

# COFFS HARBOUR BYPASS

## PLACE DESIGN AND LANDSCAPE PLAN



Yuludarla Creation Story by Gumbaynggirr Woman Lisa Kelly

### Acknowledgement of Country

Transport for NSW and Ferrovial Gamuda Joint Venture acknowledges the Traditional Custodians of the Country on which the Project will be undertaken, the Gumbaynggirr people.

The Gumbaynggirr people have been the custodians of this Country for thousands of years, forming one of the largest coastal nations in NSW. Their connection to this place is unbroken.

We recognise their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

**Cover:** Aerial view of Korora Bus Interchange from north east.  
(Artist impression. Landscape shown at full maturity.)

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## PLACE DESIGN AND LANDSCAPE PLAN

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## Glossary

<b>AHD</b> Australian Height Datum	<b>DRS</b> Disaster Recovery Site	<b>LFA</b> Landscape Functional Analysis	<b>SS</b> Stainless steel
<b>ARTC</b> Australian Rail Track Corporation	<b>EIS</b> Environmental Impact Statement	<b>LGA</b> Local Government Area	<b>SWTC</b> Scope of Works and Technical Criteria
<b>AS</b> Australian Standards	<b>EP&amp;A Act</b> Environmental Planning and Assessment Act 1979 (NSW)	<b>LMP</b> Landscape Management Plan	<b>TfNSW</b> Transport for NSW
<b>AR</b> Amendment Report	<b>EP&amp;A Regulation</b> Environmental Planning and Assessment Regulations 2000	<b>MCoA</b> Minister's Conditions of Approval	<b>TSC</b> Threatened Species Conservation
<b>BCA</b> Building Code of Australia	<b>EPA</b> Environment Protection Authority	<b>MOMF</b> Motorway Operations Maintenance Facility	<b>UDRG</b> Urban Design Review Group
<b>BC Act</b> Biodiversity Conservation Act 2016 (NSW)	<b>EPBC Act</b> Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)	<b>MRB</b> Mobile (telephone) Radio Broadcasting	<b>UPS</b> Uninterrupted Power Supply
<b>BoA</b> Body of Art	<b>ESD</b> Environmentally Sustainable Development	<b>NB</b> Northbound	<b>VMS</b> Variable Message Signs
<b>BoS</b> Body of Story	<b>FGJV</b> Ferrovia Gamuda Joint Venture	<b>NGO</b> Non-government organisation	<b>WMP</b> Weed Management Plan
<b>CBD</b> Central Business District	<b>FFL</b> Finished Floor Level	<b>PDLP</b> Place, Design and Landscape Plan	<b>WSUD</b> Water Sensitive Urban Design
<b>CEMP</b> Construction Environmental Management Plan	<b>FM Act</b> Fisheries Management Act 1994	<b>PCT</b> Plant Community Types	<b>WTP</b> Water Treatment Plant
<b>CoCH</b> City of Coffs Harbour	<b>FRNSW</b> Fire and Rescue NSW	<b>REMM</b> Revised Environmental Management Measures	<b>The Project</b> Coffs Harbour Bypass
<b>CLM Act</b> Contaminated Land Management Act 1997	<b>GDE</b> Groundwater Dependent Ecosystem	<b>RL</b> Reduced Level	<b>Artist impression</b> Illustrates the overall design intent shown is indicative only.
<b>CPTED</b> Crime Prevention Through Environmental Design	<b>ISC</b> Infrastructure Sustainability Council	<b>RMS</b> Road and Maritime Services	<b>Landscape shown at full maturity</b> Refers to landscape shown at 10-15 years.
<b>CSIRO</b> Commonwealth Scientific and Industrial Research Organisation	<b>ITS</b> Intelligent Transport Systems	<b>RRB</b> Radio Rebroadcasting	<b>Artwork</b> The artwork illustrated in the images is indicative and is being further developed as part of the detailed design process.
<b>CSSI</b> Critical State Significance Infrastructure	<b>LALC</b> Local Aboriginal Land Council	<b>RTA</b> Road Transport Authority	
<b>DDA</b> Disabilities and Discrimination Act	<b>LEP</b> Local Environmental Plan	<b>SB</b> Southbound	
<b>DPE</b> Department of Planning and Environment		<b>SiD</b> Safety in Design	

## Compliance matrix

Transport for NSW (TfNSW) has gained approval to deliver a motorway bypassing Coffs Harbour, from south of Englands Road to Korora in the north, and a two-kilometre upgrade of the existing highway between Korora and Sapphire Beach. Coffs Harbour Bypass (the Project) was declared to be Critical State Significant Infrastructure (CSSI) under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and was approved through a bilateral agreement between the NSW Minister for Planning and Public Spaces on 2 November 2020 and the Australian Minister for Environment on 12 December 2020.

This Place Design and Landscape Plan (PDLP) has been prepared to meet the relevant Conditions and Revised Environmental Management Measures Conditions outlined in the:

- Minister's Conditions of Approval (MCoA) for the Coffs Harbour Bypass SSI – 7666
- Revised Environmental Management Measures (REMMs).

This report includes the Conditions that are directly related to this PDLP.

### Minister's Conditions of Approval (MCoA)

Table 1: Minister's Conditions of Approval

CLAUSE NO.	CLAUSE	DOCUMENT REFERENCE
<b>Place Design and Landscape Plan</b>		
E63	A Place Design and Landscape Plan must be prepared to inform the final design of the CSSI and to give effect to the commitments made in the documents listed in Condition A1 on the place design and landscaping of the CSSI. The Plan must be submitted to the Planning Secretary for information one month before commencement of work to which it applies.	CHBPW-FGJV-NWW-DU-RPT-020001 (this report)
E64	The Place Design and Landscape Plan must be prepared by a suitably qualified and experienced person in consultation with the Council, the community, affected landowners and businesses, and the Kororo Public School in relation to the Korora bus interchange. The Place Design and Landscape Plan must include:	
	a the design of the CSSI elements including their form, materials and detail	Chapter 6
	b the design of the project landform and earthworks;	Chapter 5 Chapter 6
	c measures to limit the visual appearance of shotcrete;	Chapter 6
	d the location of existing vegetation, areas of vegetation to be retained and proposed planting and seeding details, including the use of local indigenous species for revegetation activities and vegetative screening;	Chapter 5 Chapter 7
	e interpretive signage and public art, incorporated into noise walls;	Chapter 4 Chapter 6
	f Crime Prevention Through Environmental Design principles for the Kororo Public School bus interchange and the Coramba Road (at Spagnolos Road) bus stop;	Chapter 6
	g details of measures to rehabilitate, regenerate or revegetate disturbed areas and the koala corridors on top of the tunnels at Roberts Hill and Gatelys Road, and their ongoing maintenance; and	Chapter 5 Chapter 7
	h additional vegetative screening between Coachmans Close and the service road.	Chapter 5
E65	The Place Design and Landscape Plan must be integrated into the CSSI design and implemented during construction and operation and incorporate monitoring and maintenance procedures for the built elements, rehabilitated vegetation and landscaping (including visual screening and weed control) and performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail.	CHBPW-FGJV-NWW-DU-RPT-020001 (this report)

## Revised Environmental Management Measures (REMMs)

Table 2: Revised Environmental Management Measures

ENVIRONMENTAL ISSUE	EIS ID	ENVIRONMENTAL MANAGEMENT MEASURES	DOCUMENT REFERENCE
<b>Urban design, landscape and visual amenity</b>			
Landscape and visual impacts	UD01	An Urban Design and Landscape Plan will be prepared in consultation with CHCC to support the detailed design of the project. The plan will present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The plan will include:	Chapter 5 Chapter 6 Chapter 7
		- Location and identification of existing vegetation and proposed landscaped areas, including species to be used	Chapter 5 Chapter 7
		- Built elements including retaining walls, bridges and noise barriers (using mounds as a priority where feasible, walls to supplement where required)	Chapter 6
		- Pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings	Chapter 6
		- Fixtures such as lighting, fencing and signs	Chapter 6
		- Details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage	Chapter 7
		- Procedures for monitoring and maintaining landscaped or rehabilitated areas	Chapter 7
		- Water sensitive urban design solutions	Chapter 7
		- Consideration of a detailed CPTED assessment of the project.	Chapter 6
		The plan will be prepared in accordance with TfNSW urban design policy guidelines including:	Chapter 1
		- Beyond the Pavement – urban design policy, procedures and design principles (Roads and Maritime Services 2014b)	
		- Landscape design guidelines: Design guideline to improve the quality safety and cost effectiveness of green infrastructure in road corridors (Roads and Maritime Services 2017b)	
		- Bridge Aesthetics: Design Guidelines to improve appearance of bridges in NSW (Roads and Maritime Services 2019)	
		- Tunnel urban design guideline: Design guideline to improve the customer and community experience of road tunnels (Roads and Maritime Services 2017c)	
		- Noise Wall Design Guideline: Design guidelines to improve the appearance of noise walls in NSW (Roads and Maritime Services 2016b)	
- Shotcrete Design Guideline: Design guidelines to avoid, minimise and improve the appearance of shotcrete in NSW (Roads and Maritime Services 2016d)			
- Water sensitive urban design guideline (Roads and Maritime Services 2017d)			
- Guidelines for Controlled Activities for Works on Waterfront Land – Vegetation Management Plan (DPI 2012e)			
- Crime prevention and the assessment of development applications – guidelines under section 79C of the Environmental Planning and Assessment Act 1979 (NSW Department of Urban Affairs and Planning 2001).			

ENVIRONMENTAL ISSUE	EIS ID	ENVIRONMENTAL MANAGEMENT MEASURES	DOCUMENT REFERENCE
<b>Urban design, landscape and visual amenity</b>			
Water sensitive urban design	UD02	Temporary and permanent drainage infrastructure will be designed to incorporate water sensitive urban design principles where possible in accordance with Water sensitive urban design guideline (Roads and Maritime 2017d). This could include replacing concrete lined longitudinal catch drains with vegetated swales and the operational water quality control measures.	Chapter 7
<b>Biodiversity</b>			
Removal of threatened fauna habitat	FF04	Where reasonable and feasible, habitat will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011a). This approach can be extended to salvaging some habitat logs such as root balls and providing them for re-use to CHCC and other organisations where they have the capacity to accept this material.	Chapter 7
	FF05	Protection and enhancement of vegetated riparian zones will be undertaken to improve opportunities for fauna movement (including spotted-tailed quoll and pale-vented bush hen).	Chapter 7
	FF11	Native vegetation consisting of suitable species from locally indigenous vegetation communities of the study area will be progressively re-established in accordance with Guide 3: Re-establishment of native vegetation of the Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011a).	Chapter 7

## Executive summary

### Coffs Harbour Bypass

The Coffs Harbour Bypass (the Project) includes a 12-kilometre bypass of Coffs Harbour from south of Englands Road to Korora in the north and a two-kilometre upgrade of the existing highway between Korora and Sapphire Beach on Gumbaynggirr Country. The Project will 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 Korora in the north. The Project will have a posted speed limit of 110km/h in most locations. The design narrative has been developed as part of a co-design process that speaks of Connection to Country, which is the primary driver for the Project. An integrated ‘tie into the environment’ approach has been adopted.

The design response reinforces the ‘Mountains to the Sea’ concept, reflecting the unique setting of the bypass, where the alignment of the Pacific Highway is adjacent to both the Great Dividing Range and the sea; providing views of, and to them.

### Key initiatives

The design provides the following benefits in key initiatives:

- 1 **Celebration of Connection to Country**
- 2 **Enhancement of Koala habitat**
- 3 **Threatened species protection**
- 4 **Revitalisation of waterways**
- 5 **Reduced impact to the mountains**
- 6 **Better relationships with community**
- 7 **Decarbonisation**

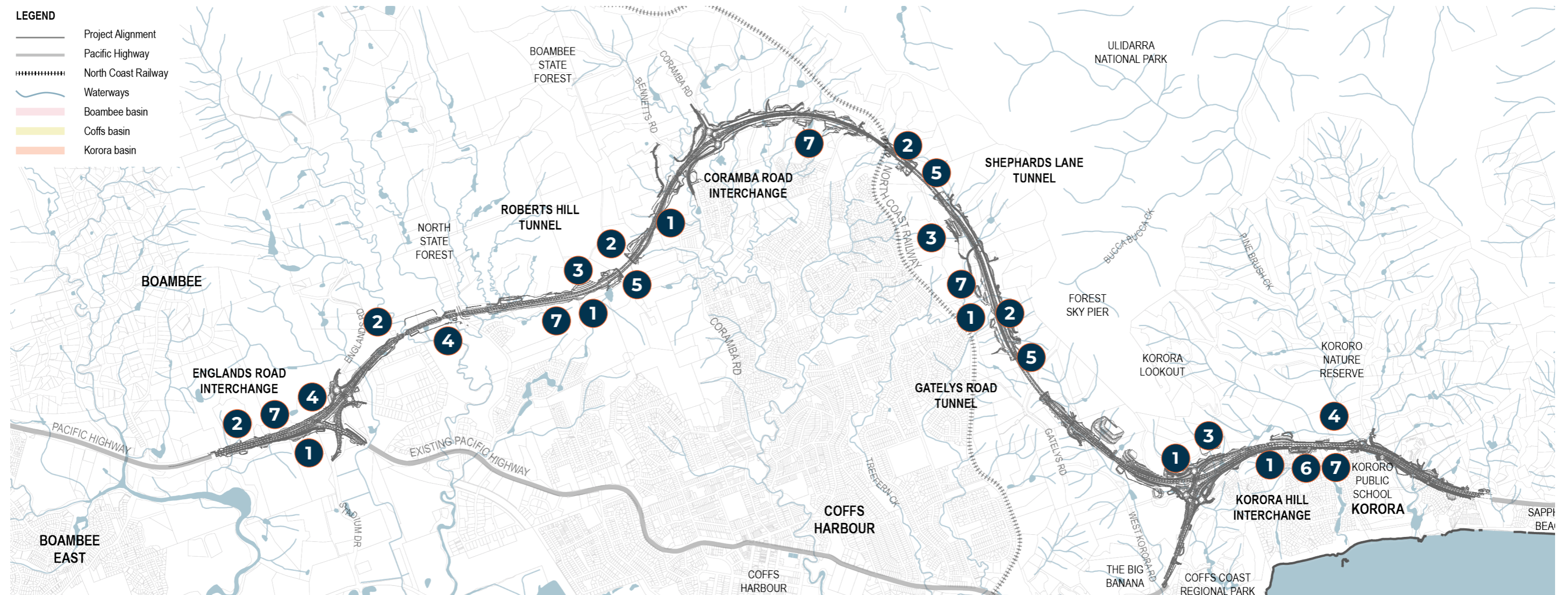


Figure 1: Key initiatives



### Celebration of Connection to Country

As part of the co-design process, an interpretation strategy has been developed to incorporate artwork on various Project elements such as noise walls and interchanges to provide a Connection to Country.



### Enhancement of Koala habitat

The design provides additional Koala Habitat revegetation as part of the overall Project offset strategy, enhancing connectivity and habitat potential.



### Threatened species protection

The design minimises clearing of native vegetation and threatened species habitat by incorporating the following design methodologies: amending the alignment of the road to avoid significant areas of existing vegetation, not constructing temporary basins within threatened species habitat, consolidating the clearing required for fencing, construction access and maintenance access wherever possible.



### Revitalisation of waterways

Enhanced biodiversity outcomes for creek line corridors linking the 'Mountains to the Sea' is achieved through soft engineering approaches which minimise use of concrete lining and provide for the revegetation of the disturbed creeklines and fauna passage.



### Reduced impact on the mountains

The tunnel portals design minimises the extent of cuttings to reduce impacts on mountain vegetation clearing. The design provides a simple form which is articulated and is complimentary to its context, facilitating enhanced integration of tunnel portals with the landscape and its natural setting.



### Better relationships with community

The design provides a reduction in scale and visual impact of embankments by lengthening the bridge over North Coast Rail. This protects the new and developing urban fringe of Coffs Harbour, enhancing visual connections to the mountains beyond.



### Decarbonisation

The project is committed to reducing its construction carbon footprint by at least 25% compared to business-as-usual approaches. As part of this, our noise wall design incorporates alternative lightweight materials which have less embodied emissions compared to concrete panels.

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# 01 Introduction



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# 1 Introduction

## 1.1 Purpose

This PDLP describes the urban, architectural and landscape design proposals for permanent works of the Project. The purpose of the PDLP is to demonstrate compliance with the following Planning Approval documents, as required by the Minister's Conditions of Approval (MCoA):

- Coffs Harbour Bypass Environmental Impact Statement Volume 1A – 10, (TfNSW, September 2019)
- Coffs Harbour Bypass Submissions Report Volume 1 – 3 (TfNSW, June 2020)
- Coffs Harbour Bypass Amendment Report Volumes 1 – 6 (TfNSW, June 2020).

The design of the various project components is developed through an integrated urban design approach. This approach encourages a continuous component evolution and refinement throughout the design and construct period.

## 1.2 Design methodology

A group of designers including architects, urban designers, landscape designers, art consultants, artist groups from the community and 3D visualisers have prepared this report, working closely with the engineering and construction teams of Ferrovial Gamuda Joint Venture (FGJV).

Key steps included:

- Attending site visits
- Preparing site analysis
- Identifying opportunities
- Developing urban and landscape design objectives and principles based on overall Pacific Highway objectives
- Developing design strategies based on driver experience, wayfinding and legacy projects
- Preparing a methodology to develop an artwork strategy to incorporate the artwork into the design, as part of the co-design process to provide Connection to Country
- Attending and contributing to ongoing Safety in Design (SiD) workshops and risk workshops, covering whole of life design and user interface as part of the detailed design
- Preparing presentations as required (internal and external audiences including the Urban Design Review Group (UDRG).

## 1.3 The team

The Project delivery team comprises the following:

- Transport for NSW (TfNSW)
- Ferrovial Gamuda Joint Venture – Principal Contractor
- Arcadis and SENER – Civil, tunnel and structural engineers
- Conybeare Morrison International (CM<sup>+</sup>) – Urban and architectural designers
- Tract Consultants – Landscape designers
- Urban Design Review Group (UDRG)
- Balarinji – Aboriginal Art and Narrative Integration specialists.

Reviews of this PDLP documentation have taken place by external subject matter experts / specialists from TfNSW and UDRG.

## 1.4 Key design standards and guideline documents

Key documents include:

### Planning Approval documents

- *Coffs Harbour Bypass Environmental Impact Statement Volume 1A – 10*, TfNSW, September 2019
- *Coffs Harbour Bypass Submissions Report Volume 1 – 3*, TfNSW, June 2020
- *Coffs Harbour Bypass Amendment Report Volumes 1 – 6*, TfNSW, June 2020
- *Commonwealth Approval EPBC 2017/8005*, TfNSW, November 2022
- *Minister's Conditions of Approval*, 02 November 2020
- *Revised Environmental Management Measures (REMMs)*, TfNSW, June 2020.

### Guideline documents

- *Pacific Highway Urban Design Framework*, RMS, 2013
- *Beyond the Pavement 2020: Urban Design Approach and Procedures for Road and Maritime Infrastructure Planning, Design and Construction for road infrastructure design*, TfNSW, 2020
- *Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW*, TfNSW, 2019
- *Shotcrete Design Guidelines: Design guidelines to avoid, minimise and improve the appearance of shotcrete*, TfNSW, 2016
- *Noise wall design guidelines: Design guidelines to improve the appearance of noise walls in NSW*, TfNSW, 2021
- *Designing to minimise vandalism (final draft)*, RTA, 2008
- *Landscape Design Guidelines: Landscape design and maintenance guidelines to improve the quality, safety and cost effectiveness of Green Infrastructure*, RMS, 2018
- *Water Sensitive Urban Design Guideline: applying water sensitive urban design principles to NSW transport projects*, RMS, 2017
- *Tunnel Urban Design Guideline: Design guideline to improve the customer and community experience of road tunnels*, RMS, 2017
- *Land bridge discussion paper. Re-stitching the Built and Natural Environment*, Centre for Urban Design, 2021
- *Safer Designed spaces: A discussion paper on the role of urban design to create valued public environments resistant to hostile vehicle attacks*, March 2018
- *NSW Bicycle Guidelines*, RTA, July 2005
- *Cycleway Design Toolbox: Designing for cycling and micromobility*, TfNSW, 2021.

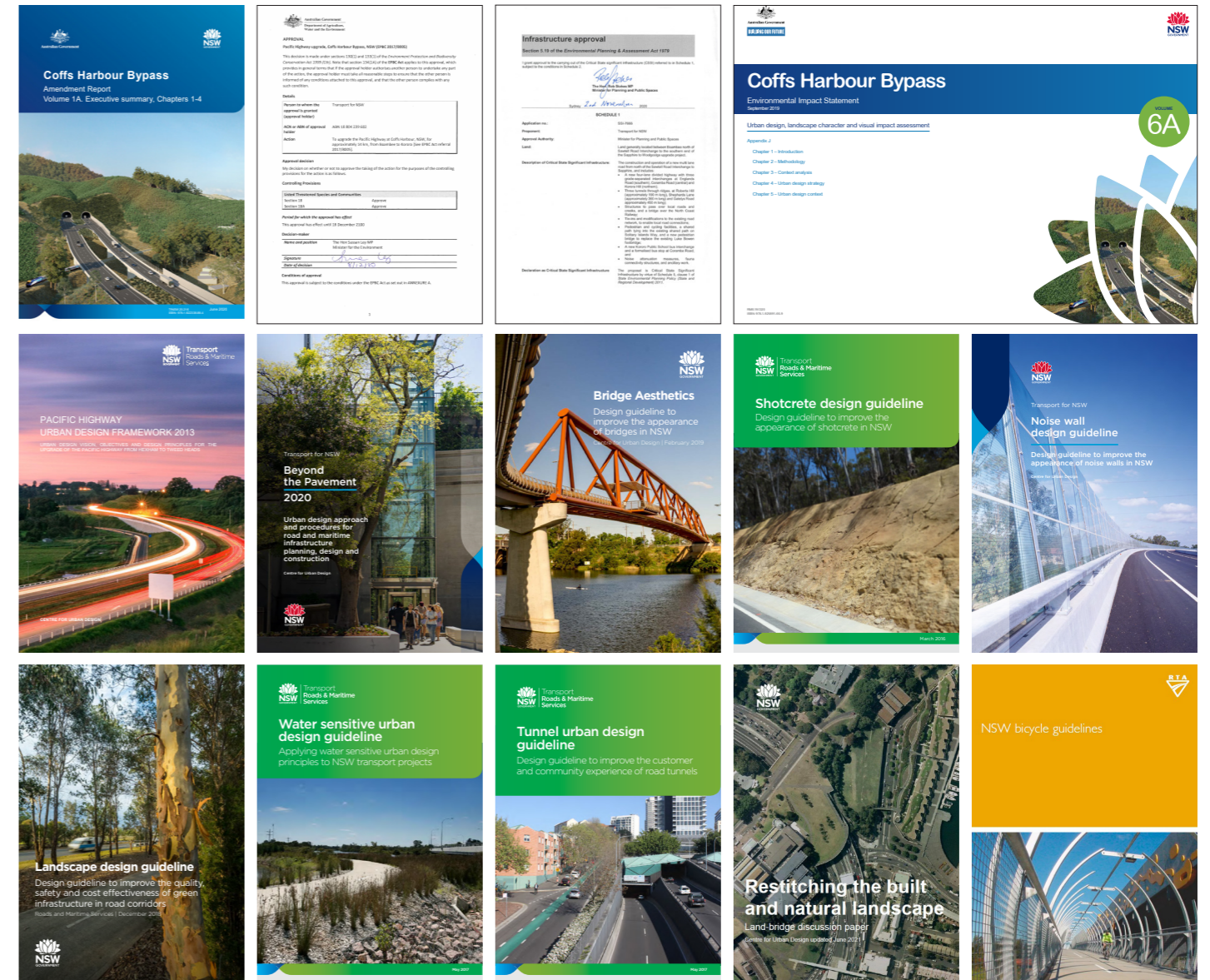


Figure 2: Key guideline documents

## 1.5 Document structure

This report identifies the overall design responses and strategies for the Project.

Description of individual chapters are as follows:

1. **Introduction** – Introduces the Project, design methodologies and guideline documents used to inform the design.
2. **Contextual analysis** – Provides a brief analysis of the Project context, with particular focus on urban design and landscape related issues.
3. **Urban design objectives** – Outlines the vision, urban design objectives and principles for the Project.
4. **Design narrative** – Outlines the overall theme and urban design strategy of the Project.
5. **Urban design concept plans** – A series of urban design concept plans and sections that illustrate the urban design concept.
6. **Design elements** – Illustrates the urban design of design elements such as bridges, tunnels and portals, noise walls, retaining walls, throwscreens and headlight screens.
7. **Landscape implementation strategy** – Outlines the landscape strategy of the Project.
8. **Materials and finishes** – Summarises the materials and finishes proposed for design elements.
9. **Conclusion** – Reinstates the vision, theme and urban design strategy of the Project.

## 1.6 Approvals and consultation

	JULY-SEPT 2022	OCT-DEC 2022	JAN-MAR 2023	APR-JUNE 2023	JULY-SEPT 2023	OCT-DEC 2023	JAN-MAR 2024
UDRG Meetings	x			x	x	x	
BoS Workshop		x					
BoA Workshop			x				
Artists Design Development Workshops			x	x			
PDLP for Display						x	
PDLP responses						x	
PDLP submission to DPE							x
PDLP approval							x

Table 3: Approvals and consultation

## 1.7 Infrastructure Sustainability Council (ISC)

The Project is pursuing a ‘Leading’ or better rating for both the Design and As-Built stages. The design has been developed in accordance with the Infrastructure Sustainability Council (ISC) technical manual and rating tool, which includes the following design principles related to people and place:

- **People**
  - Comfortability
  - Vibrancy
  - Safety
  - Walkability.
- **Place**
  - Enhancing local economy, environment, and community
  - Connecting places
  - Facilitating diverse experiences
  - Quality and enduring places.

The technical manual also states that good urban and landscape design can contribute to:

- Economic and socio-economic performance – encouraging local businesses and entrepreneurship.
- Attracting people to live in an area; providing affordable housing and travel; and providing equitable access to job opportunities, facilities, and services.
- Physical scale, space and ambience – affecting the balance between natural ecosystems and built environments.
- Social and cultural environments – how people interact with each other, how they move around, and how they use a place for variations in rainfall as a result of climate change. This will also reduce the need for operational water requirements via maintenance and will help to ensure the aesthetic of the Project remains consistent long-term.

The main, overarching objective of the urban design ISC category is to achieve contextually appropriate infrastructure design. This is achieved through a collaborative, interdisciplinary approach that is influenced by the local context and creates infrastructure that fits its setting, whilst preserving and enhancing scenic, aesthetic, cultural, community, and environmental resources and values.



## 02 Contextual analysis



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## 2 Contextual analysis

### 2.1 Regional context

The Project is located in the Coffs Harbour Local Government Area (LGA) about three kilometres west of the Coffs Harbour CBD, about 540km north of Sydney and about 400km south of Brisbane.

The Coffs Harbour LGA is positioned midway between Brisbane and Sydney. The area has a growing and diverse economy, based on existing industry and services such as the Coffs Harbour Regional Airport, health and education campuses, and a growing digital innovation sector. Other adjoining LGAs have growing creative, manufacturing and transport industries that are likely to facilitate new employment opportunities in Coffs Harbour. The area also supports a productive agricultural hinterland. Recreation and tourism also contribute to the economy, due to sporting events such as the Coffs Coast Rally and significant natural areas such as the Solitary Islands Marine Park.

There are many unique features within the Project location, including the southern limits of Australia's banana plantations, nationally significant blueberry plantations, proximity of the Great Dividing Range, the visual connection to the coastline and proximity to a large regional city. The region also supports a diverse range of native vegetation communities and provides connectivity for important areas of flora and fauna habitat including Ulidarra National Park, Kororo Nature Reserve and the Boambee State Forest.

The Project passes through, or next to the localities of North Boambee Valley, West Coffs and Korora.



Figure 3: Location map

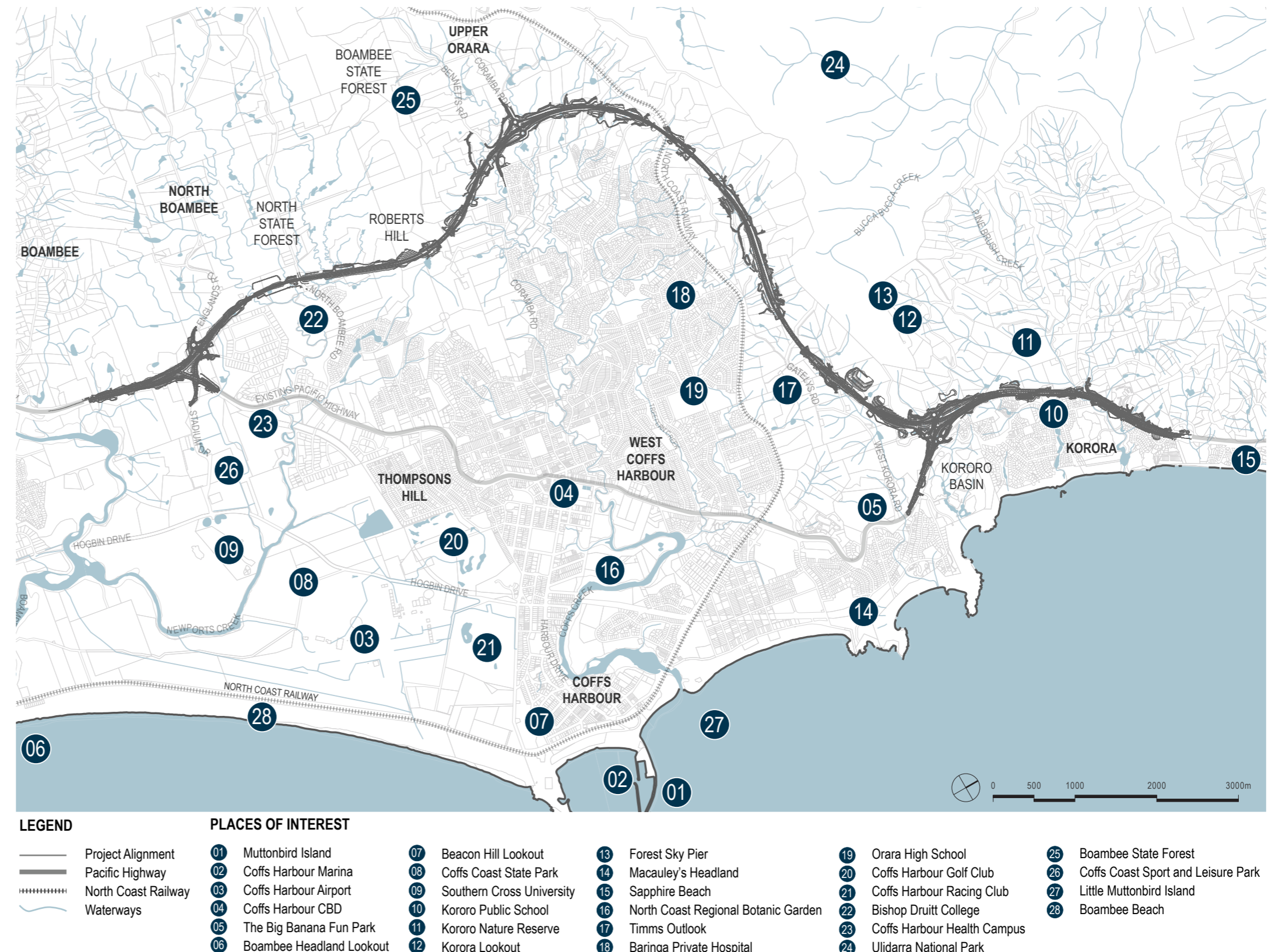


Figure 4: Regional map

## 2.2 Project context

The Project passes through or next to the localities of North Boambee Valley, West Coffs and Korora.

The benefits of the Project include:

- Complementing the Pacific Highway upgrade program by providing free flowing, dual carriageway conditions between Hexham and the Queensland border.
- Improving road safety by removing through traffic (light and heavy vehicles) and some local traffic from the existing road network, which would reduce conflicts and improve safety for all road users.
- Reducing incidents associated with conflict between pedestrian, cyclist, passenger and freight traffic through the CBD.
- Improving travel time for through and local traffic, reducing travel times by up to 20 minutes for those travelling southbound upon opening.
- Improving transport efficiency of the existing Pacific Highway through Coffs Harbour, relieving congestion on the wider Coffs Harbour road network and providing an alternative route for some local trips.
- Improving freight efficiency for heavy vehicles, by providing a high standard dual carriageway road to complement the National Land Transport Network, Future Transport Strategy 2056 and the recently upgraded Pacific Highway.
- Providing a more reliable route for traffic that avoids flood events through Coffs Harbour.
- Improving safety outcomes through relocation of the existing school bus interchange near Kororo Public School, from the Pacific Highway to James Small Drive.



## 2.3 Local context

### 2.3.1 Connectivity

Coffs Harbour is currently located on the Pacific Highway with the alignment dividing the city in half. The present highway configuration is largely a four-lane road with raised median, and an urban speed limit of 60km/h. The speed limit rises to 80km/h as you leave the main urban core and move into the resort precinct to the north, with reduced access opportunities and a less developed frontage.

The North Coast Railway has played an important role in shaping the development of Coffs Harbour. Its alignment has limited development along the coast, as it forms a barrier to the east. This restriction of growth is also evident to the north of town where it forms a clear delineation between residential development, and agricultural lands on the steeper slopes.

An eastern town centre bypass, Hogbin Drive, is an important element in the reduction of traffic congestion, and connects the town to the airport. Harbour Drive and Orlando Street form a loop connecting the CBD and the existing Pacific Highway to the foreshore.

Connections to the west are limited due to escarpment topography and limited development inland from the coast. The main connection to the west is Coramba Road which links Coffs Harbour to the small town of Karangi. This is a rural road of limited scale that transitions to a collector road as it passes through the residential suburbs of Coffs Harbour. Coramba Road is four lanes in width through this urban section, with two travel and two parking lanes. This alignment also plays an important role in regional Active Transport Links.

The general layout of streets is a grid, running slightly skewed north-south and east-west, although the roads in part respond to the topography. Clear links to the surrounding landscape are evident along these long straight roads which lead into the hills.

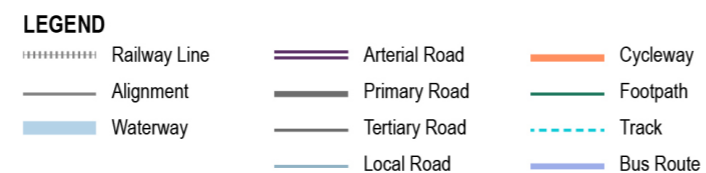
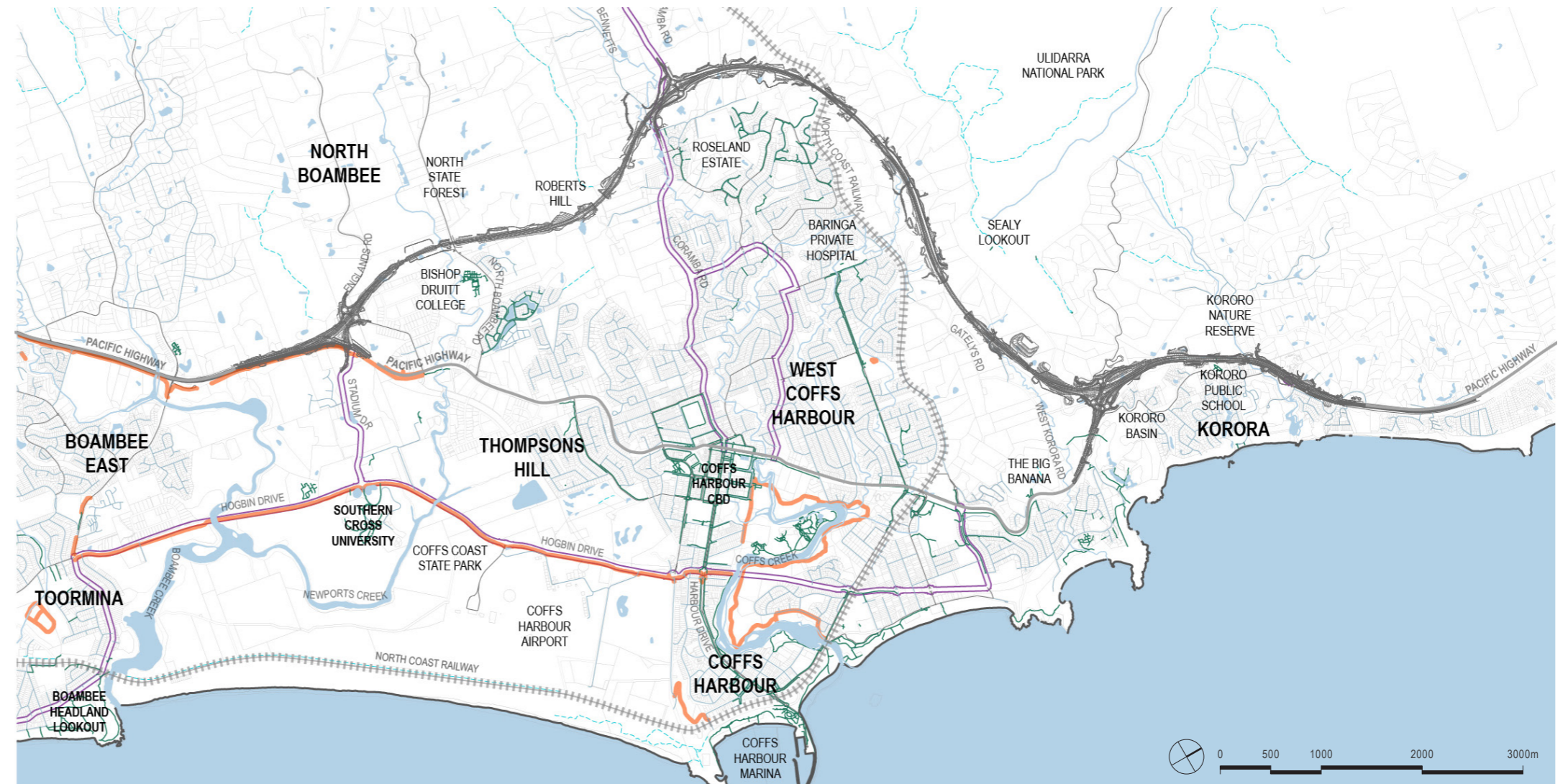


Figure 5: Access and connectivity

Active Transport Links are predominantly defined with designated shared paths and cycling routes for the urban core of Coffs Harbour. They reduce in density as you move into the suburbs. The development of the Project needs to facilitate connections to, and from the alignment, that can be safely connected into the broader road network. There are about 15 schools in the Coffs region, which are serviced by about seven bus routes.

Some of the schools include:

- Coffs Harbour Montessori Preschool
- Kororo Public School
- Orara High School
- Tyalla Primary School
- Narranga Public School
- Casuarina School for Rudolf Steiner Education
- Allegra School
- Coffs Harbour Christian Community Primary School
- St Augustine's Primary School
- Coffs Harbour Public School
- Southern Cross University
- Bishop DrUITT College.

**Design implications and strategies:**

- Provision of active transport access at all interchanges, facilitating connections to the community and facilities beyond the alignment.
- Coramba Road has been developed, acknowledging that this is a route used by experienced riders as part of a road riding route.
- Connections across the corridor improve existing road connections and access needs, but do not facilitate additional access due to topographic constraints.
- Opportunity to improve and enhance bus connectivity with the inclusion of the bus interchange near Kororo Public School, and a formalised bus stop on the eastern side of Coramba Road interchange.

### 2.3.2 Soils

The Project traverses the Boambee and Newports floodplain and scenic foot slopes of the Great Dividing Range, with views to the eastern coastline of NSW. The floodplains topography comprises flat to gently sloping coastal plains and river terraces, with estuarine mud flats. The landform rises rapidly from the adjoining plains with a series of spurs and ridgelines that cut across the Project, creating steep and undulating topography.

The Project area occurs across six landscape soil types described below:

#### 1. Coffs Creek (Alluvial landscape)

Located in level to gently undulating floodplains, at the southern end of the corridor, predominantly between the Englands Road Interchange and Roberts Hill, and a small section at the upper catchments of Coffs Creek north of Coramba Road Interchange. They comprise alluvial soils of low bearing strength, strong acidity, which are characterised by high water tables, seasonal waterlogging and flooding.

#### 2. Ulong (Erosional landscape)

Located at the southernmost section of the corridor prior to Englands Road in a landscape comprising undulating to rolling low hills on Late Carboniferous metasediments. They are moderately deep to deep podzolic soils which are predominantly well drained. They are strongly acidic and of low wet bearing strength.

#### 3. Newports Creek (Swamp landscape)

A very localised occurrence just north of Englands Road comprising low, level to gently undulating coastal back-barrier floodplains on Pleistocene estuarine sediments. They are of High organic content but low in fertility, subject to waterlogging, and strongly acidic .



#### LEGEND

..... Railway Line	Topography	Disturbed Terrain	Moonee
— Alignment	Bobo	Goolawah	Newports Creek
Waterway	Bundagen	Kooralbyn	Suicide
	Coffs Creek	Look-at-me-now	Toormina
	Coffs Harbour	Megan	Ulong
	Dairyville		

Figure 6: Soil

#### 4. Moonee (Transferral landscape)

Located in the southern valleys of Roberts Hill, it comprises undulating rises, foot slopes and drainage plains adjacent to steeper low hills. The soils are moderately deep to deep, poorly drained humic gley. Strongly acidic, poor permeability, and subject to seasonal waterlogging.

#### 5. Megan (Erosional landscape)

Dominant throughout the central and northern section of the corridor it comprises rolling hills on Late Carboniferous metasediments. It comprises moderately deep to deep, well drained structured soils that are strongly acidic, stony soil of high erodibility. Localised steep slopes, mass movement hazard, high water erosion hazard, foundation hazard.

#### 6. Suicide (Colluvial landscape)

The areas of Shephards Lane, Gatelys Road and west of Korara Hill Interchange represent the steepest of the landscape terrains with inherent issues to be considered like slope mass movement hazard, high run-off, and erosion hazard, foundation hazard, and localised rockfall hazard.

#### Design implications and strategies:

- Soils types and qualities are tied to particular plant communities.
- Soils are to be reused, in the locations that they are stripped from promote and encourage the regeneration of the native community.
- Topsoil is typically to be retained and managed on site to ensure revegetated communities thrive and waste is minimised. For Banana plantation, specific management requirements are introduced to control Panama Disease.
- Topsoil will be ameliorated in accordance with analysis undertaken as part of the Revegetation Soil Management Plan.
- Plant species have been aligned with sensitive floodplain soils to enhance and strengthen riparian corridors.

## 2.3.3 Topography

### Landform

The alignment is located in the highly scenic foot slopes of the Great Dividing Range, with potential for views over the coastline. The alignment varies in elevation from 7 to 88 metres Above Sea Level (ASL). The landform in this zone is crossed by a series of spur and ridge lines that come down from the escarpment beyond. These spurs cut across the alignment and pose one of the challenges faced in the design of the alignment, as they rise rapidly from the adjoining plains, creating steep and uneven topography. This varied form also assists in the mitigation of visual impacts, as the topography and its form provides elements that conceal the road from the adjacent, broader residential development.

The landform of the alignment contributes to its visual and scenic character, as well as playing a role in the defining of visual catchments along the alignment.

Three distinct basins are evident along the route:

- The Northern Boambee Valley, and
- The Coffs Harbour Basin – which are separated by Roberts Hill; and
- The Korora Hill Interchange, located north of Gatelys Road.

### Design Implications and strategies:

- Alignment has been developed to respond to the visual attributes of each basin.
- Management of cuttings and treatments has been managed to minimise visual and physical disruptions to their landscape setting.

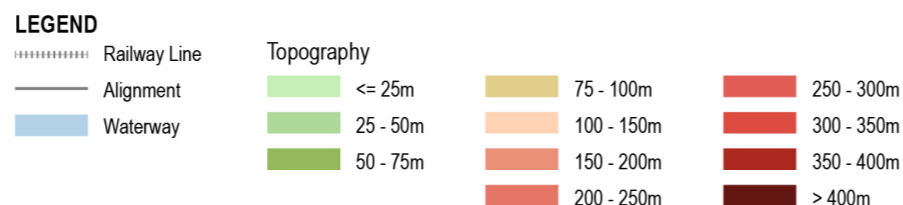
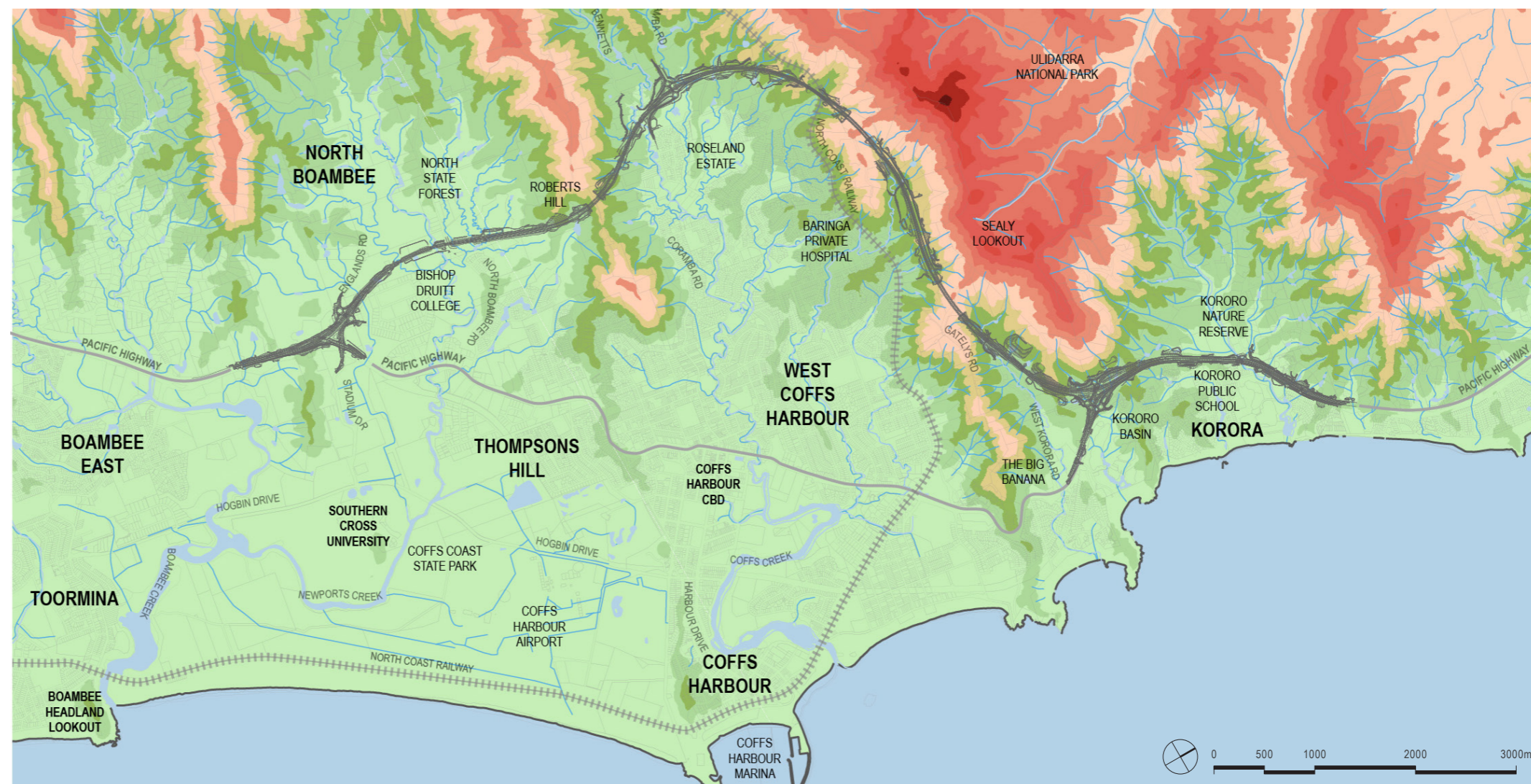


Figure 7: Topography

## Slope

The alignment is set within the foot slopes of the Great Dividing Range and is located on land generally not easily developed, due to its steeper slopes and difficult access. Despite the steepness of the slopes, intensive agricultural production of these lands has occurred, primarily in the form of banana plantations. (This land use favours steep north facing slopes). In this zone, slopes range between 15% and 25%, whereas Coffs Harbour's development has largely occurred on lands with a slope of between 2.5% to 5%.

### Design implications and strategies

The width of the land formation and steep cross fall, has seen careful consideration given to the:

- Vertical and horizontal alignment in order to avoid significant embankments and the chasing of slopes.
- Steepening of slopes to avoiding chasing the adjoining terrain, to both minimise cut and fill and overall disruption to the natural flow of the landscape.
- Adoption of both vertical tunnel portals and laid-back side slopes, enabling the minimisation of their footprint and integration into the broader landscape.

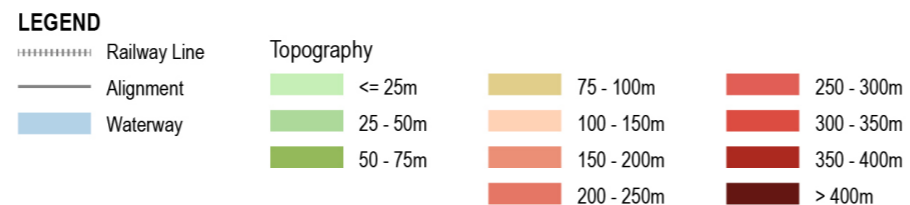


Figure 8: Slope



Figure 9: View of Coffs Harbour from Forest Sky Pier (Sealy Lookout)



Figure 10: Escarpment behind Coffs Harbour, view from Shephards Lane

### 2.3.4 Drainage

The alignment occurs in the upper portions of the Coffs Harbour City catchment, and drains into the creeks which flow through Coffs Harbour.

Seven named watercourses and their tributaries intersect the study area at various locations along the Project's linear footprint. These watercourses include Coffs Creek, Jordans Creek, Newports Creek, Boambee Creek, Pine Brush Creek, Williams Creek (a tributary of Pine Brush Creek) and Treefern Creek.

Development within Coffs Harbour has been influenced by the flooding of these creeklines, where clearly defined flood ways have been left clear of development, enabling vegetation to extend into town along these areas. The upper reaches of the catchment are clearly defined by the edge of the escarpment. The proposed alignment crosses just below these headwaters.

#### Design Implications and strategies

The design has responded to this important context by:

- Addressing water quality and the protection of receiving waters.
- The control of water flows and influences on flooding, including the construction of detention structures.
- Promotion of creeklines as key biodiversity links, retaining vegetation where possible and enhancing stream quality through revegetation.
- Adoption of strategies that enhance water quality including the use of vegetated channels to remove sediment prior to entering creeks.

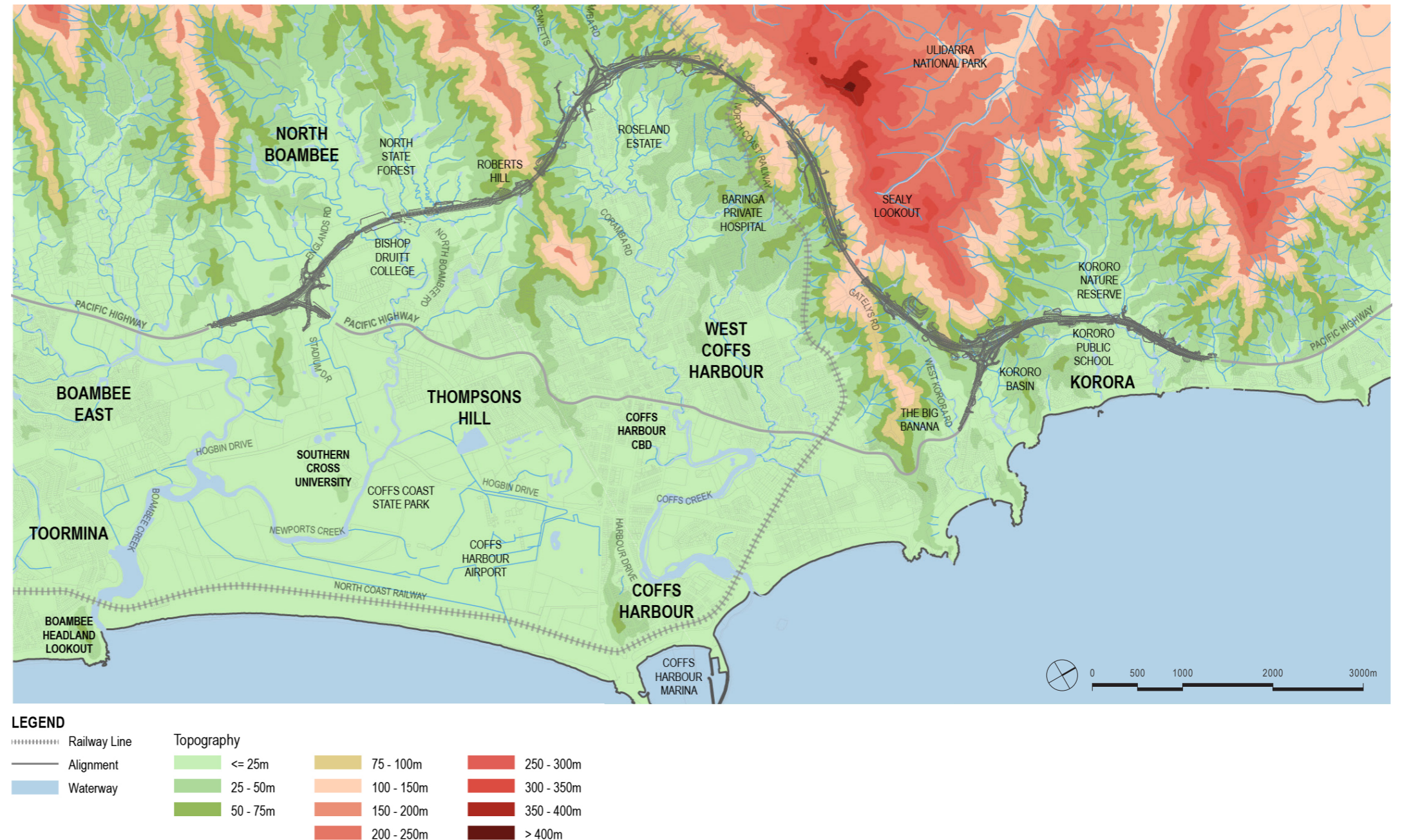


Figure 11: Drainage



### 2.3.5 Biodiversity - vegetation

The overall vegetation pattern of Coffs Harbour is distinct. Small creek lines which drain the valley have been protected and retained as open space, producing a green web running through Coffs Harbour, linking the escarpment to the west with the coast to the east.

On the escarpment the vegetation is protected, located in either Ulidarra National Park or Boambee State Forest. The potential exists to reconnect these communities by extending the green web across the corridor. Native vegetation within the study area is characterised by an overlap in distribution of more tropical-influenced communities in the north, and temperate communities in the south.

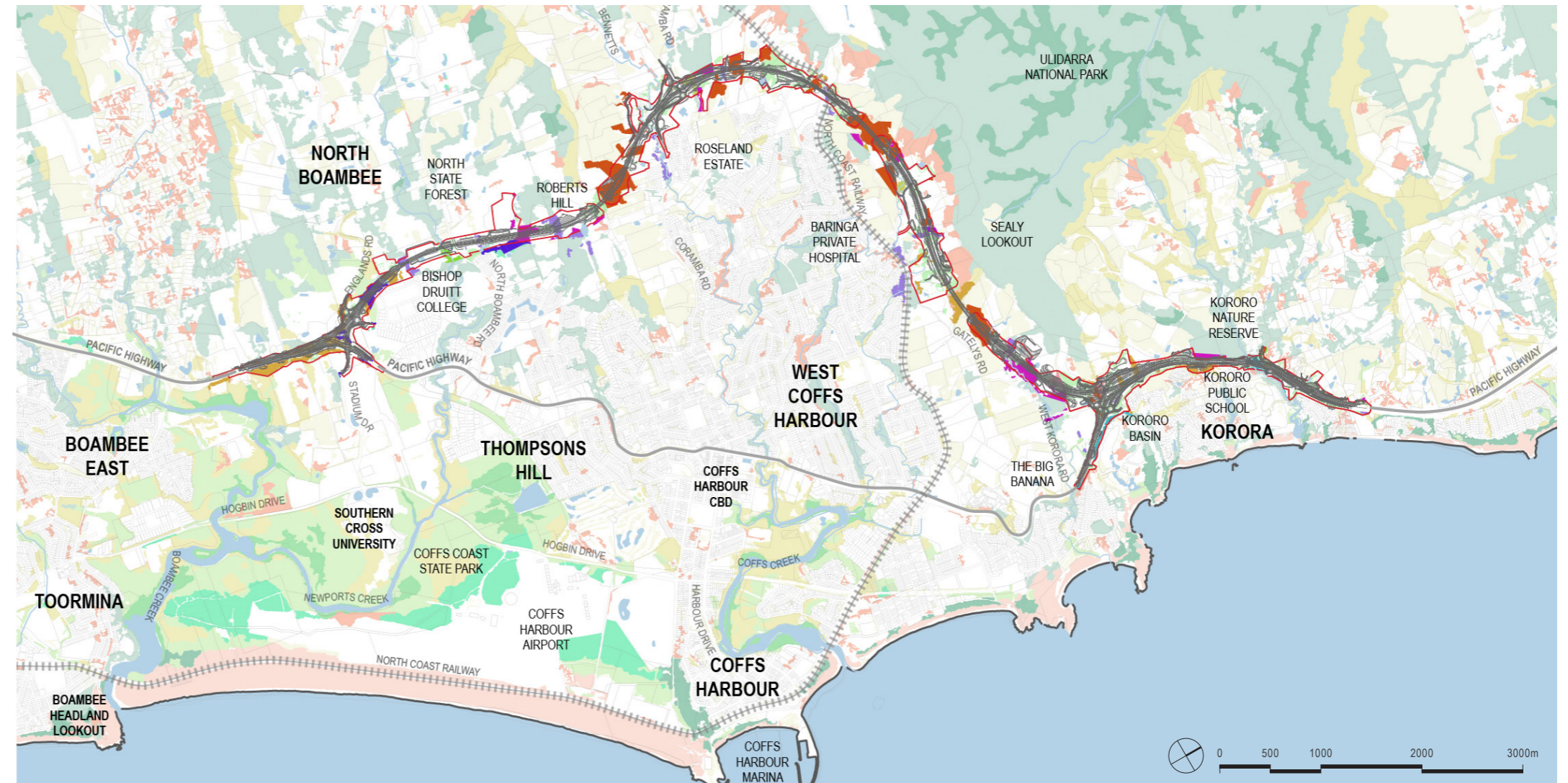
Four vegetation formations (Keith 2004) were recorded as being present within the study area, including (in order of abundance):

- Wet Sclerophyll Forest (Shrubby sub-formation) – 39.41ha
- Forested Wetlands – 4.74ha
- Rainforest – 2.42ha
- Wet Sclerophyll Forest (Grass sub-formation) – 1.60ha

These vegetation formations (Keith 2004) comprise 10 Plant Community Types (PCT), four of which are classified under the Threatened Species and Conservation (TSC) Act, The table below defines these communities with their distribution provided in Figure 12.

Vegetation patterns have the potential to influence the road user experience and provide an insight into the nature of the terrain, through which the road passes.

The road corridor itself is relatively disturbed land, characterised by various agricultural activities. Banana plantations, located on the steep north facing slopes are dominant, followed by an increasing presence of blueberry farms with their associated shade structures. Other activities include smaller hobby farms or rural residential holdings, characterised by grass and scattered trees.



LEGEND	
.....	Railway Line
—	Alignment
—	Waterway
Vegetation Community	
[Purple]	PCT 670, Black Booyong - Rosewood - Yello Carabeen subtropical rainforest of the NSW North Coast Bioregion
[Brown]	PCT 670, Black Booyong - Rosewood - Yellow open forest of the coastal ranges of the NSW North Coast Bioregion
[Pink]	PCT 695, Blackbutt - Turpentine - Tallowood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
[Blue]	PCT 747, Brush Box - Tallowood - Sydney Blue Gum tall moist forest of the ranges of the central NSW North Coast Bioregion
[Green]	PCT 780, Coastal floodplain sedgeland, rushlands, and forblands of the North Coast
[Dark Blue]	PCT 1064, Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion
[Light Green]	PCT 747, Brush Box - Tallowood - Sydney Blue Gum tall moist forest of the ranges of the central NSW North Coast Bioregion
[Red]	PCT 780, Coastal floodplain sedgeland, rushlands, and forblands of the North Coast
[Light Blue]	PCT 1064, Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion
[Yellow]	PCT 1302, White Booyong - Fig subtropical rainforest of the NSW North Coast Bioregion
[Light Green]	Urban Native/Exotic
[Orange]	Plantation
[Light Blue]	Freshwater Wetlands
[Pink]	Heath
[Light Green]	Forested Wetlands
[Yellow]	Dry Sclerophyll
[Light Green]	Exotic Vegetation
[Orange]	Native Remnant Vegetation
[Green]	Rainforest
[Light Green]	Saline Wetlands
[Light Green]	Wet Sclerophyll

Figure 12: Vegetation

Table 4: Plant community types

PLANT COMMUNITY TYPES	TSC ACT
<b>PCT670</b> - Black Booyong - Rosewood - Yellow Carabeen subtropical rainforest of the NSW North Coast Bioregion	Lowland Rainforest
39.71 hectares of known habitat for the Koala ( <i>Phascolarctos cinereus</i> ); and	
<b>PCT692</b> - Blackbutt - Tallowood moist ferny open forest of the coastal ranges of the NSW North Coast Bioregion	
<b>PCT695</b> - Blackbutt - Turpentine - Tallowood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion	
<b>PCT747</b> - Brush Box - Tallowood - Sydney Blue Gum tall moist forest of the ranges of the central NSW North Coast Bioregion	
<b>PCT780</b> - Coastal floodplain sedgeland, rushlands, and forblands of the North Coast	Freshwater Wetlands
<b>PCT1064</b> - Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Swamp Sclerophyll Forest
<b>PCT1244</b> - Sydney Blue Gum open forest on coastal foothills and escarpment of the North Coast	
<b>PCT1262</b> - Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast	
<b>PCT1285</b> - Turpentine moist open forest of the coastal hills and ranges of the NSW North Coast Bioregion	
<b>PCT1302</b> - White Booyong - Fig subtropical rainforest of the NSW North Coast Bioregion	Lowland Rainforest
<b>PCT1285</b> - Turpentine moist open forest of the coastal hills and ranges of the NSW North Coast Bioregion	

### Natural vegetation communities

Natural vegetation communities are responsive to the topography and changing influence of water in the landscape. The landscape of the corridor needs to reflect these changing communities, so a connection can be made to the broader landscape context and so that integration of the road adopts appropriate responses to minimise impacts on these natural systems.

The Englands Road area within the floodplain of North Boambee Valley is dominated by two PCTs. The southernmost section to Englands Road is characterised by the Black Booyong, Rosewood, Yellow Carabeen subtropical rainforest, dominated by Hairy Rosewood *Dysoxylum rufum*, Green Bolly Gum *Neolitsea australiensis* and Yellow Carabeen *Sloanea woollsii*. The north of the interchange is dominated by Paperbark forest of the coastal lowlands of NSW, dominated by Broad-leaved Paperbark *Melaleuca quinquenervia*, Willow Bottlebrush *Callistemon salignus*, and Swamp Mahogany *Eucalyptus robusta*, with occurrences of Swamp Box *Lophostemon suaveolens*, Flax-leaved Paperbark *Melaleuca linariifolia* and *Melaleuca sieberi*. This community has been defined as the wet sclerophyll community within the design.

The central and northern sections reflect a more undulating landscape with a higher elevation and as a result, improved drainage and reduced water logging of soils. The communities, none the less, reflect a moist forest community and include: Blackbutt Turpentine Tallowood shrubby open forest of the coastal foot slopes of the central north coast bioregion dominated by Pink Bloodwood *Corymbia intermedia*, Tallowood *Eucalyptus microcorys*, Blackbutt *Eucalyptus pilularis*, Brush Box *Lophostemon confertus* and Turpentine *Syncarpia glomulifera* with Flooded Gum *Eucalyptus grandis*, Small-fruited Grey Gum *Eucalyptus propinqua* and Red Mahogany *Eucalyptus resinifera* present in less abundance; and Brushbox Tallowood Sydney Blue Gum *Eucalyptus saligna* tall moist forest of the ranges of the central north coast bioregion dominated by Brush Box *Lophostemon confertus* and Sydney Blue Gum *Eucalyptus saligna* with some occurrence of Tallowood *Eucalyptus microcorys*, Flooded

Gum *Eucalyptus grandis* and Turpentine *Syncarpia glomulifera*. This community has been defined as the open forest community.

The Kororo Basin has two significant species which the design is responsive to, which are *Fontainea* sp Coffs Harbour and *Pittosporum* sp Coffs Harbour. Both species have had management plans prepared which the construction will respond to.

#### Design implications and strategies:

- Reinstatement of vegetation communities cleared prior to, or as part of the corridor construction, to enhance the biodiversity opportunity within the corridor
- Enhance the variation in landscapes to provide scenic and varied views and vistas, and views to rural landscape, forest and residential areas
- Provide east-west flora and fauna connectivity at key remnant vegetation corridors, ridgelines and waterways through the incorporation of a number of fauna mitigation measures including fauna underpasses (bridges or culverts) and tunnels
- Retain and enhance riparian plantings at creek crossings where possible
- Use dominant species from vegetation communities through which the Project passes
- Develop species mixes to reflect and enhance the local natural species. Provide landscape screening of low/medium density and large lot residential close to the Project, to mitigate visual impacts of noise walls and to conceal the alignment within the landscape setting
- Potential to reconnect the existing vegetation communities by extending the green web across the corridor, as part of the revegetation strategy
- Vegetation at interchanges is to have a connection to the natural environment and an overlay of plantings reflecting cultural influences.



Figure 13: Vegetation – Blackbutt Forest of Boambee State Forest



Figure 14: Vegetation – Dry Woodland



Figure 15: Vegetation – Swamp Forest

### 2.3.6 Biodiversity - Fauna

The environmental assessment identified impacts to fauna connectivity as a concern of the Project, with the following categories of links identified as being present within the study area:

- One 'regionally significant biodiversity link' in the form of a fourth order waterway riparian buffer zone, associated with a tributary of Newports Creek
- Seven 'regionally significant biodiversity links' identified as separate sub-regional corridors, all forming some of the 'Coffs Harbour Koala links', identified in the Northern Rivers Regional Biodiversity Management Plan (DECCW 2010).
- Several 'local area biodiversity links', including:
  - Riparian vegetation associated with Jordans Creek, and tributaries which connect vegetation of the coastal plain with that of the escarpment, in the north of the study area
  - Vegetation running southeast from Shephards Lane, following the North Coast Railway
  - Vegetation connecting the escarpment foothills vegetation along Roberts Hill to coastal plain vegetation in the vicinity of Eyre Road
  - Riparian vegetation along Newports Creek in the North Boambee Valley.



#### LEGEND

<ul style="list-style-type: none"> <li>----- Railway Line</li> <li>— Road Alignment</li> <li>— Waterway</li> </ul>	<p><b>Fauna Structure</b></p> <ul style="list-style-type: none"> <li>★ Combined fauna and drainage underpass</li> <li>★ Combined rail bridge incorporating fauna underpass</li> <li>★ Combined road bridge incorporating fauna underpass</li> <li>★ Combined waterway bridge incorporating fauna underpass</li> <li>★ Dedicated fauna underpass</li> <li>★ Retained ridgeline over tunnel overpass</li> </ul>	<p><b>Fauna Records</b></p> <ul style="list-style-type: none"> <li>◆ Bentwing-bat (sp)</li> <li>◆ Coastal Petaltail</li> <li>◆ Eastern False Pipistrelle</li> <li>◆ Eastern Freetail-bat</li> <li>◆ Giant Barred Frog</li> <li>◆ Greater Broad-nosed Bat</li> <li>◆ Green-thighed Frog</li> <li>◆ Grey-headed Flying-fox</li> <li>◆ Koala</li> </ul>	<ul style="list-style-type: none"> <li>◆ Little Bentwing-bat</li> <li>◆ Olive Whistler</li> <li>◆ Pale-vented Bush-hen</li> <li>◆ Southern Myotis</li> <li>◆ Square-tailed Kite</li> <li>◆ White-bellied Sea-Eagle</li> </ul>
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Figure 16: Fauna

The Koala and Giant Barred Frog were identified as two key species with issues needing to be addressed that could impact their long-term population size, disrupt their breeding cycle, reduce the occupancy area of important populations, fragment existing important populations into two or more populations, adversely affect habitat critical to the species' survival, and habitat removal that could potentially lead to a decline in the extent of a species.

Specific mitigation measures have been provided to reduce the intensity of the impact as part of the environmental assessment. This has included specific plantations on lands immediately adjacent to the corridor, to provide habitat and a food corridor for koalas, and appropriate fencing and access structures. Refer to Figure 12.

Opportunities to enhance these measures through integration with the landscape strategy have been explored. Such strategies include:

- Enhancing opportunities for connectivity through dedicated and combined waterway and fauna crossings, reinstatement of existing riparian corridors, and integration of the vegetation communities
- Increased feed/habitat tree planting within the corridor beyond the footprint of construction to enable enhanced linkages along the corridor to appropriate crossing points or vegetation fragments
- Installation of fauna fencing to prevent animals accessing the main alignment and to guide animals towards the 16 fauna connectivity structures that will be provided.



### 2.3.7 Heritage

The traditional owners of the Coffs Harbour region are the Gumbaynggirr people. They represent one of the largest coastal Aboriginal Nations in New South Wales. Known as the 'sharing people', the Gumbaynggirr people are willing to share their land's rich resources with other Aboriginal Nations.

The first Europeans settled around the Coffs Coast from 1848. Local legend has it that escaped convicts were among the first of these European to take refuge on Muttonbird Island. Timber getters were among the first Europeans to occupy the Coffs Coast. These early settlers came seeking the 'red gold' of the cedar tree. Favoured for its rich mahogany tones, this timber was highly sought after by the furniture makers of the colony.

Coffs Harbour owes its name to shipbuilder, Captain John Korff. He named the area Korff's Harbour after taking shelter there from a storm during 1847. The Captain's namesake was short lived as the name was accidentally changed to Coffs Harbour by a surveyor in 1861.

The local banana growing industry was established in the early 1900s. The crops fared well and by the 1920s, banana plantations were among the most highly profitable businesses on the Coffs Coast. In acknowledgement of this celebrated agricultural asset, The Big Banana is one of the most famous tourist attractions on the Coffs Coast.

The first north coast railway line was built between 1905 and 1932. The construction of the line was a great feat due to the many bridges required for numerous river crossings.

With the expansion of the railway came an influx of visitors to the Coffs Coast. Since the opening of the Coffs Harbour train station in 1915, tourism has grown to become the biggest industry of the region.

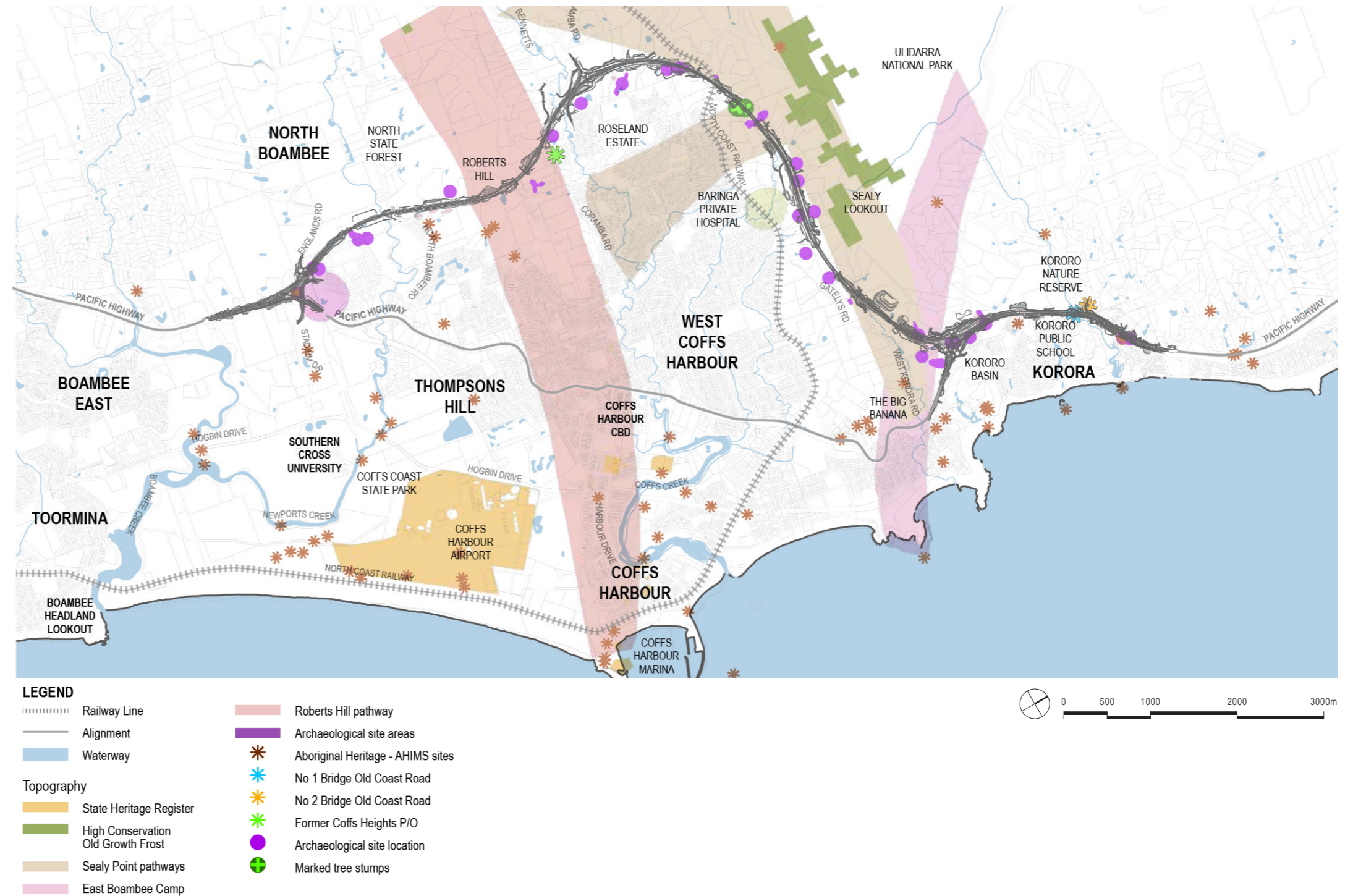


Figure 17: Heritage

### 2.3.8 Land use

The land use surrounding the Project contributes to its landscape character and is influenced by the physical constraints of topography and drainage.

Coffs Harbour is predominantly a rural area, with expanding residential and rural-residential areas, including resort areas, and industrial and mixed use land uses. Settlement is based around the Coffs Harbour CBD, and the townships of Coramba, Boambee and Korora. Much of the rural area is used for timber production and agriculture, particularly banana and blueberry plantations.

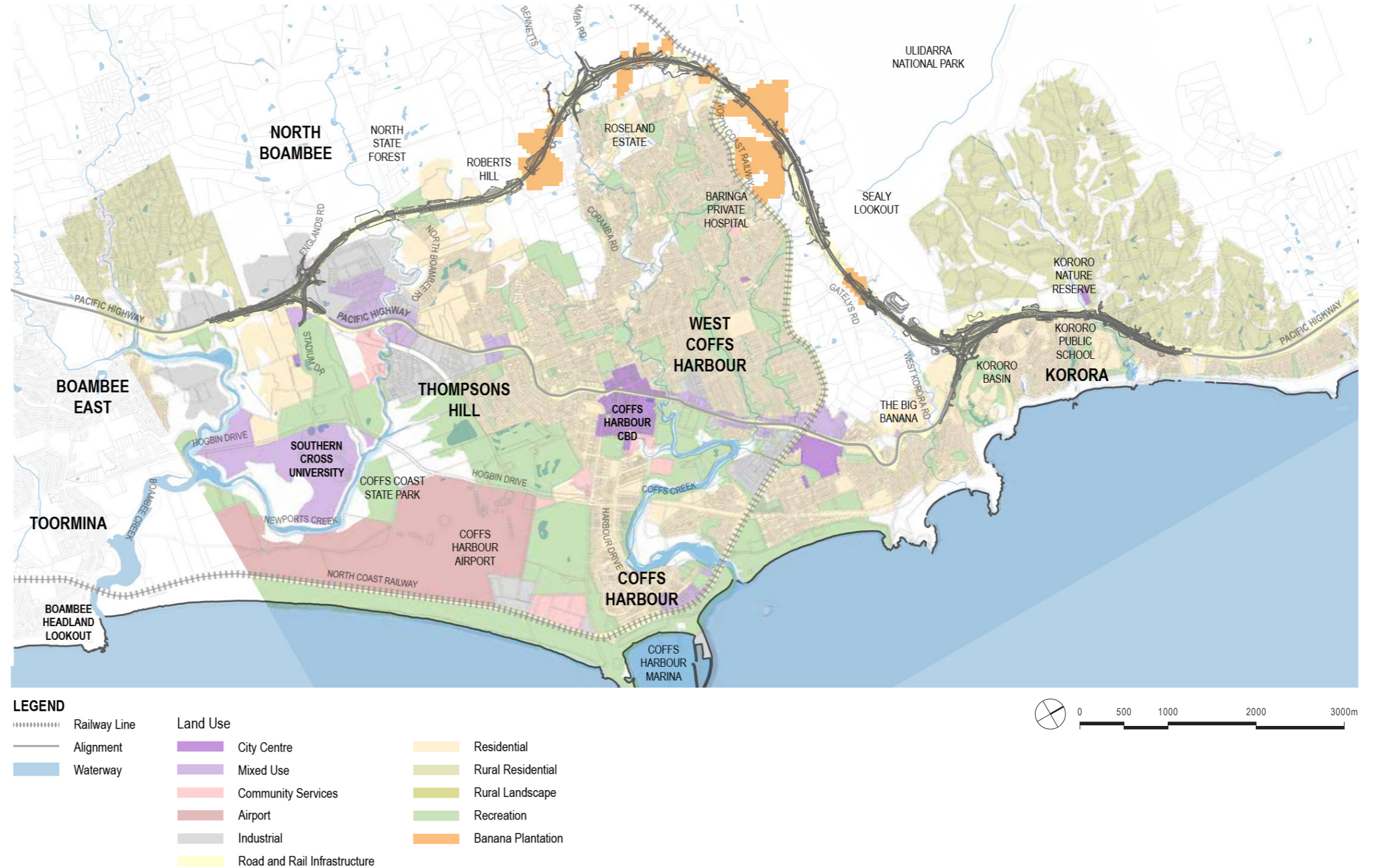


Figure 18: Land use



Figure 19: Boambee Headland Lookout



Figure 20: Coffs Harbour Marina



Figure 21: Coramba Road



Figure 22: Englands Road



Figure 23: Forest Sky Pier (Sealy Lookout)



Figure 24: Gatelys Road



Figure 25: Luke Bowen Footbridge



Figure 26: Kororo Public School



### 2.3.9 Character Zones

The overall design is responsive to three distinct, yet connected landscape character zones.

These character zones reflect the overall experience of the place, and its connection to Coffs Harbour and its urban centres.



**BOAMBEE BASIN - FLOOD PLAIN**

Located at the southern section of the highway south of Roberts Hill, it reflects a largely flat to undulating low lying landscape in which the road alignment is set on fill to provide resilience in flood events and enable local connections.

The precinct also forms a key biodiversity area in relation to the extent and range of Koala Habitat. The design response through this precinct is to celebrate the natural landscape. Natural communities are reinstated and conflicts with fauna reduced, enabling their ongoing movement and connectivity with limited risk to biodiversity and the road user through clear delineation of connections using fauna fencing and structures.



**COFFS HARBOUR BASIN - FOOT SLOPES**

This is the central section of the corridor and is set in the landscape between Roberts Hill and Gatelys Road. Its setting is a juxtaposition between urban development and nature; the suburban development of Coffs Harbour set in the flat lands, and the foot slopes and natural environment defining the steeper landscape of the basin itself. This setting provides a level of complexity for grading of the alignment, as it benches into the slope, providing noise attenuation through mounding and walls, and tunnels through the steepest spur lines and terrain in order to limit the physical impacts of the infrastructure.

The Project's position here on the interface between nature and suburbia sees the alignment located in a visually prominent position, where care is needed to visually reduce and break up the road structures, blending it with the broader landscape.



**KORORA BASIN - THE RESORT**

The final section of the corridor occurs north of Gatelys Road and connects to Sapphire Beach. This is a highly constrained environment in which topography, biodiversity and community issues all come into play – the connection between the 'Mountains and the Sea'. It is also the point of a significant connection to town, which brings complexity in terms of the separation of local and through traffic, while ensuring connectivity for all users.

This is the resort precinct and the road formation within this section of the corridor is adjoined by tourist focused developments, including the Big Banana just to the south of the exit and a number of resorts.

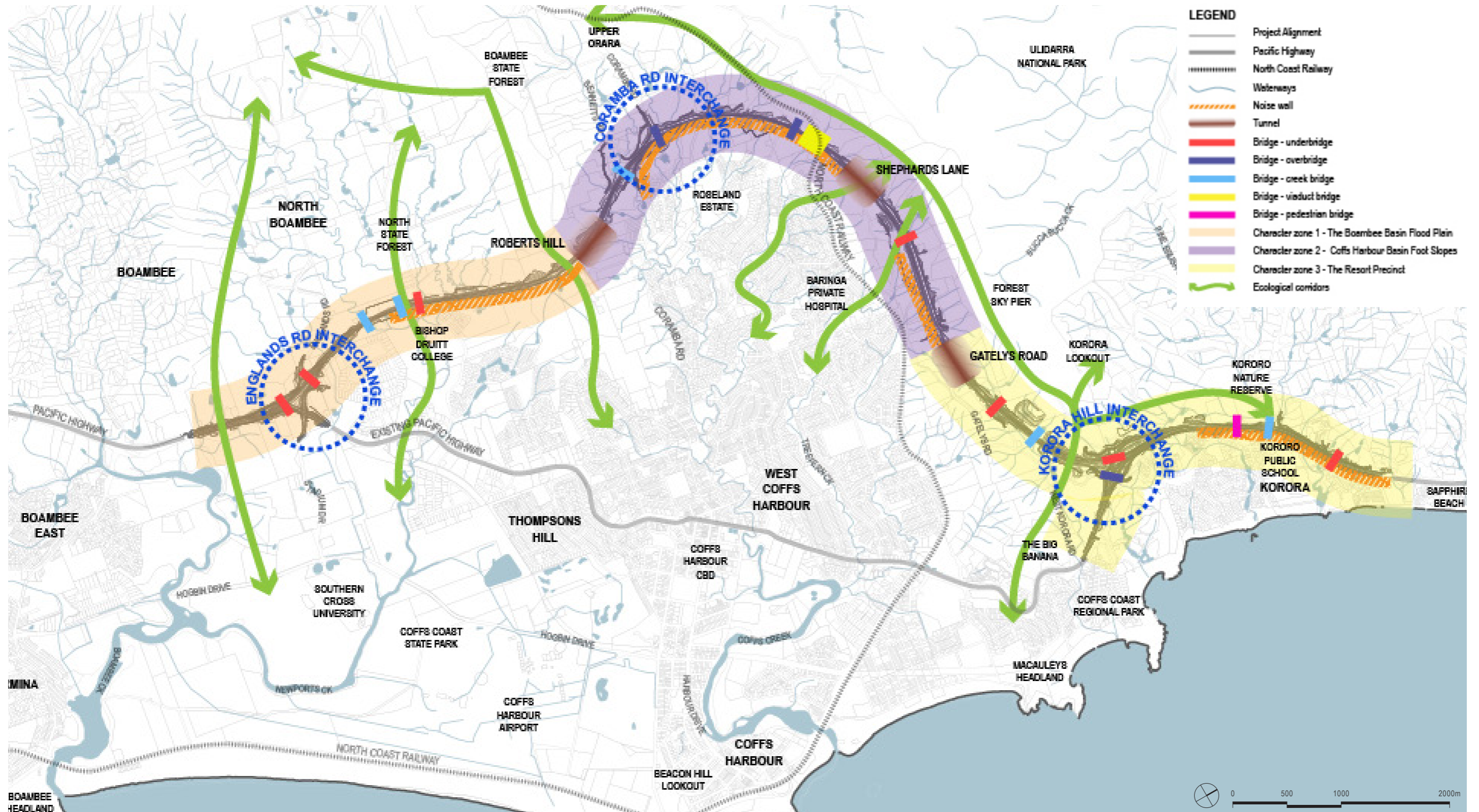


Figure 27: Character zones

## 03 Urban design objectives



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## 3 Urban design objectives

### 3.1 Objectives and responses

The urban design objectives align with objectives outlined in the Pacific Highway Urban Design Framework and the EIS documents. They are based on the principles outlined in the TfNSW urban design document 'Beyond the Pavement'. The following provides the key objectives and a description of how the design has achieved them.

#### Provide a flowing road alignment that is responsive and integrated with the landscape

The design has responded to the setting by:

- Integrating the design with the site contours and the natural and disturbed landscape of the mountains and the sea.
- Enhancing views across the hinterland, and visual connections at key points, to town and the coast.
- Incorporating vegetation that responds to context, reinstating vegetation of disturbed landscape caused by construction or past uses.
- Much of the design has focused on integration with adjoining vegetation and repair of the farmed and cleared landscape. This landscape setting however, has also been integrated into the alignment narrative, and also the physical presentation of structural elements, including noise walls and bridges.

#### Provide a well vegetated, natural road reserve

The landscape design acknowledges the significance of the site's biodiversity by:

- A focus on an indigenous plant palette.
- Responding to the natural communities through species selection and construction techniques.
- Seeking to heal areas interrupted by the works, but also by past land use, through planting beyond the clearing boundary to provide habitat for local fauna and enhance biodiversity. In particular, the Boambee Valley is an important Koala habitat, and residual land beyond the construction footprint has been revegetated where clear, to prioritise this habitat.

#### Provide an enjoyable, interesting highway with varied views and vistas of the landscape and pleasant restful places to stop

The Project has been developed as a sequence of spaces and events:

- The design responds to changing character zones and vegetation communities, changes in elevation and topography, and provides varied opportunities for outlooks.
- Distinct structural interventions provide a sense of progression and connection, including the three interchanges and three tunnels.
- Structural elements have been used to provide opportunities for interpretation and expression with significant emphasis on noise walls, retaining walls, shelters and the pedestrian bridge.
- Connections to surrounding locations for pleasant restful places to stop.

### Value the communities and towns along the road

The design has been developed with the knowledge that the alignment is able to be observed from all over Coffs Harbour. Responses have focused on:

- Revegetation and grading to assist in concealment.
- Limiting the extent of scaring or exposed, unvegetated ground which would contrast with the green backdrop that the route alignment provides.
- Providing noise mitigation initiatives to minimise disruption and inconvenience from a new alignment.
- Addressing issues of severance and access, so that impacts on the function of town are minimised. The removal of highway traffic from town provides a substantial benefit which enhances the operation and redevelopment of Coffs Harbour and its amenity.
- Providing Connection to Country, which has been a central element of the urban design - including exploration of vegetation associations, and colour, through to direct integration in the expression of elements on bridges and noise walls to convey the storytelling and richness of this connection.

### Provide consistency-with-variety in road elements

The design has adopted a family of forms for all structured elements. In particular:

- Wall elements have adopted the same design language and expression throughout the Project.
- Steel elements such as the pedestrian bridge and shelters reflect the same design language, however have design features incorporated that provide variety.
- Portal treatments respond to the unique topographical relationships of the site but have the same form of expression and integration.
- The design response has focused on structural elements and key decision points to provide identity and a sense of progression. Each interchange is unique in its planting palette, yet reinforces the concept of Coffs Harbour as a resort landscape and tourist centre. Similarly overbridges have been used to provide a sense of identity.
- The landscape and setting of the alignment provides an opportunity to celebrate diversity:
  - Boambee Valley – provides a flat low-lying landscape experience with a series of closed and open spaces.
  - Coff Harbour Basin – elevates the alignment and provides opportunities to overlook the broader Coffs Harbour Basin, as well as a varied landscape setting.
  - Korora Basin – provides an environment where the alignment is juxtaposed between the mountains and the sea – a unique experience along the Pacific Highway.
- The design, while providing consistency, also seeks to create landmarks through the inclusion of feature elements. These elements, including the tunnels, pedestrian bridge, and noise walls, all play a role in project identity and wayfinding, capturing the essence of Coffs Harbour as a unique place between the 'mountains and the sea'.

### Provide a simplified and unobtrusive road design

The design has sought to play down the impacts of structural elements which may otherwise clash with its environmental context:

- Earth mounding has been used in association with noise walls to limit scale and visual impact. In addition, vegetation planting provides screening, enabling these walls to fade into the background, concealing the roadway from adjacent neighbourhoods.
- Tunnel portals are nestled within their landscape setting, enabling the landscape to dominate, reducing impacts on the natural environment and concealing much of their structure.
- Safety and connectivity are key elements of the design.
- Separation of through and local traffic has been a key driver at the northern end of the Project.
- Provision of pedestrian and cycle access through and under the bypass at key interchanges has been provided, to ensure local connectivity is maintained.
- Separation of fauna from the road alignment protects the native species communities and limits the risk to drivers.
- CPTED principles have been incorporated into the design to provide pedestrian and cyclist safety and a non-barrier friendly design.

### 3.2 Vision

The Environmental Impact Assessment outlines a vision which promotes values of the overall Pacific Highway Framework document. This is defined as “A bypass which expresses the interfaces between the Great Dividing Range and the Pacific Highway, concealed from view from Coffs Harbour”.



Figure 28: An aerial view of Coffs Harbour (Source: Google)

