NEW HIGH SCHOOL FOR MEDOWIE

6 Abundance Road, Medowie

Lot 3//DP788451

ARCHITECTURAL & LANDSCAPE DESIGN REPORT

Proponent

The Department of Education is the landowner, proponent and determining authority pursuant to Section 5.1 of the Environmental Planning and Assessment Act 1979 (the Act)

30 January 2025

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NBRS

NSW GOVERNMENT Education School Infrastructure

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ACKNOWLEDGEMENT OF COUNTRY

NBRS acknowledge the Worimi as the Traditional Custodians of the lands of the Port Stephens Council area and their connections to land, sky, water and community.
We pay our respects to Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander Peoples today.

1 INTRODUCTION

1.1 Project Overview

This Architectural & Landscape Design Report has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP

The Activity will be carried out at 6 Abundance Road, Medowie (the site). The purpose of this report is to summarise the Architectural and Landscape design process to date for the development of a proposed new high school in Medowie.

The architectural design process for the proposed new high school in Medowie has been executed with rigor to address architectural design quality principles, best practice, and School Infrastructure NSW (SINSW) requirements. The site specific design is being developed based on the School Infrastructure NSW (SINSW) standardised building design for expandable high schools.

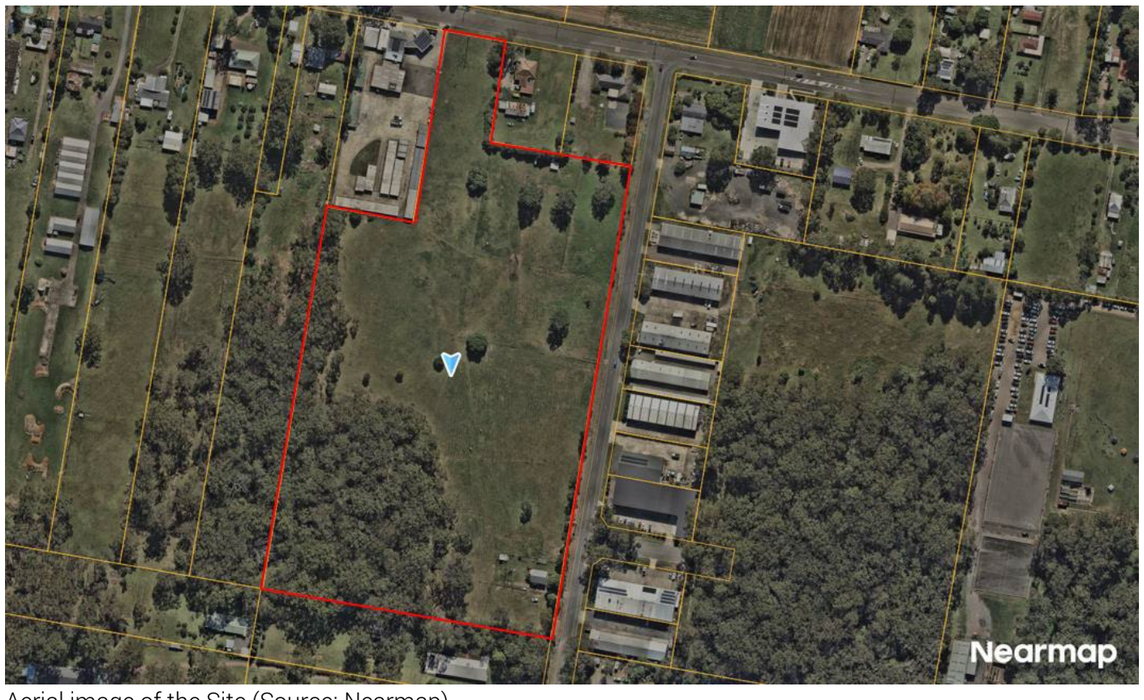
The design process included thorough site analysis and mitigation strategies to address potential impacts and planning requirements such as bulk and scale, building setback controls, privacy and overlooking. The design has been reviewed by the State Design Review Panel (SDRP) in October 2024.

The school masterplan prepared internally by School Infrastructure NSW was reviewed and revised by NBRS after a comprehensive examination of constraints and implementation of opportunities. The design demonstrates proactive approach in designing out risks and mitigate challenges, particularly in response to bushfire risk and the site's adjacencies. The key driver in the master planning is in the placement of all school buildings outside the prescribed Asset Protection Zone (APZ) and Biodiversity Zone to showcase a commitment to safety and compliance with regulatory standards. The landscaped design outcomes integrate organically with the existing terrain, reflects a thoughtful response to environmental challenges. The design outcomes also address issues such as accessibility, sustainability, contextuality, and the architectural design aesthetics. The design was reviewed by Government Architect NSW State Design Review Panel and feedback from the Panel has been incorporated into the design.

The Site is located on Worimi Country and NBRS acknowledges the Worimi People as the Traditional Custodians of the lands of the Port Stephens Council area. The Connecting with Country process has been initiated and architectural and landscape concepts will be further developed through future design phases through listening as stakeholder consultation is undertaken. Connecting with Country framework of starting, imaging shaping and caring for Country will be embedded in the design.

1.2 Site Description

The site has a street address of 6 Abundance Road, Medowie. It is 6.51ha in area, and comprises 1 allotment, legally described as Lot 3 in DP788451.
A large proportion of the site is currently unused and vacant. A small shed structure and caravan are located adjacent to the northern boundary. A cluster of buildings including a single storey dwelling, an outhouse /shed structure and temporary greenhouse are located within the south eastern corner. The site contains a largely vegetated area to the south west corner. The site is relatively flat with a gradual fall from west to east toward Abundance Road. The site has a primary frontage to Abundance Road to the east and Ferodale Road to the north. Abundance Road and Ferodale Road are both classified Local Roads. Medowie Road, approximately 1km east of the site, is a classified Regional Road. The area surrounding the site mostly consists of industrial, rural residential, educational, and agricultural lands. Adjacent to the north western boundary is a Shell petrol station and mechanic garage. Adjacent to the north eastern boundary is a medical health clinic. Across Abundance Road along the eastern boundary are a number of warehouse and light industrial developments. Directly north of the site across Ferodale Road are large lots used for agricultural purposes. Medowie Public School is located on Ferodale Road, to the north west of the site, opposite the Shell petrol station.



Aerial image of the Site (Source: Nearmap)

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2 PROPOSED ACTIVITY DESCRIPTION

2.1 Project Description

The proposed activity involves the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area.

The proposed new school will accommodate 640 students in 29 permanent teaching spaces including 3 support teaching spaces across 3-storeys of buildings on the site. The proposed activity be delivered across 1 stage, and will consist of the following:

29 permanent teaching spaces including 3 support teaching spaces, to accommodate 640 students and school hall to accommodate 1,000 students. The GFA proposed is 7376 m^2 .

- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (6 x parallel spaces on roadway).
- New pedestrian wombat crossing to Abundance Road
- 49 x car parking spaces including 3 x accessible car parking spaces.
- 57 x bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Food tech / Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1,000 students.
- Central quad, 1 playing field, and 1 sports courtyard.
- Public domain works including a new kerb and gutter on the western side of Abundance Rd and a new pedestrian path along the eastern side of Abundance Road.

The proposed school activity will include the following spaces; general learning spaces, general support learning spaces, administrative services, staff areas, gym and canteen, library, areas for science, wood and metal, food and textiles, health PE, performing arts, additional learning spaces, student amenities, storage, movement (stairs and covered walkways).

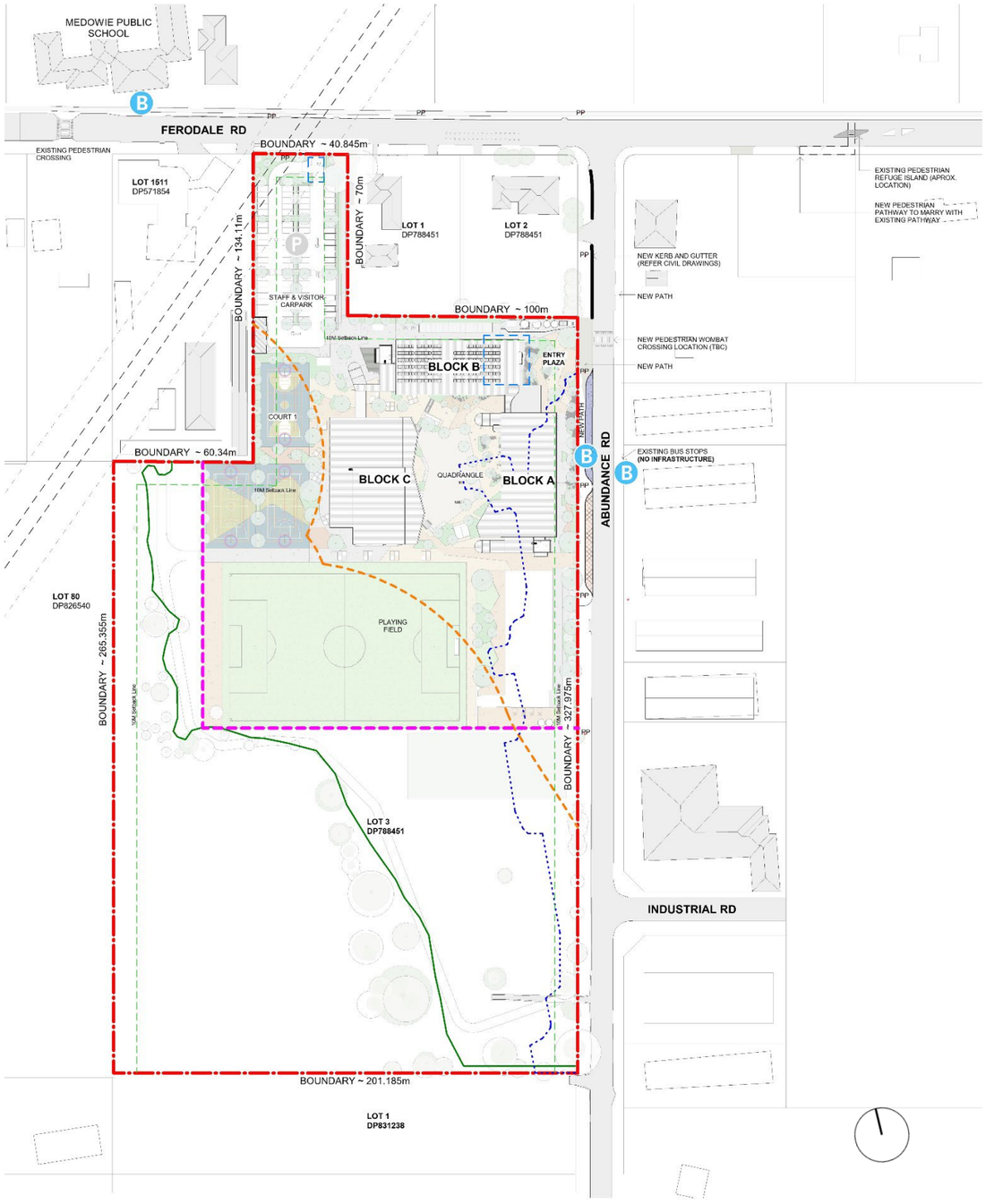


Figure: Site Plan for New High School for Medowie (Source: NBRS)

3 PROJECT CONTEXT

3.1 Project Scope

The New High School for Medowie is for a total of 640 students, designed with consideration for future expansion to up to 1000 students subject to future planning approval(s). The new high school will provide 29 permanent teaching spaces including 3 supported learning spaces. The new high school facilities are designed according to the specific constraints and opportunities of the Site, based on SINSW's standardised expandable school layouts. Initially capacity will be as per the SINSW standardise HS500 hubs, and future expansion will be per HS1000 hubs. The project has been registered to achieve 4-star-GBCA Green Star rating.

Project objectives apply to Medowie High School:

- To provide a high-quality learning environment;
- To create welcoming facilities which prioritise the care and well-being of the school community
- To ensure the school responds to the context of the site and the cultural knowledge of the traditional custodians of the land, thus providing space and design aspects that reflect the cultural context;
- To create agile and response places and use biophilic design principles, be accessible and welcoming, and respond to the urban fabric of the neighbourhood that will be a source of joy and pride to students, staff and the local community;
- Design to enable establishment of the initial stage, with consideration for the future expansion of the school.

3.2 Site Selection and Educational Facilities Context

Medowie was identified as the location for a new high school by the NSW Department of Education to meet the need for a local high school for forecast growth in the local area and to unlock capacity in existing high schools in the School Catchment Group.

Medowie is a regional town within the Port Stephens LGA in the Hunter Region. The site is located approximately 1km west of the Medowie town centre, 1km east of the Grahamstown Dam, and 6 km north of Williamstown RAAF airbase. Medowie is approximately 30km north of Newcastle.

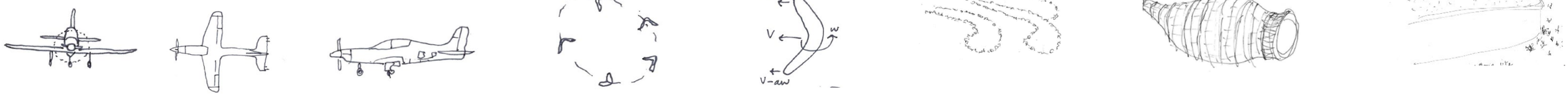
The Site for the proposed Medowie High School is identified as Lot 3, Deposited Plan 788451, is located at 6 Abundance Road in the town of Medowie. The Site is approximately 65262sqm by Survey and irregularly shaped, being roughly rectangular with the long axis oriented north south.

The Site is characterised by gently sloping topography, falling from the west to the east and is currently cleared open grass, to the north east, and dense trees to the south west corner of the site. Key characteristics of the site that have influenced the design are biodiversity protection zone and bushfire affectation associated with the heavily treed south west portion of the site. The site is flood affected on the eastern side. Overhead high voltage powerlines cross the north east corner of the site.

Site Adjacencies: The North portion of the site extends to Ferodale Road between an existing petrol station to the West and a residential dwelling to the East. Medowie Primary School is located across the road to the north of the site. The Site's main frontage is to Abundance Road on the eastern site boundary. Existing light industrial buildings are located across Abundance Road to the east.

The closest bus stops are located along Ferodale Rd to the north of the site in front of the Medowie primary school. There are bus stops identified on Abundance Road with no associated infrastructure. There is an existing pedestrian crossing located near the North of the Site in front of the existing Medowie Primary School.

The town of Medowie has no public high school. The closest Department of Education Schools are Irrawang High School located in Raymond Terrace approximately 11km from the Medowie, Hunter River High School in Heatherbrae and Tomaree High School. There are two independent high schools in Medowie being Medowie Christian School and Catherine McAuley Catholic High School.



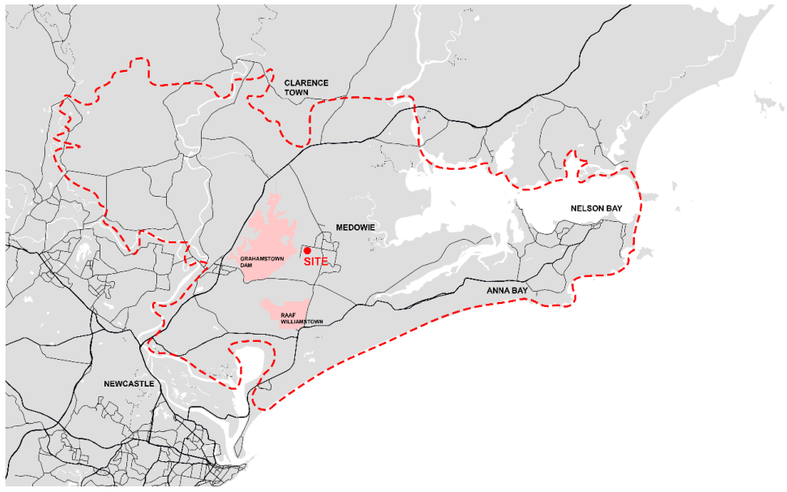
3.3 Site Context & History

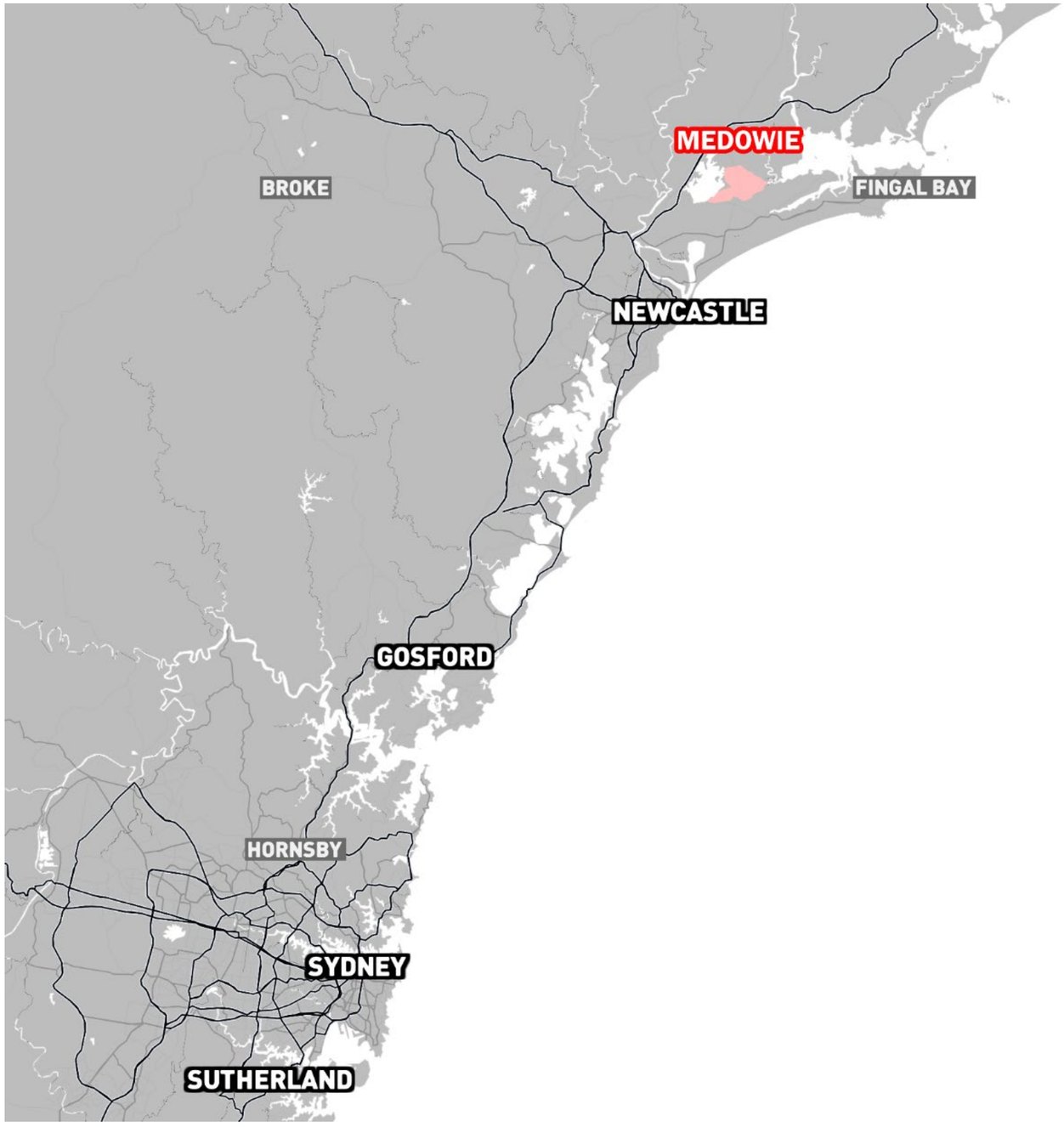
The New High School for Medowie is located in the town of Medowie, a regional town within the Port Stephens local government area in the Hunter Region of New South Wales. Medowie is located approximately 34km north of Newcastle, and 180 km north of Sydney.

Medowie is located on Country of the Worimi, the traditional custodians of the land of the Port Stevens area. The Worimi lived on and cared for Country for tens of thousands of years before the arrival of settlement by British colonisers. The Worimi held deep knowledge of all aspects of the area including plants, animals, ecological systems and history passed down through generations. The Worimi people lived on native fruits, vegetables, hunting and fishing in the rivers, estuaries and coast. Ongoing Connecting with Country Consultation with local stakeholders and knowledge holders will further enhance understanding of the cultural importance and history of site to inform the connection of the new school to culture and community.

First contact with Europeans was through ta group of escaped second fleet convicts in around 1790. The Port Stephens area was established initially with a soldiers garrison in the 1820s. The town of Medowie was a small regional town. until a property and commercial boom in the 1980s and now has a population of 10,879 (2021 census). Medowie is home to a Rural Fire Station, formed in 1946. The town has two government primary schools (Medowie Public School and Wirreanda Public School) as well as a Christian school (Medowie Christian School). Catherine McAuley Catholic College is a Catholic co-ed high school which has opened as of 2021. A large golf course is located at the southern end of the town. Medowie is known as ‘place of the tall trees’ and a State Conservation area borders the town to the north & east.

Medowie is located on the eastern edge of Grahamstown Dam. The dam is the largest drinking water supply dam to the Hunter Region. It is an engineered structure constructed in the 1950s to 1960s with a surface area of 2800 hectares and catchment area of 97 km2.

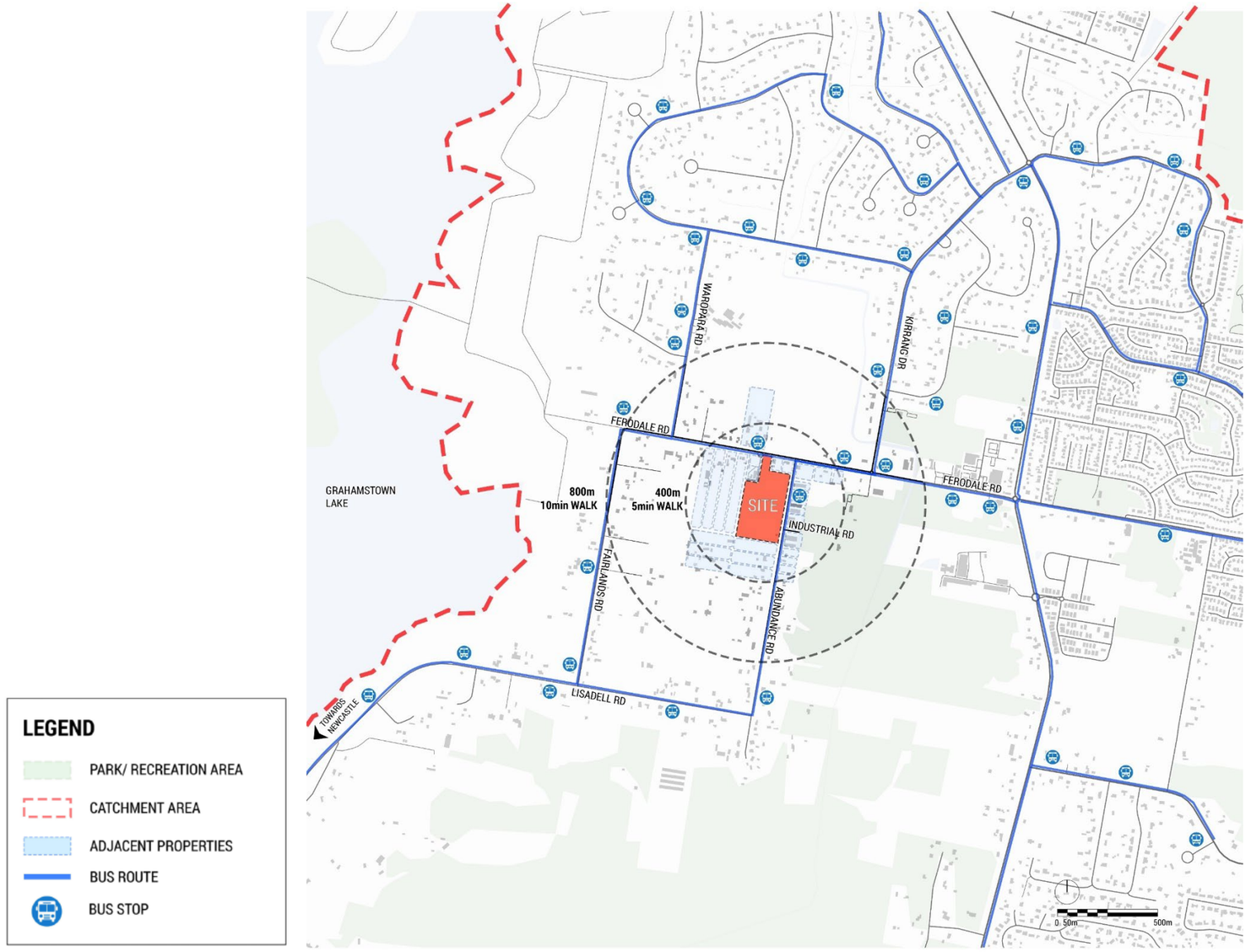




3.4 Site Location Summary

Address: 6 Abundance Road (Lot 3//DP788451)
Land size: 6.5 Ha
Land use zoning: RU2 (Rural Landscape)
Soil: Acid sulphate soil, Class 5
Topography: Site has a gradual slop running from 16m down to 14m (NW to SE 0.4%)

- Medowie Public School located across Ferodale Rd, north of Site.
- Petrol station adjacent to the site (west), and a light industrial area to the east.
- Two open space options available within 10 minute walk of site (Yulong Oval & Ferodale Sports Complex) as well as an abundance of vegetation.
- Majority of neighbouring land zoned as R5 Large Lot Residential & RU2 Rural landscape. East of site is industrial zone.
- 2 minute drive to town centre (15 minute walk).
- The site is situated off of a main road which connects the residential areas to the village centre to the east and to neighbouring centre Raymond Terrace.
- The site is well serviced by a bus network and shared pathway for walking and cycling. Connecting the site with neighbouring residential areas and the town centre.
- There is existing vegetation on the south-west portion of the site, Commercial uses on land immediately adjacent to the site general Industrial land along eastern side adjacent to site.
- Grahamstown Dam located approximately 1 kilometre west of the site. Hunter Region's largest drinking water supply
- Heavily forested areas to the south east corner of the site and generally surrounding the town of Medowie.
- Existing improvements include paddock fencing, some small sheds and a dwelling located in the south east corner of the site. Existing structures are proposed for demolition as part of the proposed school development.



3.5 School Catchment Area

The school catchment area is defined by boundary lines which are subject to adjustment in response to population growth, the evolving development in the neighbouring community and the availability of another public school in the area. The new Medowie High School will reduce travel distance for many students in the catchment currently attending schools to the north, south and east of the site.
The current catchment boundary will be reviewed and confirmed prior to the school becoming operational as typical practise – current information is based on the existing business case (9th July 2024)

Catchment boundary & nearby schools:

- Medowie PS (Medowie)
- Irrawang PS (Raymond Terrace)
- Irrawang HS (Raymond Terrace)
- Wirreanda PS (Medowie)

LEGEND

CATCHMENT AREA

MEDOWIE LOCALITY

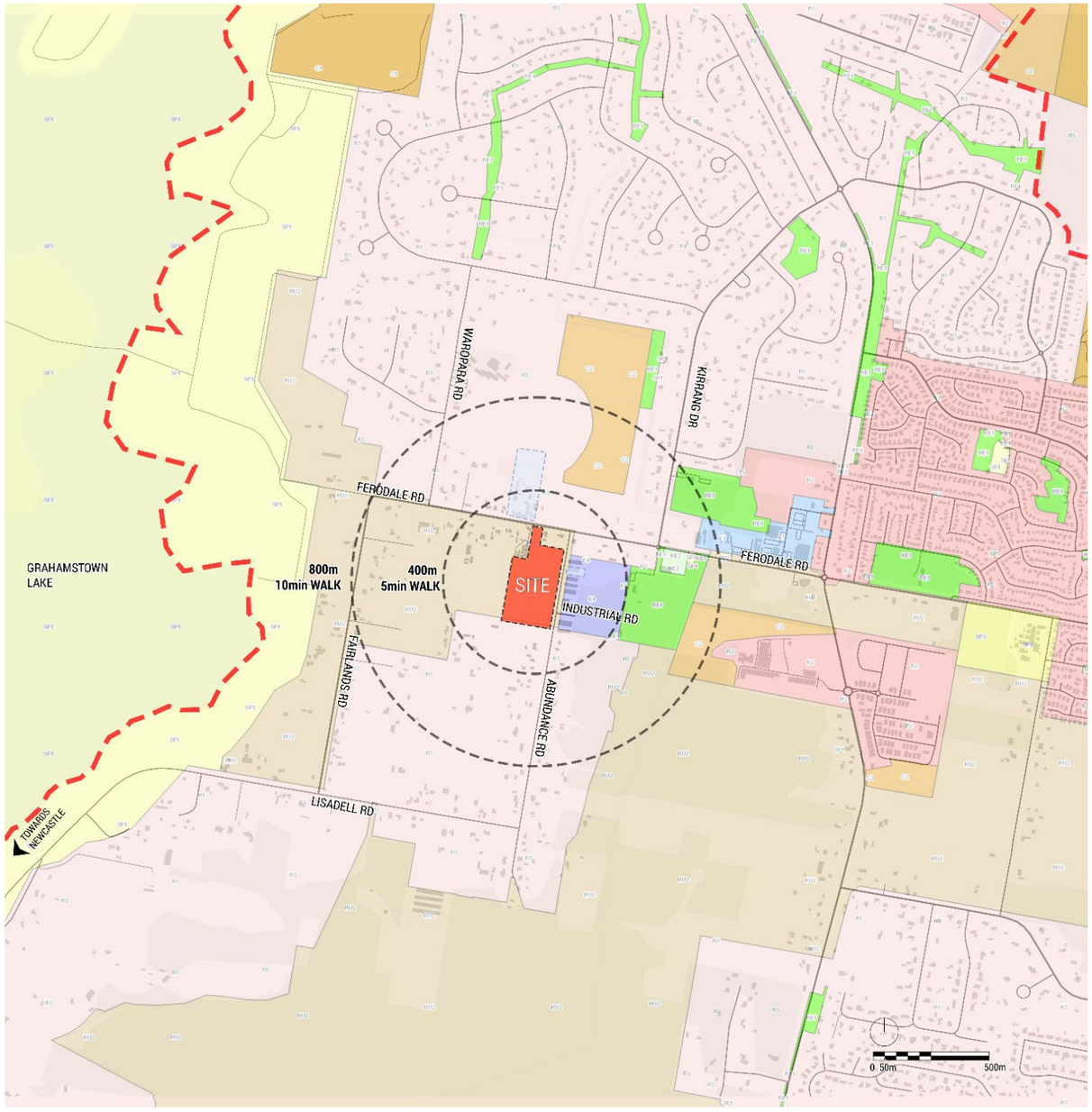
SITE

LEGEND

3.6 Land Zoning

The school is located within **RU2 – Rural Landscape zone.** Towards the north is the existing Medowie public school. The area to the north is R5 large lot residential area. Towards the west are RU2 Rural landscape areas and to the south are R5 Large lot residential. Towards the east is E4 General Industrial areas.

Educational establishments are permitted with consent in the RU2 Rural Landscape Zone pursuant to SEPP Transport and Infrastructure



PORT STEPHENS LEP 2013

- C2 - Environmental Conservation; C2, Environmental Management
- E1 - Local Centre
- E4 - General Industrial
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RE2 - Private Recreation
- RU2 - Rural Landscape
- SP1 - Special Activities

3.7 Bushfire Prone Land

The Site is mapped as Bush Fire Prone Land. Bushfire advice has confirmed Bushfire Attack Levels and construction requirements. Advice has also been provided to develop the design for compliance with Planning for Bushfire Protection Requirements 2019 and National Construction Code 2022 requirements for proposed school use on land mapped as bushfire prone.

Bushfire attack level (BAL) – Scenario 1 *SOURCE – Eco Logical Australia, Aug 2024*

3.8 Site Analysis

A comprehensive analysis of the site is crucial for understanding its characteristics, constraints, and opportunities. Following is a detailed overview of various aspects of the Site:

Topography The site is relatively flat. The survey indicates gentle fall across the site from the south west to the north east at Abundance Road, from AHD 15.515 to AHD14.139 (NW to SE 0.4%) The design has considered site falls & topography for site grading, drainage design, & building placement.

Biodiversity The south west portion of the Site is identified as having biodiversity value. Remnant native vegetation & habitat trees have been identified as important to retain. The northern portion of the site has been historically cleared for agriculture & is mainly grassed paddocks & introduced species. Fauna with high likelihood of being present on site including the little bent winged bat, greater broad nosed bat, eastern coastal free tailed bat, grey headed flying fox, and koala species.(Water Tech) Information from Comprehensive Koala plan of management, CKPoM (June 2002). The Native Vegetation Management Plan recommendations include retention and protection of vegetation in the biodiversity mapped portion of the site, management of the APZ to ensure weeds are removed to protect valued vegetation, and selection of appropriate species for landscaped areas within the proposed activity area of the site. The concept design has considered these recommendations and incorporated into building placement, landscape design, and fence and gate access for ongoing maintenance access.

Flooding The north and east portion of the site is identified as flood prone. Based on the information from Medowie floodplain risk management & study plan (April 2016) the site is categorised as “minimal floor risk” Probable Maximum Flood Levels vary across the Site. Advice from the Flood Consultant informed the location of buildings & electrical infrastructure above Probable Maximum Flood levels. Buildings & fences consider flood conditions. Consultation with SES has been carried out in relation to flood risk & the proposed use. A Flood Impact assessment & Emergency Response Plan have been prepared to address flood risks & SES comments.

Acid Sulfate Soils The entire site is classified as having class 5 Acid sulphate soil.

Contamination Detailed site investigations report no significant contamination in association with investigatory boreholes and ground water well studies in the proposed activity area.

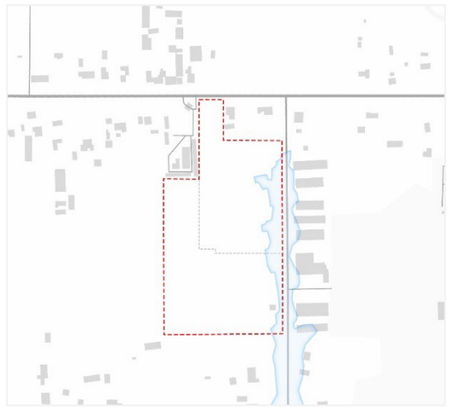
Heritage The site is not listed as a heritage item nor within a heritage conservation area.

Easements and Site Restriction Overhead high voltage electrical lines pass across the northwest corner of the site. An easement associated with the power lines constrains use of this portion of the site.

Bushfire The site is fully mapped as bushfire prone land. The subject land is considered suitable for proposed activity as advised by the engaged Bushfire Specialist consultants. The design of the buildings and landscape areas is required to meet the requirements of NCC Volume 1, Part G5, & associated Specification 43 and requirements of Planning for Bushfire Protection.

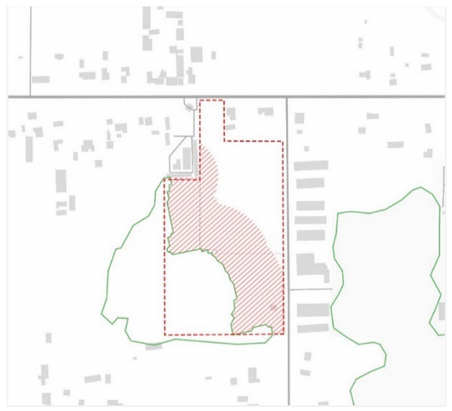
Topography - Site contours shown indicatively

Biodiversity Value Mapped Land & APZ



Flood mapped area (PMF) per LEP Maps shown in Blue

Easement for HV powerlines shown in blue



Bushfire Asset Protection Zone shown in Red

3.9 Existing Vegetation

The site consists of mainly grassed paddocks with perimeter fencing to the north east. The south west corner is occupied by dense established trees. A preliminary Arboricultural Report informed initial stages of the design including the location of buildings, and landscape design to protect native vegetation.

A further Arboricultural report prepared by Assurance Trees, dated 22.01.2025 was prepared to inform later stages of the design. Findings and recommendations from the report have been considered and incorporated into the landscape and architectural design, including the building and landscape locations, materials palette and planting selections. The design has minimised removal of moderate or high value trees. The majority of the trees proposed for removal were weed species. The design incorporates retention of the significant endangered Wallangarra white gum at the Ferodale Road boundary.

The significant stand of trees located in the south west corner comprising the biodiversity value mapped area are to be retained. The school buildings, infrastructure and landscape areas are contained to the north portion of the site to minimise impacts to the area zoned biodiversity habitat protection. In order to meet bushfire requirements for access for fire fighting appliances some trees to the perimeter of the biodiversity value mapped area are to be removed for vehicle access path.

In the area of the site proposed for school use, there are 101 trees. Of these, 40 trees are to be removed comprising 26 which are listed as weed species on the NSW Weedwise website and should be removed as part of the regional weed program, regardless of the activity on site. Of the remaining 14 trees to be removed: 4 are of High Retention Value; 6 are of Moderate Retention Value ; 4 are of Low Retention Value.

The Endangered (NSW) and vulnerable Wallangarra White Gum located within the site adjacent to the Ferodale Road boundary, and identified as Tree no. 1 in the arboricultural report, is to be retained and protected in the design.

The biodiversity value area trees provide a dramatic backdrop to the proposed school and inform the palette, patterns, and materials for the new buildings.

Weed removal and ongoing weed management has been considered in the design of the APZ with fencing to separate the biodiversity value mapped portion of the site from the APZ, and access gates for regular maintenance access.

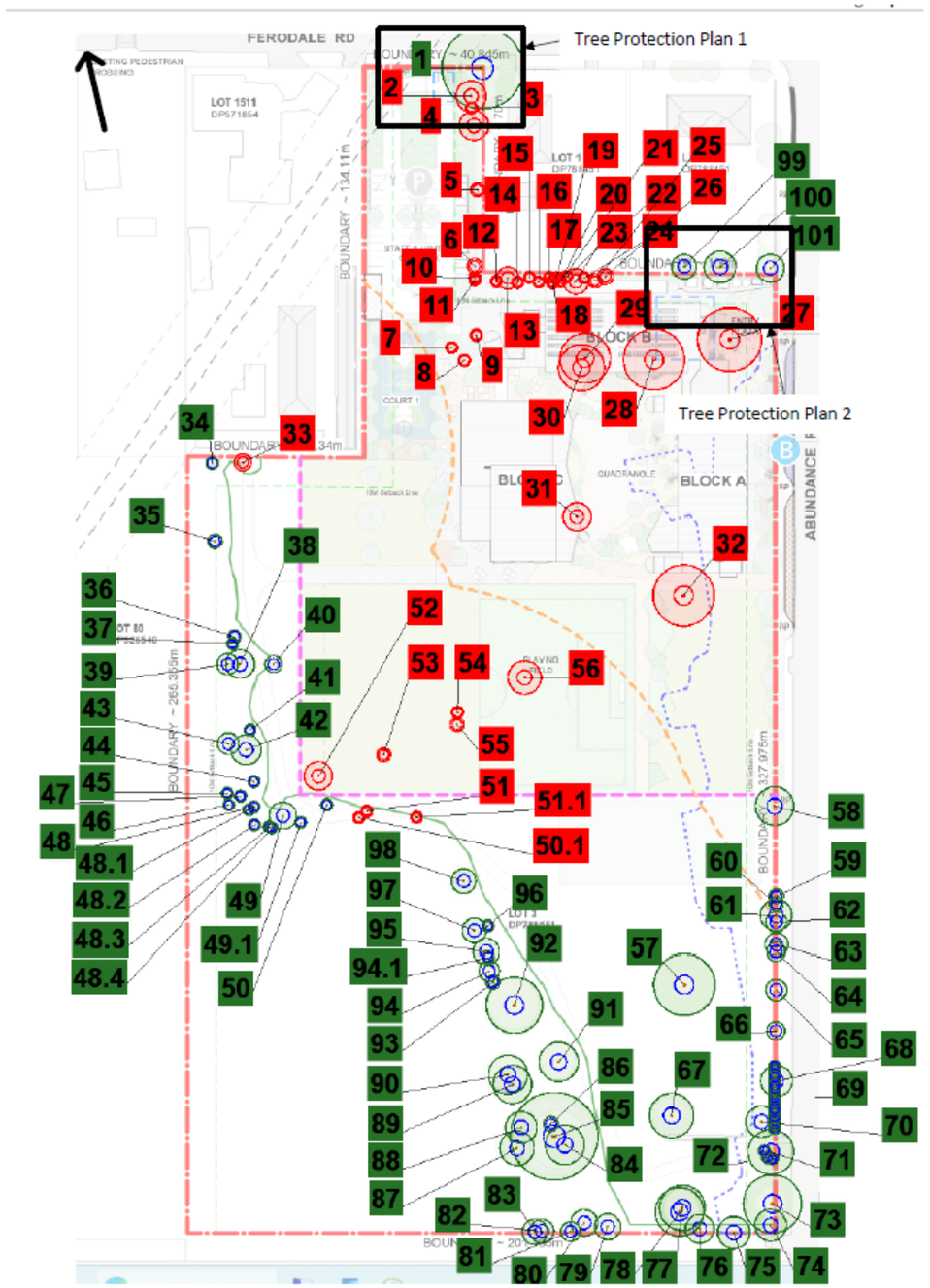


Figure: Tree Location Plan Source: Arboricultural Impact Assessment Assurance Trees

3.10 Waterways

The Site is located approximately 1 km east of Grahamstown dam. The dam is one of the major sources of drinking water for the Hunter Region. Stringent controls on stormwater runoff will apply to development on the site and design of the stormwater systems. The closest watercourse identified is Pipeclay Creek approximately 4.5km north of the site, with unnamed tributaries closer to the site.

3.11 Solar, Wind and Climate

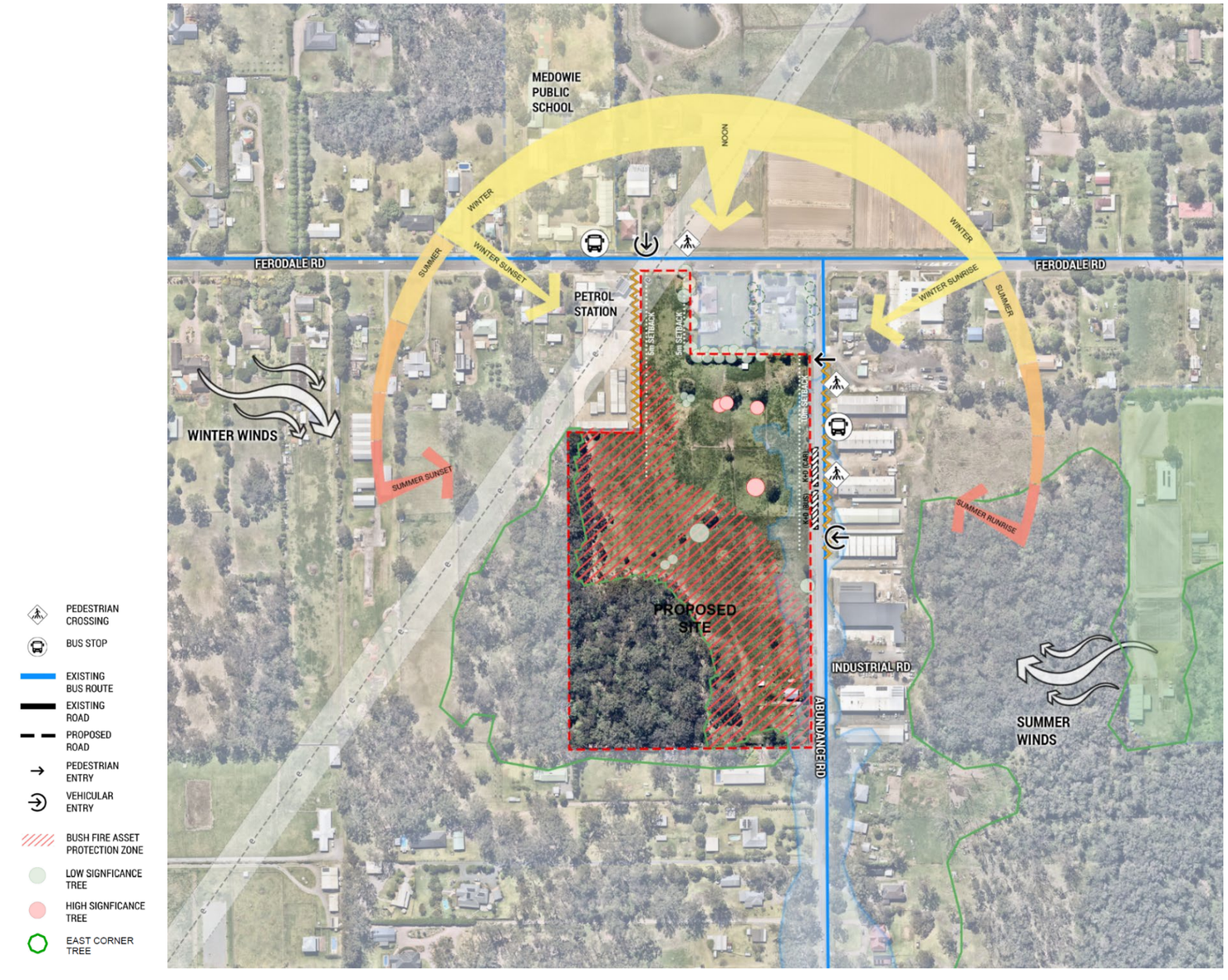
The dominant wind direction in winter (June-August) is from the southwest and in summer (December-February) is from the easterly direction. In accordance with the National Construction Code's climate zone map (Sept 2019), Medowie is in Climate zone 6 with mild temperatures which include high diurnal range inland and four distinct seasons. Summer and winter can exceed human comfort range and spring and autumn are ideal for human comfort. Mild to cool winters have low humidity, and hot to very hot summers have moderate humidity.

3.12 Traffic and Cycleways Network

Medowie local road systems has been considered in the design of Traffic and Parking strategies to minimise impacts on local traffic and provide safe conditions for drop off and pick up of students by private vehicles, public transport, pedestrian and bicycle travel. Staff on-site parking for 49 cars is proposed including 3 accessible parking spaces for staff, visitors & students including support unit students. Bicycle parking for 57 bikes and end of trip facilities are included in the design to promote green travel by students and staff. Traffic studies have been undertaken to inform the impacts of the proposed development.

3.13 Existing Topography

The site is relatively flat, having an approximate 2m fall diagonally across the site from the Northwest corner of the site at RL ~15.515 to the Southeast at RL ~14.139m.



Site Analysis Plan Source ; NBRS

3.14 Existing and Future Context of the Medowie Precinct

The architectural and landscape design draws inspiration from the colours, textures, and features of the surrounding area. Nearby lots are predominantly large lot residential development with a mix of agricultural land and Industrial. The dominant residential types are low density single storey, large Lot residential. Medowie Planning Strategy has a number of active and planned housing developments in the area. The Grahamstown Dam and Williamtown RAAF Airbase both influence the culture and landscape of the Medowie township. The suburb is considered a desirable location for its peaceful, semi-rural setting. Future growth is expected to increase demand for the high school places.

Grahamstown Dam spillway. Source: Hunter Water

Hunter quarries local limestone

Medowie local bushland East of the Site

Garuwa, (wild Native Plum), Hunter area plan, & Worimi bush food

The immediate surrounding context to the high school site includes the following:

- Medowie Primary School immediately to the northwest on the opposite side of Ferodale Rd.
- Bus stops (without infrastructure) on Ferodale Rd to the North and on Abundance Rd to the East
- The town centre is located approximately 1 km to the East of the site.
- Large lot residential dwellings located to the northeast of the site.
- Small industrial buildings located to the East along Abundance Rd.
- The Ferodale Sports complex located to the East of the site.
- South of the Site consists of large lot residential dwellings.
- Industrial zoned buildings are located to the East of the site
- Petrol station is located immediately to the west of the site
- High voltage transmission lines cross the site
- Heavily forested land adjoins the site, as well as the town of Medowie

Location of power poles, height of overhead hv power lines passing over site, proximity to petrol station for air quality and noise impacts.

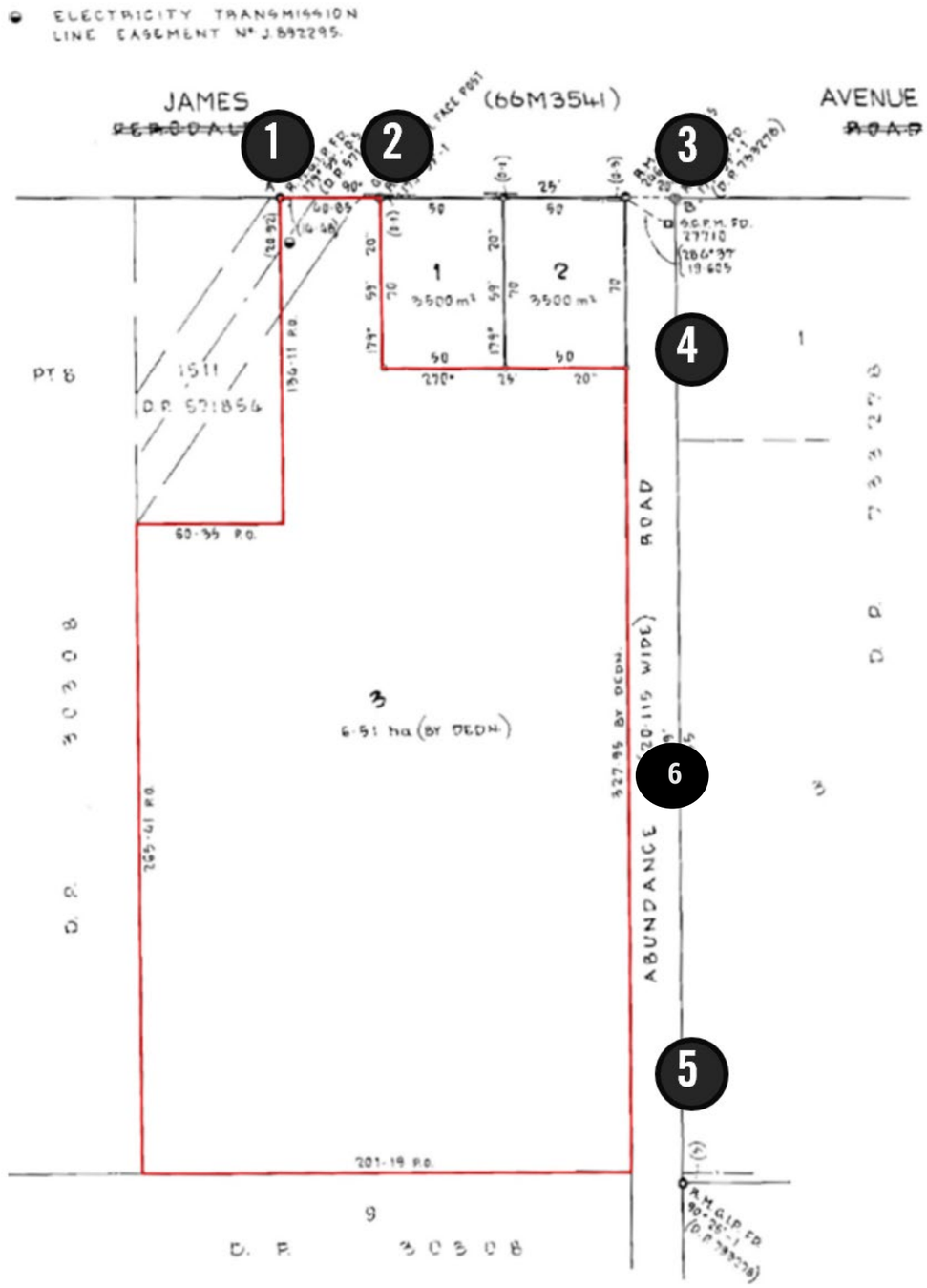
Narrow frontage, no existing driveway / vehicular crossing, high value tree on boundary, residential neighbour

Prominent corner property adjacent to proposed school site. Medowie primary school across the road from site.

Abundance rd. proposed kiss and drop, and bus stop to consider existing levels adjacent site in swale, and location of power poles, industrial use across road, truck movements on abundance rd.

Abundance rd. looking north, proposed kiss and drop and bus stop to consider existing levels adjacent site in swale, and location of power poles, industrial use across road, truck movements on abundance rd..

Abundance rd. looking north towards Ferodale Rd.



3.15 Existing Site Services

Specialist Engineering Consultants have been engaged to developed the design for the New School in relation to site infrastructure and services. Existing site services connections were investigated as part of due diligence studies in early design phases. These have informed design of the site infrastructure for the concept design phase. Refer Engineering reports for additional details of Hydraulic, Fire, Civil, Stormwater, Electrical and ICT concept design strategies.

Sewer – The site has existing connections to the Hunter Water pressure / vacuum sewerage system to the sewer main on the northern side of Ferodale Road. An additional sewerage connection is located on the Abundance Road frontage to a main on the eastern side of Abundance Road.

Potable Water – Hunter Water 100 diameter water main is located within the footpath area along the northern side of Ferodale Road. An existing water connection to the site is located on the eastern side of Abundance Road, south of the Industry Road intersection

Communications – underground Telstra cables are located on Ferodale Road, and Abundance Road. No existing cable connections to the site are indicated on Tesltra plans. NBN cables are allocated on Ferodale Road and Abundance Road. Existing connections to the site exist in the vicinity of the existing dwelling at the southern end of the site.

Electricity – Ausgrid plans show overhead cables along Ferodale Road, and Abundance Road. Existing substations are located on site. Note: Overhead high voltage transmission lines crosse the site with an associated 32.07m wide easement at the northwest corner of the site.

Stormwater

An open swale and inlet pits were noted running along the Abundance Road frontage to the site. On Ferodale Rd there is kerb and gutter running east west adjacent to the site. On Site Stormwater collection and treatment systems have been incorporated into the design of the new school in accordance with Hunter Water and the Grahamstown Dam catchment area requirements.

Gas

No existing piped gas is available in the Medowie area.

Power lines and open stormwater swale on Abundance Road

HV Transmission Lines crossing Site adj. Ferodale Road

3.16 Site Services Upgrades & Connections

The following site services infrastructure is required:

ELECTRICAL SERVICES

Electrical services have been designed based on input from specialist consulting Engineers:

- Two new Substations to be located on site, one for Stage 1 and second substation for future school expansion for Stage 2 building.
- Existing NBN network on Abundance and Ferodale Rd to be extended to serve school.
- Photovoltaic arrays are proposed to reduce energy consumption through green energy.

Refer to electrical services drawings for detailed information and design.

HYDRAULIC SERVICES

Hydraulic services have been designed based on input from specialist consulting Engineers:

- Booster Assembly system along Abundance Rd.
- Rainwater collection from roofs to rainwater tanks. Rainwater collection will be used for irrigation purposes only.
- Fire tanks proposed for permanent water supply for bushfire fighting.
- Sewerage connection is achievable on Abundance Rd. On site septic and pumps proposed to comply with local requirements for pressurised sewer service..
- Cold water connection is achievable via Abundance Rd. Booster assembly proposed in response to Pressure and Flow availability.

Refer to hydraulic services drawings for detailed information and design.

NATURAL GAS

No piped gas service is available to the site, or in the local area. The site is proposed to be fully electrified including electric Bunsen burners for science learning hubs, electric kitchens for food technology learning hub, and electric heating and cooling systems.

STORMWATER SERVICES

Onsite stormwater treatment and detention upgrades are required as part of the project. Stormwater infrastructure will be designed to meet the requirements of Port Stephens Council and Hunter Water. As site is within the Grahamstown Dam catchment more stringent stormwater treatment is required. The Site & surrounding area are relatively flat. This limits depth of on site detention tank. A larger footprint, shallow tank required.
Refer to civil drawings for detailed information and design.

TRAFFIC & PARKING

Specialist Traffic Engineers; WSP, have worked with NBRS to develop the traffic and parking design. Onsite carparking is proposed for staff and users needing accessible parking facilities, with vehicular access via Ferodale Road. The carpark provides service access for collection of waste and deliveries to the adjacent Wood and Metal, and Food Tech Specialist Learning spaces, and Canteen. Deliveries and waste collection to be scheduled out of school operational hours.

Accessible parking is proposed within the carpark. This will allow for extended time to unload high needs students away from traffic movements on the public roadway. Accessible path of travel throughout the school allows for movement between the accessible parking and all areas of the school including the proposed Support Unit located within Block A.

Bicycle parking and end of trip facilities are proposed in a secure location accessible from the main pedestrian entry as well as the secondary pedestrian entrance. The facilities are lockable and will include CCTV surveillance to secure student, staff and visitor bikes during operational hours. This is intended to encourage green transport by school users.

Private vehicle and public transport drop off and pick up is catered for on the Abundance Road frontage. Existing road width has been reviewed against survey information to allow for bus bays and private vehicle short term parking through road widening, the introduction of new paths and new stormwater gutter and in ground pipes. Refer to specialist reports for details of Traffic and Stormwater Design.

3.17 Key Design Issues & Challenges

SLOPE, AND LEVEL CHANGE

Key site level challenges include:

- Flat site with minimal fall presents challenge for drainage of on site detention areas. Multiple tanks, and a larger but shallow footprint was required to achieve drainage to local infrastructure. The design was developed to locate the new OSD tank at the lowest point of the site, and provide a second separate OSD tank to collect and treat water from the new carpark area.
- Accessible paths of travel and providing compliant access between existing site levels and proposed buildings, and between buildings at different levels.

ROADS AND FOOTPATH

Abundance Road lacks existing stormwater infrastructure, kerb and gutter, and footpaths. There is no existing pedestrian crossing at Abundance Road. The design has been developed in consultation with Port Stephens Council to ensure appropriate public domain in the surrounding roadways for the new school.

NCC 2022 AND PLANNING FOR BUSHFIRE PROTECTION 2019 REQUIREMENTS

The site is mapped as bushfire prone land. NCC 2022 stipulates a minimum of BAL19 construction for all buildings for proposed school projects located within bushfire affected zone. The high school buildings must be located outside of the Asset Protection Zone for compliance.

National Construction Code Specification 43 details requirements for schools including construction to allow for shelter in place during a bushfire event. The design has been developed in accordance with the bushfire constraints through building design and location, inclusion of appropriate infrastructure including water tanks, and emergency power.

FLOOD

The site and surrounding evacuation routes are affected by flooding. The design has been developed to locate all buildings and key infrastructure above probable maximum flood levels. Consultation with SES has been undertaken. Flood Reports and Plans have been developed to inform the design and for future operation of the new school.

FAUNA RISKS

Locals have advised that snakes, including venomous species have been sighted on the subject site. The Native Vegetation Management plan by Water Tech has also identified snakes as prevalent in rubbish dump piles in the area. The design has been developed to include fencing types to prevent snakes from entering student areas from the adjacent heavily vegetated areas. Landscape and architectural design have been developed to mitigate the risk of snakes entering the buildings.

CONTAMINATION & HARDOUS MATERIALS

Risk of in ground contamination, contaminated in ground water, presence of hazardous materials in existing buildings has been mitigated through investigation of existing ground and water conditions in the area of the new school and landscaped play areas. Investigations carried out by DSI resulted in the conclusion that that the soils present a low risk of contamination and are considered chemically suitable for the proposed activity as a secondary education school. The groundwater assessment indicates that the offsite service station adjacent to the west of the site has not contaminated the environment as to present a potential risk to sensitive receptor and any potential risk linkage is considered incomplete.

Generally, specialist environmental consultant advice was that the site is considered suitable for the proposed activity, with no further investigation needed.

GEOTECHINCAL CONDITIONS

Existing geotechnical conditions are a project risk, due to significant depth of suitable bedrock to found the buildings. The design has been developed to respond to the challenging geotechnical conditions through structural design.

4 PLANNING PRINCIPLES

4.1 Key Guiding Principles (GANSW Guide / SEPP)

The following principles in schools have been adopted from the *State Environmental Planning Policy (Transport and Infrastructure)* 2021 Chapter 3 Schedule 8 - Design quality principles in schools (Amendment No2 2024). These relatively similar principles have also been referenced within the Government Architect NSW Design Guide for Schools.
These design principles have informed the design. The below summary includes wording of each respective principle and a project specific response to each. Refer to section 5 of this report for detailed design descriptions..

SEPP Design Principles

Principle 1 - Responsive to context

Schools should be designed to respond to and enhance the positive qualities of their surroundings.
In designing built forms and landscapes, consideration should be given to a Country-centred approach and respond to site conditions such as orientation, topography, natural systems, Aboriginal and European cultural heritage and the impacts of climate change.
Landscapes should be integrated into the overall design to improve amenity and to help mitigate negative impacts on the streetscape and neighbouring sites.

Design Response:
The architectural design responds to the site's context, including its landscape and built environment, by drawing inspiration from local features like the Grahamstown Dam, aviation facilities, and the natural environment of Medowie, which is dominated by wet sclerophyll forest. The building's siting, façade patterns, materiality, and color palette reference the textures and colors of the dam water, engineered structures, aviation forms, and the natural environment of tall forests and the local environment that sustained the Worimi people. The landscape design also draws inspiration from the natural setting, seeking to celebrate cultural identity and support the school's functions. It incorporates native and endemic plant species, fostering connections to local flora and fauna.

Principle 2 – Sustainable, efficient and resilient

Good school design combines positive environmental, social and economic outcomes and should align with the principles of caring for Country.
Schools should be designed to be durable and resilient in an evolving climate.
Schools and their grounds should be designed to minimise the consumption of energy, water and other natural resources and reduce waste.

Design Response:
The project is registered with the Green Building Council of Australia for a 4-star Green Star rating.
The activity is proposed to be fully electric with an onsite solar system as a renewable energy source.
Other initiatives include water saving, water sensitive landscape strategies, acoustic comfort, Low VOC material etc.
The design uses durable materials that are suitable for a high school environment.
The landscape design includes repurposed materials where appropriate, and permeable materials to enhance water management.

Principle 3 – Accessible and inclusive

School buildings and grounds should be welcoming, easy to navigate and accessible and inclusive for people with differing needs and abilities.
Schools should be designed to respond to the needs of children of different ages and developmental stages, foster a sense of belonging and seek to reflect the cultural diversity of the student body and community.
Schools should be designed to enable sharing of facilities with the community and to cater for activities outside of school hours.

Design Response:
The school design incorporates best practice principles for accessibility and inclusivity.
Accessible facilities are provided throughout the school.
The landscape design creates a welcoming and inclusive environment, ensuring equal access and clear navigation.
Outdoor areas consider children with special needs and provide spaces for all abilities to participate in play and learning.

Principle 4 - Healthy and safe

Good school design should support wellbeing by creating healthy internal and external environments.
The design should ensure safety and security within the school boundaries, while maintaining a welcoming address and accessible environment.
In designing schools, consideration should be given to connections, transport networks and safe routes for travel to and from school.

Design Response:
The design prioritizes health, safety, and security for the health and well-being of staff and students.
The school has been designed to shield neighboring properties from noise impacts using building placement and acoustic strategies. The design incorporates Crime Prevention Through Environmental Design (CPTED) principles.
The design of open spaces ensures clear sightlines for supervision, controlled access points, inclusive design, and environmental integration in response to bushfire requirements.
The school's design includes multiple pedestrian entry points, including a main entry at Abundance Road linked to a pedestrian crossing, bus stops, and private vehicle drop-off areas. This encourages safe pedestrian access to the school.
A secondary pedestrian access point is located on Ferodale Road, connecting the school with the nearby primary school.
Within the site, weather-protected walkways and open stairs facilitate efficient and safe movement between buildings.
Bicycle parking and end-of-trip facilities are provided to promote green travel.
On-site staff and visitor parking is accessed from Ferodale Road, including accessible parking to allow for safe movement of people with disabilities.
Emergency readiness is integrated through clear evacuation routes and assembly points.

Principle 5 – Functional and comfortable

Schools should have comfortable and engaging spaces that are accessible for a wide range of formal and informal educational and community activities.
In designing schools, consideration should be given to the amenity of adjacent development, access to sunlight, natural ventilation, proximity to vegetation and landscape, outlook and visual and acoustic privacy.
Schools should include appropriate indoor and outdoor learning and play spaces, access to services and adequate storage.

Design Response:
The school provides a range of spaces to support various activities and group sizes, such as active recreation, passive play spaces, social interaction, learning and teaching spaces, play and landscaped areas.
The building arrangement creates a protected courtyard, shielding school areas from noise and activities outside of the school. It also maximises sunlight, especially to the quadrangle, and natural ventilation.

Principle 6 – Flexible and adaptable

In designing schools, consideration should be given to future needs and take a long-term approach that is informed by site-wide strategic and spatial planning.
Good design for schools should deliver high environmental performance and ease of adaptation, and maximise multi-use facilities.
Schools should be adaptable to evolving teaching methods, future growth and changes in climate, and should minimise the environmental impact of the school across its life cycle.

Design Response:
The design was developed to allow for future flexibility for changes in pedagogy or demographics. It is based on the SINSW standardized design, which is adaptable to changing teaching practices. The design incorporates structural grids and

construction techniques that allow for future adaptation.
The design includes multi-use facilities that can be shared with the community, such as the hall and outdoor sports courts.

Principle 7 – Visual appeal

School buildings and their landscape settings should be aesthetically pleasing by achieving good proportions and a balanced composition of built and natural elements.
Schools should be designed to respond to and have a positive impact on streetscape amenity and the quality and character of the neighbourhood.
The identity and street presence of schools should respond to the existing or desired future character of their locations.
The design of schools should reflect the school's civic role and community significance.

Design Response:
The school buildings and landscape setting are designed to be aesthetically pleasing, with good proportions and a balanced composition. The three-story learning hubs are separated by shorter, setback circulation and service cores, breaking up the main facades and providing opportunities for variation and landscaping. The school's design is sympathetic in scale to nearby industrial buildings across Abundance Rd, and also respects the setbacks of the adjoining residential properties. The building setbacks also allow for a landscaped softer edge along the street frontage on Abundance Rd and reduces visual impact. The entry plaza is designed to be welcoming and to express the school's identity. It incorporates planting, casual seating, patterned pavements, signage, and artwork to create a pleasant space.
The school buildings form an identifiable façade, providing a distinct presence for the school in the streetscape.
The design incorporates solar shading and patterning to reduce the visual impact of the buildings by breaking up their height into a ground floor masonry base, with defined upper floors further broken up with a grid of sun shading elements.
The materials and colour palette were developed in alignment with a concept celebrating engineering and First Nations innovation and technology. The natural colours selected in the material palette aim to reduce stress, glare, and overstimulation in staff and students occupying the buildings.
The landscape design is an integral part of the visual appeal, drawing inspiration from the natural setting of the region, celebrating cultural identity, and supporting educational functions. The design uses native and endemic plant species to strengthen connections to the local flora and fauna, while supporting biodiversity and ecological resilience. The use of stone and permeable paving in the landscape provides robust and long lasting materials that complement the building materials.

GANSW Design Guide for Schools

Principle 1—Context, built form and landscape (GANSW Guide)
Schools should be designed to respond to and enhance the positive qualities of their setting, landscape and heritage, including Aboriginal cultural heritage.
The design and spatial organisation of buildings and the spaces between them should be informed by site conditions such as topography, orientation and climate.
Landscape should be integrated into the design of school developments to enhance on-site amenity, contribute to the streetscape and mitigate negative impacts on neighbouring sites.
School buildings and their grounds on land that is identified in or under a local environmental plan as a scenic protection area should be designed to recognise and protect the special visual qualities and natural environment of the area, and located and designed to minimise the development's visual impact on those qualities and that natural environment.

Design Response: The new school architectural and landscape areas have been designed to respond to local landscape, context and built from drawing from engineering features of the dam and aviation facilities, as well as the natural environment of the Medowie locality dominated by the wet sclerophyll forest species of flora and fauna. Building siting, façade patterns & materiality, colour palette reference the colours & textures of the dam water and engineered structures, aviation patterns and forms. The natural environment is referenced through the textures and colours of the tall forest understory, fruits, birds and bats that inhabit it, & the local environment that sustained Aboriginal people for thousands of years and is woven into culture and stories of the Worimi People.

Principle 2—Sustainable, efficient and durable
Good design combines positive environmental, social and economic outcomes.
Schools and school buildings should be designed to minimise the consumption of energy, water and natural resources and reduce waste and encourage recycling.
Schools should be designed to be durable, resilient and adaptable, enabling them to evolve over time to meet future requirements.
Design Response: the architectural and landscape design was informed by best practice and specialist advice for a sustainable, efficient and durable school asset.

Principle 3—Accessible and inclusive
School buildings and their grounds should provide good wayfinding and be welcoming, accessible and inclusive to people with differing needs and capabilities.
Note— Wayfinding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space.
Schools should actively seek opportunities for their facilities to be shared with the community and cater for activities outside of school hours.
Design Response: The school is design in accordance with best practice principles fo accessibility and inclusivity. Accessibile facilities have been provided throughout the school for compliance with National Construction Code and Australian Standards, as well as informed by best practice in learning place design for a broad range of special needs including neurodiverse and behavioural needs.

Principle 4—Health and Safety
Good school development optimises health, safety and security within its boundaries and the surrounding public domain, and balances this with the need to create a welcoming and accessible environment.
Design Response: the design of the school has been developed in accordance with best practice for a health and safe facility. Workshops were held throughout the design process for input from Technical Stakeholders including school safety unit, and Project Reference Group members to inform design decisions for student and staff safety and well being.

Principle 5—Amenity
Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.
Schools located near busy roads or near rail corridors should incorporate appropriate noise mitigation measures to ensure a high level of amenity for occupants.

Schools should include appropriate, efficient, stage and age appropriate indoor and outdoor learning and play spaces, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage and service areas.
Design Response: the school has been design with input from user groups, technical stakeholders, and informed by best practice and specialist advice to achieve highest standards in educational environments as well as providing opportunities for community activities and shared use for operation school in coming years and into the future.

Principle 6—whole of life, flexible and adaptive
School design should consider future needs and take a whole-of-life-cycle approach underpinned by site wide strategic and spatial planning. Good design for schools should deliver high environmental performance, ease of adaptation and maximise multi-use facilities.
Design Response: the design has been developed with knowledge of best practices for educational facilities, to allow for flexibility into the future for changes in pedagogy, or demographics for the local area. The design is based on the SINSW standardised design, which was developed in response to teaching and learning practice across NSW schools.

Principle 7—Aesthetics
School buildings and their landscape setting should be aesthetically pleasing by achieving a built form that has good proportions and a balanced composition of elements. Schools should respond to positive elements from the site and surrounding neighbourhood and have a positive impact on the quality and character of a neighbourhood.
The built form should respond to the existing or desired future context, particularly, positive elements from the site and surrounding neighbourhood, and have a positive impact on the quality and sense of identity of the neighbourhood.
Design Response: the design of the buildings and landscape setting have considered proportions, composition, materials palette and context. Further description of the aesthetic design selections and palette is provided in the design section following.

Figure 1- Relationship of SINSW Documents (Diagram TBC by SINSW)

4.2 Education Planning Principles

The NSW Department of Education is committed to ensuring our infrastructure meets the needs of a growing population and enables future-focused learning and teaching to support outcomes for students.
In line with this vision, the *Place Creation Handbook for Public Schools* aims to create learning environments which support children's ability to thrive academically, socially and emotionally and feel a sense of belonging to their learning community.
The following Education Principles should underpin the design of all learning environments:
See Section 5 of this report for further description of design response to Education Principles

1 **Education Principle 1**
First and foremost, focus on the needs of learners and learning.

School Planning Considerations:
Development of the Child: The public school system, caters for children ranging from 3-4 years old (preschool*), all the way through to 17-18 years (seniors). Recognizing that the development needs of children vary significantly as they grow, school environments must be designed with a deep understanding of the age and particular needs of their student cohort. This includes consideration for how the environment meets the physical, cognitive, emotional, and developmental needs of children, including the following:

- Physical Development: The physical environment of the school should be designed to encourage physical activity and motor skill development. Provide spaces for playing, running, climbing, and playing sports appropriate to the children's age. Additionally, environments should encourage children's healthy physical growth by ensuring access to natural daylight, fresh air and thermal comfort.
- Cognitive Development: Create environments that stimulate curiosity, exploration, and learning. This might involve incorporating age-appropriate interactive displays, and spaces that encourage discovery and problem-solving.
- Social Development: Designing spaces that foster social interaction, collaboration, and empathy. This includes creating areas for group activities, team projects, and peer interaction, as well as quieter spaces for solitary activities or reflection.
- Emotional Development: Ensuring that environments promote a sense of security, belonging, and emotional well-being. This can be achieved through the use of comforting colors, textures, and lighting, as well as providing areas for relaxation or emotional support.

Early Learning*	Primary	Secondary	Seniors
Preschool Age: 3-4 Years **Refer to NSW Child Care Planning Guideline and the SINSW Preschool Design Brief for Early Learning design requirements*	K-6 Age: 5- 11 years **Stages:** Kindergarten Stage 1 (Years 1-2) Stage 2 (Years 3-4) Stage 3 (Years 5-6)	Years 7-10 Age: 12-15 years **Stages:** Stage 4 (Years 7-8) Stage 5 (Years 9-10)	Years 11 -12 Age: 16-18

Design Response: The architectural and landscape design of the school has been designed to respond to the needs of Secondary and Senior students, allowing for developmental needs of this age group for physical, cognitive, social and emotional development.

2 ***Education Principle 2***
Foster community and identity by cultivating a culture of welcome, inclusion, and belonging that celebrates and reflects the diversity of the school community.

School Planning Considerations:
Connecting with Country: With over 70 different Aboriginal Nations in NSW, all with different natural and cultural systems, each school site is unique. As such, there is no universal design for Connecting with Country. How the site relates to its context – its community, natural environment, built environment, and cultural setting – should inform the project. Responding to the specific character and identity of a location will allow the school site to compliment and care for Country and allow for deeper connection between Country and people. Additionally, incorporating elements of Aboriginal knowledge throughout the school environment by displaying artworks and symbols that reflect local stories, will promote a sense of pride and shared belonging. For more information refer to the **Connecting with Country Framework.**

Inclusive Design: School environments should be designed to ensure that the physical space is inclusive and accessible to students, staff, and visitors. Where possible, this includes accessible entrances, pathways, and facilities that accommodate individuals with disabilities or different needs. Outdoor areas should consider children with special needs and create spaces which allow for children of different abilities to take part in play and learning activities. A comprehensive approach to Inclusive Design fosters a welcoming and supportive educational environment for everyone. For more information refer to the **Inclusive Design Framework**.

Shared Community Use: Public schools are central to all communities across the state and local schools play an important role in shaping the culture, environment and economy of each local area. By creating shared use opportunities between community groups and the school, we maximize resources, enhance access to facilities, and foster stronger community connections, benefiting both educational and local development. For more information refer to the Shared Use information page.

Design Response: The architectural and landscape design of the school has been designed to allow for incorporation of images, symbols, references to knowledge gained from Connecting with Country consultation. Specialist consultant input is facilitating this feedback and the design has included opportunities for incorporation of knowledge in key areas such as the main entry, highly visible locations throughout the school, signage and wayfinding and planting selections.
Shared community use opportunities have been built into the design for access points, amenities, parking to support out of hours shared use of hall and sports facilities.

3	*Education Principle 3* *Provide built environments which are aesthetically pleasing, engaging and safe, designed to inspire joy, learning, and a sense of wonder.*

School Planning Considerations:

Scale of the Child: The physical design of the school must recognise that children are physically smaller, have different capabilities and sensitivities compared to adults, and require spaces and designs that cater to their unique requirements. Spaces should be appropriately scaled for the size of the child, ensuring that children are not overwhelmed by vast open areas and spaces and objects are physically dimensions for the comfort and ergonomics of the child.

Elements of Play and Delight: Incorporate features that spark joy, creativity, fun and engagement for children, including whimsical shapes, colours, and interactive components that invite exploration and discovery. Incorporating sensory experiences, such as varied textures, sounds, and lighting effects, can also enhance delight. By integrating these elements, spaces become more dynamic and enjoyable, fostering a sense of curiosity, happiness and learning. For more information refer to the Landscape Design Framework.

Safety Needs: School environments should be places where children feel emotionally and physically secure and supported. This involves designing spaces that are welcoming and nurturing. Additionally, children's physical safety should be front and centre in the design of a school, with design measures implemented to minimize risks of injury or accidents. A well-designed physical environment which promotes supervision of children, will also ensure that educators feel supported in their duty to keep children safe. For more information refer to the Safety in Design Framework.

Design Response: Technical input from key stakeholders, safety in design workshops, and best practice has informed the design of the architecture and landscape areas for age appropriate aesthetically pleasing, engaging and safe environments within the school. Further details provided in sections 5.3.1 of this report.

4	*Education Principle 4* *Provide contemporary, sustainable learning environments, which promote children's understanding and appreciation of the natural world.*

School Planning Considerations:

Environmental Stewardship: Incorporate sustainable design principles that demonstrate stewardship of the environment and promote responsible citizenship. This can include green spaces such as community gardens, outdoor classrooms and nature discovery areas to provide environmental education. Making environmental efforts visible to students through for example rain gardens, recycling stations and energy monitoring devices can also enhance environmental stewardship. For more information refer to the Sustainability Framework and the Environmental Design in Schools Guide.

Sustainable Buildings and Environments: By creating ecologically sensitive outdoor spaces and energy-efficient buildings, schools can foster healthy learning environments. Schools should utilise renewable energy sources, incorporate water-saving fixtures and rainwater harvesting systems, and use sustainable, non-toxic building materials. Sustainable transportation options, such as biking and carpooling, are encouraged, along with active community involvement in sustainability initiatives. By implementing these principles, schools not only reduce their environmental footprint but also educate and inspire students to be responsible stewards of the planet. For more information refer to the Sustainability Framework and the Environmental Design in Schools Guide.

Design Response: The design provides a variety of indoor and outdoor learning spaces with views of and connections to the natural environment. Sustainable practice is incorporated into the design and visible to students for learning opportunities. The design has been developed to meet GBCA 4 star greenstar requirements.

5	*Education Principle 5* *Embed the potential for re-configurability, both in the present for multi-purpose use and over time for changing needs.*

School Planning Considerations:

Sense of Ownership: Provide opportunities for students, teachers, and staff to personalize and contribute to the school environment. This could involve designated spaces for student artwork, collaborative projects, or community gardens that promote a sense of ownership and pride.

Future-Proofed Layouts: Schools must be designed with flexibility and adaptability in mind to accommodate evolving educational needs and changing demographics. Using a modular grid system, spaces can be easily reconfigured for different school uses over time, and expanded as needs grow. Advanced technological infrastructure is integrated to support digital learning tools and seamless connectivity. By anticipating future trends and needs, future-proofed school layouts ensure that educational facilities remain relevant, efficient, and conducive to student success for years to come. For more information refer to the Standardised Approach Framework.

Design Response: the design of the school was informed by research and understanding of the local community and context of the Medowie township. Opportunities for personalization of the school by the staff, students and local community are incorporated into the design. Consultation with the local community has informed the design. See section 5 for further description of the design response. The design incorporates structural grids and construction techniques that allow for future adaptation for changing pedagogy, demographic, and community needs.

4.3 Architectural Design Principles

Architectural Design Principles that drove the design of Medowie High School were established during masterplan phase and have continued to be guiding principles throughout the development of the design.

SCHOOL DESIGN WITH APPROPRIATE ARCHITECTURAL & LANDSCAPE DESIGN RESPONSE

When considering the very physicality and powerful presence the built environment has on influencing the interaction between people, built learning environments can become psychosocial spaces. This silent and subtle shaping of people's attitudes towards each other can render the learning environment as one which takes on the role of an implicit curriculum; one which is not overt and didactic in style, but one which implicitly suggests the importance of respect and consideration for others.

NBRS applies the following design techniques to influence the creation of a built environment that benefits the users as well as creates a presence of the school within the greater Medowie area:

- Creating a safe environment for teenagers & young adult learners, and staff.
- Designing stimulating environments to support variety of teaching & learning modes
- Use durable materials that withstands wear & tear in a high school environment.
- Provide built-form presence along Ferodale Rd and Abundance Rd.
- Create protected courtyards that are enclosed by built form.
- Maximise North/ South facing buildings.
- Provide the opportunity for good sightlines to the outdoor play spaces.
- Minimise the risk of overlooking and overshadowing neighbouring residences.
- Design of buildings and landscapes that respond to the natural topography of the site.
- Minimise building footprint to reduce the travel distance to walk between learning hubs,
- Design a simple building layout to enable clear navigation within the campus.
- Design building fabrics that reflect the unique characteristics of the place to create a sense of belonging.
- Establish building heights that are sympathetic to providing natural light to the outdoor play areas.
- Create an urban scale-built form that responds to the future medium to high-density residential developments on the neighboring sites.
- Establish relationships between the access/egress to a school site and between the main operational units and areas that form the central functions of a school

DESIGNING CONNECTION TO THE NATURAL SURROUNDING

Outdoor environments encourage spontaneous, voluntary, and joyful learning opportunities for children to explore and interact with their peers and the world around them. Play spaces, vegetable gardens, and outdoor sports courts are outdoor learning activities that promote teamwork and hands-on experiences. This includes designing learning environments that respond to simple, and pragmatic ecologically sustainable design & biophilic design principles as outlined below.

- Optimise sunlight intake to positively contribute to higher academic performance. Natural light also supports attention, the stability of the circadian cycle, and overall physical health, mental health, and comfort, which in turn, leads to better academic performance. (UCL, Mar'22)
- Maximise natural ventilation to facilitate constant flow and exchange of fresh air in learning environments.
- Create quality outdoor play spaces with adequate access to natural light and a variety of experiences.
- Provide quality outlook from the internal spaces by maintaining a visual connection to landscape, nature, and the open sky.
- Create playful outdoor spaces to encourage physical activities.
- Design indoor spaces which extract the qualities of the natural environment.

CREATING A COMMUNITY HUB.

A partnership between the school and the community provides the opportunity to engage with and enhance the surrounding community to create a stronger school as a hub within its community.

NBRS looks for the following design opportunities to enable some interaction between the school and its community.

- Opportunity to share some of the school facilities for community use after school hours. Extended use of school facilities activates the school beyond its operational hours and increases passive supervision. These opportunities to be developed by the School Principal, fencing strategy supports this in the future.
- Design a forecourt at the main entrance to the school to create a meeting space that is welcoming.
- Provide opportunities to connect with the local Aboriginal Community, and embed culture and knowledge.
- The design incorporates opportunities for public access and shared use of the hall, outdoor courts and other external facilities with consultation through the Project Reference Group and Project Control Group.

CONNECTING WITH COUNTRY

We see the need to preserve cultural history and significance for students, staff, and the community. Acknowledging the history and knowledge of the Aboriginal custodians of the land, the vast rivers and rolling mountains, flora, and fauna.
Opportunities for expression of knowledge from Connecting with Country consultation are included in the design for art, building signage, wayfinding and place naming, landscape selections. Connecting with Country consultation is ongoing and CwC features will be developed in detail with input from community stakeholders and knowledge holders during design finalisation

4.4 Connecting with Country

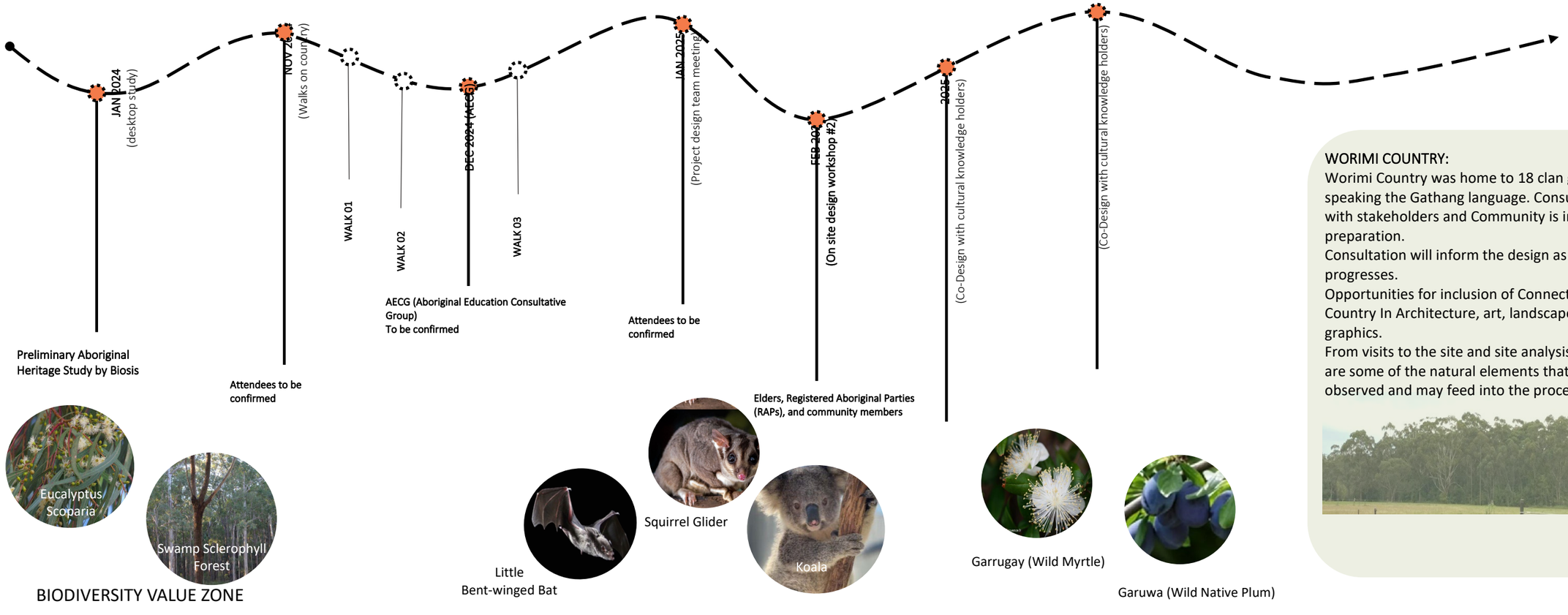
The objective of Connecting with Country is to recognise the material and spiritual connection of Aboriginal people to the land, water and sky of Country. By committing to a process of equitable and meaningful co-design with Aboriginal cultural knowledge holders, school environments which include culturally safe spaces for Aboriginal people will be developed. Aboriginal cultural knowledge and truth telling will be embedded in these environments.

In consultation with Aboriginal culture knowledge holders the design intent is to embed elements of Aboriginal culture within the design. In addition to physical design elements, explore opportunities for the incorporation of intangible cultural elements into the design, inculding signage, naming, way finding strategies, graphics and artworks, throughout the school. Architectural and landscape design concepts will be developed based on listening to knowledge about Country.

The Connecting with Country Strategy for the New Medowie High School was initiated with a desk top study produced as part of the feasibility and early design. Consultants have been engaged to facilitate consultation with local Aboriginal stakeholders, Elders and knowledge holders. The design process will incorporate knowledge from Walks on Country, Consultation sessions and workshops, throughout the design phases, and ongoing into school operation.

Some of the flora and fauna present on site and in the local area, has provided inspiration for architectural and landscape design concepts . Noted in the preliminary biodiversity and arboricultural studies are the endangered swam sclerophyll forest, a noted Wallangarra White gum, likely present are little bent winged bats, squirrel gliders, koalas. Wild myrtle and wild native plum are also local to the area.

The design embeds opportunities and identifies possible themes for development of Connecting with Country elements during design finalisation, as Consultation with local community is developed and relationships are established. Consultation with local community has commenced.



4.5 Crime Prevention Through Environmental Design Strategy

Crime Prevention through Environmental Design (CPTED) is a crime prevention strategy that focuses on the planning, design and structure of cities and neighbourhoods. It reduces opportunities for crime by using design and place management principles that reduce the likelihood of essential crime ingredients (law, offender, victim or target, opportunity) from intersecting in time and space.

Predatory offenders often make risk-benefit assessments of potential victims and locations before committing crime. CPTED aims to create the reality (or perception) that the risks of committing crime are greater than the likely benefits. This is achieved by creating environmental and social conditions that:

• Maximise risk to offenders (increasing the likelihood of detection, challenge, and apprehension).
• Maximise the effort required to commit crime (increasing the time, energy and resources required to commit crime).
• Minimise the actual and perceived benefits of crime (removing, minimising or concealing crime attractors and rewards); and
• Minimise excuse making opportunities (removing conditions that encourage / facilitate rationalization of inappropriate behaviour).

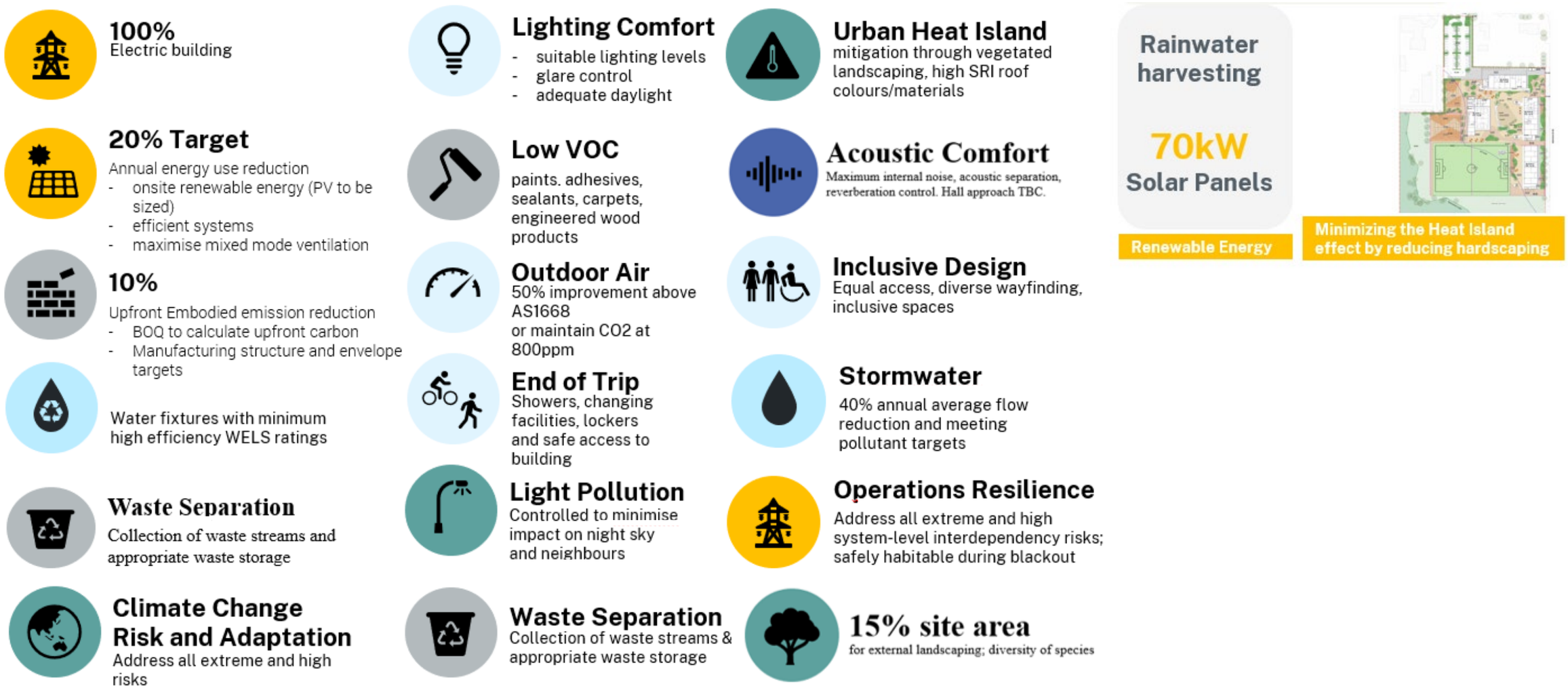
CPTED employs four key strategies. These are territorial re-enforcement, surveillance, access control and space/activity management. All CPTED strategies aim to create the perception or reality of capable guardianship. Further, CPTED can also make people, particularly vulnerable people, more comfortable in public spaces and create a sense of safety.

The design embeds principles of Crime Prevention through Environmental Design in building siting, arrangement, location of entries and windows, circulation paths, fencing, as well as through technology to support crime prevention. Section 5.3.1 of this report provides further information.

4.6 Sustainability

4.6.1 GBCA Greenstar Pathway

The project is registered with the Green Building Council of Australia for Green Staring Buildings v1 rating 4 Star Target. Key Green Star / EFSG / Sustainable Buildings SEPP targeted design components are diagrammed below:



4.6.2 EFSG Pattern Book Façade Design

The refinement of the typical standardised building GLS façade and the developed guidelines achieve the following outcomes in relation to the key compliance parameters set out above:

- A spatial daylight autonomy (sDA) result of 42% and above for all NSW climate zones and for four orientations, i.e. direct North, South, West and East. This is assessed in accordance with the GS and EFSG requirement of achieving a min. of 40% of the floor-area above 160 lux for a minimum of 80% of the occupied period.

- A natural ventilation free-area of 6.25% of the floor-area, in accordance with the EFSG Design Guideline 55, and the Australian Standard 1668.4.

- Compliance with NCC Section J through the performance pathway J1V3, wherein an energy model of the proposed façade solution is compared with a reference energy model based on Deemed-to-Satisfy (DTS) performance values.

- Compliance achieved for all NSW Climate Zones and four orientations except for Climate Zone 7.
- Recommendations for compliance with Climate Zone 7 have been provided.

- An energy improvement of 20% and above, excluding solar PV, for all Climate Zones and four orientations in accordance with the Green Star methodology, wherein an energy model consisting of the proposed façade and building services (mechanical and lighting only) is compared with a reference model.

The above recommendations are taken from the "SINSW standardised Façade Design GLS Hub" submitted on 24/06/2024 (Rev 01)

Daylight assessment

Spatial Daylight Autonomy (sDA) is the daylighting metric used to evaluate daylight availability across the different spaces. Australian sustainability assessment framework Green Star (D&AB v1.3) requires between 40-60% of regularly occupied (aka Primary) spaces to achieve at least 160 lux for 80% of the time. The EFSG requires the same performance criteria to be applied to each floor.

Daylight Results - Graphic Illustrations

A few key graphical illustrations of the daylight results have been included below. Further illustrations can be provided if required.

The difference in results between Figure 4.4 and Figure 4.5 highlights the significant impact the staircase has on the overall daylight results, with an improvement of around 20% in total sDA. This indicates that the overall glazing may be further reduced from the suggested configuration of 4x1.2x1.7 if the staircase can be in a location where it has minimal impact on the daylight, i.e. the side of the building where no glazing is present.

The design locates stairs and circulation towards the ends of each building to optimise daylight in internal spaces. Bushfire requirements for metal mesh screens are offset by increased light transmission glazing. Refer also ESD Report forming an Appendix to this report.

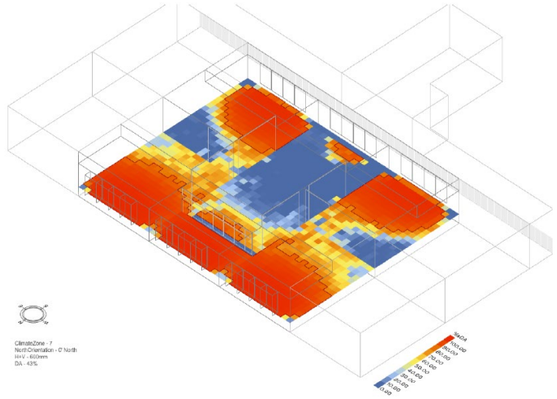


Figure 4.4
Climate Zone 7
Walkway Facing South
Glazing: 4 Panels of 1.2x1.7m (WxH)
Shading 600mm Fins Vertical + Horisontal
Staircase Included
Schedule 9AM to 4PM
sDA – 43% (Compliant)

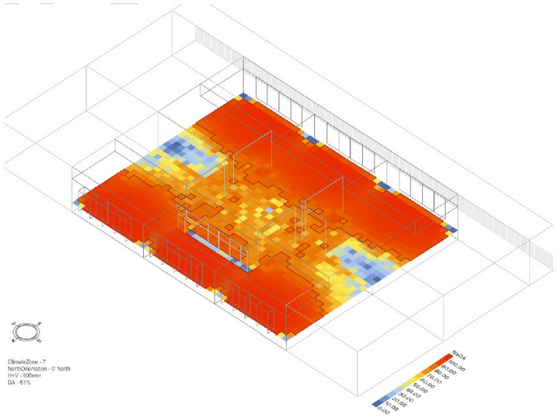


Figure 4.5
Climate Zone 7
Walkway Facing South
Glazing: 4 Panels of 1.2x1.7m (WxH)
Shading 600mm Fins Vertical + Horisontal
Staircase Excluded
Schedule 9AM to 4PM
sDA – 61% (Compliant)

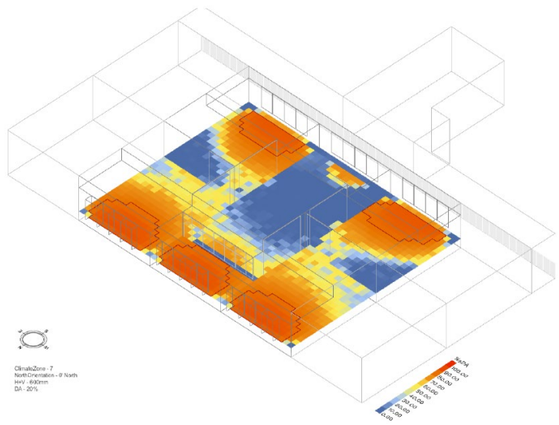


Figure 4.6
Climate Zone 7
Walkway Facing South
Glazing: 4 Panels of 1.2x1.7m (WxH)
Shading 600mm Fins Vertical + Horisontal
Staircase Included
Schedule 9AM to 6PM
sDA – 20% (Non-compliant)

Natural ventilation assessment

A natural ventilation assessment has been undertaken which considers the findings of the daylight assessment, discussed in section 4.6.2 Daylight Assessment,.

Principles of Natural Ventilation

Natural ventilation is the principle of introducing air change between the ambient and internal environments, thereby diluting any internal sources of pollution such as odour, carbon dioxide, volatile organic compounds (VOCs) etc. The use of effective natural ventilation can typically be expected to improve the indoor air quality (IAQ) and reduce the use of mechanical ventilation and air-conditioning and associated energy usage. This combination is often referred to as mixed-mode ventilation.

In all newer schools delivered by SINSW the natural ventilation is supported by a mechanical ventilation system to ensure the IAQ levels are maintained at all times, even under 'no wind' scenarios, or during periods where use of natural ventilation would result in extremely cold or hot indoor air temperatures

Natural Ventilation Results

The standardised design provides an operable louvre each with a width of 1,400mm width and height 1,700mm height provide an effective free area of 4.3 m2, with an effective opening ratio of 90%. The louvre are distributed across the façade to provide the best possible air distribution across the entire occupied area. The proposed system will need to be designed and detailed to meet noise criteria as provided by Acoustic Consultant.

The design of the mechanical system allows for closing of the louvre doors as preferred by the occupants for conditions where low noise levels are desired.

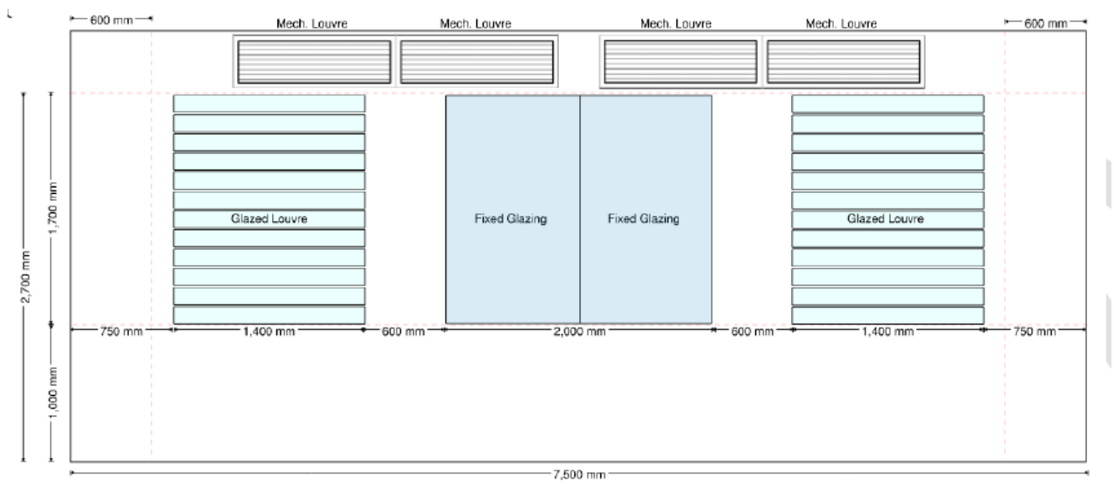


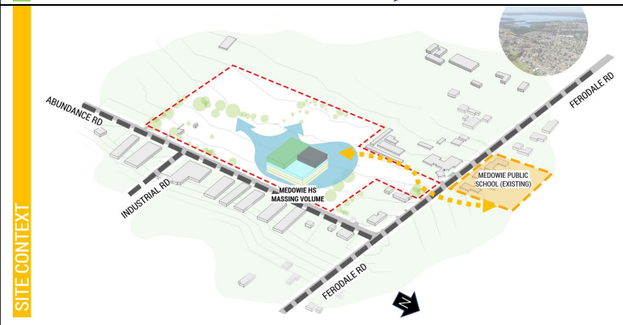
Figure: Extract from the SINSW Pattern book illustrating the natural ventilation model. Source: SINSW

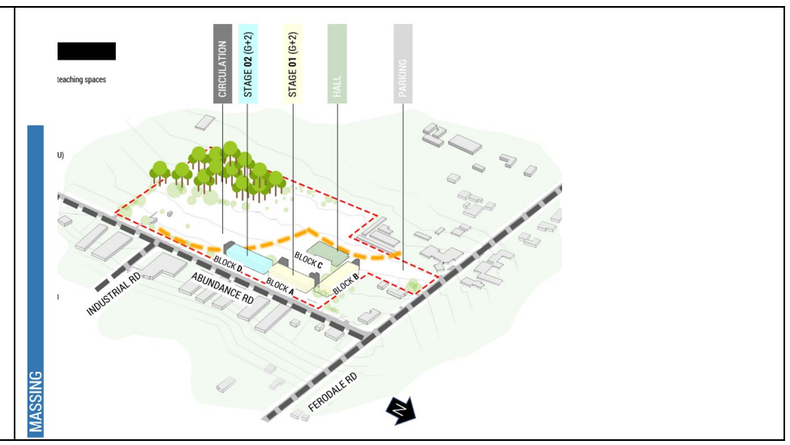
5 ARCHITECTURAL DESIGN RESPONSE

5.1 Urban Design

5.1.1 Masterplan and Arrangement

The Architectural Design responds to the immediate and extended context of the site through urban design principles. The main buildings and administration block address the primary street frontage at Abundance Road and provide a legible and visible entry point to the school for staff, students and visitors. The building arrangement creates a welcoming entry plaza at the main entrance adjoining the pedestrian crossing and bus and private vehicle drop off / pick up points. The three story buildings are an appropriate bulk and scale in the context of the industrial buildings on the opposite side of Abundance Road. Pedestrian entry points are located to create connection at Ferodale Road to the primary school and for community out of hours use for access to the hall. The buildings are arranged to create a protective courtyard around the central gathering area to the inside, shielding school areas from adjacent industrial area noise and providing activation and identity to the public domain.

Site Boundaries and local road network Diagram	
Site Constraints Diagram showing petrol station, high voltage power lines, biodiversity, bushfire asset protection lines, adjoining uses	
Site Opportunities Diagram showing views, connections and open space	

Scope Massing Diagram showing proposed building arrangement	

5.1.2 Biodiversity Design Response

The architectural design of Medowie High School mitigates the effects on the portion of the Site noted as of Biodiversity Value by locating the buildings, landscape areas and main circulation and entry points away from the areas of value. A buffer zone is provided between the Biodiversity Value Area and the proposed facilities ensuring that landscape surfaces, structural foundations, drainage and service trenching are all located well clear of any zone of influence. The existing trees include potential koala habitat. Landscape design has incorporated species selections that are compatible with the biodiversity value area being primarily native species suitable to or endemic to the area. Site services are located well away from the biodiversity value area. The required access road to the perimeter of the biodiversity area has been designed as a mineral earth road to further protect the biodiversity value of this portion of the site whilst also providing the required RFS access. Access gates have been provided at the perimeter of the school grounds for ongoing maintenance of the buffer zone and potential educational experiences for students in the future.

5.1.3 Bushfire Design Response

The architectural design of Medowie High School responds to the impacts of bushfire affectation of the site. The buildings are arranged to be located outside of the bushfire asset protection zone. The design locates open play areas within the asset protection zone. All buildings are designed to meet the requirements of Construction in Bushfire Prone Areas BAL 19. Fire Engineering input has optimised the design of the school for the specifics of the site to provide an engineered strategy for fire vehicle access to protect the school.

5.1.4 Flooding Design Response

In response to the Flood affectation of the Site, the design has been developed to locate all the buildings and critical services above the advised Probable Maximum Flood (PMF) Levels as set out in section 4.1 in the Flood Impact Risk Assessment by Enstruct. Advice from the consultant flood engineer has been coordinated to locate each building above the PMF for the relevant location on Site. Plinths are noted to essential services to raise these above PMF to mitigate any risks to essential services during an emergency on site. A Flood Emergency Management Plan is being prepared in conjunction with the design to coordinate the required actions in the event of an emergency, or the likelihood of an emergency including school closure, evacuation and emergency procedures.

5.1.5 Setbacks

The design allows for minimum 10m setbacks from front, side and rear property boundaries. This is to comply with requirements of Planning for Bushfire Protection, and National Construction Code buildings on bushfire prone land. The setbacks apply to buildings. Awnings and COLA structures are not restricted by the same controls. Weather protection to the bike parking and an optional COLA are not subject to the same requirements. The bike parking is low and to the south of the adjoining property so will not visually intrude or overshadow the adjoining property.
The main building setbacks are all landscaped and activated with overlooking occupied spaces, bike parking and staff areas.

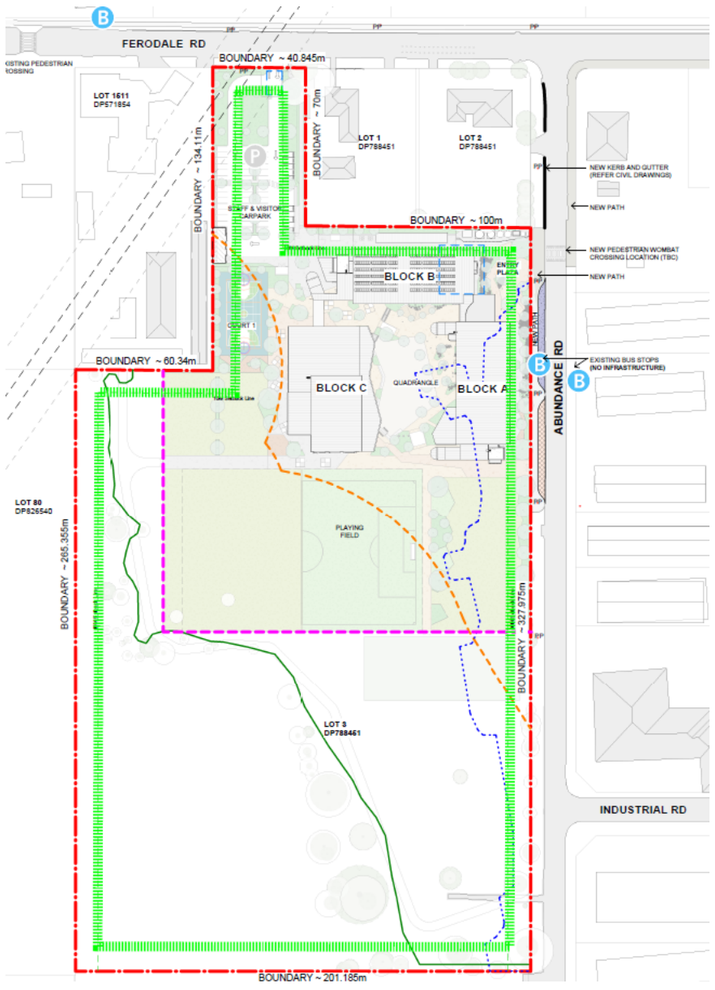


Figure: Plan showing 10m boundary setbacks for bushfire requirements highlighted in green.
Source: NBRS

5.1.6 Entry Plaza

Image: Artist's Impression of the New High School for Medowie Entry Plaza. Source: NBRS

The entry plaza is located adjacent to the main pedestrian entry & vehicle drop off / pick up at Abundance Road. The plaza is formed in the open area between blocks A & B and opens into the main quadrangle. Gates will allow free student movement from the entry plaza into the school at morning arrival times, and out again in the afternoon. During operational hours the gates will shut and visitors will be filtered into the school reception to ensure student safety.

The plaza is designed to feel welcoming and relaxed and express the school's identity. Planting, casual seating and patterned pavements create a pleasant space to linger. Signage and artwork are incorporated into the building facades to reinforce a sense of the school identity and community. Artworks located on the raised walkway overlooking the plaza will reference the links to aviation and the Dam, that form part of the identity of the Medowie township. A welcoming canopy in natural tones and shapes identifies the entry and provides an all weather place to linger and transition into and out of the school.

Activated setbacks to the rear of Block A for staff respite and additional SELU outdoor spaces also provide additional passive surveillance of the entry plaza. Student bike storage is provided adjacent to the plaza encouraging students to travel to school via transport that benefits both the environment and mental and physical health.

5.2 Built Form and Scale

The built form and scale of Medowie High School responds to the local context, being sympathetic in size to the nearby industrial buildings across Abundance Road, and setback to reduce impacts on adjoining residential and allied health buildings. The buildings form an identifiable façade and identity for the school the three storey volumes are setback from the street frontage and side boundaries. The building volumes are separated by shorter, setback circulation and service cores which break up the main facades. The buildings have solar shading and patterning to reduce the visual impacts by breaking up the height of the building into a ground floor masonry base, with defined upper floors, further broken up with the grid of sunshading. The form is unified through use of screens and balustrades connecting upper floors, set back from the main facades.

5.2.1 Building Arrangement

The architectural design, based on the School Infrastructure NSW Expandable School standardized design model, is for three storey learning hub buildings (Blocks A,B) and a single storey gathering space (Block C), arranged around a central landscaped quadrangle. The buildings are set in landscaped outdoor learning and play areas, with perimeter entry plaza, staff & visitor parking, and service and emergency access. Construction will establish the school for up to 640 students.

The SINSW standardized buildings are utilized for the New High School for Medowie. The standardised buildings are intended to provide efficient and equitable buildings for all NSW public schools. The standardised buildings accommodate learning hubs set out within a standardized construction grid, in three storey arrangements. Open veranda circulation is provided on the inner side of each building at all floors with vertical circulation and amenities accessed at each end of walkways.

The specific arrangement of learning hubs and walkways around the central quadrangle encouraging a strong sense of community, safety, and activated shared space. Each of the four corners of the quadrangle is activated and has a different identity. To the north east, the entry plaza adjacent to the administration hub welcomes students, staff and visitors. The student reception connects here also for students to access assistance. The to the south east, the support learning hub opens to an outdoor covered area, providing all weather learning opportunities and encouraging inclusion in the broader school by providing an area designed specifically for support unit needs, without separating it from the main school community space. To the south west, the gymnasium is provided with large doors allowing for school gatherings in the hall to spill into the main quadrangle space. The canteen is located in the north west corner, activating the area with casual seating and the comfort of nourishment and social opportunities. The south end of the quadrangle is open, allowing views to the south and south west across the playing fields to the significant trees on the south portion of the site. In addition to enhancing sense of community, the quadrangle provides for passive overlooking for student safety, efficient movement between learning spaces, and ease of navigation for students and visitors. Playing courts have been located at the rear of the proposed hall to optimize use of the asset protection zone and provide for a junior play area to support younger students as they transition to high school, and reduce overwhelm in first few terms. The southern side of the central area is open capturing views across the Biodiversity Value area across the playing field.

5.2.2 Block Naming and Function

Block A is on the eastern side of the quadrangle, North – South orientation, providing the main public façade of the school, facing Abundance Road. It accommodates the administration hub and public entry opening into the proposed entry plaza at the northern end. The Support Unit is located at ground in the south end of the building, with direct access to the Support Unit outdoor learning space. Upper floors accommodate the school library,

Block B flanks the north side of the quadrangle, runs East West parallel to the shared northern boundary. Bike storage and services are shielded from the quadrangle by the 3 storey building. The western end of Block B is close to the service delivery zone for ease of unloading deliveries for the TAS spaces.

Block C (the gymnasium, hall & canteen) encloses the western side of the quadrangle. It is located outside of the Bushfire asset protection zone, creating a protected area behind. The main façade of the hall has large openings allowing spill into the Covered Outdoor Learning Area and quadrangle for large events and gatherings. The school canteen is located at the north end of Block C. Adjacent awnings provide weather protected access from all buildings. The canteen activates the north west corner of the quadrangle providing sheltered casual seating areas. The canteen, is located so that, in addition to daily activities for staff and students, food and drink can be served to visitors for community events or out of hours use. Amenities are accessible separately to the main hall for community out of hours use in association with outdoor courts. Amenities are located for close convenience to the main play areas and canteen for student use during breaks. The building is close to the carpark and entry from Ferodale Road allowing it to be accessed separately from the main school. This provides opportunities for connection to the primary school and community groups, for out of hours use of hall, courts, canteen, and amenities.

Elevation View of Hubs along Abundance Road, with landscape setback. Source: NBRS

5.2.3 Height of Buildings

The following key height, overshadowing and planning considerations include:

- Blocks A and B are 3-storeys high ranging from 11.5m to 13.85m from existing ground level. Blocks A & B ground floor levels are above the probable maximum flood level as advised by consulting flood engineer. The site is relatively flat, and the arrangement requires minimal cut and fill for the proposed school.

- A three storey construction with a 3750mm floor to floor height is lower than an effective height of 25m thus it does not trigger the sprinkler protection requirement.

- The school buildings are positioned to clear the Bushfire Asset Protection Zone. They will be constructed to meet BAL 19 and to meet the requirements of Specification 43 of the BCA for school use proposed on land mapped as bushfire affected. Fire engineering advice including performance solutions is incorporated into the design to optimise the design for specific site conditions.

- The biodiversity zone to the south west portion of the site is retained with the proposed site arrangement. The significant trees will form views from the quadrangle and most learning spaces.

- The proposed buildings form a buffer along Abundance Road, providing acoustic separation between industrial use buildings the far side of Abundance Road and the outdoor play areas within the quadrangle. High level open walkways are located around the quadrangle on the internal side of the buildings, to minimise noise impacts from the school on adjoining properties and ensure efficient circulation for reduced travel between learning hubs for students and staff.

- Buildings are set back from property boundaries to reduce overlooking and overshadowing of adjacent properties. Circulation walkways are located on the internal side of each building to minimise overlooking and acoustic impacts on neighbours.

- The scale of the three storey buildings is considered appropriate in the context of local industrial buildings to the east across Abundance Road and adjacent to the site to the west on Ferodale Road. Local industrial buildings are single and two storey, with large vehicle openings facing away from Abundance Road, predominantly blank facades facing the new school. The bulk and scale of the new school façade is broken with considered location of sun shading elements, openings & changes in facade materials.

1 SITE ELEVATION - ABUNDANCE RD (EAST)
1 : 250

2 SITE ELEVATION - BLOCK B AND BLOCK A
1 : 250

3 SITE ELEVATION - SOUTH
1 : 250

Image: Artists Impression of New School buildings and adjacent industrial buildings showing Relative bulk and scale.

5.2.4 Building Facades Materiality Palette

Careful consideration of robust and pragmatic building material selection is essential for a high school. The materials were selected to reflect the heavily treed forest setting of the town of Medowie, and immediate site context. The dark understory created by the dense canopy and the earthy timber tones of the tree trunks. The natural colours selected reduce stress, glare and overstimulation in staff and students occupying the buildings. The forms reference the ingenious aerodynamics of the boomerang, developed over thousands of years for its precise flight paths and tie back to the big idea of the project, celebrating human engineering and ingenuity.

The design incorporates the following building material selection:

- Face brick external wall cladding is proposed at ground floor only. Face brick is robust and can withstand wear and tear in highly transient area.

- Compressed fibre cement (CFC) planning is acceptable for use on the upper floors where moderate transient spaces.

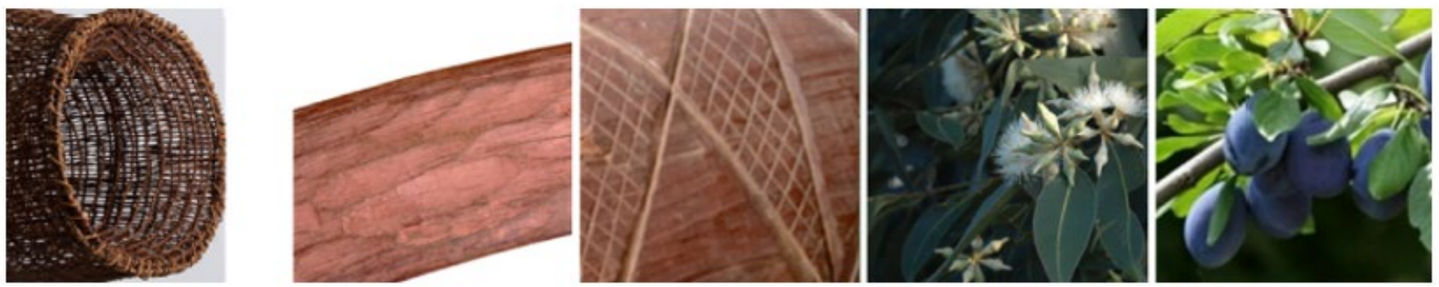
- Metal cladding is inexpensive if compared to coloured through CFC. Metal cladding with up to three different corrugation profiles are proposed to be used on high level and street facing façades where there will be no pedestrian traffic.

- Using powder coated aluminium window framing and glazing system throughout the campus.

- Using powder coated steel balustrade posts with powder coated aluminium metal infill.

- Selected material to be from the standard material, colour ranges & finishes. Custom colours & finishes will be avoided.

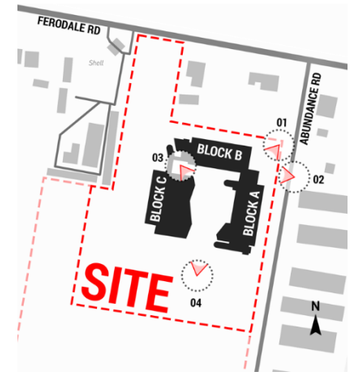
- Materials and colour palette has been developed in alignment with project Concept – the town of Medowie is surrounded by engineering wonders, the Dam structure, the airbase, thousands of years of cultural knowledge, innovations, and care of Country by the Worimi Traditional Custodians. The Concept for the New High School for Medowie is celebration of Engineering, First Nations Innovation & Technology.



5.2.5 Key perspectives

The following artist impressions demonstrate the built form as viewed from various perspectives.

KEY PLAN



01. Entrance plaza from Abundance Rd

03. View looking at the Quadrangle towards Block A

02. Entrance plaza from Abundance Rd

04. looking North towards Block B

5.2.6 Sunlight & Overshadowing

Overshadowing diagrams

The following key solar access considerations include:

- Blocks A and B are 3-storeys high throughout and are set back from site boundaries to prevent overshadowing of adjoining properties;
- Solar access is maintained to central play areas during winter for student comfort and amenity
- Summer shading through tree canopy is limited due to bushfire controls. Shaded areas are provided to the perimeter of the quadrangle and in key areas of high activity.

5.2.7 Building Setbacks

- All buildings are set back from the property boundaries by 10m. This design minimises impacts of the three storey buildings on surrounding developments, reduces overshadowing impacts on adjoining properties, reduces bulk and scale from the public domain.

5.2.8 Noise

The school has been designed to shield the neighbouring properties from noise impacts through use of the buildings as a noise barrier between external play areas and adjoining properties, through setbacks from adjoining property boundaries, and through implementation of acoustic strategies to noise generating areas of the school, such as mechanical plant areas which are provided with acoustic louvres to prevent impacts on sensitive noise receivers. An acoustic report summarising acoustic issues and strategies to minimise or mitigate impacts on adjoining sensitive noise receivers has been prepared.
Noise impacts from adjoining properties on the school have also been considered and mitigated through design through use of façade materials and appropriate acoustic rated glazing.

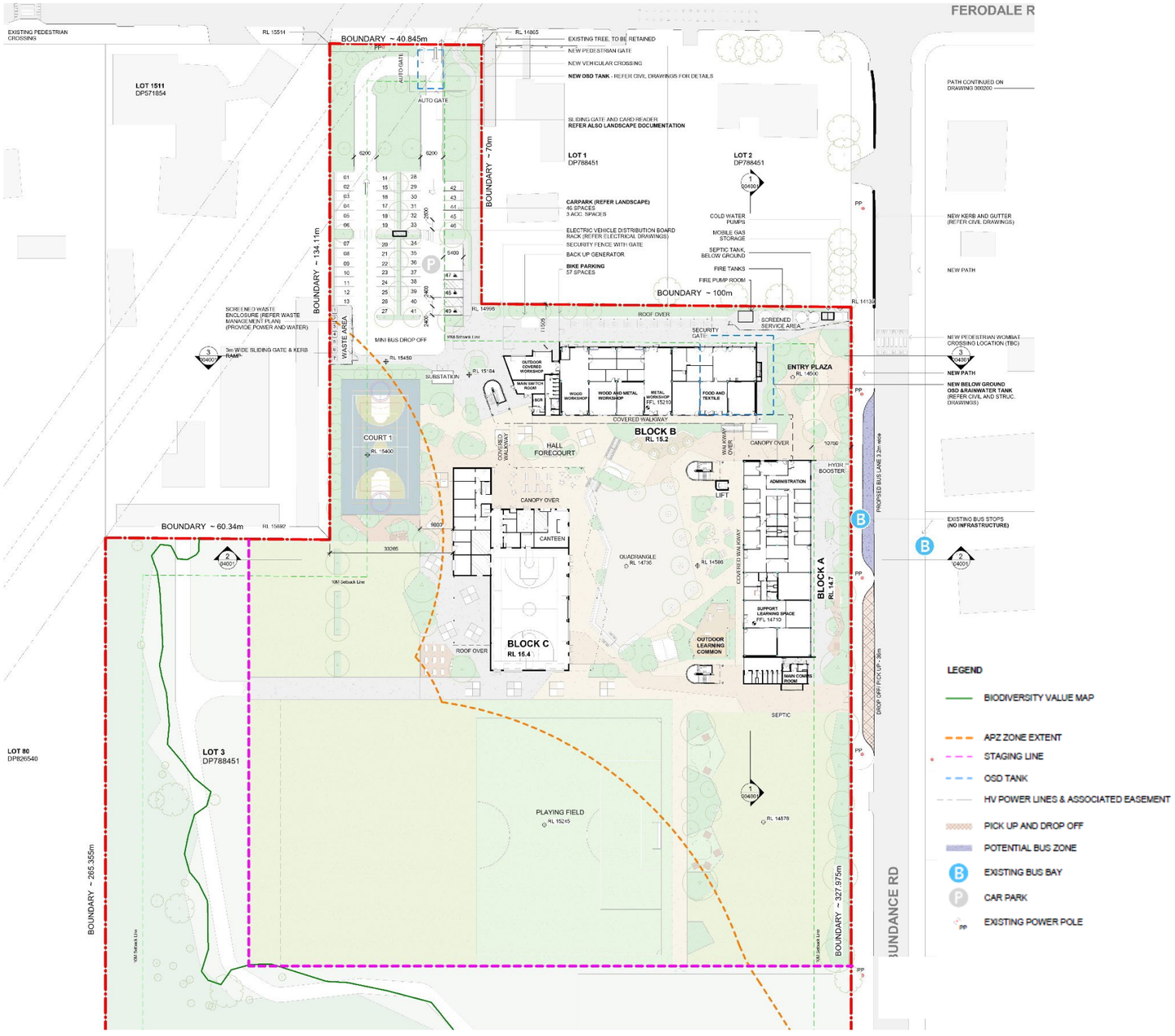
Figure: Shadow Diagrams showing shadows cast by new school buildings for 21 June (Winter Solstice) and 21 January. Source NBRS

5.2.9 Asset Utilisation and Capacity

The design intent is to optimise the use of the 6.5 hectare site to accommodate a high school for up to 640 students including building facilities, and required outdoor play space. The design allows for efficient future expansion of the facility to accommodate up to 1000 students as demand increases. The site planning is constrained by bushfire, flooding, biodiversity requirements and the irregular lot shape. The proposed design maximises asset utilisation and capacity using the following methods.

- Building footprint suitable for 3 storey construction within the north east corner of the site where there bushfire constraints have least impact;
- Frontage to Abundance Road to create an identity and presence for the new facility;
- Connection via Ferodale Road frontage to separate staff vehicle movements from pedestrian and student arrivals;
- Connection to existing primary school and out of hours community access via Ferodale Road;
- Distance between learning spaces and adjacent petrol station to minimise air quality, noise and potential risk impacts;
- A minimum 10m setback from boundaries in accordance with Bushfire controls;
- Buildings located outside of APZ zone;
- New pickup drop off facilities along the public roadway;
- Landscape areas and outdoor play spaces and achieves above the minimum unencumbered play space of 10m2 per student;
- Carpark provision at rate of 1 space per staff member in accordance with SINSW requirements;
- Waste and delivery collection arrangements including vehicle access separate from student areas;
- Delivery arrangements in close proximity to Wood and Metal, Food Tech and canteen, with vehicle movements separated from student areas;
- Courtyard arrangement for passive surveillance, and sheltered outdoor learning and play;
- Efficient connections between buildings to provide ease of movement around site during daily operations;
- Use of building circulation to minimise need for covered walkways for all weather connections to all areas of the school;
- Minimal tree removal on the south west corner of the site to preserve biodiversity zone;

The entire school site has been optimised to create an architectural design response that is unique and sensible and responds to this site.



5.2.10 Schedule of Accommodation

SUMMARY OF AREAS					
Function	Area	SLU Total	Special Teaching Space Total	Workshop /Labs Totals	Teaching Space Totals
	11 m²	0	0	0	0
HS 101 GENERAL LEARNING SPACES	1228 m²	0	0	0	14
HS 101.03 LEARNING COMMONS	345 m²	0	0	0	0
HS 102 GENERAL LEARNING SPACES (SUPPORT)	517 m²	3	0	0	0
HS 201 ADMINISTRATION HUB	369 m²	0	0	0	0
HS 202 STAFF HUB	413 m²	0	0	0	0
HS 203 GYMNASIUM + CANTEEN	977 m²	0	0	0	0
HS 204 LIBRARY HUB	528 m²	0	1	0	0
HS 301 SCIENCE LEARNING HUB	332 m²	0	2	1	0
HS 302 VISUAL ARTS LEARNING HUB	326 m²	0	2	1	0
HS 303 WOOD + METAL TECHNOLOGY LEARNING HUB	606 m²	0	2	2	0
HS 304 FOOD + TEXTILES LEARNING HUB	392 m²	0	2	1	0
HS 305 HEALTH/PE LEARNING HUB	315 m²	0	2	1	0
HS 306 PERFORMING ARTS LEARNING HUB	263 m²	0	2	1	0
HS 401 STUDENT AMENITIES	250 m²	0	0	0	0
HS 402 OTHER STORAGE	46 m²	0	0	0	0
HS 501 OUTDOOR AREAS	191 m²	0	0	0	0
HS CIRCULATION	1167 m²	0	0	0	0
HS SERVICES	465 m²	0	0	0	0
SERVICES	13 m²	0	0	0	0
VER	7 m²	0	0	0	0
Grand total: 218	8761 m²	3	13	7	14

Areas noted per business case and endorsed masterplan. Areas subject to development with standardised building design.

5.3 Safety and Security

5.3.1 Crime Prevention through Design Response

The design of Medowie High School employs several strategies to prevent crime through environmental design.

Passive surveillance is maximized in the design of Medowie High School. All teaching and learning spaces have good passive surveillance of either the internal gathering space or the rear setbacks to deter inappropriate behaviour. The circulation paths around the school are open and overlook learning spaces and outdoor gathering areas to ensure activation and passive surveillance across the site. The stairs are also open and activate / overlook adjoining areas. Within the buildings, glazed walls allow for passive surveillance between teaching spaces increasing accountability of both staff and students. The design of student amenities includes good passive surveillance of circulation and common areas and employs the SINSW amenities strategy to ensure minimization of bullying, self harm and general student safety. The administration block which is staffed during hours of operation overlooks the entry plaza and will monitor comings and goings to ensure perceived safety and accountability of people entering the school via the plaza.

CCTV will be included for surveillance of areas of high importance or where there is limited passive surveillance such as the bike store which will remain locked between arrival and departure times. Refer also services drawings forming an Appendix to this report. The CCTV design and location will be to standards and specifications set out by School Infrastructure NSW and the Department of Education to ensure adequate surveillance throughout the campus.

Territorial reinforcement – the design of the school provides for perimeter fencing to all school areas as well as signage and landscaping to identify the school premises. Specific gates will allow for student staff and visitor access at specific times throughout the day. The entry courtyard fencing will allow for the plaza to be shut down out of school hours whilst remaining a well supervised semi public area during operational hours. The carpark fencing provides controlled access into the site and signage notifying people approaching the carpark of entry controls and conditions. The perimeter of the site beyond the proposed school is proposed to be fenced and signposted to prevent unauthorized access and deter activities within the unoccupied portion of the site. The style of fencing including materiality, height and balusters is designed to maximise the effort required for unauthorized entry into the site. Careful design of site services and landscape elements ensures no opportunity for footholds to climb over the perimeter fence.

Access control is designed into perimeter gates and doors ensuring free movement of students into and out of the school at arrival and departure times, and controlled access out of hours and during operation. The administration area is place adjacent to the main arrival space to allow entry only after sign in or vetting through the office staff for any visitors to the site. Swipe card controls allow access for certain staff members to certain areas once within the site. Carpark access control is also included in the design.

Materials are selected for robustness and ability to withstand damage, particularly at ground floor and adjoining circulation areas. Face brick is selected for most ground floor high transit areas and can withstand damage and wear and tear. Selection of compressed fibre cement at upper floors along walkways where activity is limited to circulation. Metal cladding is utilized only at high level where no contact is anticipated. Powder coated aluminium window and door frames are used throughout the school, powdercoated steel balustrades along circulation paths.

Community use of the facilities out of school hours will increase sense of community ownership and guardianship of the school and activate the school out of hours. The design accommodates for out of hours use of the gymnasium, external amenities and canteen areas for community groups as well as potential out of hours use by these groups of the onsite carpark. This has been developed with consultation with local community and the Project Reference group and is supported by SINSW.

Promoting design that fosters community pride and a sense of place plays a vital role in maintaining the longevity of the design as it encourages people to identify and report issues and illegitimate behaviour. It is crucial to encourage broader community engagement in the design and use of school facilities. This includes identifying Country and consulting with representatives from relevant local Aboriginal language groups in a respectful and structured Connecting with Country process. Encouraging community engagement with the design could also involve offering part of the design such as the Library and Hall for sporting and /or cultural events outside of core functional hours. Connecting with Country consultation is underway to inform the design.

5.3.2 Access Control, Security and Emergency Access

Pedestrian Access

The primary pedestrian access to the site is located the main entry on the north east corner of the Site at Abundance Road at the Entry Plaza. This access will be the main entry for all students, staff and visitors and is directly linked to the bus and private vehicle drop off points, and the new pedestrian crossing at Abundance Road. This entry adjoins the school administration, where a manned reception desk will control all arrivals outside of daily student arrivals and departures. A secondary pedestrian access point is provided at the Ferodale Road frontage providing access for pedestrians arriving at the site from the west, or co drops off with the nearby primary school. Both pedestrian access gates will be controlled outside of the main arrival / departure times to ensure monitoring and access control to persons entering or leaving the site during operational hours.

Vehicle Access

Vehicle access into the site is limited to the Ferodale Road entry for staff parking, school bus drop off / pick up, disabled accessible drop off / pick up and visitors to the school. The carpark entry is to be accessed via swipe card and intercom to prevent unauthorised vehicle entering the site. Deliveries to the site will be pre arranged and facilitated via the carpark also.

For student safety, maintenance vehicle access within the site is to be limited to out of hours to areas accessible by ute or small vehicle to for light maintenance. Service access gates are also provided for access to the south portion of the site for maintenance of the asset protection zone, fences and field. Gates and driveway crossing from Abundance Road will allow vehicle access to the south portion of the site for occasional out of hours maintenance access only. Refer also to Landscape comments in section below.

Out of hours community shared use of some facilities including gymnasium, canteen, amenities and outdoor courts, is designed for through proximity of these facilities to the Ferodale Road entry and carpark.

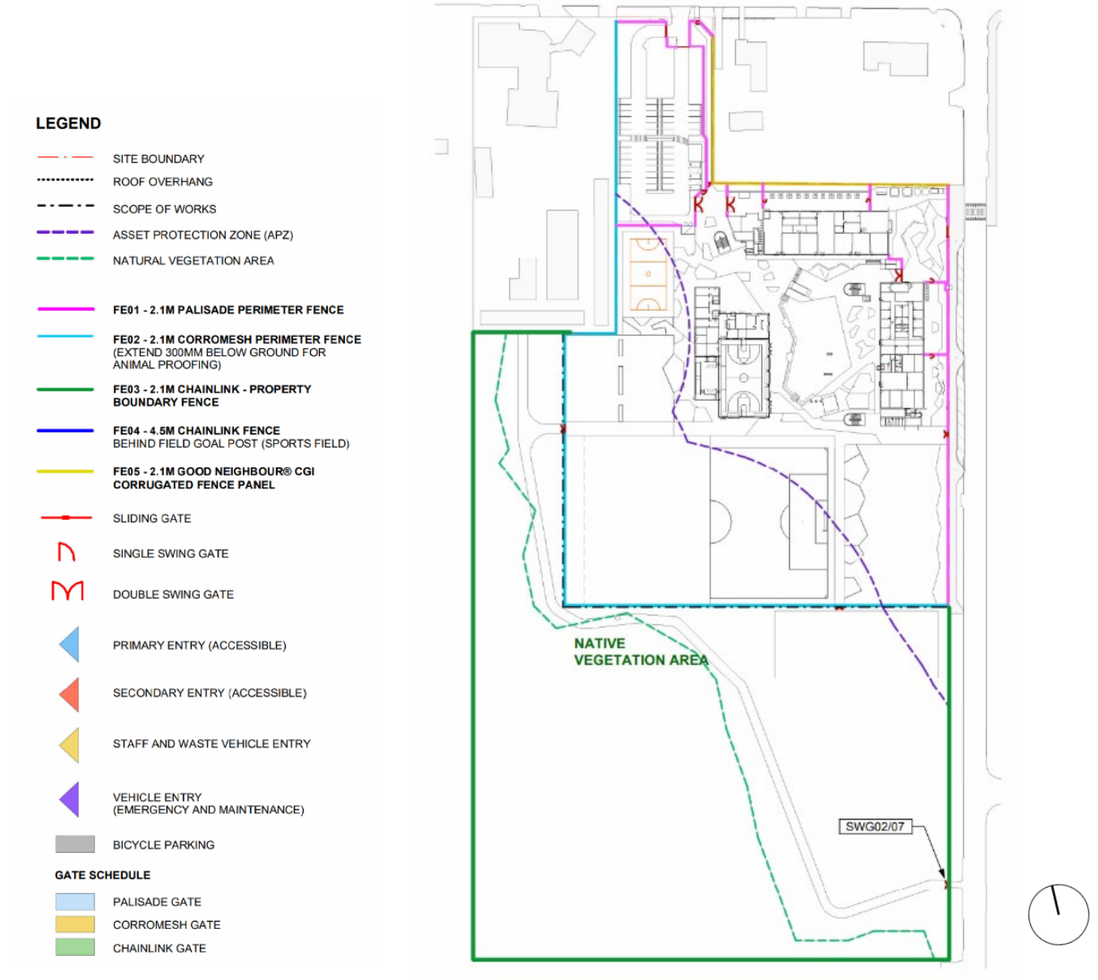
Emergency access

Emergency access for an ambulance is facilitated in the bus bay at Abundance Road (close to administration, sick bay and the lift). Ambulance access into the field or quadrangle could also be facilitated through the southern gates, across the field. Fire brigade or Rural Fire Service appliance are able to access emergency site infrastructure (fire hydrant boosters, fire tanks, etc.) from the bus bay in Abundance Road including consideration of the 45 degree rigid connection for the truck to the booster.
Both ambulance and fire appliances are able to access the carpark via Ferodale Road.

Site security

In line with SINSW Asset Management Unit (AMU) site security strategy the perimeter site security is as follows:

- Perimeter fencing at site boundary along Abundance Road frontage, shared boundaries to adjoining properties to the north, east, south, and petrol station to the west.
- Fencing set back from the Ferodale Road frontage to allow service access to the existing power pole infrastructure on site. Sliding gates with access control and remote activation to provide access to the staff and visitor carpark. remote activation and access controls will allow for vehicle entry to the carpark.
- Fencing to the perimeter of the proposed School area to separate student play areas from the remainder of the site. Access gates provided for maintenance access to southern and western portions for APZ maintenance work.
- Fencing to the perimeter of the legal lot to ensure no unauthorised access. Gates to allow access for maintenance of the Asset protection zone between the proposed school boundary and the lot boundary.
- All buildings and site infrastructure to be offset from boundary by minimimum 1200mm to prevent footholds / climbing opportunities.



5.3.3 Safety in Design Risks

Safety in Design (SID) workshops have been carried out to identify the potential project risks from inception to completion. The SID assessment result in a list of potential project risks and the mitigation strategy. Project risks will be mitigated, designed out or managed throughout the subsequent stages of the project.

SLOPE, AND LEVEL CHANGE DESIGN RESPONSE

Key site level challenges include:

- Flat site with minimal fall presents challenge for drainage of on site detention areas. Larger footprint required to achieve drainage to local infrastructure. Mitigate through site drainage and detention
- Flood planning levels mitigated through Flood Emergency Response Plan and design of buildings above Probable Maximum Flood.
- Accessible paths of travel and providing compliant access between existing site levels and proposed buildings, and between buildings at different levels.

ROADS AND FOOTPATH

Abundance Road lacks existing stormwater infrastructure, kerb and gutter, and footpaths. Mitigated through inclusion of public domain works as to provide footpath and inground stormwater drainage as part of the proposed drop off pick up arrangements for the new facility. Mitigation of road safety risks through inclusion in design of a new pedestrian crossing at Abundance Road.

BUSHFIRE NCC AND PLANNING FOR BUSHFIRE PROTECTION REQUIREMENTS

A portion of the site is mapped as bushfire prone land. NCC 2022 stipulates a minimum of BAL19 construction for all buildings for proposed school projects located within bushfire affected zone. The high school buildings must be located outside of the Asset Protection Zone for compliance.

National Construction Code Specification 43 details requirements for schools including construction to allow for shelter in place during a bushfire event. Fire engineering strategies incorporated into design, including performance solutions to ensure the design is optimised for specific site conditions and occupant safety.

FLOOD

Specialist Flood consultant advice has informed the design response for flood emergencies. The school is to be evacuated in the event of likely flooding occurring. The Flood Emergency Response Plan outlines procedures for this to occur. Should the school be occupied in the event of a PMF storm event, shelter in place provisions are provided. Generators are provided to provide continued emergency services to occupants, generators to be located above PMF. Specialist flooding advice is that the type of flooding affecting the site is likely to be short lived so shelter in place could occur in the event of the school being occupied during a PMF storm. Consultation with the SES has been undertaken and feedback provided. Refer also flood reports and modelling forming an appendix to this report for further details. .

FAUNA RISKS

Locals have advised that snakes, including venomous species have been sighted on the subject site. Part of the safety in design response is proposed snake proof fences to minimise opportunities for snakes to enter outdoor play areas. Weather seals are to be included on all doors, sealed waste areas to minimise attraction for rodents, which would in turn attract snakes, and ongoing maintenance to ensure grass and pathways are kept clear for visibility. These measures are designed to minimise risks to occupants and will be further developed in future stages of the design. These measures are noted on fencing plans and specifications.

CONTAMINATION OR HAZARDOUS MATERIALS DESIGN RESPONSE

Risk of in ground contamination or presence of hazardous materials in existing buildings has been mitigated through Preliminary Site Investigation including boreholes, water wells, and specialist review of site samples from these investigations. Preliminary investigations revealed no contamination in samples. Ongoing vigilance during construction will mitigate further risks.

Hazardous materials, see following note on demolition works.

5.3.1 Demolition

The site consists of existing fenced paddocks, small sheds, and a single storey fibre cement clad, metal roof dwelling located at the south side of the site. These are all proposed for demolition as part of the new school facility. The existing dwelling and outbuildings are in generally poor condition from external visual inspection. The buildings likely contain asbestos and demolition will be carried out by appropriately qualified persons, with waste being transferred to a licenced waste facility as appropriate.

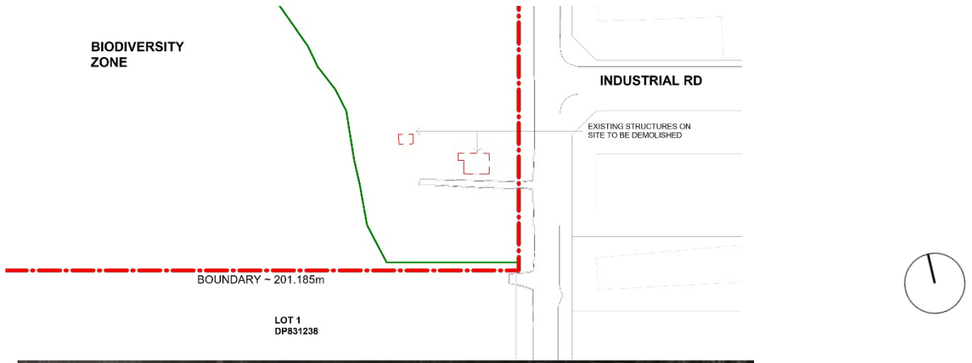


Figure: plan and photo of existing dwelling and outbuildings to be demolished as part of the works.

5.4 Arrival & Movement

5.4.1 Student Circulation, Arrival & Movement

Efficient arrival, movement within the site throughout the day, and departure of students is critical to a successful school. The design provides for a generous arrival plaza adjacent to the main vehicular and pedestrian arrival point to allow for a welcoming and pleasant daily arrival. Bike and scooter storage is provided in proximity to allow for secure storage of passive transport items without the need to bring them through main entry points. The entry plaza is designed to allow for a large number of students at peak arrival and departure times, when buses arrive, or in afternoons whilst waiting for buses to return home. The landscape design provides casual seating for parents and community to feel comfortable to connect whilst visiting the school or collecting or dropping of children. Perimeter fencing will allow the area to be secured overnight to protect the facility and infrastructure. Refer to entry diagram on the right.

A secondary pedestrian entrance is provided for community access from Ferodale Road with convenient access to the hall, courts and potentially canteen, for community events, and out of hours use.
Pedestrian entry is also provided at the south of Block A for occasional direct pedestrian access from Abundance Rd to Support Unit hub if required.
Further gates are provided for student access, or for service and emergency access on the Abundance Rd boundary south of Block B. Weather protected connections join all the buildings for all weather movement between all buildings.

Within the site student and staff movements are via weather protected external walkways which link all spaces around the quadrangle, at each floor. The courtyard plan allows for efficient movement between learning spaces around or across the quadrangle during the day.
Vertical circulation via open stairs is provided at each end of each hub to ensure efficient movement between floors. A lift provides equitable access to all areas of the school.

Figure: Artist's impression showing covered walkways and stairs around central assembly area.

5.4.2 Waste and Deliveries

A waste storage area and collection arrangements have been design for recyclable and general waste to be stored on site, collected on a regular basis and removed for recycling where possible. The waste collection vehicle will collects stored waste from the service area of the carpark. waste collection is to be scheduled outside of operational hours to ensure minimal disruption to the school.

Deliveries to the site will be either via the carpark service area, with intercom communication to staff in the administration hub, or via out of peak arrival and departure hours utilising parking in the Abundance Road private vehicle spaces with direct access to the front reception.
Planning of the school considered canteen, food tech and wood and metal deliveries and located these in proximity to the carpark service area for efficient materials deliveries.

5.4.3 Bike And Scooter Parking

Provision for locked and weather protected bicycle storage areas and scooters has been provided on site in a secure area adjacent to the main school entry plaza. Access is also provided from the Ferodale Road pedestrian entry. The area is to be secured between peak arrival and departure times and will be monitored by cc tv to mitigate risk of theft or vandalism. End of trip facilities are provided for staff who elect to cycle to work.

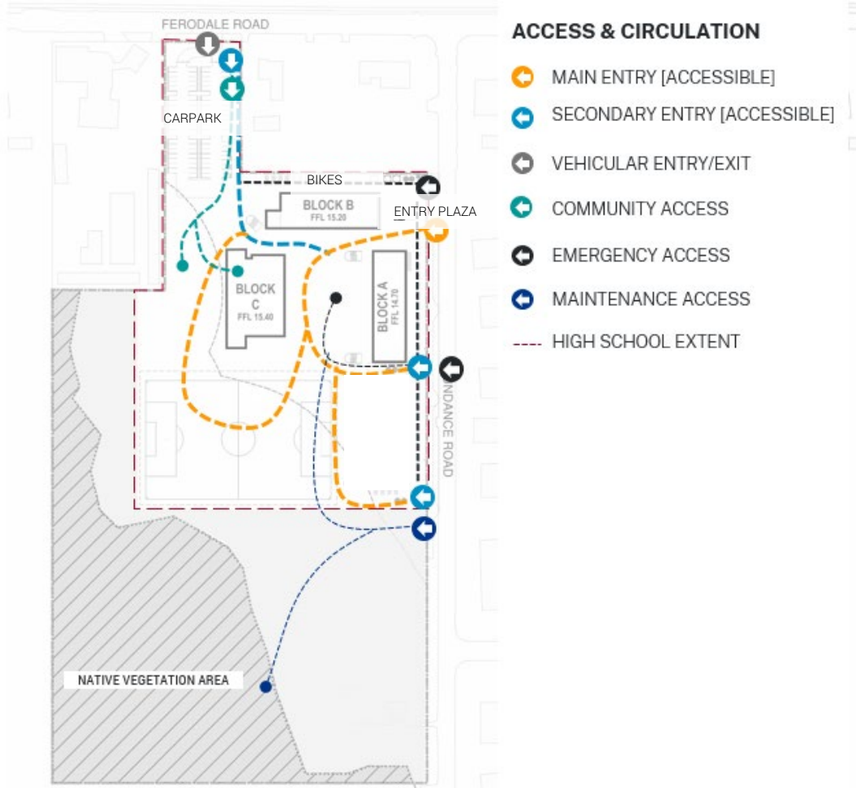


Figure: Diagram showing Entry & Circulation within the site. Source: NBRS.

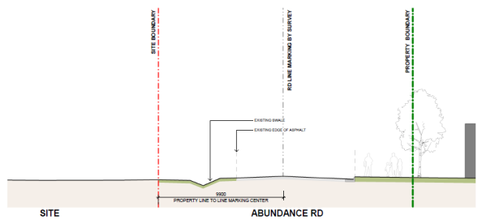
5.4.4 Vehicular Circulation

The considered design for vehicular movement around and into a school ensures safety in school design. The Traffic Consultant has collaborated in the design of the vehicular arrangements for on site parking, service access, emergency access and day to day student drop off and pick up to minimize conflicts between pedestrian and vehicular movements and optimize the traffic arrangements.
Traffic counts for local road network have also been carried out to inform design and consider impacts on the local road network of the proposed parking and traffic arrangements.

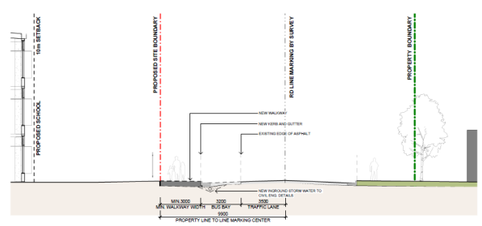
The traffic and parking design includes a proposal for:

- kerbside pick up and drop off bays at Abundance Road, considering existing road carriage way width and power infrastructure.
- Kerbside bus bay at Abundance Road for public transport for staff and student arrivals and departures
- Proposed on site staff & visitor parking accessed from Ferodale Road to meet SINSW requirements
- Accessible parking on site to allow for high needs student loading / unloading away from road traffic movements;
- Proposed staggered start and finish times between the existing Medowie Primary School and the proposed new high school, to be confirmed with bus company and local traffic group;
- Intersection capacity at Ferodale & Abundance road corner has been reviewed for proposed movements in local roads and advice provided on likely impacts.
- Vehicle entry to the site from Abundance Road, and emergency and service access to the buildings, and outdoor play areas from the southern end of the site;

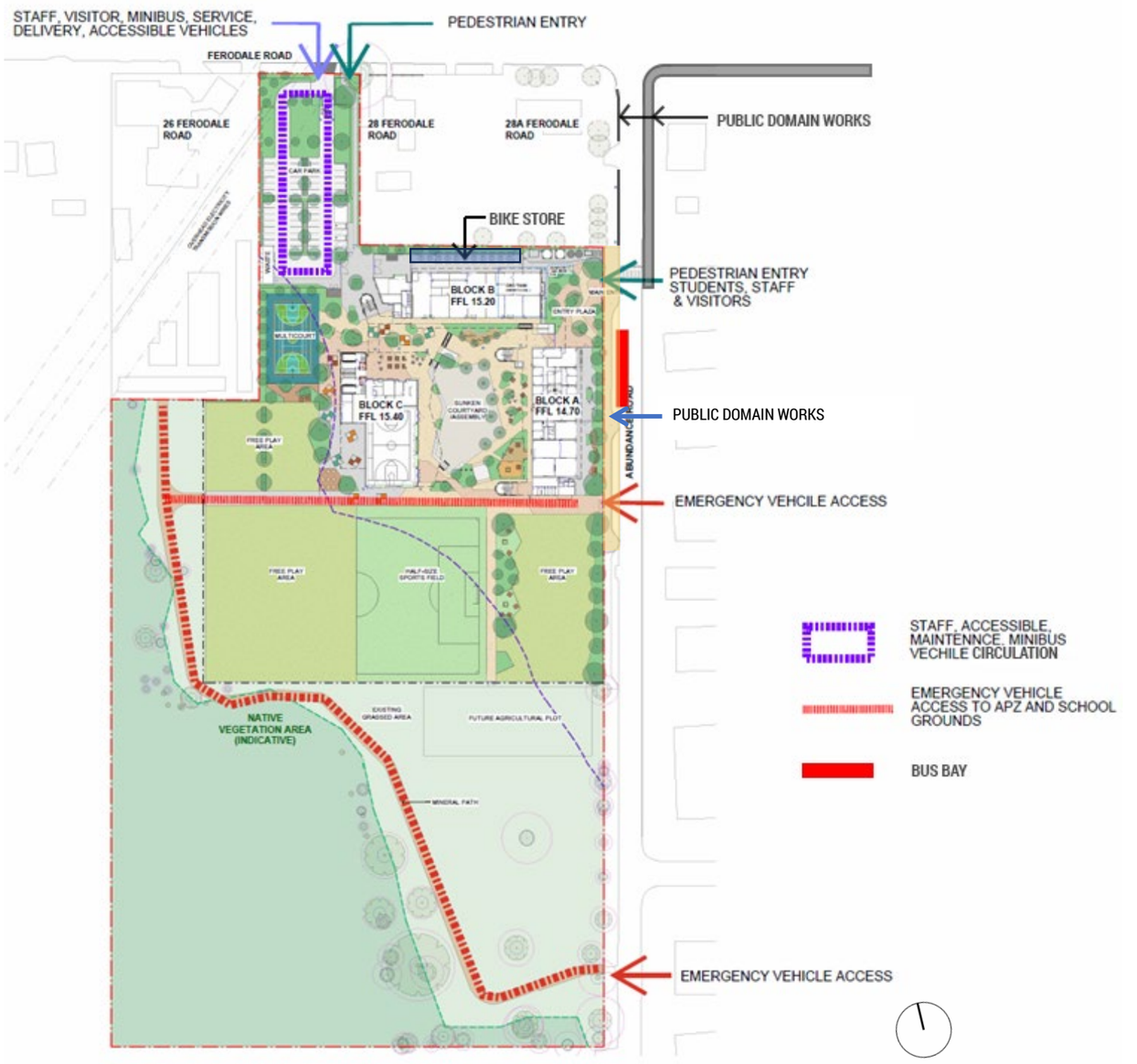
The following diagrams were prepared by NBRS as part of coordination with the Traffic & civil Engineers for proposed kerbside parking arrangements for the Abundance Road frontage. Consideration was given to existing road carriage width, kerbside parking lane width for private vehicles and bus swept paths, footpath widths, and existing power poles, likely stormwater upgrades to allow for kerbside drop off.



1 EXISTING - DIAGRAM FOR ABUNDANCE RD
1 : 100



2 PROPOSED - SKETCH FOR ABUNDANCE RD WORKS
1 : 100



Source: NBRS Architectural Drawings

6 OUTDOOR OPEN SPACE AND LANDSCAPE

6.1 Landscape Statement

The landscape design of the proposed New High School for Medowie draws inspiration from the natural setting of the region, offering opportunities to celebrate cultural identity while ensuring the design supports and reinforces the educational and social functions of the school.

The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest). This unique ecological asset informs the design approach, fostering a connection between the school community and the local environment while creating opportunities for environmental education and awareness.

6.2 Landscape Strategy

The overall landscape design will respond to and adapt to the site's flooding and bushfire nature, ensuring a safe and inclusive learning environment for all students. A diverse array of spaces, ranging in scale and function, will be created to support active recreation, passive relaxation, social interaction, learning, and play. These open spaces will be enhanced with the use of native and endemic plant species, strengthening connections to the local flora and fauna while supporting biodiversity and ecological resilience

The site is relatively flat with a gradual slope from west to east toward Abundance Road. The project site is entirely mapped as bushfire-prone land, and there is a bushfire hazard within 140 meters, triggering the requirement for a bushfire response in accordance with Planning for Bushfire Protection (PBP) (refer to *Bushfire – Opportunities and Constraints Assessment Report – Medowie High School – Site E, 2 August 2024*). The proposed landscape design is designed for compliance with the Inner Protection Area (IPA) specifications outlined below and with the requirements of Planning for Bushfire Protection. This will be developed during detailed design phase.

Trees:

- Tree canopy cover should be less than 15% at maturity
- Trees (at maturity) should not touch or overhang the building
- Lower limbs should be removed up to a height of 2 m above ground
- Canopies should be separated by 2 to 5 m
- Preference should be given to smooth barked and evergreen trees.

Shrubs:

- Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided
- Shrubs should not be located under trees
- Shrubs should not form more than 10% ground cover
- Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass:

- Should be kept mown (as a guide grass should be kept to no more than 100 mm in height)
- Leaves and vegetation debris should be removed.

6.3 Landscape Design Principles

Site Response

- Ensure that the trees and planting are designed to the bushfire requirements and complement the different play areas.
- Develop gardens with fire-resilient plants, which can serve as a living laboratory for students to learn about fire-resistant landscaping techniques and sustainability.
- Ensure the design presents an accessible, inclusive, and welcoming environment
- Ensure equal access is provided and structured to allow for clear navigation through the site.
- Allow for passive/dynamic activities and learning spaces for groups of different age and ability.
- Provide access and connections to the natural environment that encourages learning and social interactions, whilst providing areas for respite and reflection

Green Presence

- Ensure a green presence is considered for all types of landscape where appropriate
- Planting to that focuses on endemic planting and accommodate the varying climate conditions with opportunities to provide shade and support the local habitat.
- Design to maximise tree canopy through succession and provide different types of habitats
- Provide canopy trees and incorporate WSUD initiative where appropriate to mitigate heat island effect, minimise surface water runoff, provide shade and passive irrigation
- Maximise mature canopy coverage and permeable surfaces
- Provide different types of habitats for local wildlife through the succession of trees and planting.

Versatile Spaces

- A mixture of passive, active and targeted play areas to be integrated into the design
- COLA spaces to provide a sheltered environment for outdoor activities in all-weather conditions.
- Intimate space to cater for specific programming, age and gender groups
- Flexible spaces to be included throughout the site to provide a variety of social and play opportunities whilst also facilitating larger groups and school events and assemblies.
- Provide a range of unstructured active play, dedicated Games Fields and Courts, discovery play

Connection With Country

- Emphasize a Country-centred design approach that respects and reflects the land's cultural significance.
- Integrate First Nation's culture into the design, fostering opportunities for storytelling and cultural expression.
- Highlight the deep, ongoing connection of First Nations people to Country through design elements.
- Prioritize the reuse of materials sourced from the site and local areas to promote sustainability and connection to place.
- Foster cultural learning through the landscape, creating spaces that engage with and educate about cultural significance and heritage.

6.4 Connection with Country Strategy

The Connecting with Country process has been initiated and themes around design will be further developed and incorporated throughout the landscape design in the next phase.

6.5 Proposed Landscape Site Plan

1. Main Entry (Abundance Road)
2. Entry Plaza
3. Secondary Entry (Ferodale Road)
4. Staff Car Park
5. Bike Parking
6. Bus Bay & Student Pick-up and Drop-off
7. Assembly / Unstructured Active Play
8. Amphitheatre Seating
9. Passive / Social Pockets
10. Support Unit Outdoor Play
11. Canteen Spill-out Space
12. Sports Field Targeted Play
13. Multi-Courts
14. Informal Active Play (Handball Courts)
15. Grassed Free Play Area
16. Landscaped Edge
17. Vegetable Garden
18. Existing Grassed Area

LEGEND

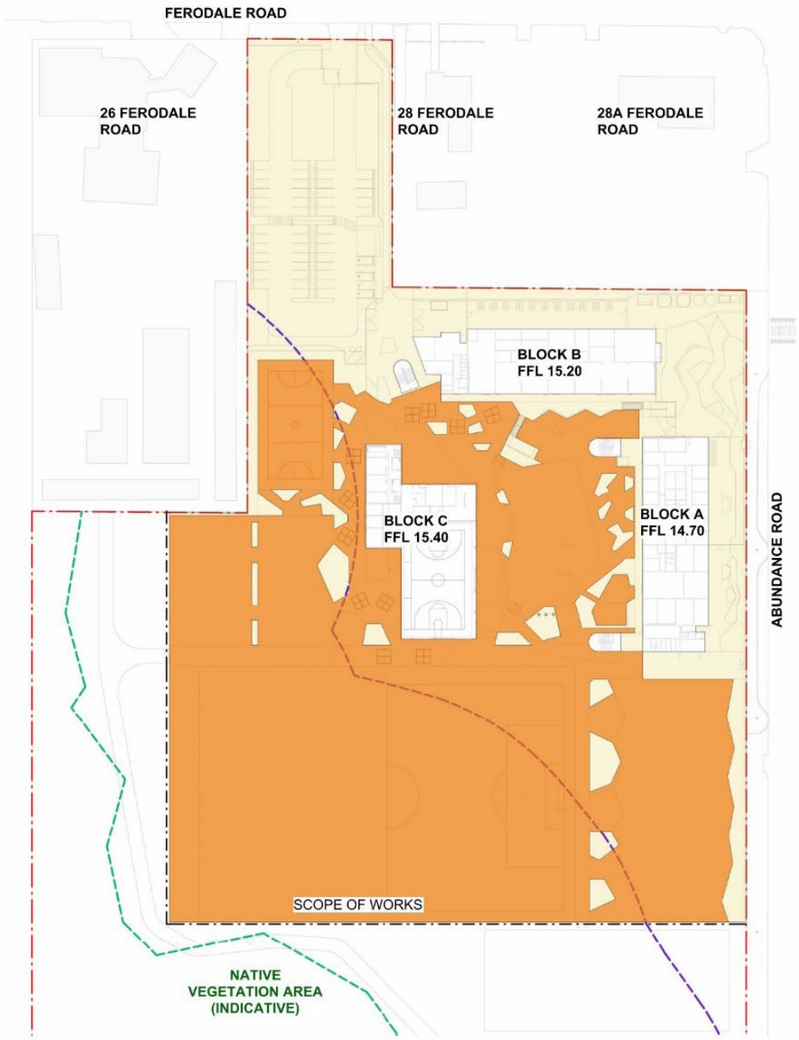
- SITE BOUNDARY
- ROOF OVERHANG
- SCOPE OF WORKS
- ASSET PROTECTION ZONE (APZ)
- NATURAL VEGETATION AREA

- **PAV01 - STANDARD GREY CONCRETE** BROOM FINISH
- **PAV02 - COLOURED CONCRETE 01** BROOM FINISH
- **PAV03 - COLOURED CONCRETE 02** BROOM FINISH
- **PAV04a - PERMEABLE UNIT PAVING 01** PEDESTRIAN
- **PAV04b - PERMEABLE UNIT PAVING 02** PEDESTRIAN
- **PAV05a - PERMEABLE UNIT PAVING 01** VEHICLE ACCESS - TRAFFICABLE
- **PAV05b - PERMEABLE UNIT PAVING 02** VEHICLE ACCESS - TRAFFICABLE
- **PAV06 - DECOMPOSED GRANITE** STABILISED WITH CEMENT
- **PAV07a - MULTICOURT COLOUR 01**
- **PAV07b - MULTICOURT COLOUR 02**
- **PAV07c - MULTICOURT COLOUR 03**
- **PAV08a - HANDBALL COURT COLOUR 01**
- **PAV08b - HANDBALL COURT COLOUR 02**
- **PAV08c - HANDBALL COURT COLOUR 03**
- **PAV09 - SOFTFALL** WITH IMPACT ATTENUATION LAYER
- **PTC - PUBLIC DOMAIN PAVING** TO COUNCIL PAVING SPECIFICATION AND CIVIL DETAILS

6.6 Open Play Space Diagram

Designing open spaces in school sites with security in mind is essential to creating environments that are both safe and welcoming. Below are key landscape strategies for open spaces:

- Clear Sightlines: Outdoor play areas and open spaces are designed with clear sightlines to ensure maximum visibility and supervision
- Controlled access points: Clearly define entry and exit of the school site to prevent unauthorised access. Fencing or natural barriers like hedges can be used to delineate boundaries without compromising aesthetics.
- Strategic lighting: Ensures spaces are well-lit during early mornings, evenings, or overcast days. Motion-activated or solar-powered lights can provide sustainability while enhancing security.
- Natural surveillance: Positions play areas near staff rooms, classrooms, or offices with large windows, allowing for passive supervision. Seating areas for teachers or caregivers can be placed near play zones to encourage active monitoring.
- Defined zones: Separate play areas by age group and types of activity, reducing overcrowding and allowing for better supervision. Specific areas for quiet play, active games, and group gatherings minimise conflicts.
- Inclusive design: Creates spaces accessible to all students, including those with disabilities, ensuring safety and usability for everyone.
- Environmental integration: Uses native and low-maintenance plants strategically to create natural boundaries.



OPEN PLAY SPACE DIAGRAM

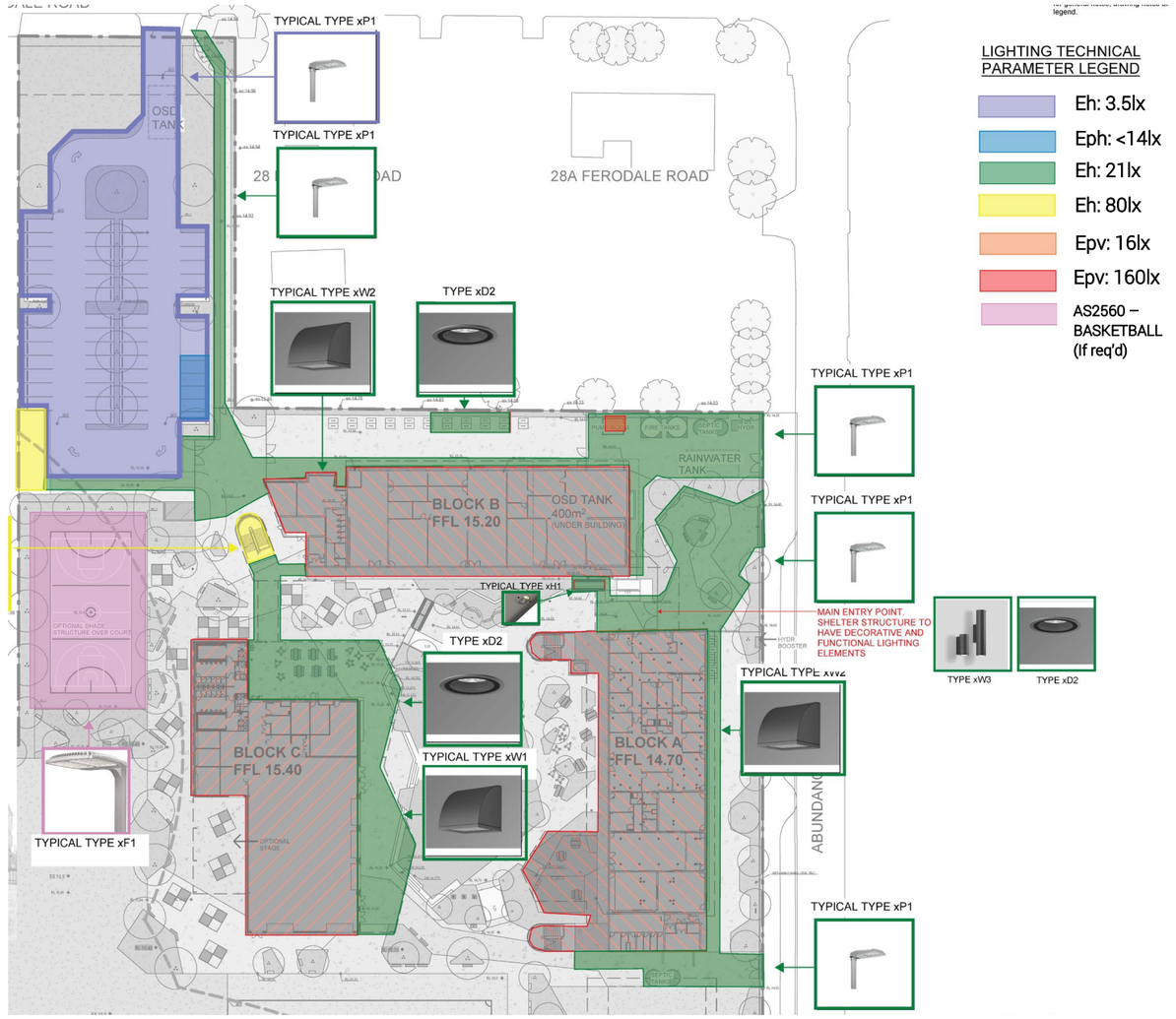
MEETS 10M² PER STUDENT EFSG REQUIREMENT*
CAPACITY: UP TO 650 STUDENTS

SCOPE OF WORKS FOR OPEN PLAY CALCULATION = 26,900M²
**EXCLUDES NATIVE VEGETATION AREA AND BUILDING FOOTPRINT*

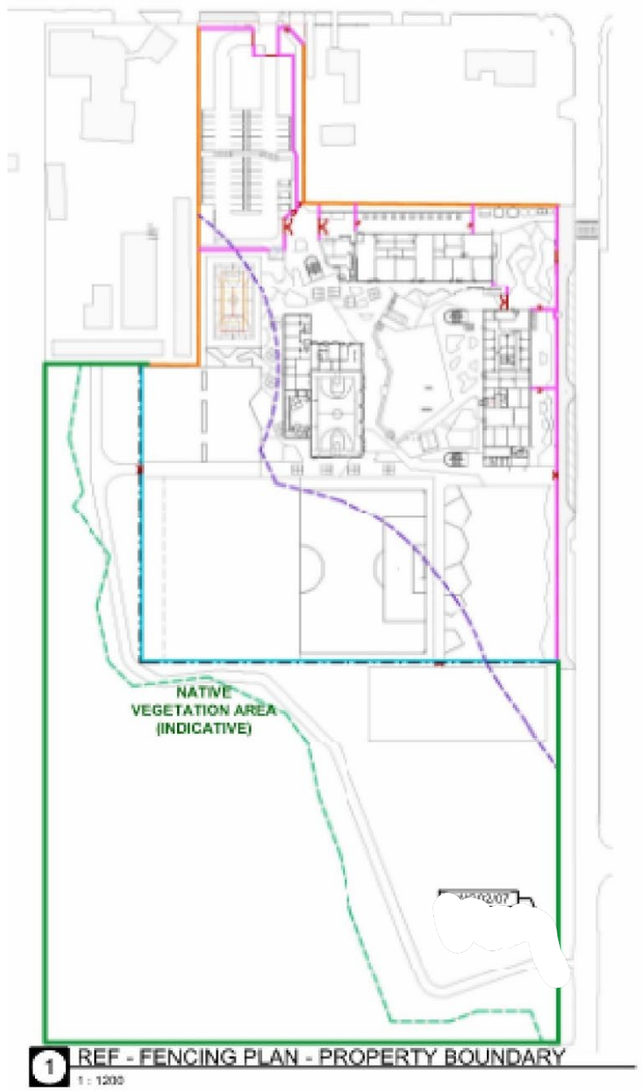
6.7 Crime Prevention Through Environmental Design (CPTED)

Applying Crime Prevention Through Environmental Design (CPTED) principles to school environments creates spaces that are not only safe but also welcoming and conducive to positive interactions. By thoughtfully integrating strategies that enhance visibility, define boundaries, and encourage active use, schools can foster a sense of community.

- Natural surveillance is prioritised where appropriate by designing open spaces, pathways, and entrances to maximise visibility. Windows in classrooms and staff areas are oriented toward high-traffic areas like playgrounds and entry points, allowing for passive monitoring.
- Access control is implemented through well-defined entry points, secure fencing, and clear signage to guide movement and restrict unauthorised access. Gates and entrances include security features like card readers or intercom systems to regulate entry.
- Territorial reinforcement is achieved by defining school boundaries with perimeter fencing along the property boundary
- Lighting design provides adequate illumination in outdoor spaces, pathways, and parking areas, reducing opportunities for concealed activity and improving visibility during early morning or evening hours.
- Landscaping considerations include the use of low-height vegetation near pathways and entry points to prevent hiding spots. Trees and shrubs are placed thoughtfully to avoid blocking sightlines while enhancing aesthetics.
- Emergency readiness integrates safety features like clearly marked evacuation routes, easily accessible assembly points, and communication systems. Pathways are designed for smooth movement, and areas are accessible for emergency personnel.



ARUP LIGHTING CONCEPT



FE01 - 2.1M PALISADE PERMIETER FENCE

FE04 - 4.5M CHAINLINK FENCE

FE02 - 2.1M CORROMESH OERIMETER FENCE

FE05 - 2.1M GOOD NEIGHBOUR® CGI CORRUGATED FENCE

FE03 - 2.1M CHAINLINK FENCE

LEGEND

- SITE BOUNDARY
- ROOF OVERHANG
- SCOPE OF WORKS
- ASSET PROTECTION ZONE (APZ)
- NATURAL VEGETATION AREA
- **FE01 - 2.1M PALISADE PERIMETER FENCE**
- **FE02 - 2.1M CORROMESH PERIMETER FENCE** (EXTEND 300MM BELOW GROUND FOR ANIMAL PROOFING)
- **FE03 - 2.1M CHAINLINK - PROPERTY BOUNDARY FENCE**
- **FE04 - 4.5M CHAINLINK FENCE** BEHIND FIELD GOAL POST (SPORTS FIELD)
- **FE05 - 2.1M GOOD NEIGHBOUR® CGI CORRUGATED FENCE PANEL**

NBRS FENCING PALETTE - MHS-NBRS-00-XX-DR-L-001021

6.8 Material Typology

The material palette in the landscape design has been chosen to complement the Architectural materiality, creating a cohesive and integrated environment. The Landscape materials strategy emphasises both durability and sustainability while maintaining a connection to the natural and cultural context of the site.

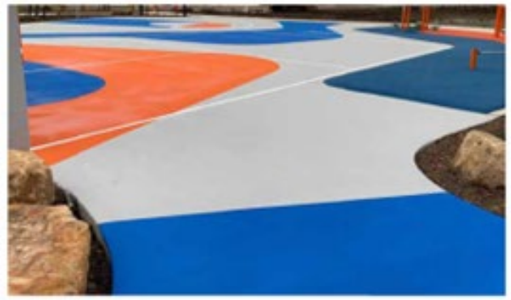
- Durable and Contextual Materials:
  The material selection is inspired by the bushland's natural colour palette and textures, ensuring a harmonious integration with the surrounding environment.
- Robust materials such as stone, permeable paving, and weather-resistant finishes are prioritised for their longevity and ability to withstand the demands of a school setting. These materials reflect the natural beauty of the landscape while creating a cohesive and timeless aesthetic that complements the site's character.

- Sustainable and Repurposed Materials:
  Sustainability is a core focus, with repurposed materials incorporated where appropriate to reduce waste and environmental impact.
- Permeable materials are used to enhance water management, supporting the site's natural hydrology and reducing stormwater runoff. This approach aligns with sustainable design principles, ensuring the materials contribute to an environmentally responsible and resilient school environment.

PERMEABLE PAVING

COLOURED CONCRETE

DECOMPOSED GRANITE



PLEXIPAVE SPORT COURT SURFACE

BLEACHER SEATING / OUTDOOR CLASSROOM

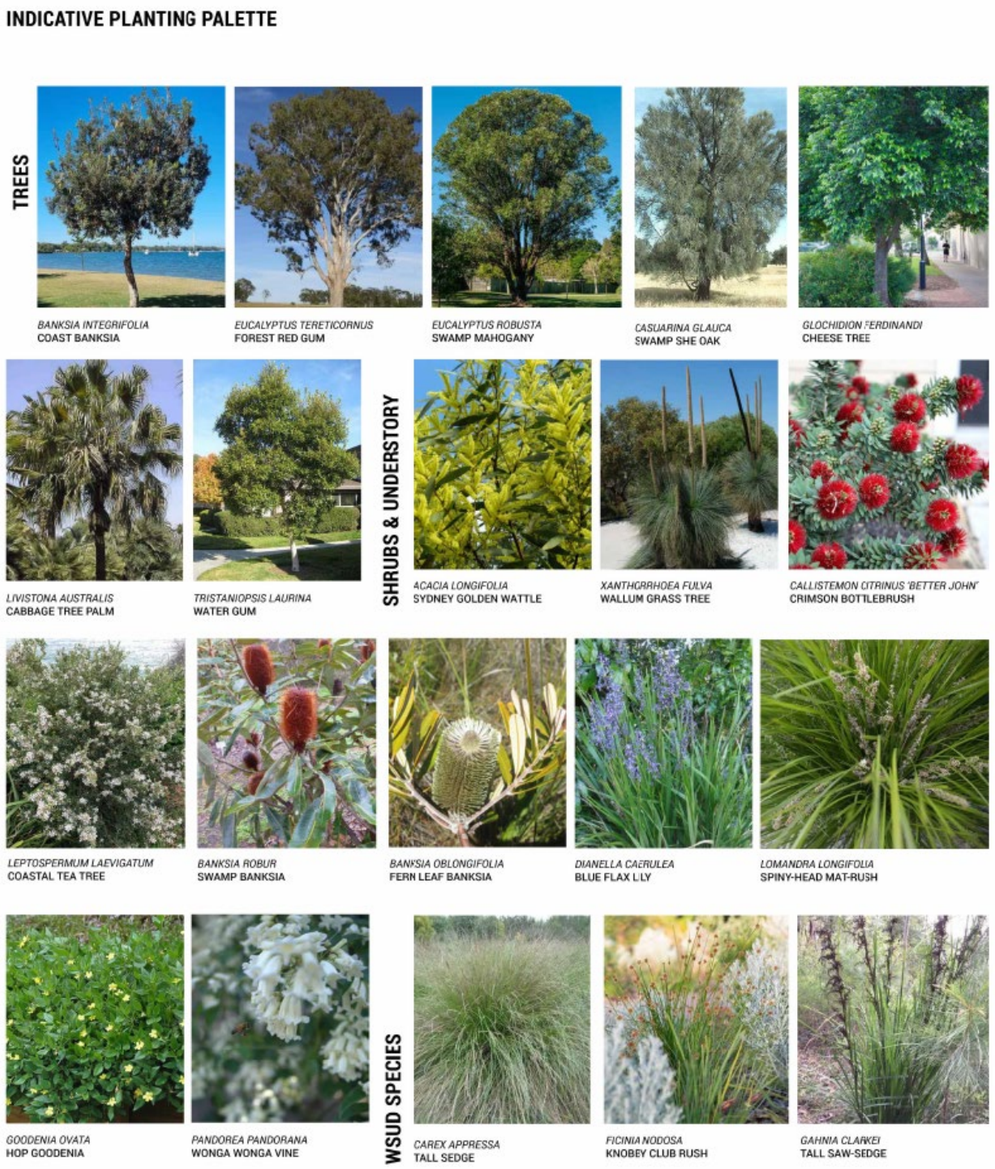
PICNIC SET / OUTDOOR CLASSROOM

MULTI-PURPOSE PLATFORM SEATING

PLANTED SEATING EDGE

6.9 Planting Typolog

The planting strategy focuses on integrating endemic species from the Hunter Coast Paperbark-Swamp Mahogany community to restore local habitats and enhance biodiversity while meeting bushfire management requirements. These plants are selected for their ecological value, supporting native wildlife and promoting sustainability in the landscape. Additionally, culturally significant plant species are intended be incorporated in consultation with the First Nations.



6.10 Mature Tree Canopy Cover

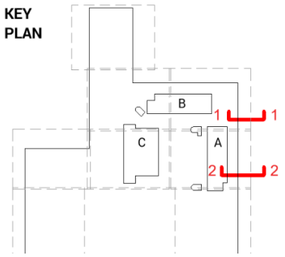
Strategically designed to maximise tree canopy cover on the school site while adhering to bushfire control requirements and site limitations, tree placement is targeted around play areas to provide shade, enhance aesthetics, and create a sense of enclosure. Tree species will be selected in consultation with the Bushfire Consultant, and ensuring appropriate spacing is maintained.

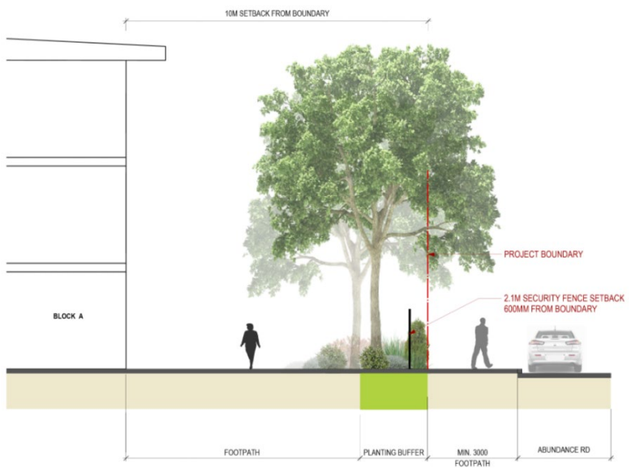
6.11 Public Domain

The public domain works including pedestrian path on Abundance Road to the school site, a new kerb and gutter on the western side of Abundance Road and a new pedestrian path along the eastern side of Abundance Road that connects to the existing refuge island.

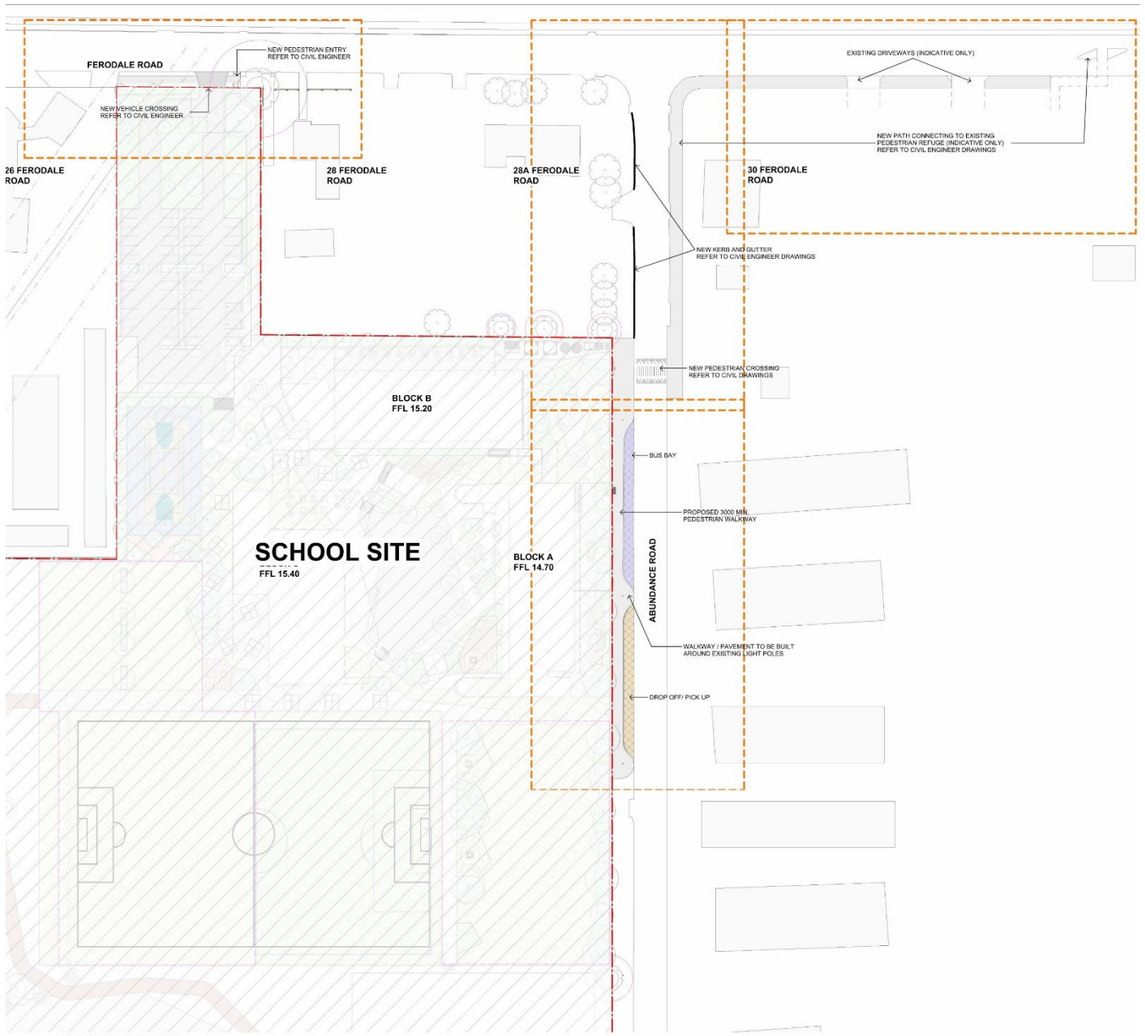
The landscape design objective is to provide a welcoming, generous and a sense of place at the main entry whilst ensuring that the other entries have a strong relationship to the existing public domain. A generous landscaped setback will provide a transition between the public domain and the school. This buffer will provide space to negotiate any level difference, soften the secure fence line with the use of planting, allow space for new tree planting for shade and amenity, transition the scale of the building and the street, and demonstrate an adequate urban understanding and resolution to all interfaces.

SECTION 1 – ENTRY PLAZA / ABUNDANCE ROAD





SECTION 2 – BLOCK A / ABUNDANCE ROAD



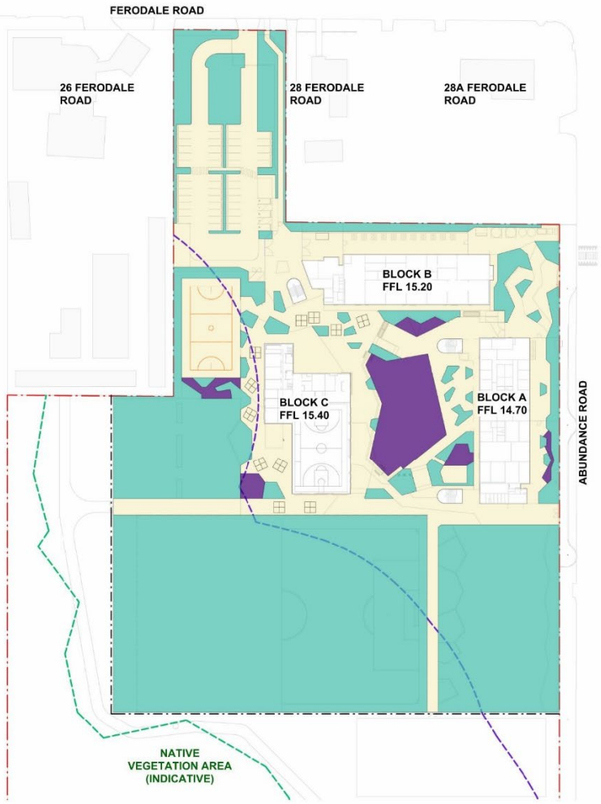
PUBLIC DOMAIN OVERALL PLAN REFER MHS-NBRS-00-XX-DR-L-006000

6.12 Bushfire

For bushfire requirements, refer to the summary in the Landscape Strategy section 6.2.

6.13 Heat Island Effect

A landscape design objective is to minimise the heat island effect by maximising landscaped areas and incorporating permeable paving throughout the site. By increasing the proportion of green spaces and utilising materials that allow for water infiltration, the design may assist to reduce surface temperatures, enhance stormwater management, and promote cooling. Light and natural colours are prioritised in the selection of materials to further reduce heat absorption.



PERMEABLE SURFACE DIAGRAM

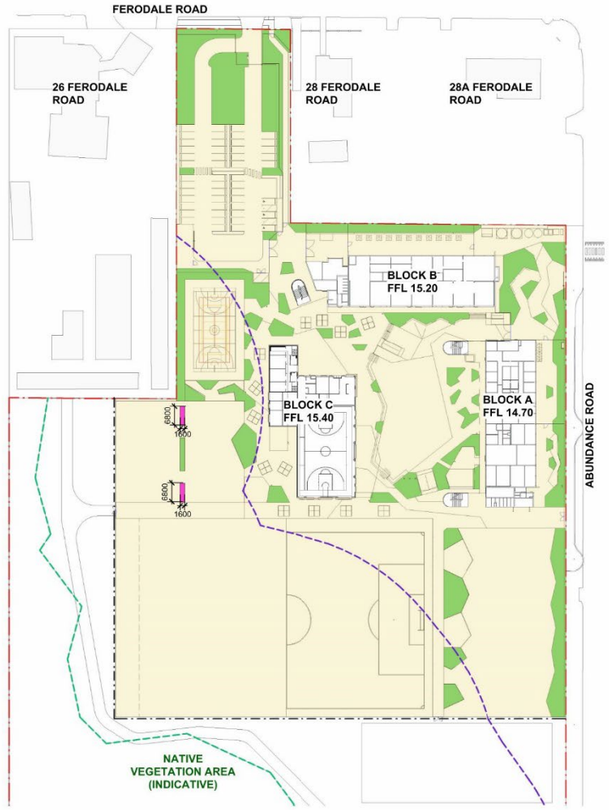
LANDSCAPED AREA (TURF AND GARDEN BEDS): APPROX. 16,050M² (60%)

PERMEABLE PAVING: APPROX. 1,215M² (5%)

SCOPE OF WORKS FOR PERMEABLE FINISHES CALCULATION = 26,900M²
**EXCLUDES NATIVE VEGETATION AREA AND BUILDING FOOTPRINT*

6.14 Deep Soil Zone

The deep soil zone is designed to support the growth of mature trees by providing sufficient soil depth for root expansion. Strategically placed to enhance canopy coverage and provide shade to key areas like play spaces, it also contributes to stormwater management by improving water retention and reducing runoff. This approach ensures the long-term health and resilience of the landscape, supporting both ecological and aesthetic goals.



DEEP SOIL PLANTING DIAGRAM

DEEP SOIL PLANTING: APPROX. 3,550M²

MINIMUM DEEP SOIL PLANTING AREA = 1.6 x 6.8M WIDE

SCOPE OF WORKS FOR DEEP SOIL ZONE CALCULATION = 26,900M²
**EXCLUDES NATIVE VEGETATION AREA AND BUILDING FOOTPRINT*

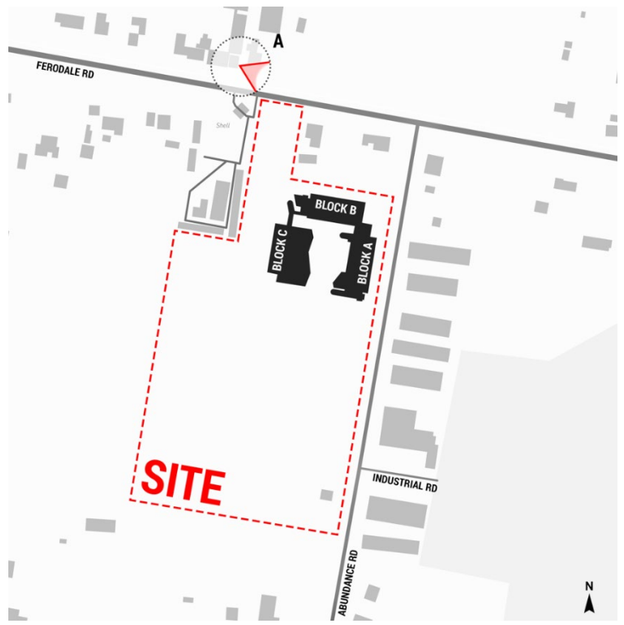
7 VISUAL ANALYSIS

7.1 VISUAL IMPACT VIEW A – FERODALE ROAD LOOKING EAST

The proposed carpark provides suitable adjacency to the existing service station. Proposed perimeter fencing and landscaping retain external access to the high voltage power line assets. The school does not impact existing views or vistas, being set back 2m from the boundary and approx. 6.5m from the road edge. Note the buildings are minimally visible in the distance beyond the landscape setback to the new school carpark. Over time, the fully developed landscaping / planting will soften the fence edge and provide further screening.

VIEW A - EXISTING

VIEW A – PROPOSED

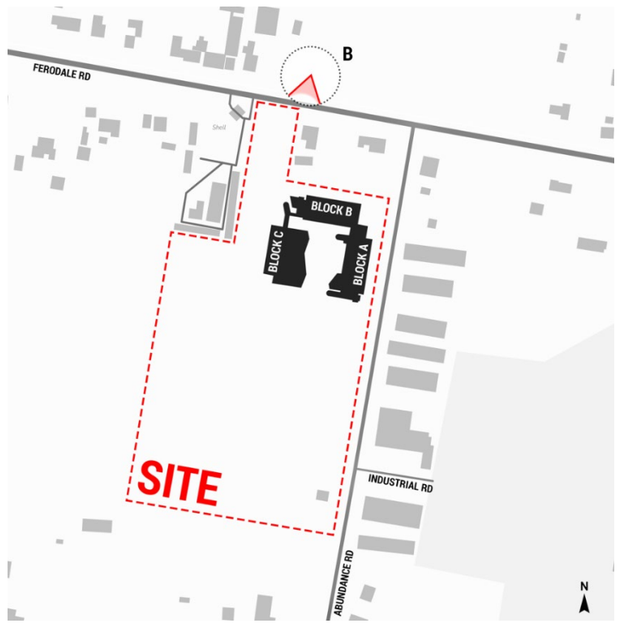


7.2 VISUAL IMPACT VIEW B – FERODALE ROAD LOOKING SOUTH TOWARDS SITE

Landscape setbacks, pedestrian entry and signage for the school provide visual setback to the adjoining existing residential lot. The new school buildings are set well back beyond the building line established by adjacent properties and are minimally visible from the public domain. The school does not impact existing views or vistas from Ferodale Road, being set well back from the street frontage. Existing tree at the front of the site is retained and protected as part of the school design.

VIEW B - EXISTING

VIEW B - PROPOSED

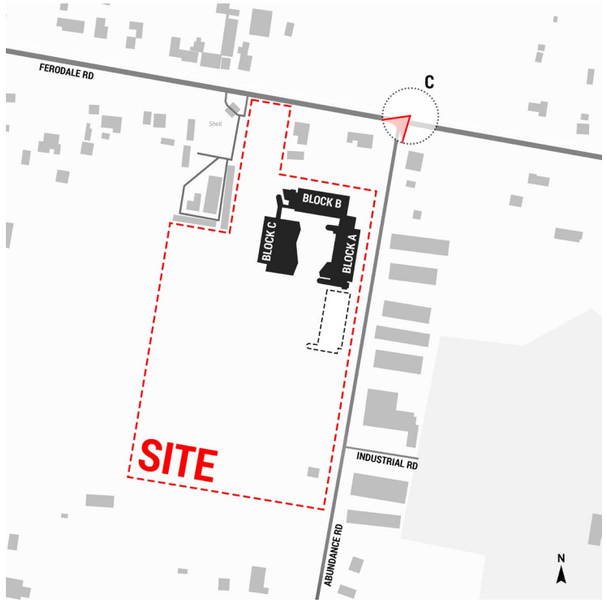


7.3 VISUAL IMPACT VIEW C – ABUNDANCE ROAD & FERODALE ROAD INTERSECTION LOOKING SOUTH WEST

This view impact analysis shows the minimal impact on existing streetscape of the proposed school from the intersection of Abundance and Ferodale Roads. The new school buildings are minimally visible behind the existing allied health building on the corner. The new buildings are set back sufficiently that the three storey height does not overwhelm the existing streetscape. The new school entry plaza is visible from the intersection, being an important visual signal to the community of the entry location to the school. Proposed public domain upgrades will provide new paths and vehicle parking adjacent to the new school to improve the public domain adjacent to the site.

VIEW C - EXISTING

VIEW C - PROPOSED

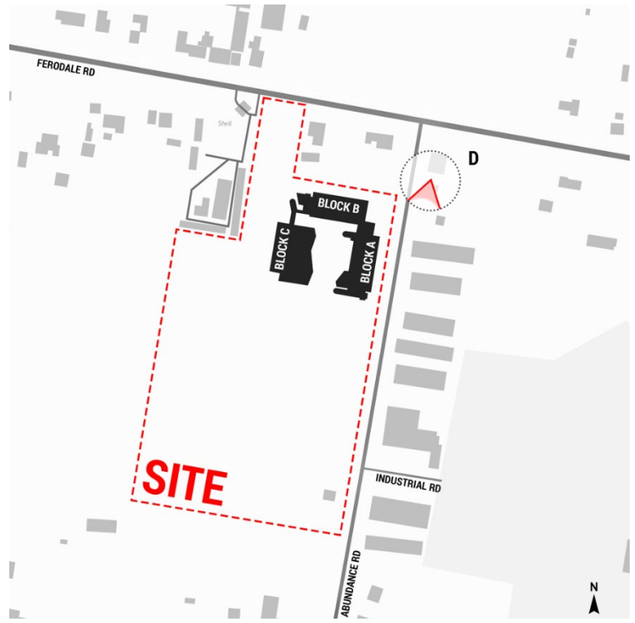


7.4 VISUAL IMPACT VIEW D – ABUNDANCE ROAD LOOKING SOUTH

The main entrance to the school is visible as the site is approached heading south along Abundance Road. The entry plaza with landscape setback, signage and artwork, as well as public domain upgrades give the school identity in the streetscape. The building bulk and scale is considered appropriate in the context of the industrial buildings across the road. Landscape setbacks to the front of the school buildings decrease the visual impact also. Proposed public domain upgrades will provide new paths and vehicle parking adjacent to the new school to improve the public domain adjacent to the site.

VIEW D - EXISTING

VIEW D - PROPOSED



7.5 VISUAL IMPACT VIEW E – ABUNDANCE ROAD LOOKING NORTH

The building facades as seen travelling North along Abundance Road. Proposed public domain upgrades will provide new paths and vehicle parking adjacent to the new school to improve the public domain adjacent to the site. New drop off pick up with formalised pedestrian path replace the existing grass swale for safe bus and private vehicle out of the roadway, as well as pedestrian and bike path accessing the site. The building bulk and scale is considered appropriate in the context of the industrial buildings across the road. Landscape setbacks to the front of the school buildings decrease the visual impact also.

VIEW E - EXISTING

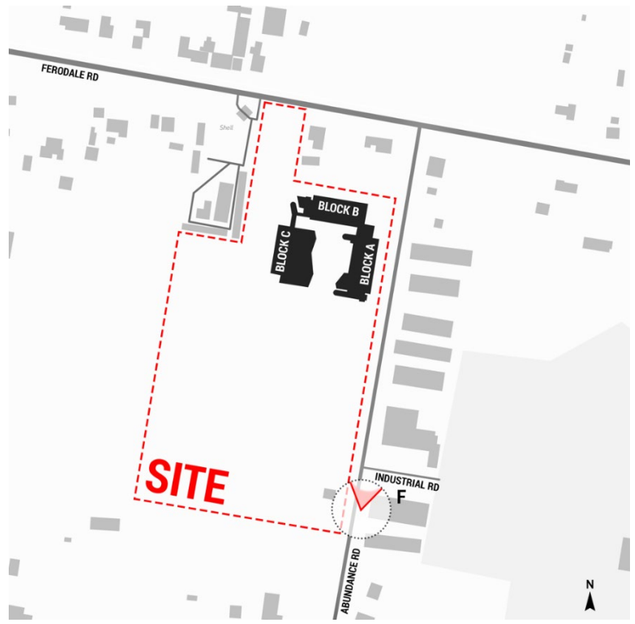
VIEW E - PROPOSED

7.6 VISUAL IMPACT VIEW F – ABUNDANCE ROAD (SOUTH END OF SITE) LOOKING NORTH

The building facades as seen travelling North along Abundance Road. Proposed public domain upgrades will provide new paths and vehicle parking adjacent to the new school to improve the public domain adjacent to the site. New drop off pick up with formalised pedestrian path replace the existing grass swale for safe bus and private vehicle out of the roadway, as well as pedestrian and bike path accessing the site. The building bulk and scale is considered appropriate in the context of the industrial buildings across the road. Landscape setbacks to the front of the school buildings decrease the visual impact also.

VIEW F - EXISTING

VIEW F - PROPOSED



8 MITIGATION MEASURES

IMPACT	STAGE OF PROJECT	MITIGATION MEASURE	RESPONSIBILITY
Design Finalisation – Connecting with Country	Design Development	CwC consultation must be progressed and design update will be required to respond to the outcomes of the consultation. The consultation may cover: cultural importance, history of the site, culturally significant flora specific to the site.	SINSW / Contractor
Hazardous Materials	Construction	Any hazardous materials to be removed by suitably qualified persons to an appropriately licenced waste facility. Testing to confirm nature of materials such as fibre cement cladding prior to demolition.	Contractor
Contamination	Construction	Preliminary Site investigation showed minimal risk of in ground contamination based on samples from site. Ongoing vigilance during construction to ensure that any in ground contamination is investigated specialist advice sought to remediate site if encountered.	Contractor
Arboricultural	Construction	All trees to be protected in accordance with the requirements of the Arboricultural Report prepared as part of this submission.	Contractor

9 LIST OF APPENDICES

REF Architectural Drawing Set

REF Landscape Drawings Set

Safety in Design Register

State Design Review Panel Responses