

ARCADIA
LANDSCAPE ARCHITECTURE

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JOHN HOLLAND NIF
Maintenance Facility

NEW INTERCITY FLEET MAINTENANCE FACILITY
URBAN DESIGN PLAN AND PUBLIC DOMAIN PLAN
NOVEMBER 2018

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New Intercity Fleet Maintenance Facility Determination Report Ref-5339920 Appendix F, Planning Condition 52 requires the preparation of an Urban Design Plan. Below is a list of each of the specific requirements and where they are referenced in the document:

Urban Design Plan Requirements	Reference/Page
<p>a) the appropriateness of the proposed design with respect to the existing surrounding landscape, built form, behaviors and use-patterns (including consideration of Crime Prevention Through Environmental Design principles). This is to include but not be limited to:</p> <ul style="list-style-type: none"> i) connectivity with surrounding local and regional movement networks including street networks, other transport modes and active transport networks. Existing and proposed paths of travel for pedestrians and bicycles should be shown ii) integration with surrounding local and regional open space and or landscape networks. Existing and proposed open space infrastructure/landscape elements should be shown iii) integration with surrounding streetscape including street wall height, active frontages, awnings, street trees, entries, vehicle cross overs etc iv) integration with surrounding built form (existing or desired future) including building height, scale, bulk, massing and land use. Avoiding large expanses of blank walls through the use of varied materials, colours, textures or opening where possible. 	<p>Access & circulation 2.1 & 2.2</p> <p>Local Land-use, Natural Systems, Baseline Flooding, Vegetation Communities 2.3, 2.4, 2.5, 2.6 and 2.7</p>
<p>b) design detail that is sensitive to the amenity and character of the local area and heritage items located within or adjacent to the Project site</p>	<p>Local Land-use 2.3 Master Plan 5.1 Noise wall 8.1 & 8.2 Materials & Finishes 9.1 Planting Palette 10.1</p>
<p>c) total water management principles to be integrated into the design where considered appropriate</p>	<p>Natural systems 2.4 Baseline Flooding 2.5 UDL Master Plan Zones 6.1</p>
<p>d) any other matters which the conditions require the UDP to address.</p>	<p>-</p>

New Intercity Fleet Maintenance Facility Determination Report Ref-5339920 Appendix F, Planning Condition 53 requires the preparation of a Public Domain Plan. Below is a list of each of the specific requirements and where they are referenced in this document:

Public Domain Plan	Reference/Page
<p>a) materials, finishes, colour schemes and maintenance procedures including graffiti control for new walls, barriers and fences</p>	<p>Materials + Finishes 9.1</p>
<p>b) location and design of pedestrian and bicycle pathways, street furniture including relocated bus and taxi facilities, bicycle storage (where relevant), telephones and lighting equipment</p>	<p>Access & Circulation 2.1 Master Plan 5.1 UDL Master Plan Zones 6.1 Security Structures 7.1 Materials & Finishes 9.1</p>
<p>c) landscape treatments and street tree planting to integrate with surrounding streetscape which, at a minimum, must address the following:</p> <p>i) landscape details, including details of soil preparation, mulches, plant selection, plant sizes (planting container and expected final sizes)</p>	<p>Planting Palette 10.1</p>
<p>d) opportunities for public art created by local artists to be incorporated, where considered appropriate, into the Project</p>	<p>TfNSW liaising with John Holland re any opportunities</p>
<p>e) total water management principles to be integrated into the design where considered appropriate</p>	<p>UDL Master Plan 6.1 Natural Systems 2.4 Baseline Flooding 2.5</p>
<p>f) design measures included to meet TfNSW's NSW Sustainable Design Guidelines - Version 3.0 (7TP-ST-114)</p>	<p>The UDP & PDP complies with the TfNSW's Sustainable Design Guidelines -Version 3</p>
<p>g) identification of design and landscaping aspects that will be open for stakeholder input, as required</p>	<p>TfNSW liaising with John Holland re any opportunities</p>

LEGEND

-  Motorway
-  Highway
-  Surrounding main roads
-  Train-line
-  Bus routes
-  On-road bike tracks
-  Off-road bike tracks

The New Intercity Fleet Maintenance Facility site is at Kangy Angy, Central Coast, NSW.

The relationship of site access and circulation within the regional context is an important consideration.

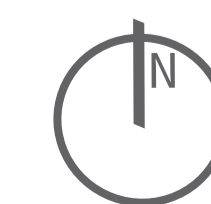
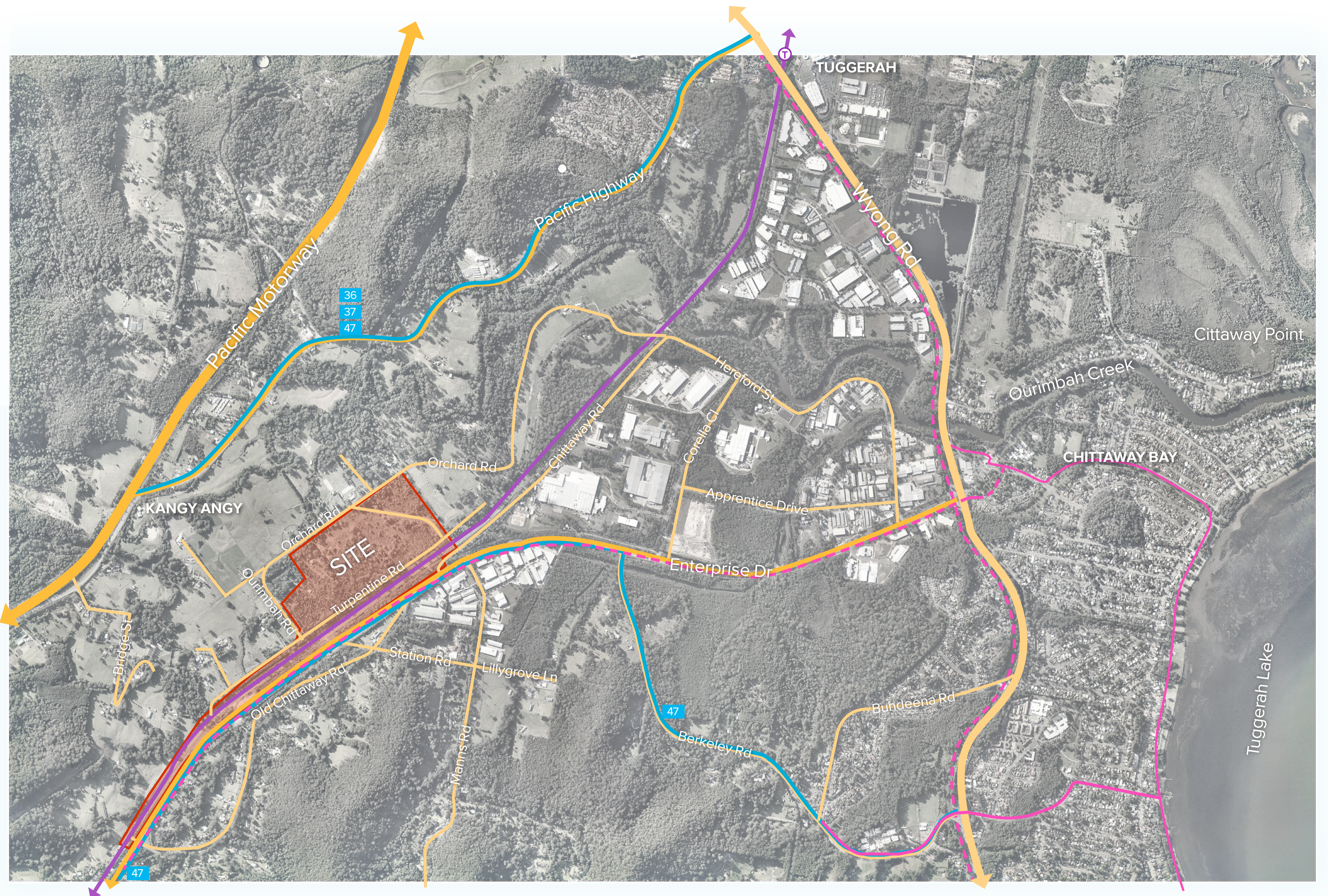
The main road feeding the site is Enterprise Drive; its users include local public transport and cyclists as well as standard vehicles. This road is the primary connection between the site and adjacent towns such as Chittaway Bay.

The main arterial roads of the Central Coast are the Pacific Motorway and Pacific Highway; these are located to the north-west of the site but have no direct connection to the facility.





Non-connecting rural roads surround the site perimeter, providing local access to farmland and other private properties. These roads are not thoroughfares; however, impacts from site from both construction and operation of the facility need to be considered.

The adjacent map shows:

- _ the proximity of the site to the closest town centre, Chittaway Bay;
- _ the Main North Line (i.e. train line) that passes the site and north to Tuggerah where a station exists.



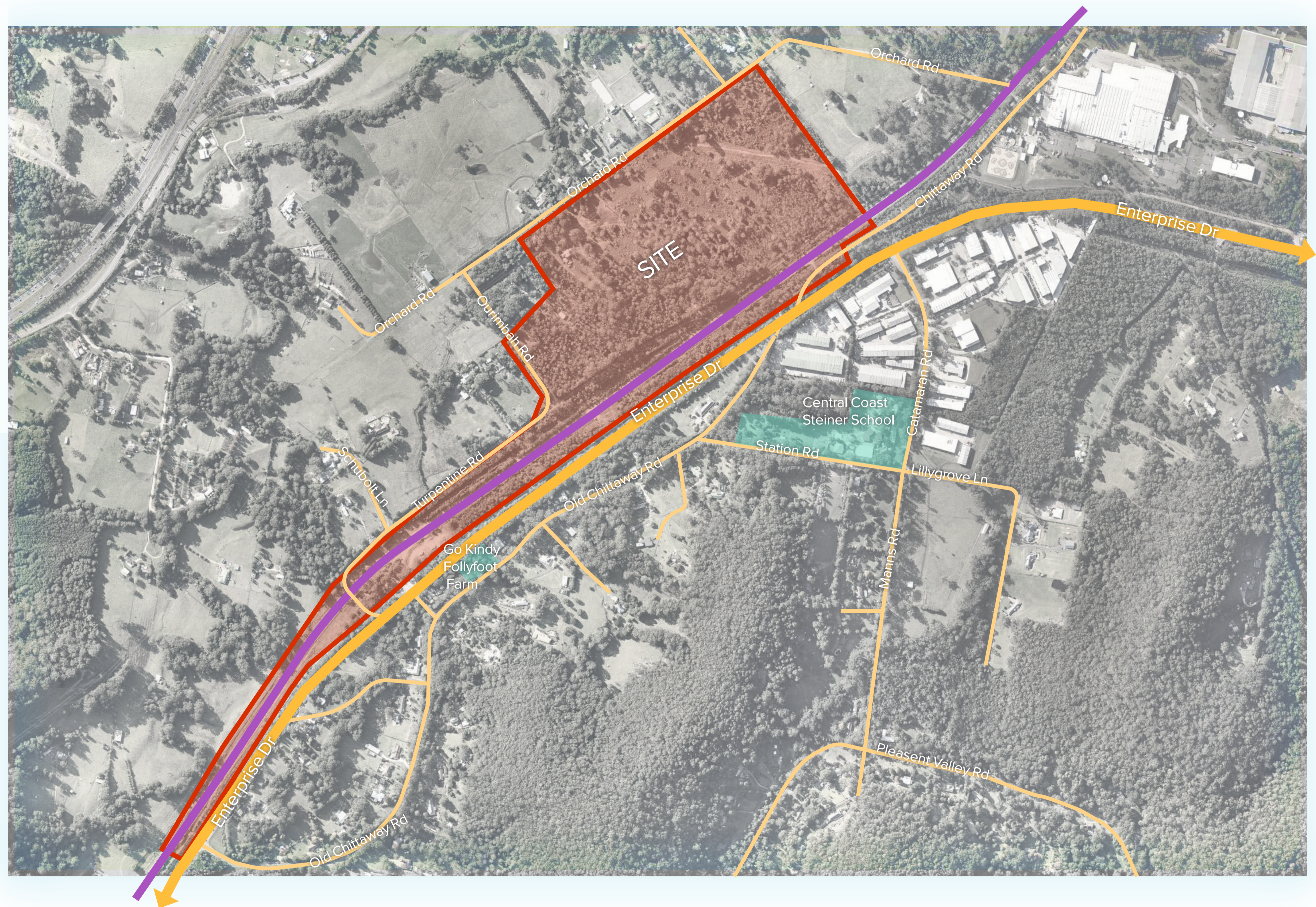
LEGEND

-  Main road
-  Local roads
-  Train-line
-  Point of interest

This larger scale map (adjacent), highlights the local roads. These country roads are typically narrow and mostly lined on both sides with tall, natural vegetation. These roads, such as Orchard Road and Ourimbah Road, primarily service private properties, i.e. houses and farms.

The local roads currently have low traffic volumes, resulting in a pedestrian and horse-friendly, relatively peaceful atmosphere to the local area. The design is to recognise that increased traffic will be approaching this area, so appropriate design speeds need to be considered; however, it is noted, most traffic will be entering the facility rather than driving further on into the local community, thus limiting traffic impact.

Access to the facility will be direct, obvious and easily achieved with little impact on residents. The new access road/bridge and roundabout location is appropriately located.



LEGEND

- Town Centre
- General Residential
- Low-density Residential
- Sewerage System
- Rural Landscape
- Public Recreation
- Environmental Management
- Environmental Conservation
- National Park
- Business Park
- General Industrial
- Local Schools

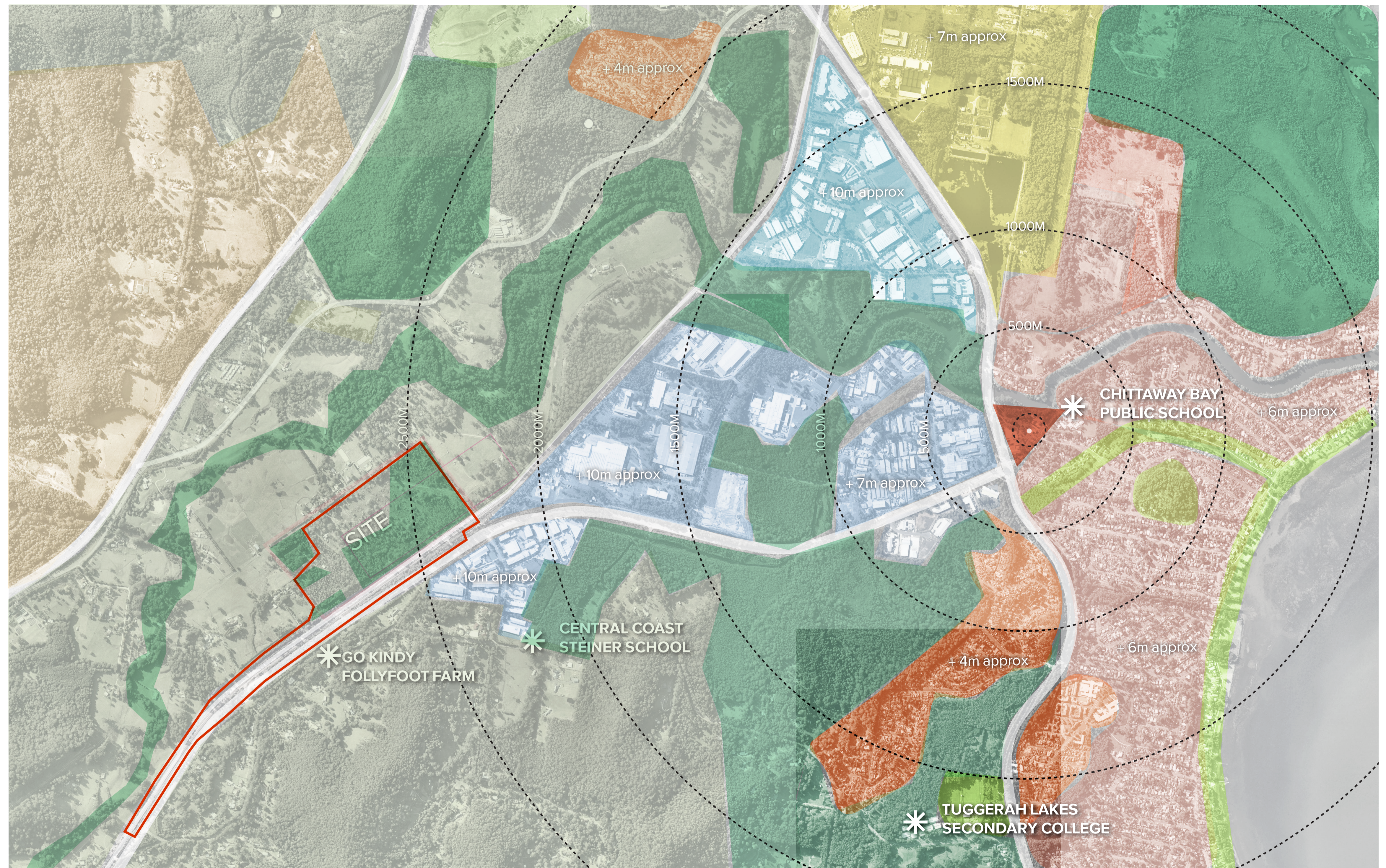
The map shows numerous land uses in the area. The immediate site surrounds are predominantly zoned: 'Environmental Management', 'Environmental Conservation', and 'Rural Landscape'. The urban design is to be sensitive to these zones, with robust vegetation and ecosystem strengthening.

The proximity of neighbouring residents necessitates a noise wall to reduce potential noise impact from the facility.


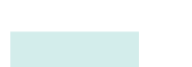
The site is near to a substantial industrial estate and to schools, both across Enterprise Drive. It remains an objective to minimise visual, audible and operational impact on neighbouring properties and development.

Chittaway Bay is the closest population centre. Urban design and planning is to take close account of local residents prone to be impacted by the development. Conversely, town residents are more likely to benefit from the development economically and remain unaffected in most other terms.

Appropriate urban design will mitigate negative impact of the development on the community and strengthen its presence and acceptance.



LEGEND

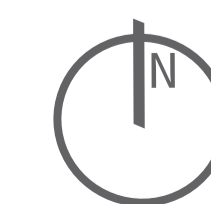
-  Forest Wildlife Corridor
-  Creeks



New Intercity Fleet Maintenance Facility Project
 FIGURE 6.1
 Species Impact Statement

The diagram indicates the presence of a regional wildlife corridor potentially provided by the Swamp Sclerophyll forest. This wildlife community is currently fragmented due to land use and plant species degradation but remains a potentially viable ecosystem.

The corridor and ecosystems are to be reconnected, strengthened and re-vitalised through appropriate planting and remediation measures.



LEGEND

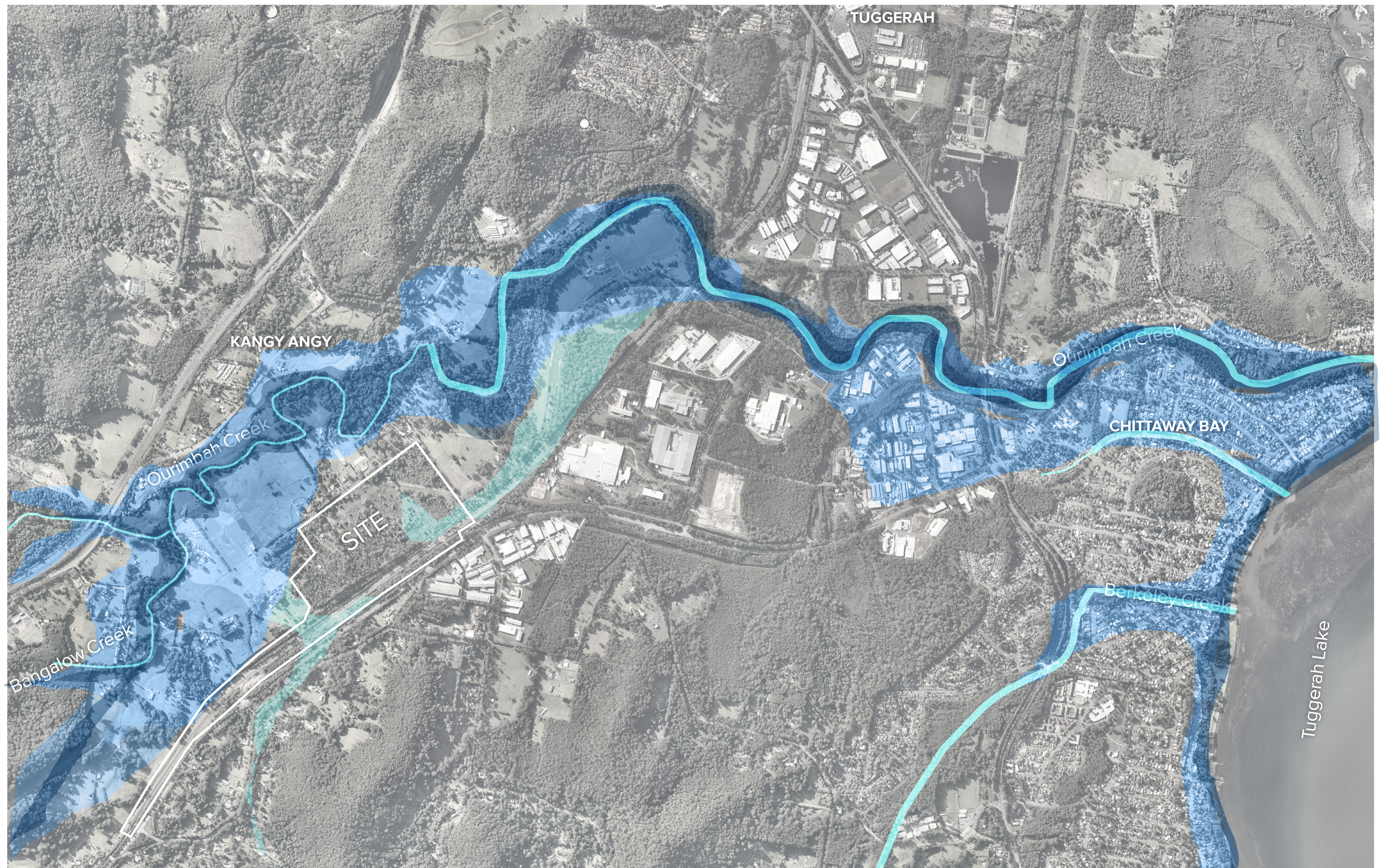
- Hazardous flood depths -
Areas, usually close to waterways, where flood waters are deepest and serious dangers exist in a 1% AEP flood event

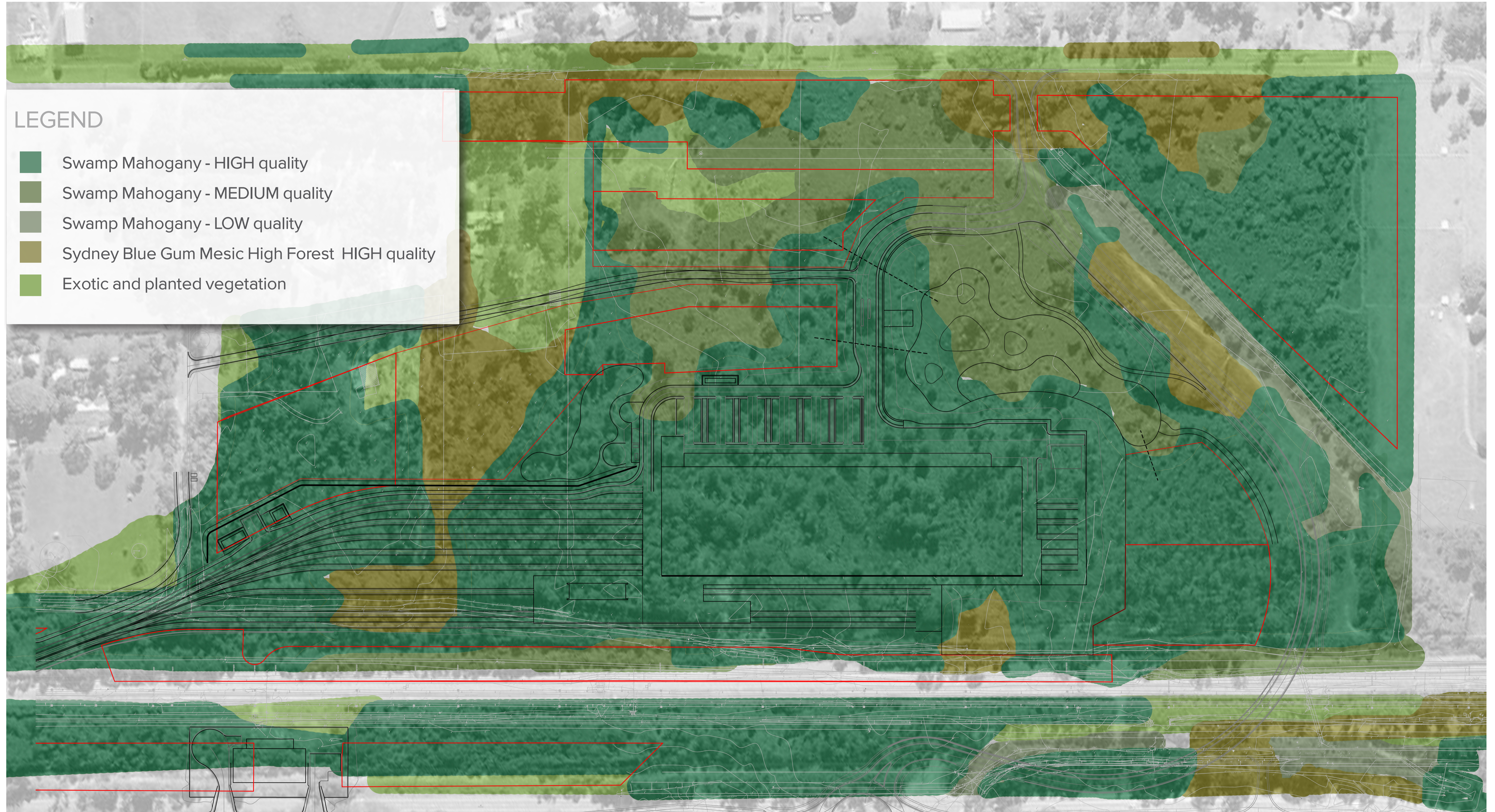
 - Flood detention land -
Areas where flood water is naturally detained but will be less than 1m deep in a 1% AEP flood event.

 - Flood prone land -
The area of land that is likely to be flooded during a 1% AEP flood event
- (AEP = Annual Exceedance Probability)."

The proximity of the creek line to the site will result in naturally occurring flooding. By demonstrating the flooding extent, the map also indicates ephemeral water bodies which form potential habitat locations for froglets, toadlets and other species.

The landscape and civil drainage design is to account for this frequent flooding and ponding.





The diagram indicates the predominant vegetation communities within the site. The communities vary in quantity and quality, i.e. species richness and amount of weed species contained; this has determined exclusion zone extent and species selected for planting in conjunction with the project element configuration.



VEGETATION TYPES

The vegetation communities within the region dictate the landscape design of the project. Areas of high-quality vegetation, i.e. rich in species diversity and biomass, are considered to be of high value resulting in exclusion zone establishment. Plants common to such communities are to be used for re-vegetation and remediation to support the existing ecosystems.

Land clearing has fragmented the site; appropriate plant selection is to be made to link and strengthen these fragmented communities. Non-indigenous species should not be used.

The current vegetation types and their “habitat-creating” attributes are summarised below.



SWAMP MAHOGANY FOREST
(*Eucalyptus robusta*)

- Dominant vegetation community (to be promoted)
- Located across the site
- Drawn to low areas holding water
- Has structural complexity
- Swamp forests used seasonally by nectivorous birds and bats
- Dense fern understorey provides foraging and sheltering opportunities for small birds and mammals



SYDNEY BLUE GUM MESIC HIGH FOREST

- This community contains the largest and most mature trees in the study area
- This forest has reduced structural complexity; understorey plants are dominated by grasses and ferns
- Mature trees contain hollows for animals



EXOTICS & CLEARED LAND

- This vegetation occurs in areas subject to past and current land uses
- This land use’s vegetation fragments the native plant communities and contains many introduced and weed species.



ANIMAL CLASSES

Altering the surrounding landscape will have significant effects in the local biodiversity. Land/vegetation clearing for site facilities should be minimised to: preserve fauna habitat, encourage return of species and maintain maximum ecosystem diversity.

The following information summarises primary habitat criteria for the predominant species on site:



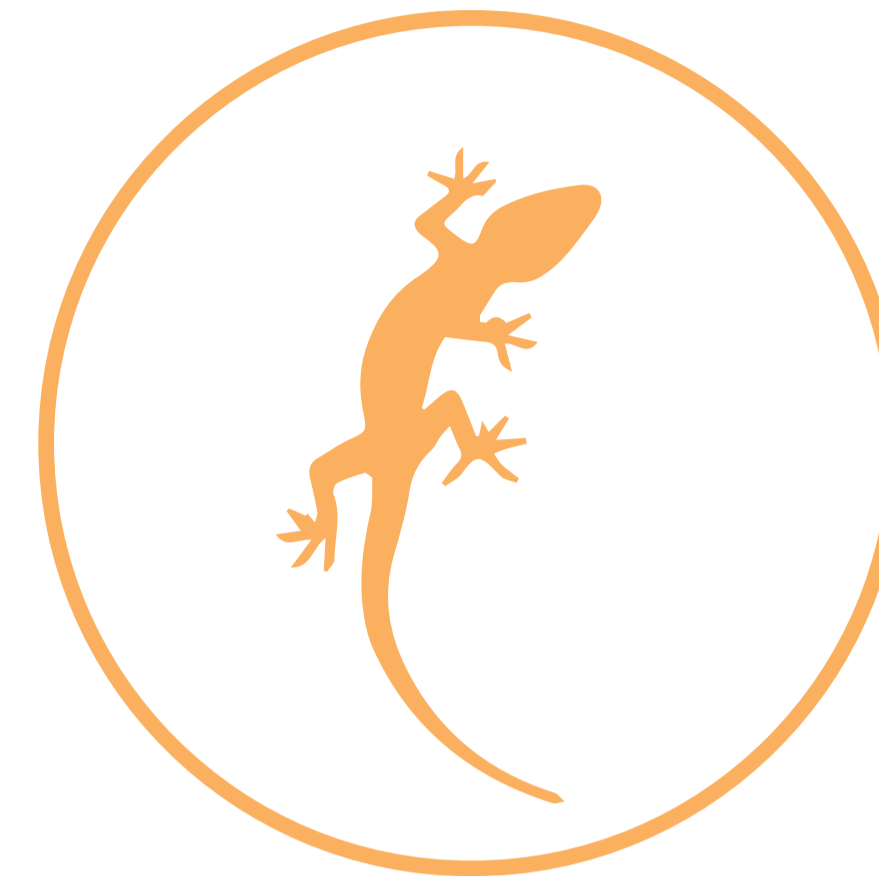
AMPHIBIA

- Drawn to water retaining basins
- Habitat found amongst dense, sclerophyllic vegetation
- Seasonal calling
- The landscaping design is to retain pre-existing water bodies where possible and promote planting of dense understorey groundcovers and shrubs



AVES

- Ferny understorey supports a range of ground dwelling birds
- Require multiple, complex vegetation strata levels
- Some areas on site lack a mid-storey vegetation layer, resulting in a reduced bird presence;
- The landscape design must support a diversified vegetation strata by planting trees, shrubs and groundcovers



REPTILIA

- Requires dense understorey vegetation which provides micro habitat for prey species
- The design will incorporate low groundcovers and dense shrubs

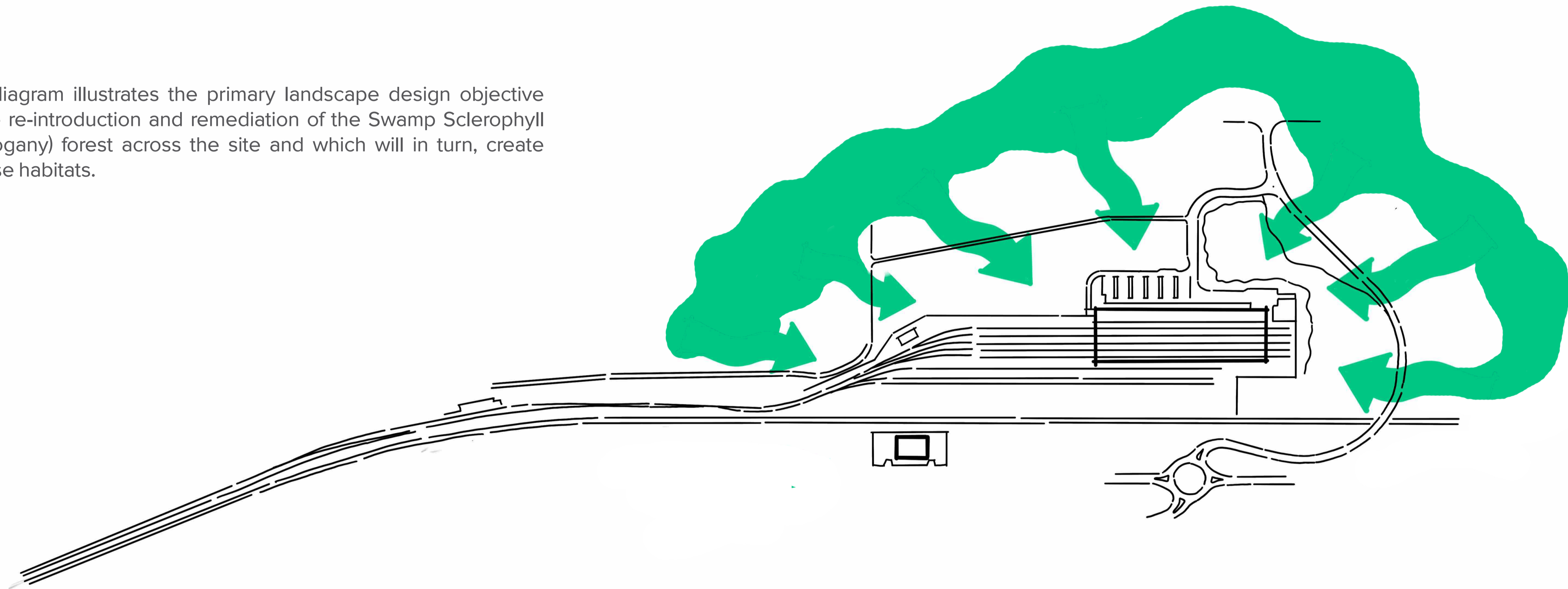


MAMMALIA

- The dense understorey provides habitat suitable for mammals
- Seasonal blossom within the area are natural attractors of mammals
- Nomadic species of bats use the site intermittently
- Site remediation should provide roosting opportunities for cave/hollow dwelling animals
- The design will keep existing hollow trees on site and will use flowering trees and shrubs where possible to promote mammal occurrence

“Ensuring the Green Legacy of the Swamp Sclerophyll Forest is maintained”

The diagram illustrates the primary landscape design objective of the re-introduction and remediation of the Swamp Sclerophyll (Mahogany) forest across the site and which will in turn, create diverse habitats.



CONNECTION TO LANDSCAPE

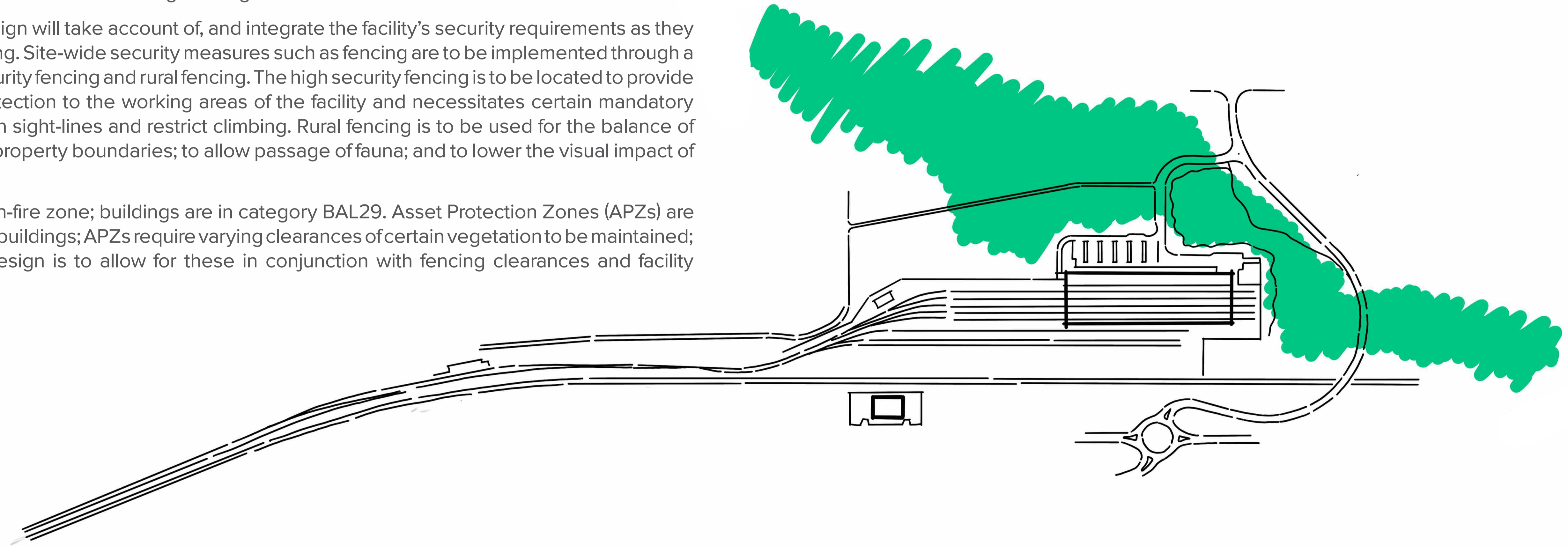


The existing landscape has been mapped and reviewed for flora, fauna and habitat diversity to better understand its qualities and characteristics (refer various REF Reports).

The new landscape is to be planned to integrate existing vegetation, and particularly build on the remnant bushland in the western vegetation belt. Indigenous native species are to be used to provide fauna habitat stimulation and protection, together with the introduction of exclusion zones and integration with relevant engineering measures such as culverts and drains.

The landscape design will take account of, and integrate the facility's security requirements as they relate to landscaping. Site-wide security measures such as fencing are to be implemented through a mixture of high security fencing and rural fencing. The high security fencing is to be located to provide the necessary protection to the working areas of the facility and necessitates certain mandatory clearing to maintain sight-lines and restrict climbing. Rural fencing is to be used for the balance of the site to identify property boundaries; to allow passage of fauna; and to lower the visual impact of the facility.

The site is in a bush-fire zone; buildings are in category BAL29. Asset Protection Zones (APZs) are required around all buildings; APZs require varying clearances of certain vegetation to be maintained; the landscaping design is to allow for these in conjunction with fencing clearances and facility requirements.



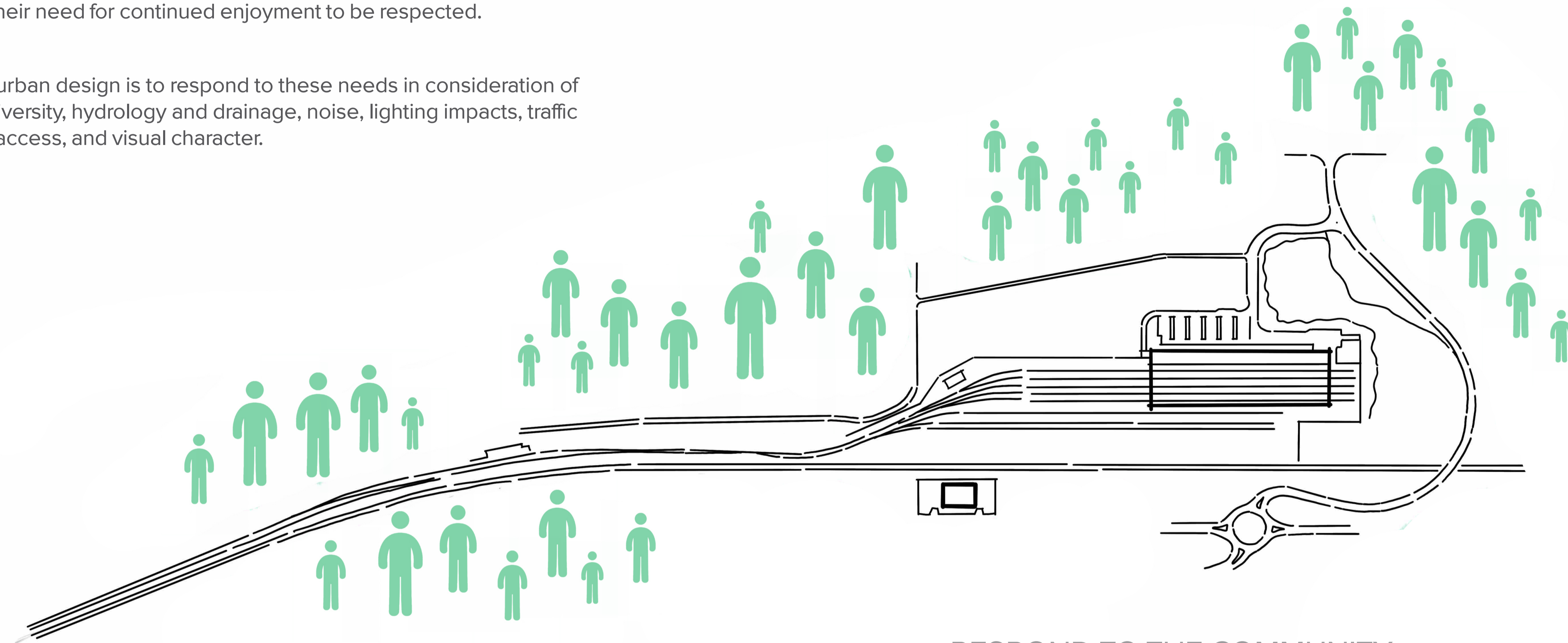
APPRECIATE & STRENGTHEN THE ENVIRONMENT

- Appreciate the importance of the remnant bushland and fauna
- Connect fauna habitats to increase vegetation density
- Integrate APZ clearances with landscaping design
- Integrate fencing with urban design and landscaping
- Reduce visual impact and hence resident conflict

This diagram represents:

- the resident community surrounding the facility;
- their close proximity to the facility, and therefore potential impacts arising;
- their need for continued enjoyment to be respected.

The urban design is to respond to these needs in consideration of biodiversity, hydrology and drainage, noise, lighting impacts, traffic and access, and visual character.



RESPOND TO THE COMMUNITY

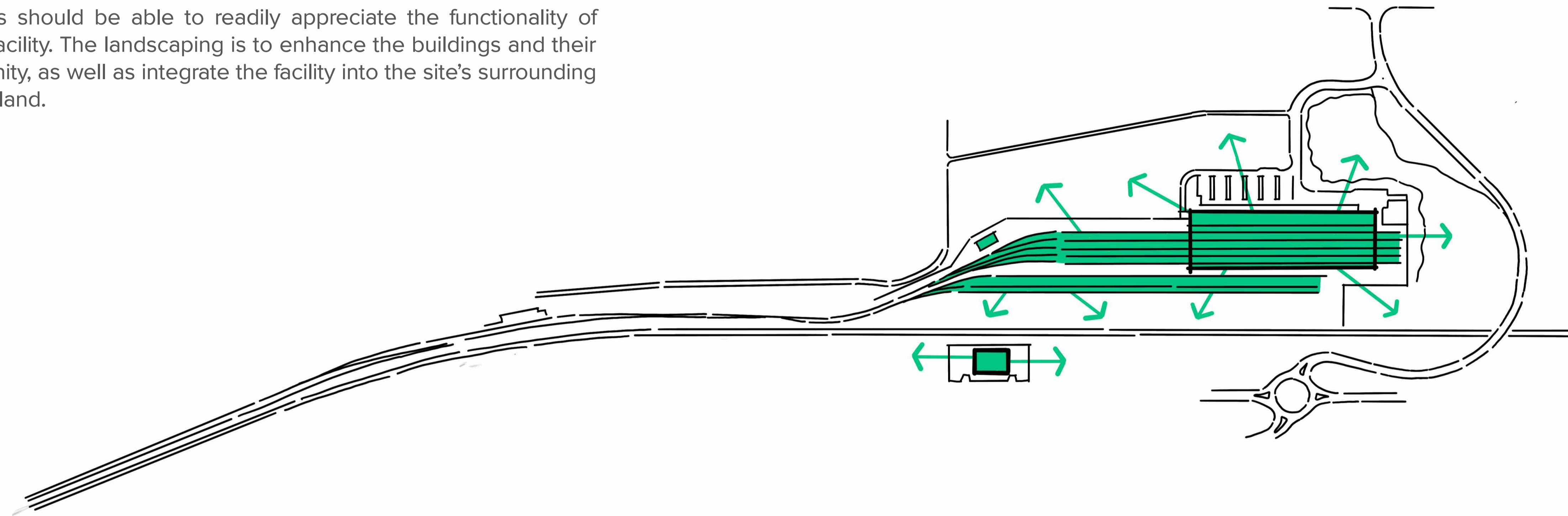
- Undertake community communication
- Create landscape buffers and visual amenity
- Manage and implement noise mitigation
- Provide appropriate access measures
- Engineer drainage solutions
- Manage and implement light spill mitigation
- Provide responsible construction management
- Encourage community contribution



The project is to provide for user and customer experience.

Primary users will have direct contact with the Main Building and ancillary buildings. The facility's planning for these buildings should present them as an integrated campus; the urban design approach for the campus buildings is provide a common identity and materiality.

Users should be able to readily appreciate the functionality of the facility. The landscaping is to enhance the buildings and their amenity, as well as integrate the facility into the site's surrounding bushland.



CUSTOMER EXPERIENCE

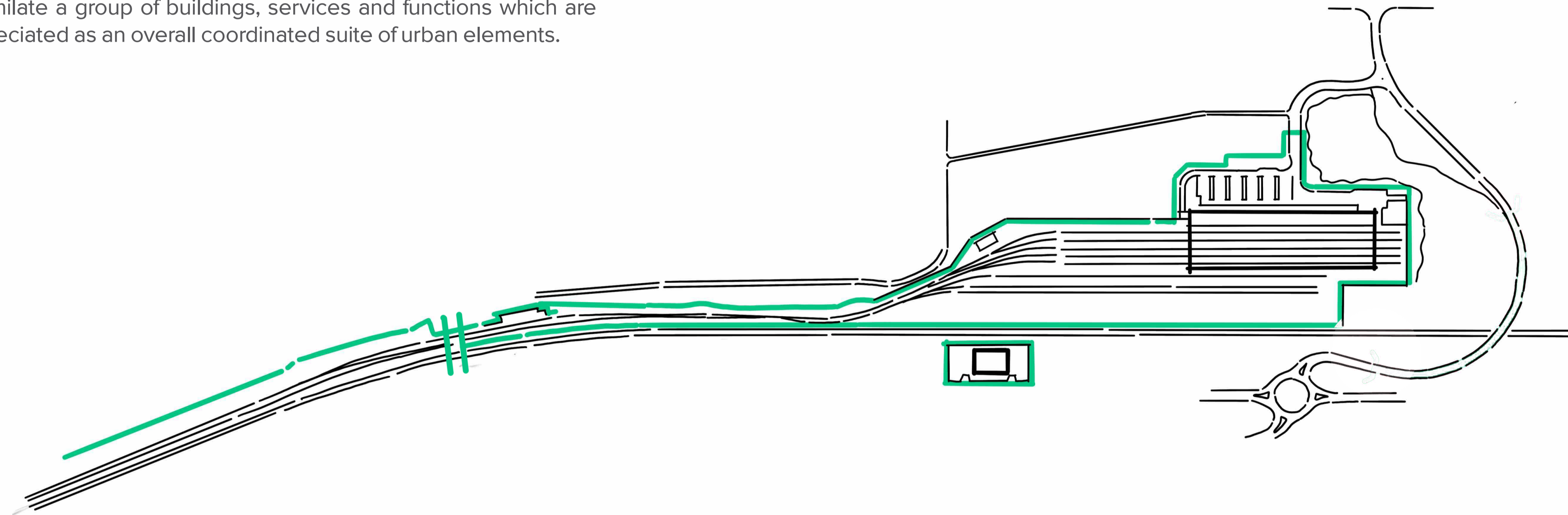
The design of the facility shall consider the needs, requirements and experiences of the following:

- Facility workers (workplace functionality and amenity)
- Train drivers and passengers (whilst traveling past)
- Visitors (access, wayfinding and amenity)
- Community (impacts on)
- Motorists, cyclists and pedestrians (accessing the facility)



The project requires the coordinated integration of security measures, built elements, services and the landscape to achieve a successful urban design outcome along the whole length of the project.

The designs of all these elements is to ensure their interrelation is appreciated and undertaken together with the consideration of built elements' external finishes and materials. The objective is to assimilate a group of buildings, services and functions which are appreciated as an overall coordinated suite of urban elements.



COORDINATED SUITE OF URBAN ELEMENTS

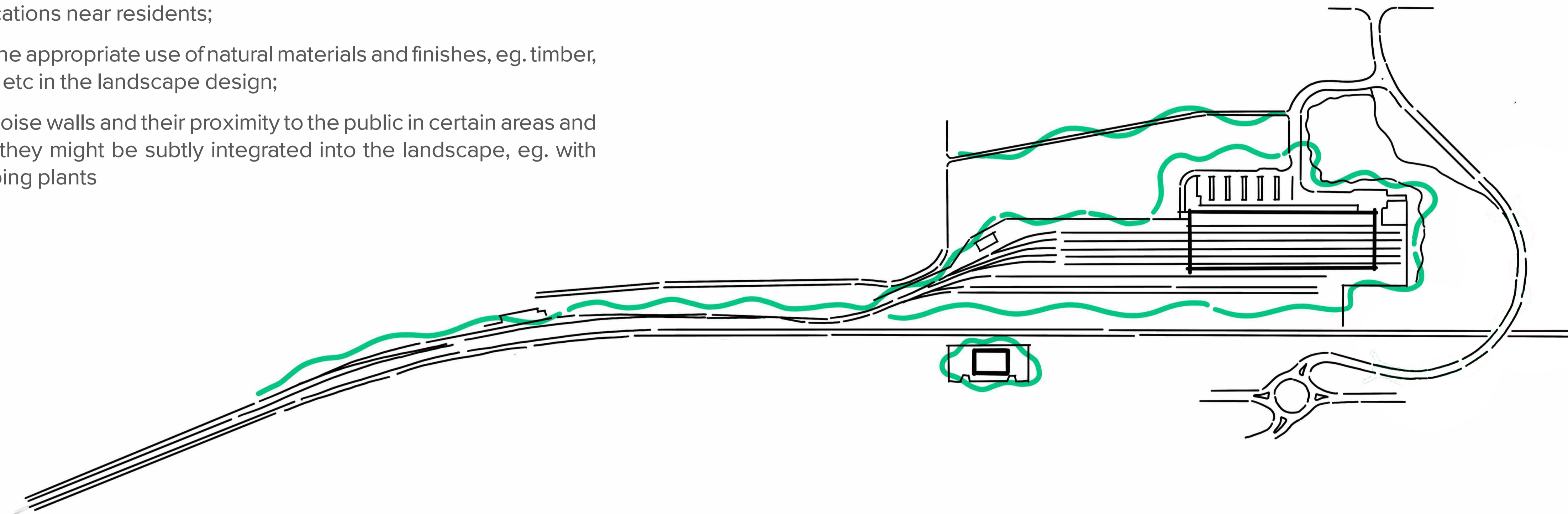
- Understand the relationships between all project elements
- Utilise a complementary palette of materials;
- Provide visually integrated but recessive solutions
- Consolidate and group built elements where possible



Further to the previous principle, the suite of built elements is to correlate with Kangy Angy's natural setting. The completed facility, as individual elements and as a whole, is to be unimposing and reflect the considered development of urban elements within its rural regional context.

Consider:

- The functionality of facility fencing across the site and its impact in locations near residents;
- The appropriate use of natural materials and finishes, eg. timber, rock, etc in the landscape design;
- Noise walls and their proximity to the public in certain areas and how they might be subtly integrated into the landscape, eg. with climbing plants

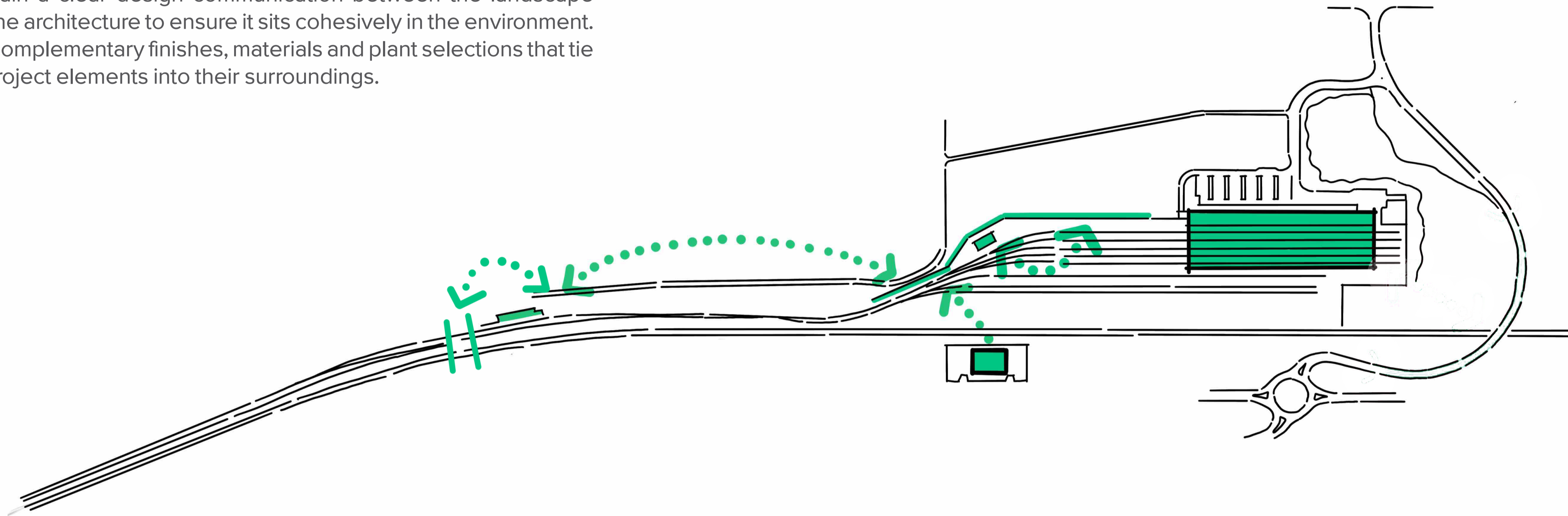


INTEGRATION OF URBAN ELEMENTS INTO THE NATURAL SETTING

- Utilise the natural textures and patterns of the landscape
- Respond to the topography to integrate structures, access and circulation
- Avoid impacting existing trees and key natural assets where possible
- Borrowing of naturalistic aesthetic



Maintain a clear design communication between the landscape and the architecture to ensure it sits cohesively in the environment. Use complementary finishes, materials and plant selections that tie the project elements into their surroundings.

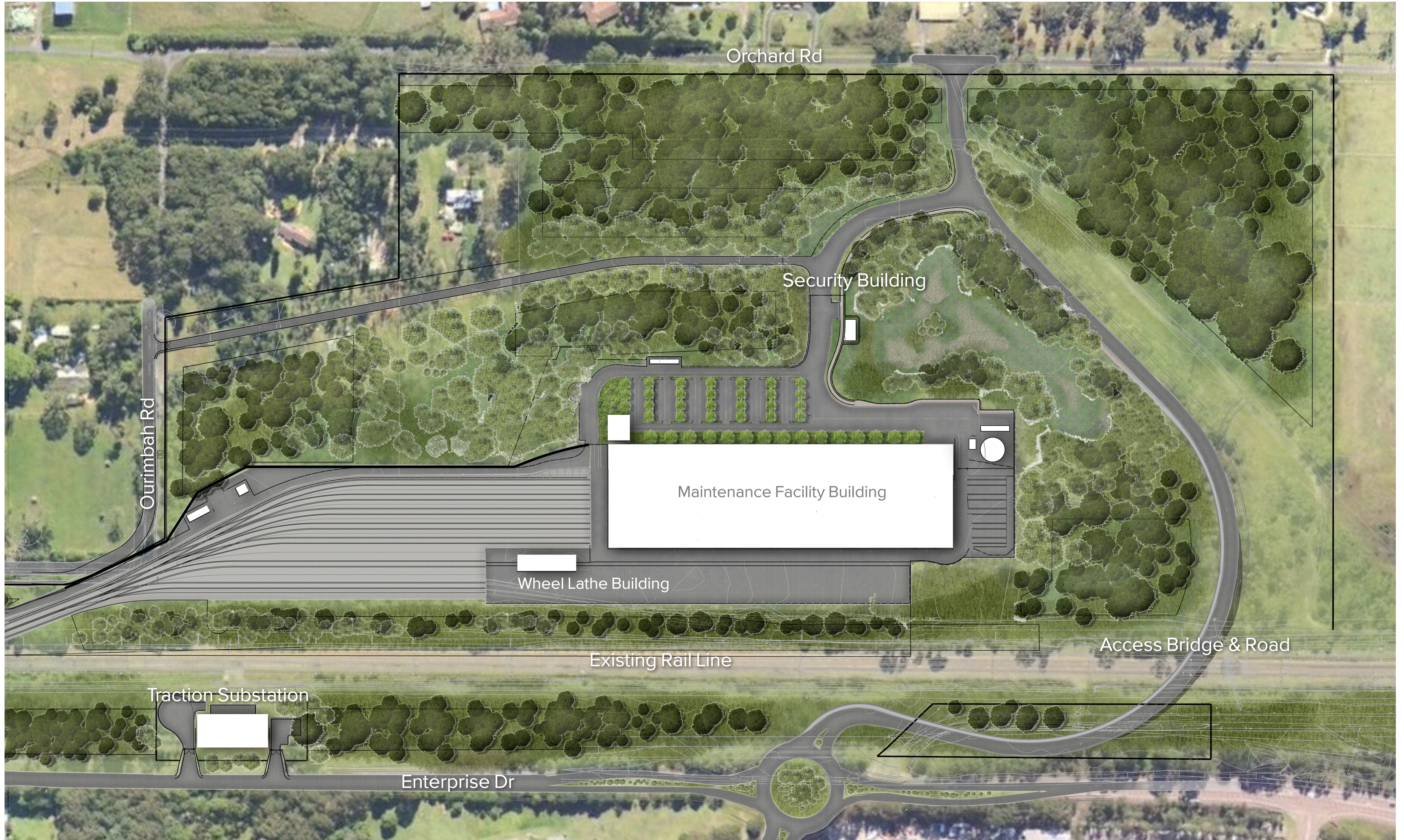


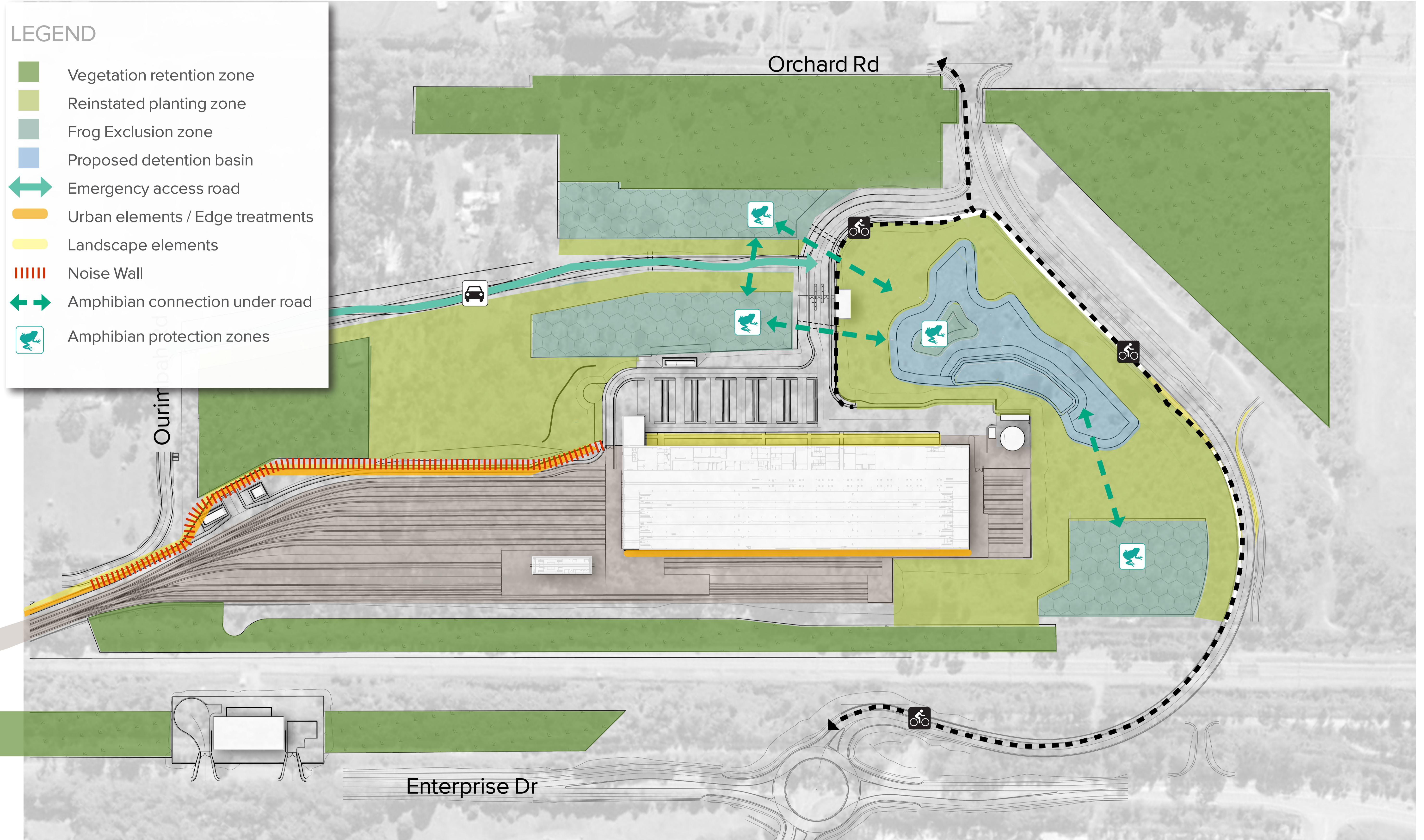
URBAN DESIGN AND ARCHITECTURE TO COMPLEMENT EACH OTHER

- Use materials consistently, i.e. for similar functions on differing build elements
- Materials to be to be sustainable, to be of long life and easily maintainable







The Urban Design and Landscape Master Plan below reflects the final design and landscape treatments together with key built elements across the main part the site (Train wash and Turpentine Rd Bridge area not shown).

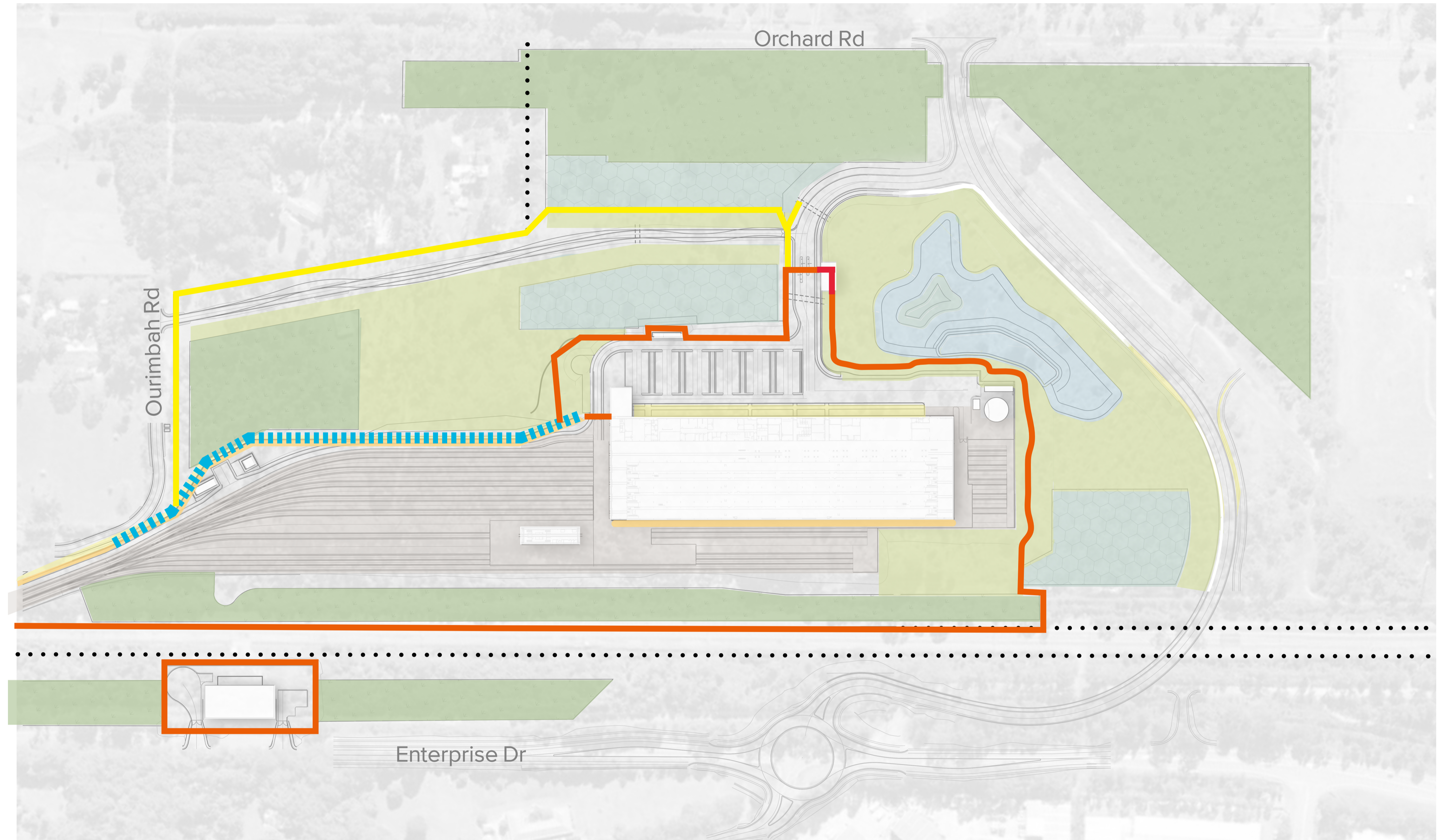




LEGEND

-  Noise wall 6m high from top of rail
-  Rural Fence 1.2 m
-  High Security Fence 3m
-  Existing Fence

Fences and noise walls are used for different functions across the site. The noise wall mitigates noise impact upon private properties and doubles as a high security fence. The high security fences prevent trespassing to the working areas of the facility. In areas less critical to the functions of the facility, eg. along Orchard Road, rural fences are used to soften the facility's industrial feel and allow the landscape to link the facility into the existing rural street setting.

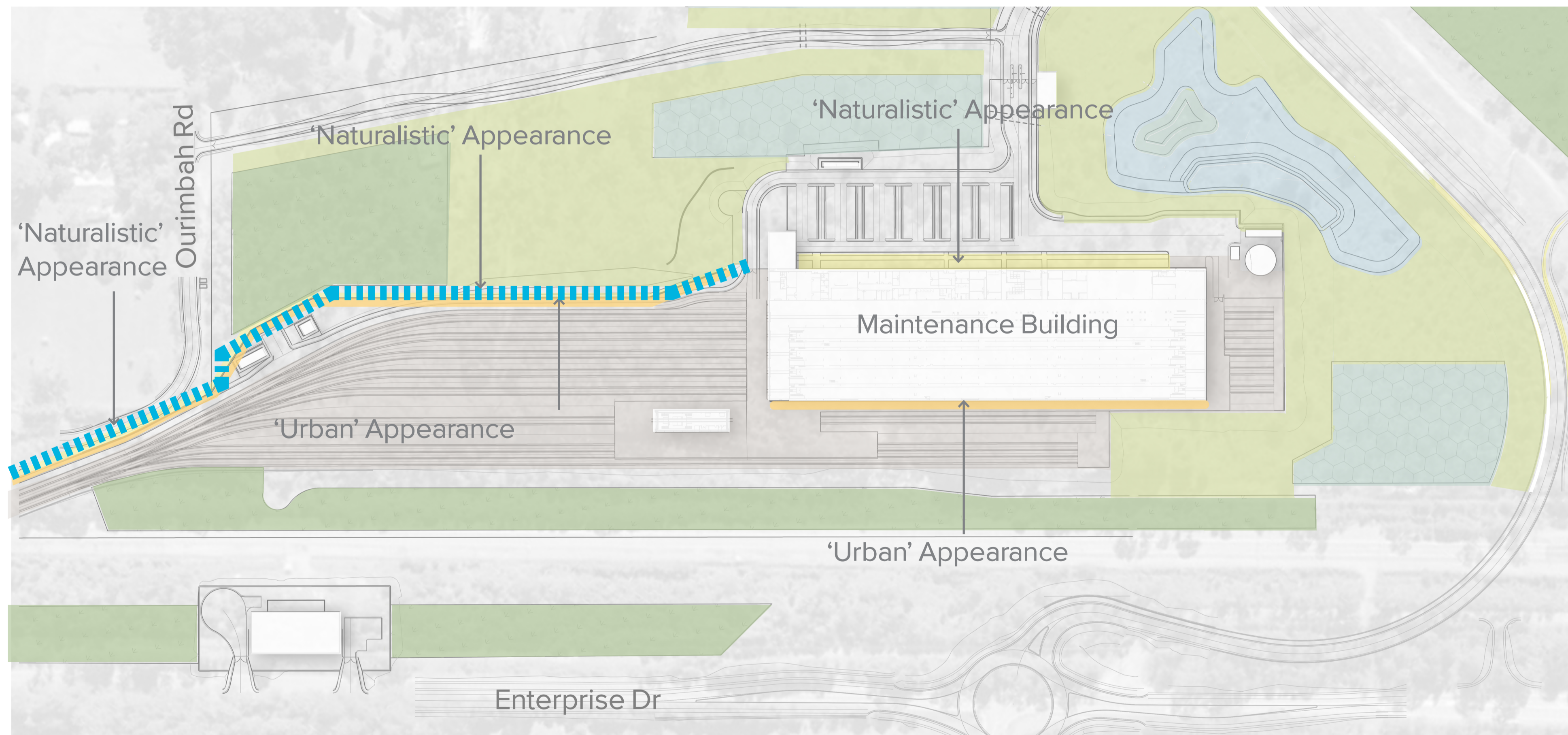


LEGEND

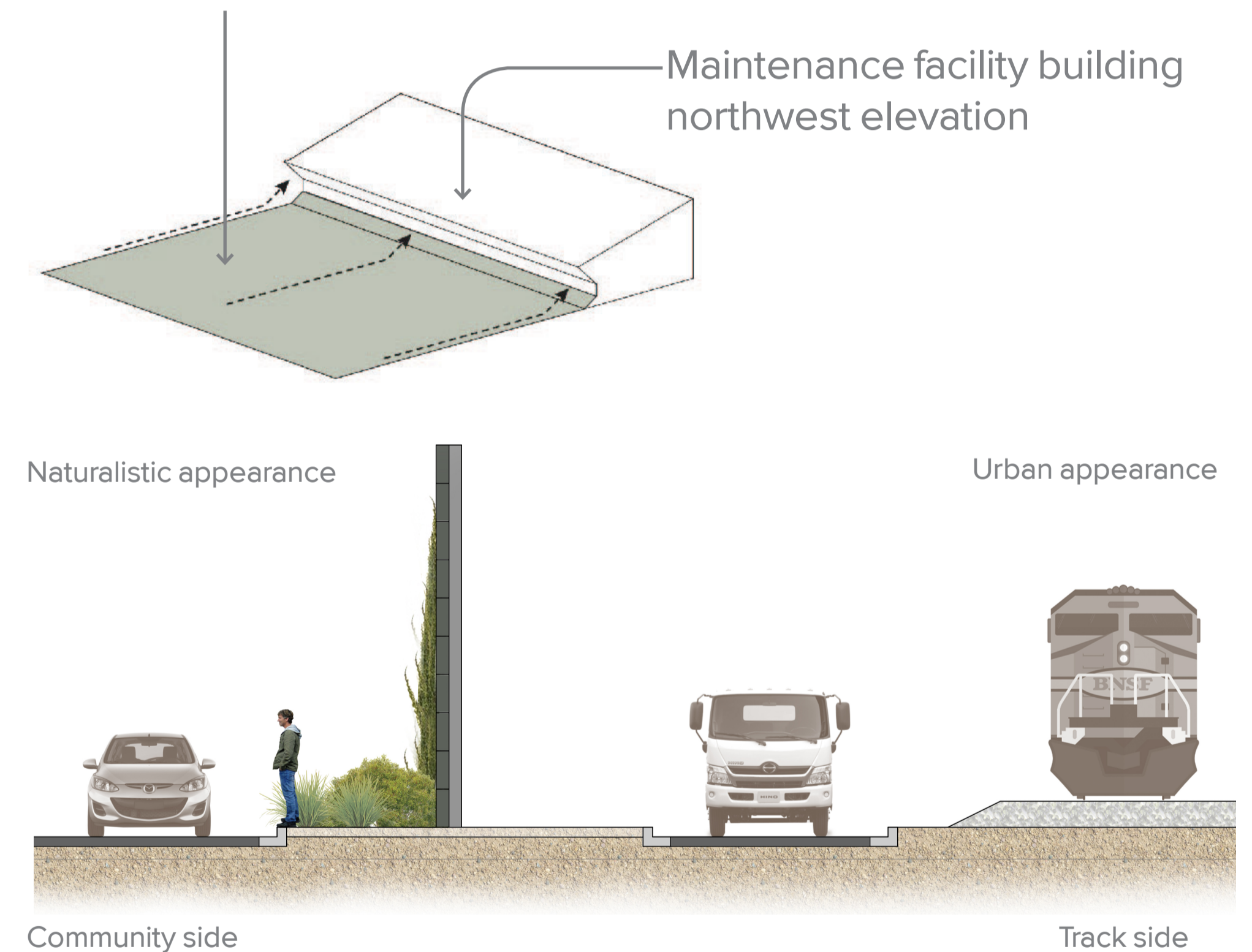
■■■■■ Noise wall 6m high from top of rail

The noise wall's length, height, materiality and structure (Hebel panels and steel columns) is designed as a response to the strategic intent, i.e. noise mitigation, and design requirements for the project. The side of the wall facing the bush or rural views will have a naturalistic look, and the other side, facing the rail yard/tracks, will have a more urban appearance to respond to the local context of built elements.

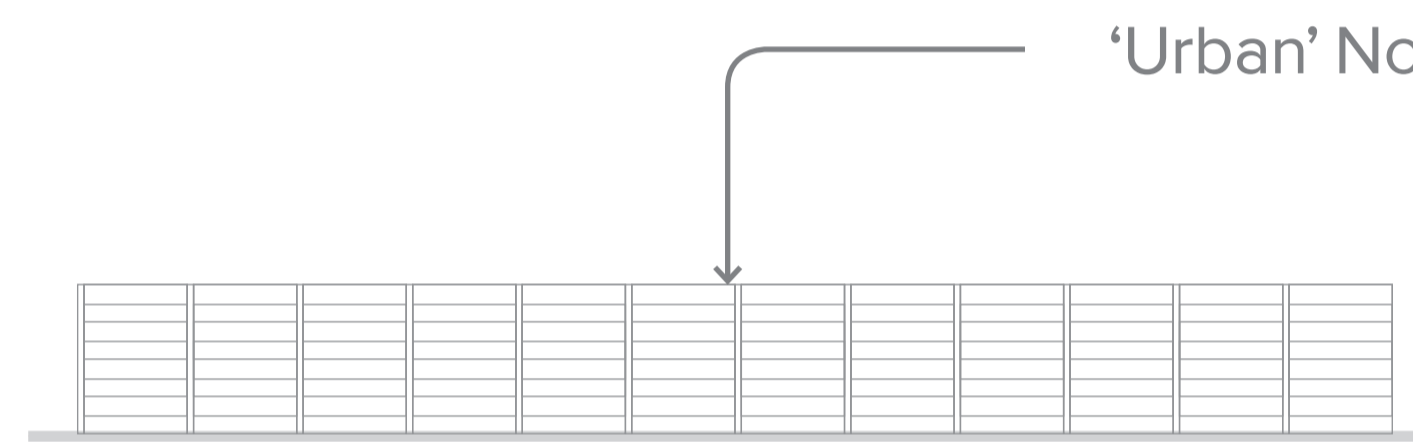
This approach has also been taken with the naturalistic appearance of the NW face of the Main Building (with planting along its full elevation) vs the more urban face of the Main Building (having no vegetation).



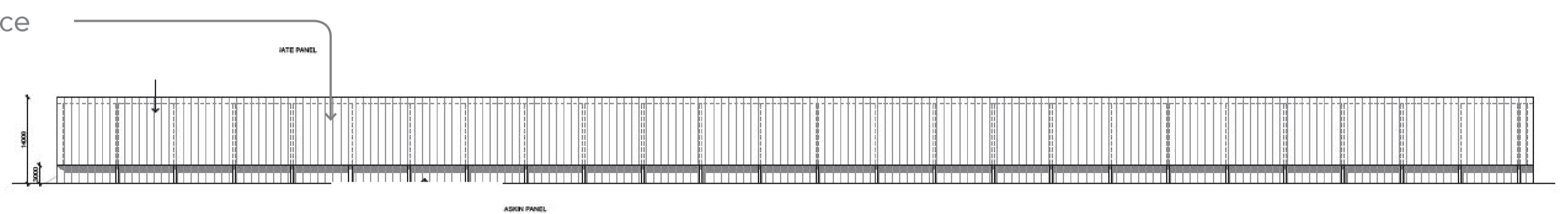
This diagram illustrates that the naturalistic appearance of the maintenance building northwest facade will be folded down and have planting extending up the facade.



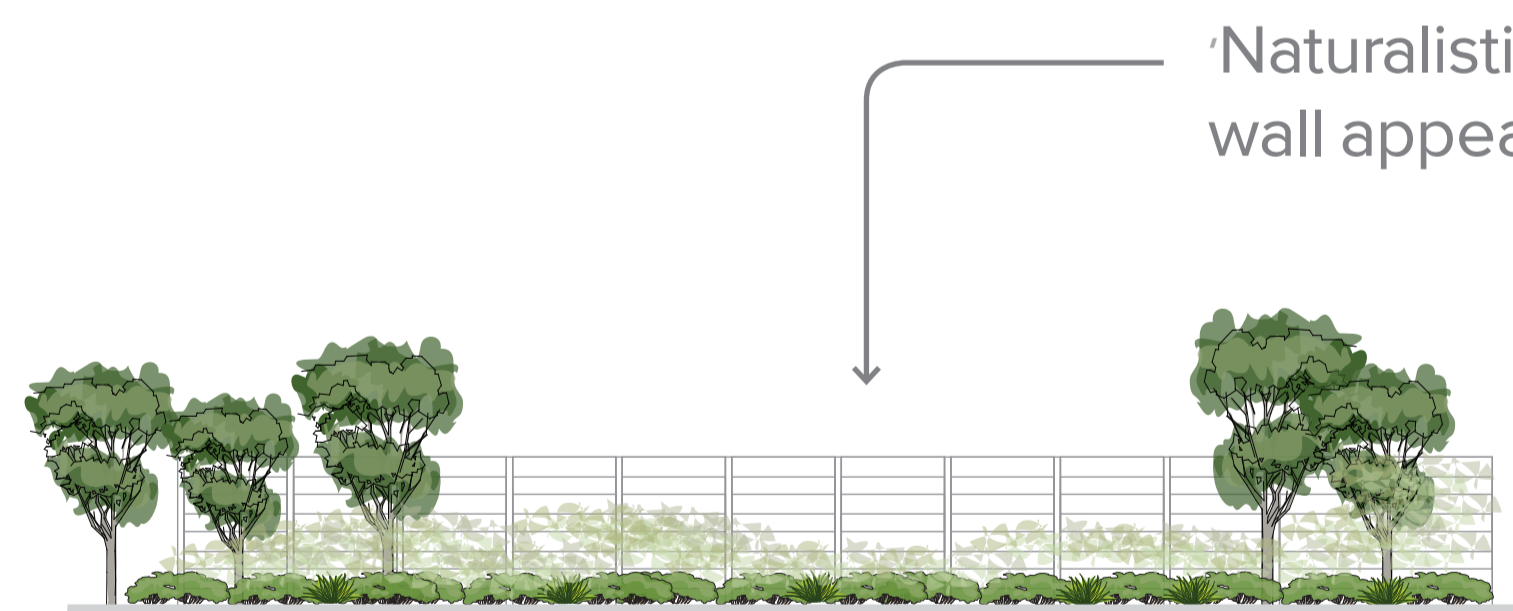
The elevations below show both the urban and naturalistic appearance sides of the noise wall. The noise wall will be made from horizontal Hebel panels. The naturalistic side will have native climbing plant species (eventually) covering the wall. The urban side will be a bare panel. The wall is intended to be a dark grey colour.



Noise Wall Southeast Elevation



Maintenance Building Southeast Elevation



Noise Wall Northwest Elevation

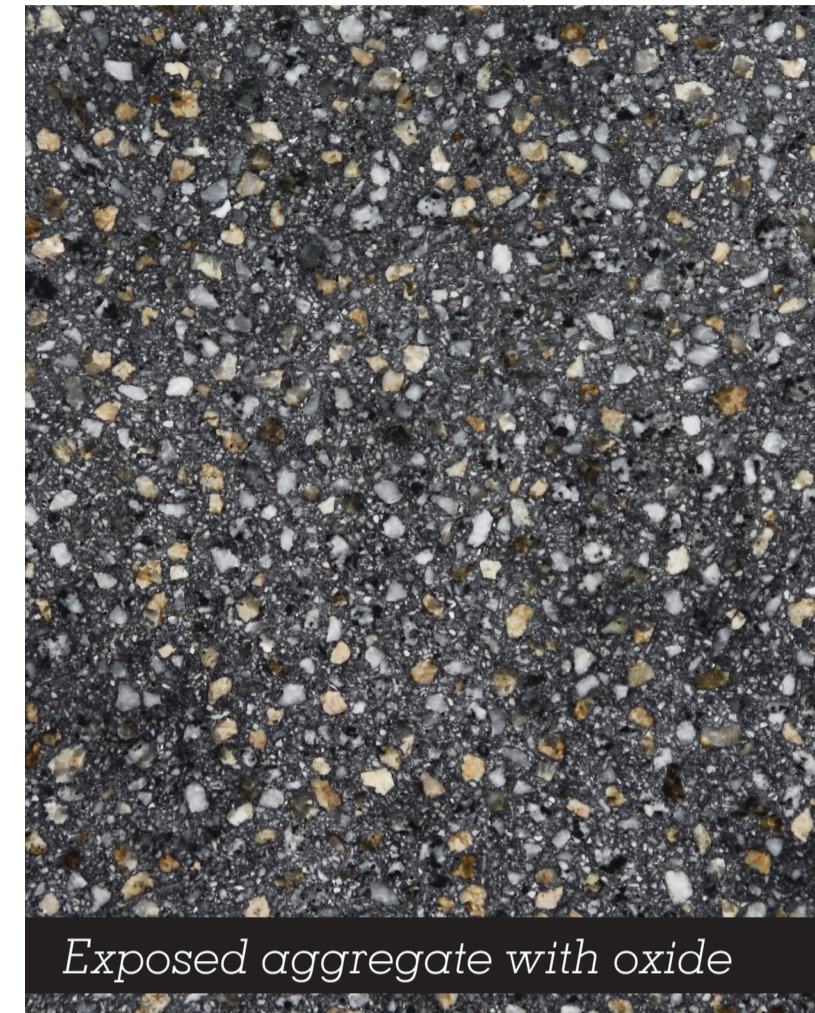
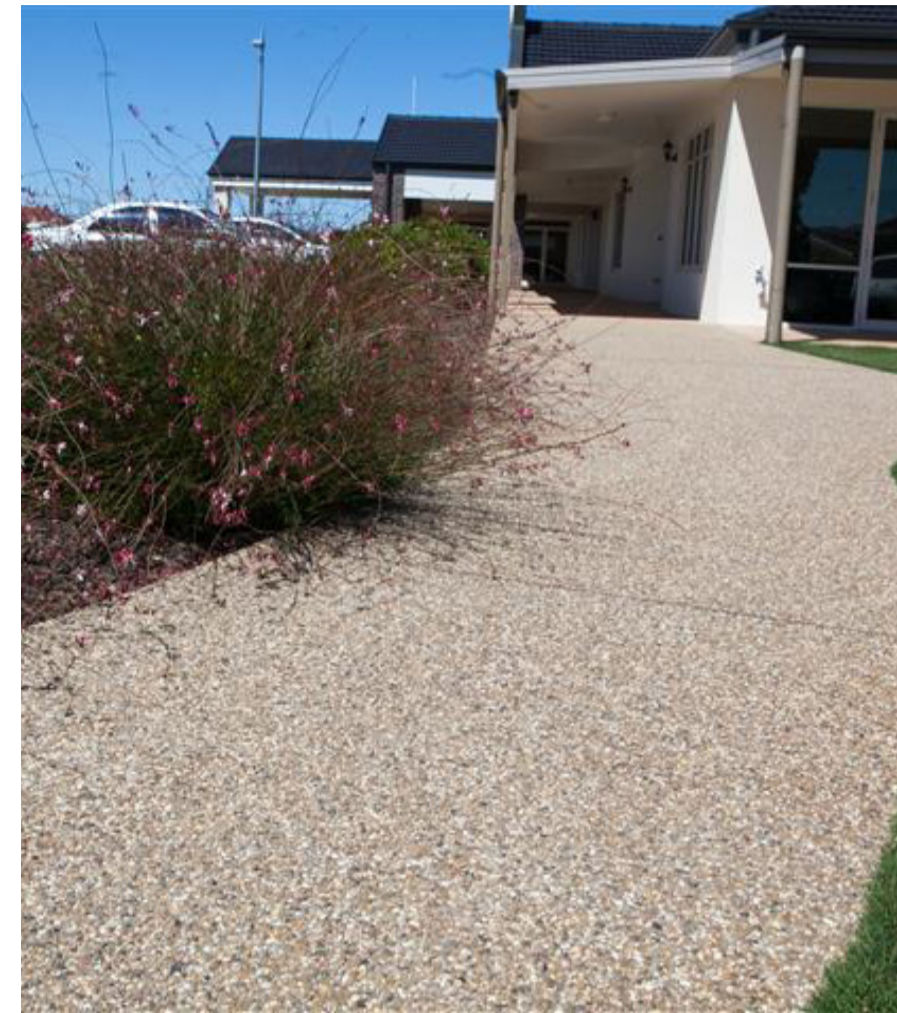


Maintenance Building Northwest Elevation

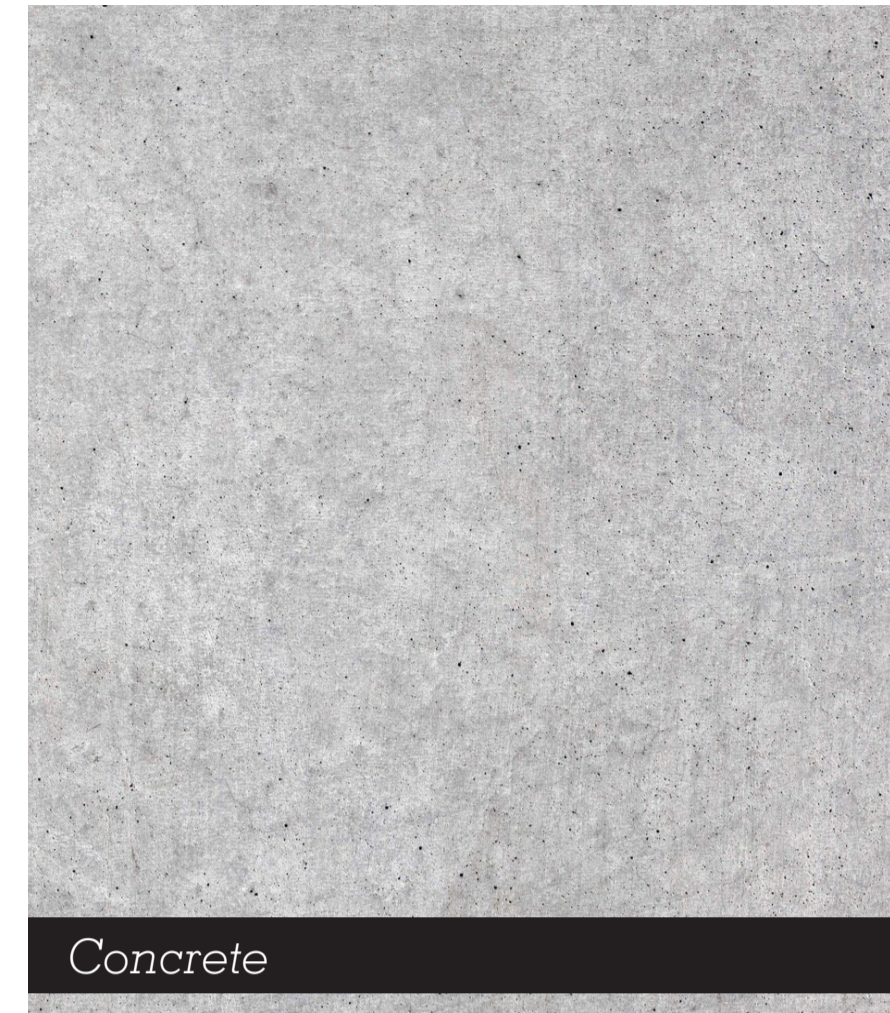


The project is to integrate with its surrounding natural setting. External fittings, materials and finishes used in the landscape have been selected to complement the existing setting. Using a variety of natural tones and materials the landscape aids the shift from the natural environment to the Maintenance Building and the other built elements. The built elements are functional structures, designed to be aesthetically pleasing, subtle and enhancing the natural setting.

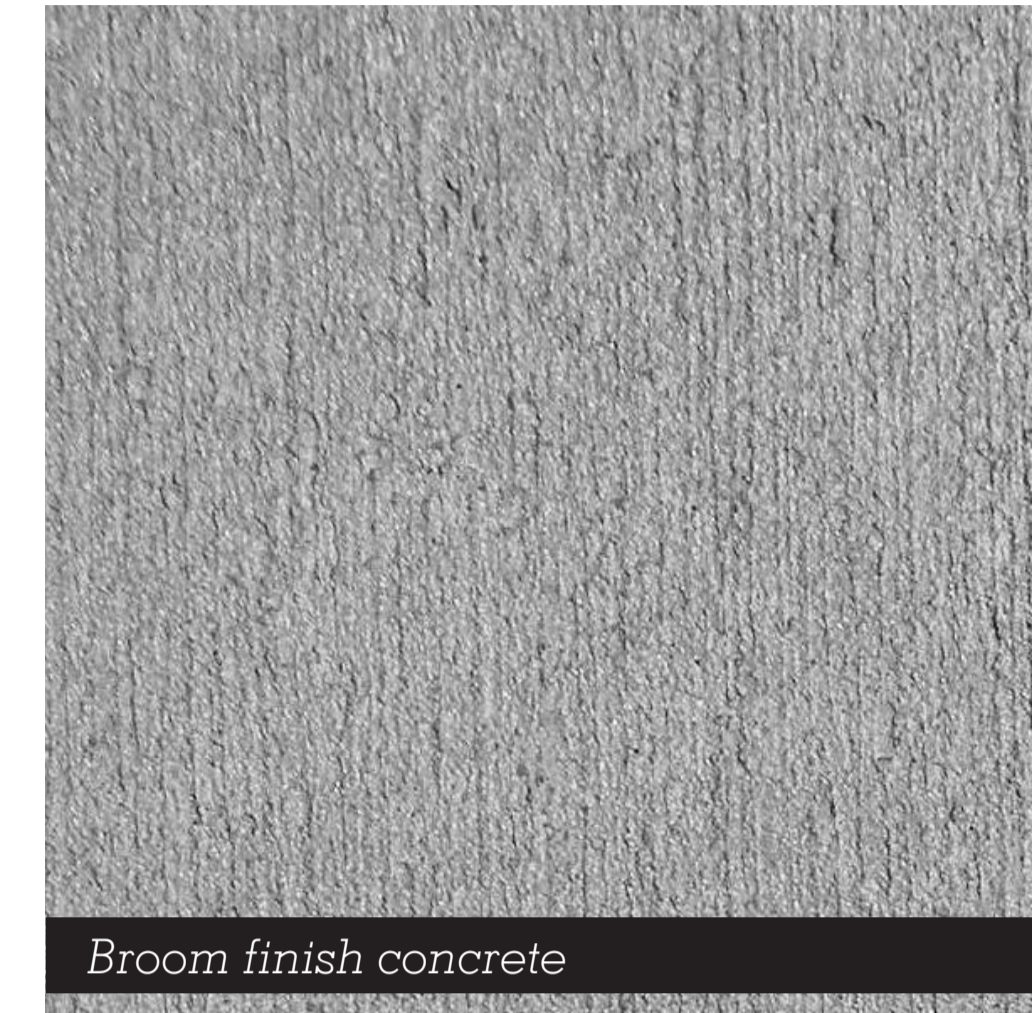
PAVING



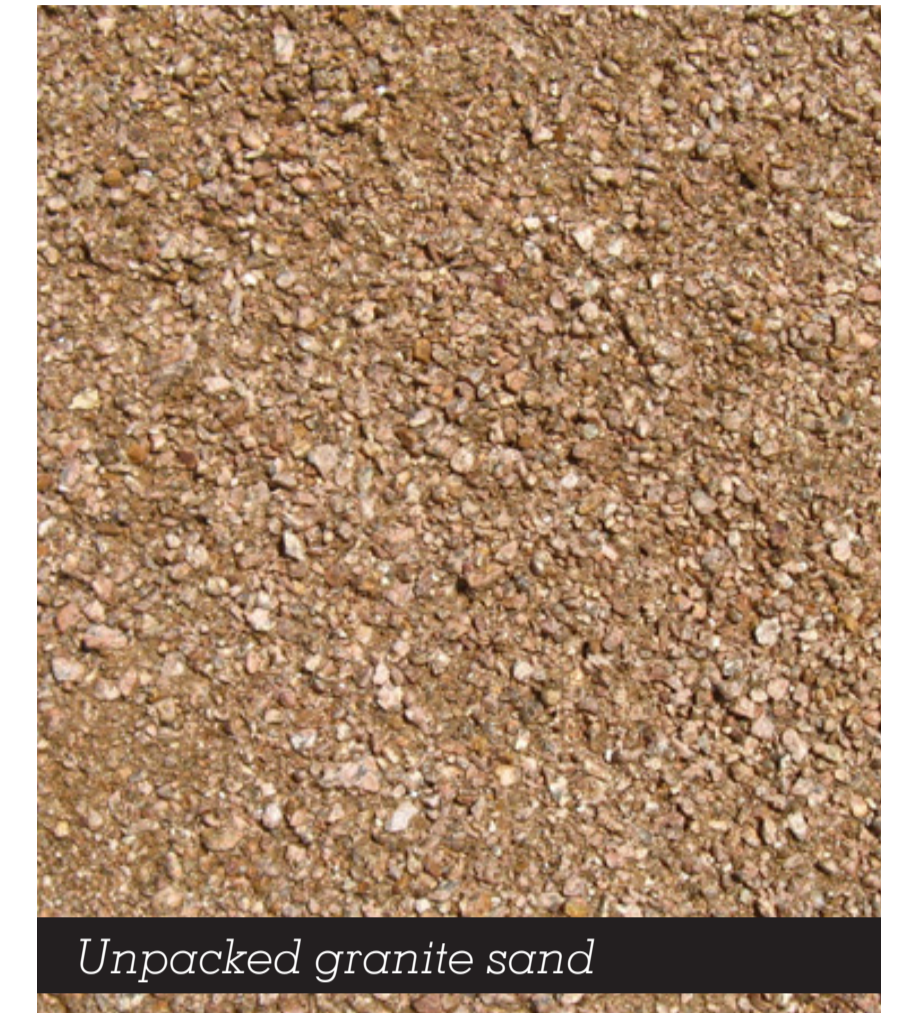
Exposed aggregate with oxide



Concrete



Broom finish concrete



Unpacked granite sand

FURNITURE



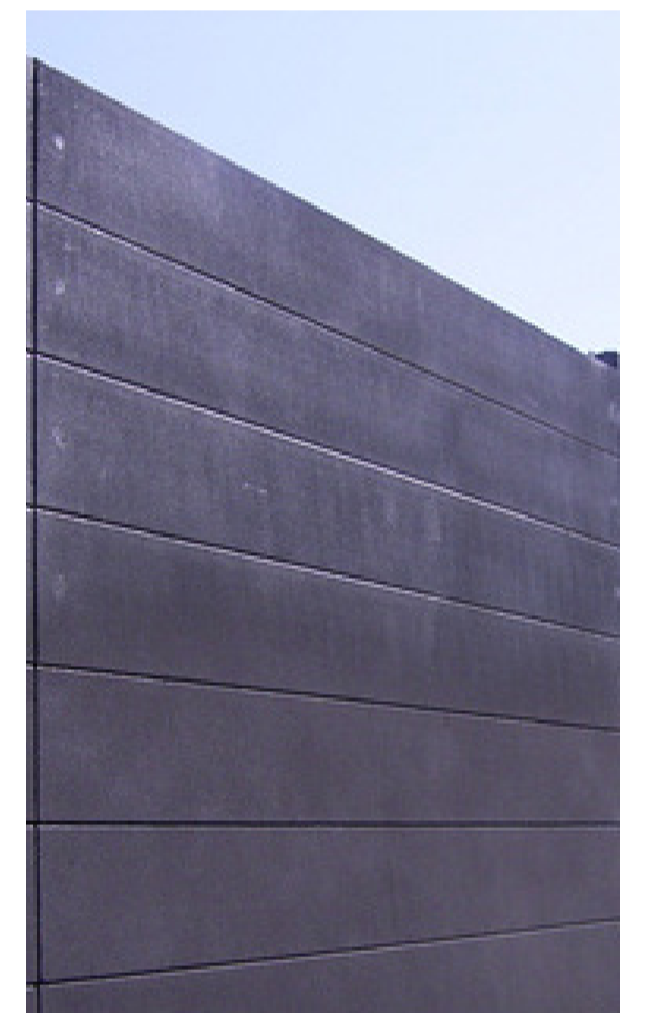
Bike racks



WALLS



Hebel noise walls



SAFETY



Tactiles



Stair Nosings

SOFTSCAPE + HARDSCAPE



Carpark Water Sensitive Urban Design (WSUD)

WATER SENSITIVE URBAN DESIGN



Water Sensitive Urban Design (WSUD) planting



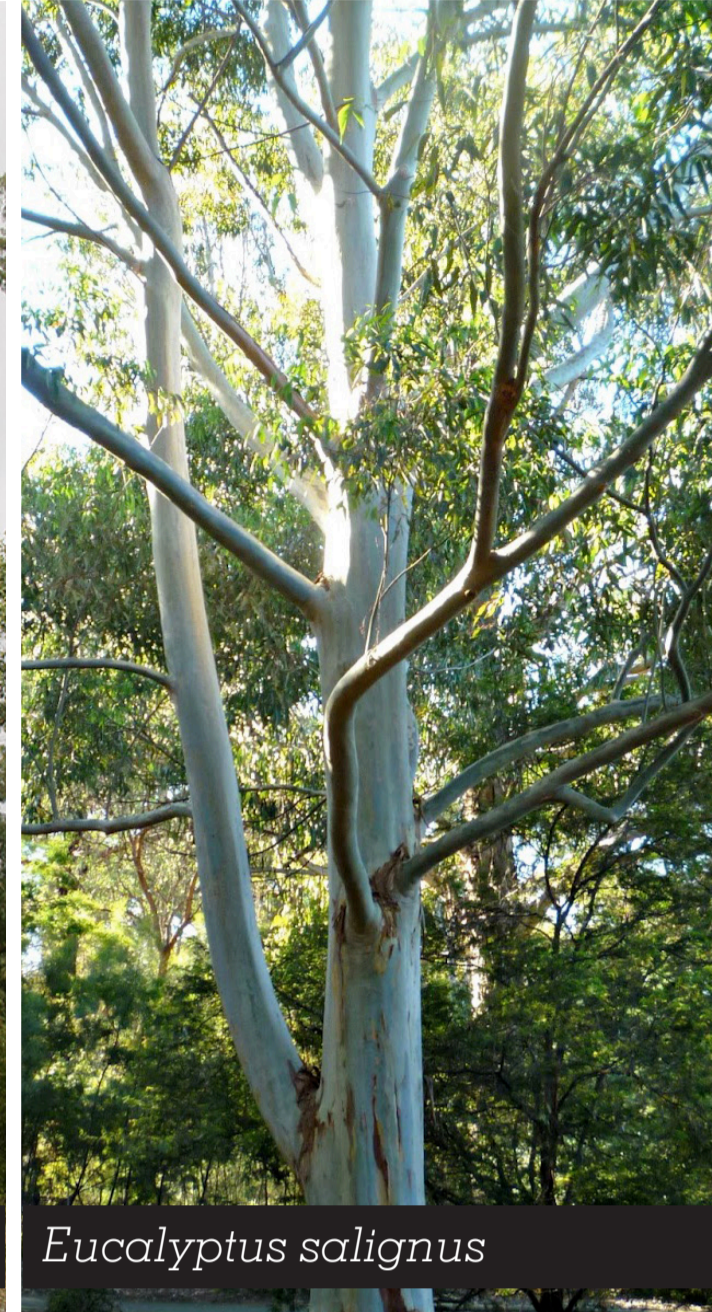
Water Sensitive Urban Design (WSUD) planting

Vegetation native to the Sydney Blue Gum Mesic High Forest and Swamp Mahogany forest were chosen due to their predominance of natural forest types in the area (as well as *Melaleuca biconvexa*). These forests' species are the ones most likely to thrive in the area. The selected species are low maintenance, many will be grown from seeds collected before the site is cleared. They will be used to strengthen the forests on the site and provide the landscape buffering and integration media.

TREES & PALMS



Eucalyptus robusta



Eucalyptus salignus



Elaeocarpus reticulatus



Livistonia australis



Glochidion ferdinand



Melaleuca biconvexa



Melaleuca linariifolia

SHRUBS & ACCENTS



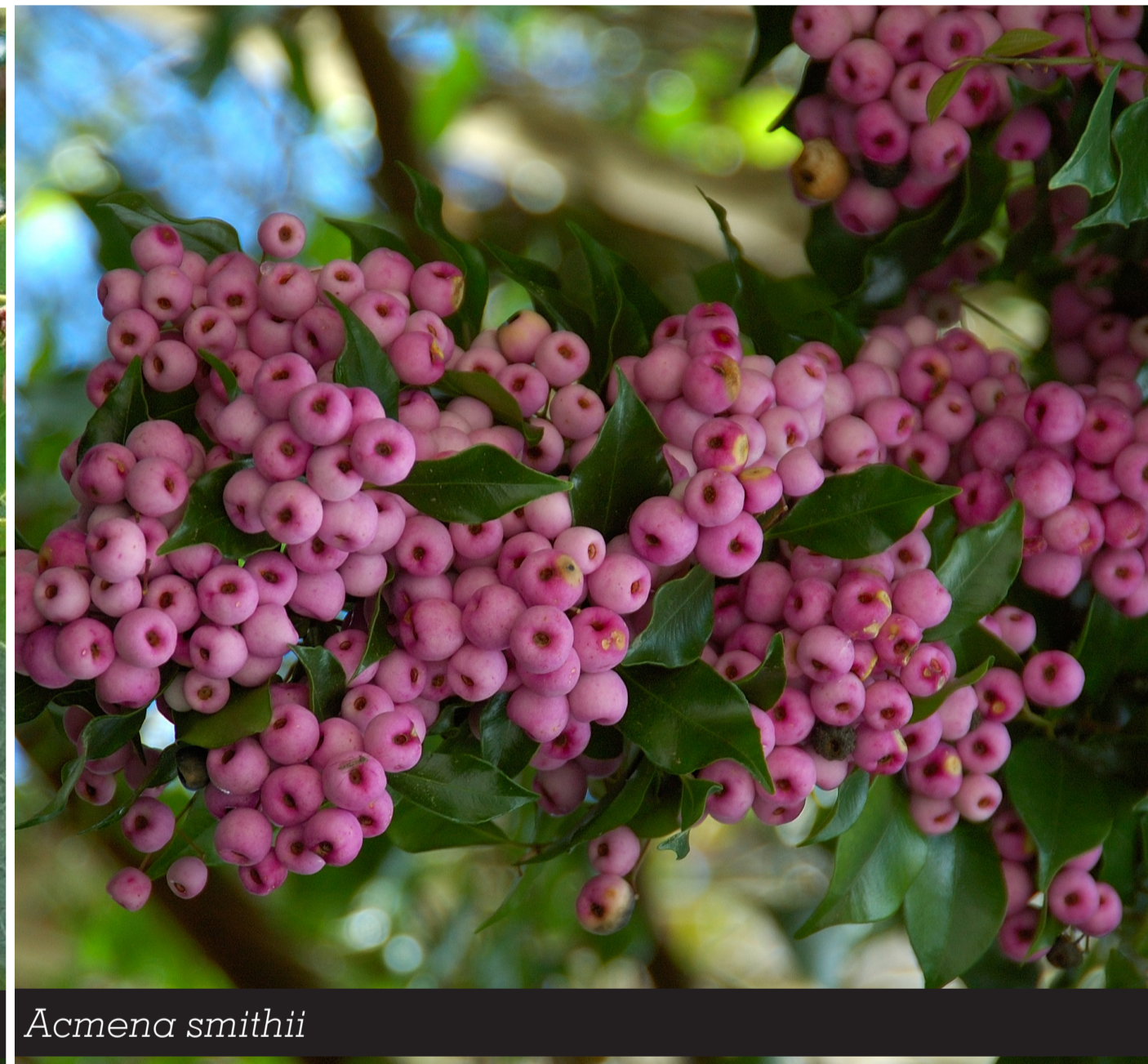
Acacia longifolia



Dodonaea triquetra



Breynia oblongifolia



Acmena smithii



Melaleuca sieberi



Ficus coronata

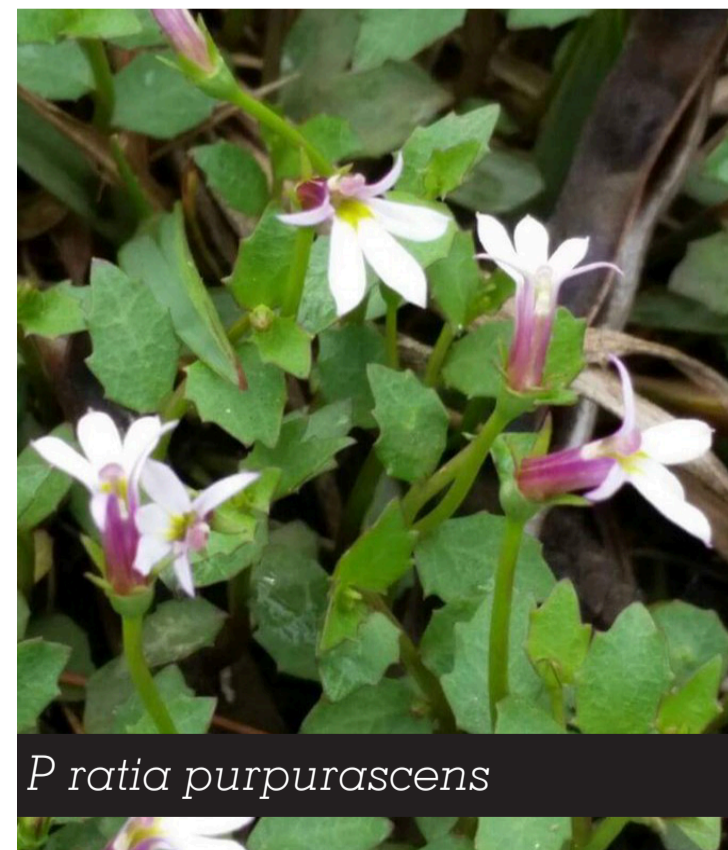


Banksia spinulosa

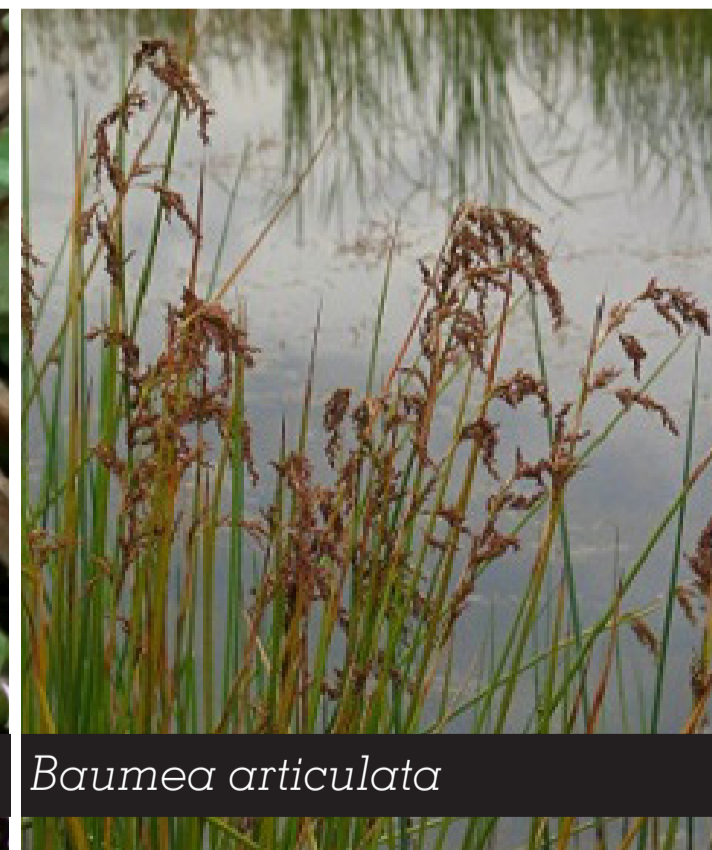


Leptospermum polygalifolium

GRASSES & GROUNDCOVERS



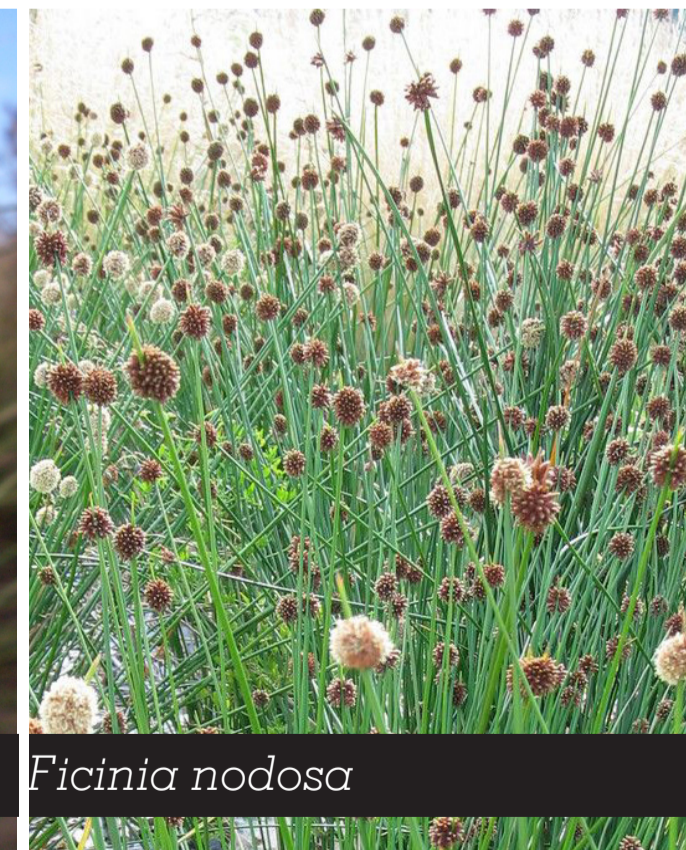
P ratia purpurascens



Baumea articulata



Carex appressa



Ficinia nodosa



Viola hederacea



Lomandra longifolia



Themeda australis



Dianella caerulea