The Gables New Primary School

Gables (Box Hill North)

Schematic Design Report

Prepared for	Prepared by	Date
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GABLES PRIMARY SCHOOL, BOX HILL NORTH

Landscape Schematic Design Report

Project Number: S22-028
Project Address: Lot 301 Fontana Drive, Gables (Box Hill North), NSW 2765

Rev	Issue	Date	By	Checked
A	Draft	20/09/2024	FC/SC	KS
B	Final	16/10/2024	FC/SC	KS
C	Final	08/11/2024	FC/SC	KS
D	Final	13/11/2024	FC/SC	KS
E	Final	21/11/2024	FC/SC	KS

OCULUS acknowledges the traditional owners of the lands on which we work. We pay our respects to Elders past and present.

Contents

1.0
Introduction

1.1 Introduction

This schematic design report has been prepared by OCULUS on behalf of NSW Department of Education (the Applicant) to assess the potential environmental impacts that could arise from the development of The Gables New Primary School at Lot 301 DP 1287967 on Fontana Drive, Gables (the site).

This report has been prepared to provide schematic landscape design framework to The Gables New Primary School development outlining the overall design intent and vision for the school landscape, highlighting how the proposed outdoor spaces will meet the functional, educational, and aesthetic goals of the project, whilst taking into consideration site context and conditions, relevant regulations and guidelines, connecting with country approach, and masterplanning/future development of the area.

This report accompanies a Review of Environment Factors that seeks approval for the construction and operation of a new primary school at the site, which involves the following works:

+ Construction of school buildings, including learning hubs, a school hall and an administration and library building.
+ Construction and operation of a public preschool.
+ Delivery of a sports court and fields.
+ Construction of car parking, waste storage and loading area.
+ Associated site landscaping and open space improvements.
+ Associated off-site infrastructure works to support the school, including (but not limited to) services, driveways and pedestrian crossings.

For a detailed project description, refer to the Review of Environmental Factors prepared by Ethos Urban.

Site Description

The site is located on Cataract Road, Gables, within The Hills Local Government Area (LGA), approximately 50km northwest of the Sydney CBD and 10km north of the Rouse Hill Town Centre. It comprises one lot, legally described as Lot 301 DP 1287967, that measures approximately 2.2ha in area. The site is bound by Pennant Way to the north, Cataract Road to the east, Fontana Drive to the west and a vacant lot to the south.

An aerial image of the site is shown at Figure 1.

Statement of Significance

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

+ The extent and nature of potential impacts relating to bushfire are low, and will not have significant adverse effects on the locality, community and the environment;
+ The extent and nature of potential impacts relating to flooding are low, and will not have significant adverse effects on the locality, community and the environment;
+ The extent and nature of potential impacts relating to the restrictions on tree and shrub planting from the Planning for Bush Fire Protection (NSW RFS, 2019) guidelines, affecting provision of shade, and the reduction of the urban heat island effect is low, and will not have significant adverse effects on the locality, community and the environment;
+ Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community.

Figure 1 Site Aerial
Source: Nearmap, edits by Ethos Urban

2.0
REF Reporting Requirements

2.1 REF Reporting Requirements

Item	REF Requirement	Relevant Section of Report
01	Detail the size of the landscaped area, strategy of proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage	Section 6.2, 6.7, 7.2, 7.3, 7.4, 9.1
02	Detail the inclusion of native vegetation communities that occur (or once occurred) in the locality and the use of local provenance species (trees, shrubs and groundcovers)	Section 4.4, 6.7, 9.1
03	Provide evidence that opportunities to retain significant trees have been explored and/or informs the plan	Section 4.8, 7.2
04	Consider equity and amenity of outdoor play spaces	Section 6.2, 6.4, 7.1
05	Demonstrate how the proposed development would address the relevant landscaping requirements within the Hills Shire Council's DCP	Section 6.2
06	Demonstrate how the proposed development would: - contribute to long term landscape setting in respect of the site and streetscape - mitigate the urban heat island effect and ensure appropriate comfort levels on-site - contribute to the objective of increased urban tree canopy cover including the replacement any trees that are removed at a ratio of greater than 1:1 and the planting of advanced sized trees - maximise opportunities for green infrastructure, consistent with Greener Places	Section 6.2, 6.7, 7.2, 7.3, 7.4
	Refer to The Hills Shire Council SEARs response:	
07	Provide fully detailed Landscape Plans in accordance with the relevant Development Control. Plans are to be prepared by a suitably qualified landscape architect or landscape designer, providing high quality landscaping and indicating:	
07a	Trees to be retained and removed	Section 7.2
07b	Surface finishes, proposed levels, and existing levels (including existing contours) past the site boundary to illustrate how the site interfaces with the existing	Section 6.2, 6.4, 6.5, 6.6, 7.1
07c	RLs provided to all areas of hard surface, such as along paths and at the top and bottom of ramps	Section 6.4, 6.5, 6.6, 7.1
07d	Top of Wall (TOW) heights and existing levels for all proposed retaining walls and raised planting beds. Wall height is to provide sufficient soil depth where planting is on slab. Wall finish and materiality is to be specified	N/A
07e	Fully detailed planting plans indicating individual species locations on plan and in planting schedule including name, size and quantities	Section 6.7, 9.1
07f	Landscape areas are to have a minimum width of 2m	Section 6.2
07g	Use a mix of trees, shrub and groundcovers	Section 9.1
07h	Appropriate plant selection for the aspect and solar access	Section 6.7, 9.1
07i	Fencing details for the site, clearly showing the location, height and type of proposed fencing are to be provided to landscape plans	Section 7.2
07j	Garden edging to all beds, including to street boundaries	Section 9.2, 10.1
07k	Landscape screening to electrical substations	Section 6.2
08	'Outdoor parking areas are to be provided with two metre wide landscaping strips: - Between rows served by different aisles - Between spaces at a rate of one in every ten car parking spaces.' 'Outdoor parking areas are to be screened by a minimum of two metre wide landscaping strips. Such landscaping is to be of a mature and dense nature.' THDCP Part C Section 1 – Parking Clause 2.8 (a)(b) and THDCP Part C Section 3 – Landscaping Clause 3.12 (a)(c) 'Shade trees are to be provided within landscaping strips.' THDCP Part C Section 1 – Parking Clause 2.8 (f) and THDCP Part C Section 3 – Landscaping Clause 3.12 (h)	Section 6.2
09	'Driveways are to be screened by a minimum of two metre wide landscaping strip on either side.' in accordance with THDCP Part C Section 3 – Landscaping Clause 3.12 Car Parking	Section 6.2
10	'Landscaping to side and rear boundaries should effectively screen the development' in accordance with THDCP Part C Section 3 – Landscaping - Chapter 3.1(c)	Section 6.2
11	Location of Stormwater to be coordinated with landscape designs to reduce conflicts with existing and proposed plantings	Refer Civil Report
12	Indicate the location and detail of letterboxes, fire services (boosters and substations) and fire egress paths which are to be integrated into the landscaping	Refer Architectural Report
13	Provide notes and details relating to mulch, soil depth, staking of trees etc. in accordance with THDCP Part C Section 3 – Landscaping Clause 3.6 (b)(c)(h)(i)(j)(o)	Section 10.1

3.0
Design Principles

3.1 Design Principles

1. Context, Built Form and Landscape

- Respond to site topography, orientation, and hydrological context.
- Address and respond to interface with riparian corridor to the east, and future open space/playing fields to the north of the site.
- Review and consider Aboriginal cultural heritage and cultural plantings in design development.
- Address and respond to interface with medium to low density residential developments to the west of the site.
- Develop a sense of identity and placemaking.

2. Sustainable, Efficient and Durable

- Develop and utilise durable, resistant, and adaptable materials and planting pallete.
- Integrate WSUD into the design.
- Consider and develop design elements to be adaptable with provision of potential future requirements of the school.

3. Accessible and Inclusive

- Develop clear circulation network hierachy including entries and through-site links that are safe, accessible, and welcoming with school grounds.
- Develop strong visual and physical accessibility and wayfinding legibility within overall school grounds.
- Consider and include inclusive equitable access throughout school grounds.

3.2 Design Principles

4. Health and Safety

- Respond to local access and connections – footpaths, cycleways, bus, kiss n' drop for safe access and circulation.
- Provide covered areas for protection from sun, rain, and wind.
- Ensure landscape design responds to Planning for Bushfire Protection requirements.

5. Amenity

- Provide diverse mix of outdoor learning areas, play spaces, and amenities.
- Ensure close interfaces between indoor and outdoor uses and spaces.
- Provide landscape buffers to setback zones for visual screening and noise mitigation.

6. Whole of Life, Flexible and Adaptive

- Provide capacity for multiple uses, flexibility and change of use over time.
- Provide adequate outdoor space to accommodate student population, including future growth.

7. Aesthetics

- Create engaging, considered, and attractive environments.
- Respond to the natural landscape setting of the site and broader context in terms of landscape character and materiality.
- Ensure landscape and building layout and design are integrated.
- Screen car parking and service zones.
- Minimise and integrate perimeter security fencing into the design.

3.3 Connection to Country

Collaboration with Traditional Knowledge Holders

Yarrawalk Pty Ltd was engaged by Architectus on behalf of Schools Infrastructure NSW, to undertake a Connecting with Country assessment for the development of The Gables (Box Hill) Public School.

A Connecting with Country report provides an opportunity for local Aboriginal culture to be included in the built form of the new development. The project team undertook a Walk on Country at the study area on the 9th February 2023 along with the traditional knowledge holders in attendance.

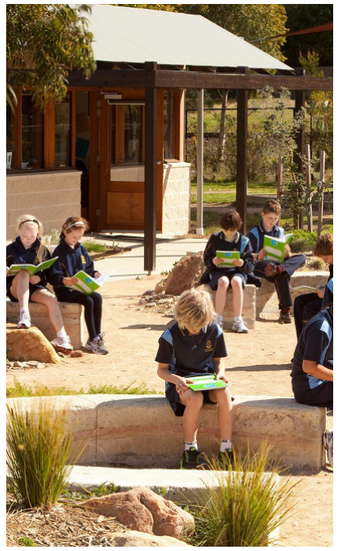
The primary purpose of this project, was for Yarrawalk to:

- Consider cultural connection to the landscape of the site where the development is to take place.
- Document the cultural heritage of place through time.
- Recommend approaches for the architects and designers to incorporate Aboriginal cultural and connection to place in the design and build of the new development.

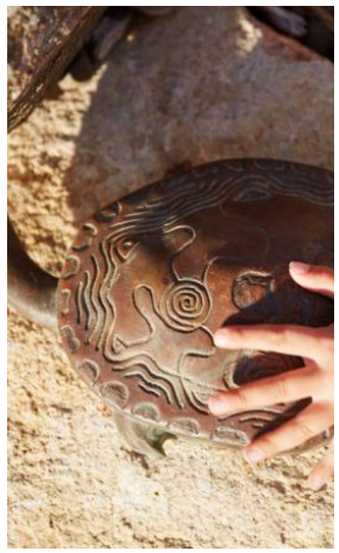
Connecting with Country Landscape Response

From the consultation process with traditional knowledge holders and Yarrawalk, OCULUS have further developed a preliminary design approach as a response:

- A series of interconnected meandering yarning circles integrated with outdoor learning spaces, amenities, and native/ edible gardens throughout the study area, with a focus on recycled materials.
- Interactive and accessible native community gardens on the outer edge of the study area with a focus on drawing pollinators, promotion of biodiversity, and community engagement.
- Consideration of spaces as an inclusive, interactive, and sensory experience involving sight, sound, smell, taste, and touch.
- Natural colour palettes, reflective materials, and curvature in design expressions.
- Darug motif inspired playspaces.
- Grinding groove motif.
- Reconciliation memorial.
- Increase in overall tree canopy, specifically tall leafy trees to outdoor open landscape spaces to both increase overall shade coverage across the study area and reintroduce lost habitat for local avifauna to encourage return to the area - in relation with latest bushfire consultant advice.

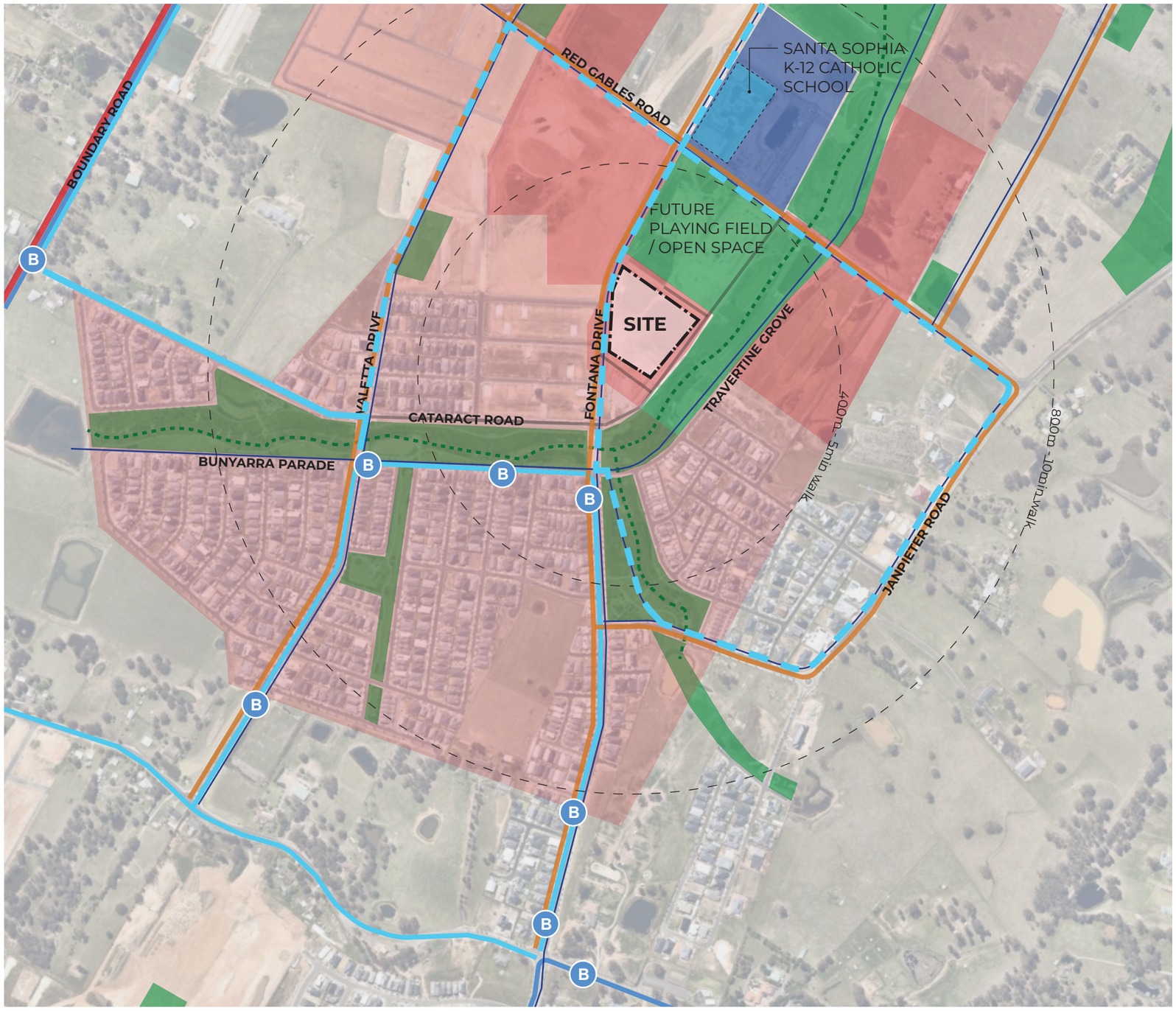




4.0
Site Analysis

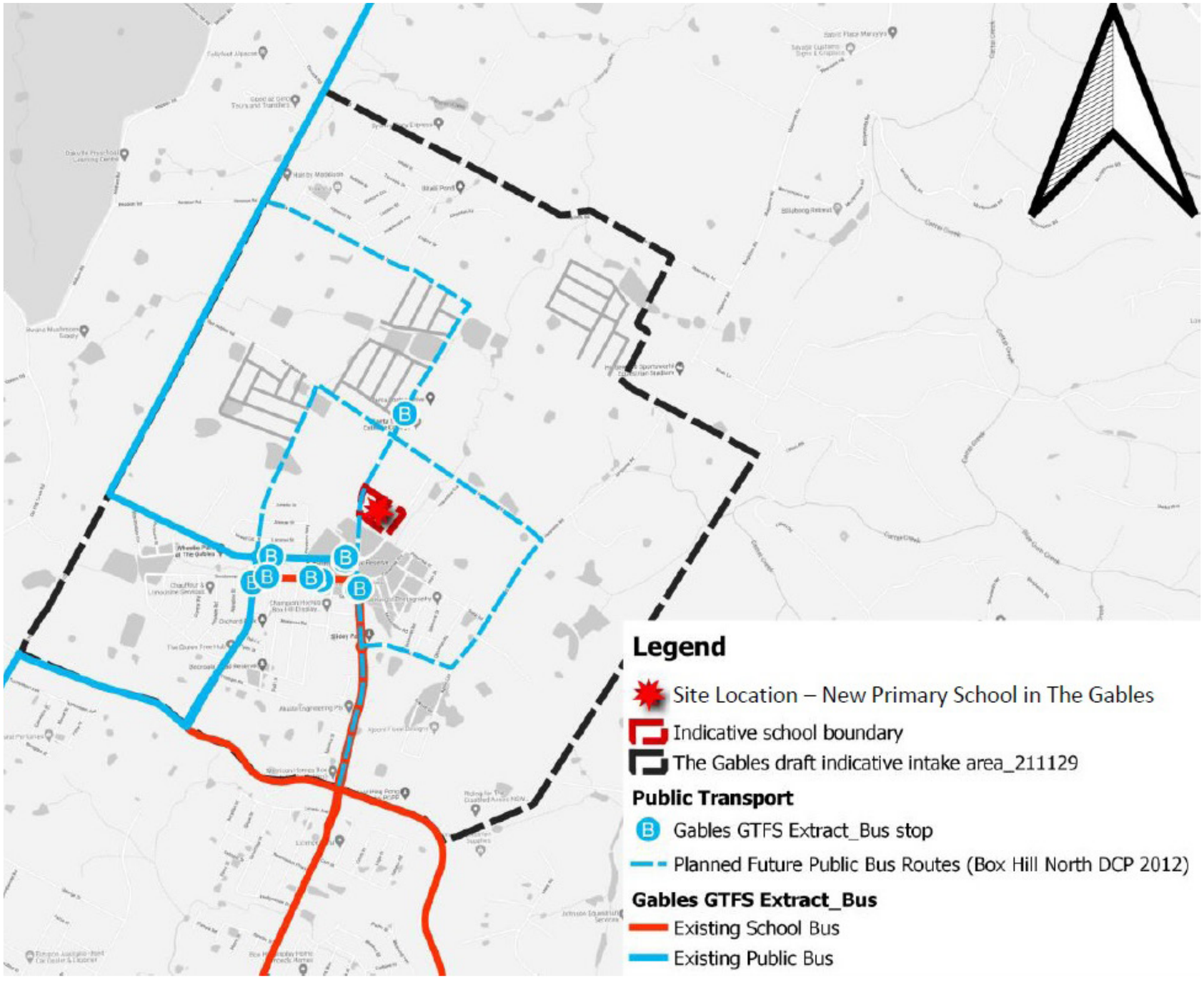
4.1 Site Context & The Gables Community Masterplan



Legend

- Site area
- Open space / parkland
- Public bus route and stop
- School bus route and stop
- Future school bus route
- Arterial / sub-arterial road
- Creek / Riparian waterway
- Non-government school
- Town Centre zoning
- R4 High density residential
- R3 Medium density residential

4.2 Transport Network & Connectivity

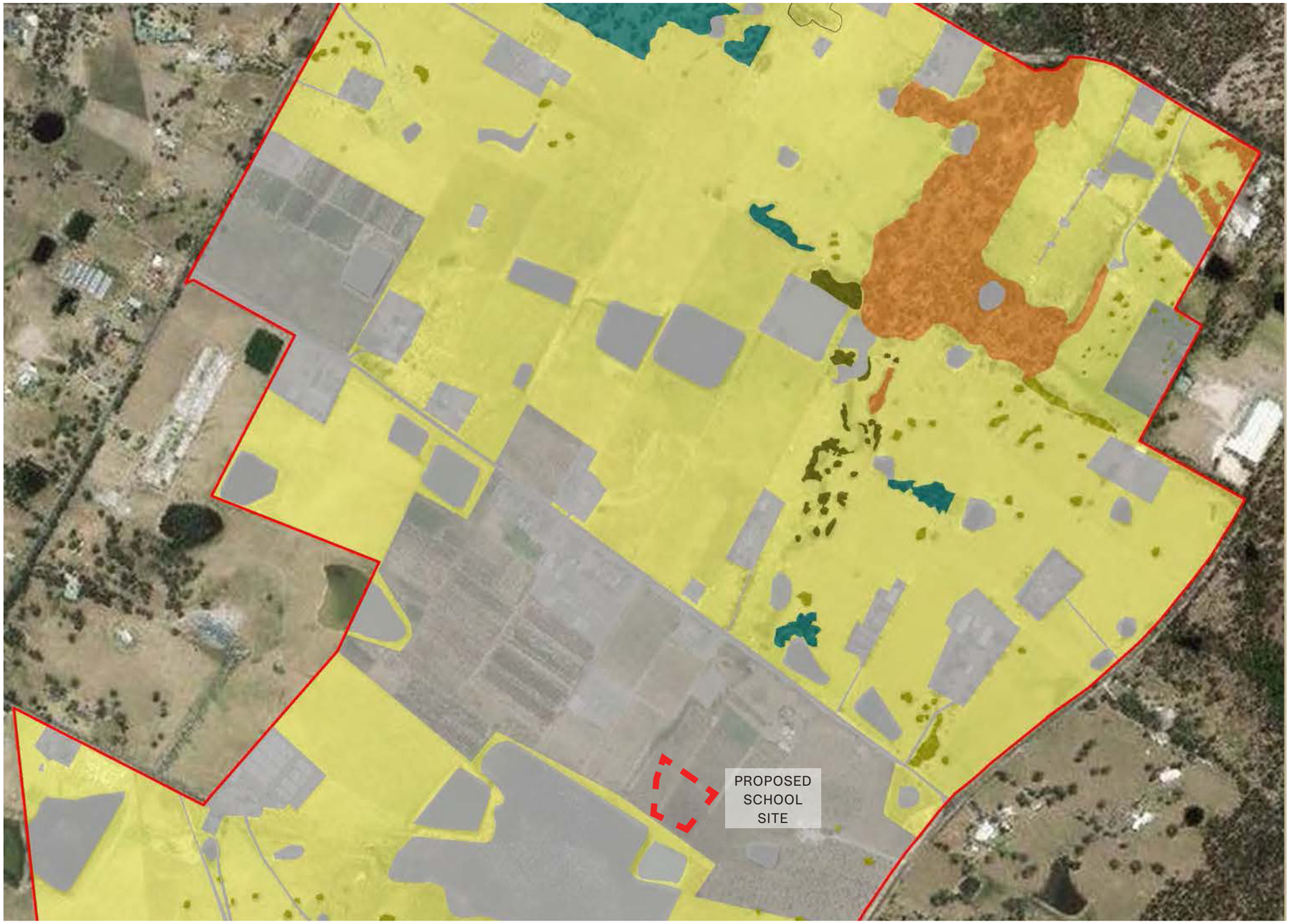


Existing and Future Public and and School Bus Routes

*Data sourced from TfNSW, Route and service frequency & Box Hill North DCP 2012, valid from 20 Dec 2021.

4.3 Topography & Hydrological Context

4.4 Ecology & Vegetation Communities



Remnant Vegetation Communities

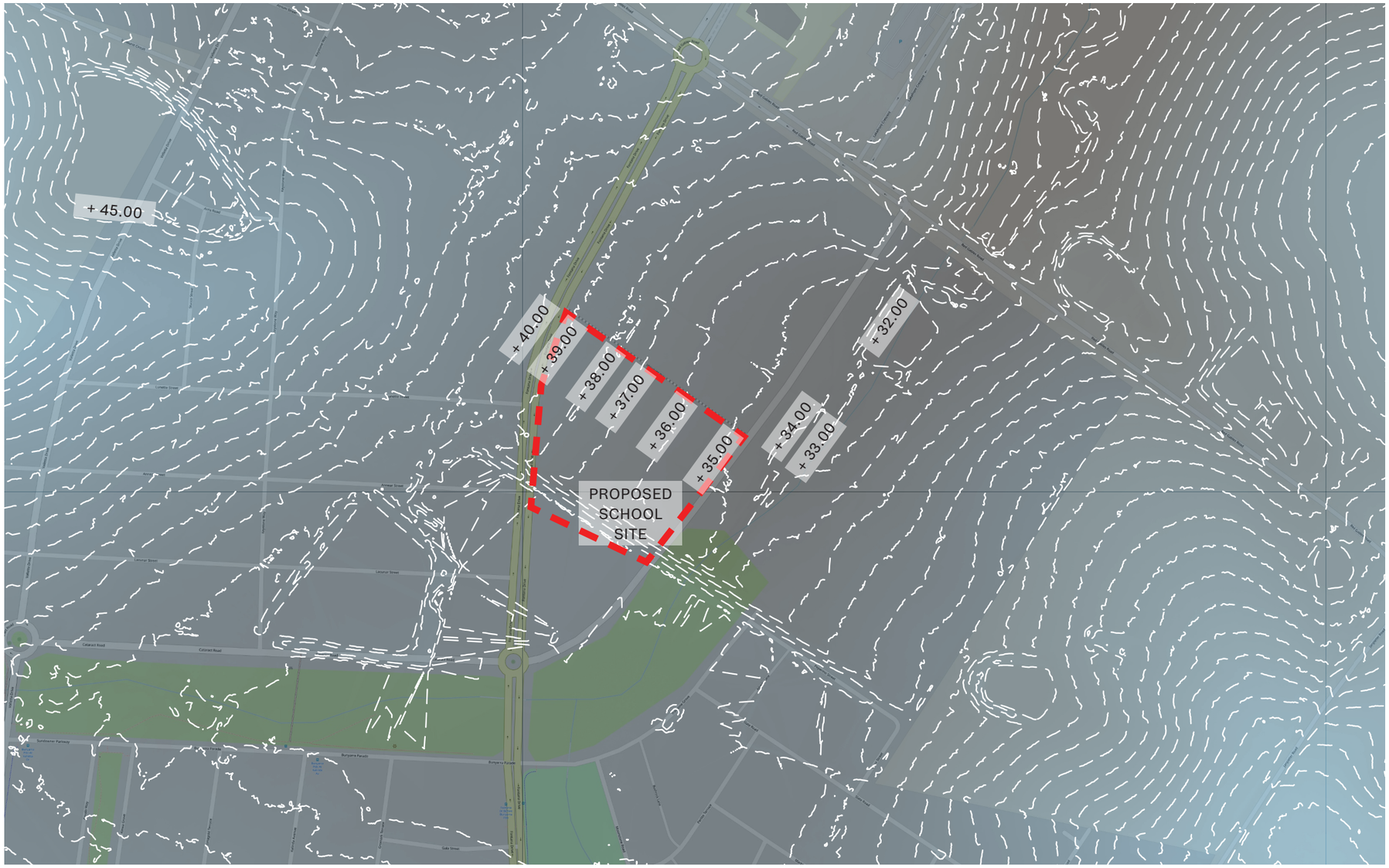
Remnant vegetation communities mapping of the Box Hill North as of 2015.

*Data sourced from Cumberland Ecology Box Hill North Masterplan Species Impact Statement and Vegetation Management Plan.

Legend

- Cumberland Plain Woodland
- Shale Sandstone Transition Forest
- Scattered Trees
- Exotic Vegetation

4.5 Site Topography

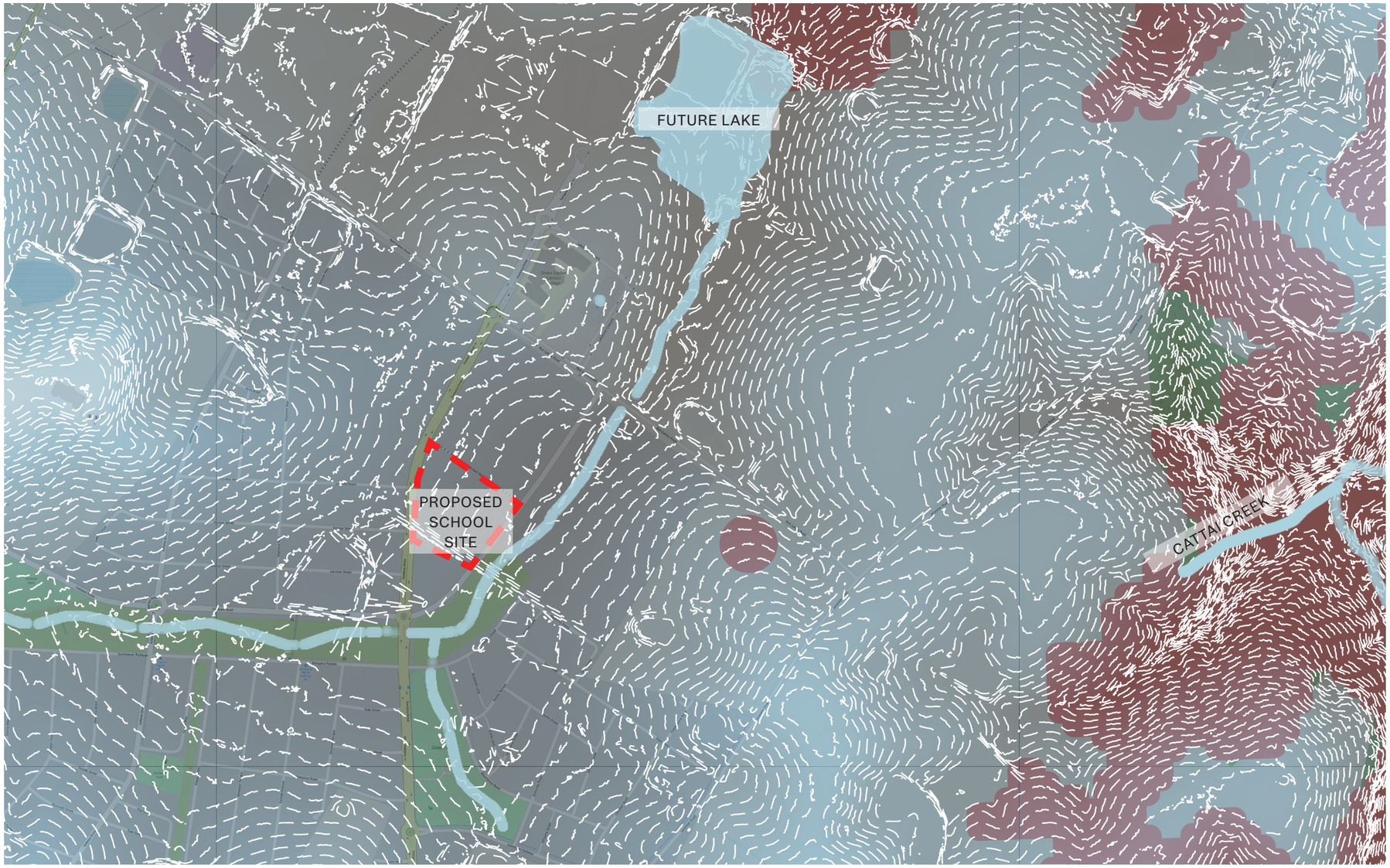


Topography

The site is sloped towards the riparian corridor to the southeast from a high point in the northwestern corner with an approximate 5m change in elevation across the site.

*1m Contour intervals, data sourced from ELVIS Spatial via QGIS.

4.6 Site Hydrology



Hydrology

The site is bounded to the east by the newly built riparian corridor along the eastern edge, which will connect to the constructed lake to the north adjacent the future town centre.

The site also sits adjacent to the High Ecological Value Waterway, Cattai Creek to the East.

*1m Contour intervals, data sourced from ELVIS Spatial via QGIS.

Legend

Waterways
(Sourced from Open Street Map)

High Ecological Value Waterways and Water Dependent Ecosystems
(Department of Planning and Environment, Seed map)

4.7 Site Landscape Character

View looking east across cleared site towards riparian corridor

Western edge interface with Gables estate development

Eastern edge interface with riparian corridor

New road under construction connecting Fontana Dr and Cataract Rd forming northern boundary of site extents

Existing Gables estate streetscape, bridge, and riparian corridor

View across site looking north towards Santa Sophia College

4.8 Remnant Vegetation Communities

Ecological Context

The site is cleared of native vegetation and dominated by exotic grasses. The vegetation profile of the surrounding area is dominated by regenerating patches of open forest and woodland at various stages of canopy regeneration. These comprise of patches of Cumberland Plains Woodland and Shale Sandstone Transition Forest.

Critically Endangered Ecological Communities

The site is adjacent to remnant Cumberland Plain Woodland and Shale Sandstone Transition Forest which are listed as critically endangered ecological vegetation communities under both the Threatened Species Conservation Act 1995 and Environment Protection and Biodiversity Act 1999.

Two areas of significant ecological value, Scheyville National Park and Maguires Road Priority Conservation Area occur near the area. Scheyville National Park is located approximately 500m from the western boundary of the site. This National Park includes large areas of remnant Cumberland Plain Woodland and provides habitat for a range of threatened flora and fauna known from the locality.

Design Considerations

- Protecting and enhancing areas of remnant native vegetation and bushland where possible.
- Encouraging connections with site biodiversity and study of ecology.
- Establish green connection to adjacent riparian corridor development.
- Creating visual and physical connections to the adjacent riparian corridor and open space sports fields and town centre.
- New planting on site to focus on native vegetation types relevant to area and to maximise shade provision opportunities.

Image: Site images of cleared landscape.

Image: Site image looking north across to Santa Sophia Catholic College

Image: Site image of riparian corridor interface to the east

Image: Site image of western interface with adjacent Gables estate development

5.0
Accommodation

5.1 EFSG Requirements

Landscape Typologies

The masterplan provides a range of open spaces to facilitate student's learning, physical activity, socialising and wellbeing. Relationships and adjacencies of uses and circulation patterns have been considered between indoor and outdoor spaces to ensure the smooth operation and use of all areas.

While meeting the functional criteria for the school, the landscape should also reflect the local character of the area, increase tree canopy cover and vegetation, and create a comfortable and inspiring environment for students, staff and visitors.

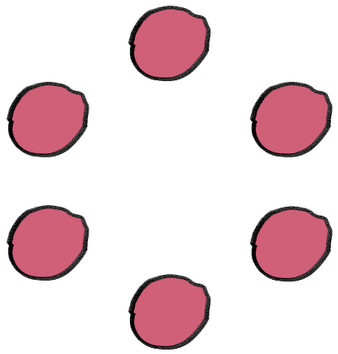
Accommodation Summary

The masterplan needs to accommodate the EFSG requirements for open spaces of a Core 35 Primary School. The requirements for Core 35 are shown in the table below.

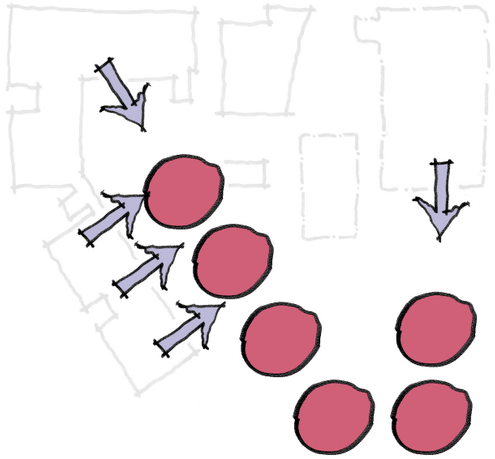
	ESFG Unit ID	Facility Name	Requirement
	PS501.01	Covered Outdoor Space (COLA)	364.5m²
	PS501.04	Assembly Court	630 m²
	PS501.05	Games Court	576 m²
	PS501.06	Open Play Space	10 m² per student (10,000 m²)
	PS501.08	Bike Parking	106 spaces (per traffic consultant)
	PS102.12	Support Unit Outdoor Learning Area (SUOLA)	135m²
	PS203.17	Garden Storage Room	13m²
		Preschool Outdoor Play Area	294m²
		Preschool Covered Outdoor Play Area (COPA)	126m²

6.0
Concept Design

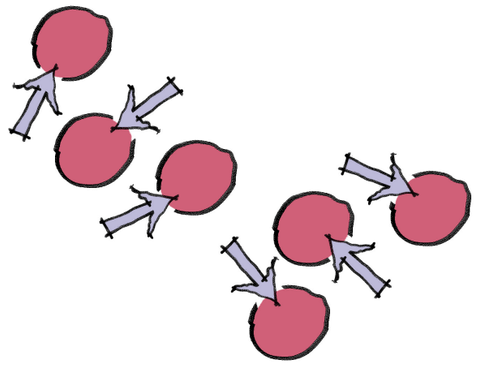
6.1 Site Narrative



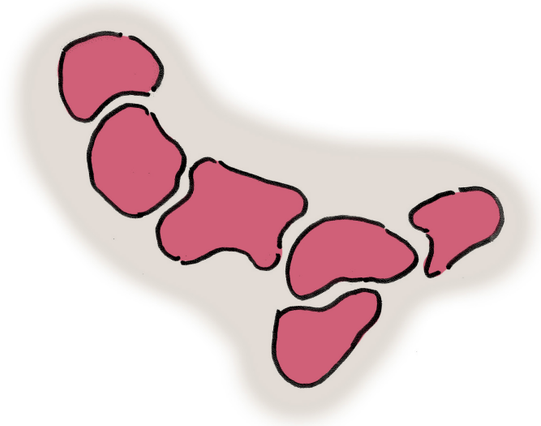
OUTDOOR LEARNING
AREAS & YARNING
CIRCLES LOOP



INTERACTION & RESPONSE
TO SITE & FORM



MEANDERING PUSH & PULL



CONNECTIONS &
PROGRAMMING

6.2 Landscape Concept Design

LEGEND

1. Integrated Outdoor Learning Area / Yarning Circle
2. Bush Tucker Productive Garden / Buffer Planting
3. Dharug Country Inspired Nature Play Playground
4. Passive Open Space Central Lawn
5. Assembly Court
6. Outdoor Kitchen & Amenities / Educational Space
7. Grinding Groove Educational Space
8. Perimeter Buffer Planting
9. Games Court
10. Car Parking & Access
11. Bike Parking
12. Dry Creek Bed
13. WSUD Bioswale
14. WSUD Car Park Raingardens
15. Existing Footpath Widened to Kerb, Existing Tree Pit & Street Trees Retained

Potential Reconciliation Artwork / Motifs Series

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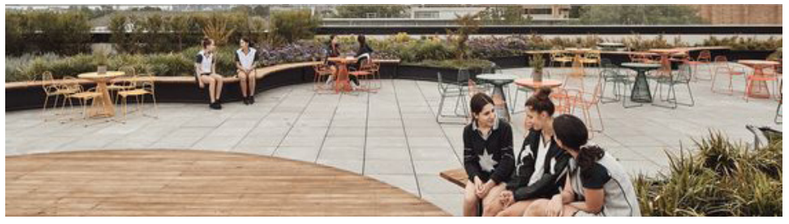
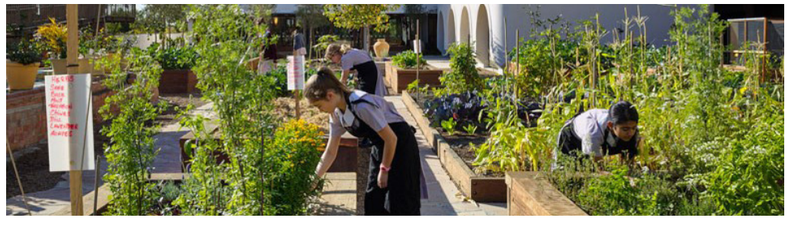
10 0m 10 20 50m

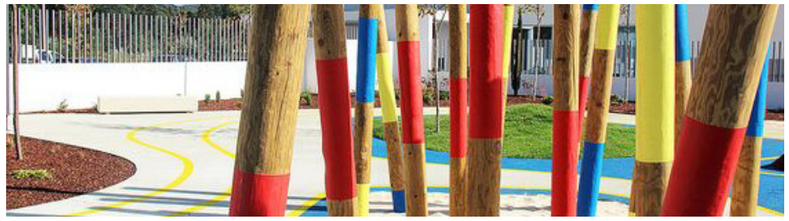
6.3 Landscape Concept Design



1 Integrated Outdoor Learning Area / Yarning Circle



2 Bush Tucker Productive Garden / Buffer Planting / Perimeter Planting



3 Dharug Country Inspired Nature Play Playground

6 Outdoor Kitchen & Amenities / Educational Space

7 Grinding Groove Educational Space / Reconciliation Artworks & Motifs

6.4 Levels Plan

LEGEND

+RL 38.00	Proposed Levels
+EX 38.00	Existing Levels
	Existing Contours

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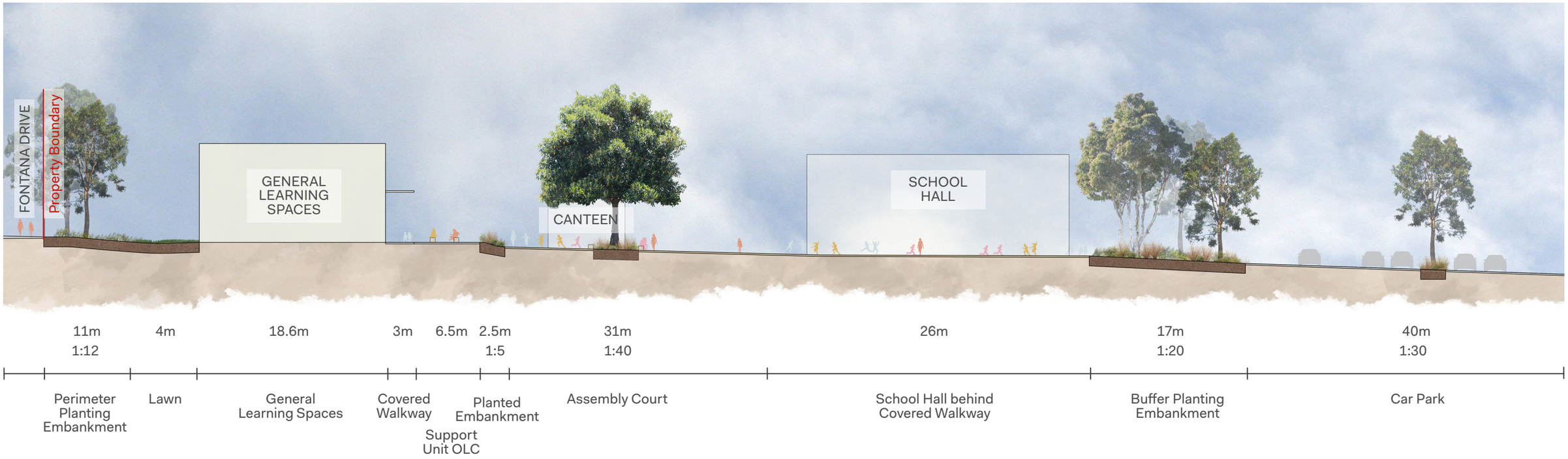
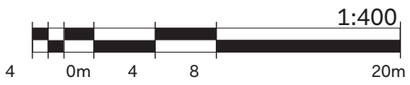
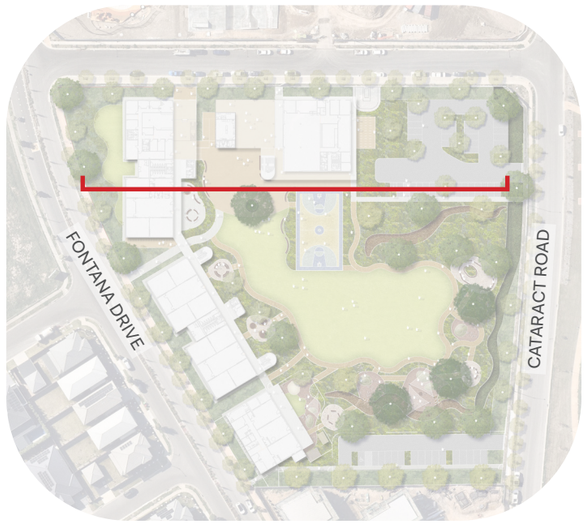
10 0m 10 20 50m

6.5 Landscape Sections



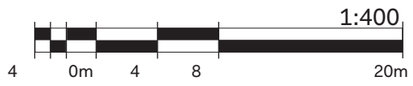
East-West Section Through Assembly Court & Car Park

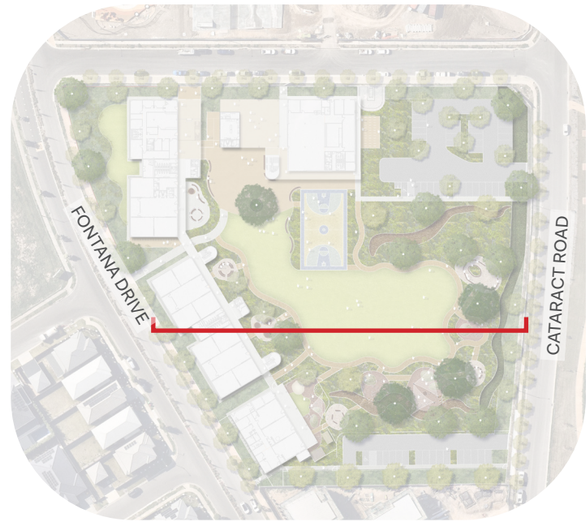




6.6 Landscape Sections

East-West Section Through Outdoor Learning Area & Lawn





6.7 Planting Plan

LEGEND

- Proposed Tree Planting
- Existing Street Trees
- Existing Street Trees To Be Removed (Subject to a tree removal permit to council)
- Buffer Planting Mix (Shrub planting limited to 10% of total mix only)
- Buffer Planting Mix - Groundcovers Only
- Bush Tucker Productive Garden Planting Mix (Shrub planting limited to 10% of total mix only)
- Perimeter Planting Mix (Shrub planting limited to 10% of total mix only)
- Perimeter Planting Mix - Grass/Groundcovers Only
- WSUD Raingarden/Bioswale Planting Mix

Planting Species Selection

All planting species have been selected from the recommended species list outlined in The Hills Development Control Plan (2012) and are indigenous species to The Hills Shire that occur within native vegetation communities and are to be of local provenance with exception of the bush tucker productive garden planting mix, which are native species.

Perimeter Tree Planting

Ap	Acacia parramattensis	Parramatta Green Wattle
Cm	Corymbia maculata	Spotted Gum
Er	Elaeocarpus reticulatus	Blue Berry Ash
Es	Eucalyptus saligna	Sydney Blue Gum

Buffer Tree Planting

Ac	Angophora Costata	Sydney Red Gum
Bs	Banksia serrata	Old Man Banksia
Er	Elaeocarpus reticulatus	Blue Berry Ash
Eh	Eucalyptus haemastoma	Scribbly Gum

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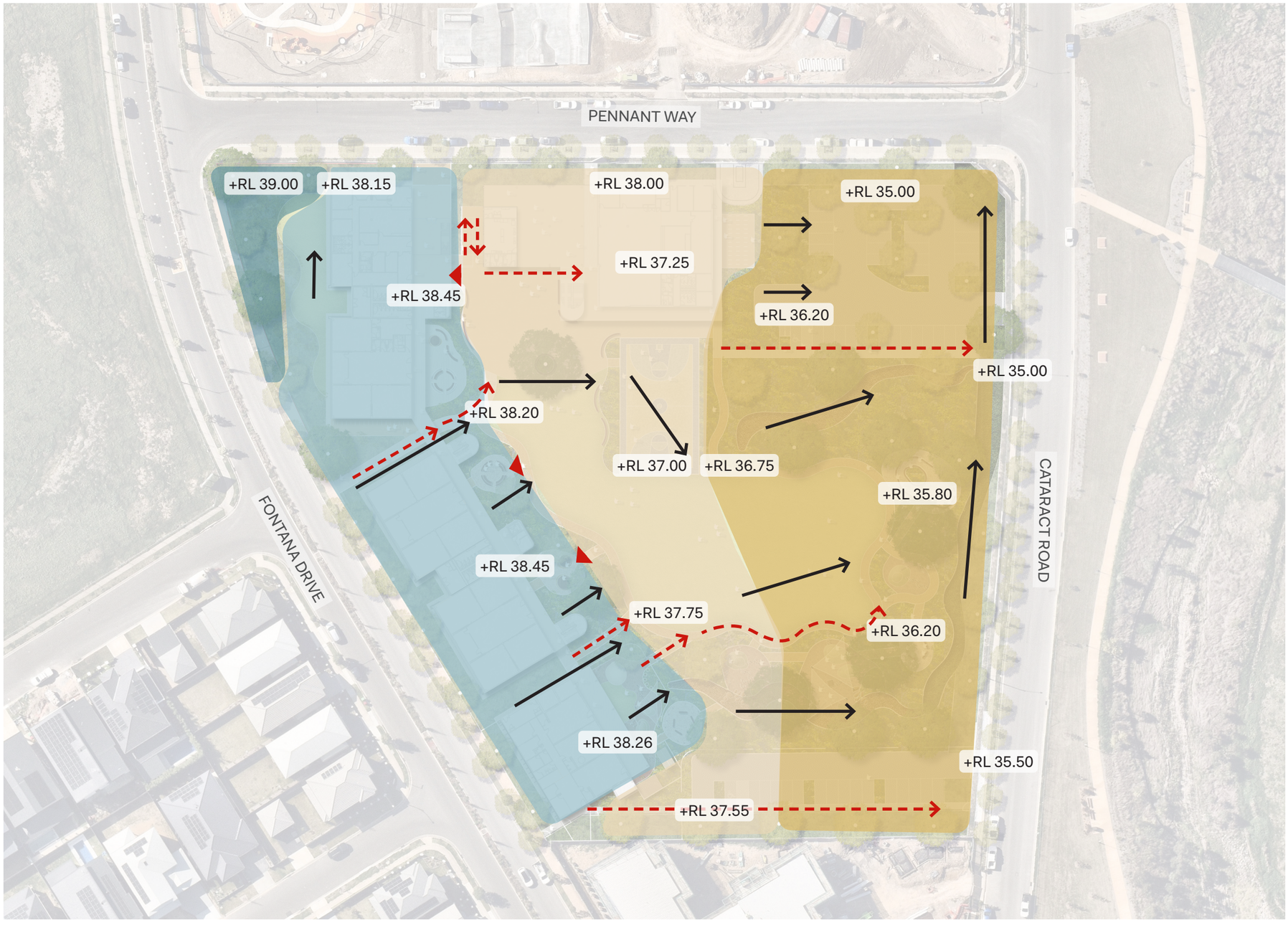
10 0m 10 20 50m

7.0
Strategies

7.1 Levels & Accessiblity



LEGEND

- RL 39.00+
- RL 39.00 - 38.00
- RL 38.00 - 36.75
- RL36.75 - 35.00
- Fall/Grade Down
- Graded Walkway Down
- Stairs Up

1:1000

10 0m 10 20 50m

7.2 Fencing Strategy

LEGEND

- Palisade Security Fence 2.15m
- Palisade Security Fence 1.8m
- Sports Fence 2.4m
- Pedestrian Swing Gate 2.15m
- Pedestrian Swing Gate 1.8m
- Sliding Vehicular Access Gate 2.15m

1:1000

10 0m 10 20 50m

7.3 Tree Canopy Coverage

Site Area: 22,127m²

Existing Trees Removed on Site: 0 no.

Existing Trees Retained on Site: 0 no.

Existing Canopy on Site: 0m²

Proposed Canopy Cover on Site: 3380m²

Total Tree Canopy Cover on Site: 3380m²

Coverage Rate: 15%

LEGEND

- Proposed Tree Planting
- Proposed Feature Tree Planting
- Proposed Perimeter Tree Planting

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7.4 Planting Strategy

LEGEND

- Buffer Planting
- Buffer Planting - Groundcover Only
- Bush Tucker Productive Garden Planting
- Perimeter Planting
- Perimeter Planting - Groundcover Only
- WSUD Raingarden/ Bioswale Planting

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7.5 Bushfire Protection Planting Strategy

Bushfire Protection

The landscape design for the school will need to comply with section A4.1.1 of the Planning for Bushfire Protection (NSW RFS, 2019). The car parks and loading area will create a break in tree and shrub canopy to further protect the buildings and main areas used by faculty and students from bushfire risk.

These will be addressed in detail in the Design Development phase.

A management regime will require to be put in place in order to:

- Control tree canopy growth to maintain separation between groups of trees and to buildings;

- Remove lower limbs up to a height of 2m above the ground when mature;

- Control shrub growth to maintain height and separation to buildings;

- Remove dead leaves, branches and other vegetation debris regularly to prevent a buildup of fuel load;

- Maintain turf grass to be kept mown to max 100mm in height.

The Hill's Development Control Plan (2012) outlines the requirement to plant shade trees to provide shade to not less than 40% of the car park area at maturity which is not met in the landscape design as this conflicts with the Planning for Bushfire Protection (NSW RFS, 2019) guidelines requiring less than 15% canopy cover of the site at maturity, with a minimum seperation of by 2 to 5m between canopies.

LEGEND

- Proposed tree planting, with canopy cover less than 15% of the site at maturity, seperated by 2 to 5m. Lower limbs should be removed up to a height of 2m above ground.
- Managed understorey planting with 10% shrubs, 90% groundcover mix. Clumps of shrubs to be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- Managed understorey planting with 0% shrubs, 100% groundcover mix.
- Managed natural turf. Kept mown, with no more than 100mm in height, and leaves and debris removed.

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7.6 WSUD Opportunities

LEGEND

- Car Park Raingarden
- Overland Bioswale
- Dry Creek Bed

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7.7 Circulation

LEGEND

- Primary Circulation
- Secondary Circulation
- Tertiary Circulation

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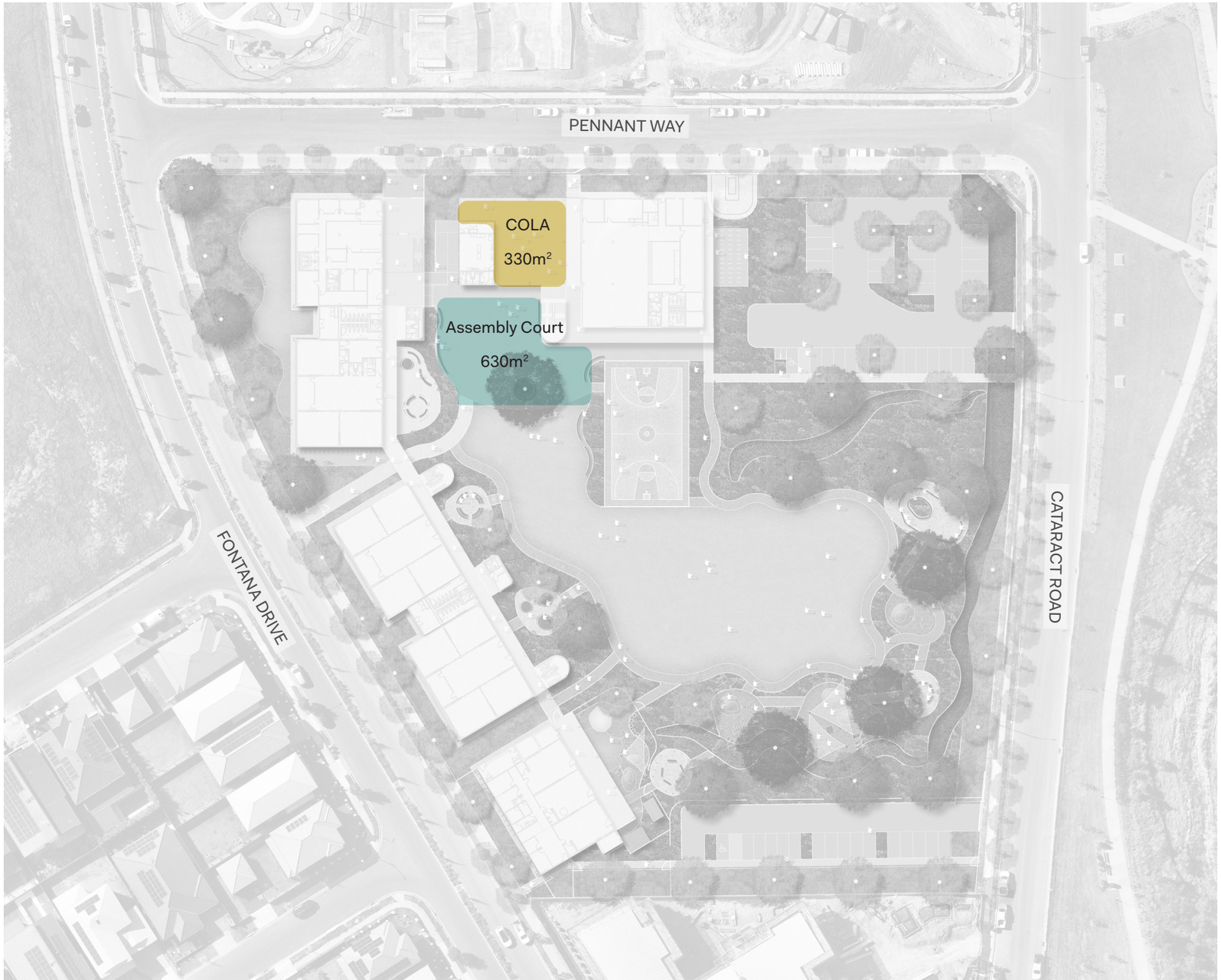
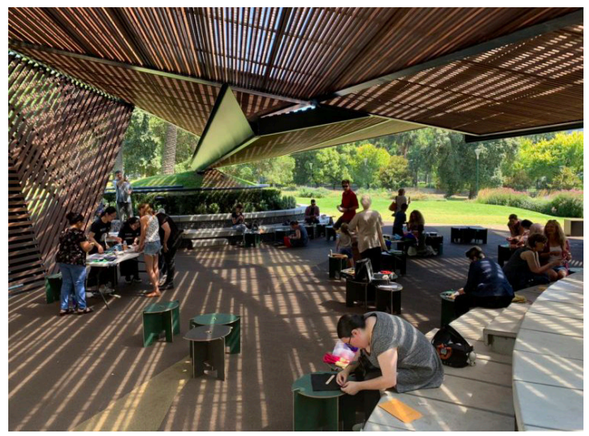
8.0
Open Space Typologies

8.1 Assembly Court & COLA





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8.2 Outdoor Learning

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8.3 Nature Play/Playground

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8.4 Games Court

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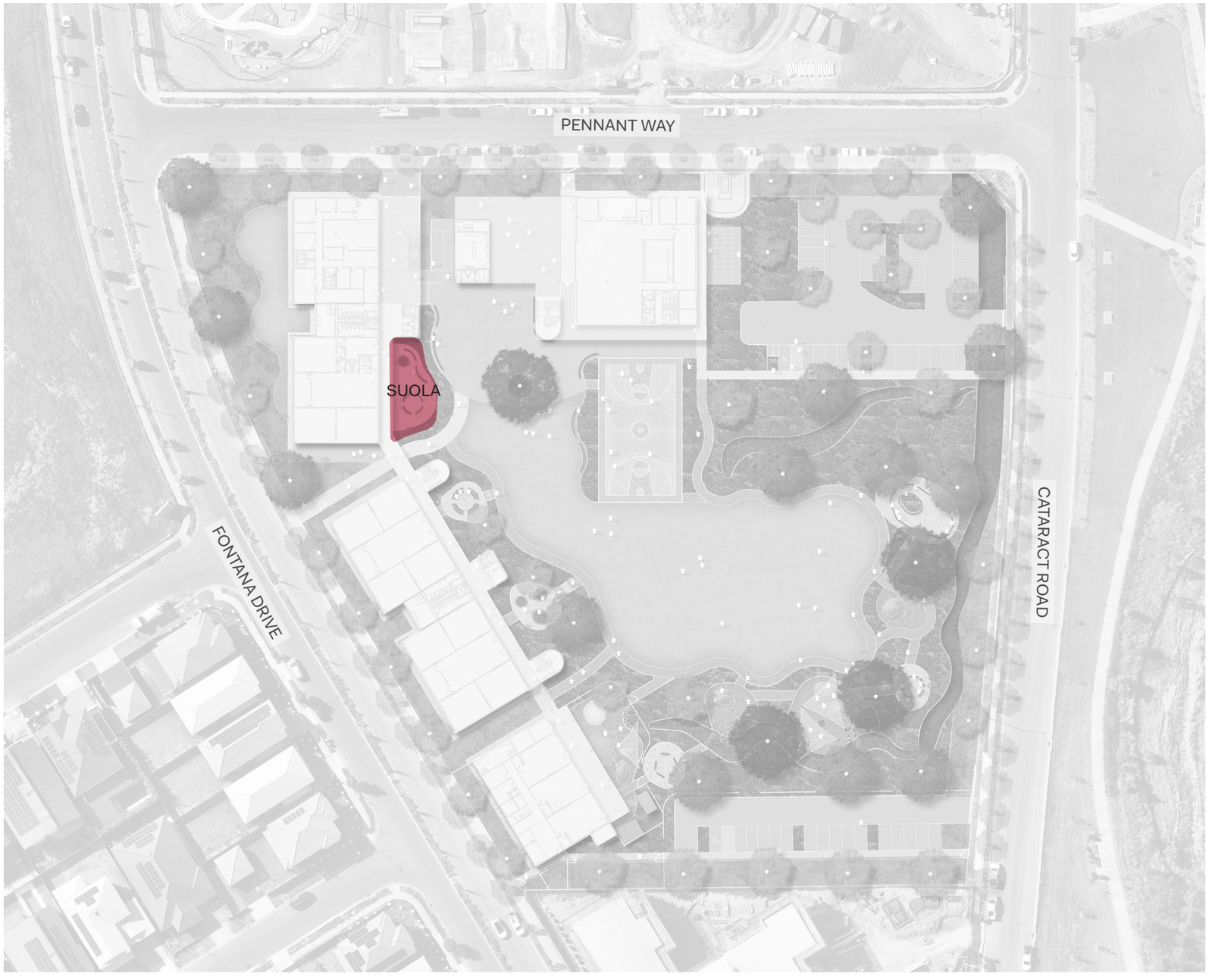
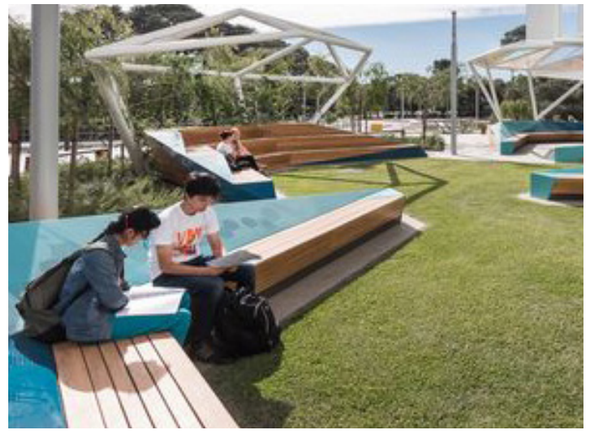
20 0m 10 20 50m

8.5 Support Unit Outdoor Learning Area (SUOLA)





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8.6 Preschool Outdoor Play Area & Covered Outdoor Play Area (COPA)

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8.7 Car Parks & Bicycle Parking

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8.8 Lawn

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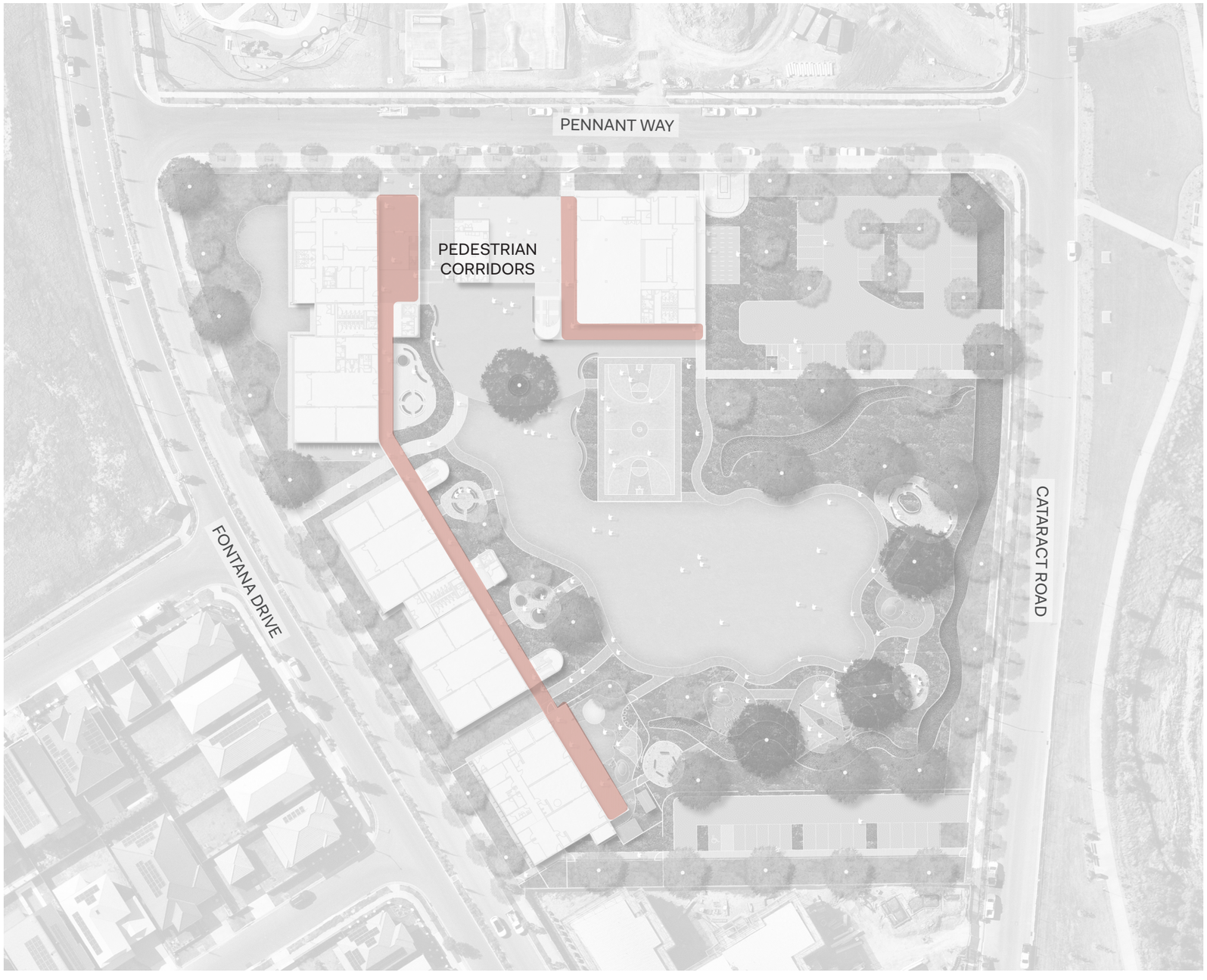
20 0m 10 20 50m

8.9 Pedestrian Corridors



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8.10 Passive Landscape

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8.11 Productive Gardens

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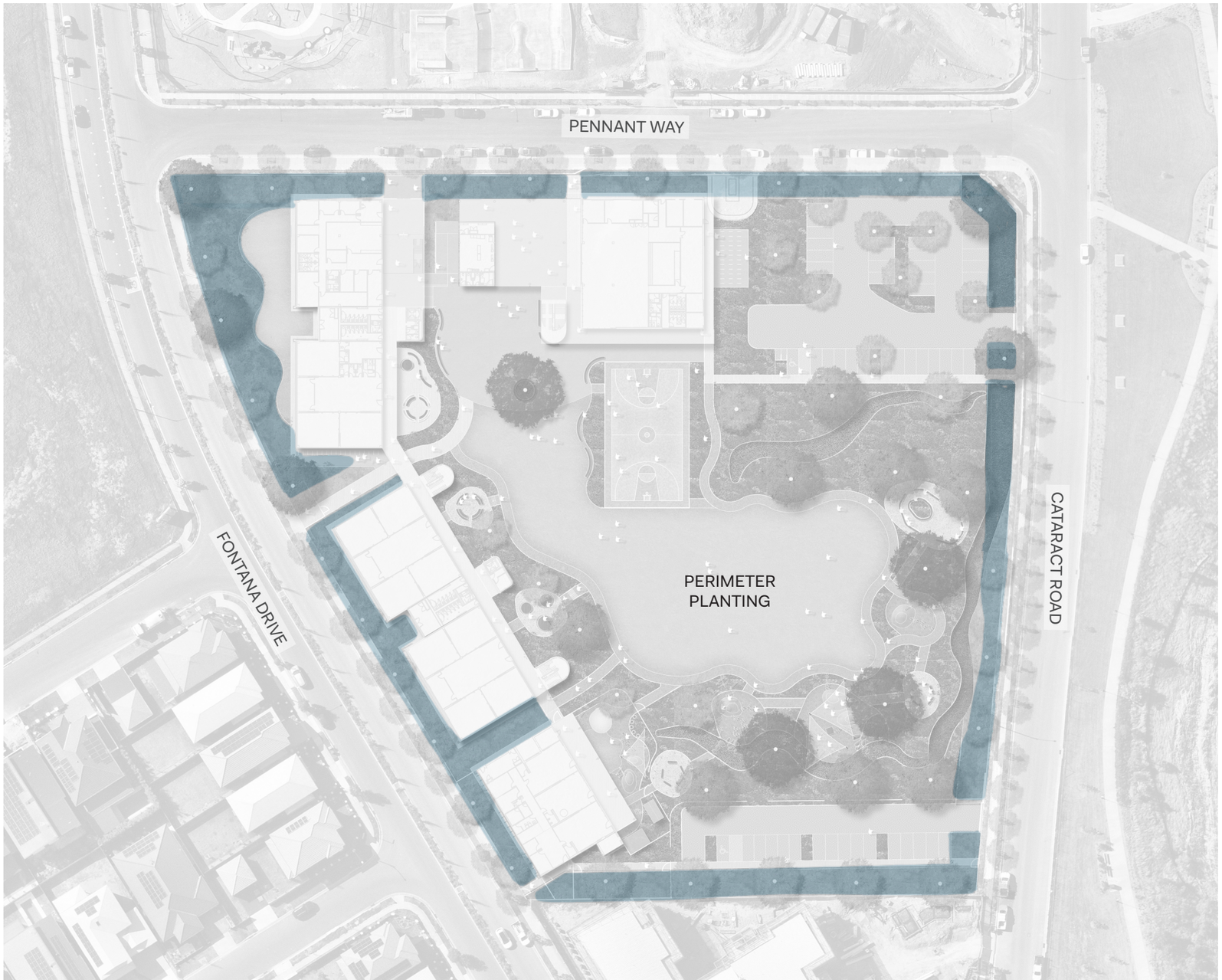
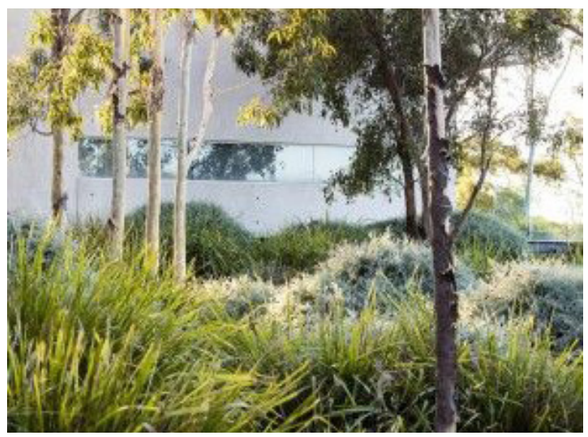
8.12 Perimeter/Buffer Landscape





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9.0
Planting Schedule & Materiality

9.1 Planting Schedule

Perimeter Planting Mix (Shrub planting limited to 10% of total mix only)

Code	Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Ap	Acacia parramattensis	Parramatta Green Wattle	Tree	10 x 8m	75L
Cm	Corymbia maculata	Spotted Gum	Tree	20 x 12m	100L
Er	Elaeocarpus reticulatus	Blue Berry Ash	Tree	10 x 7m	75L
Es	Eucalyptus saligna	Sydney Blue Gum	Tree	20 x 12m	100L
	Acacia longifolia	Sydney Golden Wattle	Small tree/Shrub	7 x 5m	70% 400mm / 30% tubestock
	Banksia spinulosa	Hair-pin Banksia	Small tree/Shrub	2 x 1m	70% 400mm / 30% tubestock
	Callistemon citrinus	Crimson Bottlebrush	Small tree/Shrub	4 x 3m	70% 400mm / 30% tubestock
	Callistemon salignus	Willow Bottlebrush	Small tree/Shrub	7 x 4m	70% 400mm / 30% tubestock
	Kunzea ambigua	Tick Bush	Shrub	4 x 2m	70% 200mm / 30% tubestock
	Lambertia formosa	Mountain Devil	Shrub	2 x 2m	70% 200mm / 30% tubestock
	Lomandra longifolia	Mat Rush	Grass	1 x 1m	70% 200mm / 30% tubestock
	Dianella caerulea	Blue Flax Lily	Groundcover	1 x 1m	70% 200mm / 30% tubestock
	Dichelachne crinita	Longhair Plume Grass	Grass	1 x 1m	70% 200mm / 30% tubestock
	Themeda australis	Kangaroo Grass	Grass	1 x 1m	70% 200mm / 30% tubestock
	Hardenbergia violacea	False Sarsaparilla	Shrub	2 x 3m	70% 200mm / 30% tubestock
	Lobelia purpurascens	White Root	Groundcover	0.5 x 2m	70% 200mm / 30% tubestock
	Viola hederacea	Native Violet	Groundcover	0.5 x 2m	70% 200mm / 30% tubestock

Buffer Planting Mix (Shrub planting limited to 10% of total mix only)

Code	Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Ac	Angophora costata	Sydney Red Gum	Tree	20 x 15m	700L
Bs	Banksia serrata	Old Man Banksia	Tree	10 x 7m	75L
Er	Elaeocarpus reticulatus	Blue Berry Ash	Tree	10 x 7m	75L
Eh	Eucalyptus haemastoma	Scribbly gum	Tree	20 x 12m	100L
	Boronia floribunda	Pink Boronia	Shrub	1 x 1m	70% 200mm / 30% tubestock
	Epacris longiflora	Fuchsia Heath	Shrub	1 x 1m	70% 200mm / 30% tubestock
	Grevillea linearifolia	White Spider Flower	Shrub	2 x 2m	70% 400mm / 30% tubestock
	Hakea salicifolia	Willow Leaved Hakea	Small tree/Shrub	3 x 4m	70% 400mm / 30% tubestock
	Indigofera australis	Australian Indigo	Shrub	2 x 2m	70% 400mm / 30% tubestock
	Pultanaea villosa	Bush Pea	Shrub	1 x 1m	70% 200mm / 30% tubestock
	Dianella caerulea	Blue Flax Lily	Groundcover	1 x 1m	70% 200mm / 30% tubestock
	Viola hederacea	Native Violet	Groundcover	0.5 x 2m	70% 200mm / 30% tubestock
	Wahlenbergia communis	Native bluebell	Groundcover	0.5 x 2m	70% 200mm / 30% tubestock
	Clematis aristata	Old Mans Beard	Shrub	1 x 3m	70% 200mm / 30% tubestock
	Hardenbergia violacea	False Sarsaparilla	Shrub	2 x 3m	70% 200mm / 30% tubestock
	Pandorea pandorana	Wonga Wonga Vine	Groundcover	1 x 3m	70% 200mm / 30% tubestock

Perimeter Planting Mix - Grass/Groundcovers Only

Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Lomandra longifolia	Mat Rush	Grass	1 x 1m	Tubestock
Dichelachne crinita	Longhair Plume Grass	Grass	1 x 1m	Tubestock
Themeda australis	Kangaroo Grass	Grass	1 x 1m	Tubestock
Dianella caerulea	Blue Flax Lily	Groundcover	1 x 1m	Tubestock
Lobelia purpurascens	White Root	Groundcover	0.5 x 2m	Tubestock
Viola hederacea	Native Violet	Groundcover	0.5 x 2m	Tubestock

Buffer Planting Mix - Groundcovers Only

Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Dianella caerulea	Blue Flax Lily	Groundcover	1 x 1m	Tubestock
Viola hederacea	Native Violet	Groundcover	0.5 x 2m	Tubestock
Wahlenbergia communis	Native bluebell	Groundcover	0.5 x 2m	Tubestock
Pandorea pandorana	Wonga Wonga Vine	Groundcover	1 x 3m	Tubestock

Bush Tucker Productive Garden Planting Mix (Shrub planting limited to 10% of total mix only)

Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Citrus australasica	Finger Lime	Shrub	2 x 2m	400mm
Rubus parvifolius	Native Raspberry	Shrub	2 x 2m	400mm
Solanum aviculare	Kangaroo Apple	Shrub	2 x 2m	400mm
Billardiera scandens	Apple Berry	Shrub	2 x 2m	400mm
Carpobrutus glaucescens	Pigface	Groundcover	0.5 x 2m	200mm
Tetragonia tetragonioides	Warrigal Greens	Groundcover	0.5 x 2m	200mm

Raingarden/Bioswale Planting Mix

Botanic Name	Common Name	Planting Type	Height x Spread	Installation Size
Dianella caerulea	Blue Flax Lily	Groundcover	1 x 1m	200mm
Dianella revoluta	Mauve Flax Lily	Groundcover	1 x 1m	200mm
Dichelachne crinita	Longhair Plume Grass	Grass	1 x 1m	200mm
Gahnia aspera	Saw Sedge	Grass	2 x 1m	200mm
Gahnia clarkei	Saw Sedge	Grass	2 x 1m	200mm
Lepidosperma laterale	Weeping Meadow Grass	Grass	1 x 1m	200mm
Poa labillardierei	Tussock Grass	Grass	1 x 1m	200mm

9.2 Materials Selection

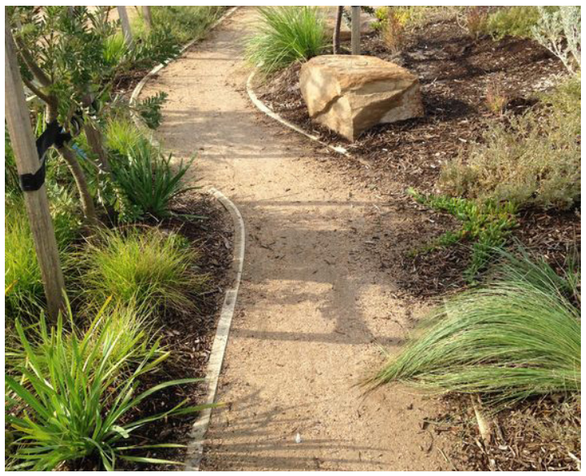
INSITU CONCRETE - BROOM FINISH
MAIN PATHS

INSITU CONCRETE - WARM COLOUR
ASSEMBLY AREA

DECOMPOSED GRANITE
PRODUCTIVE GARDENS / YARNING CIRCLES/ SECONDARY PATHS

BARK MULCH
NATURE PLAY AREAS

RECYCLED TIMBER EDGING
GARDEN BED & STREET BOUNDARY EDGING



RECYCLED TIMBER SEATING
OUTDOOR LEARNING SPACES/ ASSEMBLY AREA

NATURAL TURF
EXTENSIVE LAWN

RECYCLED STONE BOULDERS
NATURE PLAY AREAS

9.3 Materials Selection

RECYCLED TIMBER PLAY ELEMENTS
NATURE PLAY AREAS

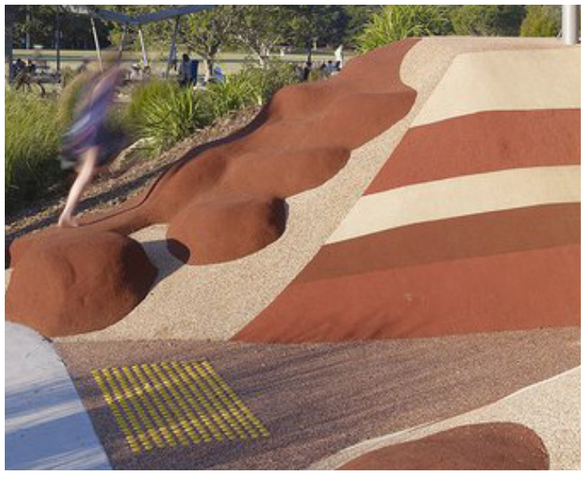
NATURAL STONE PEBBLE
DRY CREEK BEDS

HARD SPORTS SURFACE
GAMES COURTS

RECYCLED CONCRETE STEPPING STONES
NATURE PLAY AREAS

SHADE SAILS
NATURE PLAY AREAS

SOFTFALL PLAY MOUNDS
NATURE PLAY AREAS

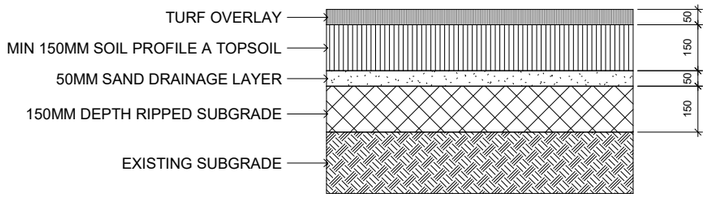


Concrete
CAR PARK

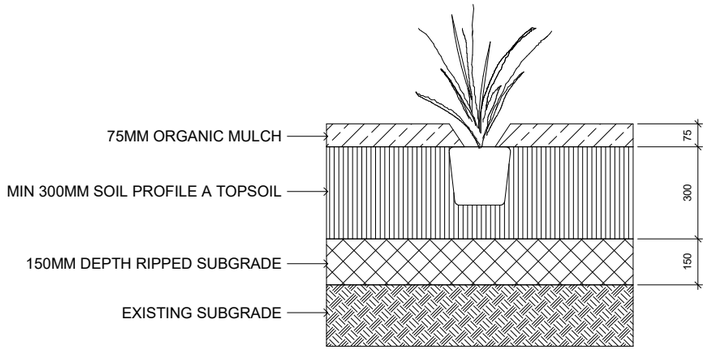
WSUD PLANTING
BIOSWALE/RAINGARDEN

10.0
Typical Details

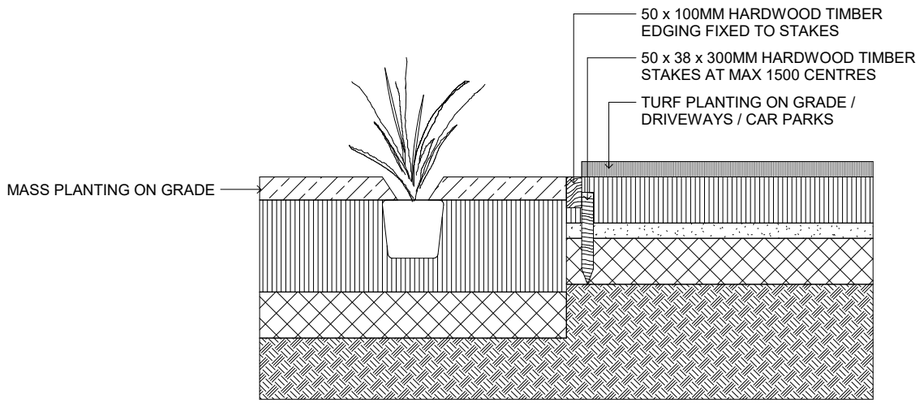
10.1 Typical Details



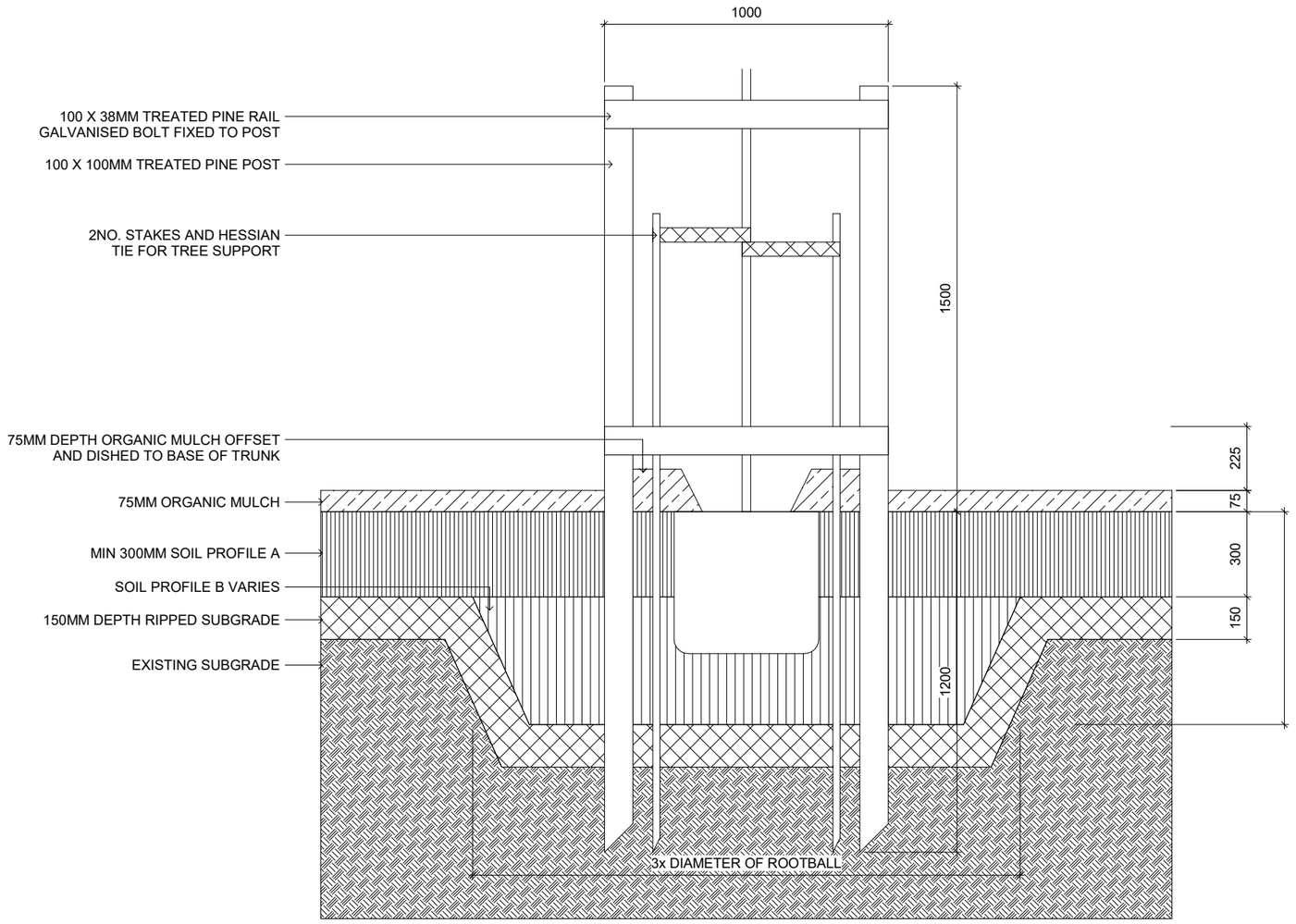
Typical Detail Turf Planting On Grade



Typical Detail - Mass Planting On Grade



Typical Detail - Garden Bed & Street Boundary Timber Edging



Typical Detail - Tree Planting On Grade

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11.0
Benchmark Projects

11.1 Homebush West Public School

Project Details

Project location: Homebush West, Sydney, Australia

Design year: 2015-2019

Year Built: 2019

Architect: TKD Architects

Project Description

The design of the school has a strong focus and approach to maximise the potential of the landscape to create an environment where students would feel comfortable, stimulated and connected to nature and the surrounding Homebush community.

The use of local and recycled materials, gentle manipulation of the topography, a diverse native planting palette, and the concept of 'landscape as learning', all reference the site's natural and cultural heritage—both Indigenous and European—within the context of Homebush.-Landezine article.

The landscape provides a variety of spaces with opportunities for different kinds of play, outdoor classrooms, refuge areas, productive gardens and educational spaces.

Image: Homebush West Public School.
Source: Decor Systems

Image: Homebush West Public School.
Source: Mike Chorley

Image: Homebush West Public School.
Source: SFA

11.2 Clyde Creek Primary School

Project Details

Project location: Clyde, Victoria, Australia

Year Built: 2022

Architect: Kerstin Thompson Architects

Project Description

Clyde Creek Primary school is a newly built school in the residential growth suburb of Clyde in Melbourne's South-East. The school is designed to meet the needs of 525 long term students.

The school is centred around a central heart and includes 2 playgrounds, 2 hardcourts and a field as well as a range of outdoor learning spaces catering for both small and large groups of students (up to 125 students).

Recipient of both the 2022 Victorian School Design Awards, Best Primary School Project and the 2011 Learning Environments Australasia (VIC Chapter), New Education Campus Award.

Image: Aerial photograph of the central heart space.
Source: Hutchinson Builders

Image: Low timber stage/ platform for play and outdoor learning. Source: Kerstin Thompson Architects

Image: Integrated outdoor learning spaces and planting.
Source: Hutchinson Builders

11.3 Woodcroft College ELC

Project Details

Project location: Morphett Vale, South Australia, Australia

Year Built: 2020

Architect: Swanbury Penglase

Project Description

Woodcroft College is a private Anglican day school for students from ELC to year 12, located in the southern Adelaide suburb of Morphett Vale. The ELC is the first component to be realised of the Schools 20+ year Masterplan developed by Swanbury Pengalase. The ELC facility is built for 140 children and has a strong focus on both indoor and outdoor learning spaces.

The school interior opens out onto a vibrant nature play environment which re-purposes an existing stormwater swale, facilitating a range of active and imaginative play.

"The design draws inspiration from similar rock featured play-spaces in the Adelaide South Parklands and allows children to appreciate the changing nature of the seasons and the joy of nature-play." - Swanbury Penglase

Recipient of the AILA SA Award of Excellence for Health and Education Landscape, 2021 and the AILA SA Landscape Architecture Award for Infrastructure, 2021

Image:
Source: Peter E Barnes

Image:
Source: Swanbury Penglase

Image:
Source: Peter E Barnes

12.0
Mitigation Measures

12.1 Mitigation Measures

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of Report
D	Bushfire threat: The design complies with the Planning for Bush Fire Protection (NSW RFS, 2019) guidelines including: - Restricted proposed tree planting to allow for 15% tree canopy cover of the site extents only at maturity - Placement of proposed tree planting to avoid tree canopies touching or overhanging buildings at maturity - Placement of proposed tree planting to allow for a 2 to 5m separation between tree canopies at maturity - Preference for selected tree species to be smooth-barked, evergreen, and locally indigenous, and in accordance with the Hills Shire Council DCP's preferred tree planting species list - Gaps between planting beds to slow down or break the progress of fire towards buildings - Selected understorey planting beneath proposed trees limited to groundcovers only - Selected understorey planting mixes to include no more than 10% shurb planting - Understorey shrub planting to be separated from exposed windows and doors by a distance of at least twice the height of the vegetation	Section 6.7, 7.2, 7.3, 7.4, 9.1
D	Flooding / stormwater management: The potential impacts of flooding resulting from the proposed landscape development on the site have been reviewed and coordinated with the civil engineer to implement mitigation strategies to address negative effects, including flooding, scouring, and excessive stormwater runoff, including: - Flood review of site against adjacent to riparian corridor - Review of levels and grading to direct flow across the site strategically - Implementation of dry creek beds, bioswales, and raingardens to capture and divert overland flow - Retention of existing levels where possible, and minimisation of civil works involving cut and fill, regrading, and changes in levels to avoid accelerating flows and increased flooding across the site	Section 6.2, 6.4, 7.1, 7.5
D	Urban heat island effect / general provision of shade: The design complies with the Planning for Bush Fire Protection (NSW RFS, 2019) guidelines which set restrictions on the quantity of tree and shrub planting. This impact on the urban heat island effect, and general provision of shade is mitigated through the following measures including: - Strategic placement and considered tree species selections to maximise shade provision in areas of faculty and student gathering - Provision of shade structures within nature play playgrounds - Use of natural materials including decomposed granite for secondary paths, outdoor learning areas, and nature play areas; and recycled materials for seating logs, nature play elements	Section 6.2, 6.7, 7.2, 7.3, 9.1, 9.2, 9.3

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