

Architectural Design Statement

Glenwood High School

Prepared for:

NSW Department of Education

School Infrastructure NSW



PTW Architects

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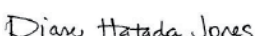
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Nominated Architects
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Report Register

This report register documents the development and issue of the report entitled Glenwood High School Architectural Design Statement.

The report has been reviewed and approved for issue.

Project Director & Reviewer	Diane Jones
Issue No.	A.5
Signature	

Position	Executive Director PTW Architects
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Date	10.11.21
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We would like to pay our respects and acknowledge the traditional custodians of the land the Dharug people and also pay respect to Elders past, present and future.

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1 INTRODUCTION

This Architectural Design Statement accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of a State Significant Development Application (SSD - 23512960).

The development is for upgrading works comprising alterations and additions to Glenwood High School at 85 Forman Avenue, Glenwood. The site is legally described as Lot 5227 DP 868693.

The site is roughly rectangular in shape, with a total area of 60,790m² and street frontages to Forman Avenue to the south and Glenwood Drive to the east. Glenwood Reserve adjoins the northern and western boundaries of the school.

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), specifically:

2. Built Form and Urban Design

2 THE PROPOSAL

The proposed development seeks to upgrade Glenwood High School. The upgrade consists of the following alterations and additions:

- Construction of a new three-storey building at the north-eastern portion of the site facing Glenwood Park Drive which will accommodate new learning spaces;
- Construction of one storey performance pavilion;
- Refurbishment of existing Building Block A (ground floor only) to provide one new support unit within the space of an existing general learning space;
- Refurbishment of Building Block D (ground floor only) to provide an additional office space and storeroom;
- Refurbishment of Building Block E to re-purpose it on the ground floor for computer learning spaces, staff and administration spaces as well as upgrades to the library on the first floor;
- Refurbishment of Building Block J to re-purpose it from visual arts and performing arts to learning spaces and workshops for food tech and woods/metal unit;
- Demolition of existing botany room and construction of a new single storey pavilion comprising of interview rooms and end-of trip facilities; and
- The proposed development will also involve ancillary works at the site associated with the proposed upgrades.

3 SEARS REQUIREMENTS

2. Built Form and Urban Design

Address:

<ul style="list-style-type: none"> The height, density, bulk and scale, setbacks and interface of the development in relation to the surrounding development, topography, streetscape and any public open spaces. 	6	CONTEXT OF THE GREATER AREA	17
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<ul style="list-style-type: none"> Design quality and built form, with specific consideration of the overall site layout, streetscape, open spaces, façade, rooftop, massing, setbacks, building articulation, materials and colour palette. 	6	CONTEXT OF THE GREATER AREA	17
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<ul style="list-style-type: none"> How Crime Prevention through Environmental Design (CPTED) principles are to be integrated into development. 	8	ARCHITECTURAL CONCEPT	43
	8.5	Access, Security and Circulation Strategy	48
<ul style="list-style-type: none"> How good environmental amenity would be provided, including access to natural daylight and ventilation, acoustic separation, access to landscape and outdoor spaces and future flexibility. 	8	ARCHITECTURAL CONCEPT	43
	8.10	Environmental Sustainability Design (ESD)	64

<ul style="list-style-type: none"> How design quality will be achieved in accordance with Schedule 4 Schools – design quality principles of State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 and the GANSW Design Guide for Schools (GANSW, 2018). 	4	PROJECT SUMMARY	9
	4. 1	Design Excellence Guides	10
<ul style="list-style-type: none"> How services, including but not limited to waste management, loading zones and mechanical plant are integrated into the design of the development 	8	ARCHITECTURAL CONCEPT	43
	8. 3	Services and Infrastructure Requirements	46
Provide:			
<ul style="list-style-type: none"> A detailed site and context analysis to justify the proposed planning site planning and design approach including massing options and preferred strategy for future development. 	6	CONTEXT OF THE GREATER AREA	17
	6. 1	North West Secondary School Community Group	17
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<ul style="list-style-type: none"> A visual impact assessment that identifies any potential impacts on the surrounding built environment and landscape including views to and from the site and any adjoining heritage items. 	8	ARCHITECTURAL CONCEPT	43
	8. 9	Visualisations	56
	9	CONSULTATION	66
	9. 3	Blacktown City Council - visual impact and overshadowing	72
4. Environmental Amenity			
Assess amenity impacts on the surrounding locality, including solar access, visual privacy, visual amenity, overshadowing, wind impacts and acoustic impacts. A high level of environmental amenity for any surrounding residential land uses must be demonstrated.	6	CONTEXT OF THE GREATER AREA	17
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	9. 3	Blacktown City Council - visual and acoustic impact	72

Provide:

• Shadow diagrams,	9	CONSULTATION	66
	9.3	Blacktown City Council - visual impact and overshadowing	72
• A view analysis, where relevant, of the site from key vantage points and streetscape locations and public domain including photomontages or perspectives showing the proposed and likely future development.	8	ARCHITECTURAL CONCEPT	43
	8.9	Visualisations	56

Design report to demonstrate how design quality would be achieved in accordance with the above Key Issues including:

• Architectural design statement.	4	PROJECT SUMMARY	9
• Diagrams, structure plan, illustrations and drawings to clarify the design intent of the proposal.	6	CONTEXT OF THE GREATER AREA	17
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• Detailed site and context analysis.	6	CONTEXT OF THE GREATER AREA	17
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• Analysis of options considered to justify the proposed site planning and design approach.	5	MASTERPLAN OPTIONS	13
	5.1	Existing site conditions	14
• Summary of feedback provided by GANSW and NSW State Design Review Panel (SDRP) and responses to this advice.	9	CONSULTATION	66
	9.1	State Design Review Panel	66
• Summary report of consultation with the community and response to any feedback provided.	9	CONSULTATION	66
	9.2	Connection with Country	70
	9.3	Blacktown City Council - visual impact and overshadowing	72

4 PROJECT SUMMARY

Context

The school sits within the relatively new suburb, Glenwood and about 500m distant from the Bella Vista Metro station. The northern and western edges of the site are bordered by the Glenwood Reserve. On the other two edges of the site there are one to two storey houses with a height cap of 9m. Therefore, the new three storey building is located on the northeastern part of the site, facing Glenwood Park Drive, and forms a L-shape around the remnant Cumberland Plain Woodland stand of trees.

The new spaces will be accessed through the main campus, which has its entry at the southeastern corner of the site near the intersection of Forman Avenue and Glenwood Park Drive.

Public Realm

The siting of the new building along Glenwood Park Drive offers the potential to give the existing inward-looking campus a more considered identity. Careful articulation of the very long north-south elevation will be important in this respect.

It is also important that the school appears to engage with the public domain, rather than be defined by its fence line.

The built form

The built form utilizes the SINSW planning grid for both the general and specialist learning spaces. The “knuckle” of the two main wings contains the lift, stair and accessible toilet with breezeway connections. Another breezeway with services rooms, including the comms room, and amenities separates the two parts of the north-south wing. The access balconies, which are part of the SINSW planning grid, face the central stand of trees. At the ground level, there are external learning areas at this interface.

While the planning grid is quite rigid, the design works to use the connecting circulation areas such as the single storey performance pavilion, the main entry forecourt and the edges of the access areas for unstructured activities.

Within the existing buildings, there are internal alterations with a new small pavilion on the edge of the main quadrangle built to house interview rooms and end-of-trip facilities. The new building replaces an existing small building which has very poor amenity.

Connections

The landscape design will be developed in concert with the Aboriginal cultural consultant to provide a sense of historic and cultural continuity to this relatively new suburb and school. The Cumberland Plain Woodland offers potential in this regard.

The school community is anxious that the new built form spaces give easy access to the forest area and that there is a greater sense of permeability across the campus.

The revised masterplan positions the new performance unit adjacent to the existing hall and to the existing fitness unit so that external courtyards are formed, and can be used by the community as called for in the Education Rationale. The configuration will also enable the existing quite convoluted series of accessways and levels to be reworked and made more legible and safer.

Sustainability

The project will target a 5 star Green Star rating.

Design Excellence Guides

- GANSW Design Guide for Schools & Environmental Manual
- Education SEPP
- Better Placed
- Greener Places - refer to Landscape Report
- Designing with Country - refer to p 70 - 9.2 Connection with Country

4. 1 Design Excellence Guides

Design Guide for Schools	
GANSW 2018	
Education SEPP Design Quality Principles	
1. Context, built form and landscape	6 CONTEXT OF THE GREATER AREA 17
<ul style="list-style-type: none"> context cultural/historic continuum <p>Schools should be designed to respond to and enhance the positive qualities of their setting, landscape and heritage, including Aboriginal cultural heritage.</p> <p>The design and spatial organisation of buildings and the spaces between them should be informed by site conditions such as topography, orientation and climate.</p> <p>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.</p>	6. 1 North West Secondary School Community Group 17 6. 2 Community / Demographic Challenges 21 6. 3 External / Mixed Use / Community Use Opportunity 24 6. 4 Accessibility Considerations 25 6. 5 Site Analysis 28 6.5.1 Levels and Contours 29 6.5.2 Significant Trees and Open Space 30 6.5.3 Sunpath Analysis and Seasonal Winds 31 6.5.4 Built Form Analysis 32
2. Sustainable, efficient and durable	8 ARCHITECTURAL CONCEPT 43
<p>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.</p> <p>Schools should be designed to be durable, resilient and adaptable, enabling them to evolve over time to meet future requirements.</p>	8. 3 Services and Infrastructure Requirements 46 8. 8 Proposed Materials 54 8. 9 Visualisations 56 8. 10 Environmental Sustainability Design (ESD) 64
3. Accessible and inclusive	8 ARCHITECTURAL CONCEPT 43
<ul style="list-style-type: none"> Good wayfinding <p>School buildings and their grounds should provide good wayfinding and be welcoming, accessible and inclusive to people with differing needs and capabilities.</p> <p>(Note: Wayfinding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space.)</p> <p>Schools should actively seek opportunities for their facilities to be shared with the community and cater for activities outside of school hours.</p>	8. 4 Public Domain and Community 47 8. 5 Access, Security and Circulation Strategy 48
4. Health and Safety	6 CONTEXT OF THE GREATER AREA 17
<p>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.</p>	6. 1 North West Secondary School Community Group 17 6. 2 Community / Demographic Challenges 21 6. 3 External / Mixed Use / Community Use Opportunity 24 6. 4 Accessibility Considerations 25 8 ARCHITECTURAL CONCEPT 43 8. 4 Public Domain and Community 47 8. 5 Access, Security and Circulation Strategy 48

<p>5. Amenity</p> <p>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.</p> <p>Schools located near busy roads or near rail corridors should incorporate appropriate noise mitigation measures to ensure a high level of amenity for occupants.</p> <p>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.</p>	<p>6 CONTEXT OF THE GREATER AREA 17</p> <p>6.1 North West Secondary School Community Group 17</p> <p>6.2 Community / Demographic Challenges 21</p> <p>6.3 External / Mixed Use / Community Use Opportunity 24</p> <p>6.4 Accessibility Considerations 25</p> <p>6.5 Site Analysis 28</p> <p>6.5.1 Levels and Contours 29</p> <p>6.5.2 Significant Trees and Open Space 30</p> <p>6.5.3 Sunpath Analysis and Seasonal Winds 31</p> <p>6.5.4 Built Form Analysis 32</p> <p>7 GUIDING AND KEY DESIGN PRINCIPLES 33</p> <p>7.1 Education Rationale 33</p> <p>7.2 Learning Facilities 39</p> <p>7.3 Design Principles 40</p> <p>8 ARCHITECTURAL CONCEPT 43</p> <p>8.1 Planning 44</p> <p>8.1.1 Asset Utilisation and Capacity 44</p> <p>8.2 Block and Stack 45</p> <p>8.3 Services and Infrastructure Requirements 46</p> <p>8.4 Public Domain and Community 47</p> <p>8.5 Access, Security and Circulation Strategy 48</p> <p>8.6 Play Space 50</p> <p>8.7 Building Envelope 52</p> <p>8.8 Proposed Materials 54</p> <p>8.9 Visualisations 56</p> <p>8.10 Environmental Sustainability Design (ESD) 64</p>
<p>6. Whole of life, flexible and adaptive</p> <p>School design should consider future needs and take a whole-of-life-cycle approach underpinned by site with strategic and spatial planning.</p> <p>Good design for schools should deliver high environmental performance, ease of adaptation and maximise multi-use facilities.</p>	<p>7 GUIDING AND KEY DESIGN PRINCIPLES 33</p> <p>7.1 Education Rationale 33</p> <p>7.2 Learning Facilities 39</p> <p>7.3 Design Principles 40</p> <p>8 ARCHITECTURAL CONCEPT 43</p> <p>8.1 Planning 44</p> <p>8.1.1 Asset Utilisation and Capacity 44</p> <p>8.2 Block and Stack 45</p> <p>8.3 Services and Infrastructure Requirements 46</p> <p>8.4 Public Domain and Community 47</p> <p>8.5 Access, Security and Circulation Strategy 48</p> <p>8.6 Play Space 50</p> <p>8.7 Building Envelope 52</p> <p>8.8 Proposed Materials 54</p> <p>8.9 Visualisations 56</p> <p>8.10 Environmental Sustainability Design (ESD) 64</p>
<p>7. Aesthetics</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>7 GUIDING AND KEY DESIGN PRINCIPLES 33</p> <p>7.1 Education Rationale 33</p> <p>7.2 Learning Facilities 39</p> <p>7.3 Design Principles 40</p> <p>8 ARCHITECTURAL CONCEPT 43</p> <p>8.7 Building Envelope 52</p> <p>8.8 Proposed Materials 54</p> <p>8.9 Visualisations 56</p>

Environmental Design in Schools Manual	
Passive design <ul style="list-style-type: none"> • sun • wind • materials • external shading • sky lights 	Refer to Building Elevations in drawings DA-AR-N201 and DA-AR-N202 and Section 8.9 Environmental Sustainability Design of this report and separate ESD report by AECOM
Roof ventilators	Roof ventilators not used - clerestory windows provided
Passive cooling and heating – cross ventilation	ESD Report (separate document by AECOM)
Noisy and quiet spaces	Ability to open up and close down learning spaces and to utilise outdoor learning spaces. Refer to Section 7 - Guiding and Key Design Principles and Floor plans DA-AR-N103, DA-AR-N113 and DA-AR-N123
Careful use of resources	Alterations and additions to existing buildings; choice of materials guided by ESD report.
Control heat gain – orientation, external sun shading, natural shading, blinds	External facade shading which varies according to orientation. Operable louvre systems provided to optimise light and cross ventilation
Encourage physical activity	Outdoor learning areas and engagement with woodland
Learn outdoors	Outdoor learning areas on all levels of new building in addition to learning courtyard at entry to the new building and embankments structured for information learning
Share environmental knowledge	Implementation of waste collection/recycling strategies in learning areas. Refer to waste management strategy.
Share community assets	Refer to Section 8.4 Public Domain and Community of this report
Plant trees	Landscape drawings and report (separate)
Active travel	Additional bike and scooter parking for students and staff; new pedestrian entry from Glenwood Park Drive
Building materials from sustainable sources	
Bring nature and building together	Outdoor learning areas and enhanced landscape zones
Life cycle design	ESD report (separate)
Solar panels	Refer to Roof Plan - DA-AR-N133
Water – efficient and water sensitive design	Refer to Hydraulic report. New rainwater and OSD tank. Refer to Section 8.2 Services and Infrastructure Diagram and Civil and Hydraulic services reports.
Adequate daylight	ESD report (separate)
Improve energy efficiency	ESD report (separate)
Encourage physical activity	Retain open playing areas
Better Placed	
GANSW May 2017	
A well designed built environment is defined as: <ul style="list-style-type: none"> • Healthy • Responsive • Integrated • Equitable • Resilient 	See above and refer to design principles diagrams in Section 7 - Design Principles of this report.

5 MASTERPLAN OPTIONS

The Final Business Case (FBC) of October 2020 states that four masterplan options progressed to design and masterplanning for detailed consideration and costing, of which Option 4 was selected as the preferred option and was recommended for funding.

On commencement of Phase 2 and our commission, PTW was advised that the new building should utilise the new SINSW planning grid.

A revised masterplan Option 1_Rev B was developed based on the previous Option 4 Stream 12 targets, with siting of the building in the north east of the site in order to accommodate the planning grid and the educational objectives set out in the Education Rationale. The requirements were further identified by consultation with the EFSG and the Principal (April/May 2021).

Option 1_Rev B:

- 30 new general learning spaces (GLSs)
- 20 new specialised learning spaces and 8 associated workshops in new building
- upgrade existing buildings for specialised workshops
- upgrade the core facilities for the staff, library and administration)
- one additional support learning space to meet support student demand
- preserve the main playground areas in the northwestern corner of the site.

Note: On October 2021, with the completion of concept design, SINSW endorsed a reduced floor plate to align the areas to the October 2020 Option 4 masterplan. The northern wing of the new building was reduced in length by 7.5m over three storeys.



Figure 1. Masterplan option 4

Source: Pedavoli Architects, Glenwood High School Masterplan Report, 30 October 2020.



Figure 2. Glenwood High School masterplan Option 1_Rev B site plan

5. 1 Existing site conditions



Figure 3. Covered seating area with sandstone stepping landscape



Figure 4. View to existing Building E - library



Figure 5. View to courtyard in between Building J and Building H



Figure 6. View from ramp next to Building H towards Building G



Figure 7. View of circulation space between Building J and Building K



Figure 8. View of covered seating area with games court and woodland at the back



Figure 9. View of covered seating area in front of Building K



Figure 10. View of covered walkway looking towards Building K



Figure 11. View of existing demountables classrooms with woodland at the back

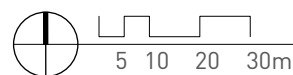


Figure 12. View from eastern driveway towards Building A



— — Site boundary

Figure 13. Aerial photo showing existing Glenwood High School
 Source: Nearmap - accessed 06/07/2021



GHS aerial photo
 1:1500 @A4

6 CONTEXT OF THE GREATER AREA

6.1 North West Secondary School Community Group

The North West Secondary SCG is a large area located in North West Sydney within the Blacktown Local Government Area (LGA). It extends from Glenwood in the south-east, to Vineyard and Marsden Park in the north-west.

Under the Greater Sydney Commission (GSC)'s 'Three Cities' vision, this area of the Western Parkland City is classified as the North West Priority Growth Area. Due to extensive greenfield development and transport infrastructure investment, the North West Priority Growth area is expected to provide 33,000 homes over the next decade. Once fully developed, the area will accommodate up to 250,000 people. This population growth is expected to drive increased demand for infrastructure facilities, including schools, within the growing and emerging communities.

Historically, the area includes semi-rural to rural land holdings in the north particularly in Riverstone and Schofields. The Riverstone township is comprised of pockets of public housing, a large indigenous community, and students coming from backgrounds of greater socio-economic disadvantage compared to neighbouring catchments in the SCG.

Despite this, a large portion of emerging communities within the SCG are characterised by younger than average demographics with higher than average levels of employment participation.

Data source: Final Business Case, Glenwood High School, December 2020, Version 4.0

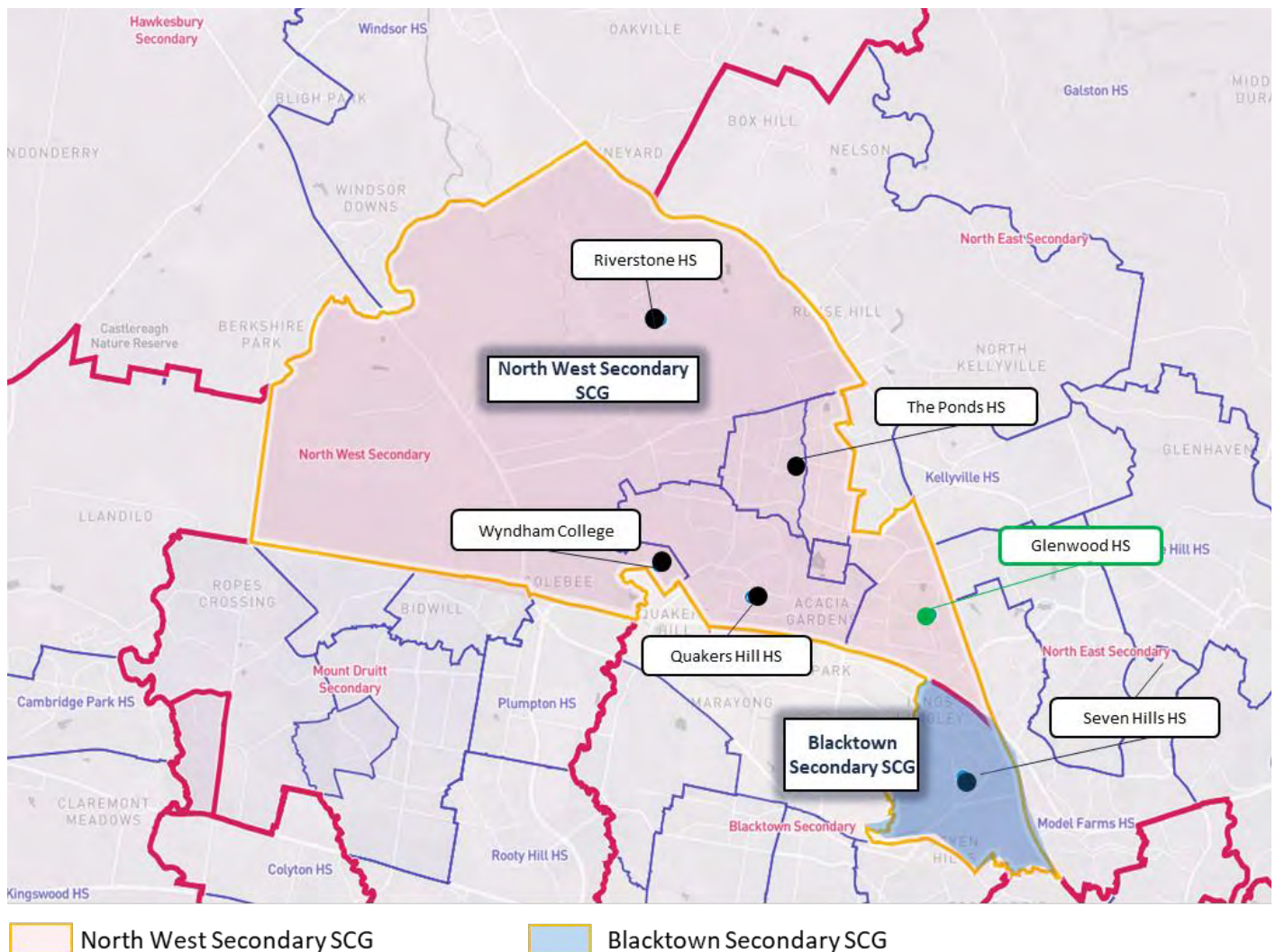


Figure 14. The North West Secondary School Community Group location map

Source: GWHS Final Business Case (Version 4.0) by Rebecca Willott from SINSW dated December 2020.

The school is surrounded by suburban residential housing and green reserves and bordered by major roads including the arterial Old Windsor Road and the Westlink (M7) motorway. Despite this, the school is not easily accessible by public transport as the bus stops on Windsor Road are approximately 1 kilometre from the school and the Bella Vista metro station is a 20-minute walk from the school and located on the opposite side of the Old Windsor Road

School bus stops are located in close proximity to the school, with several stops located at all entrance points to the school site.

Data source: Final Business Case, Glenwood High School, December 2020, Version 4.0

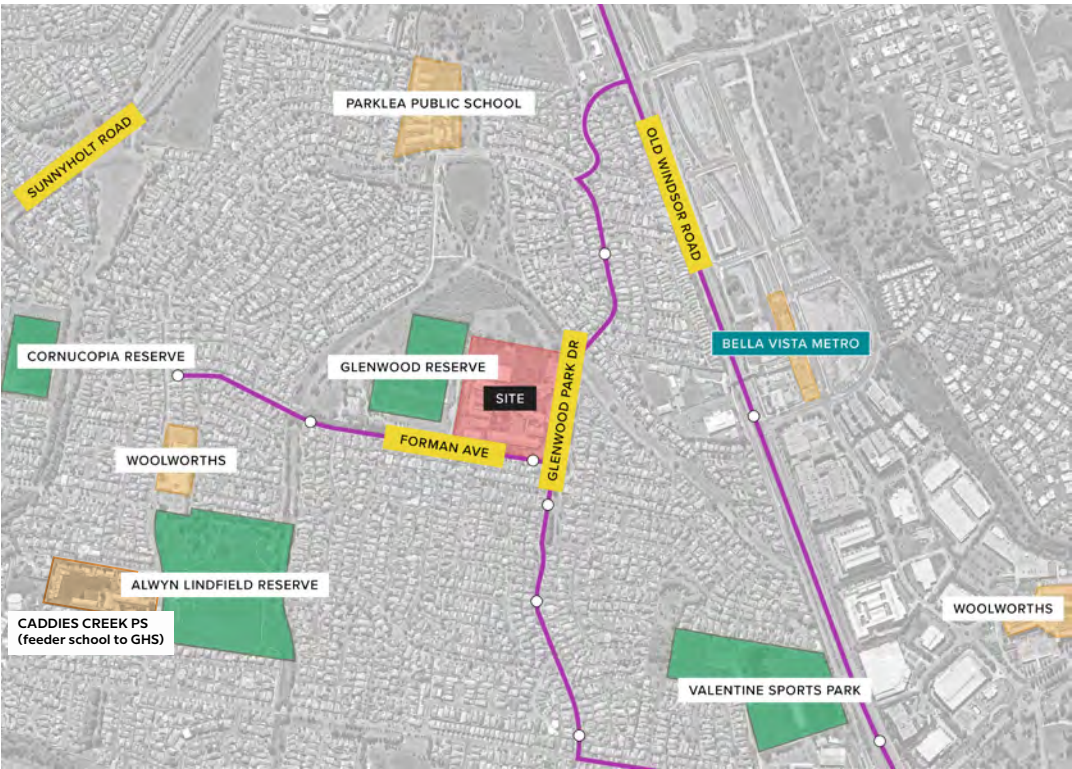


Figure 15. Context map highlighting the Glenwood High School and its surroundings

- Surrounding Infrastructure

Potentially useable green space

Road names
- Bus route
- Bus stop
- Metro Station



View of a covered concrete walkway connecting the demountables on site



Figure 16. Glenwood High School ideals at the school pedestrian entry

6. 2 Community / Demographic Challenges

Glenwood HS has an Index of Community Social Economic Advantage (ICSEA) value of 1,062, which is slightly above the state average of 1,000. 29% of students fall within the top quartile, while close to 40% fall within the bottom and lower middle quartiles. In the past three years, students in grade 7 and grade 9 at Glenwood HS have performed above or close to the average of all Australian students in NAPLAN testing.

The school has a positive reputation in the community drawing enrolments mostly from within the designated drawing area and enjoys close links with partner primary schools. Parental support of the school is strong with the school catering to the individual needs of all students. Through consistent and continued consultation the school community identifies and recognises the aspirational needs of all families and works tirelessly to create an environment for true success in a variety of pathways

Data source: Final Business Case, Glenwood High School, December 2020, Version 4.0

Language support in GHS

More than 50% of the school's enrolment is from non-English speaking backgrounds. The school also has English as Additional Language/Dialect (EAL/D) facilities to train students for whom English is not their first language. The school also provides counselling for families and arranges interpreters to aid non-English speaking families.

Volunteering in GHS

Glenwood High School supports a variety of opportunities for students to volunteer, from school and community fundraising, in-house peer support and tutoring programs, to external partnerships with community not-for-profit organisations. Glenwood High School participated in the Clean Up Australia Day campaign and students have also volunteered their time at the local feeder school helping out with various initiatives.

The positive engagement with community partners including local council, youth groups, business mentors and supporters, volunteer centres and parents can enhance the learning outcomes and experience for students.

Aboriginal Education

The school supports Aboriginal students through a variety of projects organised within the school and with the local Darug community, supported by strong relationships with elders. Aboriginal students have access to peer support, mentor support and additional academic tutoring.

Voluntary Religious Activities

A number of students at Glenwood High School voluntarily participate in religious groups, which meet weekly during lunchtimes. In accordance with the Department of Education's policy, visiting group leaders undergo all appropriate child protection checks and practices and the content of the activities is regularly monitored.

Data source: <https://glenwood-h.schools.nsw.gov.au/>. accessed 27 May 2021

School Identity

Innovation. Opportunity. Diversity. Success
Opportunity through learning

- The school reinforces collaborative leadership and community engagement to foster dynamic connections between teachers, students, parents and the local community
- Leads a learning environment of educational excellence that maintains a culture of innovation that is responsive to local and global contexts
- Aims to empower students to become confident, creative learners who make a difference in their world. Students who are literate, numerate, successful learners, who are innovative, resourceful and highly motivated. Students who are future-focused, able to contextualise their learning beyond the classroom, who actively contribute to the school, the community and the society in which they live.

Data source: Glenwood High School 2019 Annual Report.
Accessed 26/05/2021



Figure 17. School ideals at the school pedestrian entry

Source: PTW



Figure 18. Students of Glenwood High School

Source: <https://glenwood-h.schools.nsw.gov.au> - accessed 19/05/2021



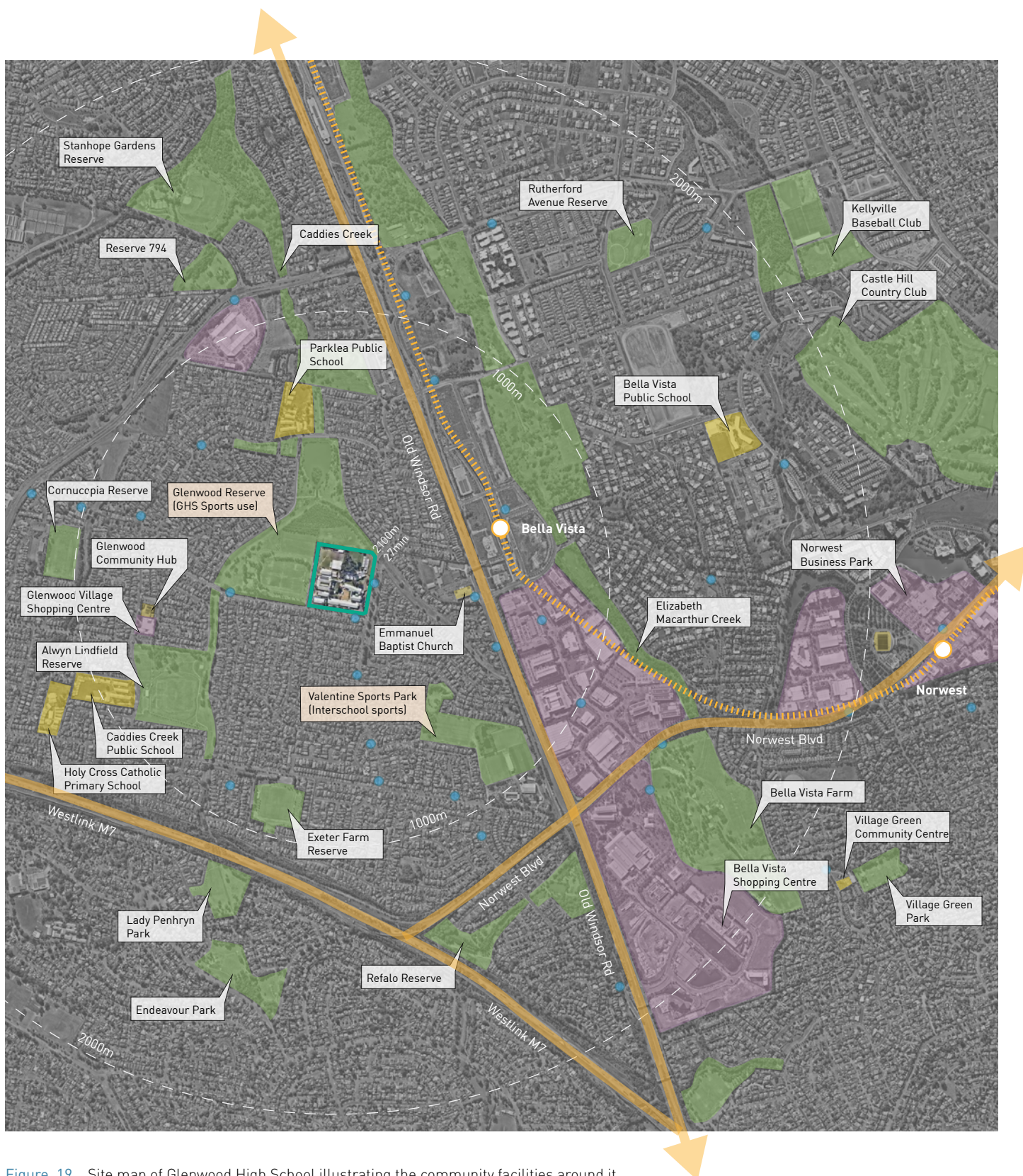


Figure 19. Site map of Glenwood High School illustrating the community facilities around it

- | | | |
|---|--|--|
| — Site boundary | Zones of interest | ● Bus stops |
| — Arterial highways | Neighbouring Public Schools | ● Metro stations |
| - - - Railway lines | Green spaces | |

6.3 External / Mixed Use / Community Use Opportunity

The following is an excerpt from the **Glenwood High School Education Rationale** by SINSW dated 12 May 2020 and reflects findings from an 'exploration workshop and focus groups'.

Glenwood High School is a co-educational, comprehensive, community high school in Sydney's north west sector and includes a Support Unit.

The school has a positive reputation in the community drawing enrolments mostly from within the designated drawing area and enjoys close links with partner primary schools. Parental support of the school is strong with the school catering to the individual needs of all students. Through consistent and continued consultation the school community identifies and recognises the aspirational needs of all families and works tirelessly to create an environment for true success in a variety of pathways

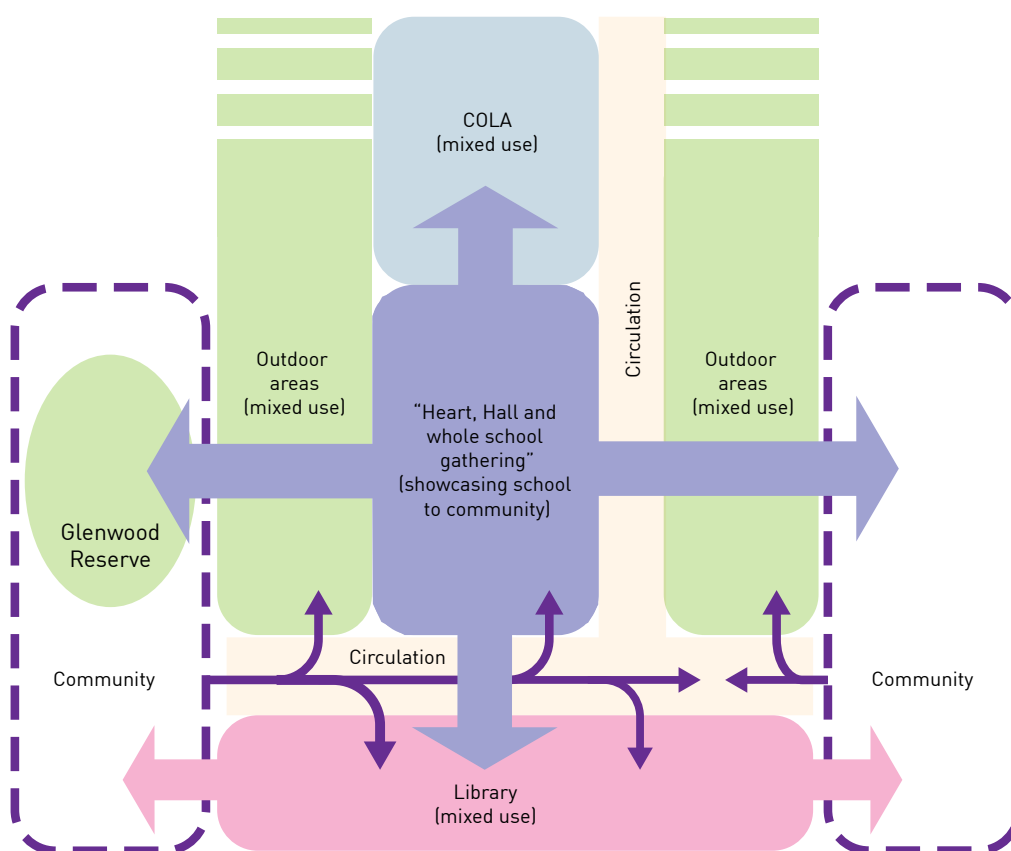


Figure 20. Functional Relationships diagram external / mixed use / community use opportunities

Source: Adapted from EFSG functional relationships and Education Rationale findings.

6. 4 Accessibility Considerations

Access

Vehicle and pedestrian access to the site is currently available via both the Forman Avenue and Glenwood Park Drive, with a formal 'Kiss and Drop' area off Forman Avenue. There are two parking areas - one in the south-eastern corner of the site, while the other sits on the site's western boundary. Both are accessible via Forman Avenue. There are existing northbound and southbound bus stops on Glenwood Park Drive. The site has good pedestrian connectivity to the surrounding neighbourhood with footpaths along each street and there are some cycleways in the area.

Data source: SINSW, Glenwood High School Planning Approval Pathway Strategy



Figure 21. View of the northern vehicular entry to the school from Glenwood Park Drive.
Source: PTW

Equity

The support unit at Glenwood High consists of three classes for students with autism spectrum disorder and one class for students with a moderate intellectual disability. The unit is staffed by one head teacher support, three special education teachers and four learning support officers as well as their Support Teacher Learning Assistant and Integration aides.

Data source: <https://glenwood-h.schools.nsw.gov.au/supporting-our-students/learning-support.html>. accessed 27 May 2021

The school has 3 dedicated support learning units with adjoining amenities like shared learning areas, a laundry room, accessible toilets and showers. The expansion looks at adding one more unit to the existing stock.

The Kiss and Drop zones on Forman Avenue have a capacity of 26 cars operational between 8am – 9:30am and 2:30pm – 4pm. It is signposted as no parking during these times.

Current number of parking spaces:

Total	93 spaces
Early Learning Centre	28 spaces

Data source: Woolacotts Consulting Engineers, Glenwood High School - Preliminary Parking / Traffic Advice. 1 June 2020



Figure 22. View of the slip lane accessed off Forman Avenue used as a "Kiss and Drop" area.
Source: Google Maps Export. Accessed 20 May 2021

The school currently has a learning centre located within the library that accommodates 2 teachers and 2 teachers' aides who support students through Individual Learning Programs (ILPs), testing and disability provisions for learning and assessment tasks. Constrained by facilities that cater to an enrolment of 1,000 students, the learning centre could use a more suitable space that would provide:

- increased staff space
- more spaces for one-to-one testing and support
- space for assemblies
- small group interventions and supports
- senior study rooms
- equitable access to technologies to match student needs
- resources in a variety of formats.

Data source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020

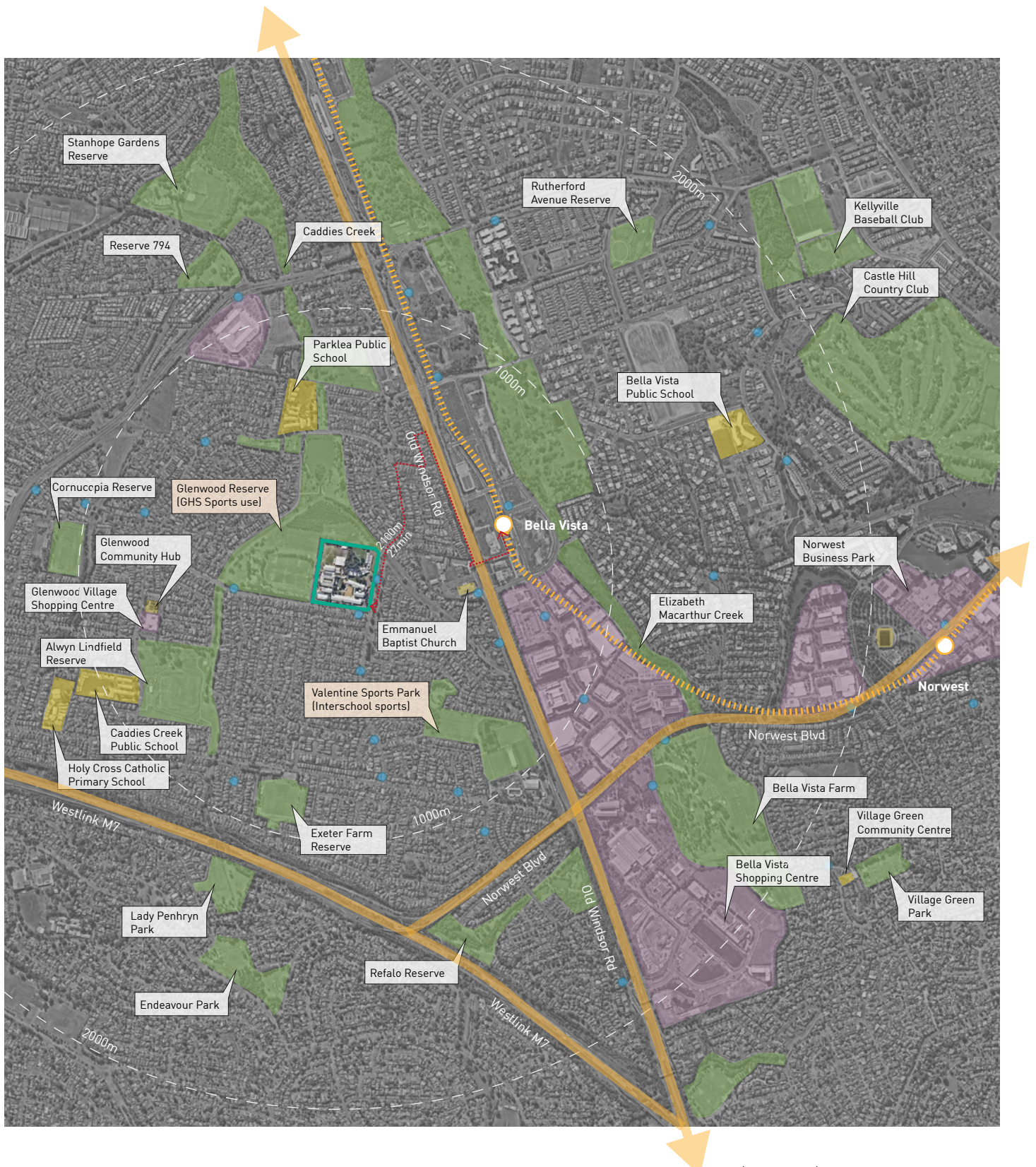









Figure 23. Site map of Glenwood High School illustrating the surrounding bus stops and closest metro station (Bella Vista)

- | | | |
|---|--|--|
| — Site boundary | Zones of interest | ● Bus stops |
| — Arterial highways | Neighbouring Public Schools | ● Metro stations |
| - - - Railway lines | Green spaces | |

Source: PTW Architects



Figure 24. Site map of Glenwood High School illustrating the site access points and facilities

- | | | |
|--|---|---|
|  Site access - vehicular |  Parking facilities |  Bus stops |
|  Site access - pedestrian |  Bus slip lane | |
|  Site Boundary |  Vehicular slip lane | |

Source: Woolacotts Consulting Engineers, Glenwood High School - Preliminary Parking / Traffic Advice. 1 June 2020. Reference: 20-99



10 50 100m

Site Map

1:3000 @A4

6. 5 Site Analysis

The following diagrams of this section illustrate the following physical aspects of the site:

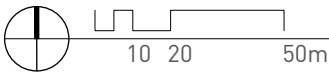
- Levels and contours
- Significant trees and open space
- Sunpath analysis and seasonal winds
- Built form analysis.

6.5.1 Levels and Contours



Figure 25. Plan showing the site contours.

Source: Drawing 17713B, Survey Plan Showing Detail, Levels & Underground Services Over Lot 5227 In DP868693 , CMS Surveyors Pty Limited, 10 July 2020



6.5.2 Significant Trees and Open Space



Figure 26. Plan illustrating the site significant trees and open space.

6.5.3 Sunpath Analysis and Seasonal Winds

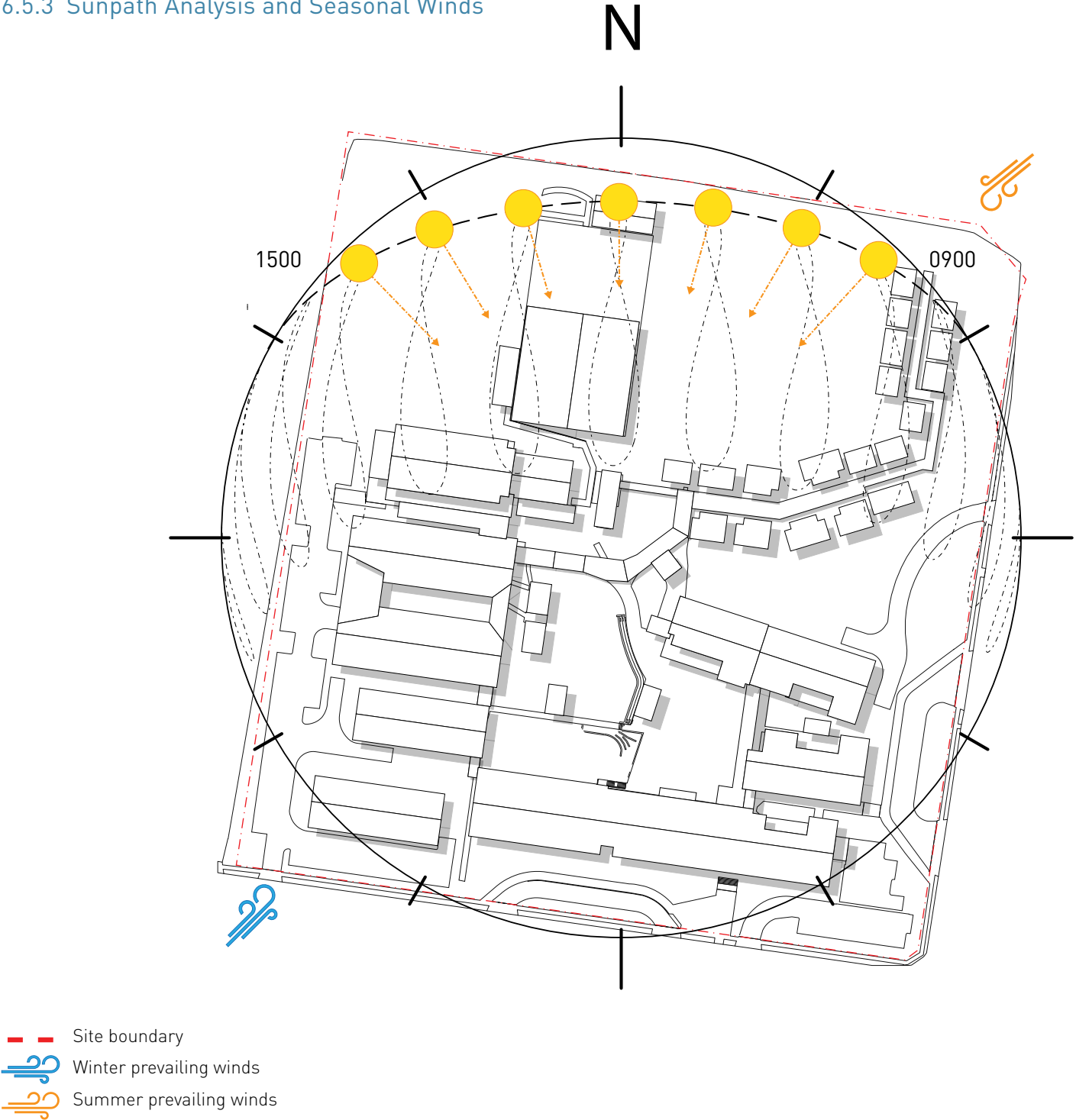


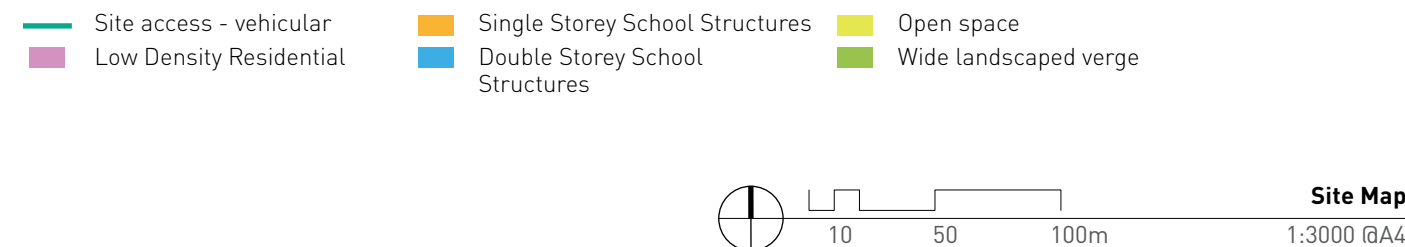
Figure 27. Plan illustrating the sun path from 9am to 3pm on 21 June 2021 and the seasonal prevailing winds

Source: RMY Australia Representative Meteorological Year Climate Files, accessed 16 September 2021

6.5.4 Built Form Analysis



Figure 28. Plan illustrating the built form of existing site and surrounds



7 GUIDING AND KEY DESIGN PRINCIPLES

7. 1 Education Rationale

Acknowledgements

The following chapter is an excerpt from the **GHS Education Rationale** prepared by SINSW on 12 May 2020 and Aaron Cook from School Learning Environments and Change.

Executive Summary

Glenwood High School is a co-educational, comprehensive, community high school in Sydney's north west sector and includes a Support Unit. More than 50% of the school's enrolment is from non-English speaking backgrounds.

The school has a dynamic teaching staff with a range of experience from early to late career teachers. This depth and breadth of successful classroom practitioners are supported by a dedicated executive leadership team.

The school has a positive reputation in the community drawing enrolments mostly from within the designated drawing area and enjoys close links with partner primary schools. Parental support of the school is strong with the school catering to the individual needs of all students. Through consistent and continued consultation the school community identifies and recognises the aspirational needs of all families and works tirelessly to create an environment for true success in a variety of pathways.

The response of education

Governments are recognising that while obtaining and retaining knowledge remains a fundamental competency it is but one of many competencies young people need to survive and thrive in a world recognised as volatile, unpredictable, complex and ambiguous. While one important role of education is to prepare students for future work, its remit is much broader in that it should prepare students for life.

In a paper commissioned by the NSW Department of Education, Dr. Phil Lambert summarises drivers for educational change into five main themes:

- *economic competitiveness: re-calibrating for a knowledge-based economy*
- *employability skills and dispositions for a changed and changing marketplace*
- *citizenship (and national identity)*
- *social cohesion, understanding and valuing diversity, respect*
- *personal growth.*

In response to these drivers, most countries across the globe include or are looking to include in their curricula 21st century competencies.

At a national level, the development of these competencies are best represented through the seven general capabilities (see image on next page) embedded in the content of the Australian Curriculum's eight learning areas as well as to some extent through the cross-curriculum priorities.

These capabilities are integrated into learning area syllabuses to support deep knowledge and understanding of discipline content and skills.

OECD Principles of Effective Learning

- *Recognise the learners as its core participants, encourage their active engagement, and develop in them an understanding of their own activity as learners ("self-regulation").*
- *Be founded on the social nature of learning and actively encourage group work and well-organised co-operative learning.*
- *Have learning professionals who are highly attuned to the learners' motivations and the key role of emotions in achievement.*
- *Be acutely sensitive to the individual differences among the learners in it, including their prior knowledge.*
- *Devise programmes that demand hard work and challenge from all without excessive overload.*
- *Operate with clarity of expectations and deploy assessment strategies consistent with these expectations; there should be strong emphasis on formative feedback to support learning.*
- *Strongly promote "horizontal connectedness" across areas of knowledge and subjects as well as to the community and the wider world.*

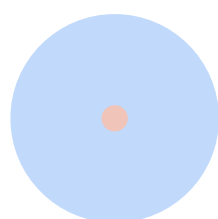
Current Challenges and Constraints

Most spaces at Glenwood High School are individual classrooms designed for one teacher and up to 30 students. This typology precludes or at least inhibits certain pedagogies, such as:

- **Collaborative teaching**
which provides students with different expertise and support, and improves teacher practice.
- **Flexible grouping of students across classes**
which better allows students to receive targeted instruction and work with peers on interest projects.
- **Integrated learning**
which typically relies on connected spaces to bring together multiple classes and subject teachers, typically with some specialist or varied spaces (e.g. maker space). Integrated learning is a way of achieving horizontal connectedness.

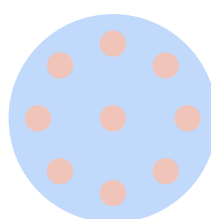
The lack of variety of spaces inhibits:

- students to regulate whether they work independently or with others
- access to a variety of resources and activities that allows students to engage with learning in different ways, which improves knowledge and understanding.



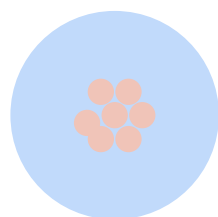
Intradisciplinary

Working within a single discipline.



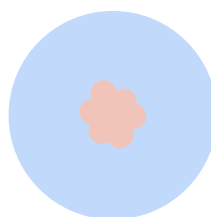
Multidisciplinary

Viewing one discipline from the perspective of another.



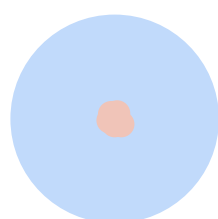
Crossdisciplinary

People from different disciplines working together, each drawing on their disciplinary knowledge.



Interdisciplinary

Integrating knowledge and methods from different disciplines, using a real synthesis of approaches.



Transdisciplinary

Creating a unity of intellectual frameworks beyond the disciplinary perspectives.

Figure 29. Integrated learning models

Source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020.

Educational Model

The principles of learning for Glenwood High School describe an education model that is:

- **Accessible and differentiated** – so that all students can benefit from different teaching and learning activities.
- **Timely, flexible and adaptable** – teaching and learning takes advantage of and responds to opportunities as they arise. This makes learning relevant to current, real-world situations and shows students how they can impact society.
- **Future-focused** – develops in students a full toolkit of skills they can use in the world to assist them in their future.
- **Skills-based** – give students the ability to apply the information they have and can act when situations change.
- **Often collaborative** – the majority of tasks done in the real world are collaborations, and students need the ability to perform together.
- **Self-directed** – interesting, meaningful and actively involves students in creating their learning.
- **Technology-enabled** so that students are confident in the use of technologies that are driving the world forward.
- **Encouraging of critical and innovative thinking** – so that students are confident users and creators of information.

Learning Environments to Support the Model

Responsive learning spaces

Student-centred learning allows students to take ownership of the activities they're undertaking. To completely support this way of learning, students need to access the right learning space to support the right activity at the point of need. There are two ways to achieve this:

- 1 Spaces that can adapt – through moveable furniture and resources such as whiteboards and displays on wheels
- 2 A range of diverse spaces – spaces are designed purposefully to meet a specific need.

Integrated learning hubs

The school has been innovating in project-based learning, using STEM (science, technology, engineering and mathematics) as a starting point. STEM challenges students to integrate content from across learning areas to solve real-world problems.

Ideally, this would involve:

- teachers from the three learning areas (science, TAS, mathematics) being available to support students with subject matter expertise
- students working independently, in small and large groups, as driven by their own learning
- access to different spaces such as maker spaces, labs and workshops, as well as small group breakout spaces and large group presentation spaces
- access to a range of technologies including laptops, robotics and 3D printers. Technologies may be considered for prototyping (hand tools, low-res 3D printers, crafts) and design (higher-end technologies such as CAD, laser printers and CNC)
- spaces that consider uses such as green screen/filming studios, editing studios etc. to support creation of media.

The learning hub could be considered as a cluster of classes working together by accessing the peers, teachers, resources and spaces they need to solve their problems and create their products. This requires a consideration of how spaces are grouped, connected and zoned for specific purposes.

Creation and performance spaces

The school music is valued as an experience that brings together all members of the school community: students, teachers, administration and support staff, parents, community members and future students. The diversity of skills and experiences developed through a musical extends from the creative and performing arts to construction, sound and light production, costume design, and the general capabilities of personal and social skills, creative thinking and high level literacy.

- A learning hub for creation and performance could include:
- Rehearsal spaces for music, drama and dance
- Performance spaces for large groups, with purposeful sound and lighting provision
- Workshops for set design (art and construction), costume design (textiles)
- Storage of large resources (props, sets, costumes)
- Change rooms/green rooms.

Catering for the needs of all students

An education model that supports the differences in student interests, needs and readiness can be described as responsive, differentiated or personalised. For an increasing number of students, the level of support needed requires additional resources in the form of:

- Staff such as learning and support teachers, student learning support officers, English as an additional language or dialect teachers
- Resources such as assistive technologies and accessible specialty equipment
- Reduced class sizes, and classes of students with similar needs
- Targeted instruction or support, often in small groups separated from the rest of the class
- Retreat spaces, indoors or out
- Targeted pedagogy for a modified curriculum (called life skills).

Learning environments to support the model (continued)

The school's learning centre gives insight into how these are provisioned at Glenwood High School. The learning centre is a small room located within the Library. There are 2 teachers and 2 teachers' aides who work there to support 1429 students with Individual Learning Programs (ILPs), testing, and disability provisions for learning and assessment tasks.

The efficacy of the learning centre is constrained by its size and provisions. The current allocations are based on an enrolment of 1000 students, and the population of students with addition needs is growing at rate greater than the overall population. A more suitable space would provide:

- increased staff space
- more spaces for one-to-one testing and support
- space for assemblies
- small group interventions and supports
- senior study rooms
- equitable access to technologies to match student needs
- resources in a variety of formats.

Space for staff collaboration

The staff at Glenwood High School value collaboration – within and across faculties – as a way of developing professional practice and ultimately improving student experience and outcomes. Spaces for staff collaboration should support:

Collaborative planning of learning and assessment tasks. Staff may work together in faculty groups (up to 14 people), year level teams, cross-faculty teams or wrap-around teams for student wellbeing. Spaces to support these activities should provide:

- acoustic separation from other work or learning spaces
- discretion from students, but perhaps visibility to other staff
- technology and surfaces for collaboration, e.g. writeable tables, whiteboards or glass walls.

Collaborative teaching – this needs to be investigated more, but should not “build out” the possibilities of:

- two or more teachers occupying the same space with their respective classes.
- teachers from across faculties working across classes, or allowing classes to work across spaces.
- The range of co-teaching models as shown in figure 29 (below). Note, that co-teaching may occur with more than 2 teachers.

Collaborative assessment and evaluation – moderating tasks is an essential practice in ensuring consistent teacher judgement of student achievement. When learning is integrated, assessment of products often requires teacher expertise across subjects. These practices require discrete spaces from students and access to technology.

Whole staff learning – workshops, lectures and presentations are common practices to ensuring all staff receive consistent messages and information for organisational and professional manners. There are currently around 120 staff, including 100 teaching staff.

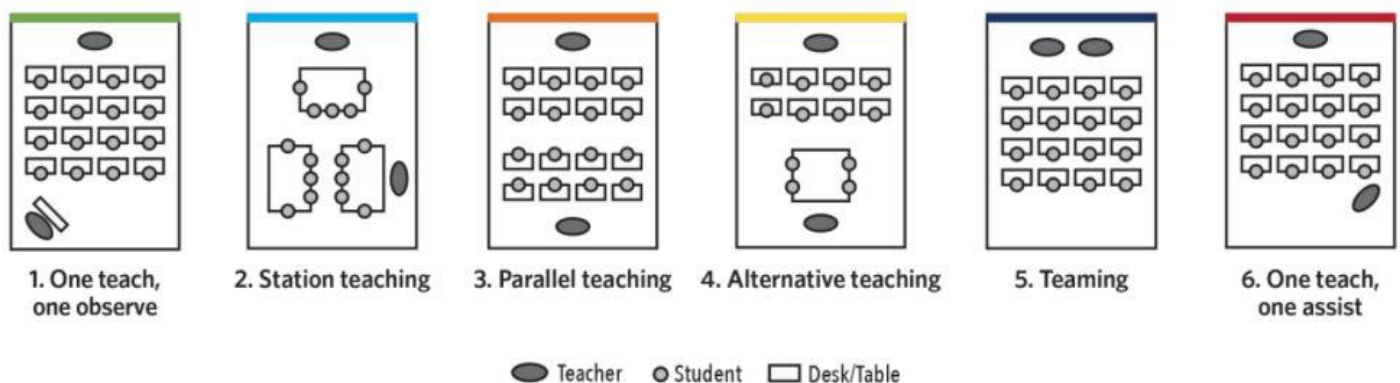


Figure 30. Co-teaching models

Source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020.

Spatial Model - Hubs

Currently most of the existing spaces are in an enclosed typology and some are connected. A **combined** type is likely to best support and provide the following:

- hubs with centralised meeting spaces, adjacent to purposefully designed zones to support a range of learning modes
- multi-purpose spaces
- shared spaces for just-in-time learning
- flexibility afforded by operable walls and diverse furniture
- access to specialist equipment, technology and resources for student-centred projects
- access to specialist teachers for responsive learning
- visibility between zones
- different sized spaces for different sized groups.

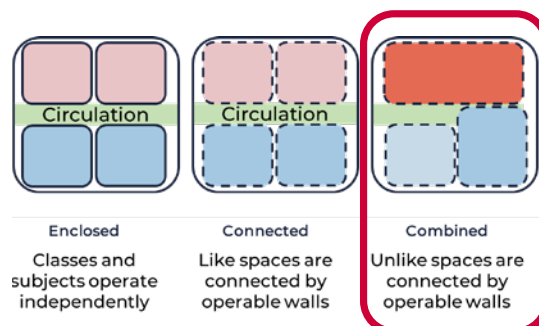


Figure 32. Illustration depicting the combined hub typology

Source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020.

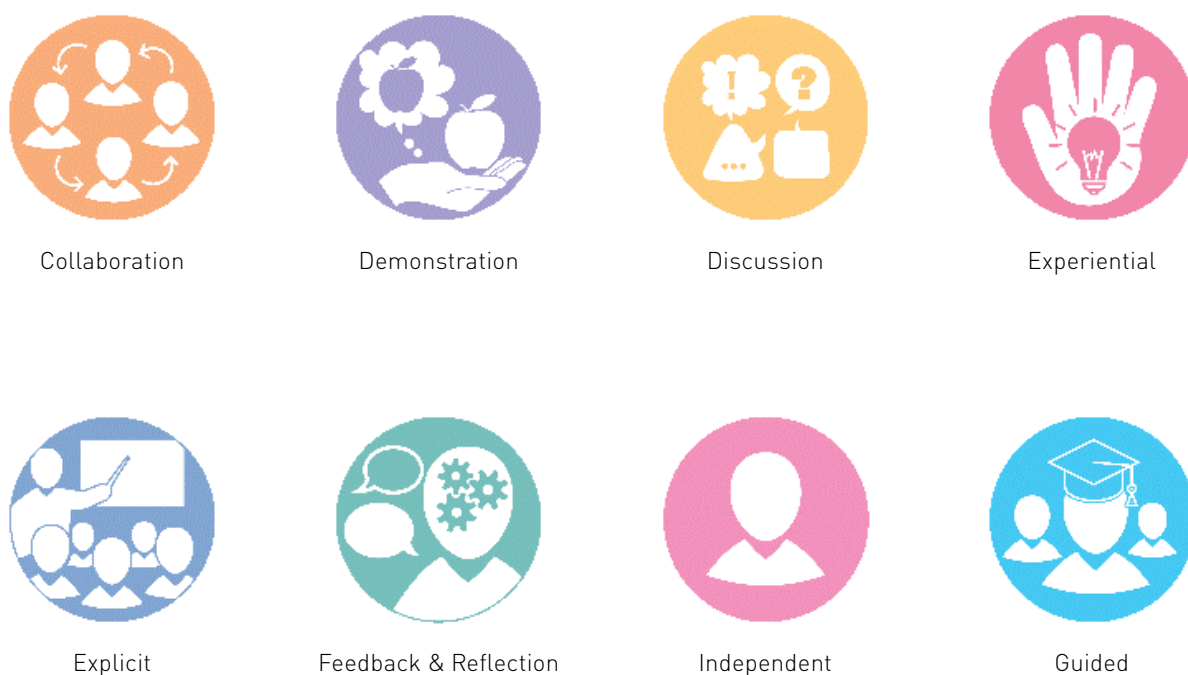
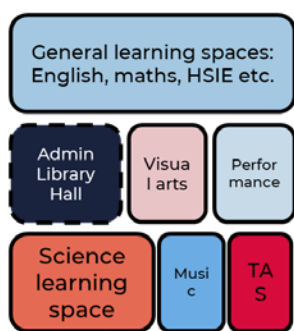


Figure 31. Learning modes featured in the GHS Education Rationale

Source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020.

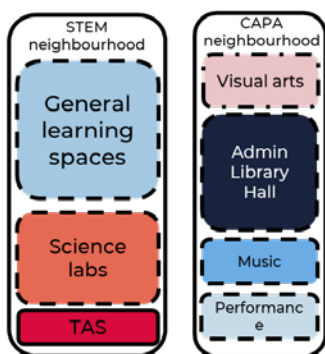
Spatial Model - Neighbourhoods

As the school's existing buildings are discipline-based neighbourhoods, the new spaces should be disciplined-based or partially integrated to balance consistency across the school with new opportunities.



Discipline based

Neighbourhoods are based around faculties, with hubs of like spaces clustered together. Students move between classes to specialist spaces.



Partially integrated

Some faculties are grouped together to support particular models of integration. hubs may contain like spaces or a variety of spaces.



Community-based

Students spend most of their time in their neighbourhood and only leave for subjects with highly specialised spatial requirements. Hubs contain a variety of spaces to support a range of activities.

Figure 33. Illustration depicting neighbourhood interactions.

Source: SINSW, Glenwood High School Educational Rationale, Version 1.2, 12 May 2020.

7. 2 Learning Facilities

The following is an excerpt from the **Glenwood High School Education Rationale** by SINSW dated 12 May, 2020 and reflects findings from an 'exploration workshop and focus groups'.

A combined type is likely to best support and provide the following, as desired from the workshop:

- *hubs with centralised meeting spaces, adjacent to purposefully designed zones to support a range of learning modes*
- *multipurpose spaces*
- *shared spaces for just-in-time learning*
- *flexibility afforded by operable walls and diverse furniture*
- *access to specialist equipment, technology and resources for student-centred projects*
- *access to specialist teachers for responsive learning*
- *visibility between zones*
- *different sized spaces for different sized groups.*

Cross reference Appendix K - Better Placed Design Guide For Schools May 2018 and Appendix L - Better Placed Environmental Design In Schools October 2018.

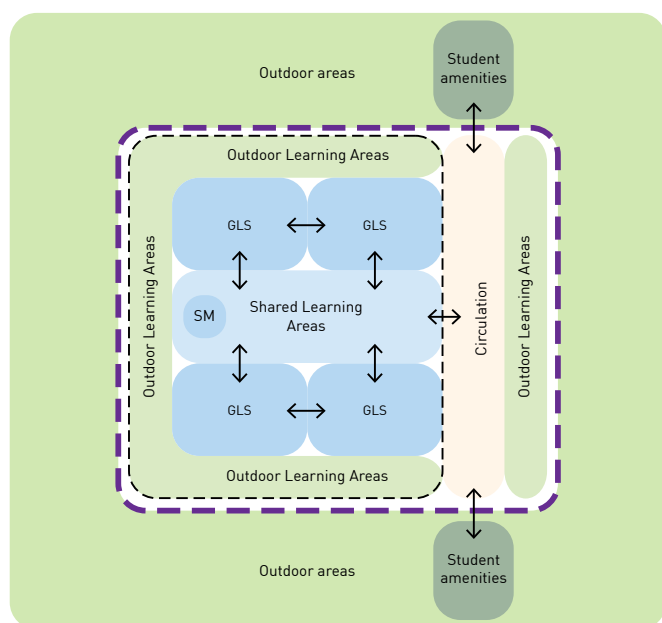


Figure 34. Functional Relationships diagram of learning facilities for GHS

Source: Adapted from EFSG functional relationships and Education Rationale findings.

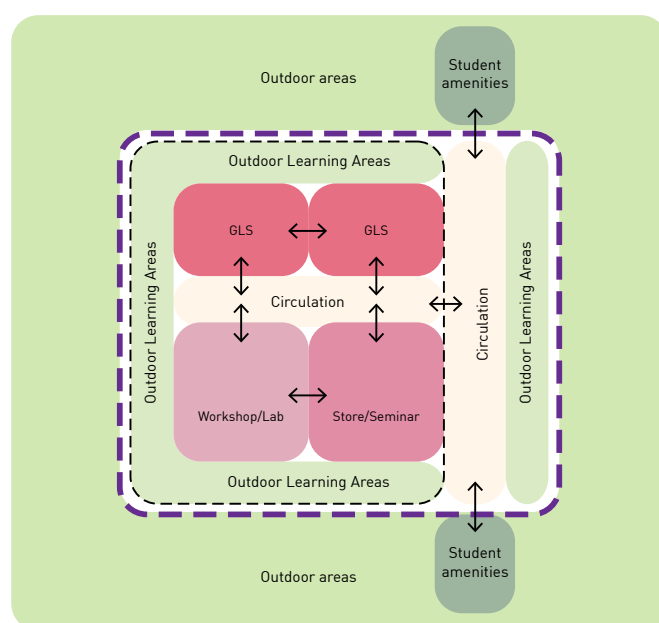
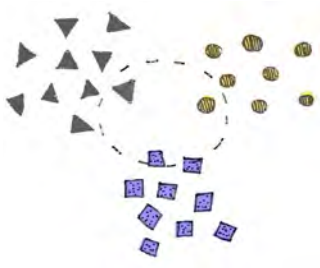


Figure 35. Functional Relationships diagram of specialised learning facilities for GHS

Source: Adapted from EFSG functional relationships and Education Rationale findings.

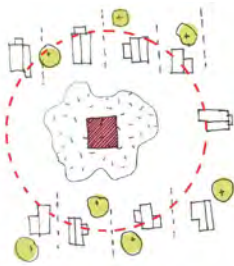
7.3 Design Principles

The Historic Continuum

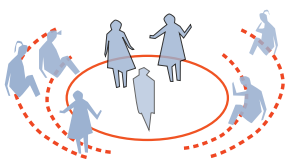


Community and Learning

Exchange between past, present and future culture and ideas

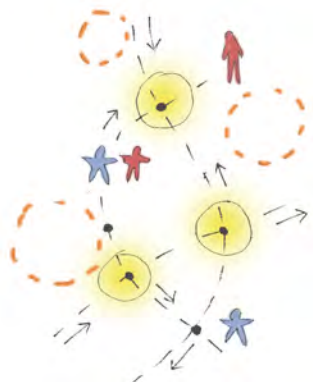


Inherent Continuum of the Environment



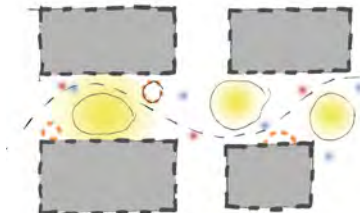
Legacy and Positivity for the future

Cooperation and Competition



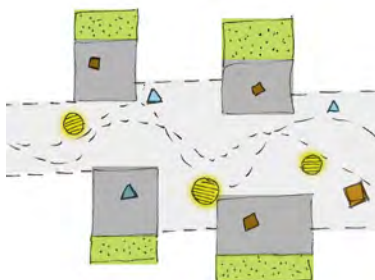
Cooperation and Competition

Collaborative Learning



Learning for young adults

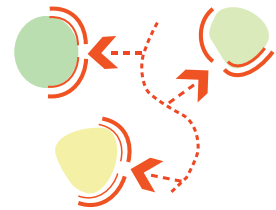
Open Learning Space
Controlled + Less controlled



Choice and Differentiation

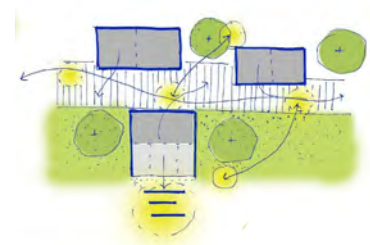
Variety of Learning
Choice • Trust • Self-selection

Use Resources Wisely



Reconfigurability into Future

Adaptable spaces for the whole community



Outdoor Landscape Specific Learning Spaces
Interaction groups General Learning Spaces

Learning outdoors

Irregular • Sense of freedom
Stimulus + Curiosity



Choice and Differentiation

Variety of Learning

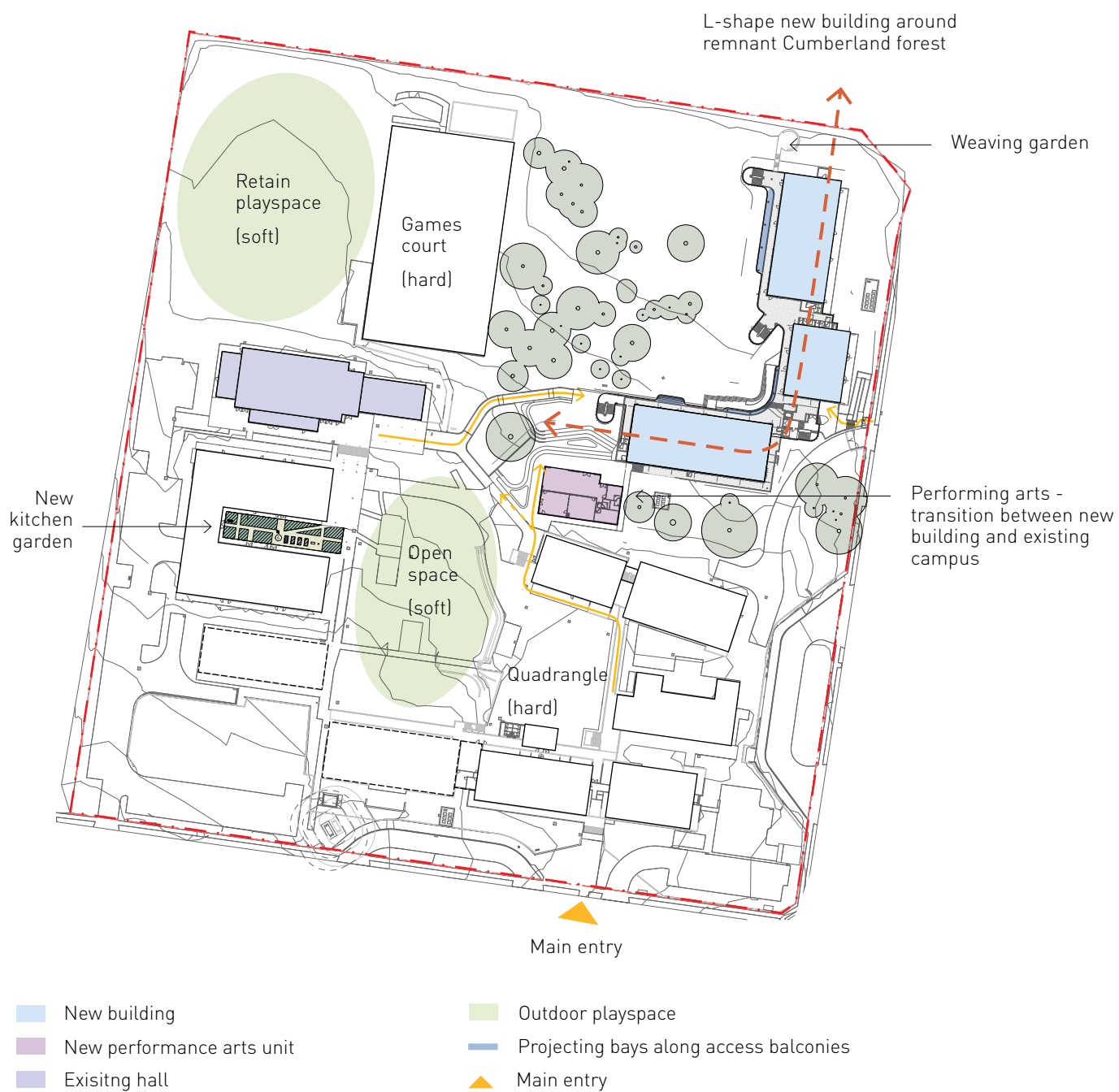


Figure 36. Using resources wisely - land and playspace

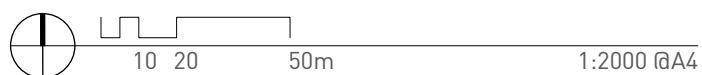
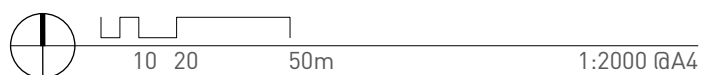




Figure 37. Connection to biological processes - interstitial spaces used for outdoor learning and recreation



8 ARCHITECTURAL CONCEPT

The design for the new building for Glenwood High School configures the SINSW mandated planning grid as a L-shape around the remnant Cumberland forest. The wings have been organised to relate to the sloping topography and to create circulation and service nodes. In so doing, interstitial spaces are created that can be used for outdoor learning and informal student and staff interactions.

The students like to be sociable with an ability to spill out of the 'controlled space' of the classroom to the 'less controlled space' both internally and externally all of which are conducive to learning.

The landscaped external spaces offer the opportunity to learn outdoors and can be separated or joined together.

There is a line of sight out to the external spaces.

These landscaped areas can be irregular in configuration in contrast to the planning grid, and thus create spaces of different qualities for students of different needs and personalities, while still in view of the teachers.

In addition, high school students can have a large physical presence and need adequate space.

The new three storey building sits on a platform that is raised above the adjacent ground levels by at least 225mm to comply with freeboard requirements. This platform increases to approximately one metre at the northern end and is expressed as either sloping grassed embankments (for students to relax against in the sun) or stepped platforms for outdoor learning.

At the nodal spaces, breezeways separate the internal spaces from the vertical circulation, amenities and services and encourage natural ventilation across the width of the building.

The new performance unit has been separated out from the new L-shaped building as a transitional element between the existing campus and the new building. It allows students to readily access the existing multi-purpose hall and the fitness learning unit, and their associated toilet/change areas. Moreover, its location leads to the creation of an outdoor performance area. The existing complex series of level changes and links have been reworked into a more coherent series of spaces and 1:20 walkways.

For the older children and young adults of a high school:

- the built environment serves as one of the tools of learning, the others being
- social rules and
- structured learning.

High school students need:

- choice
- trust
- self-selection.

These attributes or qualities are needed to

- encourage engagement and
- maintain attendance.

Therefore, the long access balconies that are part of the planning grid are punctuated with slightly projecting bays which

- create a sense of space
- prevent a sense of being corralled and
- allow for informal student to student or student to teacher interactions.

The L-shaped building has three main component wings:

- an east-west wing,
- an intermediate north-south wing and
- the main north-south wing which steps down by 1.2 metres in line with the topography.

A number of existing buildings will be refurbished to meet the school needs as described below in 8.1 Planning.

8. 2 Block and Stack

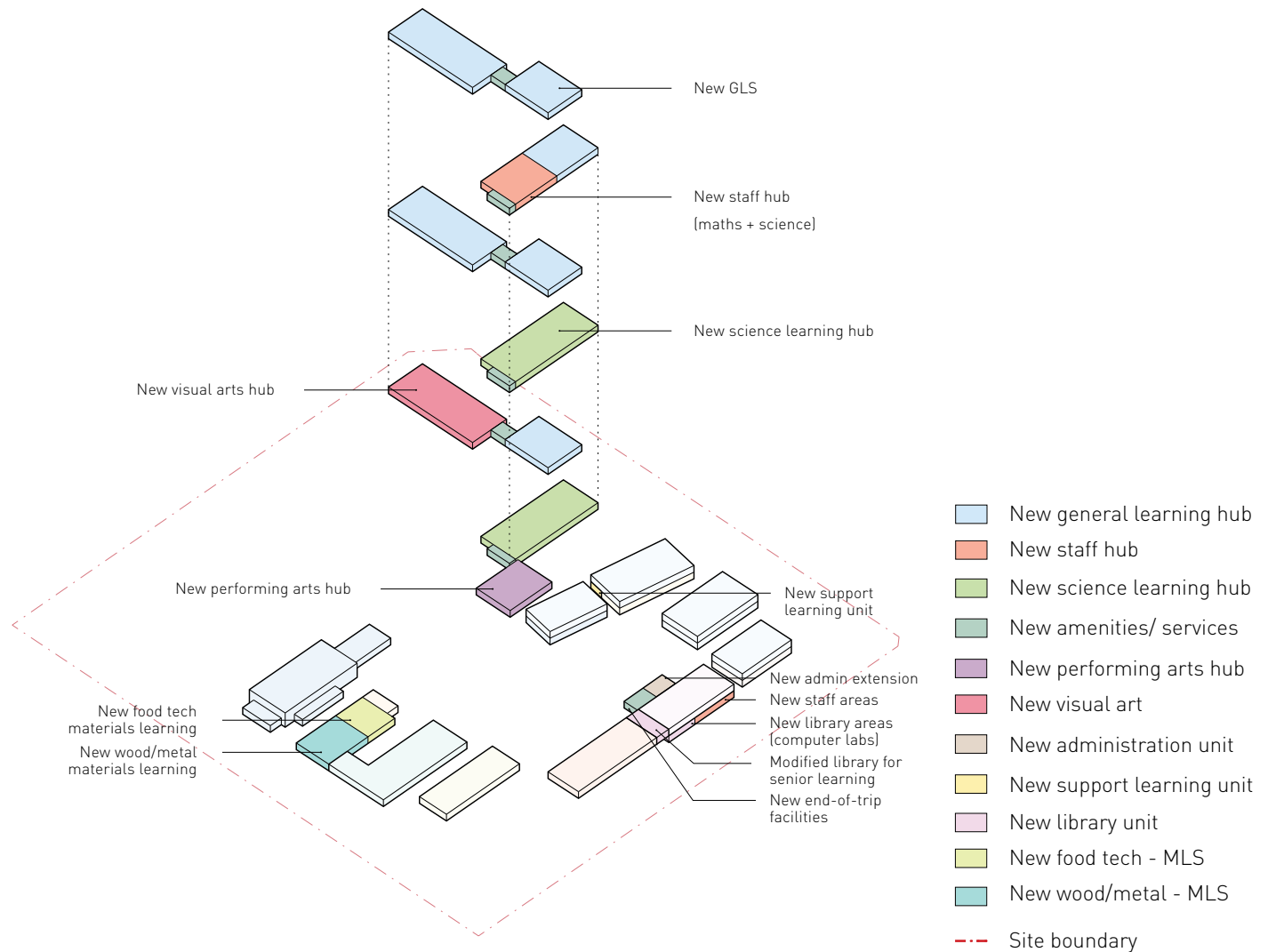


Figure 41. Block and stack concept diagram

	NEW BUILDING			TOTAL	PERFORMANCE ARTS	TOTAL
	GFA m ²			GFA m ²	GFA m ²	GFA m ²
INTERNAL	L00	L01	L02		L00	
Internal Area	1797	1808	1777	5382	353	5735
COLA	132	132	130	393		393
Vertical	213	211		424		424
Services	34	32	32	97	9	106
Circulation	617	741	696	2053	319	2372
EXTERNAL						
Courtyard	644			644		644
Covered Walkway	382			382		382
COLA - External	134			134		134
Vertical	147			147		147

8.3 Services and Infrastructure Requirements

The major services requirements for the redevelopment of the school campus include:

- New substation adjacent to existing off Forman Ave
- New fire hydrant pump room at eastern parking lot
- Extension of existing main comms room (MCR) in library
- New comms room in Building E L00 refurbishment
- New rainwater harvesting tank located below the northern end of the new building
- New OSD tank located at the north of the site between Glenwood Park Drive and the new building
- New air-conditioning plant enclosures in various locations around the site

The new infrastructure consists of:

- New pedestrian student entry from Glenwood Park Drive.

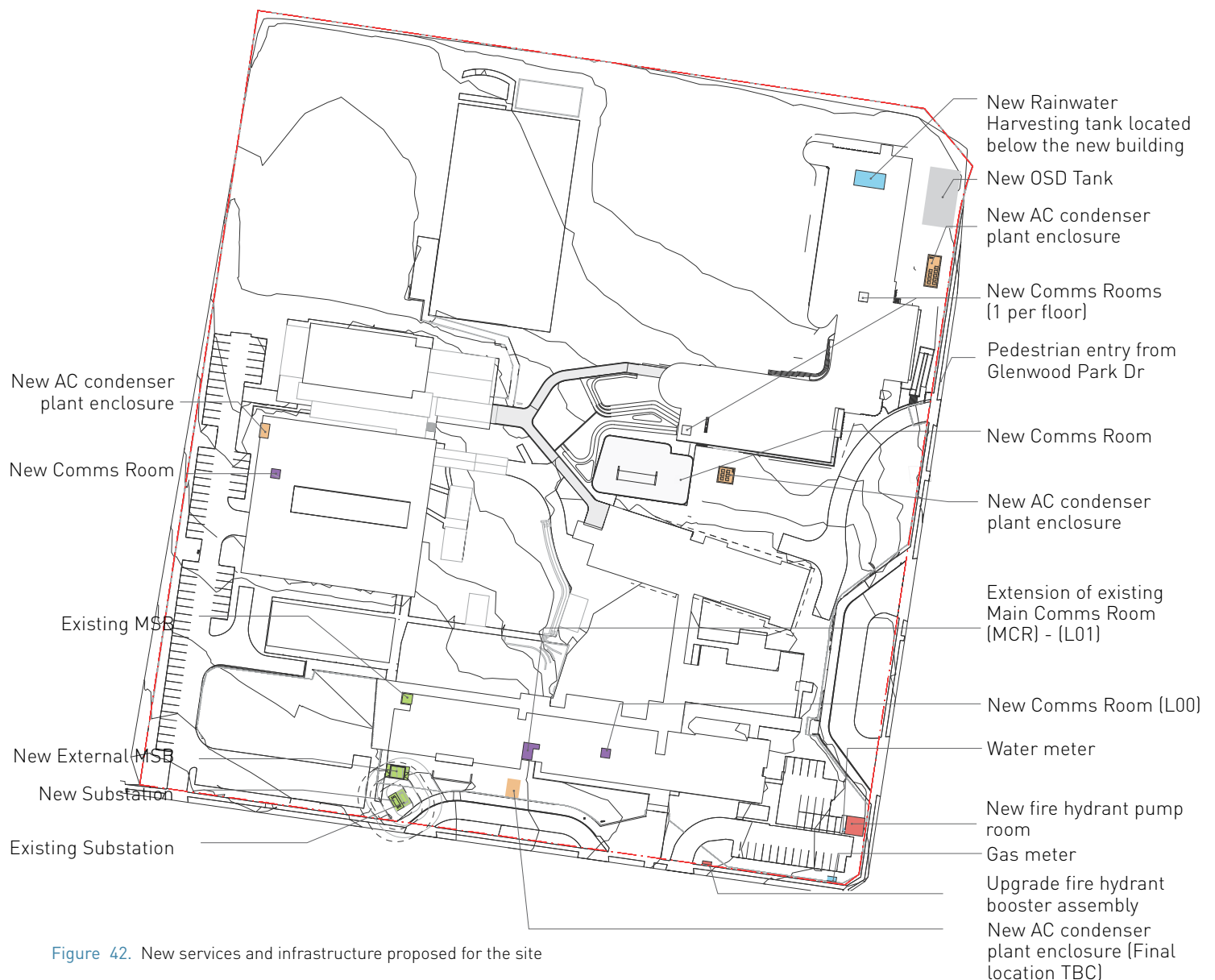
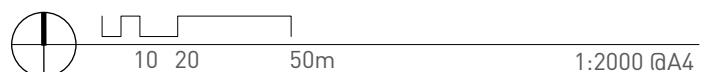


Figure 42. New services and infrastructure proposed for the site



8. 4 Public Domain and Community

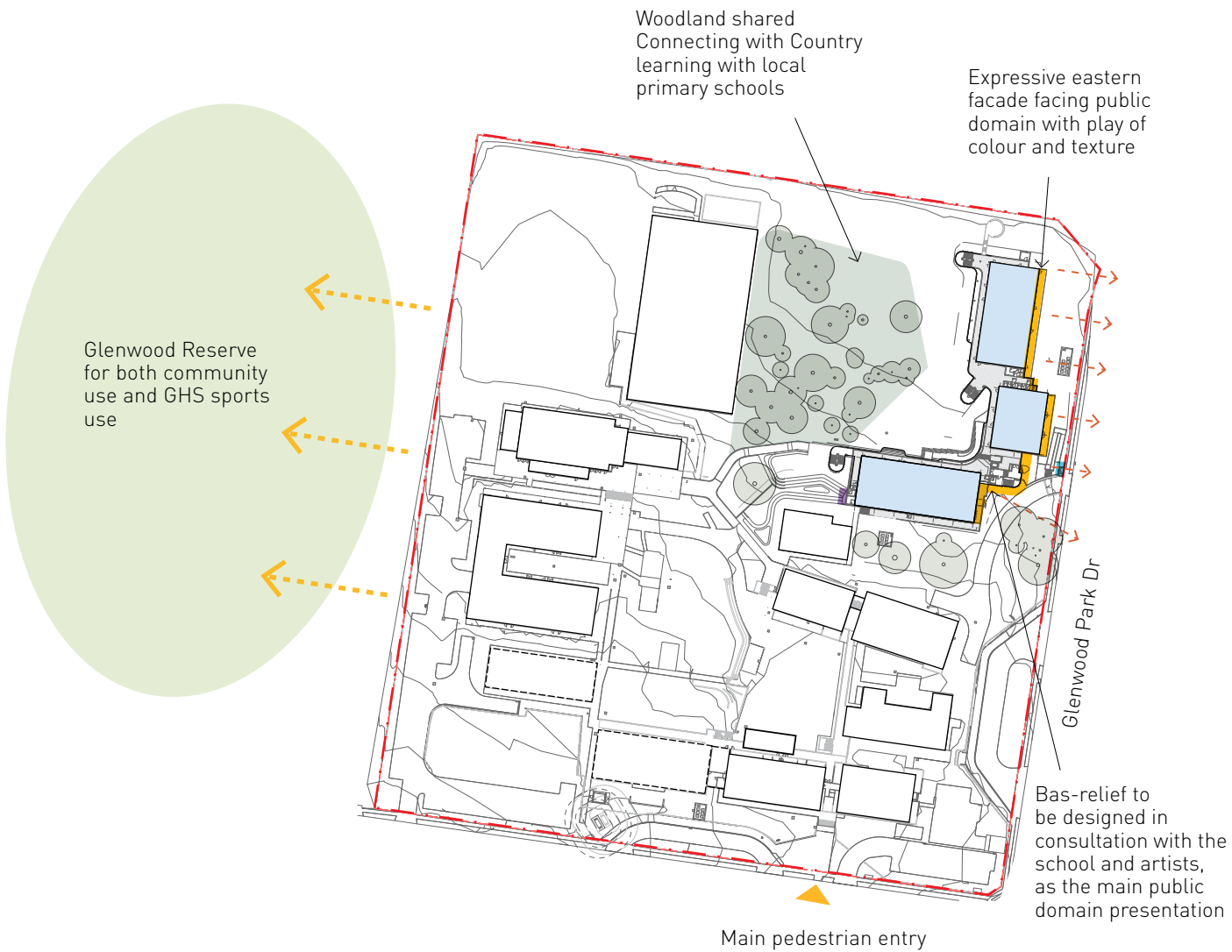


Figure 43. Public Domain and community relationship diagram

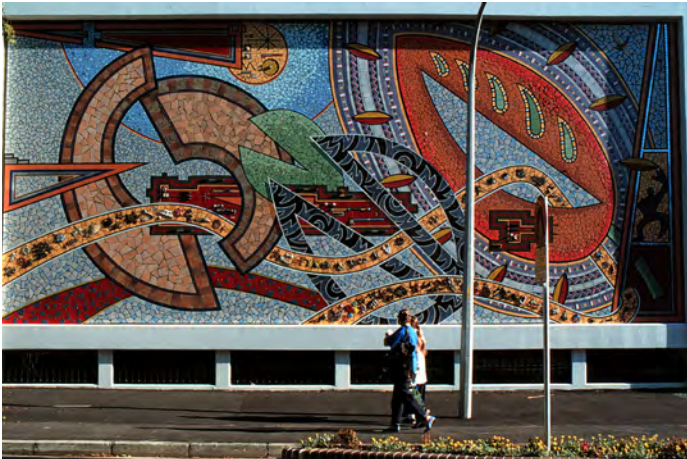


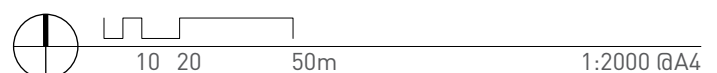
Figure 44. International Grammar School Sydney mural in public domain
 Artist: Lloyd Keleman and Jenny Crooke
 Source: PTW Architects

8. 5 Access, Security and Circulation Strategy

The site is bounded by a secure fence. The proposed design meets the principles of Crime Prevention Through Environmental Design (CPTED) through the provision of active edges to the new buildings and a clearer pattern of accessible pathways between the existing buildings and the new part of the campus.



Figure 45. Site access, security and circulation diagram



CPTED – Safer by Design

The four key CPTED strategies and the response to those strategies are outlined below.

Natural Surveillance

As noted above, the proposed layout and location of the new building provides natural surveillance both outwards to the street and inwards to the campus. In addition, there will be technical surveillance through CCTV.

Natural Access Control

The existing campus is surrounded by a high palisade fence.

Maintenance Space/Activity Management

The school operations allow for controlled entry and exit of students, parents and visitors.

The CPTED strategies benefit schools by:

- Creating a warm and welcoming environment
- Fostering a sense of physical and social order
- Creating a sense of ownership by students
- Sending positive messages to students
- Minimising opportunities for out-of-sight activities
- Managing access to all school areas.

Territorial Re-enforcement

The new buildings have been located on the site so that the sequence of movement from the existing campus to the new portion of the campus is clear, at accessible grades and with open sightlines. Students can move in either sheltered and accessible paths from the existing or upper campus down to the new campus or via a more direct uncovered route with steps.

The performance space acts both as a physical connector with the existing campus, the hall and the new campus and as an emblem of the school's evolution. Performance is an important way for the school community to share their different cultural backgrounds.

There is a new student entry from Glenwood Park Drive with direct access into the 'knuckle' of the new learning building.

The proposed design improves the existing non-descript presentation to Glenwood Park Drive and thus enhances the school identity within the wider community.

8. 6 Play Space



Existing Play space is approx 19056m²
13.5 m²/student @ 1410 students

Existing Play space is approx 31.4 % of site

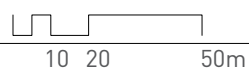


Figure 46. Existing play space

1:2000 @A4



Proposed Play space is approx 18970m²
 10.4m²/student @ 1820 students

Proposed Play space is approx 31.2% of site



1:2000 @A4

Figure 47. Proposed Play space

8. 7 Building Envelope

The indicative elevations set out below and in Sections 8.8 and 8.9 reflect the rhythm of spaces within the building and provide natural light and airflow to the internal spaces.

The learning block is a L-shaped three storey building which embraces the woodland. It is composed of three main wings of learning spaces, one in an east-west orientation and two in a north-south direction. These blocks are simply expressed as brickwork: terracotta coloured brick reflecting the existing buildings on the ground floor and bands of white (matt and glazed) brick above with soldier coursing detail. Glazed window, louvre and door panels sit within the rhythm established by the concrete frame, shielded by a simple framework of horizontal and vertical aluminium sunshading.

Between these blocks, are distinctive metallic connecting elements.

The main knuckle presents to Glenwood Park Drive as a concrete fin wall and perforated metal 'leaves'. Bas-relief motifs will be set into the fin. The motifs will be developed in association with the wider school community to express both their Connection to Country and to their rich multi-cultural community.

The node between the two parts of the north-south wing will have a geometrically striking form, as will the chimney for the kiln at the northernmost point of the building.

Similarly, the perforated metal shroud around the performance space has an expressive geometry, angled to lead people from the existing campus down into the new building. The screen will be enhanced by a pattern developed by an artist to express the school's cultural heritage.

The external stairs will be shrouded in modelled perforated metal to give a degree of protection from wind and rain. Similarly, perforated metal screening will delineate the curved projecting bays along the access balconies so that they can function as the places of incidental learning, so important to teenagers.

The roof is pitched to create a clerestory and sheathed with sheet metal.

The wall helping to define the eastern edge of the stepped outdoor courtyard and between the performance pavilion and the new building, will house a large scale ceramic tiled mural. The mural will interpret the school's values which the students and community revere.



Figure 48. Performing Arts - East elevation



Figure 49. Performing Arts - South elevation



Figure 50. Performing Arts - West elevation

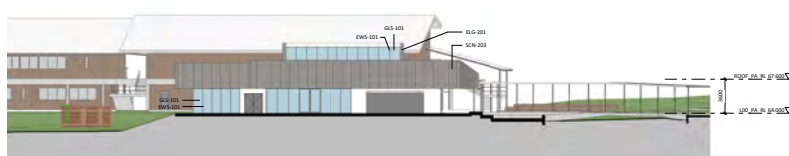


Figure 51. Performing Arts - North elevation



Figure 52. New building - East elevation



Figure 53. New building - South elevation

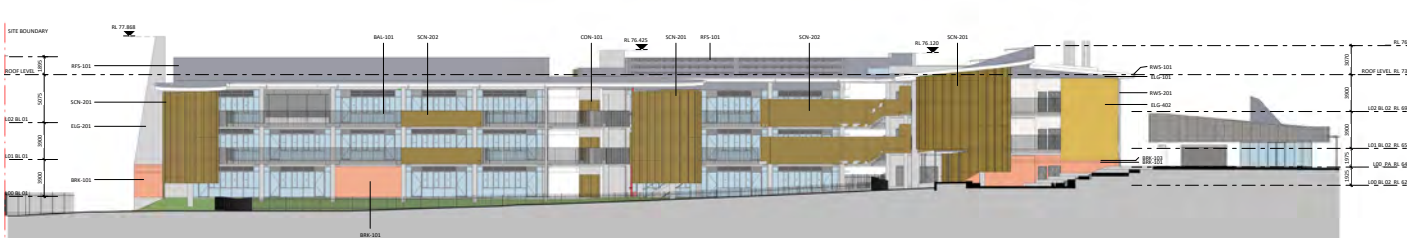


Figure 54. New building - West elevation

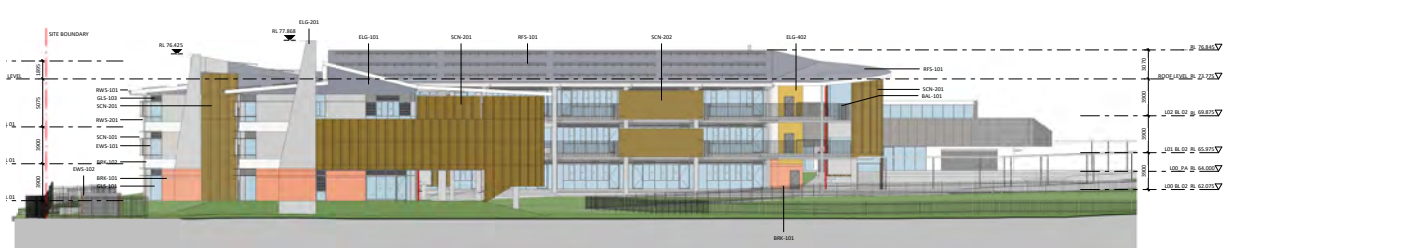
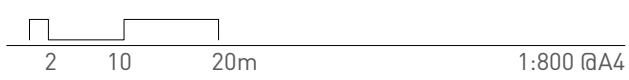


Figure 55. New building - North elevation



8. 8 Proposed Materials

The external materials illustrated on figure 53 (Sheet AR-0501) have been selected to create a play of light and shadow across the facade, as well as for robustness and conformance with EFSG.

The terracotta coloured brick reflects the colour and texture of the existing brickwork on the campus. The pattern and colour of the modelled perforated aluminium for the screens to the external stairs will be further developed in consultation with the Aboriginal Cultural consultant and community to reflect the weaving tradition of the Darug people:

Objects created allow for self-satisfactory social acceptance, and social support.

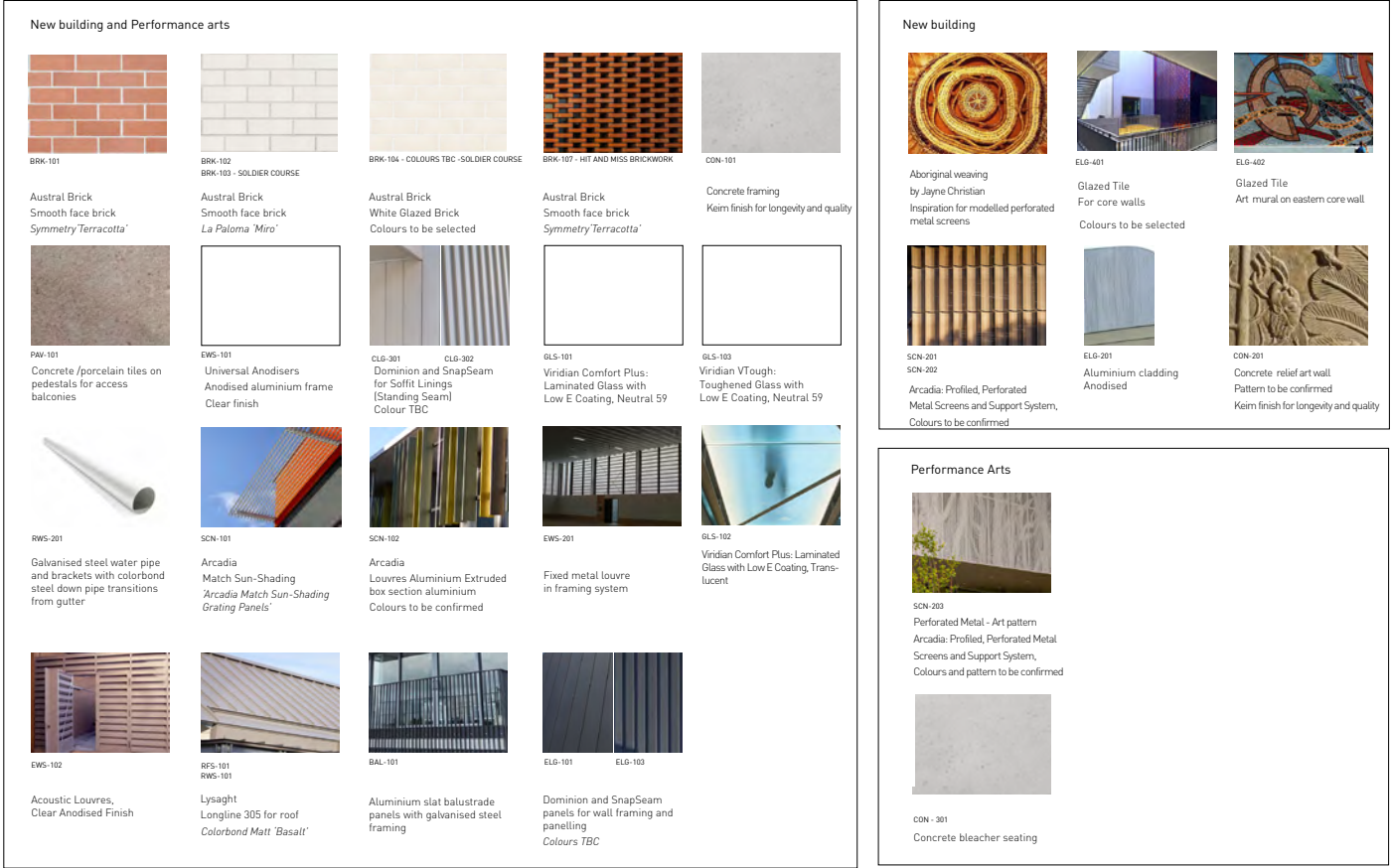
Julie-Ann Christian, Scoops, "Vessels of love: Darug weaving that connects generations, community and country", Garland Magazine, 27 February 2020

Colours of the screens and the panels of glazed brick and tiles will be selected based on artefacts found in the surrounding area.



Figure 56. Aboriginal weaving by Jayne Christian

Source: <https://garlandmag.com/article/vessels-of-love/> - accessed 02/07/2021



8. 9 Visualisations

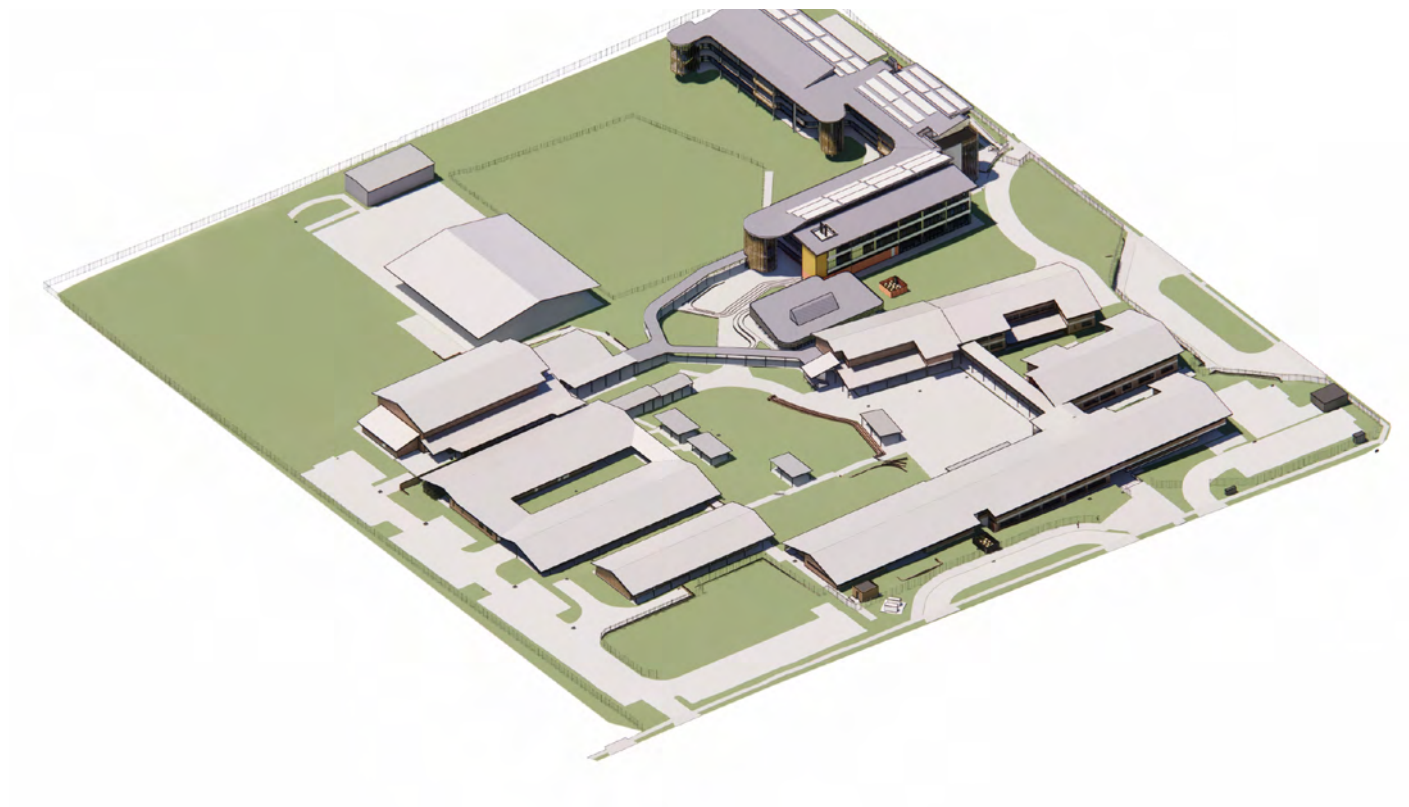


Figure 59. Southwest axonometric

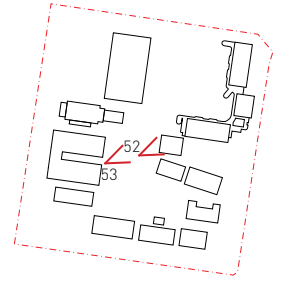


Figure 60. View looking east from the canteen



Figure 61. View looking east towards the performance arts unit from the covered walkway

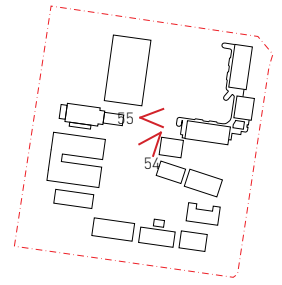


Figure 62. View looking southwest from the performance arts unit



Figure 63. View looking east to the new building from the covered walkway

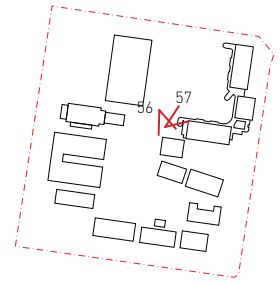


Figure 64. View looking southeast towards the performance arts unit from the covered walkway



Figure 65. View looking northeast towards the new building

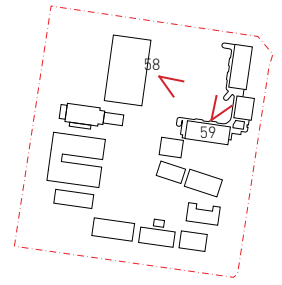


Figure 66. View looking southeast towards the central core of the new building from the woodland



Figure 67. View looking northeast towards the northern wing of the new building

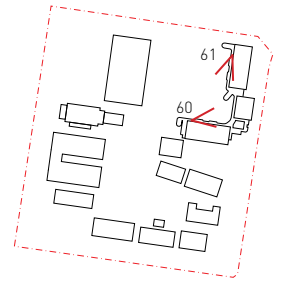


Figure 68. View looking towards the northern wing from the access balcony



Figure 69. View looking south from the access balcony in the northern wing

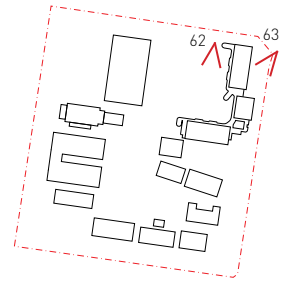


Figure 70. View looking southeast towards the new building

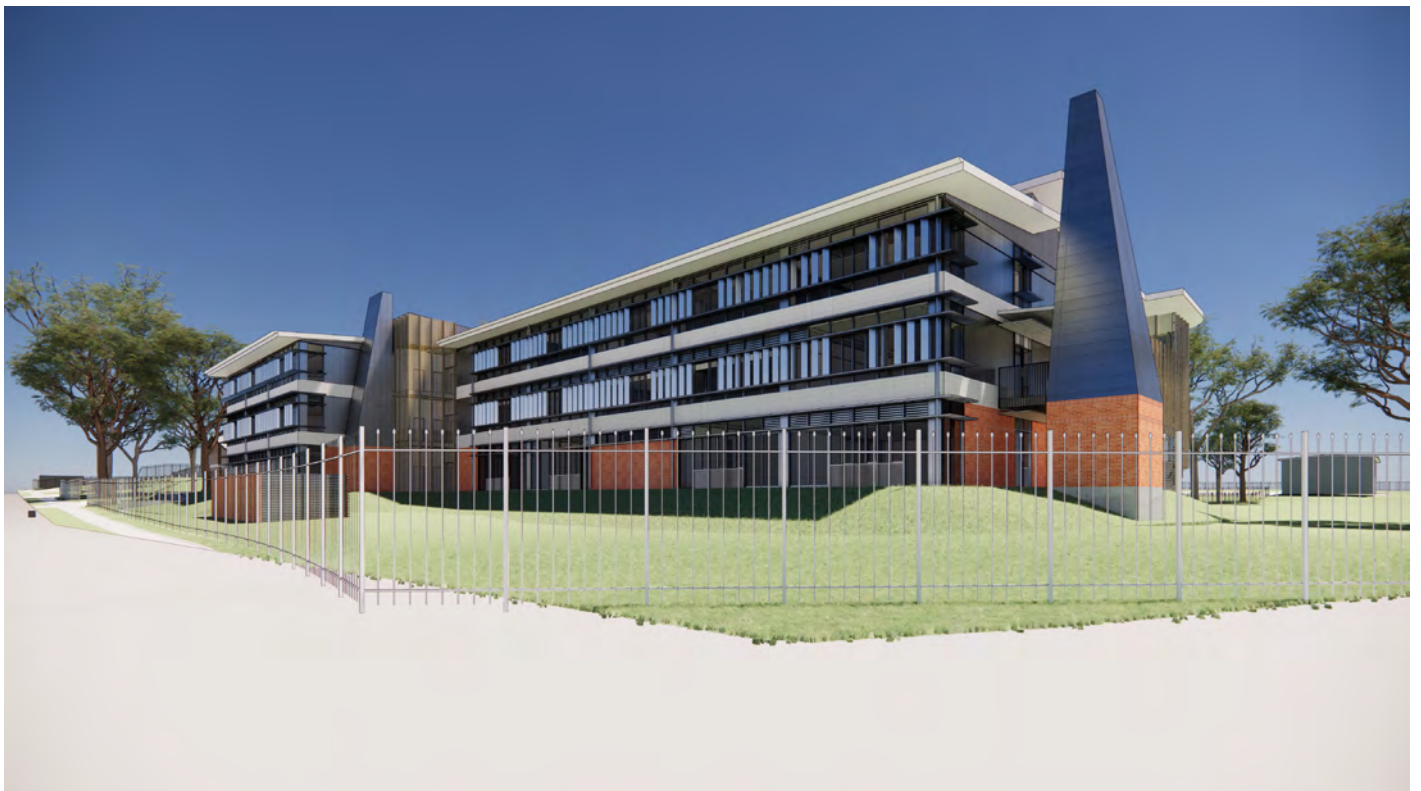


Figure 71. View looking southwest towards the new building from Glenwood Park Drive (landscaping and OSD removed for clarity)

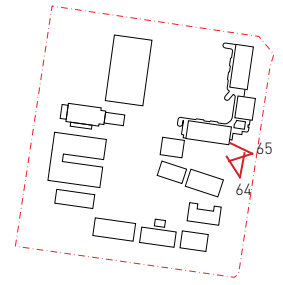


Figure 72. View looking north towards the new building from building A



Figure 73. View looking west towards the performance arts unit and the new building

8. 10 Environmental Sustainability Design (ESD)

The following is an excerpt from the **GHS ESD report** by AECOM dated 17 September 2021.

ESD design principles as defined in Clause 7 (4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 have been incorporated into the holistic design of GHS including:

- *The precautionary principle*
- *Inter-generational equity*
- *Conservation of biological diversity and ecological integrity*
- *Improved valuation, pricing and incentive mechanisms*
- *Minimisation of consumption of resources, water (including water sensitive urban design) and energy*

ESFG Sustainability Targets - Energy Conservation

The project is targeting a 5 star Green Star rating. As such, the building will target a modelled energy reduction of between 20-40 better than minimum compliance under the National Construction Code (NCC) 2019. In accordance with the NSW Government Resource Efficiency Policy, the building must be designed such that energy consumption is predicted to be at least 10% lower than minimum compliance with the NCC requirements. This will be exceeded under the current Green Star targets.

Green Star Sustainable Design Initiatives

The project is targeting a 5 star Green Star rating, as per the Educational Facilities Standards and Guidelines. Green Star Design and As built is due to be phased out by the 17th December 2021 and is to be replaced by Green Star Buildings.

AECOM have developed two pathways for consideration subject to EFSG and SINSW approval:

- *5 Star Green Star v1.3 Design and As Built (minimum 60 Points)*
- *5 Star Green Star Buildings (minimum 35 points + minimum expectations)*

The minimum expectations of the 5 Star Green Star Buildings pathways are:

- showers and lockers for changing
- acoustic comfort
- daylight
 - maximise daylight to spaces that prioritize learning
 - regularly occupied spaces in reasonable proximity to glazed façades, windows or skylights (20% of areas to be provided with high levels of daylight)
- outdoor air 50% higher than minimum required by AS 1668.2:2012 and CO₂ levels less than 800ppm
- waste streaming.

It is proposed that the 5 Star Green Star Buildings pathway will be followed.

The key architectural design requirements set by SINSW, and which are addressed by this design are:

- Building location and orientation for optimum solar access and passive design, natural ventilation, etc.
- Protection / regeneration of natural habitats and vegetation on and adjacent to site
- Retention / removal of built form for passive design (particularly daylighting and natural ventilation)
- Joint / community use of site and facilities
- Tapping into reticulated recycled water networks or precinct infrastructure
- Incorporation of crime prevention through environmental design (CPTED)
- Mitigation of urban heat island effect and provision of landscaped shaded outdoor space
- Consultation with Aboriginal communities to incorporate celebration of local Aboriginal cultures into school design.

Source: SINSW. Sustainable Development Practice Note. Version 1.0. 30 April 2021

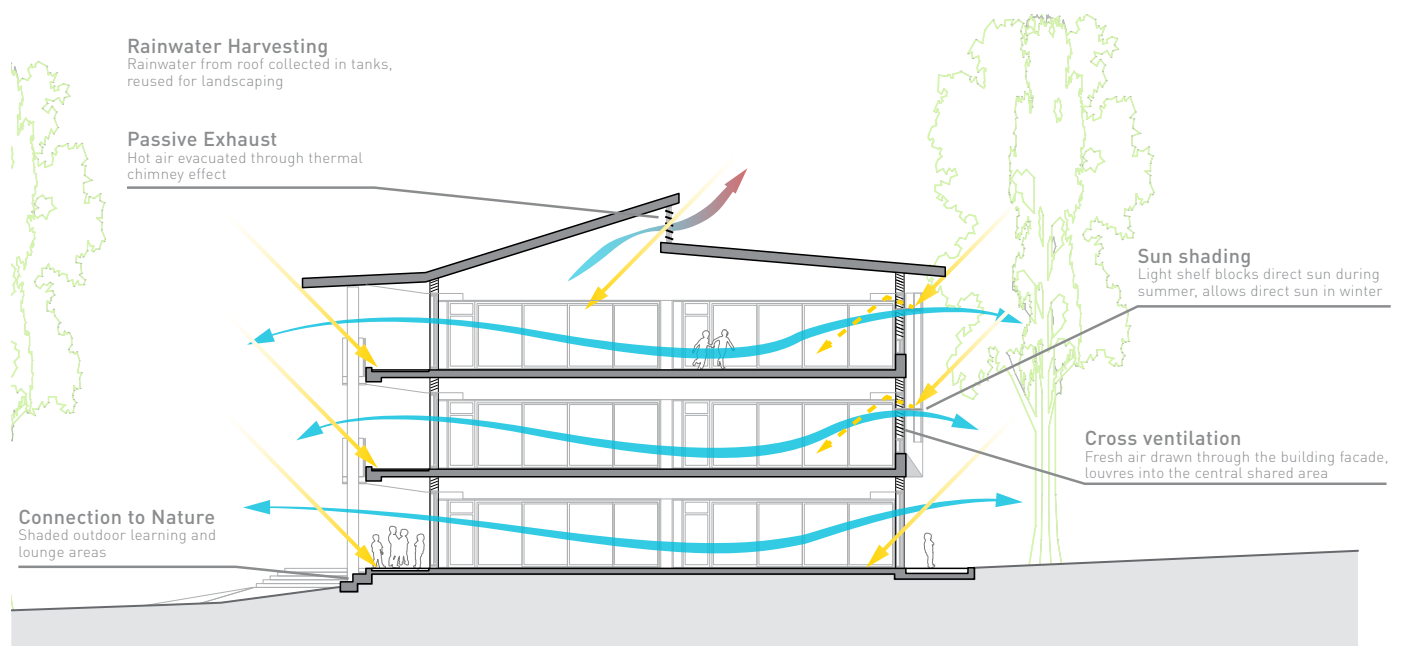


Figure 74. Passive design principles of new three storey building

9 CONSULTATION

9.1 State Design Review Panel

The concept design was presented to the State Design Review Panel (SDRP) on 25 August 2021.

The following elements are supported:

- *Well planned and rational suite of buildings that sit appropriately within the surrounding buildings and school campus, and embrace the Cumberland Plain Woodland.*
- *Design intention for student connection with the Cumberland Plain Woodland, including building orientation, emphasis on visual connectivity and proposed surrounding pathways.*
- *Performance building and surrounding outdoor area linking the existing and new buildings and creating a new vibrant heart for the school.*
- *Proposal for a mural and the intention for its connection with community.*
- *Plan to retain the architect for the remaining phases of the project.*

The advice and recommendations for design amendments were:

1. *Continue engagement with local Aboriginal groups and explore the school's relationship with Indigenous culture to inform a meaningful approach to Country and seek ways to strengthen these connections.*
2. *Formulate a strategy to incorporate resulting engagement initiatives into the project as an ongoing process, ensuring ample time is factored into the program.*
3. *Create opportunities for the Indigenous community, particularly families within the school, to participate in developing aspects of the design and build knowledge within the design team, such as how to respect and respond to the Cumberland Plain Woodland.*
4. *Further develop the language and articulation of the pathways. Explore varying widths, gathering points and play with the geometry. Refine the connections between the pathways and the learning building circulation.*
5. *Enable students to interact, engage and occupy the woodland as a continuation of their open green play space.*
6. *The embankment conditions around the new buildings, which help to address flooding, are uniformly presented and need further development. Incorporate a variety of treatments to create more interest in the landscape and opportunities for students to occupy the edges such as seating, ramping and steps.*
7. *Further develop the landscape design and provide drawings which demonstrate the integration of landscape and architecture.*



Figure 75. View of the northern wing of the new building



Figure 76. View of the updated amphitheatre at the Performance Arts unit after removing the balustrades

8. Consider providing new trees across the whole site rather than just within proximity of the new buildings. A 40% tree canopy coverage is preferred.
9. The concept for an edible garden is supported. Confirm that the proposed location receives adequate sunlight and consider incorporating edible native planting else where throughout the site.
10. Develop a plan for more planting throughout the school campus including a strategy for succession planting and reuse of any removed trees.
11. Explore the impact of the proposed dark coloured roof on solar heat gain and consider a lighter colour for a better sustainability outcome.
12. Aiming for a net-zero building is highly encouraged to reach NSW's Net Zero emissions goal by 2050. Refer to 'NSW, DPIE, Net Zero Plan, Stage 1: 2020-2030' for further information.
15. The concept of expressing the knuckle of the new, L-shaped building is supported, however the planning in this area needs further resolution. Provide detailed drawings demonstrating how the circulation works and explore adjustments to the planning to improve efficiency, connectivity and views as seen from Glenwood Park Drive. This might include revising the lift, storage and mural location.
16. The performance building and surrounding outdoor areas are the first new spaces experienced when entering the school. They present an opportunity to join the existing and new school buildings together and improve the arrival experience to create the vibrant heart of the school. Further design development should consider:
 - a. The level change and balustrade which creates a barrier between the performance building and the outdoor area. Explore strategies to create fluid movement between these spaces including bleacher style seating.
 - b. Multiple circulation paths collide at this outdoor area, including the critical southern end of the pathway through the Cumberland Plain Woodland. Carefully consider these connections and provide detailed drawings demonstrating how this area will enable fluid movement in and out of the woodland and throughout the campus while encouraging use of the outdoor area.
 - c. Improvements to the articulation and orientation of the built form, which is currently presenting as orthogonal and rigid, and has the opportunity to embrace its unique location and function.

Architectural expression

13. The following building elements presented are supported:
 - a. The nooks, breakout bays, 'knuckle' stair void and mesh of the walkways. Incorporate creative expression into the mesh with graphics and perforations informed by the students and Indigenous participatory design. Ensure adequate porosity is achieved through the mesh and stair void to allow sufficient natural lighting and prevent the walkways feeling enclosed.
 - b. Architectural expression of the projecting stairs.
 - c. The solar shading devices. Use the shading strategy as an opportunity to develop the character and identity of the new buildings. Explore how they might be integrated with the façade.
 - d. Expression of coloured bricks on ground. Consider reducing extent of coloured brick on upper levels and using solar shading devices for variety on the façade.
 - e. Proposed large mural. Explore options for its location which may include either relocating to, or introducing an additional mural at the new heart of the school outside of the performance building.
 - f. Clerestory windows on the top floor of the new learning buildings.
 - g. The expression of the workshop chimneys. Provide detail demonstrating further resolution of the junction where the roof sheeting and chimney meet.
14. The project is an important opportunity for the school to strengthen its identity and place in the community. Provide detailed elevations and visualisations illustrating how the character of the new buildings will reflect the unique community, culture and context of the school.
17. Consider reducing the dominance of the soffit in the built form by introducing a series of breaks in the soffit plane, or using an alternate material to painted sheeting.
18. Address the privacy issues arising from the visibility of the student amenities along the new learning building walkways.

Many of the comments in relation to sustainability, future community sharing of facilities and passive design are embedded in this design.

In response, the architectural design was amended to respond to points 11, 13c, 13e; 15, 16, 17 and 18. The landscape design responds to 6, 7, 8, 9 and 10.

A second SDRP occurred on 13 October 2021.

SDRP's advice and recommendations for the project:

Connecting with Country, landscape and sustainability

1. *Increase access and connection to the Cumberland Plain Woodland by reinstating the paths presented at the last SDRP session and consider gravel paths in areas where a sensitive approach is needed.*
2. *Continue the Connecting with Country consultation as an ongoing process throughout the design development:*
 - a. *Demonstrate how cultural knowledge gained is informing the design and being embedded into the project e.g. the introduction of curved elements and the need to reflect these throughout, such as in the edible garden.*
 - b. *Present the interpretation of the initiatives to the consultation groups, and ensure they are being translated in a way that is meaningful to them.*
3. *The increase to tree canopy coverage is supported, however a higher percentage should be aimed for and this should be achieved across the entire site.*
4. *Provide detailed drawings demonstrating the arrival experience and landscaping from the new pedestrian access off Glenwood Park Drive to the Cumberland Plain Woodland, the weaving circle, and other community facilities.*
5. *Develop a management plan for the implementation and maintenance of landscape over time and include the following:*
 - a. *Strategy for the regeneration of the Cumberland Plain Woodland.*
 - b. *Collaboration with a bush regeneration specialist.*
 - c. *Temporary fencing strategy to protect newly planted native vegetation from foot traffic.*
 - d. *Learning opportunities and participation of students and the local community as part of implementation and ongoing management.*

Architectural expression

6. *The following recommendation from the previous SDRP advice letter still applies: 'Consider reducing the dominance of the soffit in the built form by introducing a series of breaks in the soffit plane, or using an alternate material to painted sheeting.'*
7. *The following recommendation regarding the performance arts building from the previous SDRP advice letter still applies: 'Improvements to the articulation and orientation of the built form, which is currently presenting as orthogonal and rigid, and has the opportunity to embrace its unique location and function.'*

8. *The following developments in the façade design are supported:*
 - a. *Horizontal banding approach. Demonstrate the increased sill height will not compromise views from a student's perspective within.*
 - b. *Refinement to the design of the vertical blades. Provide details of the overall solar shading strategy across each façade and demonstrate the approach is logical and consistent.*
 - c. *Reduced and sophisticated material palette consisting of metal cladding, concrete frame, terracotta brick and light coloured brick.*
 - d. *Texture and variation to the light coloured brick on upper levels through matt and glazed finishes, and soldier coursing.*
 - e. *Robust seams on the mesh of the stairs.*
 - f. *Mural location facing the performance arts building's outdoor amphitheatre.*
9. *Provide a 3D visualisation of the performance arts building from the perspective of students approaching from the south, demonstrating how it improves the arrival experience from the existing buildings.*
10. *Illustrate how the building elements connecting and abutting the classrooms provide a place for expressing the identity and character of the school. These include the 'knuckle', workshop chimney, stairs and expressed brick core housing the toilet facilities. An additional mural, unique material or façade treatment could be considered in these locations.*
11. *The AC plant negatively impacts the street frontage and compromises the amenity of the weaving circle and learning spaces adjacent:*
 - a. *Relocate the AC plant to a less prominent location with minimal impact on surrounding spaces.*
 - b. *If it cannot be relocated, demonstrate alternative strategies to reduce its impact such as noise reduction, screening and relocating the weaving circle.*
12. *Consider the following adjustments to improve circulation:*
 - a. *Rotation of the angled stair to 45 degrees to improve circulation along the walkway.*
 - b. *Rotation of the stair and lift 90 degrees to improve circulation in and around the 'knuckle'.*
13. *Improve the articulation of the expressed brick core housing the toilet facilities by increasing its projection and height.*
14. *At the next SDRP provide revised drawings and 3D visualisations integrating the design changes that were shown in sketch form. Include a 3D view of the architectural expression of the new walkways.*

In response, the design has been amended in the following ways:

1. Celebration of the four architectural 'moments' as sculptural metallic elements. These elements are:
 - the kiln chimney
 - the central node between the two parts of the north-south wing (now reconfigured to allow side access to the adjacent classrooms)
 - the knuckle at the junction of the two main wings of the L-shaped building
 - the performance space shroud of perforated metal which takes a free form above the orthogonal plan and will be enhanced by an artist-commissioned pattern that reflects the school's cultural heritage.
2. Refinement of design of soffits to walkways to hide downpipes into two levels, and sheeted with profiled metal panels in two different colours (grey and white).
3. Slight re-orientation of central external stair to increase circulation width at that point.
4. The ability to open up to the Cumberland Plain Woodland for the use and enjoyment of the school, including Connection with Country workshops with local public (primary) schools. It is intended that the school undertake this as a community project.
5. The consolidation of the proposed air conditioning units along Glenwood Park Drive into one enclosure that can have sufficient separation from both the internal spaces and the fence line, with landscaped shielding the enclosure from view.
6. Relocation of the weaving garden away from the air conditioning unit enclosure.



Figure 77. View of the sculptural elements forming moments on Glenwood Park Drive



Figure 78. View of the two toned articulated soffits

9. 2 Connection with Country

Following the formal consultation undertaken by the specialist consultancy Tocomwall, a virtual workshop was held with representatives of the school community (students, parents and teachers) on 10 September 2021.

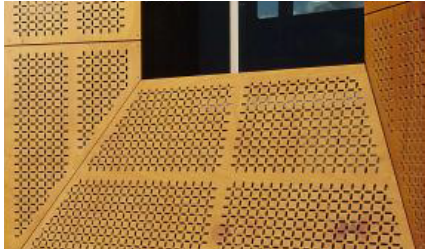
The main ideas raised were:

- Meaningful representations of Durag culture linked to school values of respect, readiness and responsibility
- Colour is important
- Sitting in circles (in contrast to 'westernised' straight lines)
- Circles represent coming together
- New building can be 'movement' to working together
- Gardens are important - edible plants and plants to provide material for weaving
- Cumberland Forest regeneration is important and offers great opportunities for learning in association with local primary schools about bush tucker and bush medicine
- Sharing of culture through dance and performance is important - allowing every culture to have its voice. The interaction between the multiple cultures (both old and new) is a key aspect of the school.

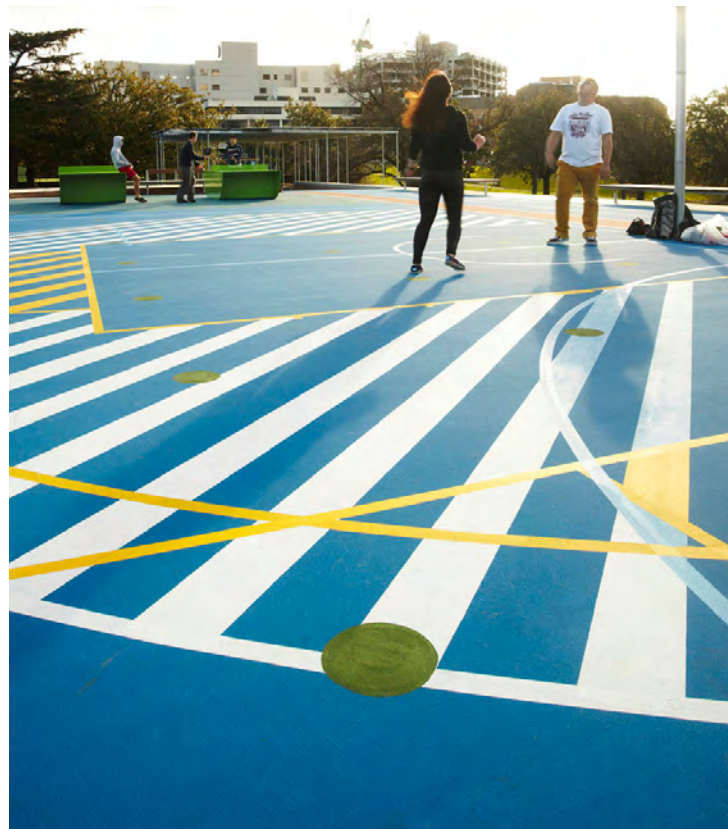
The design responds accordingly:

- The landscape design assumes that the woodland will be able to be opened to school use and enjoyment
- Indigenous edible plants will be incorporated in the kitchen garden and a garden for plants used for weaving added into the composition
- Colour and motifs will be incorporated in the perforated metal screens which sheath the external stairs; the motifs specified for the graphics for the glass decals and films; the bas relief
- The solid walls of the central 'knuckle' will have an iridescent coloured tile finish
- The modelling of the perforated metal screens recall the traditions of weaving of the Durag people
- The design of the area around the performing arts pavilion gives areas for performance and sharing of cultural traditions, an important part of school life for the students
- Curves are used in the access balcony and external stair geometries (the students spoke of curves, in contrast to westernised "straightness").

At a meeting with Tocomwall on 11 October 2021, it was agreed that the design provides a sound framework for the development of these concepts during documentation and construction process.



Aboriginal weaving
Jayne Christian
Figure 79.



Explore and reflect local stories in the form of colour and graphics
Figure 80.

Indigenous edible plants incorporated in the kitchen garden
Figure 81.

9.3 Blacktown City Council - visual and acoustic impact

A pre-application meeting held on 18 August 2021 with Blacktown City Council included discussion on the visual and acoustic impact of the new three storey building along Glenwood Park Drive.

The minutes of the meeting note:

- Importance of substantial landscaped setback “to allow for a greater distance from the road, better streetscape separation, classroom amenity and opportunity for more landscaping”
- No adverse affect on the acoustic quality of the public domain.

The discussion included:

- The integration of the services infrastructure as an integral part of the design (eg kiln exhaust as a contemporary chimney) is important.



Figure 82. Elevation of the school from Glenwood Park Drive

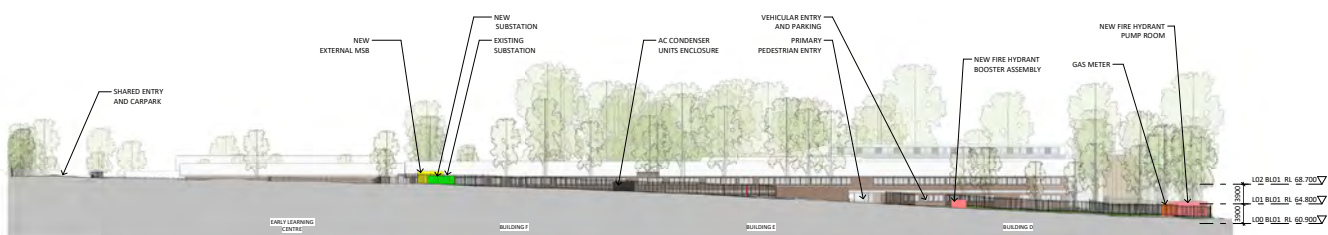
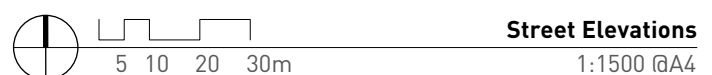


Figure 83. Elevation of the school from Forman Avenue



9.3.1 Shadow Analysis - Winter Solstice (21 June 2021)

Shadows at 9 AM



Figure 84. Site plan extract depicting the existing shadows at 9 am



Figure 85. Site plan extract depicting the shadows of the proposed development at 9 am



10 20 50m

Shadow Diagrams

1:2000 @ A4

Shadows at 10 AM



Figure 86. Site plan extract depicting the existing shadows at 10 am

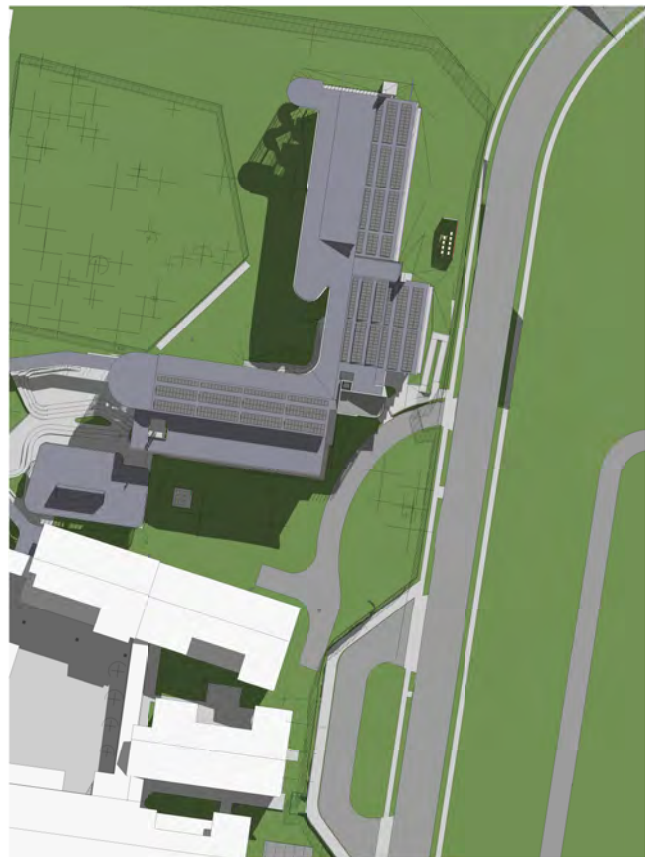


Figure 87. Site plan extract depicting the shadows of the proposed development at 10 am



10 20 50m

Shadow Diagrams

1:2000 @ A4

Shadows at 11AM

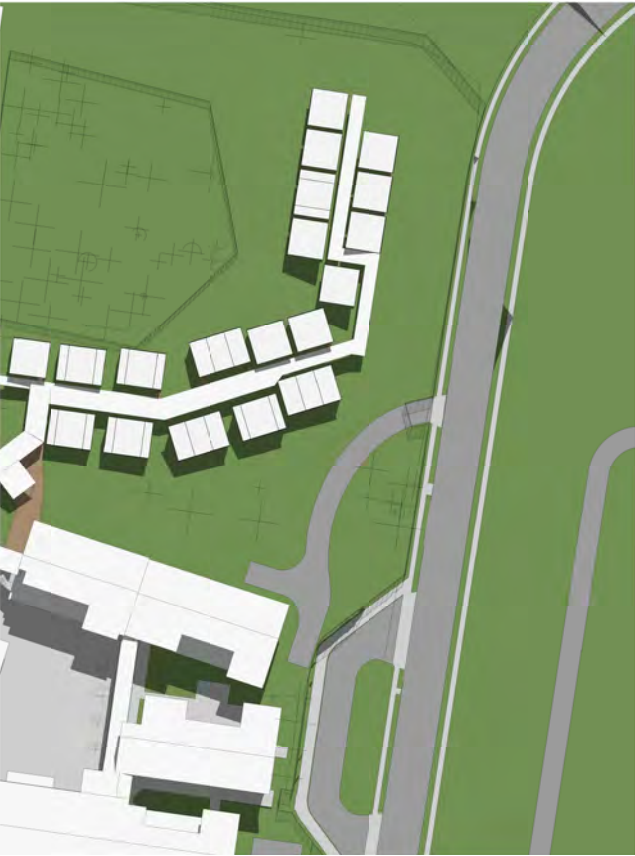


Figure 88. Site plan extract depicting the existing shadows at 11 am

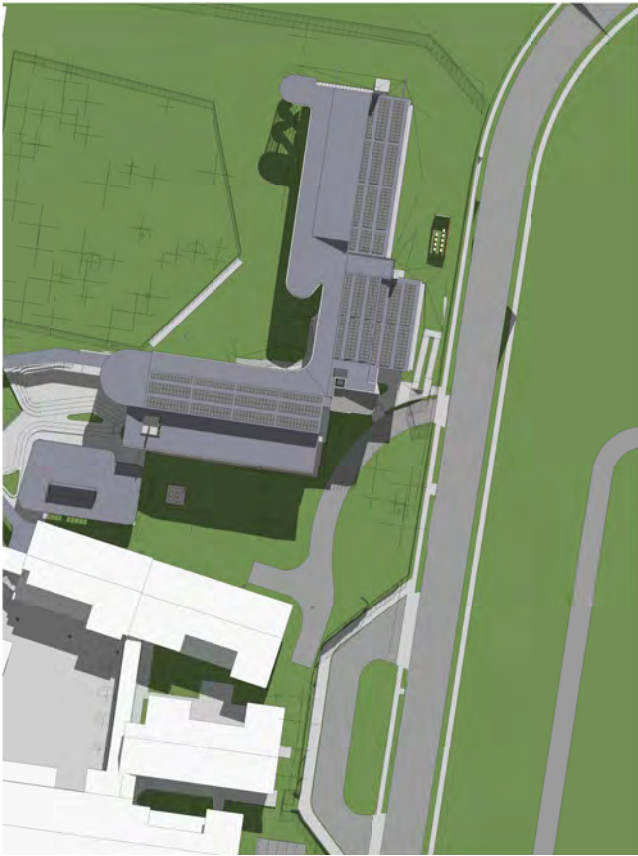


Figure 89. Site plan extract depicting the shadows of the proposed development at 11 am

Shadows at 12 Noon



Figure 90. Site plan extract depicting the existing shadows at 12 pm

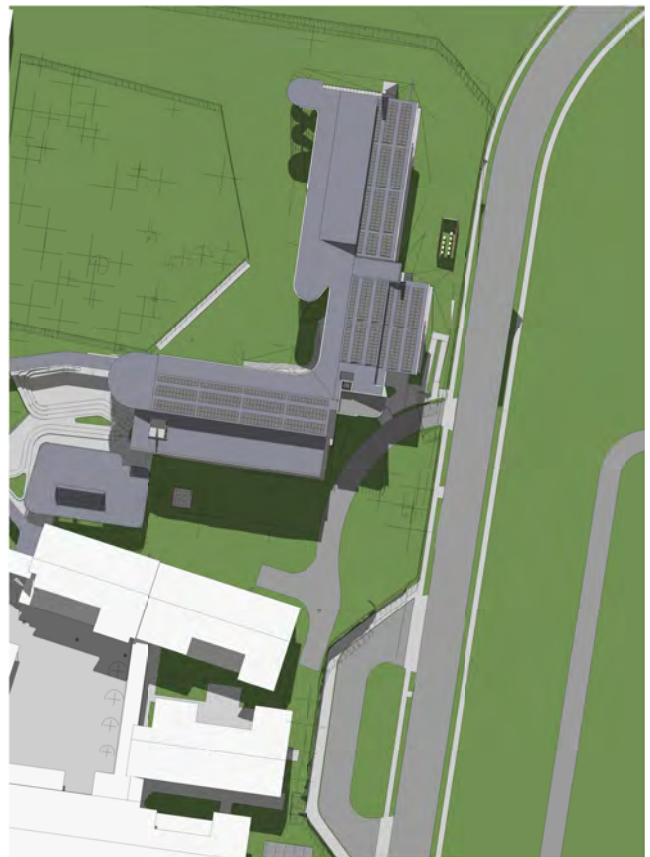


Figure 91. Site plan extract depicting the shadows of the proposed development at 12 pm



10 20 50m

Shadow Diagrams

1:2000 @ A4

Shadows at 1 PM

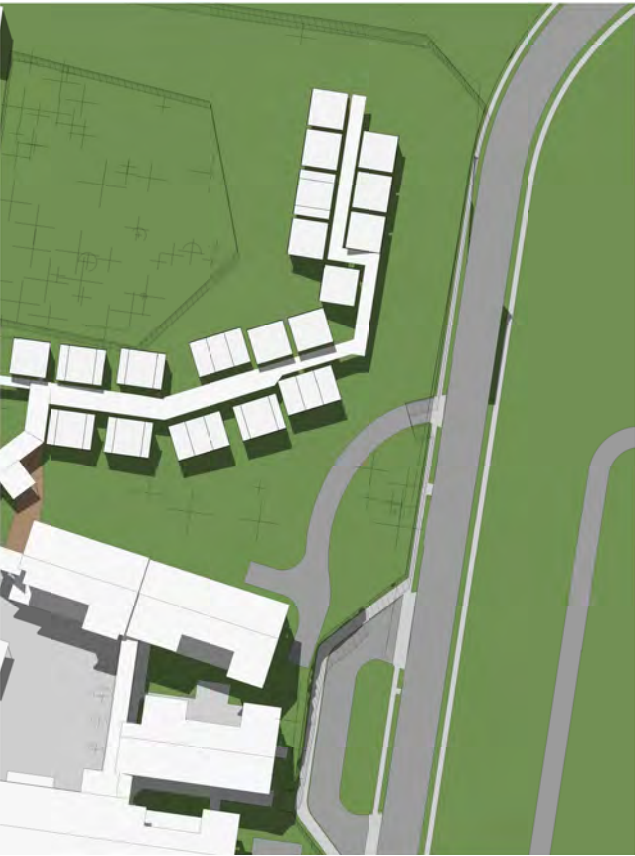


Figure 92. Site plan extract depicting the existing shadows at 1 pm

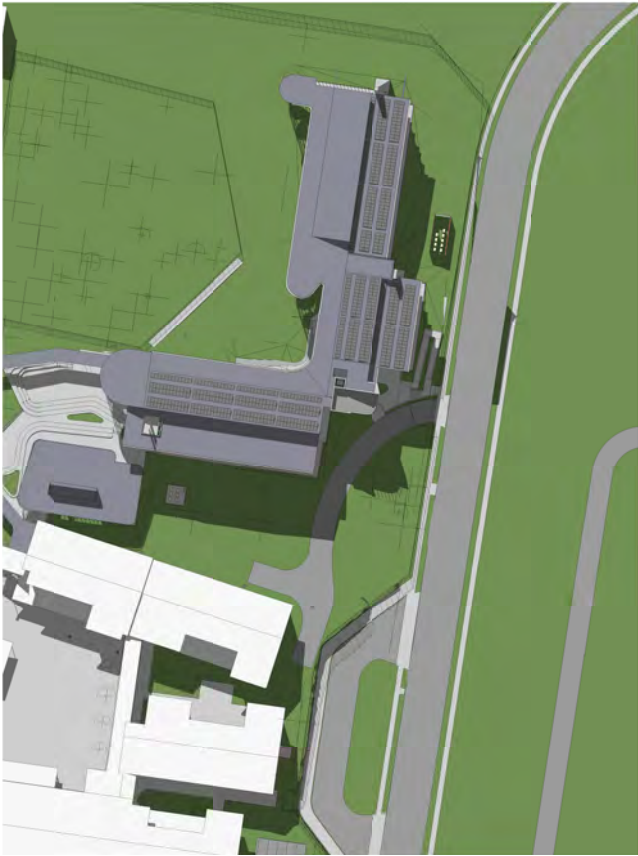


Figure 93. Site plan extract depicting the shadows of the proposed development at 1 pm

Shadows at 2 PM



Figure 94. Site plan extract depicting the existing shadows at 2 pm

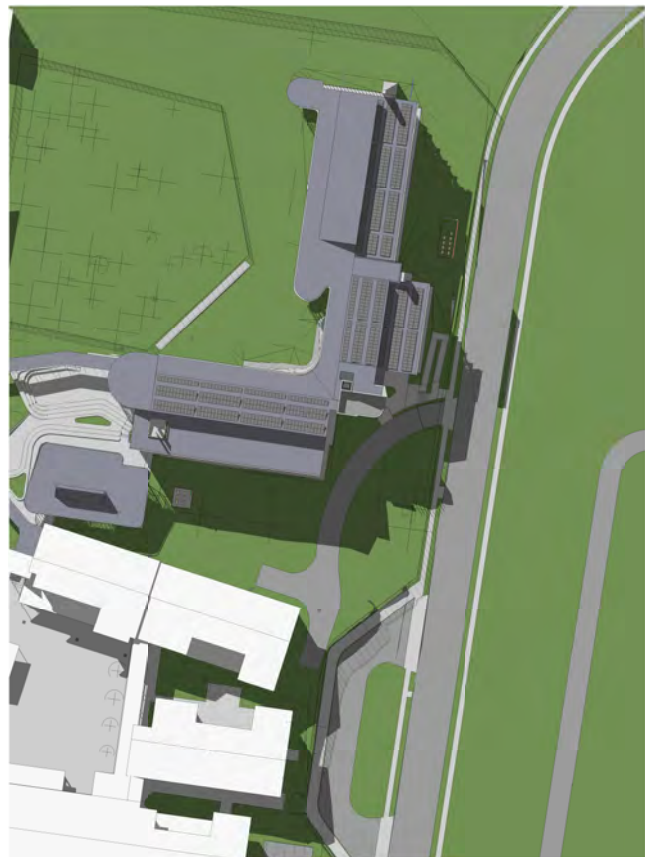


Figure 95. Site plan extract depicting the shadows of the proposed development at 2 pm



10 20 50m

Shadow Diagrams

1:2000 @ A4

Shadows at 3 PM

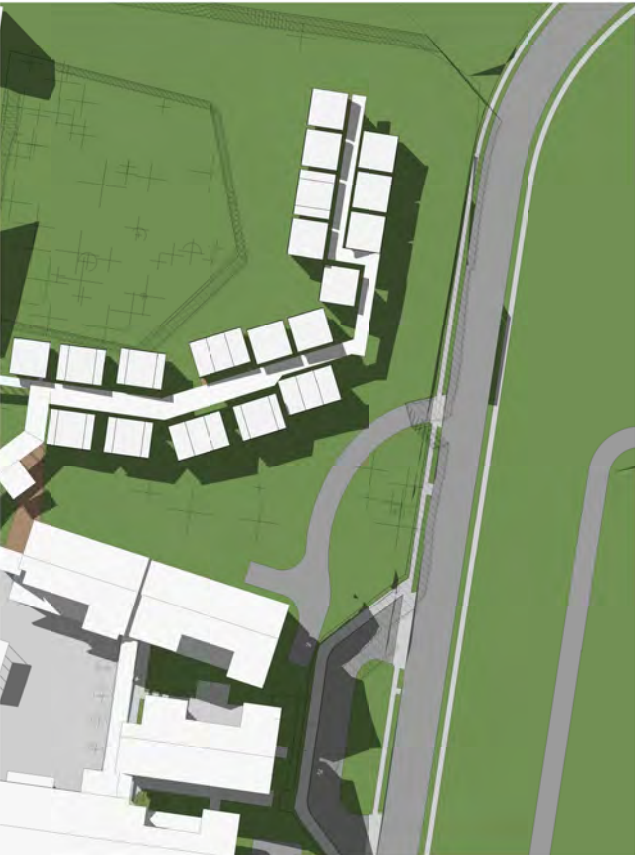


Figure 96. Site plan extract depicting the existing shadows at 3 pm

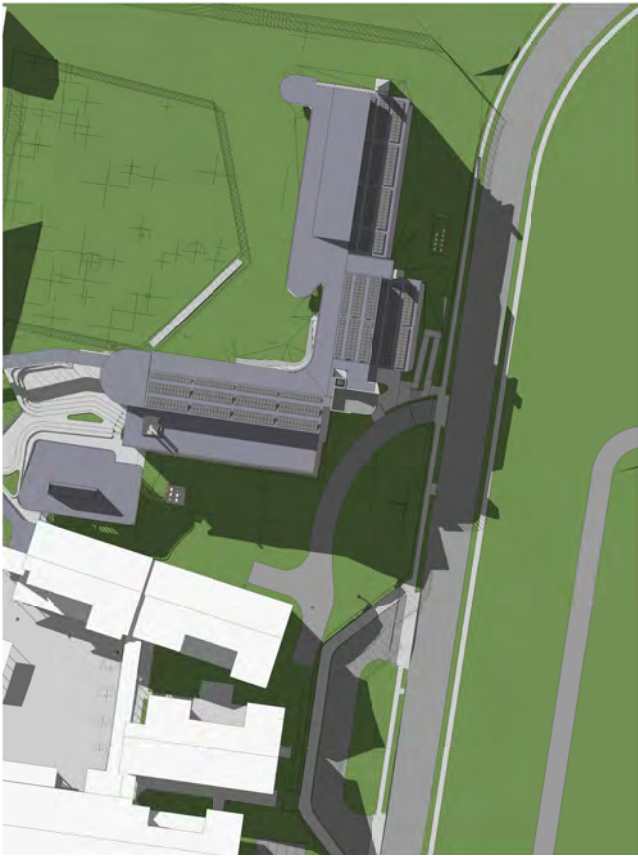


Figure 97. Site plan extract depicting the shadows of the proposed development at 3 pm