table 2.3: BRIDGE LOCATIONS

Bridge No.	Bridge name	Bridge category/type/context	Fauna crossing	Noise wall
BR01	Bridge over northbound exit ramp at Englands Road interchange	Highway bridges over local road	No requirement for fauna passage	NIL
BR02	Bridge over Englands Road roundabout	Highway bridges over local road	No requirement for fauna passage	NIL
BR25	Bridge over Englands Road roundabout	Highway bridges over local road	No requirement for fauna passage	NIL
BR03	Bridge over Newports Creek (south) near Industrial Drive	Highway bridge over creeks	Fauna underpasses	NIL
BR23	Bridge over Newports Creek (north) near North Boambee Road	Highway bridge over creek	Fauna underpasses	Noise Wall (South bound only)
BR04	Bridge over North Boambee Road	Highway bridges over local road	Fauna underpasses	Noise Wall (South bound only)
BR05	Bridge over creek near Highlander Drive	Highway bridge over creeks	Fauna underpasses	Noise wall (south bound only)
BR06	Bridge over Coffs Creek at Coramba Road interchange	Highway bridge over creeks	Fauna underpasses	NIL
BR07	Northbound exit ramp bridge over Coffs Creek at Coramba Road interchange	Highway bridge over creeks	Fauna underpasses	NIL
BR08	Southbound entry ramp bridge over Coffs Creek at Coramba Road interchange	Highway bridge over creeks	Fauna underpasses	NIL
BR09	Bridge over Pacific Highway on Coramba Road	Bridge over the highway	No requirement for fauna passage	NIL
BR11	Bridge over Pacific Highway on Shephards Lane	Bridge over the highway	No requirement for fauna passage	NIL
BR12	Bridge over North Coast Railway near Shephards Lane	Landmark bridge	Fauna underpasses	Noise Wall (South bound only)
BR13	Bridge at unnamed local road, south of Mackays Road	Highway bridge over creeks	Fauna passage included with access road underpass	NIL
BR16	Bridge over West Korora Road	Highway bridge over local road	Fauna passage included with access road underpass	NIL
BR17	Bridge over Bruxner Park Road	Highway bridge over local road	No requirement for fauna passage	NIL
BR18	Bridge over northbound entry ramp at Korora Hill interchange	Highway bridge over ramp	No requirement for fauna passage	NIL
BR19	Bridge over Korora Hill interchange eastern roundabout	Ramp bridge over local road	No requirement for fauna passage	NIL
BR20	Existing bridge over Pine Brush Creek on service road	Service Road bridge over creek	-	-
BR21	Bridge over Pine Brush Creek	Highway bridge over creeks	No requirement for fauna passage	Noise Wall (South bound only)
BR22	Twin bridges over new connection between Coachmans Close and Seaview Close	Highway bridge over local road	No requirement for fauna passage	Noise Wall (South bound only)
BR24	Luke Bowen footbridge at Kororo Public School	Shared path bridge over the highway	-	NIL

Summary statement:

- Changed
- Changed bridges - (New / Amended) as shown in sheet 1 - 7
- Removed
- Removed bridges

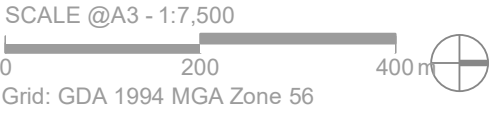




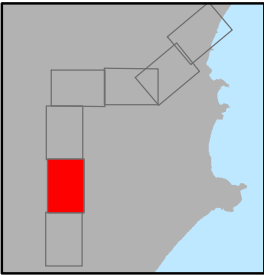
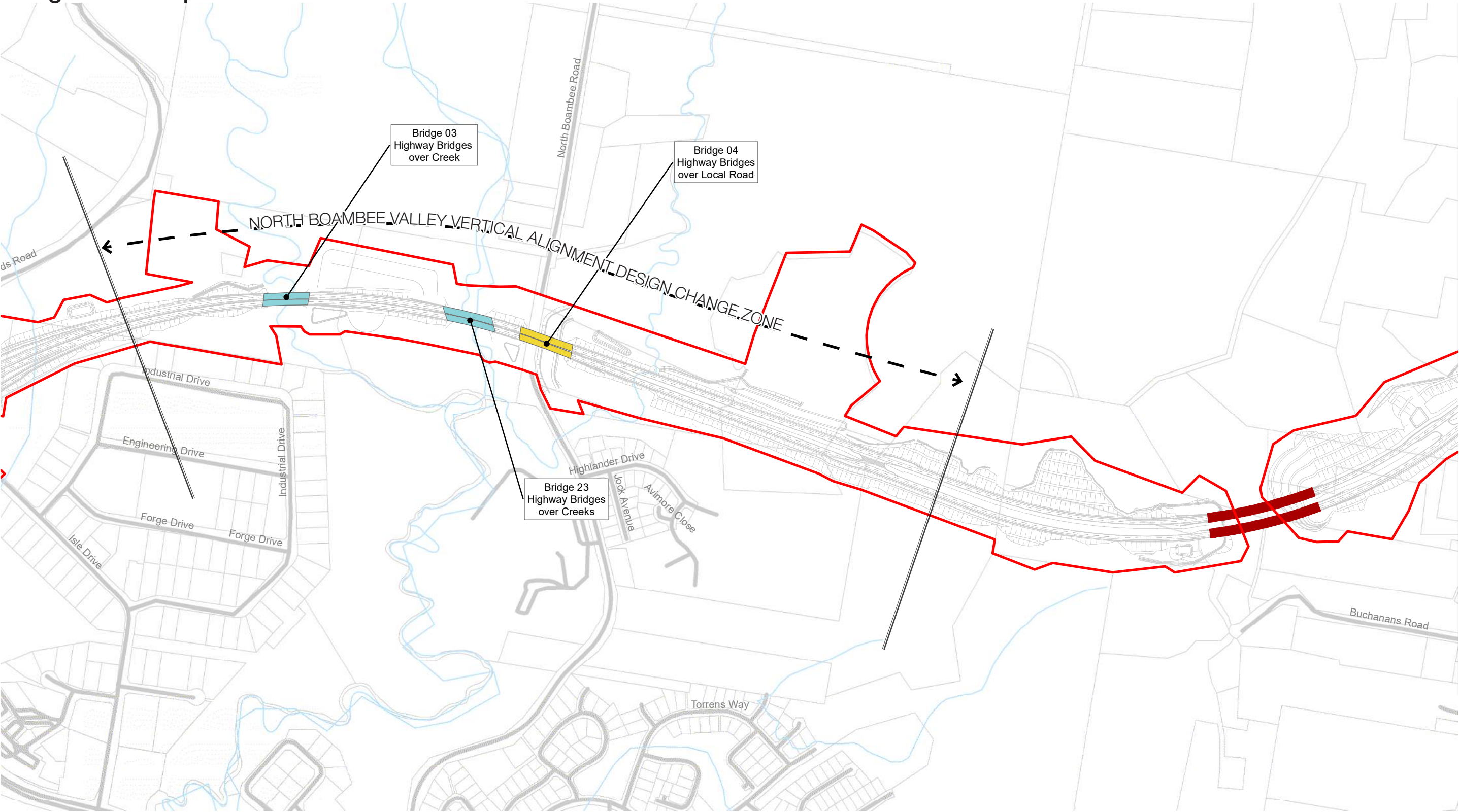
Legend

- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass
- Design Change Zone





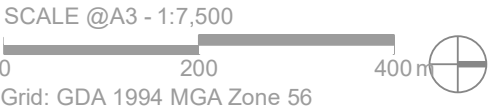


Legend

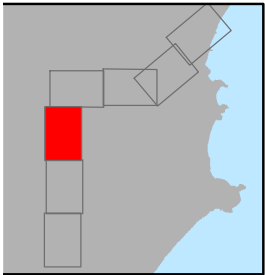
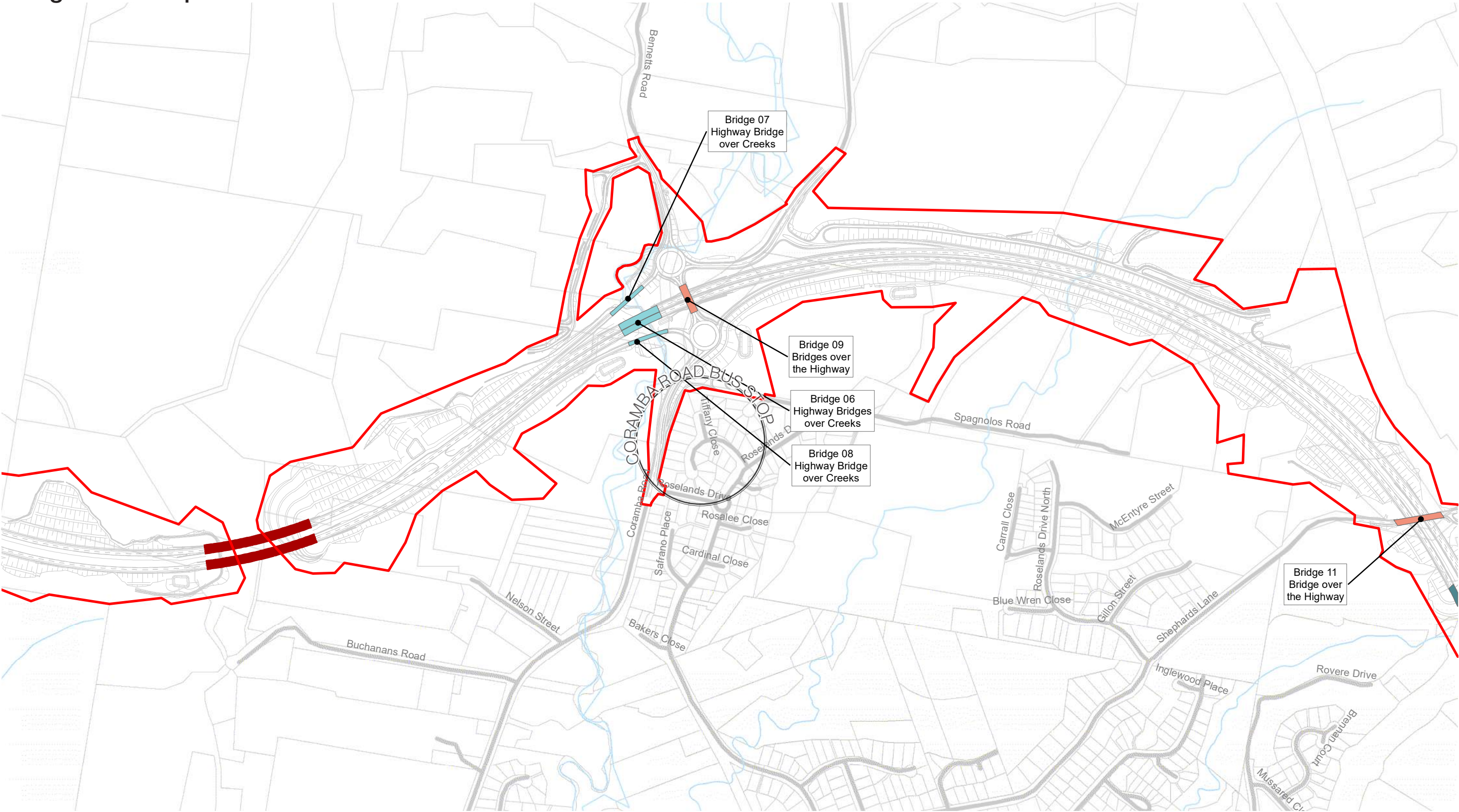
- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass

Design Change Zone





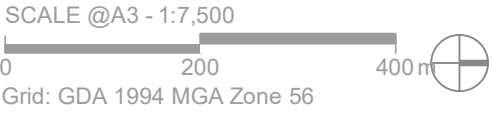


Legend

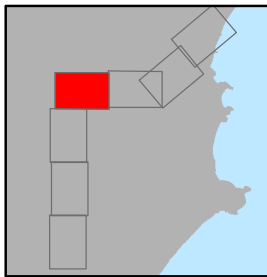
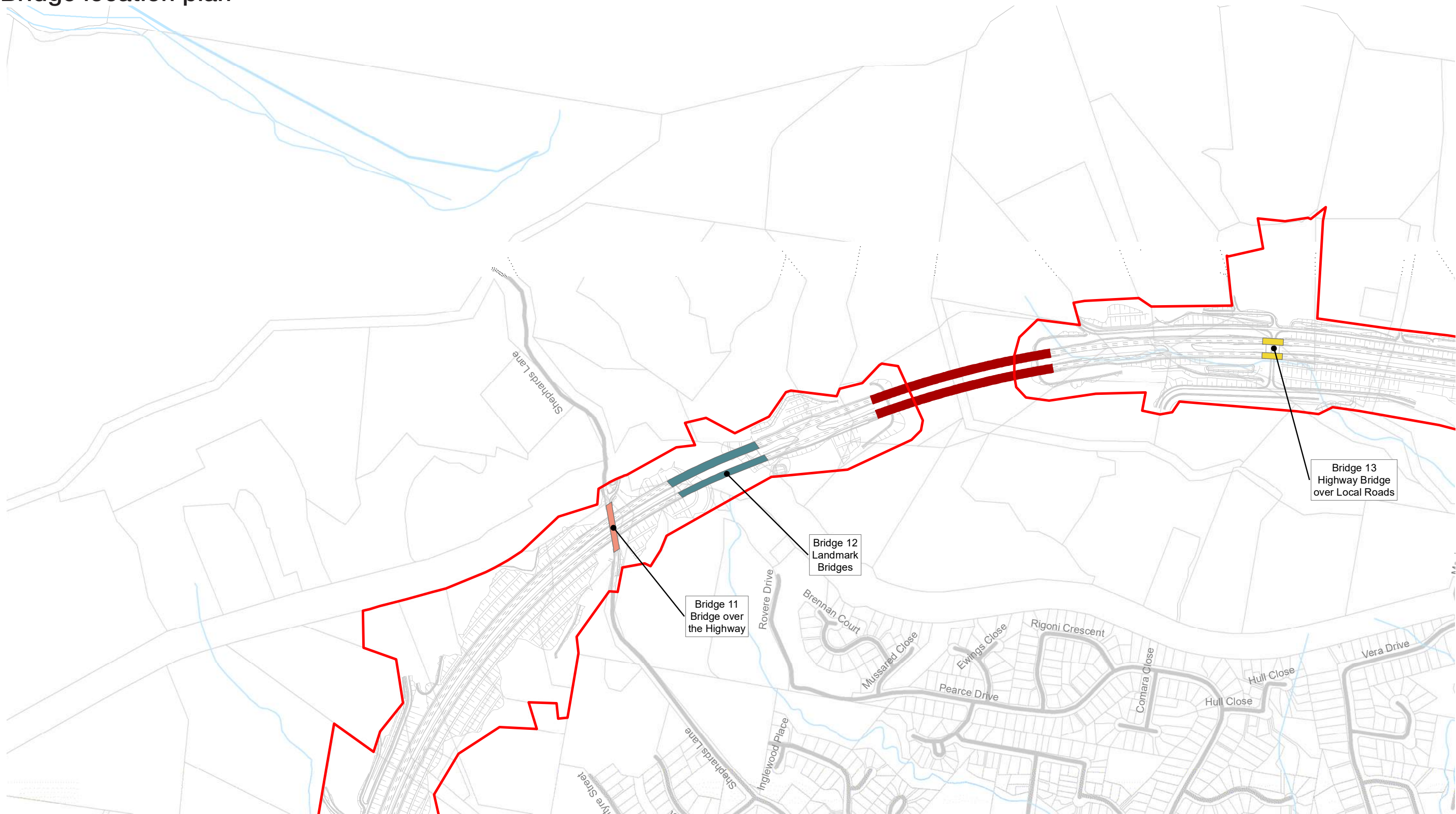
- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass

Design Change Zone





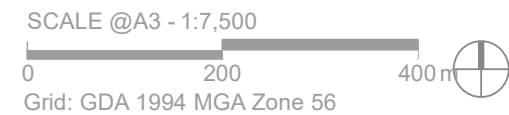


Legend

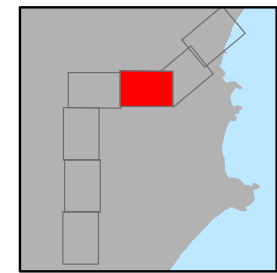
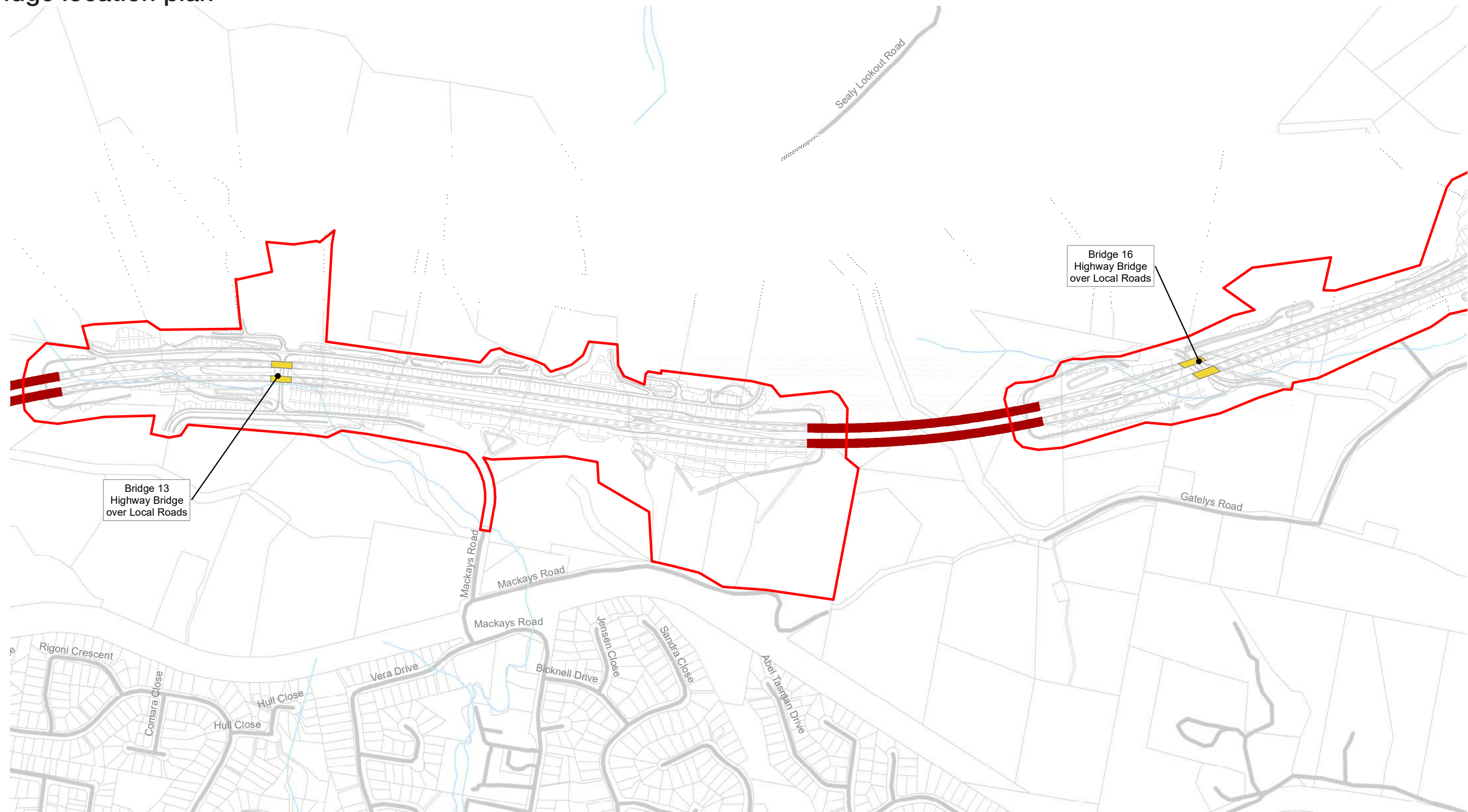
- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass

Design Change Zone







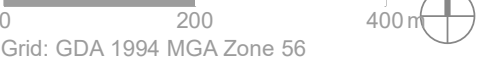
Legend

- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

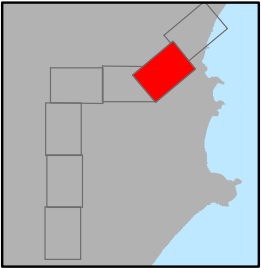
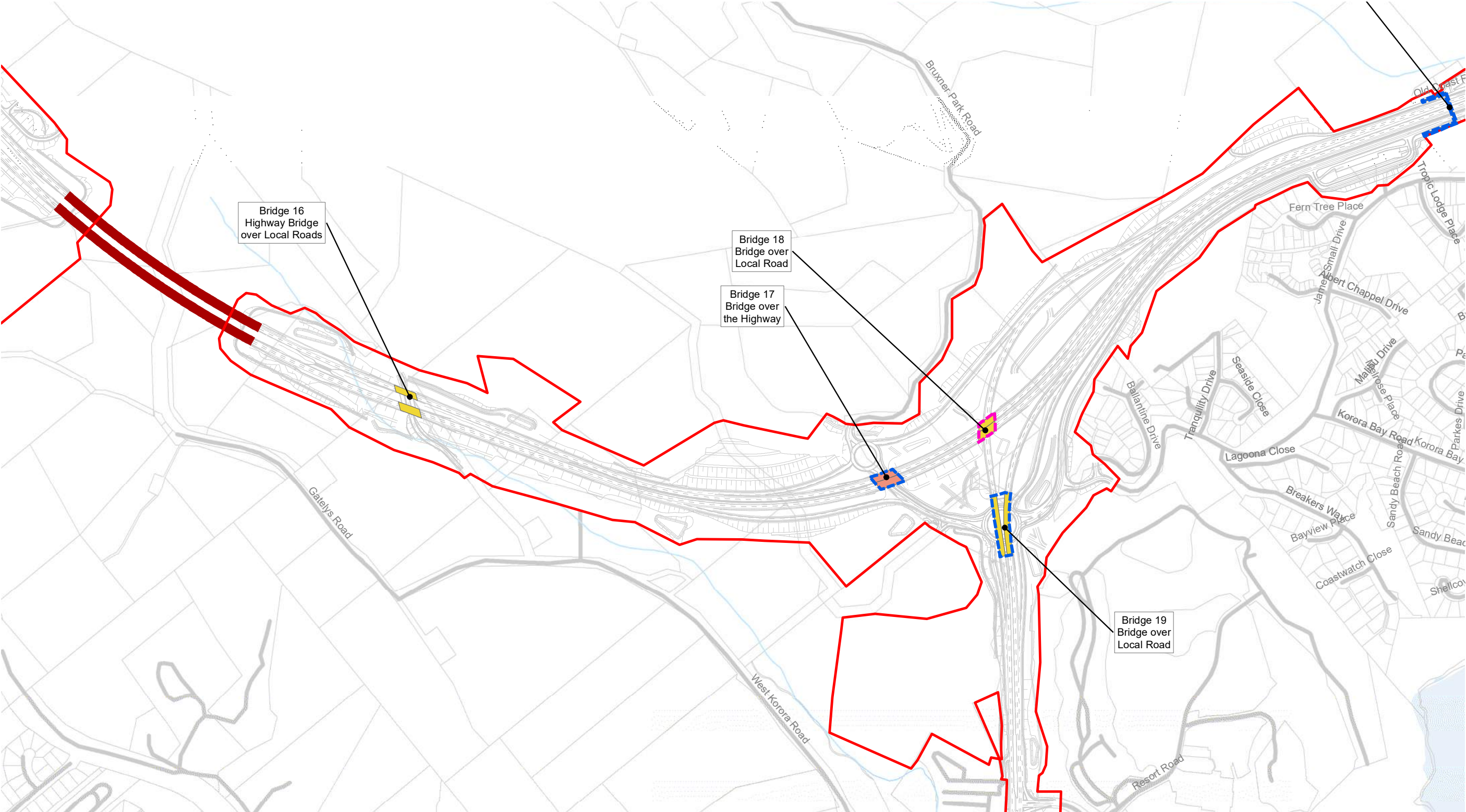
- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass

Design Change Zone

SCALE @A3 - 1:7,500







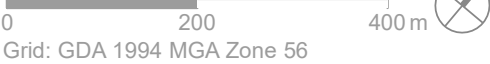
Legend

- Amended
- New
- Construction footprint
- Tunnel
- Bridge over the Highway
- Highway bridge over Creek

- Highway bridges over Local Road
- Landmark Bridge
- Pedestrian Overpass

Design Change Zone

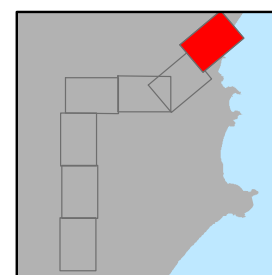
SCALE @A3 - 1:7,500









Grid: GDA 1994 MGA Zone 56







### Legend

-  Amended
-  New
-  Construction footprint
-  Tunnel
-  Bridge over the Highway
-  Highway bridge over Creek

- Highway bridges over Local Road  
 Landmark Bridge  
 Pedestrian Overpass

- == Design Change Zone

SCALE @A3 - 1:7,500

0 200  
Grid: GDA 1994 MGA Zone 56

