Appendix G – Urban Design Concept and Landscape Strategy

Mandalong Road Upgrade

Urban Design Concept and Landscape Strategy

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Acknowledgement of Country

Moir Studio acknowledge the traditional custodians of the lands and waters of Australia, most notably the Awabakal Nation on which our office resides and the **Darkinjung Nation**, the traditional owners of the lands on which this Project resides. We acknowledge their contribution to our community and their deep connection to the land. We pay our respects to Elders both past and present.

Mandalong Road Upgrade

Urban Design Concept and Landscape Strategy

Prepared for
WSP Australia Pty Limited on behalf of Transport for New South Wales (TfNSW)

Project Number
2497

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Executive Summary

Moir Studio have been commissioned by WSP Australia Pty Limited on behalf of Transport for New South Wales (Transport) to prepare an Urban Design Concept and Landscape Strategy (UDCLS) for the proposed road upgrade referred to as the 'Mandalong Road Upgrade'.

The report is structured with the following chapters:

1. Introduction
2. Project Overview
3. Site Context
4. Urban Design Strategy
5. Concept Design

Moir Studio underwent site investigations to understand the existing landscape character of the proposal area. An Urban Design Concept and Landscape Strategy was then prepared with reference to TfNSW's *Beyond the Pavement 2020*, *Landscape Design Guideline 2023*, *Guide to Road Design Part 6A 2021* by Austroads and the Lake Macquarie City Council *Landscape Design Guidelines 2017*.

The Urban Design Strategy has been developed to include eight principles:

1. Improve and Maintain Safety
2. Improve Connectivity and User Amenity
3. Integrate with Surrounding Built Form
4. Visual Amenity
5. Enhance Landscape Character
6. Connecting with Country
7. Minimise Maintenance and Lifecycle Costs
8. Respond to Natural Systems

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01 Introduction

1.0 Introduction

1.1 Background

Transport for NSW (Transport) proposes to upgrade Mandalong Road between Gimberts Road and Ourimbah Street (the proposal). The proposal is located within the suburb of Morisset in the Lake Macquarie local government area (LGA), midway between Sydney and Newcastle.

Mandalong Road is a critical link within the B53 Morisset to Wallsend transport corridor that connects the Morisset town centre and surrounding urban areas to the M1 Pacific Motorway. A key aim of the proposal is to improve traffic flow and road safety for all road users through increasing the capacity of Mandalong Road and active and public transport improvements, which would support future economic and residential growth in the surrounding area.

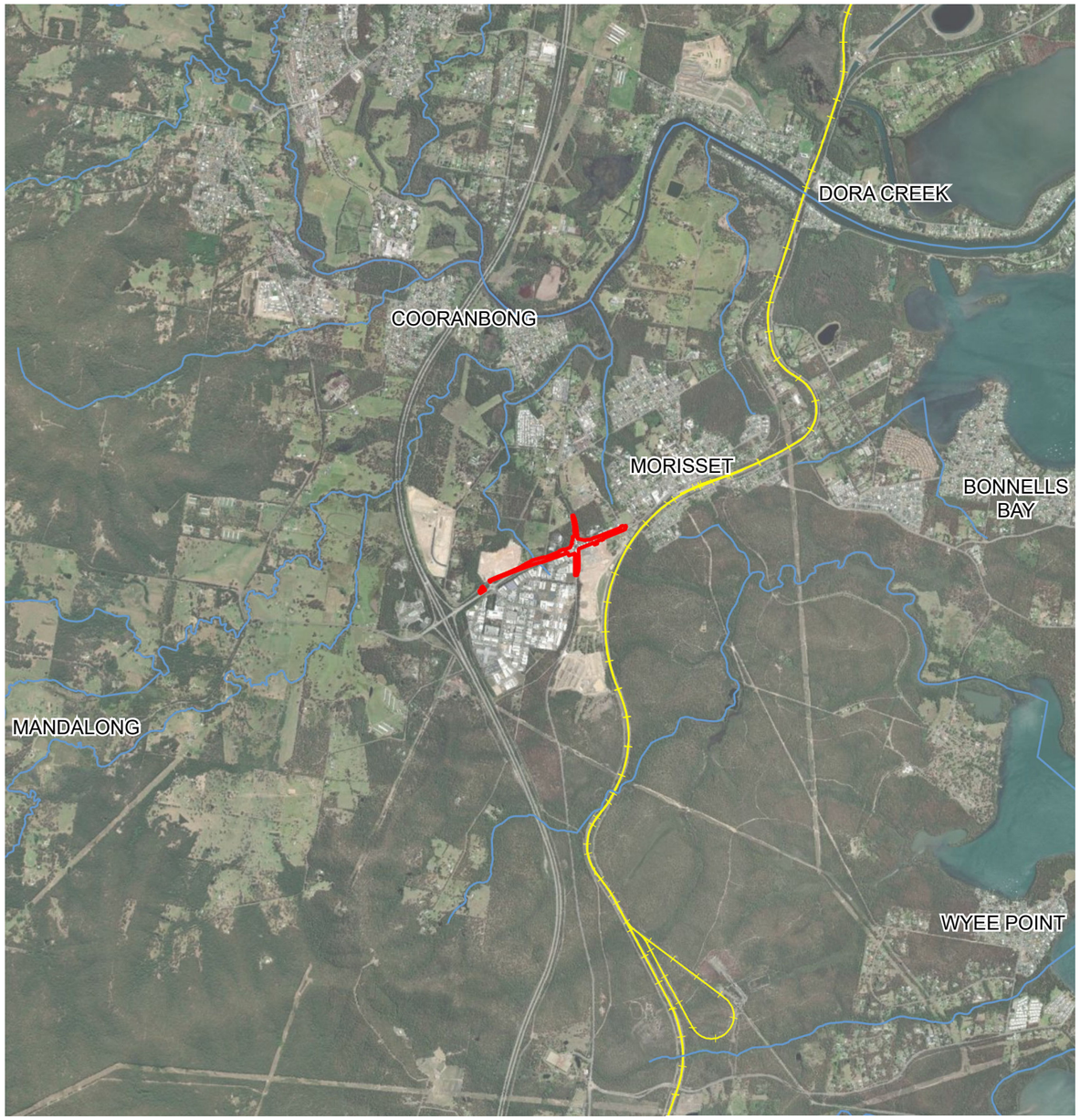


Figure 01 – Regional Context Map
Basemap Source: Esri 2024

1.2 Report Structure

02
Project Overview

Introduction to the Project.

03
Site Context

Overview and analysis of the existing context in which the proposal is located.

04
Urban Design Strategy

The urban design vision, objectives, design principles and typical treatments to guide the design phase of the proposal.

05
Concept Design

Development of the Design informed by the Urban Design Concept and Landscape Strategy, proposed road design and based on recommendations of the Landscape Character and Visual Impact Assessment (LCVIA) and urban design objectives.

02

Project Overview

2.0 Project Overview

2.1 General

Transport for NSW (Transport) proposes to provide upgrade to Mandalong Road between Gimberts Road and Ourimbah Street (the proposal). The proposal is located within the suburb of Morisset in the Lake Macquarie local government area (LGA).

Mandalong Road is a critical link within the B53 Morisset to Wallsend transport corridor that connects the Morisset town centre and surrounding urban areas to the M1 Pacific Motorway. A key aim of the proposal is to improve traffic flow and road safety for all road users through increasing the capacity of Mandalong Road and active and public transport improvements, which would support future economic and residential growth in the surrounding area.

The location of the proposal within the B53 Morisset to Wallsend transport corridor is shown in Figure 02.

This Urban Design Concept and Landscape Strategy supports the environmental assessment for the proposal. The proposal is subject to assessment by a Review of Environmental Factors (REF) under Division 5.1 of Environmental Planning and Assessment Act 1979 (EP&A Act).

Figure 02 – Proposal Area Map
Basemap Source: Esri 2024

2.2 Key Features

Key features of the proposal include:

- upgrading the Mandalong Road/Freemans Drive/Dora Street/Wyee Road intersection, including:
  - replacing the existing roundabout with new traffic lights
  - providing additional through and turning lanes on all approaches of the intersection
  - providing a central raised median on all approaches of the intersection
- providing active transport connections, including:
  - a shared user path along the length of the proposal on Mandalong Road and Dora Street
  - a shared user path on the eastern side of Wyee Road
  - a footpath on the north-eastern corner of Dora Street and Freemans Drive
- providing two new bus stop facilities on Dora Street
- installing and/or relocating fauna connectivity structures, such as glider poles
- full and partial property acquisitions, leases and adjustments, including relocating and adjusting property access and private utility connections
- ancillary work for the proposal, including, but not limited to, vegetation clearing, earthworks, landscaping and tie-in works
- relocating and/or adjusting existing public utilities, including electrical, gas, water, sewer and telecommunications
- roadworks, including pavement, line marking, lighting and road furniture (e.g. signs and safety barriers)
- upgrading drainage infrastructure, including culverts, pits, pipes, kerbs and gutters
- temporary ancillary facilities, including site compounds, material storage and laydown areas.

The concept design is indicative and may be further refined during the detailed design phase.

The location of the proposal is shown in Figure 02 and an overview of the proposal is provided in Figure 03. Chapter 3 of the REF describes the proposal in more detail.

2.3 The Proposal

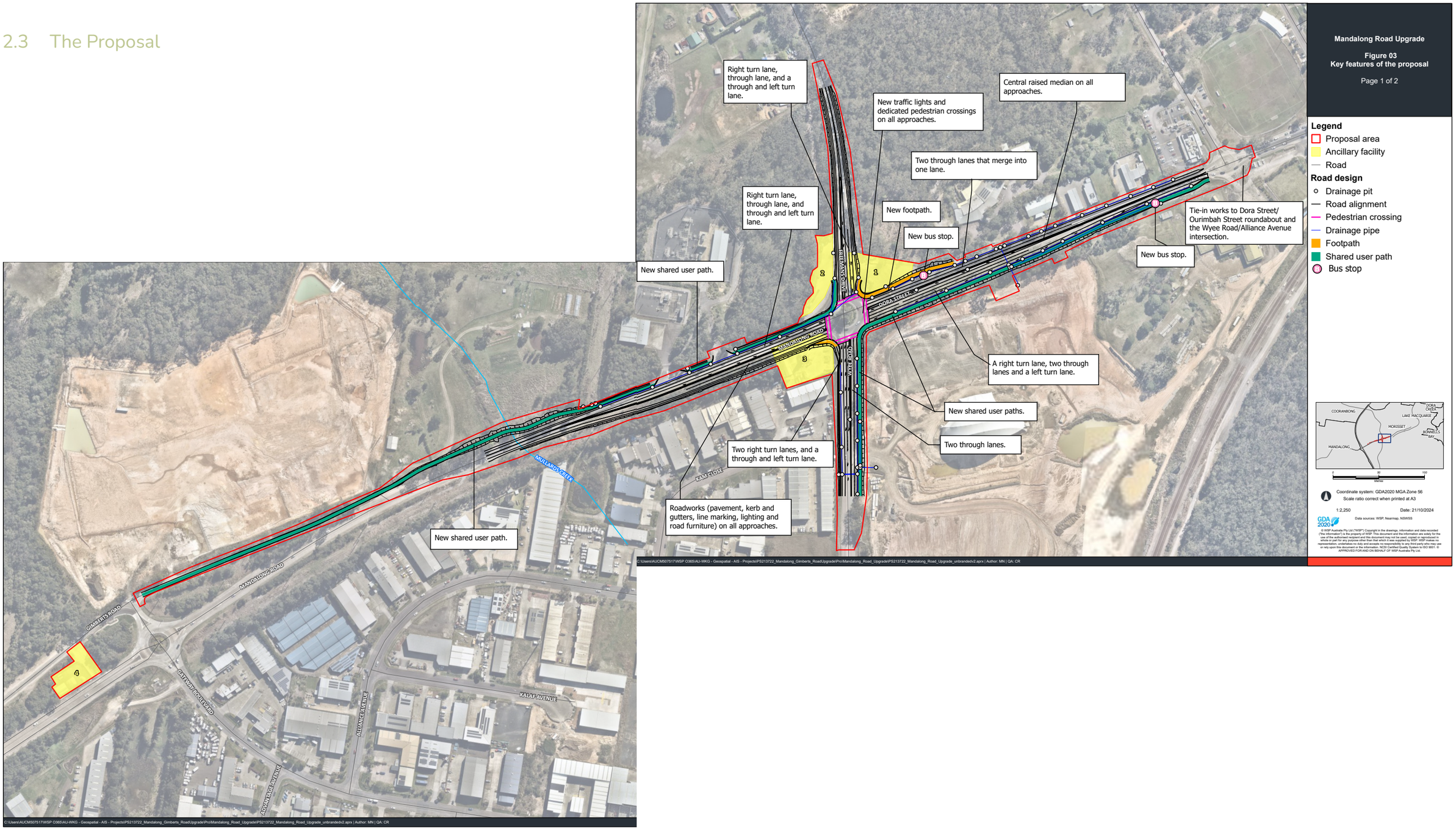


Figure 03 – Mandalong Road Upgrade Preferred Design

Basemap Source: WSP Figures 1.1 and 1.2

2.4 Ancilliary Sites

Figure 04 – Ancilliary Sites
Basemap Source: Esri 2024

0 0.25 0.5 km

LEGEND

Proposal Area

Ancilliary Site

03 Site Context

3.0 Site Context

3.1 Site Images

The following images demonstrate the existing character visible along roads associated with the Mandalong Road Upgrade.

Image 01 – Looking southeast towards roundabout between Dora Street, Freemans Drive, Mandalong Road and Wyee Road; location of proposed intersection and traffic lights

Image 02 – Traffic on Dora Street

Image 03 – Looking southwest along Old Mandalong Road; to be reused as shared path

Image 04 – Commercial buildings on Wyee Road

Image 05 – Dry schlerophyll forest as seen from Freemans Drive

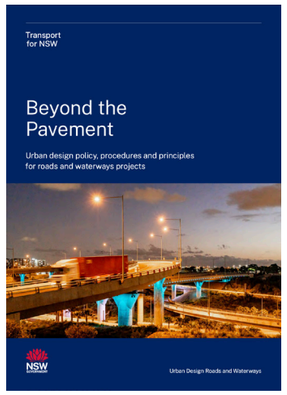
Image 06 – Planned Cedar Mill Lake Macquarie Amphitheatre under construction

04 Urban Design Strategy

4.0 Urban Design Strategy

4.1 Urban Design Governance and Objectives

To ensure best practice outcomes are achieved and TfNSW overarching guidelines and frameworks are implemented, the design proposal will be underpinned by the following documents.



Beyond the Pavement by TfNSW is a guide that promotes the integration of urban and landscape design in road projects, emphasising context sensitivity, sustainability, and collaboration to enhance both functional and aesthetic outcomes.

The TfNSW Landscape Design Guideline provides standards and principles for incorporating landscape design into transport projects, focusing on creating sustainable, context-sensitive, and aesthetically pleasing environments that complement the surrounding landscape.

The Guide to Road Design Part 6A by Austroads focuses on the design of pedestrian and cyclist paths, providing detailed guidance on planning, designing, and constructing safe and efficient pathways that cater to the needs of pedestrians and cyclists while ensuring their integration with other road infrastructure.

The proposal will seek to include active transport provisions, such as shared paths, bus stops and opportunities for connections to adjoining pedestrian linkages. The design will seek to strengthen overall user experience and safety, emphasising the importance of an established tree canopy and pedestrian amenity. In accordance with the Beyond the Pavement 2020 urban design approach there are four key objectives that have been identified that will assist in supporting TfNSW commitment to providing 'successful places' with the 'liveability, amenity and economic success of communities and places enhanced by transport'. The design objectives are as follows:

- Proposals should fit sensitively into the built, natural, and cultural environment in both urban and rural locations.
- Proposals should contribute to the accessibility and connectivity of communities and a general permeability of movement through areas by all modes of movement.
- The design and management of proposals should contribute to the overall design quality of the public domain for the community, including transport users.
- Proposals should help revitalise areas and contribute to the local and broader economy. These objectives are further reinforced by the broader commitments of TfNSW and will be reflected throughout the design process.

The Urban Design strategy has been developed to include **eight** (8) principles:

- **Improve and maintain safety** - Consideration to planting heights, spacing and positioning to maintain clear views and integrate key guidelines as described under 'Guide to Road Design Part 6A - Path for Walking and Cycling'.
- **Improve connectivity and user amenity** - Provide Landscape design principles that improve the overall connectivity and comfort of route users through signages, appropriate planting to improve amenity and safety and develop assist in navigation and wayfinding.
- **Integrate with surrounding built form** - Investigate opportunities that seek to integrate the proposed upgrades to enhance the existing built fabric of the study area and ensure that the upgrades minimise disruption to the functioning and amenity of the surrounding community.
- **Visual amenity** - Investigate opportunities that seek to better integrate the proposal into the existing character and built form of the surrounding landscape.
- **Enhance landscape character** - Reference the existing landscape character through thoughtful selection of landscape and urban design elements to improve visual amenity and ground the proposal in its surroundings.
- **Connecting with Country** - Investigate opportunities to integrate 'Designing with Country' principles through ecological sensativity and acknowledgment of pre-existing eco-systems.
- **Minimise maintenance and lifecycle cost** - Reduce ongoing maintenance and associated costs of the proposal through the use of local materials and landscaping.
- **Respond to Natural Systems** - Integrate the proposed development into the existing natural environment

4.2 Urban Design Principles

Improve and Maintain Safety

Objective 1

Ensure the Landscape Design creates an environment where vehicular, pedestrian and cyclist movement is safe and designed in a way that encourages safe driving behaviours.

Principles

- Ensure the Landscape design is underpinned by Crime Prevention Through Environmental Design principles;
- Integrate the key guidelines as described in 'Guide to Road Design Part 6A - Paths for Walking and Cycling' in particular, consideration to planting heights, spacing and locations in relation to maintaining relevant sight distance and clear zones requirements along the corridor; and
- Integration of soft and hardscape elements that assists in reducing pedestrian-vehicle conflict.
- Where possible incorporate distance and physical barriers between vehicles and pedestrians.

Improve Connectivity and User Amenity

Objective 2

Provide Landscape Design outcomes that improve the overall connectivity and comfort of all driver, cyclist and pedestrian users.

Principles

- Identify, and design for, pedestrian and cycle links between key destinations such as Cedar Mill development, Auston Oval, retail hubs and future and existing residential areas;
- Integrate appropriate tree and shrub planting in accordance with Austroads guidelines to improve shade amenity for the comfort of users; and
- Develop legibility in the landscape to assist in navigation and wayfinding.

Integrate with surrounding Built Form

Objective 3

Investigate opportunities that seek to integrate the proposed upgrades to enhance the existing built fabric of the study area and ensure that the upgrades minimise disruption to the functioning and amenity of the surrounding community.

Principles

- Create a cohesive interface between footpaths and adjacent buildings and centres - in particular the Morisset Ambulance Station, 7-Eleven, Ampol Sercive Station and McDonalds ;
- Investigate opportunities for intersection design and corner properties that adjoin suburban developments including Cedar Mill to provide a sense of entry, emphasise public spaces and provide walkable shaded intersection areas; and
- Where necessary, maintain view corridors between property access points and slip lane entrances to ensure safe access.

Visual Amenity

Objective 4

Investigate opportunities that seek to better integrate the proposal into the existing character and built form of the surrounding landscape.

Principles

- Address the identified key visual impacts through appropriate mitigation strategies to reduce the impacts on the surrounding context, where possible;
- Enhance views from the road and pedestrian corridors through the inclusion of higher quality landscape elements such as signage, lighting and materials at key strategic locations such as at intersections and entries;
- Use planting to frame and highlight key areas to create visual interest for motorists, pedestrians and cyclists.

Enhance Landscape Character

Objective 5

Reference the existing landscape character through thoughtful selection of landscape and urban design elements to improve visual amenity and ground the proposal in its surroundings.

Principles

- Continue the vegetation communities and mimic their natural growing behaviours in planting proposal for disturbed areas;
- Ensure proposed landscape elements such as retaining walls, signage, street lighting, traffic barriers and handrails are designed to minimise roadside clutter and do not visually distract from features in the landscape; and
- Ensure elements such as fencing, walls and barriers incorporate landscape measures to minimise visual impact.

Connecting with Country

Objective 6

Investigate opportunities to integrate 'Designing with Country' principles.

Principles

- Investigate opportunities for implementing interpretive cultural heritage; and
- Celebrate the sense of place by protecting and enhancing features within the landscape that are characteristic to the region.

Minimise Maintenance and Lifecycle Costs

Objective 7

Reduce ongoing maintenance and associated costs of the proposal through the use of resilient materials, finishes and planting palette.

Principles

- Consider the resilience of the landscape to climate change through appropriate tree and shrub selection;
- Consider seeding and planting of native species of local provenance to improve plant survival and resilience, reduce water consumption and support local fauna;
- Propose plant spaces and groupings that reflect the need to out-compete weeds but also provide space for plants at maturity;
- Propose robust materials that are readily available and can be replaced safely and easily;
- Design for a low maintenance, long-living and self-sustaining landscape;
- Investigate design strategies and incorporate materials that deter vandalism; and
- Consider, and implement where possible, ecologically sustainable development (ESD) and water sensitive urban design (WSUD) principles throughout the design.

Respond to Natural Systems

Objective 8

Integrate the proposed development into the existing natural environment and develop synergies between the proposal and existing flora and fauna communities.

Principles

- Retain and enhance, where possible, native vegetation communities and investigate opportunities that minimise the removal of native vegetation to reduce the overall impacts on the natural environment and threatened species,
- Select and design landscape planting and vegetation to help reconnect natural systems and habitat;
- Implement fauna crossing requirements, specifically for the Squirrel Glider, to improve the north-south connectivity of the proposal.

4.3 Urban Design Analysis

LEGEND

Address impacts of proposed road widening in properties immediately fronting the proposed development through appropriate replacement of removed vegetation where possible, and the softening of the interface through new low planting.

Supplement removed native vegetation with new native plantings feasible in the space remaining.

Address interface between key commercial hubs and proposed development through planting to improve connectivity and user amenity and maintain their functionality into the future.

Address entrance to suburb through the integration of planting and other urban design interventions

Consider the approach to key intersections and mitigate impacts to the existing character of this experience generally through design or interface elements discussed above.

Investigate opportunities to provide safe connections to recreational facilities through planned pedestrian paths.

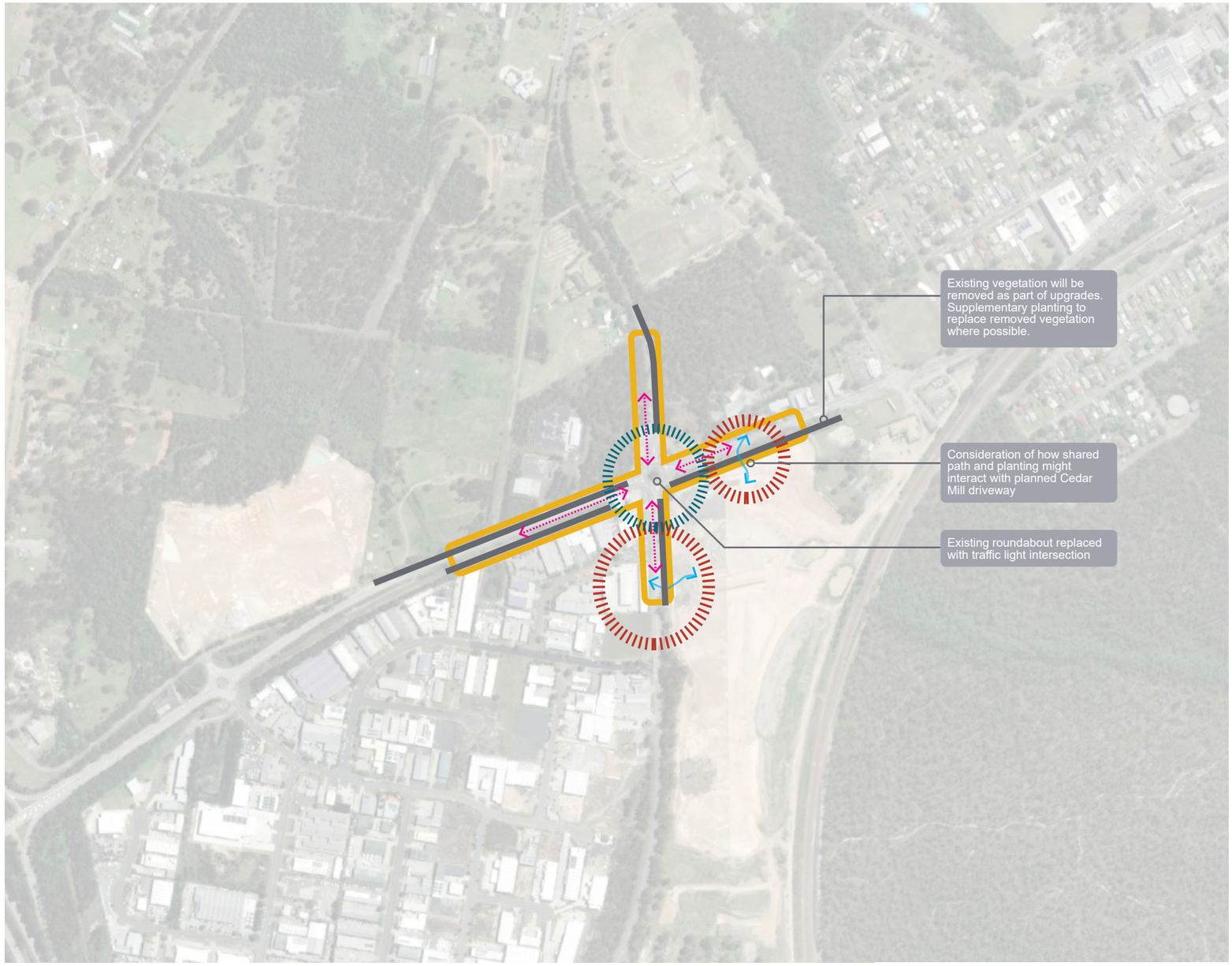


Figure 05 – Selected viewpoint locations
Basemap Source: Esri 2024

05 Urban Design Concept

5.0 Urban Design Concept

5.1 Urban Design Interventions

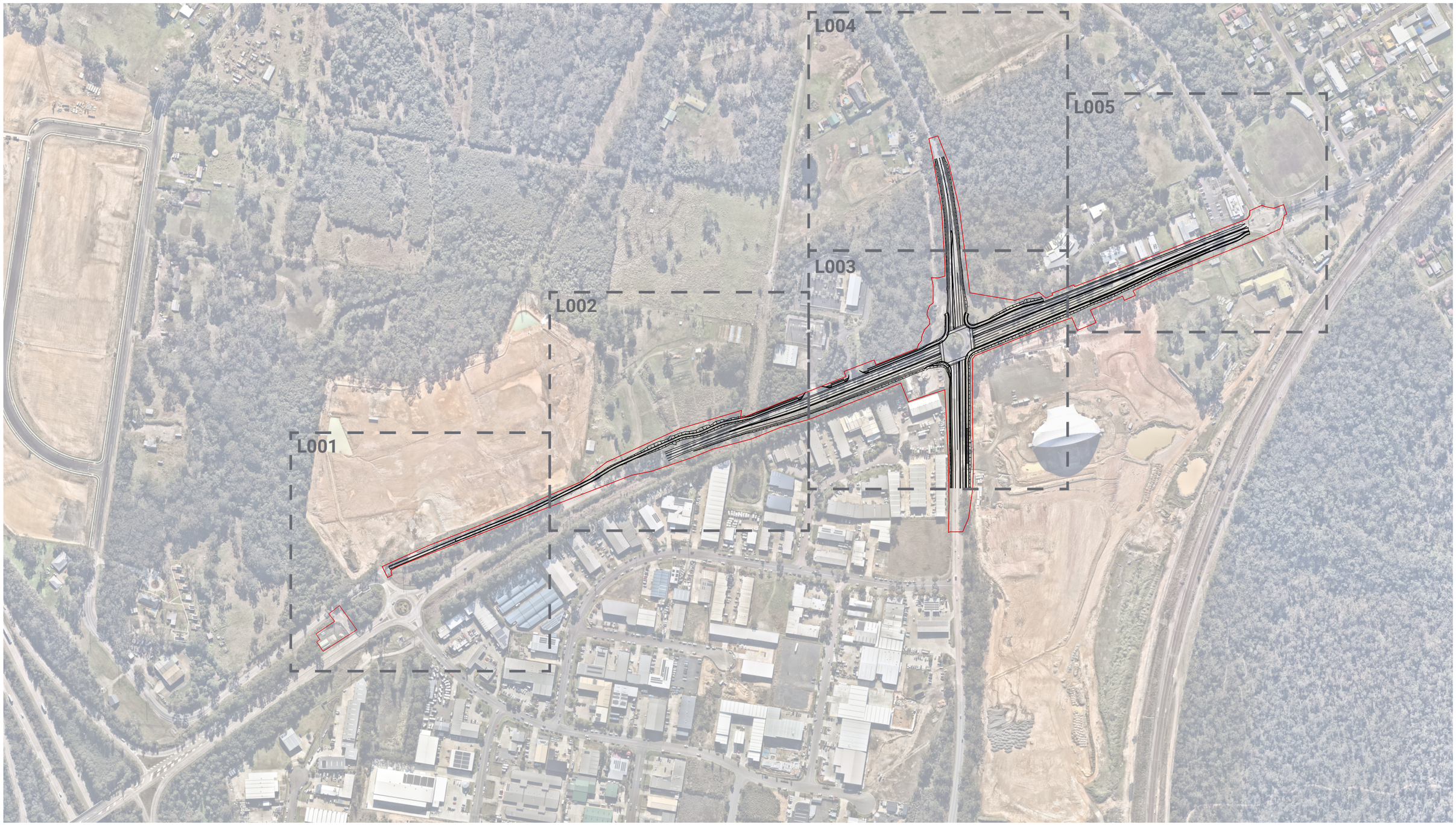


Figure 06 – Drawing Sheet Key Map
Basemap Source: Esri 2024

5.1.1 L001 - Urban Design Interventions

LEGEND

1. Proposed shared path follows Old Mandalong Road alignment
2. Existing trees on north and south side of path alignment to be retained where possible
3. Retain existing canopy and vegetation, where possible. Investigate opportunity for new plantings to improve canopy.
4. Proposed future large format retail development

Figure 07 – L001
Basemap Source: Esri 2024

0 25 50 100
Meters

5.1.2 L002 - Urban Design Interventions

LEGEND

1. Proposed shared path
2. Mullards Creek - culvert under shared path required
3. Native shrub and tree planting to supplement disturbed areas
4. Existing electrical easment
5. Guard rail between road and shared path required

Figure 08 – Drawing Sheet L002
Basemap Source: Esri 2024

0 25 50 100 Meters

5.1.3 L003 - Urban Design Interventions

LEGEND

1. Native shrub and tree planting to supplement disturbed areas
2. Investigate opportunities to re-vegetate residual land
3. Existing informal rest and food truck area to be retained in consultation with Lake Macquarie City Council (LMCC)
4. Investigate opportunities to landscape to align with surrounding native vegetation communities. Existing Morisset suburb entry signage to be retained or replaced.
5. New Bus Stop
6. Native tree planting to northern side of footpath
7. Native tree planting with wide canopy to provide shared path with shading
8. Native tree planting as key fauna corridor
9. Footpath
10. Shared Path
11. Planned Cedar Mill Amphitheatre

Figure 09 – L004
Basemap Source: Esri 2024

0 25 50 100 Meters

5.1.4 L004 - Urban Design Interventions

LEGEND

1. Native shrub planting to supplement disturbed areas

Figure 10 – L003
Basemap Source: Esri 2024

0 25 50 100
Meters

5.1.5 L005 - Urban Design Interventions

LEGEND

1. Native tree planting with wide canopy to provide Shared Path with shading
2. Shared path
3. New Bus Stop

Figure 11 – L005
Basemap Source: Esri 2024

0 25 50 100 Meters

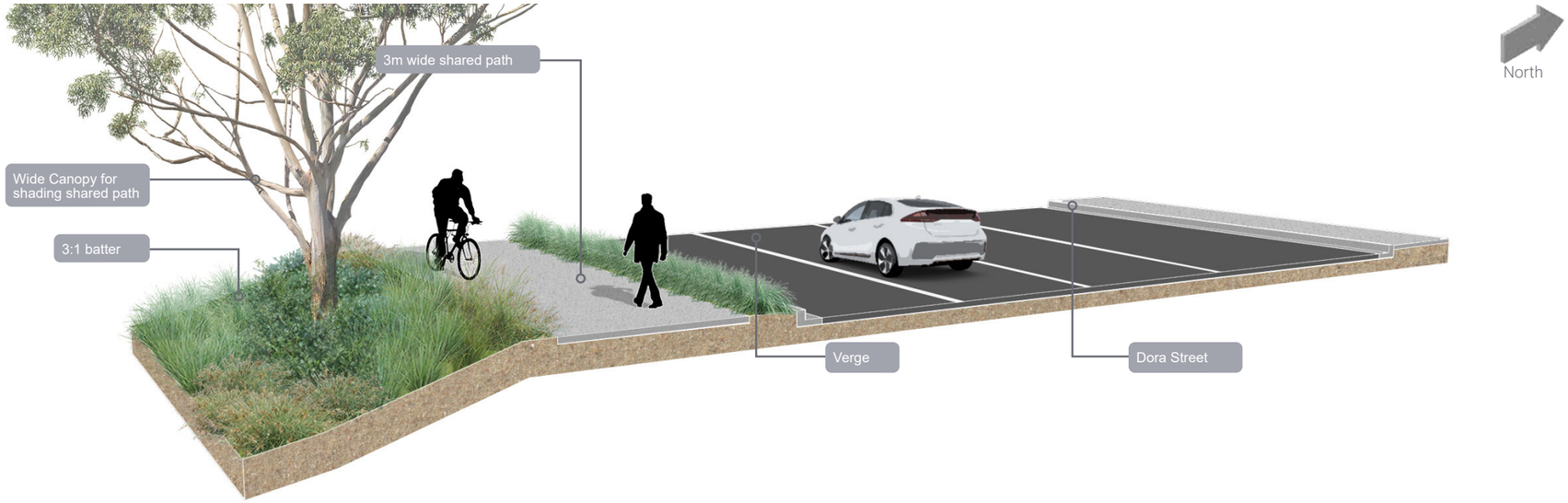


Figure 12 – Typical Section A - Shared Path adjacent to Cedar Mill

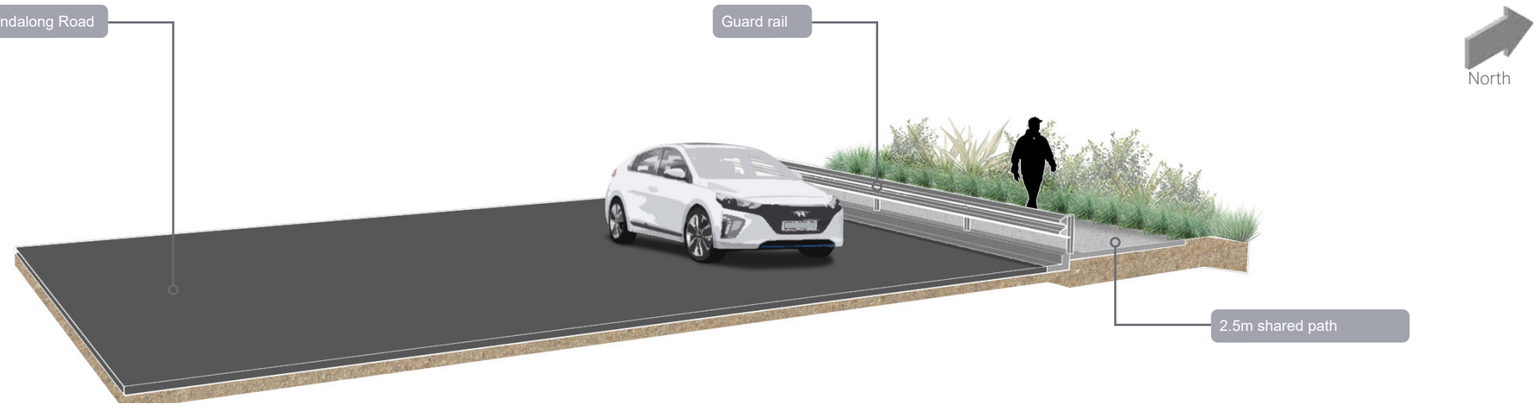


Figure 13 – Typical Section B - Shared Path with Guard Rail

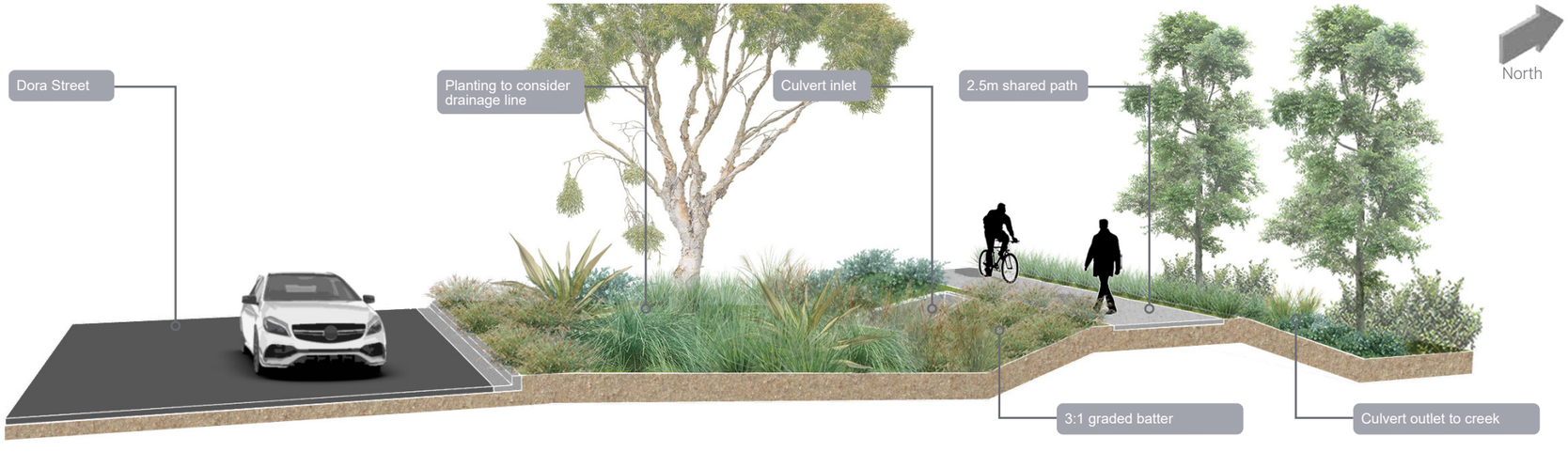


Figure 14 – Typical Section C - Shared Path Across Creek Culvert

5.2 Materials & Precedents

Image 07 – Cycle chicane

Image 08 – Guard rail

Image 09 – Plantings

Image 10 – Natural Materials

Image 11 – Shared Path

Image 12 – Native street tree planting

5.3 Planting Schedule

An initial planting schedule for new plantings within the Mandalong Road Upgrade site boundary has been developed using information from Appendix C of the Lake Macquarie City Council ***Landscape Design Guideline***, in conjunction with species known to exist in nearby bushland including Koompahtoo Aboriginal Reserve (Trees Near Me, 2024).

The continuation of planting species along the proposal will create a consistent character for the area, which will assist in aligning with the area's sense of place and tie into the existing species and plant communities of the surrounding environment. Trees should provide shade, habitat and visual screening.

5.3.1 Indicative Species List

Table 1 identifies trees, shrubs, groundcovers and grasses appropriate to the Morisset area.

Table 1: NDICATIVE SPECIES LIST

Species	Common Name:		Use:	
		Habitat Value	In narrow verge <3m	Under powerlines
Trees				
Angophora costata	Smooth-barked Apple	•		
Backhousia myrtifolia	Grey Myrtle	•	•	•
Banksia integrifolia	Coast Banksia	•	•	
Callistemon salignus	Willow Bottlebrush	•	•	•
Corymbia eximia	Yellow Bloodwood	•		•
Corymbia gummifera	Red Bloodwood	•		
Corymnbia maculata	Spotted Gum	•		
Eucalyptus capitellata	Brown Stringybark	•		
Eucalyptus microcorys	Tallowwood	•		
Eucalyptus racemosa	Scribbly Gum	•		
Eucalyptus sideroxylon 'Rosea'	Red flowering ironbark	•		
Geijera parviflora	Wilga Wilga	•	•	•
Glochidion ferinandi	Cheese Tree			•
Melaleuca quinquenerva	Broad-leafed Paperbark			
Syzgium luehmannii	Lilly Pilly	•		
Tristaniopsis laurina	Water Gum		•	
Shrubs				
Acacia myrtifolia	Myrtle Wattle	•		•
Acmena smithii	Lilly Pilly	•	•	•
Banksia oblongifolia	Fern-leaf Banksia	•		•
Breynia oblongifolia	Coffee Bush			•
Melaleuca nodosa	Prickly-leaved Paperbark	•		•
Melaleuca thymifolia	Thyme Honey Myrtle		•	•
Groundcovers and grasses				
Adiantum aethiopicum	Common maidenhair		•	•
Imperata cylindrica	Bladey Grass		•	•
Lomandra longifolia	Spiny-headed Mat-rush		•	•
Microlaena stipoides	Weeping grass		•	•
Patersonia occidentalis	Native Iris		•	•
Themeda australis	Kangaroo Grass	•	•	•
Viola banksii	Native Violet		•	•

Trees

Corymbia gummifera
Red Bloodwood

Eucalyptus capitellata
Brown Stringybark

Eucalyptus microcorys
Tallowwood

Melaleuca quinquenervia
Broad-leaved Paperbark

Banksia integrifolia
Coast Banksia

Corymbia maculata
Spotted Gum

Shrubs

Acmena smithii
Lilly Pilly

Breynia oblongifolia
Coffee Bush

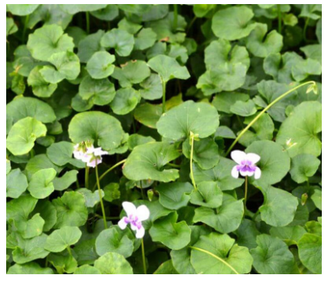
Melaleuca nodosa
Prickly-leaved Paperbark

Banksia oblongifolia
Fern-leaf Banksia

Acacia myrtifolia
Myrtle wattle

Melaleuca thymifolia
Thyme Honey Myrtle

Groundcovers, Forbs & Grasses



Viola banksii
Native Violet

Patersonia occidentalis
Native Iris

Microlaena stipoides
Weeping Grass

Imperata cylindrica
Bladey Grass

Themeda australis
Kangaroo Grass

Lomandra longifolia
Spiny-headed Mat-rush