



High School in Jerrabomberra

State Significant
Development Application
(SSD-24461956)
Architectural Design Report

Prepared for



School Infrastructure NSW

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Document/Status Register				
Issue	Date	Purpose	Written	Approved
A	20.09.21	Issued for SSDA	CR/RS	AC

We acknowledge that the proposed High School in Jerrabomberra is located on the land of the Ngunnawal and Ngarigo peoples who have a continuing connection to the land, water and sky. We pay our respects to the Elders and the knowledge holders, past present and emerging and express our gratitude for sharing of knowledge and culture.

A Introduction

1 Introduction

This Architectural Design Report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 24461956). The SSDA is for a new high school located at Jerrabomberra.

This report addresses the below Secretary’s Environmental Assessment Requirements (SEARs), notably:

Planning Secretary’s Environmental Assessment Requirements	
Item	Response
GENERAL REQUIREMENTS	
- likely interactions between the development and existing, approved and proposed operations in the vicinity of the site	<p>A detailed site analysis and response to context has been provided within this report to demonstrate how the proposed development will interact with its immediate context, and the transitioning character of the area as part of the Poplars Precinct.</p> <p>The proposed development is to provide facilities which will have a positive contribution to the town and be in keeping with proposed character of the Poplars Education Precinct. The school further provides opportunity for shared use agreements of key facilities such as the hall and library, if a shared agreement is made in the future.</p> <p>Refer to Sections A, B, C, E-K within this report.</p>

Planning Secretary’s Environmental Assessment Requirements	
Item	Response
- a description of any proposed building work	<p>The proposed development is for the construction of a new high school in Jerrabomberra. The proposal will meet community demand and to ensure new learning facilities are co-located near existing open space infrastructure.</p> <p>The proposal generally includes the following works:</p> <ul style="list-style-type: none">• Site preparation;• Construction of a series of buildings up to three storeys including administration/staff areas, library, hall and general learning spaces;• Construction of new walkways, central plaza and outdoor games courts;• Construction of a new at-grade car park;• Associated site landscaping and open space. <p>The proposal has been designed to accommodate approximately 500 students with Stream 3 teaching spaces, however the core facilities will be future proofed to a Stream 5 to enable possible future expansion to meet projected demand.</p> <p>The proposal will include site preparation works, such as clearing and levelling to accommodate the proposed buildings and play areas. The proposal will involve the construction of a series of buildings housing general learning spaces, administration and staff wings, outdoor learning areas, a library and assembly hall.</p> <p>The proposal will include construction of a new driveway and hardstand with access proposed off the northern stub road east of Environa Drive. Pedestrian access is proposed off Environa Drive and the northern stub road.</p>

Planning Secretary's Environmental Assessment Requirements	
Item	Response
- a description of proposed operations, including staff and student numbers, hours of operation, and details of any proposed before/after school care services and/or community use of school facilities.	<p>The new high school will initially cater for approximately 500 students and 68 full time staff and operate Monday to Friday between 7am - 6pm.</p> <p>A table of operational times is provided within Section B of this report which considers the various school functions.</p>
- a detailed constraints map identifying the key environmental and other land use constraints that have informed the final design of the development.	<p>A detailed site analysis has been included within this report. The analysis has been used to inform the final design so that it positively contributes to the site's context.</p> <p>Refer to Section C within this report.</p>
- plans, elevations and sections of the proposed development.	<p>Plans, elevations and sections of the proposed development have been provided within this report and within the Architectural drawing documentation.</p> <p>Refer to Sections E - K within this report.</p>
- cladding, window and floor details, including external materials.	<p>The architectural approach has been developed to respond to the unique context of the site, which include the Connection with Country. The architectural character and proposed external finishes and materials have been described within this report.</p> <p>Refer to Sections E and K within this report.</p>
- plans and details of any advertising/business identification signs to be installed, including size, location and finishes.	<p>A wayfinding signage strategy has been prepared for the development to ensure the new school campus and community facilities are legible, and to enhance the understanding and experience of the new development.</p> <p>Refer to Section G within this report.</p>
KEY ISSUES	
<p>The EIS must address the following specific matters:</p> <p>1. Statutory Context, Strategic Context and Policies Address the statutory provisions contained in all relevant legislated and draft environmental planning instruments, including but not limited to:</p> <ul style="list-style-type: none">- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017, Schedule 4 - Schools - Design Quality Principles	<p>Sections E-K of this report have been structured to address the design quality principles within Schedule 4 of the Education SEPP.</p> <p>Refer to Sections E-K within this report.</p>

Planning Secretary's Environmental Assessment Requirements	
Item	Response
<p>Address the relevant planning provisions, goals and strategic planning objectives in all relevant planning policies including but not limited to the following:</p> <ul style="list-style-type: none">- Crime Prevention through Environmental Design (CPTED) Principles.- Better Placed: An integrated design policy for the built environment of New South Wales (Government Architect NSW (GANSW), 2017).- Draft Greener Places Design Guide (GANSW).	<p>The new high school has been developed with consideration of these documents and to respond to the unique context of the site. The development will be environmentally responsive and provide facilities which are inclusive and connected; diverse and safe; functional and attractive; and that will benefit students, staff and the wider community.</p> <p>Refer to Sections E-K within this report.</p> <p>A separate CPTED report has been prepared by Mecone for this EIS.</p> <p>A separate Landscape Design Report has been prepared by Context Landscape Architecture for this EIS which addresses the Draft Greener Places Design Guide.</p>
<p>2. Built Form and Urban Design <i>Address:</i></p> <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.- 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.- how Crime Prevention through Environmental Design (CPTED) principles are to be integrated into development.- how good environmental amenity would be provided, including access to natural daylight and ventilation, provision of shade, acoustic separation, access to landscape and outdoor spaces, and future flexibility.- 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).- how services, including but not limited to waste management, loading zones, and mechanical plant are integrated into the design of the development. <p><i>Provide:</i></p> <ul style="list-style-type: none">- a detailed site and context analysis to justify the proposed site planning and design approach including massing options and preferred strategy for future development.- 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.	<p>A detailed site analysis has been included within this report. The analysis has been used to inform the final design and response to the site's context.</p> <p>The built form and urban design have been developed to provide a positive contribution to the developing character of the township; and provide a safe, high quality amenity for both school and the wider community. Services and vehicle servicing have been designed to have minimal visual impact on the development's context and building aesthetic. This has been achieved through careful location of services, carparking and servicing routes, and the provision of appropriate screening and planting.</p> <p>Sections E-K of this report have been structured to respond the design quality principles within Schedule 4 of the Education SEPP. An assessment of the visual impact is provided under Section E, 1.2. It should be noted that the area is undergoing major transformation as part of the Poplars Precinct development and so an assessment against the current, non native grasslands is not applicable due to the changing character. The built form has been sited and designed with consideration to minimise the impact of existing residences and respond to potential future developments within the area, which are likely to be of a similar scale and character to the proposed new high school.</p> <p>Refer to sections E-K within this report for further detail.</p> <p>A separate CPTED report has been prepared by Mecone for this EIS.</p> <p>A separate Landscape Design Report has been prepared by Context Landscape Architecture for this EIS which addresses the Draft Greener Places Design Guide.</p>

Planning Secretary's Environmental Assessment Requirements	
Item	Response
3. Trees and Landscaping <i>Provide:</i> <ul style="list-style-type: none">- a detailed site-wide landscape strategy, that:<ul style="list-style-type: none">- details the proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage.- provides evidence that opportunities to retain significant trees have been explored and/or informs the plan.- considers equity and amenity of outdoor play spaces, and integration with built form, security, shade, topography and existing vegetation.- demonstrates how the proposed development would:<ul style="list-style-type: none">- contribute to long term landscape setting in respect of the site and the streetscape.- mitigate the urban heat island effect and ensure appropriate comfort levels on-site.- contribute to objectives to increase urban tree canopy cover.- a detailed landscape plan prepared by a suitably qualified person.	<p>The landscape response to the project has been developed with 4 key design principles and provides an overall, site wide vision for the campus, unifying the various characteristics of the campus and providing an integrated landscape and built form response, while responding to the site's context. An overview of the landscape response is provided within this report.</p> <p>Refer to Section E within this report.</p> <p>A separate Landscape Design Report has been prepared by Context Landscape Architecture for this EIS.</p>
4. Environmental Amenity <ul style="list-style-type: none">- 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. <i>Provide:</i> <ul style="list-style-type: none">- shadow diagrams.- 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.- an analysis of proposed lighting that identifies lighting on-site that will impact surrounding sensitive receivers and includes mitigation management measures to manage any impacts.	<p>The environmental impact of the proposed development on adjacent residential neighbours has been carefully considered. An environmental impact analysis has been provided within this report, which include shadow diagrams and a view analysis.</p> <p>New buildings are set away from the existing residential lots, maintaining visual privacy and solar access, with no overshadowing. The proposed lighting as part of the new High School works consists of security lighting to provide low illumination levels and will be designed in accordance with Australian Standards to control of the obtrusive effects of outdoor lighting.</p> <p>The proposed development is not envisaged to adversely impact the surrounding residential neighbours.</p> <p>A Lighting Services Report has been prepared by NDY for this EIS.</p> <p>Refer to Sections E and I within this report.</p>

Planning Secretary's Environmental Assessment Requirements	
Item	Response
5. Transport and Accessibility <ul style="list-style-type: none">- details of the proposed development, including:<ul style="list-style-type: none">- a map of the proposed access which identifies public roads, bus routes, footpaths and cycleways.- pedestrian site access and vehicular access arrangements, including for service and emergency vehicles and loading/unloading, including swept path analysis demonstrating the largest design vehicle entering and leaving the site and moving in each direction through intersections along the proposed transport routes.- car and motorcycle parking, bicycle parking and end-of-trip facilities.- drop-off / pick-zone(s) and arrival/departure bus bay(s).- pedestrian, public transport or road infrastructure improvements or safety measures.	<p>The siting of the new high school campus on the periphery of the existing township provides excellent opportunities for sustainable transport strategies to be adopted for the school. The school consists of 3 entry points. The main entry of the school is accessed from the northern stub road, which also provides for pick and drop off as well as access to the staff car park. A second entry is provided at lower ground floor level connecting to the new bus bay which is currently being constructed to service the school. A third entry connects the school to David Madew oval and its existing shared paths. The entry provides good connections for cycling to school. Bicycle parking is provided adjacent to the David Madew Oval entry and to the main entry. End of trip facilities are provided for staff within the staff area at first floor and the students within Building B.</p> <p>The high school campus is proposed to be a pedestrian friendly campus where priority is given to pedestrians. The new car park located to the north eastern corner of the site will be screened by landscaping and separated from the main pedestrian areas.</p> <p>Servicing of the school will predominantly be provided from the staff car park access, including waste collection and canteen/ food tech deliveries as well as emergency vehicle access.</p> <p>A second vehicle access for metal and wood workshop deliveries and additional ambulance access to the lower courtyard is provided from the bus bay</p> <p>A Transport Assessment ahas been prepared by GHD for this EIS.</p> <p>Refer to Sections E, G and H within this report.</p>

Planning Secretary's Environmental Assessment Requirements	
Item	Response
6. Ecologically Sustainable Development (ESD) Identify: - how ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) would be incorporated in the design and ongoing operation phases of the development. - proposed measures to minimise consumption of resources, water (including water sensitive urban design) and energy. - how the future development would be designed to consider and reflect national best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy and water efficient design (including water sensitive urban design) and technology and use of renewable energy. -how environmental design will be achieved in accordance with the GANSW Environmental Design in Schools Manual (GANSW, 2018).	<p>The project has been developed using the principles of ESD to create a site wide strategy, and has been assessed against a suitable accredited rating framework - Greenstar. The project is expected to achieve a high level of environmental sustainability and is targeting a 4 Star rating, which is deemed to represent an Australian Best Practice development.</p> <p>These ESD principles adopted for the project will contribute to the conservation of resources and future resilience across the whole life cycle of the project; from construction, through to the operational phase and provide opportunities for inherent pedagogy.</p> <p>A separate ESD Report has been prepared by NDY for this EIS.</p> <p>Refer to Section F within this report.</p>
18. Waste - Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.	<p>Services and vehicle servicing have been designed to have minimal visual impact on the development's context and building aesthetic. This has been achieved via careful location of services, carparking and vehicle servicing routes and the provision of appropriate screening and planting.</p> <p>Refer to Section H within this report.</p>
PLANS AND DOCUMENTS	
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Regulation. Provide these as part of the EIS rather than as separate documents. Any plans and diagrams included in the EIS must include key dimensions, RLs, scale bar and north point.	Architectural drawings and diagrams have been provided throughout the report. Where relevant to the diagram or drawing, dimensions and RLs have been provided.

Planning Secretary's Environmental Assessment Requirements	
Item	Response
In addition to the plans and documents required in the General Requirements and Key Issues sections above, the EIS must include the following: - Design report to demonstrate how design quality would be achieved in accordance with the above Key Issues including: - architectural design statement. - diagrams, structure plan, illustrations and drawings to clarify the design intent of the proposal. - detailed site and context analysis. - analysis of options considered to justify the proposed site planning and design approach. - summary of feedback provided by GANSW and NSW State Design Review Panel (SDRP) and responses to this advice. - summary report of consultation with the community and response to any feedback provided.	<p>The Architectural Design Report has been prepared to address the adjacent SEARs requirements and are presented throughout this report.</p> <p>An options analysis is provided within Section D of this Report.</p> <p>This design report outlines the design intent of the proposal and demonstrates how design quality has been achieved in accordance with the Design Guide for Schools and the Design Quality Principles outlined in Schedule 4 of the Education SEPP.</p> <p>A summary of comments and recommendation from the SDRP process, and responses to advice received have been provided within Section L of this report.</p> <p>A separate Social Impact Assessment (SIA) report has been prepared by Urbis for this EIS.</p>
CONSULTATION	
The EIS must describe and include evidence of the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided. - Government Architect NSW (through the NSW SDRP process).	<p>The new high school has been developed to respond to GANSW's Draft Connecting to Country Framework and through consultation with Ngambri Elder Woman Dr Matilda House and representatives of the Aboriginal Educational Consultative Group (AECG), to create a strong, place driven identity that will help instill pride in the school and community.</p> <p>The final design has also been prepared through consultation with the Government Architect via the SDRP process. The design report has been prepared to address comments raised within the SDRP process. A summary of comments and recommendations, and responses to the advice received have been provided within Section E and L of this report.</p> <p>A separate Social Impact Assessment (SIA) report and Social Outcomes Report has been prepared by Urbis for this EIS.</p> <p>Refer to Section E and L of this report.</p>

2 Proposal

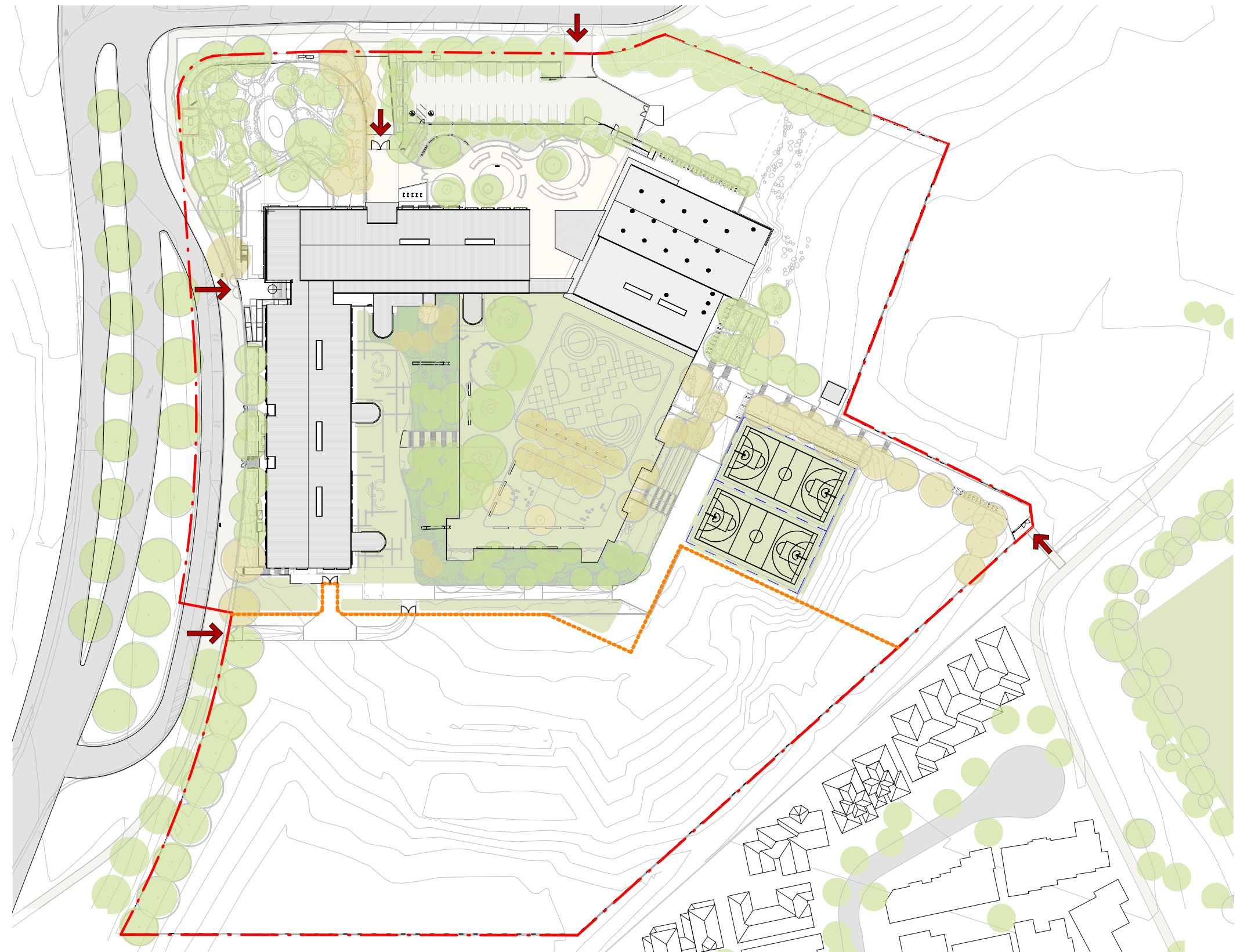
The proposed development is for the construction of a new high school in Jerrabomberra. The proposal will meet community demand and to ensure new learning facilities are co-located near existing open space infrastructure. The proposal generally includes the following works:

- Site preparation;
- Construction of a series of buildings up to three storeys including administration/staff areas, library, hall and general learning spaces;
- Construction of new walkways, central plaza and outdoor games courts;
- Construction of a new at-grade car park;
- Associated site landscaping and open space.

The proposal has been designed to accommodate approximately 500 students with Stream 3 teaching spaces, however the core facilities will be future proofed to a Stream 5 to enable possible future expansion to meet projected demand.

The proposal will include site preparation works, such as clearing and levelling to accommodate the proposed buildings and play areas. The proposal will involve the construction of a series of buildings housing general learning spaces, administration and staff wings, outdoor learning areas, a library and assembly hall.

The proposal will include construction of a new driveway and hardstand with access proposed off the northern stub road east of Envrona Drive. Pedestrian access is proposed off Envrona Drive and the northern stub road.



Proposed Site Plan
Source: TKD Architects



3 Site Description

The proposed development is located within the South Jerrabomberra Innovation Precinct, also referred as the Poplars Innovation Hub, in the local government area of Queanbeyan-Palerang Regional Council.

The school site- is part of an existing lot (Lot 1 in DP 1263364), which is approximately 65.49ha in area and will be characterised by a mix of business park and open space uses and a new north-south connector road named Environa Drive.

Delivery of the Precinct is underway with Environa Drive currently under construction. Most of the-lot, however, remains undeveloped.

The school site is subject to a proposed lot (Lot 2 in DP 1263364), which was approved by Council under DA332-2015 on 10 March 2021 but is not yet registered. The approved lot is irregular in shape, is largely cleared and is approximately 4.5ha in area. A small dam is located adjacent to the south eastern boundary of the site, which forms part of a broader wetland.

The site is located in excellent proximity to existing open space facilities. It adjoins David Madew Regional Park to the south east and is located 100m east of an existing recreational field associated with Jerrabomberra Public School.

A description of the site is provided in the table below.

Table 1 – New High School in Jerrabomberra Site Description	
Item	Description
Site Address	School address yet to be determined however, it is located within the Jerrabomberra Innovation Precinct at 300 Lanyon Drive, Jerrabomberra.
Legal Description	Lot 1 in DP 1263364 (existing) Lot 2 in DP 1263364 (proposed, but not registered)
Total Area	Lot 1 – 65.49ha Lot 2 – 4.5ha
Frontages	The site provides frontage to Environa Drive and the northern stub road, both currently under construction.
Existing use	The site is undeveloped and contains a series of small vegetation clusters scattered across the site.
Existing access	Existing access is via an informal unsealed driveway off Tomsitt Drive along the northern boundary of the existing lot. The site will be accessed via Environa Drive and a secondary access road (North Road), which is currently under construction.
Context	Land to the south is primarily residential in nature. Jerrabomberra Public School and David Madew Regional Park are located to the east/south-east, while land to the west is undeveloped and features Jerrabomberra Creek. The site is located within the South Jerrabomberra Innovation Precinct, which is currently under construction. The areas north and west of the site are currently undeveloped but the site is currently undergoing a transition from rural to business park uses. Development further north on the opposite side of Tomsitt Drive and along Edwin Land Parkway includes retail and commercial uses. Development immediately to the south includes existing low density residential development. Land in the south west has been identified for future low density residential, light industrial and business park uses.



Site aerial depicting the land subject to the proposed High School.
Source: Nearmap with TKD Architects overlay



4 Design Report

This Design Report provides an analysis of the site's current constraints and opportunities for the school's development. The report has also been developed to establish design guidelines and development parameters to clarify the design intent of the proposal and demonstrate how design quality will be achieved in accordance with the Design Guide for Schools and the Design Quality Principles outlined in Schedule 4 of the Education SEPP 2017:

Principle 1	Context, Built Form and Landscape
Principle 2	Sustainable, Efficient and Durable
Principle 3	Accessible and Inclusive
Principle 4	Health and Safety
Principle 5	Amenity
Principle 6	Whole of Life, Flexible and Adaptive
Principle 7	Aesthetics

Each of the Design Quality Principles are discussed in detail in Sections E to K.

<div>1</div> <div>Context, built form and landscape</div> <div><div>New school development should:</div><div>Respect and respond to its physical context, neighbourhood character, streetscape quality and heritage</div><div>Consider interpretation of Aboriginal cultural heritage within the design of buildings and open spaces in consultation with local Aboriginal community</div><div>Respond to its natural environment including scenic value, local landscape setting and orientation</div><div>Retain existing built form and vegetation where significant</div><div>Include tree planting and other planting that enhances opportunities for play and learning</div><div>Ensure landscaping improves the amenity within school grounds and for uses adjacent to the school</div><div>Be informed by a current Conservation Management Plan (CMP) and consider local heritage items both on the school site and in the local neighbourhood</div><div>Take advantage of its context by optimising access to nearby transport, public facilities and local centres</div><div>Consider height and scale of school development in relationship to neighbouring properties.</div></div>	<div>2</div> <div>Sustainable, efficient and durable</div> <div><div>New school development should:</div><div>Be responsive to local climate including sun, wind and aspect</div><div>Select materials and approaches to detailing that are robust and durable</div><div>Integrate landscape, planting and Water Sensitive Urban Design (WSUD) principles to enhance amenity and building performance</div><div>Include deep soil zones for ground water recharge and planting</div><div>Minimise reliance on mechanical systems</div><div>Include initiatives to reduce waste, embodied energy and emissions, through passive design principles and the use of advanced energy production systems where possible</div><div>Maximise opportunities for safe walking, cycling and public transport access to and from the school.</div></div>	<div>3</div> <div>Accessible and inclusive</div> <div><div>New school development should:</div><div>Establish security requirements early to ensure any required secure lines can be designed and integrated with built form</div><div>Balance security with accessibility and inclusiveness by minimising the use of fencing particularly along street frontages</div><div>Engage students, educators and the community in development of the vision and design brief for the school</div><div>Allow for passive and dynamic play of different age groups</div><div>Provide school frontages and entrances that are visible, engaging and welcoming</div><div>Encourage access for members of the community to shared facilities after hours</div><div>Ensure clear and logical wayfinding across the school site and between buildings for all users including after hours community users</div><div>Ensure accessibility for all users of the site</div><div>High rise schools should consider the impact of circulation times on timetables and pedagogical models, particularly when accessing core learning spaces. This may have design implications for spatial planning, lift and circulation requirements.</div></div>	<div>4</div> <div>Health and safety</div> <div><div>New school development should:</div><div>Locate buildings and design facades that optimise fresh air intake and access to daylight</div><div>Prioritise pedestrians and avoid conflicts between vehicles and people</div><div>Provide covered areas for protection from sun and rain</div><div>Support safe walking and cycling to and from school through connections to local bike and foot paths and the provision of bike parking and end of journey facilities</div><div>Support passive surveillance, including through the location of toilets and areas for communal use outside of school hours</div><div>Incorporate Crime Prevention Through Environmental Design (CPTED) principles</div><div>Clearly define access arrangements for after school hours</div><div>Consider location and number of toilet facilities to allow safe use by different age groups and genders.</div></div>	<div>5</div> <div>Amenity</div> <div><div>New school development should:</div><div>Be integrated into, and maximise the use of the natural environment for learning and play</div><div>Ensure access to sunlight, natural ventilation and visual outlook wherever possible</div><div>Facilitate flexible learning by providing access to technology</div><div>Seek opportunities for buildings and outdoor spaces to be learning tools in themselves</div><div>Provide a diversity of indoor and outdoor spaces to facilitate informal and formal uses</div><div>Provide buffer planting in setbacks where appropriate to reduce the impact of new development</div><div>High rise schools should consider and seek to minimise the negative impacts of overshadowing and wind on surrounding built form and open space, and on school grounds.</div><div>Ensure outdoor play ground space is sufficient to accommodate the student population including future growth.</div></div> <div>Locate buildings away from noisy roads and other noise sources to ensure acoustic levels within teaching and learning spaces are acceptable</div> <div>Where teaching and learning spaces must be located alongside noise sources, arrange built form to ensure dual aspect that will allow for natural ventilation away from the noise source. In extreme cases, mechanical systems and other technologies may be necessary to ensure acoustic levels can be maintained along with cross flow ventilation and natural light.</div>	<div>6</div> <div>Whole of life, flexible and adaptive</div> <div><div>New school development should:</div><div>Allow for future adaptation to accommodate demographic changes, new teaching and learning approaches and the integration of new technologies</div><div>Be based on a masterplan of the school site that includes the testing of options for future potential growth</div><div>Take a whole-of-lifecycle approach when considering cost and consider wider public benefits over time</div><div>Provide capacity for multiple uses, flexibility and change of use over time</div><div>Respond to the findings of a site appraisal including in-ground conditions, contamination, flora and fauna, flooding, drainage and erosion, noise and traffic generation</div><div>Understand the potential impacts of future local projected growth</div><div>Design learning spaces to cater for a range of learning styles and group sizes</div><div>Consider providing areas for collaboration, group learning, presentations, specialised focus labs, project space and wet areas, display areas, student breakout, teacher meetings, and reflective / quiet spaces.</div></div>	<div>7</div> <div>Aesthetics</div> <div><div>New school development should:</div><div>Reflect a commitment to and investment in design excellence</div><div>Create engaging and attractive environments</div><div>Achieve a purposeful composition of materials and elements through a rigorous design process</div><div>Provide an engaging environment for pedestrians visually and materially along public street frontages</div><div>Seek opportunities to enhance public facing areas with landscaping and ensure landscape and building design are integrated</div><div>Integrate service elements with the building design</div><div>Balance internal spatial requirements with an external mass and scale that responds to its environment</div><div>Avoid long stretches of security fencing to public facing areas through arrangement of building edges, landscaping, gates and other openings</div><div>Look for opportunities to include public art.</div></div>
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B Project Background

B Project Background

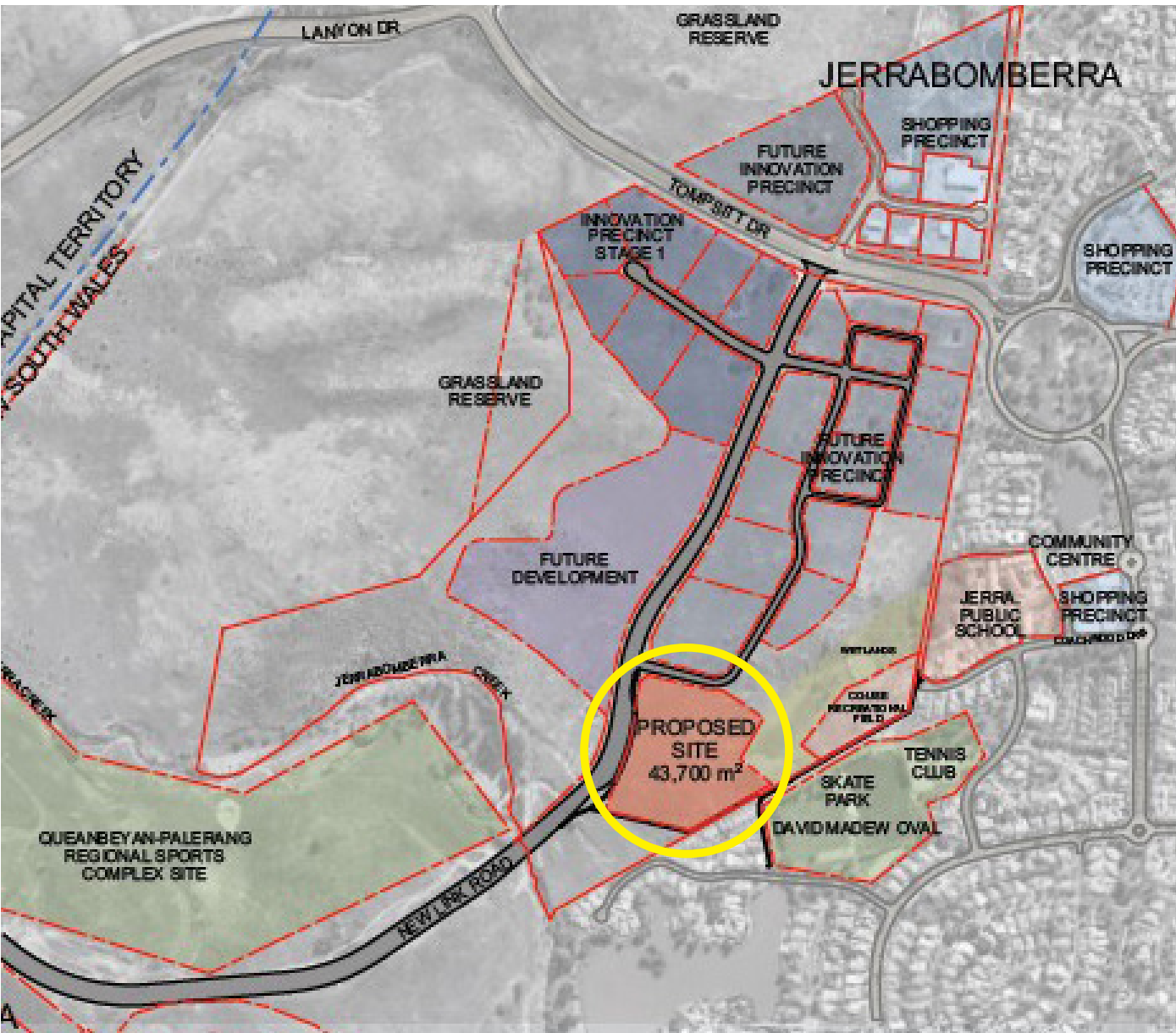
1 Project Background

The new high school in Jerrabomberra is a public secondary school, developed by School Infrastructure NSW. It falls within the Monaro Cluster of schools, comprising projects in Jerrabomberra, Bungendore, Googong Murrumbateman and Jindabyne. The purpose of the Monaro Cluster is to address the increased learning demand created by the rapid growth in the new residential development areas in each of these existing towns/ neighbourhoods.

The increase in demand for schools also stems from the newly introduced 'NSW Pathway Zones' seven-year phasing plan which seeks to reallocate NSW-residing student enrolments back to the NSW live-in catchments

from the ACT.

The new schools within the Monaro Cluster of Schools program will address this increased need whilst also ensuring equitable access to contemporary learning spaces for students of NSW.



Precinct plan of the Poplars development area, with the school site highlighted
Source: Clarke Keller Architecture

2 Project Brief

The key requirements of the brief are based on the Department of Education's Educational Facilities Standards and Guidelines (EFSG). Under the EFSG, the school is referred to as a Stream 3 school, which would allow up to 500 students. However, core facilities of the school are proposed to be Stream 5, which would future proof the school for up to 1000 students, should the learning spaces be needs to be expanded in future.

The facilities that are designed to meet Stream 5 requirements are as follows:

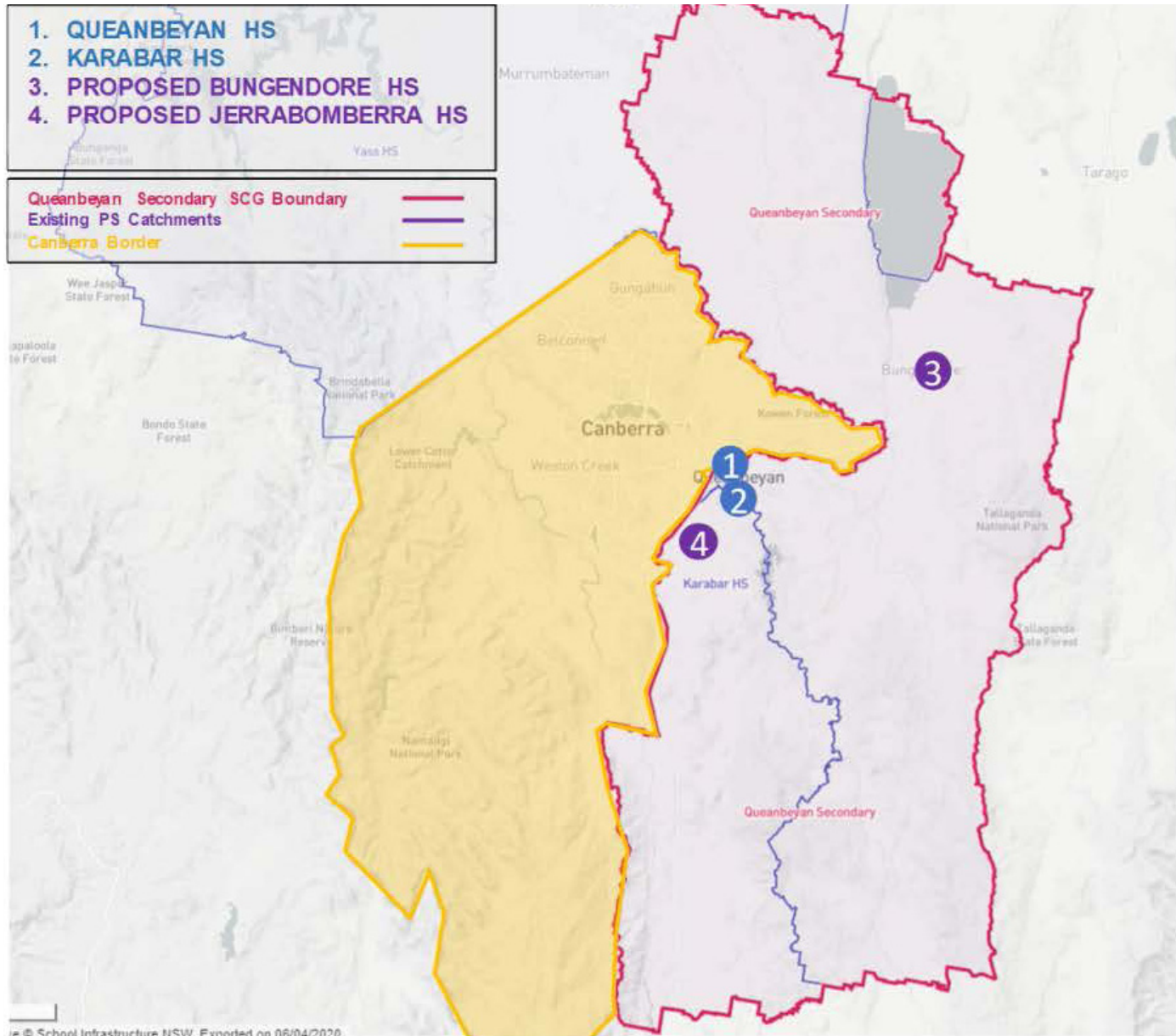
- Staff Areas
- Administration Areas

- Hall
- Canteen

Other elements specifically required in the project brief are:

- The Food Technology area is designed with a semi-commercial kitchen
- The Hall is provided with a stage area

The EFSG also sets out requirements for particular spatial adjacencies, environmental performance, durability, safety and security. All these requirement form part of the project brief, and apply to architecture, interiors, landscape and engineering aspects of the design.



Catchment Boundaries for the Monaro Cluster of Schools
Source: SINSW

2.1 Modern Methods of Construction (MMoC)

The new-build components of the school are to be constructed via Modern Methods of Construction (MMoC)

2.2 Hours of Usage

Refer to the adjacent table

2.3 Shared Use of High School Facilities

The application contemplates the use of the hall and school library for community use, whether for one-off or periodic events. This will be subject to reaching a shared use agreement in the future.

Item	Use	Times
General	The new high school in Jerrabomberra will cater for students Year 7 - Year 12. The school will have the following capacity following completion of the development: > 44 full time staff > 500 students	Monday to Friday between 7am and 6pm
Before and After School Care (BaSC) and offline courses	The new High School in Jerrabomberra may be used to provide before and after school care for students (BaSC) as an overflow from Jerrabomberra Public School and other schools across Queanbeyan which are at capacity. BaSC is expected to be required for: > 250 students on a regular basis > 15 - 20 staff will be present The new High School in Jerrabomberra will provide offline classes for students to attend to supplement their regular learning times. This will occur in class rooms before and after school.	Monday to Friday in the morning between 6am and 8:30am and in the afternoon between 3pm and 7pm For BASC – Vacation Care the facilities will be utilised between 6am and 7pm Monday to Friday.
Hall/ Gym	Generally used during standard school hours. BaSC is expected to be conducted in the school hall. This application contemplates the future use of school facilities out of school hours. In particular, the use of the hall and associated facilities for school events such as presentation nights, drama or music recitals. The application contemplates the use of the hall for community use, whether for one-off or periodic events. This will be subject to reaching a shared use agreement in the future.	Monday to Friday between 6am and 7pm Monday to Friday in the morning between 6am and 8:30am and in the afternoon between 3pm and 7pm during school terms The Hall is considered the most relevant after-hours use of the site and occasionally may be used outside of standard school hours on weekdays until up to 10pm. If a shared use agreement is reached, from time to time use of the school hall may be used for out of hours community use. Sat, Sun and Public Holidays between 8am and 10pm
Outdoor Sports Courts	Intended to only be used by School during standard school operating hours. These will form part of the licence agreement for BASC onsite.	Monday to Friday between 7am and 6pm Monday to Friday in the morning between 6am and 8:30am and in the afternoon between 3pm and 7pm
School Library	Intended use for school only during standard school hours. This area will be used for BaSC and Homework or Study Centres outside of general use hours. These will form part of the licence agreement for BASC onsite.	Monday to Friday between 7am and 6pm Monday to Friday in the morning between 6am and 8:30am and in the afternoon between 3pm and 7pm

C Site Analysis

C Site Analysis

1 Site Analysis

1.1 Site location

The site is located on Environa Drive, Jerrabomberra, in the local government area of Queanbeyan-Palerang Regional Council (QPRC). The school site- is part of an existing lot (Lot 1 in DP 1263364), which is approximately 65.49ha. The school site is subject to a proposed lot (Lot 2 in DP 1263364), which was approved by Council under DA332-2015 on 10 March 2021 but is not yet registered.

1.2 Broader site Context

Jerrabomberra is in the Southern Tablelands region of NSW. It is a suburb of Queanbeyan and sits within Queanbeyan-Palerang Regional Council (QPRC). Evidence of humans in this place can be traced back to between 10 and 20 000 years ago.

The delineation between the two known local language groups is blurred, so the area could have been Ngunawal, Ngarigo, or a combination of both. The Yuin and Gundungurra groups were also nearby to the east.

The aerial image to the right shows the nearby hubs of Queanbeyan and Canberra, which are set on the Molonglo and the Queanbeyan Rivers. The Queanbeyan River continues down past Jerrabomberra to Googong.

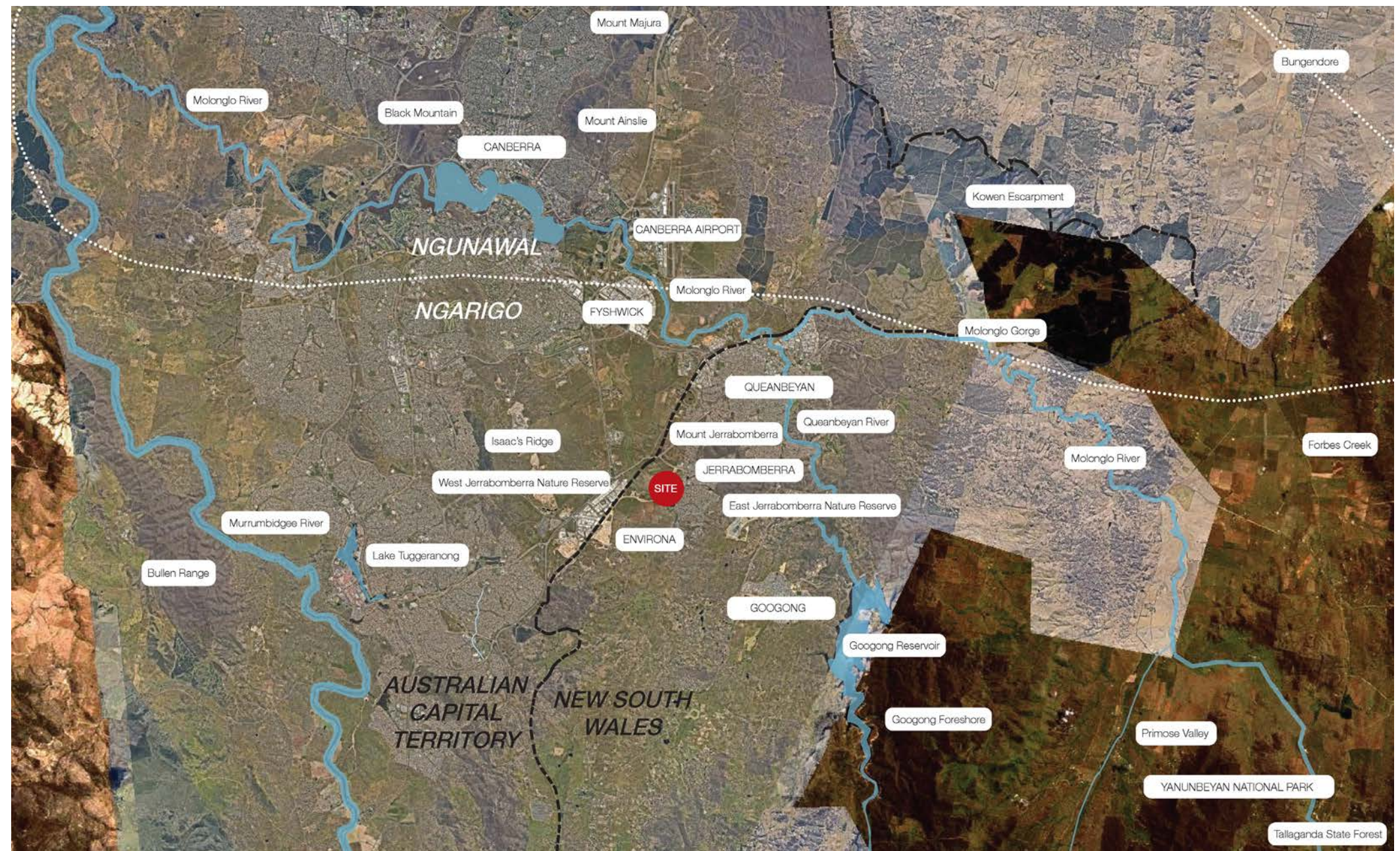
The area is high elevation above sea level, the site RLs are around 600 AHD.

National Parks, State Parks and mountains are nearby. Canberra airport is 12km away from the site, to the north-north-west past Fyshwick ACT.

1.3 Queanbeyan context

Jerrabomberra is immediately south-west of Queanbeyan, in the south-eastern region of New South Wales. Queanbeyan's economy is based on light construction, manufacturing, service, retail and agriculture.

Due to the proximity of Canberra (around 15 kilometres), many Queanbeyan residents commute to Canberra for work or education.



Aerial image of regions around Jerrabomberra
Source: Nearmap with overlay by TKD Architects



Aerial image of Canberra city centre
Source: www.chessmoving.com.au



Jerrabomberra Grasslands Nature Reserve
Source: environment.act.gov.au



Googong Reservoir
Source: visitqueanbeyanpalrang.com.au/googong-foreshores

1.4 Immediate site context

The site is located at the outskirts of the existing Jerrabomberra neighbourhood, in an area that is undergoing substantial redevelopment, including new roads and infrastructure. The proposed school site is generally a green field site. There is a small dam situated to the site's eastern boundary that forms part of a larger wetland area. The school site is located within a portion of land designated as the Poplars Learning Precinct, within the larger Poplars development which includes precincts for education, innovation, business, sport, Industrial, technology and retail + services, as well as areas for conservation. The development is to target industries such as defence, space, cybersecurity, information technology and scientific research sectors to foster collaboration and innovation.

The site is irregular in shape, and is bounded to the north by the proposed new local road, to the west by the new through road 'Environs Drive' which is currently under construction, to the east by the Wetlands, and to the south-east by residential blocks and community recreational facilities including David Madew Oval, the Skate Park and Tennis Club.

The uses in the immediate vicinity of the site are primarily residential. Retail and commercial uses are located on the opposite side of Tomsitt Drive to the north and along Edwin Land Parkway to the north east. Jerrabomberra Public School is located to the east, while land to the west is undeveloped and features grasslands and Jerrabomberra Creek.

As a cleared site, which is part of a greater development, the context of the school is expected to change rapidly over the coming years.

1.5 Heritage Context

Jerrabomberra was developed into a residential area in the late 1980s and early 1990s. Testing undertaken on Aboriginal artefacts found in the Queanbeyan area would indicate that humans have been present in the area for between 5,000 to 10,000 years.

Many years of the land being used for cattle grazing is likely to have impacted the accuracy and extent of archaeological finds in the area. However, AHIMS records indicate that the Poplars precinct has seventeen Aboriginal archaeological sites, four areas of Aboriginal archaeological potential (PAD) and eight European historical sites. Twelve European sites or items of more recent origin are also present.

The Aboriginal sites comprise eleven low density artefact scatters and six isolated finds. One PAD is located within the site of the proposed High School.



Site Context Plan
Source: TKD Architects



Jerrabomberra Creek
Source: jra.asn.au



Jerrabomberra houses on the lake
Source: jra.asn.au



View of Jerrabomberra from Mount Jerrabomberra
Source: visitnsw.com

European historical sites recorded in the Poplars precinct comprise the ‘Poplars’ homestead precinct, a farm shed ruin, three sections of old fencing, the ruins of an old piggery, a series of low stone walls of uncertain origin and a small garbage dump. None of these are proximate to the subject site of the High School. There is one local heritage item which is listed on the LEP, and is described as a “stone-faced brick structure”, located at 360A Lanyon Drive - about 800m away from the site.

1.6 Urban Grain

There are three contrasting characters to consider in the urban grain of the area surrounding the proposed site.

- Low Density Residential Character
The existing residential neighbourhoods to the south and southeast of the site are predominantly single storey detached dwellings, with some two storey buildings intermixed. In the diagram to the right, this character area sits on the right-hand side of the blue dashed line. The dwellings are set out on smaller local roads that wind around man-made water features and cul-de-sacs. David Madew Oval and its associated skate park and tennis courts comprise the main open space area in this zone.
- Character in Transition
To the left of the blue-dashed line, the built environment is undergoing a transition from being grasslands and grazing lands to becoming a business park, incorporating the new high school. Although the existing site character is completely open, without any buildings or roads, over the course of the next 5 to 10 years, a significantly portion of the area can be expected to become more built-up, with large format commercial buildings and a local road network by which to access them. Image A, to the right, is taken from the developer’s website as an indication of what buildings within the Poplar’s may look like, which is 1 to 2 storeys but with commercial proportions in floor-to-floor height and building footprint.
- Grasslands, Wetland and Jerrabomberra Creek
On the perimeter of the future business park, natural landforms and site features are expected to be retained, and will remain as natural landscapes despite the transitional zoning around them.

These zones are open and are not suitable for development. The area around Jerrabomberra Creek slopes down quickly to the water, which is bounded along its length by a mix of exotic and native trees. The poplar trees along the banks of the creek are deciduous and their changing colours have become a part of the identity of the local area, despite not being a native species.

The wetland area to the north-east of the site is also open and expansive. It sits at a low point in its surroundings and is flanked by dense vegetation.

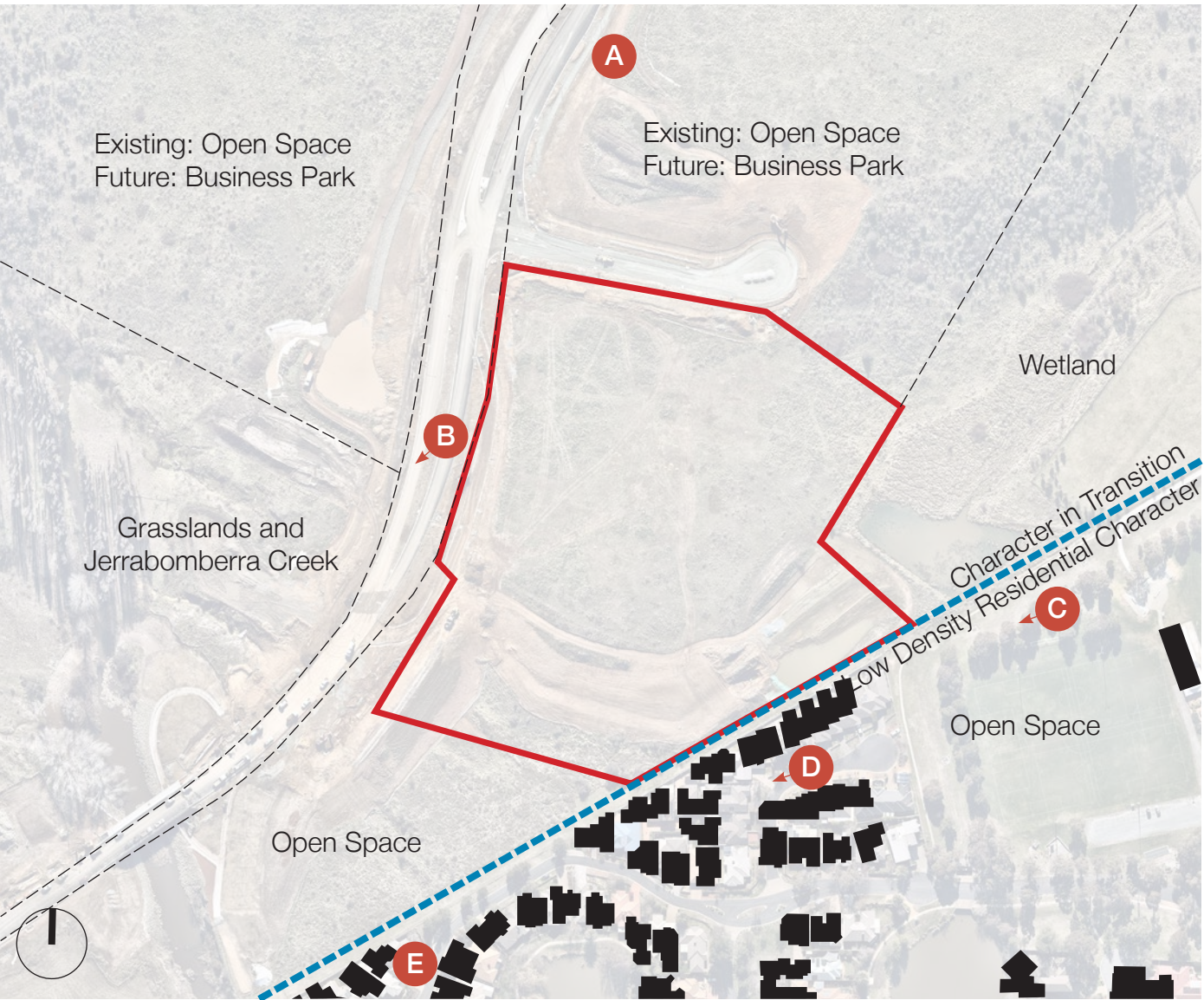


Figure Ground - Existing Site Context
Source: TKD Architects



Edge Condition at David Madew Oval
Source: TKD Architects



Low Density Residential Development at Palm Court
Source: Google Street View



CGI of Future Business Park
Source: poplars.com.au



Grasslands and Jerrabomberra Creek
Source: TKD Architects



Relationship Between Low Density Residential Development and Grasslands
Source: Google Street View

2 Site Area

The school site is 4.5ha, and spans from Environa Drive to the west to a boundary with residential houses in the east.

The site boundary is irregular in shape, being slightly broader in the centre of the lot, then stepping in around the man-made dam in the north-east corner. Not all of the site area is practical for construction, due to the topography and the limited locations for site access.

Part of the site area is occupied by the bus bays, currently under construction as part of the Environa Road works.



Site Aerial
Source: Nearmap with Overlay by TKD Architects



Site Area Looking Towards the Northern stub road
Source: TKD Architects



Site Area Looking Towards Jerrabomberra Creek
Source: TKD Architects



Site Area Looking Towards Jerrabomberra
Source: TKD Architects



Site Area Looking Towards Mount Jerrabomberra
Source: TKD Architects

3 Topography and Site Features

The proposed site has undulating topography, with the apex of a hill sitting within the site area. The northern site boundary is the highest point, and the land across the new northern access road continues to rise up, away from the site. The west, south, and eastern site boundaries are low points, with a dam and wetland area just outside the site boundary to the east, and Jerrabomberra Creek running south of the site.

The highest point of the site sits at about +606m AHD, and is positioned slightly north of the centre of the site. The lowest point (approx +592m AHD) occurs at the southern boundary, however other boundaries are also relatively low, at about +596m on the west and +595m on the east.

North of the site, the landform continues to rise upwards, with a high point immediately across the northern stub road. The land to the south continues to fall away from the site, and ultimately falls to Jerrabomberra Creek. The residential developments to the east incorporate artificial waterways.

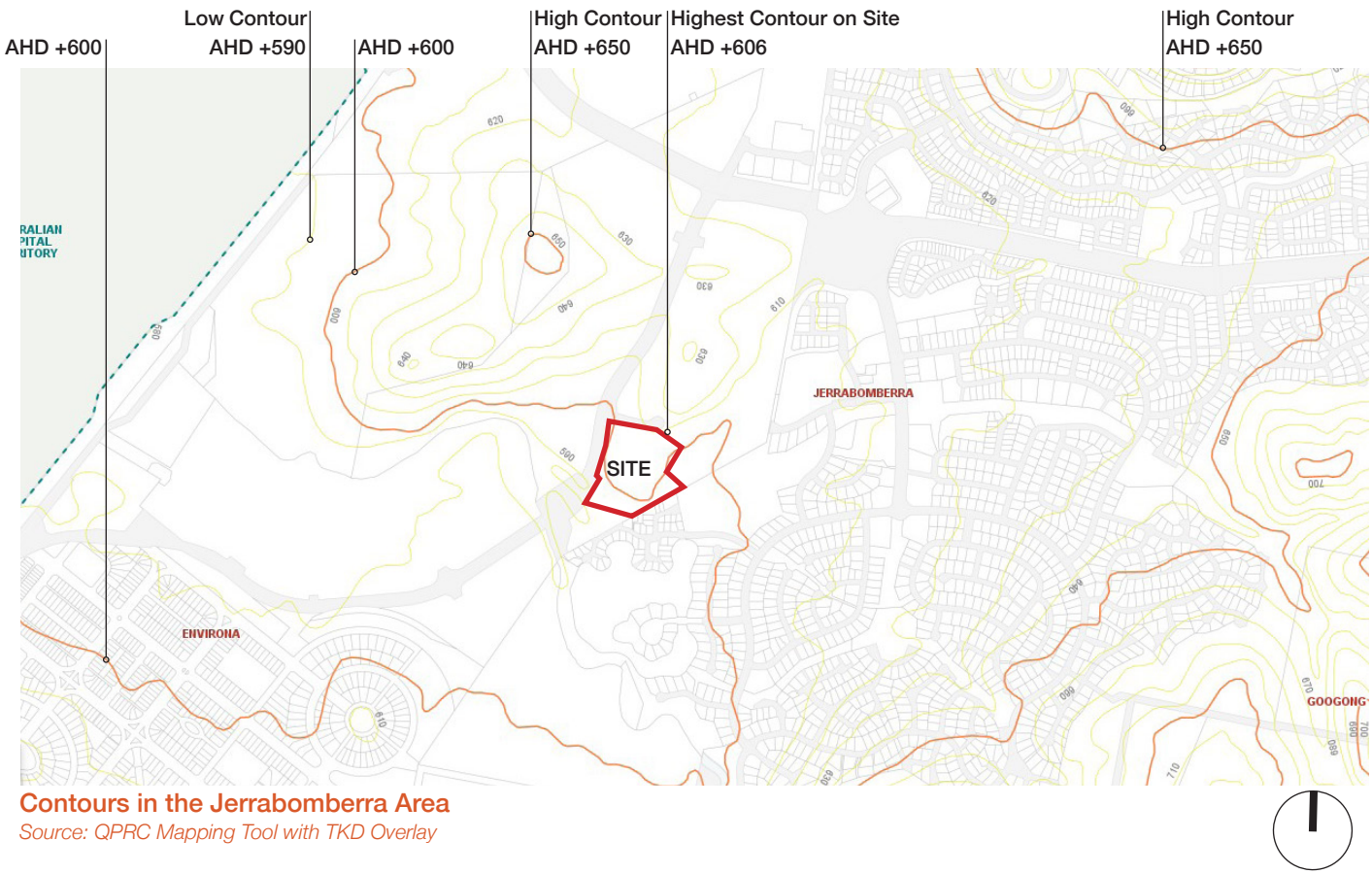
The Poplars precinct is dominated by a broad, flat-topped ridge with three prominent hills, the highest of which is +654m. Slopes are mostly gentle to moderate (10% to 20%), but there are areas of steep slope (>20%) to the south and west.

Jerrabomberra Creek follows the southern edge and then turns north, eventually joining the Molonglo River approximately 7km to the north. The creek banks have been steeply cut to a depth of approximately 3m. There are small areas of creek flat in the southwest and southeast. A partly eroded tributary of Jerrabomberra Creek cuts across the south-eastern corner. Two intermittent drainage lines feed into the tributary. The western slopes of the ridge are drained by two well-defined but intermittent gullies.

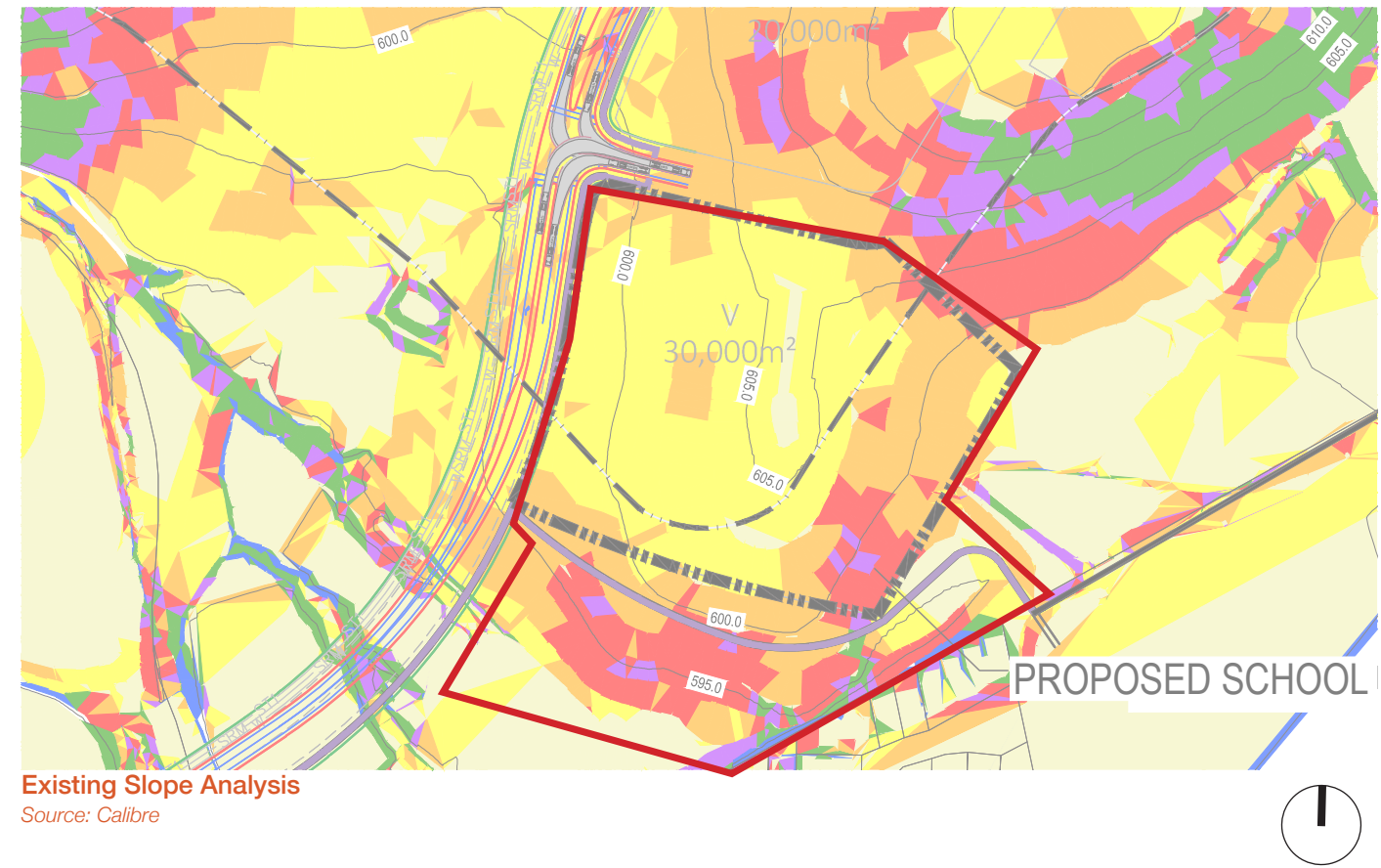
Geotechnical research undertaken for the project indicates that the site is underlain partially by Deakin Volcanics and partially by Quaternary aged alluvial deposits. The former typically comprise rhyodacitic ignimbrite with minor volcaniclastic and argillaceous sedimentary rocks. The latter typically comprise gravel, silt, sand and clay.

Jerrabomberra is set around Jerrabomberra Mountain, a landform which delineates Jerrabomberra from Queanbeyan. Jerrabomberra is divided into three precincts, known as The Park, the Heights and Lakeview. It was developed into its current form in 1987, and has a population of around 10,000 people.

Jerrabomberra Lake is an artificial lake which drains into Jerrabomberra Creek.



Contours in the Jerrabomberra Area
Source: QPPRC Mapping Tool with TKD Overlay



Existing Slope Analysis
Source: Calibre

Surface Analysis: Slope Ranges			
Number	Color	Minimum Slope	Maximum Slope
1		0.0%	5.0%
2		5.0%	10.0%
3		10.0%	15.0%
4		15.0%	20.0%
5		20.0%	25.0%
6		25.0%	50.0%
7		50.0%	100.0%

LEGEND Existing Slope Analysis
Source: Calibre

4 Planning Controls

The following planning controls apply to the site:

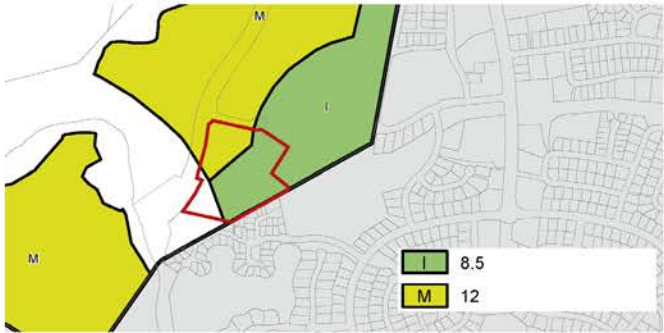
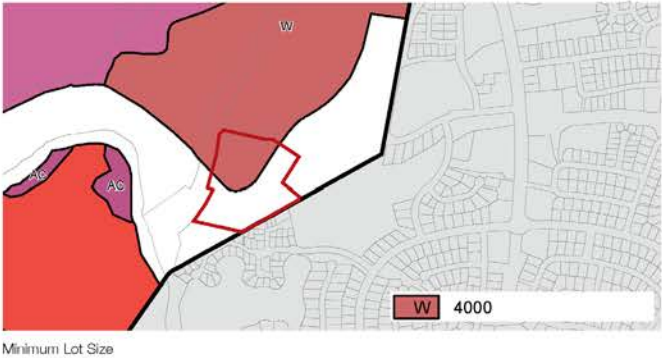
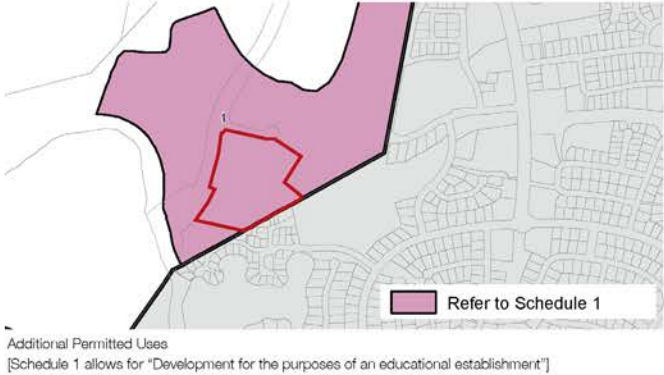
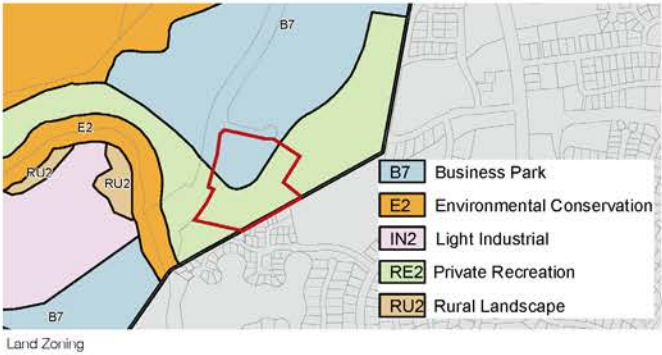
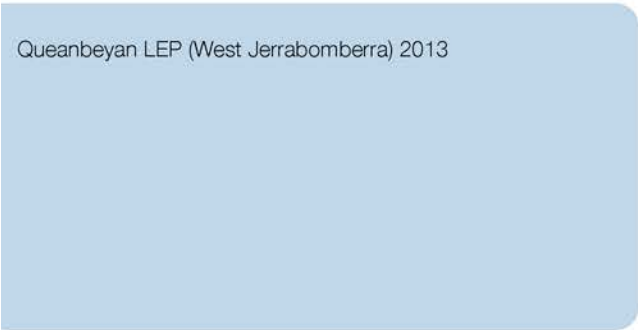
- State Environmental Planning Policy (State and Regional Development) 2011;
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- State Environmental Planning Policy No. 55 – Remediation of Land;
- Draft Remediation of Land State Environmental Planning Policy;
- State Environmental Planning Policy (Koala Habitat Protection) 2019;
- Draft State Environmental Planning Policy (Environment);
- Queanbeyan (Poplars) Local Environmental Plan 2013;
- South Jerrabomberra Development Control Plan 2015.
- Airports Act and Airports (Protection of Airspace) Regulations 1995

4.1 Land Use Zoning

The land is zoned partially as Business Park and partially as Recreational Use. However, under the “Additional Permitted Uses” map, a special zoning has been incorporated into the LEP, allowing Education Use.

4.2 Maximum Building height

The site includes two different height limits under the LEP. The eastern and southern portion is limited to 8.5m, and the north-western portion is limited to 12m.



Planning Controls
Source: LEP Mapping Tool with TKD Overlay



5 Climate analysis

The site sits within the NCC Climate Zone 7 – Cool Temperate. With much of the site at an elevation of over 600m above AHD, the NCC also considers the site as (at least partially) in a sub-alpine zone.

The Bureau of Meteorology uses Canberra data to describe the climate in Jerrabomberra. A summary of key data is listed below.

- Mean Maximum Temperature [January] = 28.5°C
- Mean Minimum Temperature [July] = 0.0°C
- Mean Maximum Rainfall [September] = 65.2mm
- Mean Minimum Rainfall [June] = 37.9mm

Prevailing summer winds are from the south and east of the site, with summer morning winds from the south and summer afternoon winds from the east. Prevailing winter winds are from the north-west and west of the site, with winter morning winds from the north-west and winter afternoon winds from the west.

Parts of the site are classified within the Central Tablelands of NSW (Sub-Alpine zone above an altitude of 600m) under AS1170.3 and will require snow loading of the roof structure.

6 Flood prone areas

The site is not identified as flood prone land.

7 Bushfire Prone Areas

The school site is identified as a bushfire prone area under the LEP, classified as Vegetation Category 2. This category applies to much of the development area around the site as well.

A Bushfire Protection Assessment has been prepared by Ecological for this EIS. The land to the south-west to the east has been assessed as a bushfire hazard and is classified as ‘grassland’ in accordance with PBP. The proposed development is exposed to a BAL-12.5 level.

The new school is defined as a Special Fire Protection Purpose (SFPP) development and been assessed against ‘Planning for Bush Fire Protection 2019’ and incorporates Bushfire Protection Measures which include Asset Protection Zones (36m APZ to the north east section of the site; 40m APZ to the east; and, 45m APZ to the north west), compliant landscaping, access and services, and requirement to comply with construction standards defined in AS 3959-2018 or the NASH standard, including additional ember provisions detailed in section 7.5 of PBP as required.

8 Prevailing wind

Undesirable winter winds are identified from north-west of the Site. The building is laid out to protect the main area of the school from this aspect, via the L-shaped form of Building A. Desirable Summer winds are from the north-east, and as such the building layout is more open in the easterly direction.

The risk of wind tunnels occurring in between the buildings is reduced by the use of metal screens where possible.

9 Existing services and easements

Currently there are no existing services and easements on the site. However, once construction is complete on Envirova Drive and the northern stub road, services tie-ins will be available for gas, electricity, communications, water supply, drainage and stormwater. A substation will be built in the north-west corner of the site for the school’s Main Switch Room to connect into.

10 Site History

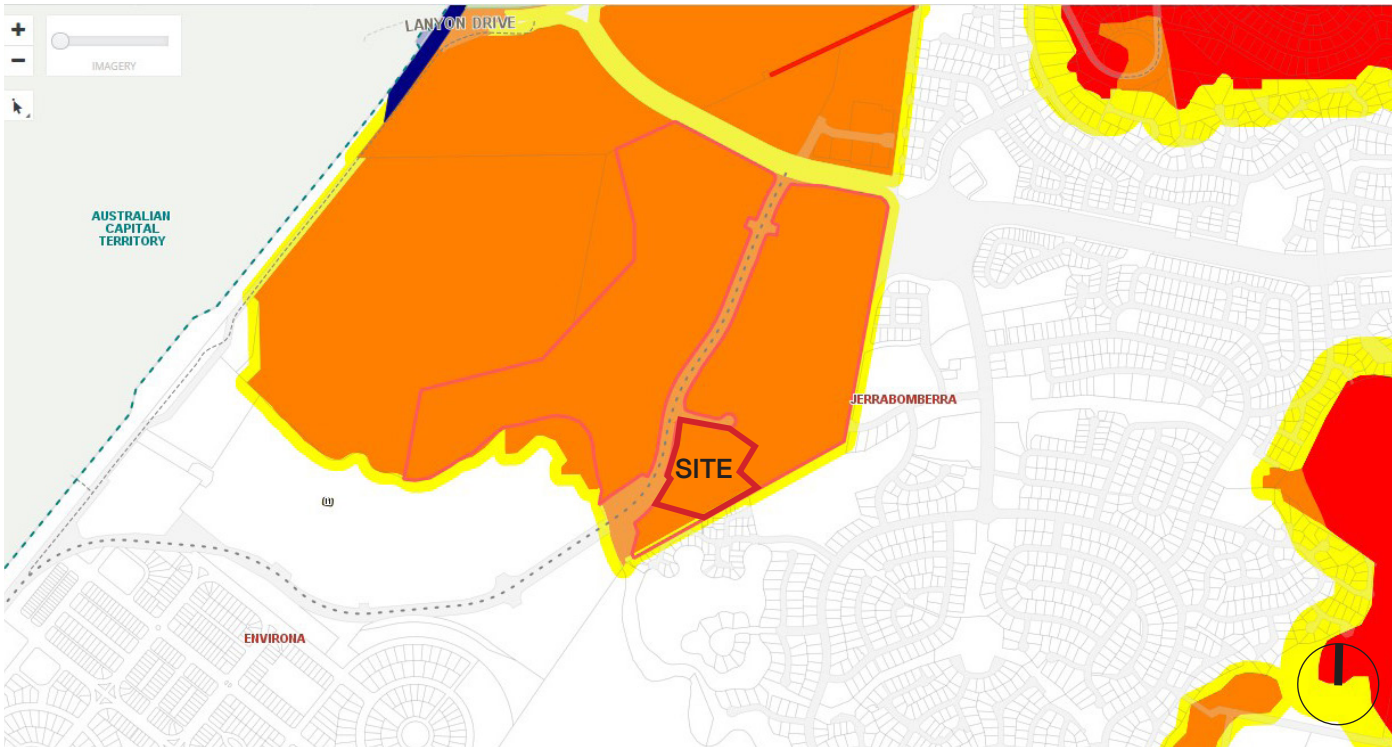
The site is a greenfield site and has previously been used as grazing lands. Studies undertaken on Aboriginal artefacts found in the Queanbeyan area would indicate that humans have been present in the area for between 5,000 to 10,000 years.

Subdivision of the area was first conceptualised in the 1920s, but it was not until 2007 that the Poplars Developments Pty was established, and the current precinct plans developed.

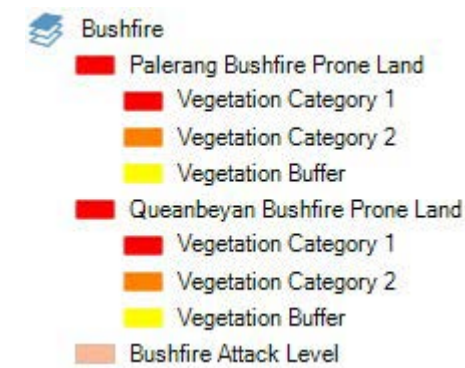
In 2019, the first stage of the Poplars precinct completed construction. The school site represents a significant component of the future development of the precinct.

11 Site Contamination

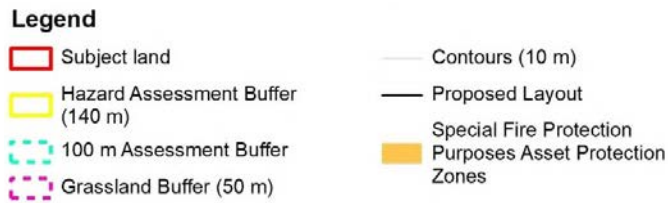
A Preliminary Site Investigation (Contamination) Assessment and Limited Contamination Assessment has been prepared by Douglas Partners for this EIS. Based on the assessment findings, it can be considered that the site can be rendered suitable for the proposed school. The material found on site could also be classified as Virgin Excavated Natural Material (VENM). The report recommends that a Construction Environmental Management Plan (CEMP) be prepared to inform construction management measures and treatment of unexpected finds.



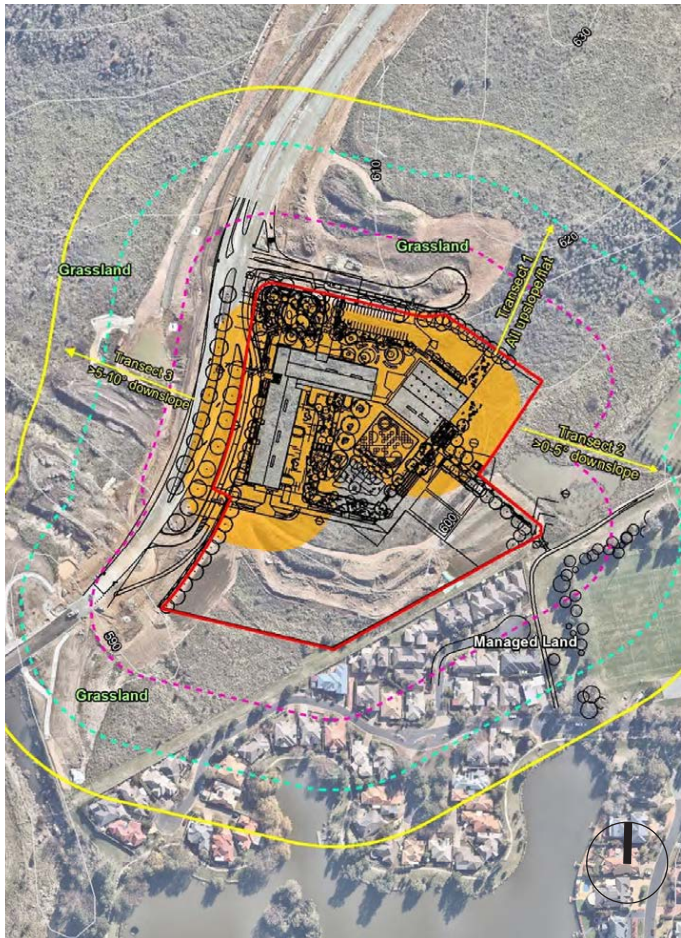
Bushfire-Prone Land Map
Source: LEP Mapping Tool with TKD Overlay



LEGEND Bushfire-Prone Land Map
Source: LEP Mapping Tool with TKD Overlay



LEGEND Bushfire Hazard Assessment
Source: Ecological



Bushfire Hazard Assessment
Source: Ecological

12 Views

12.1 Looking out from Site

The site is elevated above its surroundings to the east, south and west. These aspects provide attractive views over the local area, with undulating topography, natural grasslands, grazing lands, low density housing, and mountains in the distance. In the winter, the mountains south of the site are snow-capped, and in the spring, bogong moths nest in the rocky outcrops.

To the north of the site, the topography slopes upwards, so views are more restricted in this direction, although the aspect is pleasant.

12.2 Looking Towards the Site

The site includes a street corner between Environa Drive and the new northern stub road. This is expected to be the perceived as the public face of the school. The frontage along Environa Drive will also be prominent. The site is expected to be highly visible from David Madew Oval, to the east of the site, and the local Jerrabomberra neighbourhood.



View Looking South-West
Source: TKD Architects



View Looking West-South-West
Source: TKD Architects



View Looking South-East
Source: TKD Architects



View Looking North-East
Source: TKD Architects



View Looking North
Source: TKD Architects



View Looking North-West
Source: TKD Architects

13 Overshadowing

Being part of a new subdivision, there are no existing neighbouring structures which overshadow the site. The site is already cleared of trees. Its position is slightly elevated over surrounding land to the east, south and west, further reducing the likelihood of overshadowing impacting the school. Adjacent roads to the north and to the west provide buffer zones which will not be built upon.



Overshadowing risk to site

Source: Nearmap with TKD overlay

14 Noise

Envrona Drive, once complete, is expected to be a reasonably busy through-road. However, the main noise constraint applicable to the site is aircraft noise, from nearby Canberra Airport.

The location of the proposed high school would place it at the very high end of being between the 20 to 25 ANEF contour. According to the table reproduced to the right, a school within the 20 to 25 ANEF zone would be considered conditionally acceptable on the basis that appropriate noise control features be incorporated in the construction of the school buildings.

An ANEF investigation has been prepared by GHD for this EIS. Refer to this report for further information.

Acoustic impacts may also be generated by the school itself. Potential noise sources from the school are:

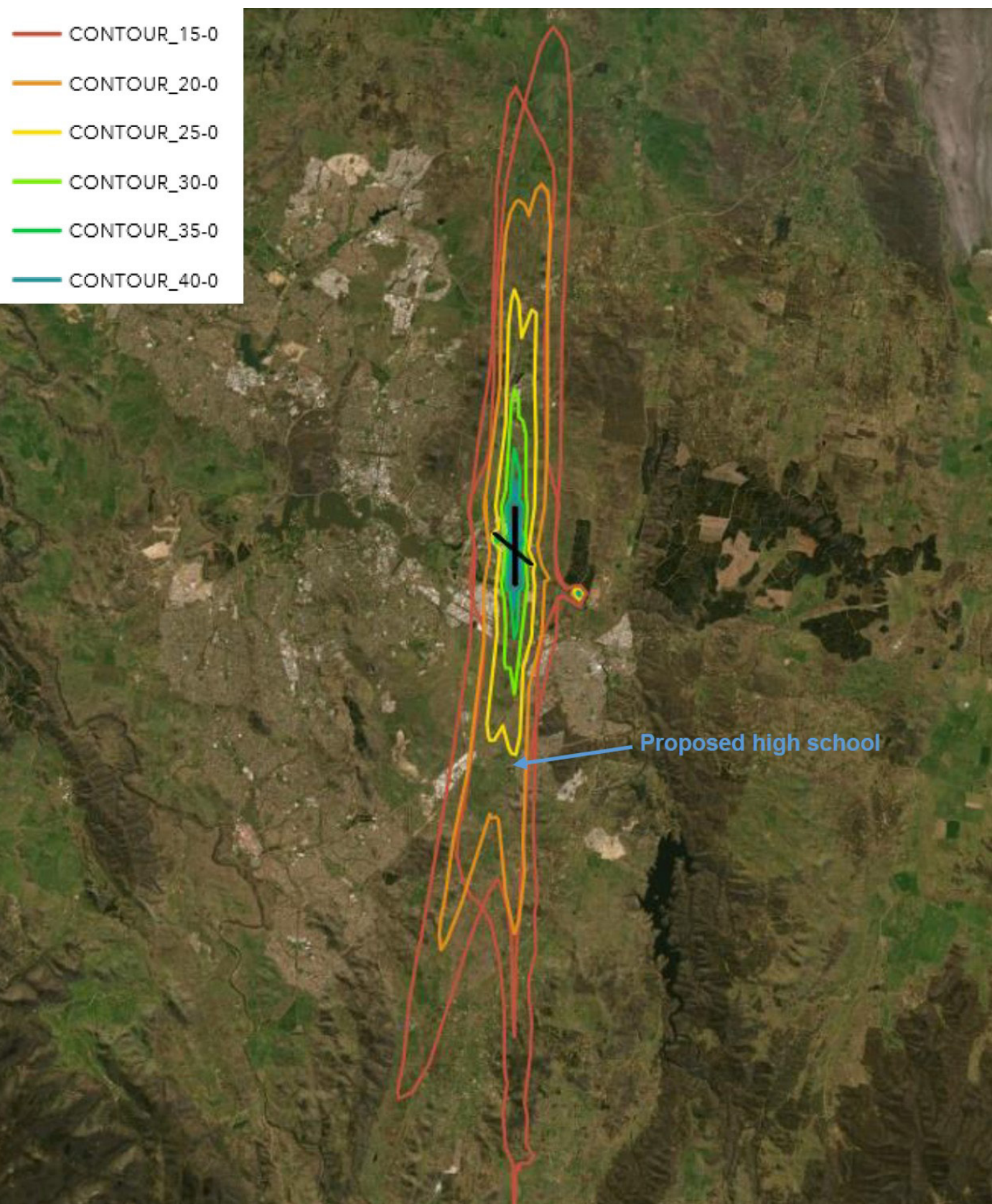
- Performances or sports occurring in the gym
- Equipment used as part of practical activities, such as in the Wood and Metal Workshops
- Sports courts and outdoor play
- School bells and PA announcements
- Mechanical plant (such as external air conditioning condensers)
- Waste and recycling collection

Recommendations around these uses have been made within the *Jerrabomberra High School Environmental Noise and Vibration Assessment* by Acoustic Logic, which forms a part of this SSD submission.

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF ¹	20 to 25 ANEF ²	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF ¹	20 to 25 ANEF ²	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF ¹	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF ¹	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Building site acceptability based on ANEF zones (AS 2021:2015)

Source: Jerrabomberra High School ANEF Assessment, 29 March 2021, GHD



Location of proposed high school and 2019 Canberra Airport ANEF

Source: Jerrabomberra High School ANEF Assessment, 29 March 2021, GHD

15 Biodiversity

A Biodiversity Development Assessment Report has been prepared by Capital Ecology for this EIS.

The proposed development is located on a portion of land that has been modified by its current and past land use, which has primarily been grazing (sheep and cattle). Approximately 97% of the original woody vegetation has been historically cleared. The site is identified to support threatened ecological communities and species including Box-Gum Woodland and habitat for the Golden Sun Moth. The riparian vegetation is generally dominated by exotic grasses.

The impact on biodiversity has been considered and mitigated within the planning and consent of the larger Poplars development area through the creation of large reserves which contain the majority of land with of high biodiversity value.

Refer to the Biodiversity Report for further information.

16 Heritage and Aboriginal Assessment

An Aboriginal Cultural Heritage Assessment report has been prepared by Ecological for this EIS.

The Aboriginal Heritage Information Management System (AHIMS) identified 2 sites within the school site.

The report summarises that one site which consisted of two quartzite river pebbles and a quartz flake could not be located during the survey. A low density artefact scatter was identified following test excavations of the second site.

The reports set out recommendations for the proposed works, which include potential salvaging of any surface artefacts, but notes, no further assessment is required for the site.

Refer to the ACHAR for further information.

17 Summary of Site Constraints

The following site constraints have been identified:

- Bushfire Asset Protection Zones and BAL12.5 construction requirements;
- Prevailing winds;
- Topography of the site;
- Constrained opportunity for parking;
- Constrained space on site for an oval;
- Constrained site shape due to the wetlands to the

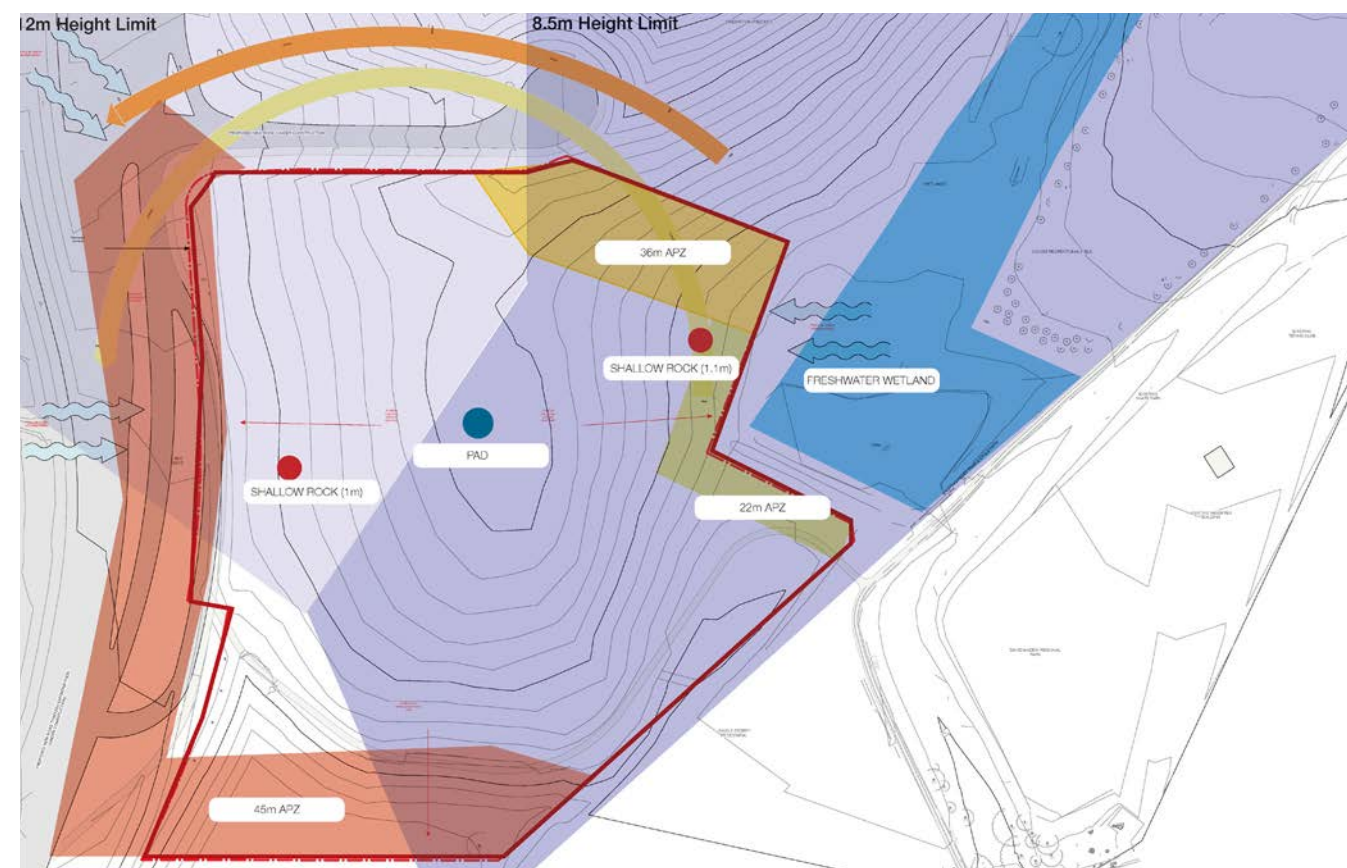
east;

- Potential Archaeological Deposits;
- Two LEP height limits – 12m above natural ground in the west, and 8.5m in the East;
- Mixed geotechnical conditions, including hard rock.
- Ecological constraints. The site contains Golden Sun Moth habitat

18 Summary of Site Opportunities

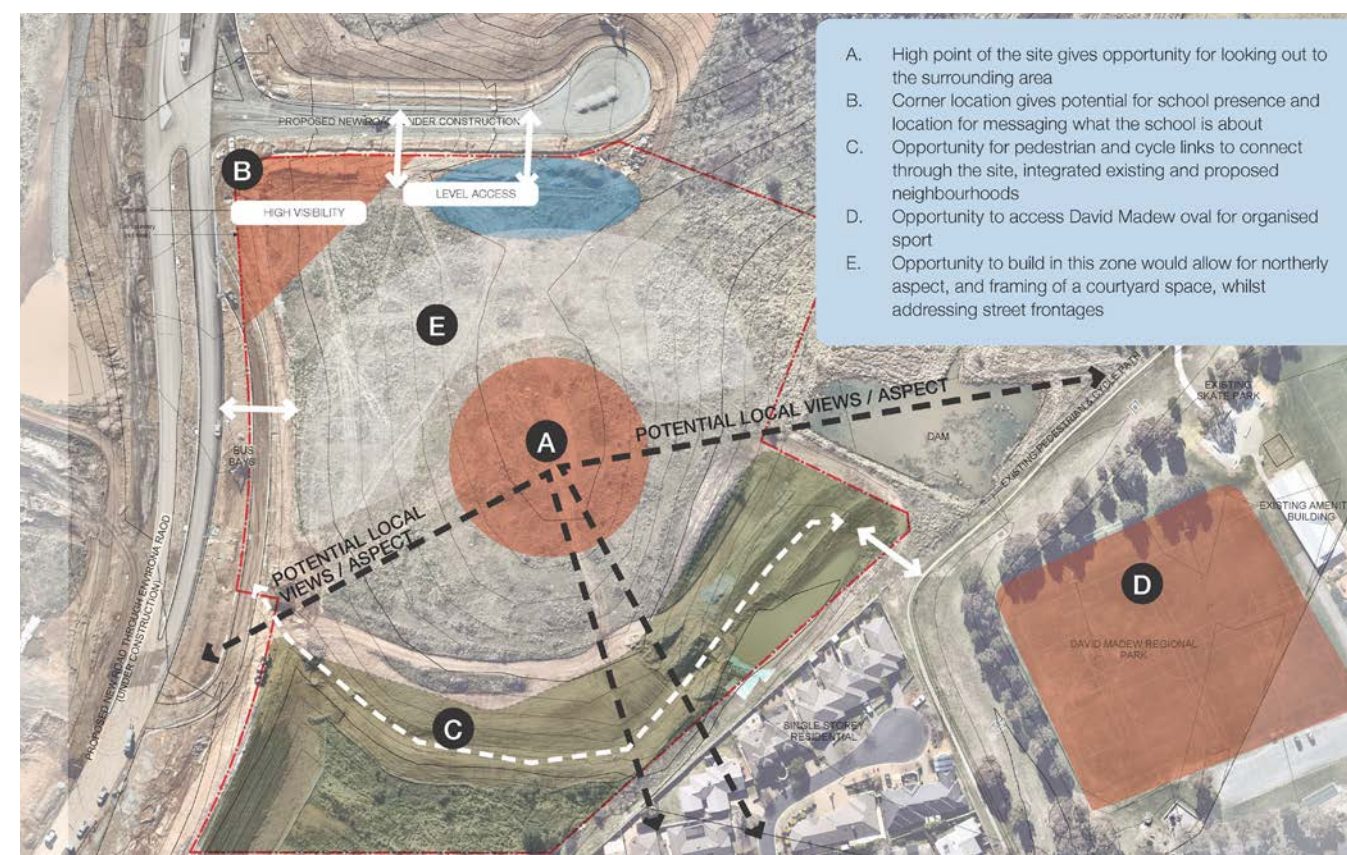
Beyond those constraints, the following opportunities can be utilised:

- Connection to Country via consultation and investigation into the site, and looking for ways to express its stories through the architectural and landscape design;
- The centre of the site is free from Asset Protection Zones;
- The alignment of the site allows for the built form to be a buffer to westerly winds;
- The sloping topography, whilst challenging, can add to the design in a number of ways, such as:
 - Creation of zones of different character and experience in the landscape design;
 - The high point of the site can become a central gathering space with views to the east over the wetlands towards David Madew Oval, to the south towards Lake Jerrabomberra, and to the west towards Jerrabomberra Creek.
- The site area is large, with a lot of open space. This brings opportunities for a variety of outdoor green spaces and play spaces
- Elevated, picturesque setting with natural features
- Vehicular access opportunities:
 - Kiss and drop location on the new local road
 - Include staff car parking within the school grounds.
 - A bus bay is being constructed next to the school site.
- Potential to explore opportunities for joint use facilities with the David Madew Oval.
- Proximity to the Poplars Innovation Precinct, giving opportunities to connect with local businesses and initiatives.



Constraints Diagram

Source: TKD Architects



Opportunities Diagram

Source: TKD Architects

D Development Guidelines and Development Parameters

D Design Guidelines and Development Parameters

1 Architectural Concept

1.1 Guiding Principles

The design is guided by three key principles - Purpose, Place and People. These lenses have been used to inform decision-making around the arrangement of buildings on site, the building forms, functional layouts, facades and landscape.



Prioritising Place: Green Trellises



Celebrating Place: Picture Windows



Legibility and Ownership: Graphic Overlay



Purpose

The school will be part of a new identity for Jerrabomberra, founded on the idea of innovation. How can the school buildings and landscape inspire students to innovate, and expand their understood horizons? What can be done to create opportunities for looking out, looking up, and looking beyond?

- Looking out: The linear form of the buildings encourages looking out, with large windows along the length of the façades. The building elevation will provide views across the grasslands. The 'L' shaped form of the building group provides a sheltered urban courtyard with views outwards from the high point.
- Looking Up: Rooflights over internal shared learning areas act as windows to the sky. The high ceiling and the spill of natural light draws the eye upwards.
- Looking Beyond: The massing and alignment of the proposed buildings enables students to look beyond their immediate surroundings.
- Enhancing Existing Landscape Features: A fully integrated landscape design approach, with outdoor learning areas plays a key role in the site strategy



Place

The new High School in Jerrabomberra will be on the edge of a suburban area and rapidly changing area but nearby to significant and sensitive landscape features.

How will the School integrate with the town and its unique landscape? How will students appropriate the new School and feel connected to this place, no matter where they are on the site?

- Connecting to the Country: the buildings are designed to connect with the site and work to the site levels as well as acknowledge hills, valleys and natural watercourses and grasslands
- Connecting to the neighbourhood: new pathways and roads through the landscape will connect the school with nearby precincts;
- Celebrating Place: Picture windows that look over the landscape, and a courtyard that forms a legible heart and gathering place for the school;
- Prioritising Place: Green walls and trellises integrated in circulation nodes climb up the new buildings, inviting the natural world into the built.



People

There is no High School in Jerrabomberra the town, so secondary students currently commute daily to larger regional centres for schooling. Many of the families living in Jerrabomberra have parents who work in Canberra. How can the buildings and landscape inspire the students and the community to appropriate the new high school as part of the town?

The school benefits from a diverse and engaged community. How can this community feel most supported by this physical place? What opportunities are there for enhanced engagement, identity and ownership of it? What can be done to create a legible and connected place?

- Sharing with the community: The commercial kitchen and café will allow the sharing of food with the community.
- Supporting Community: The building layout allows for equitable facilities, with all teaching spaces having access to equivalent amenity,
- Enhancing Engagement: From productive gardens to writeable surfaces, the design encourages engagement with the buildings, their contents and their surroundings,
- Access: New pathways and access roads will enable links to the neighbourhood, the primary school and nearby sports facilities;
- Legibility and Ownership: Each building, although part of a cohesive whole, has its own individuality and identity.
- Providing key node points of circulation associates with significant breaks in the building form helps users navigate their way around the school. A graphic overlay will further develop the individual identity of each building.

2 Project Principles and Approach

The design outcomes are to align with the following principles which are based on the DoE's Educational Principles (as outlined in the EFSG).

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

Education Principle 2: Build community and identity, and create a culture of welcome inclusion and belonging that reflects and respects diversity, within the school's community

Education Principle 3: Be aesthetically pleasing

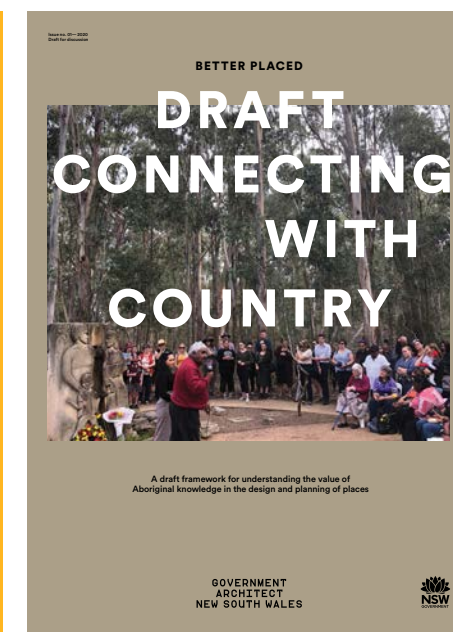
Education Principle 4: Provide contemporary, sustainable learning environments that:

- Promote learning for students and teachers through collaboration, social interaction and active investigation
- Encourage learner self-management and self-direction
- Support a full range of teaching strategies from direct explicit instruction to facilitation of inquiry and authentic project and problem-based learning
- Facilitate learning and connection anywhere, anytime by providing seamless access to ICT and integration of learning resources throughout the learning spaces
- Be integrated into, and maximise the use of the natural environment
- Enable aspects of the buildings, building design and outdoor spaces to be learning tools in themselves—for example, learning from the ecologically sustainable features of the design and associated energy management systems
- Be age and stage appropriate

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

3 Reference Design Documents

- Educational Facilities Standards and Guidelines (EFSG)
- State Environmental Planning Policy – Educational Establishments and Child Care Facilities 2017 (Education SEPP)
- Better Placed - Design Guide for Schools - Government Architect New South Wales (GANSW) 2018
- Better Placed - An Integrated Design Policy for the Built Environment of NSW (GANSW) 2017
- Better Placed – Environmental Design in Schools - (GANSW) 2018
- Better Placed - Draft Connecting with Country - (GANSW) 2020



4 Educational Facilities Standards and Guidelines (EFSG)

The school facilities are required to be developed in accordance with the Department of Education, Education Facilities Standards and Guidelines (EFSG).

The EFSG is designed to set minimum standards and ensure equality of spaces and facilities are provided across all schools of a similar size.

5 Educational Rationale and Planning

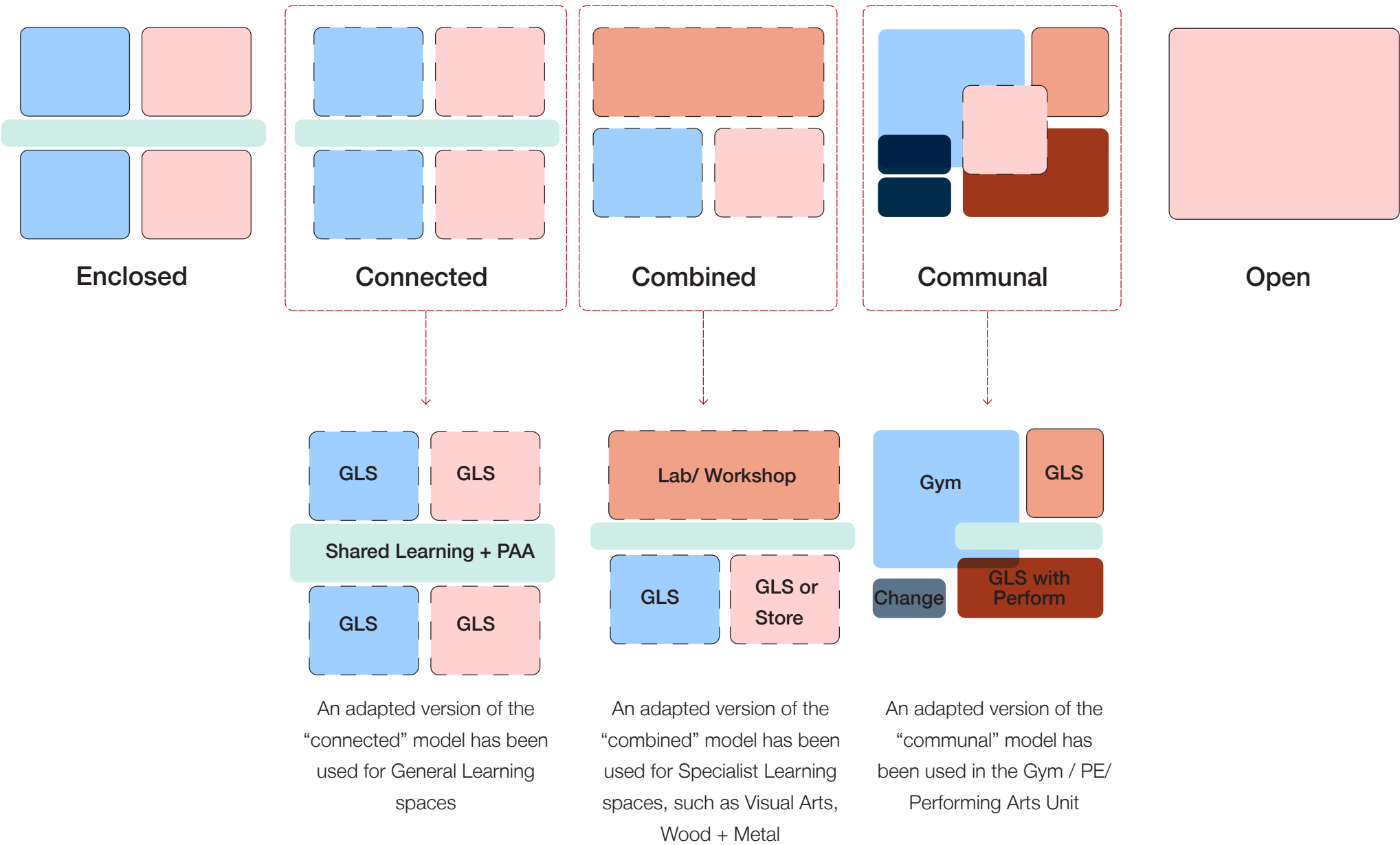
SINSW has developed and Education Rationale for the project through consultation with the Queanbeyan Principal Network. The Queanbeyan Principal Network consists of 20 government schools. The Network engaged in a consultation process involving a ‘Discovery Workshop’ which included Directors, Educational Leadership, school executive, and teaching staff from the Queanbeyan principal network.

The department’s aspirations are for the delivery of facilities that are able to support ‘future focused learning’. The objective of future-focused learning is to furnish students with lifelong learning skills (e.g., creative and critical thinking, collaboration and communication, and problem solving) as well as literacy and numeracy proficiency. It recognises learning will be facilitated via a range of delivery methods, and engage students in different learning styles, each fostered by emerging technologies and social changes.

The SINSW tiered framework for learning environment design considers “zones” that can be shared across classes in order to create the diverse offering of spaces that best support contemporary learning and teaching practices.

Two new organisational tiers (beyond class and school) are introduced to consider these new ways of learning, teaching and designing spaces in the form of Hubs and Neighbourhoods.

The educational rationale has been developed to inform the location and spatial arrangement of learning spaces.



6 Modern Methods of Construction (MMoC) and Design for Manufacture and Assembly (DfMA) Guidelines

The project is to be delivered via Modern Methods of Construction in line with SINSW DfMA (Design for Manufacture and Assembly) Guidelines. The DfMA Guidelines have been developed to facilitate and contribute to the DoE's sustainability objectives and 'Sustainability Pillars of the Department of Education'. The DfMA approach has been identified to allow for future adaptability and flexibility. Through use of a standardised planning grid, efficient structural grid and standardisation of room areas, flexibility is provided for a range of spaces that can be utilised for high school, primary school specialist spaces, future proofing the ability to steer education and pedagogy towards potential future of cross disciplinary learning methods.



Pedagogy First

- Enable flexibility and best possible teaching outcomes, now and in the future.
- Increased building efficiency: larger teaching spaces, more outdoor space, less circulation



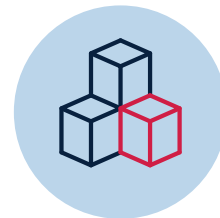
Equity

- Consistency across all schools
- Ability to deliver the same level of education, design, layout and joinery across the state



Prioritise Resilience & Wellness

- Adapt for a changing climate
- Change the focus to the wellness and best possible teaching and learning environment for student and teacher.



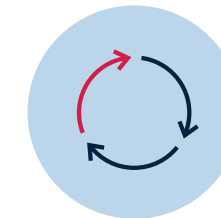
Kit of Parts

- A single universal education planning grid
- Interchangeable module for all primary, high school and special education teaching spaces.
- Enables state-wide spatial and social equity.
- School building as a learning opportunity.



Investment & Infrastructure

- Enable all construction methods from off-site volumetric to conventional to secure quality and program, and maximise use of budget.
- Establish demand to grow NSW manufacturing capacity
- Drive lower construction costs per sqm.



Whole of Life Thinking

- Shift the discussion on capital cost to encompass whole-of-life cost, flexibility, durability and maintenance.
- Put in place easy to use performance guidelines that set simple rules and allow for innovation.

SINSW DfMA Principles

Source: SINSW with Woods Bagot

7 Options Analysis

The below options were considered for the project to analyse and justify the site planning and design approach.

7.1 Option 1

Option 1 was designed to accommodate 500 students with the potential to expand in the future.

Advantages:

- Potential future building is larger than required to complete Stream 5 allocation, providing flexibility and future proofing
- North-facing orientations optimise northern passive solar gain
- Western wing of main building mitigates westerly winter winds protecting the central plaza play space.
- Building placement has been developed to minimise cut and fill on this steep site
- Parking, kiss and drop and bus bay design were developed in conjunction with and are supported by QPRC
- Building forms are designed for delivery as DfMA volumetric modules
- Good connection with joint use David Madew Oval

Disadvantages:

- Kiss and drop provision is constrained by existing road design and QPRC's vehicular access constraints. However, no other vehicle access arrangements would be supported by QPRC on this site.

7.2 Option 2

Option 2 looked to provide a much larger building for a Stream 9 school and prioritises vehicle servicing from the western road.

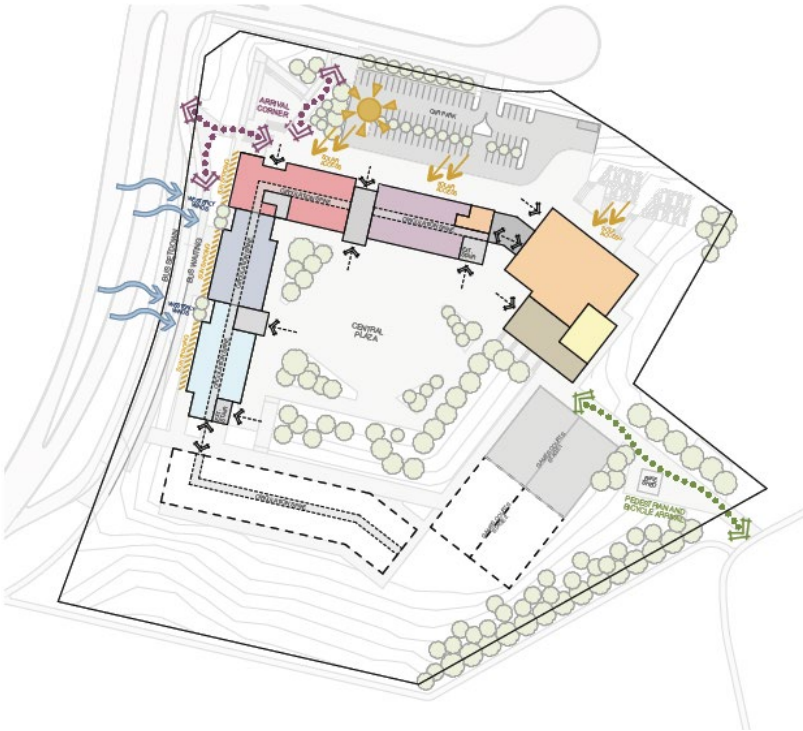
Advantages:

- Buildings form a wind break along the western boundary.
- Potentially student movement between functional zones could be internalised.
- Outdoor spaces connected
- Potential linkages to David Madew Oval

Disadvantages:

- Building orientation compromises ESD outcomes, such as passive design and daylighting due to its predominantly north-south orientation. Significant sunshade would be required on the extensive western

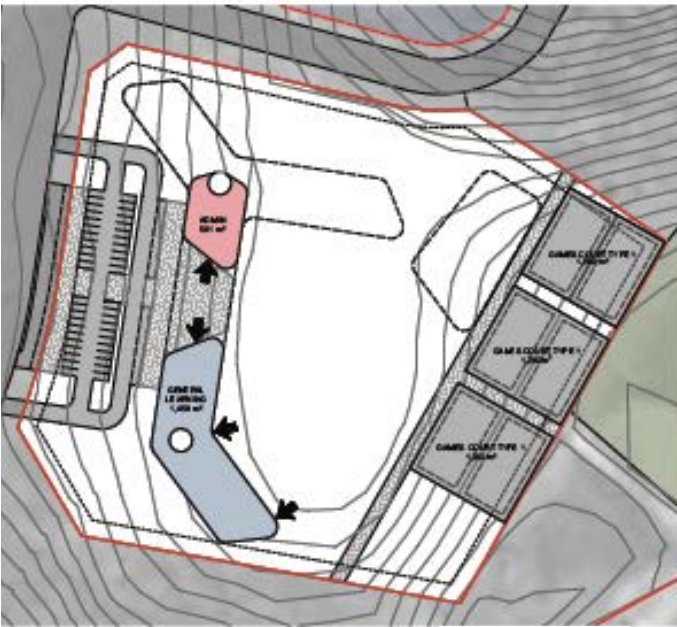
- facade
- The carparking access of the Link Road is unsupported by Council
- Higher capital cost



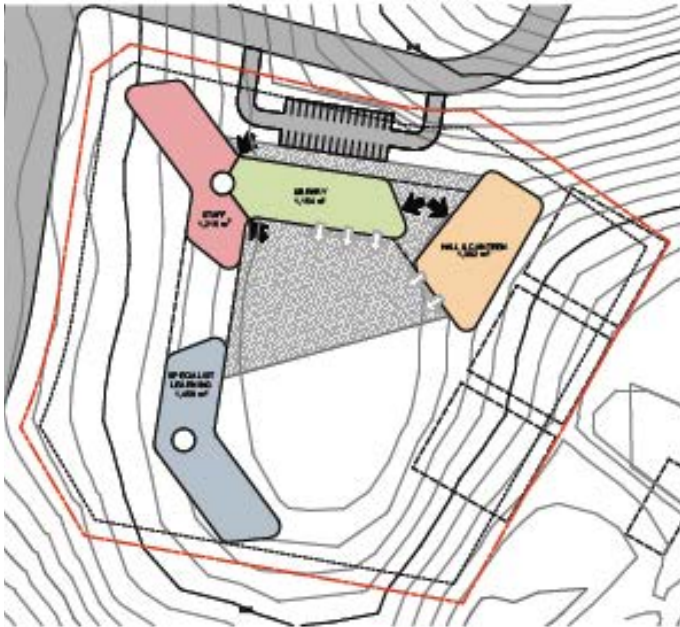
Option 1
Source: Clarke Keller Architects



Preferred Option
Source: TKD Architects



Option 2
Source: Clarke Keller Architects



7.3 Preferred Options

The preferred option stems from option 1, however relocates functional relationships following stakeholder consultation. Key amendments include:

- Lower Ground floor level utilised for teaching spaces rather than undercroft. By providing teaching spaces at the lower level, the design is better able to respond to the natural topography of the site
- Use of hybrid circulation strategy, with some internal circulation and some external covered walkways to respond to the circulation requirements of the various functions.
- Stairs are pulled out of the building to be stand-alone components
- The playground incorporates a series of play spaces and outdoor learning spaces that respond to the natural topography

E Context, Built Form and Landscape

E Context, Built Form and Landscape

Principle 1 | Context, Built Form and Landscape

Schools should be designed to respond to and enhance the positive qualities of their setting, landscape and heritage, including Aboriginal cultural heritage.

The design and spatial organisation of buildings and the spaces between them should be informed by site conditions such as topography, orientation and climate.

Landscape should be integrated into the design of school developments to enhance on-site amenity, contribute to the streetscape and mitigate negative impacts on neighbouring sites.

School buildings and their grounds on land that is identified in or under a local environmental plan as a scenic protection area should be designed to recognise and protect the special visual qualities and natural environment of the area, and located and designed to minimise the development's visual impact on those qualities and that natural environment.

Design Quality Principle 1, Schedule 4, Education SEPP

1 Context

1.1 Urban Grain and Building Height Context

Being part of a large development area and a new use zone, the area to the north and west of the site is in a phase of transition. New roads, and a small retail precinct on the north side of Tomsitt Drive, are near to being fully constructed. However the land which neighbours the school lot is still open space, and subdivision of the lots in this area is not complete. To establish the possible future urban grain of this area, the LEP planning maps and DCP can be used, in lieu of development plans being made publicly available at this time.

The LEP gives a height limit of 12m for the Poplars development area (with the exception of an 8.5m which is mainly over the school site and adjacent wetlands). The FSR for the area is 1:1. These two parameters allow developers to build either 2 storeys, with 50% site coverage, or 3 storeys, with 33% site coverage. Arguably, a 4 storey building could be achieved within the 12m height but this would be ambitious, particularly with the 1:1 FSR at play.

Although specific designs for the Poplars development area are not publicly available, Patrick Roberts Architects have produced the CGI shown in image A on this page, which gives some indication of the potential character of

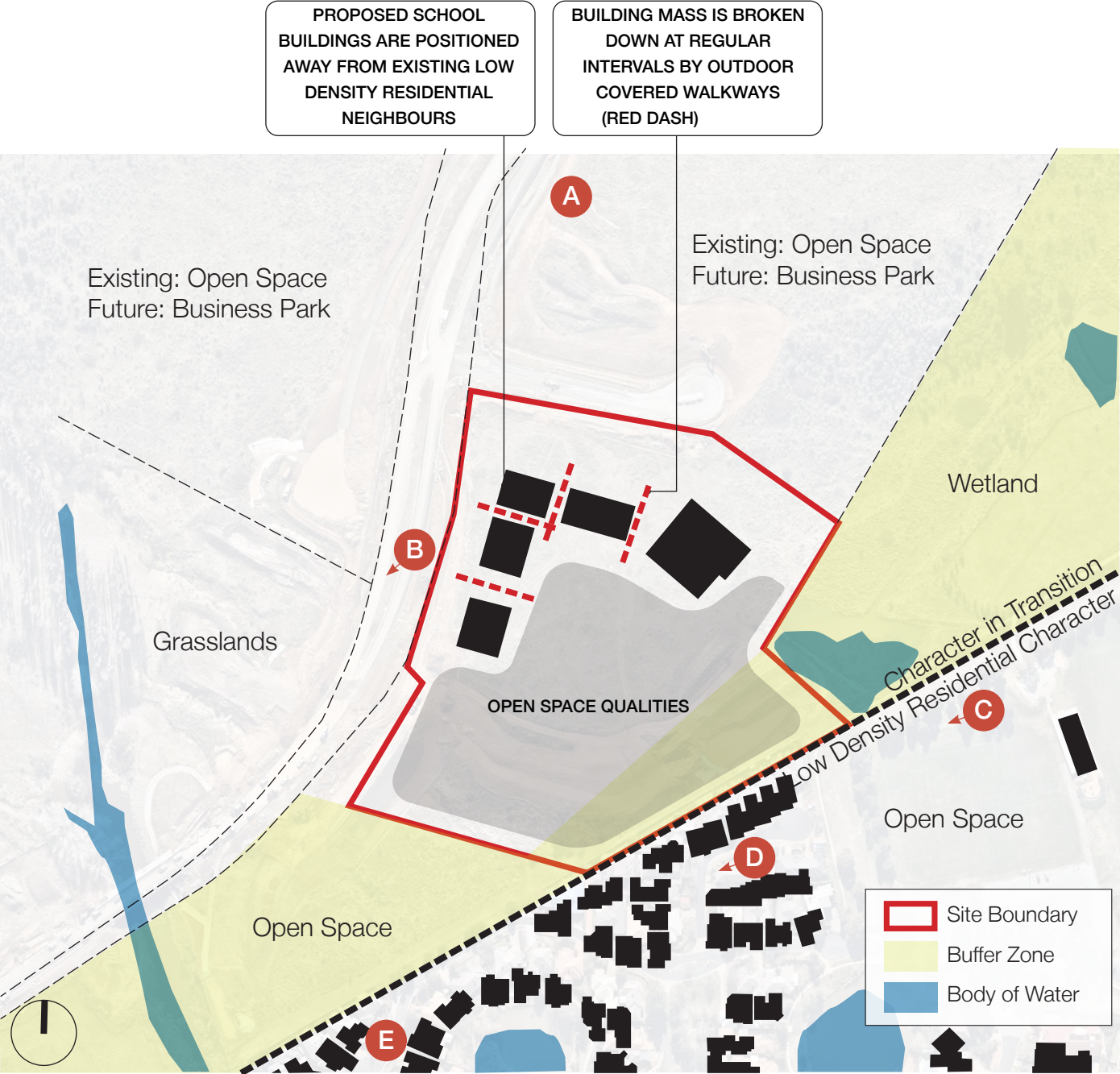


Figure Ground - Proposed
Source: TKD Architects

future buildings in the precinct, with a large format floor plate and mix of 1 and 2 storey components.

The neighbours to the south-east of the site are mainly single-storey, freestanding or semi-detached dwellings. Images D and E, on the right, show typical streetscapes in the area. Lot sizes, front setbacks and building heights are compact and buildings appear diminutive in the scale of the surrounding landscape.

Building footprints required for high school functionality are closer in scale to those expected to evolve within the business park. To ensure that the buildings are sensitive to

the lower scale residential neighbours, the following design strategies have been employed:

- The buildings have been located on the Poplars precinct side of the site, with significant landscape space between the school buildings and the residential neighbours;
- The proposed building footprints have been broken down into smaller components, with external circulation, main entrances, and outdoor learning spaces in between;
- The building floor levels step down the site, following the natural topography. This keeps the perceived



CGI of Future Business Park
Source: poplars.com.au



Grasslands and Jerrabomberra Creek
Source: TKD Architects



Edge Condition at David Madew Oval
Source: TKD Architects



Low Density Residential Development at Palm Court
Source: Google Street View



Relationship Between Low Density Residential Development and Grasslands
Source: Google Street View

- building height as minimal as possible;
- The roof pitches have been kept relatively low, so as not to add additional height unnecessarily;
- Building B, which is closest to the residential neighbourhood, is 1 storey only;
- The materials palette is designed based on the colours of the surrounding natural environment, which helps the building fit in to the landscape and visually recede;
- The facades are broken down into human scale elements, by use of:
 - Sunshading which is oriented vertically;
 - Metal screens which wrap key parts of the building;
 - Articulation of the facade by stepping the buildings in and out where possible;
 - Articulation of vertical circulation such as external stairs and the elevator. These are pulled out of the building envelope as discreet elements.

1.2 Visual Impact/ Streetscape Views

The images to the right show the buildings in context, as viewed from each publicly-accessible site boundary. From these, the following observations can be made:

- The streetscapes are currently predominantly open space, combining future development zones, wetlands and grasslands
- When viewed from Environa Drive, the buildings relate well to the topography, with the Lower Ground and Ground Floors in the foreground, and the first floor set back so that it visually recedes
- The setback from the Northern Stub Road provides a generous green forecourt to the school. The building mass recedes with the pedestrian entrance and landscape response being the main focus
- When viewed from Environa Drive, looking North-East, the buildings respond to the alignment of the road, setting up a new urban edge which is likely to be in keeping with future development of the Business Park along the road.
- Looking at the school from David Madew Regional Park, and from the existing residential neighbourhood, the sense of green open space is not only maintained, but enhanced by the rehabilitated landscape proposed on site. The main school building, Building A, is not visible from this location, but Building B as well as clear signage at the eastern entry provide a respectful presence and a legible connection.



View from Environa Dr looking South-West



View from the Northern Stub Road looking South



View from Environa Dr looking North-East



View from David Madew Regional Park

2 Built Form

2.1 Overview

The built form responds to the site constraints and opportunities. Given the slope of the site, and the bushfire constraints, the zone in the centre of the site, as well as the north and west, is the most ideal area for building.

- The project scope does not require a building so large that it would use the entirety of the buildable zone
- The zone includes the high point of the site. This point draws you to it as a vantage point for looking out to the south of the site
- It is a natural “gathering place” for the school, and makes sense to be kept as open space
- The natural features of this high point can be enhanced by framing it - establishing its edges to make it a feature.
- An L-shaped building frames the high point on two sides, giving structure to the gathering place, but still retaining a sense of openness to the most expansive views from the site.
- The L-shape is positioned to protect the high point from unpleasant winter winds from the north-west
- The position also provides the opportunity for the building to respond to the street corner
- The position also allows the north-south running wing to approximate its alignment between the site contours and the alignment of Enviro Drive - thus balancing the site topography with the emerging urban grain
- The L-shape also consolidates the buildings together efficiently, meaning flexibility for the future. Although additional learning spaces could be built in a number of ways, one possibility would be to follow the alignment of contours and complete a third side of the courtyard. Views to the south would be maintained due to the use of the lower contour and also the opportunity for gaps in between the new buildings.

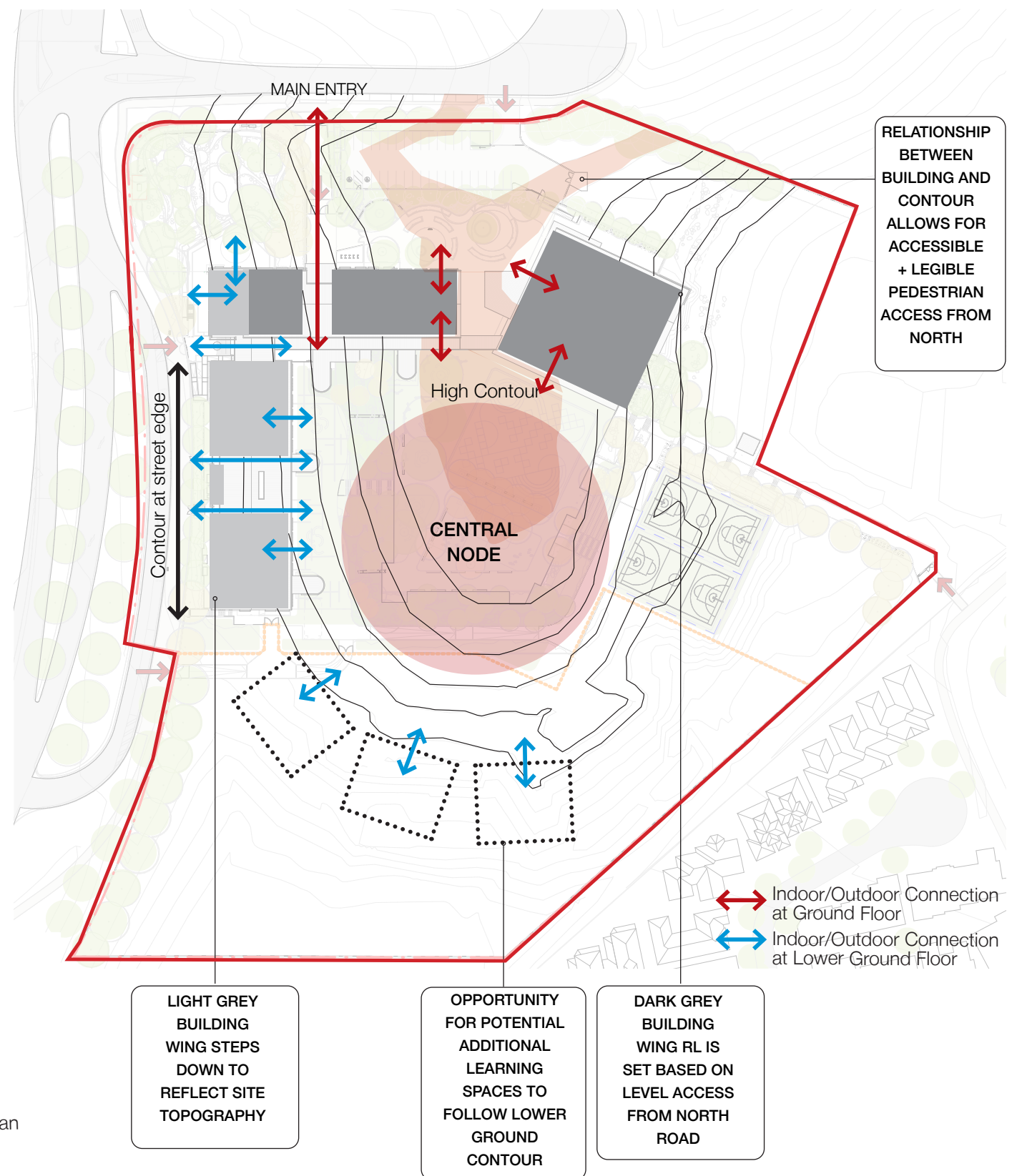
2.2 Density

Under the LEP, the maximum FSR applicable to the site is 1:1. Given the site area is 4.5ha, to reach this FSR would be to provide a school well in excess of what is required to meet the service need. The GFA of the school is 6,645m².

For this reason, the density of the proposal is more a function of the required building area under the EFSG, as well as a response to the LEP height limits, the constraints of the site, and the need for proximity between learning spaces throughout the school.



Building Morphology - Plan Views



Site Plan Indicating Response to Topography and Urban Grain



2.3 Bulk + Scale

The bulk and scale of the proposed buildings respond to the natural topography, with the buildings stepping down the slope towards the west and south.

Breaks in the built form have been made, to allow visual and physical permeability, and to further break down the building mass.

The design of finishes, including external screening and sunshades, create a visual rhythm on the facades which divides up the length of the buildings.

Vertical circulation, such as the several sets of stairs and the lift are expressed externally, to further divide the built form.

Diagrams 1 to 4 on this page explain each of these adjustments, supplemented by the descriptions below.

Establishing the Building Envelope

- Two storey building form so that the school is relatively compact on the site
- Preferred not to go above two storeys due to height limits and surrounding urban density
- Ground floor level based on the contour of the northern stub road, since Environa Drive is arterial and therefore not suited for school main pedestrian access and drop-off.

Adjusting the Envelope to Respond to Site Topography

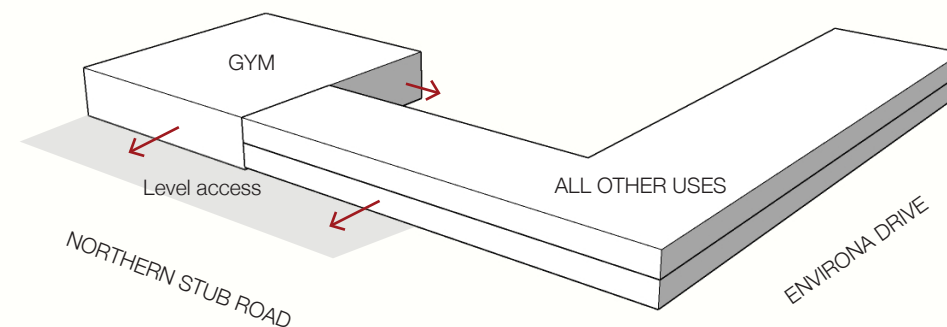
- Western-most wing lowered down to respond more closely to the level of Environa Road. Opportunity for level access between indoor and outdoor spaces created for this wing.
- Roof height lowered in Gym building where internal spaces allow, to reduce scale of the building when viewed from existing residential neighbourhoods.

Integrating Permeability and Access

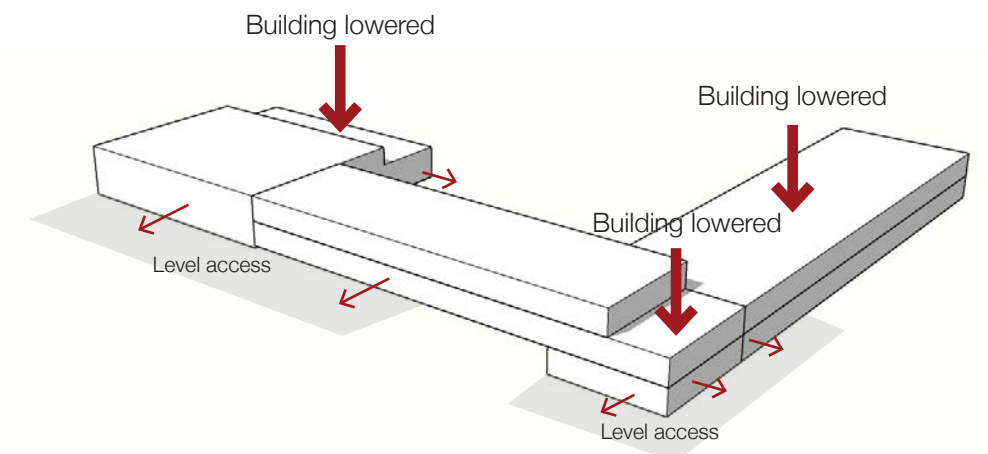
- Building mass broken down for visual and physical permeability.
- Two main pedestrian access points located so that they are on either side of the street corner.

Articulation and Movement

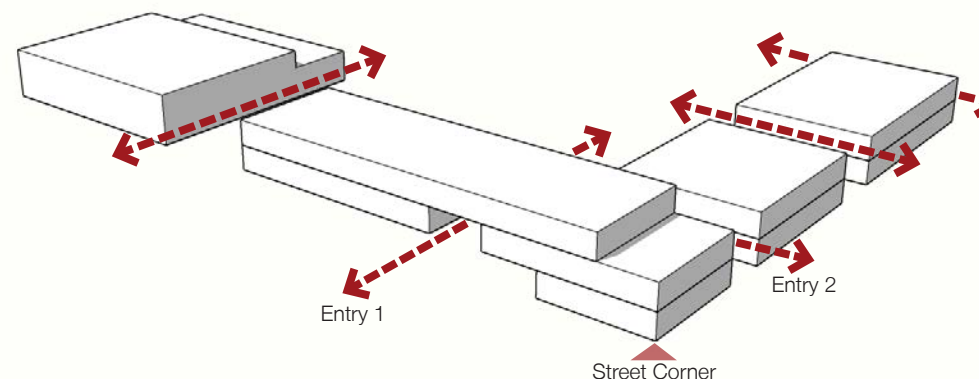
- Gym building cranked to frame the central courtyard and to indicate its more civic use, by opening it out to the school front forecourt space.
- Weather protection added in between buildings for improved amenity in all seasons, including larger covered areas at main entrance points and outdoor learning
- Roof lanterns added to bring daylight into the upper storey shared learning spaces and circulation spine
- Vertical circulation expressed externally to break down the length of facades, to integrate activity and movement, and to ensure passive surveillance of stairs from the playground
- External sunshading screen used to articulate key views towards the school, such as the main street corner, and the Gym building when viewed from the residential neighbours.



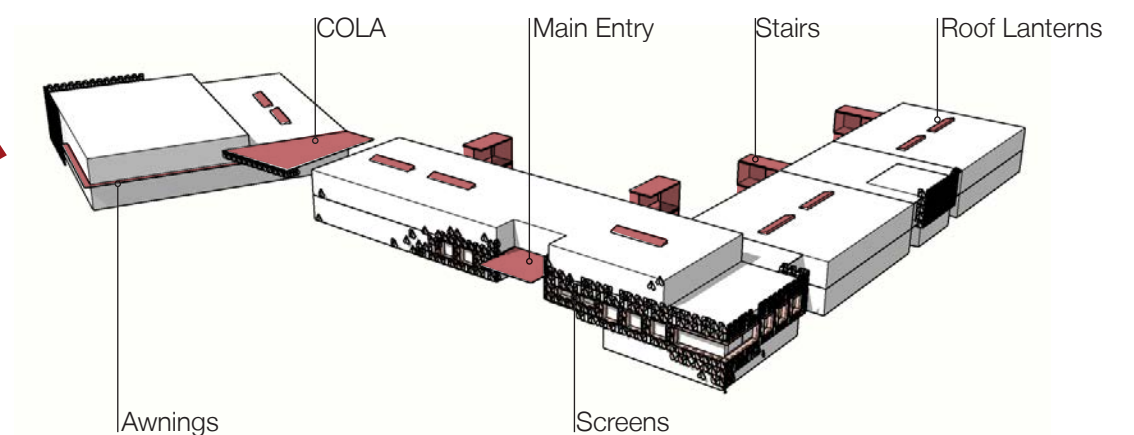
1 Establishing the Building Envelope



2 Adjusting the Envelope to Respond to Site Topography



3 Integrating Permeability and Access



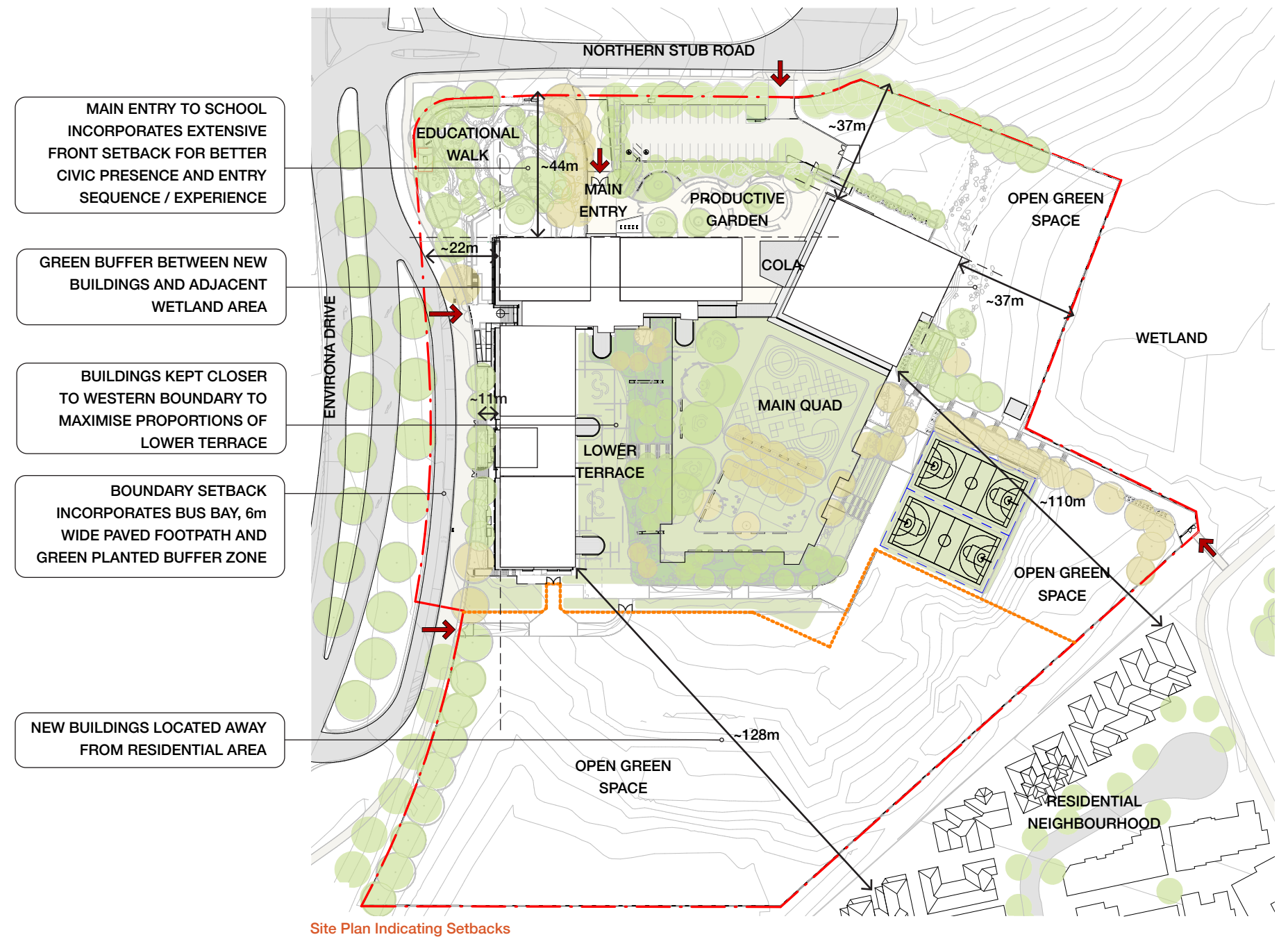
4 Articulation and Movement

Building Morphology - 3D Views

2.4 Setbacks

Locating the school buildings in the north-western portion of the site means they are well set-back from any boundaries with residential neighbours. The other setbacks have been established based on the following drivers:

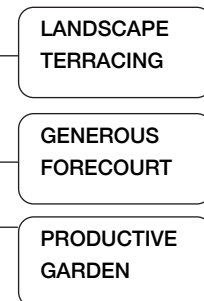
- The implications of the site topography, allowing for a large, level area to the north of the site which is suitable for a generous entry experience. The front setback is able to incorporate a forecourt, signage, seating, bicycle storage, a productive garden and educational walk, as well as provision for car parking and waste collection.
- The desire to protect the site from the west, to limit impacts of cold westerly winds, combined with the need to create play space for the school with good amenity. This led to the closer alignment of buildings to the western site boundary, which gives space to the lower terrace while also providing protection to the school from the west.
- The open space qualities of neighbouring lots to the south and east of the site. The proposed buildings have the largest setbacks from these zones, so that open green space within the school connects through to open green space on adjacent land.



3D View - Western Boundary Setback



3D View - Northern Boundary Setback



3D View - Eastern Boundary Setback



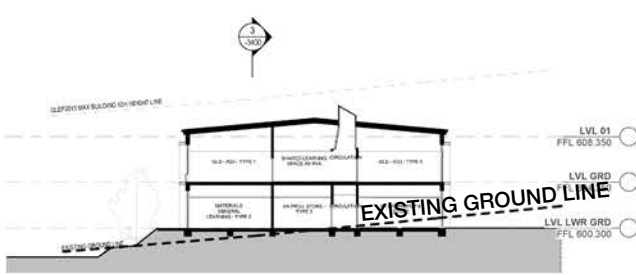
2.5 Topography

Being a sloping site, the natural topography has been considered from very early site strategy stages. Discussion around this has been included in the Built Form section of this report.

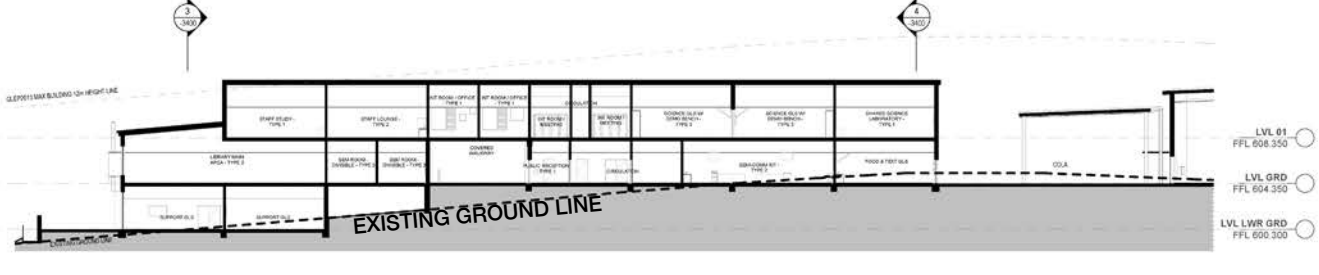
The response to topography has been further resolved in 3D. A reasonable balance of cut-and-fill has been sought, with 3D modelling and the analysis of several options undertaken by the civil engineer.

This information informed the finished floor levels for the project, as well as the arrangement of landscape terracing. The section drawings on this page demonstrate a close relationship between the existing ground level and the proposed finished floor levels.

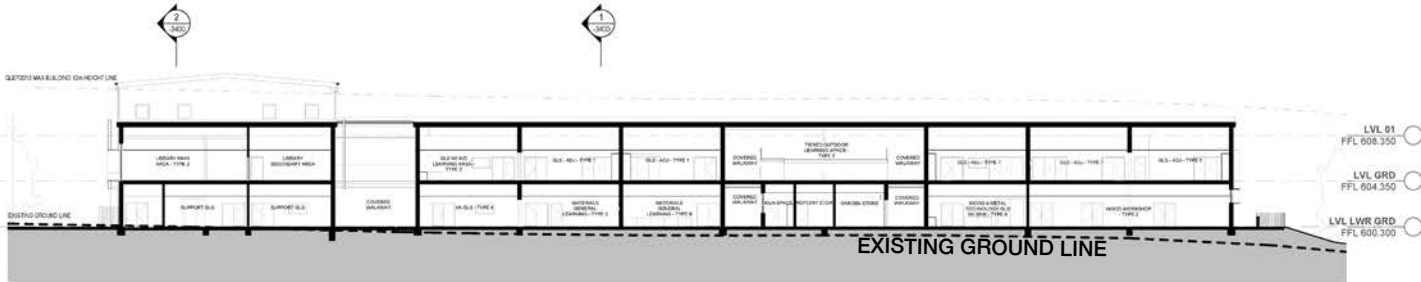
The landscape design incorporates flexibility, via the use of planted battered slopes, with soft undulating edges. These edges allow for adjustment of the extent of batter, should on-site conditions vary. For example, the presence of volcanic rock on the site is known to exist, but its locations are not always predictable, sitting in small pockets rather than in extensive tracts. The battered slope edges can accommodate small changes to adapt to any unexpected volcanic rock that is encountered on site, without any negative impact on the design intent.



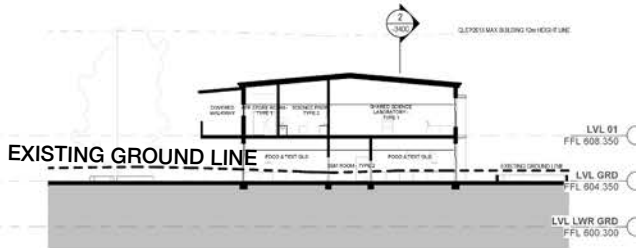
Building A - Cross Section



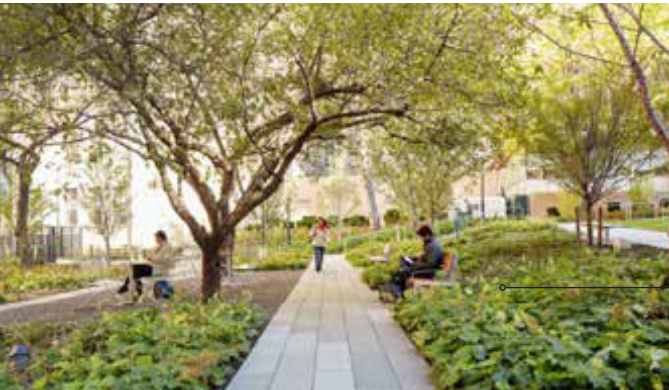
Building A - Section Through East-West Wing



Building A - Section Through North-South Wing



Building A - Cross-Section Through East-West Wing



Precedent Image - Battered Slope

PLANTED GREEN BATTERS USED TO NEGOTIATE LEVEL CHANGES IN THE LANDSCAPE, WITHOUT CREATING VISUAL BARRIERS



Precedent Image - Tiered Seating near Courts

LEVEL CHANGES USED TO CREATE LEARNING SETTINGS, OR SEATING FOR WATCHING THE SPORTS COURTS



3D View - Lower Terrace

THE EDGE OF THE BATTERED SLOPES INCORPORATES CURVED/SOFT EDGES, GIVING FLEXIBILITY TO THE DESIGN

THE LOWER TERRACE IS GENEROUSLY PROPORTIONED



Precedent Image - Slides

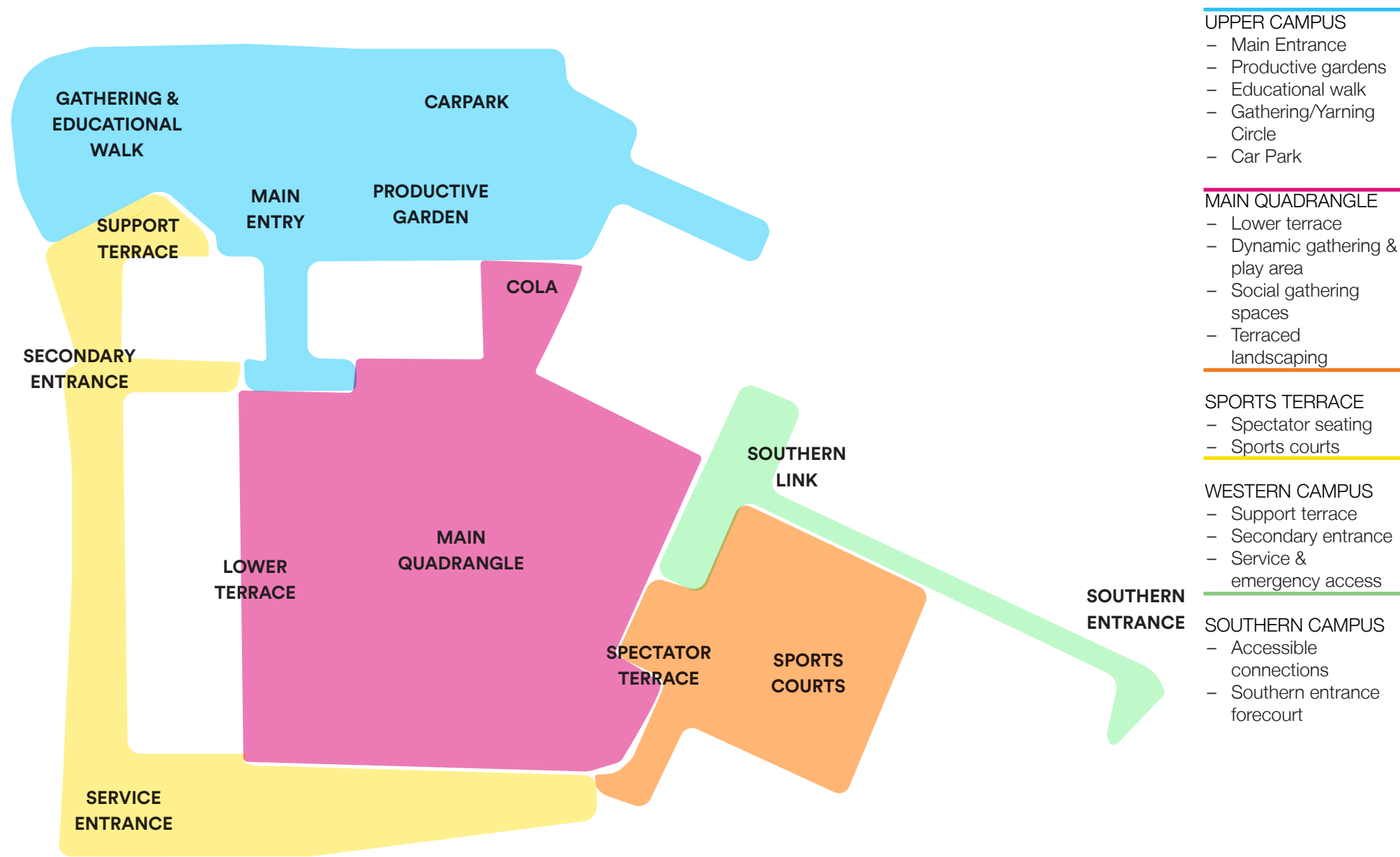
LEVEL CHANGES USED TO CREATE OPPORTUNITIES FOR PLAY AND SOCIAL INTERACTION

3 Landscape

A Holistic landscape masterplan and design has been developed by Context Landscape Architecture.

A Landscape Design Report has been prepared for this EIS which contains detailed information on the landscape strategy and its components, including hardscape and softscape elements.

An overview of the landscape structure is included here for reference. The diagram to the right summarises the distinct landscape zones provided throughout the school. Refer to the legend for information on the components within each zone.



Landscape Structure
Source: Context Landscape

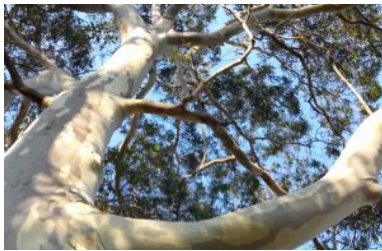
The landscape approach has been integrated into the first principles of the master plan, which is particularly important for this site.

The landscape design is guided by four lenses, which are:

- Identity
- Access
- Green Amenity
- Diverse Spaces

The landscape design is also guided by best practice guidelines, including but not limited to:

- Educational Facilities Standards and Guidelines (EFSG), Department of Education
- Better Placed Design Guide for Schools, Government Architect NSW
- Better Placed Environmental Design in Schools, Government Architect NSW
- Everyone Can Play - A Guideline to Create Inclusive Play Spaces, Department of Planning and Environment
- Connecting with Country (Draft), Government Architect NSW



Identity

Establish a strong sense of identity for the new campus by providing strong connections to the landscape character of the site. The landscape design incorporates Connection with Country design opportunities, this strong identity will help to instill pride in the school, its grounds and in the community.



Access

Provide spaces that are inclusive, accessible and well defined through the use of sight-lines, materiality and the establishment of strong visual axes. Include a range of level change transitions, from the direct to the meandering links. All places will be well connected and encourage both recreation and rest, to foster exploration and curiosity through using biophilic design principles.



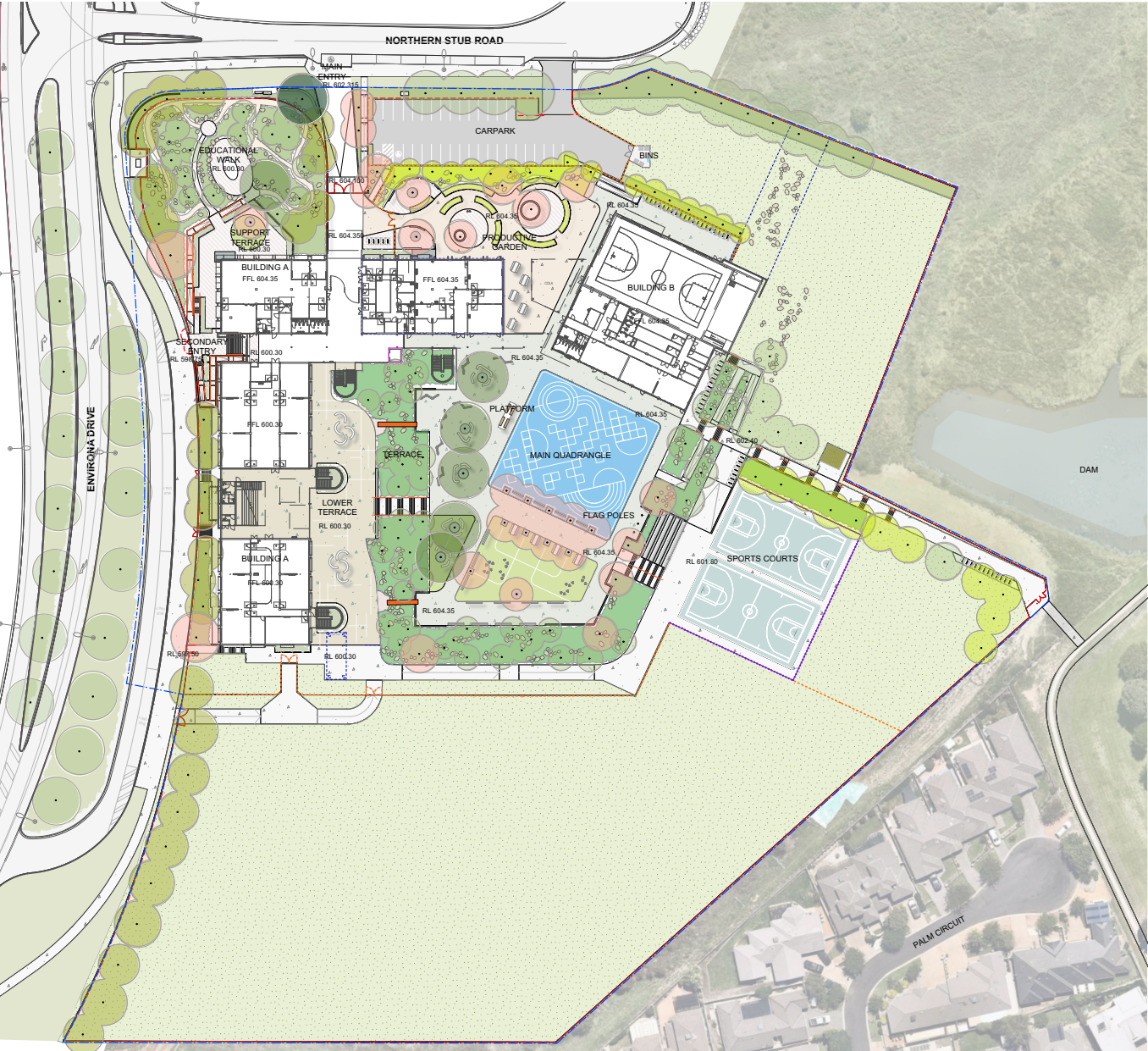
Green Amenity

Create spaces that are soft, greener and have a strong connection to nature. Outdoor learning spaces will incorporate technology, water sensitive urban design and flexible furniture to provide an innovative and progressive campus environment.



Diverse Spaces

Provide diverse spaces on the campus to encourage a range of activities for the students. Including areas of respite and foster moments of curiosity. This is executed through a variety of spaces designated for individual study, small groups and large classes as well as passive and active recreation.



Landscape Plan
Source: Context Landscape



4 Connection with Country

The Ngunnawal and Ngarigo people are thought to have occupied the area of Jerrabomberra.

The new High School has been developed to respond to GANSW's Draft Connecting to Country Framework and through consultation with Aboriginal Educational Consultative Group (AECG) and traditional land owners, to create a strong, place driven identity that will help instill pride in the school and community.

So far, the design team has met with local Indigenous representatives on site twice, to walk on Country and also to discuss design progress. This is in addition to consultation related to the preparation of the ACHA.

A summary of discussion points from the initial walk on Country is provided in the table to the right.



Photo from site meeting on 7.4.2021

A strong support for the development and its response to Connecting with Country were key outcomes from the consultations with Ngambri Elder Woman, Dr Matilda House and the AECG.

AECG Recommendations	Design Team Response
Ridge lines in the distance are important and could be considered or referenced in the design. In winter, the ridge lines are snow-capped.	The buildings step down the site, following the natural topography. This also allows views out from the buildings to the south, where the ridge lines can be seen. In terms of aesthetics, the alpine landscape is reflected in the muted colour palette, which combines silvery tones and deep teal tones. This could be further explored in later design stages, once the school's graphic overlay is conceived.
Main school entrances should be wide enough for people to gather.	The main school entrance includes a forecourt area which is around 9m wide, and incorporates planting, low walls, seats and bicycle storage. It is visible from the school Administration area.
Abundance of stone on site – probably basalt - Opportunity to store on site & use throughout the design. The rocks are important and should be celebrated.	The landscape design incorporates the use of rocks which are found on site. They are used extensively as part of the Educational Walk, and within the battered slope in the main playground.
Proposed external pavements could be used for integration of Indigenous design – could incorporate patterns by engaging with a local artist	The landscape design included coloured concrete and synthetic play surfaces that could incorporate patterns designed by a local artist. A range of colours and locations has been allowed for.
Use of natural materials in the pavements and design critical to establish link to the country/site & community.	Natural materials for pavements are used where possible, however the scope is somewhat limited to accessibility requirements for schools. Concrete pavements can include exposed aggregate that is in keeping with local stone colours, and decomposed granite walkways can also reflect these materials.
Site fencing needs to consider the impact to the indigenous community. Historical impact of children being taken from schools as part of the stolen generation and the institutional feel fencing invokes. Fencing could be located in planting to soften, painted black to recede into the landscape & where possible use the building as the secure line.	Fencing has been located in planting, rather than being immediately on the site boundary, and has been specified as being black.
Creation of a 'yarning circle' in the landscape shown on the north-west corner site corner was suggested. Could use rocks excavated from the site.	A yarning circle has been added into the design in the location suggested. It includes rocks from the site.
Opportunity for art in the architectural form could be considered.	The external metal screens have been designed with a folding pattern inspired by the local moths.
The Golden Sun Moth is significant to the site and should be referenced, habitat provided and opportunity for interpretation. In January and February, Bogong moths come out of the rocky outcrops visible in the distance from the site.	The Bogong moth has been used as the departure point for the design of the folding metal screens.
References to Country need to be integrated throughout the whole site – not just in the northern street frontage/ north-west street corner	Awareness of Country is fully integrated throughout the scheme, with the high point of the site being the key strategic driver to how the buildings have been located on site. This is supplemented by materials choices, colour palettes, and will be further expanded via graphic design overlay and naming of buildings, once these aspects are developed.
The site was unlikely to have been heavily treed in the past – more alpine type plants. Trees would have been Yellowbox and Stringybark. Trees proposed beside the quadrangle: need to have places to sit under them. Sitting under trees is important, especially if it can be near water.	Places to sit under trees are included in the landscape plan in a variety of locations, including beside the main quadrangle.

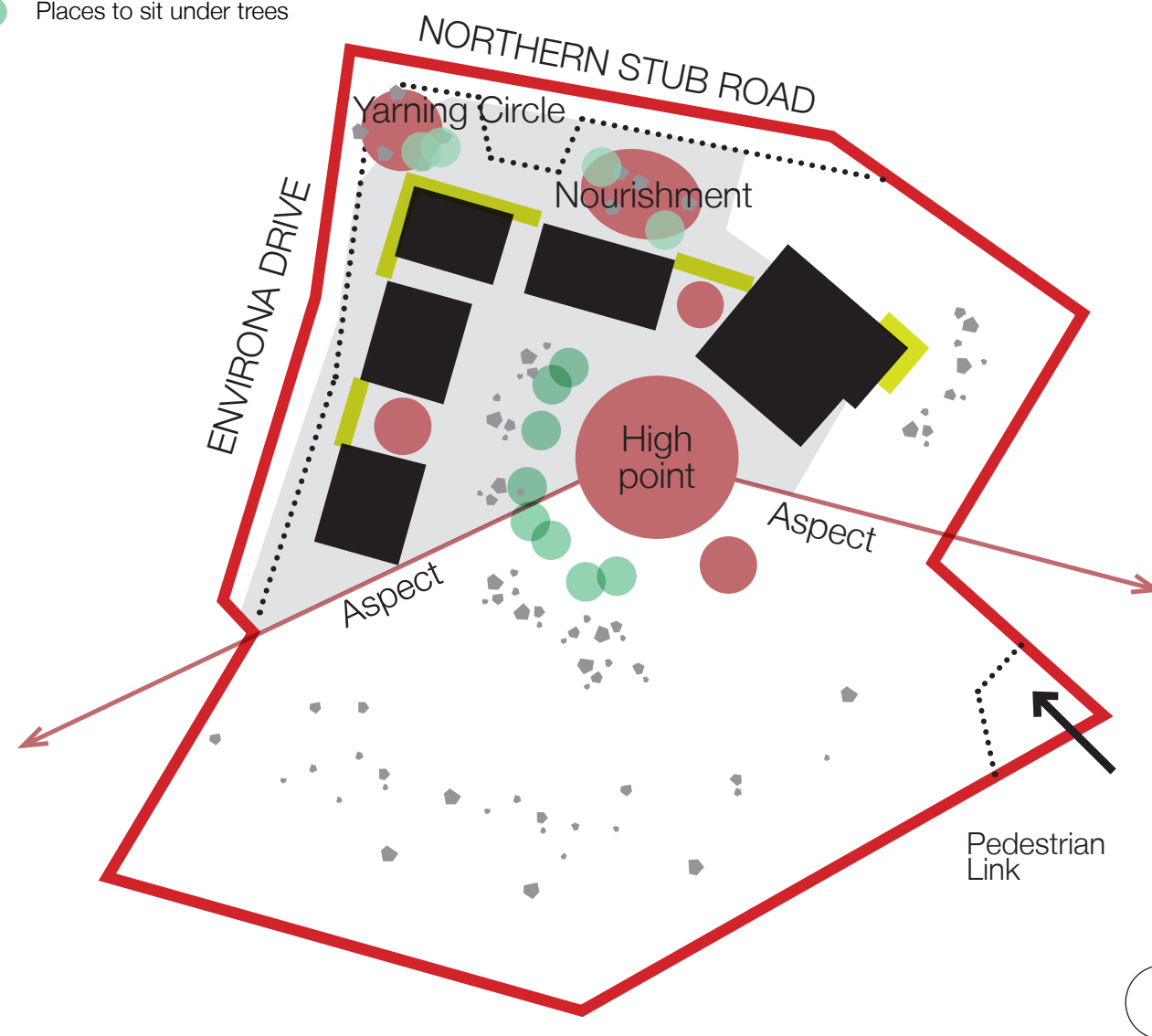
Site Planning + Country

Having a number of places to gather, and a variety of places, was identified during the consultation as being very important. In the diagram below, important gathering spaces are indicated by red dots and include the main quadrangle, the productive garden and the yarning circle, the tiered seating adjacent to the sports courts, the covered outdoor learning area in between the two main general learning neighbourhoods, and the main COLA space outside the hall.

Trees, and places to sit under them are also important. The Landscape Design Report includes a canopy plan with more detail, however on this diagram the green circles indicate where canopy is associated with gathering spaces.

Site rocks were identified during the walk as being important and something that should not be taken from site, so these are integrated into the landscape design in several zones, with flexibility in their scope so that it can be adjacent according to what is actually found during construction.

- Site Boundary
- Location of moth motif
- Security fence with green buffer in front
- Rocks found on site
- Places to gather
- Places to sit under trees



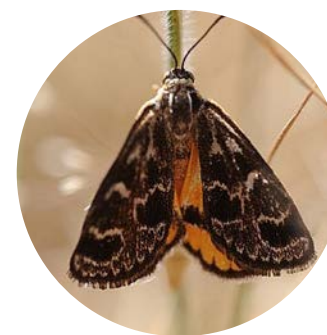
Site Plan - Opportunities for Connecting with Country

Importance of Moths

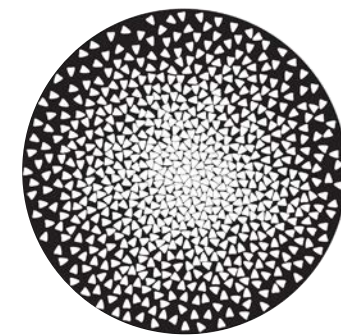
Moths were strongly emphasised as being important to the area, and the subject of local stories – ancient stories and modern ones too. There are two important moth species – one is the bogong moth and one is the golden sun moth. Moths breed in the nooks and crannies of the distant ridgelines and then descend on the local area en masse. The design uses this event as a point of inspiration, with the moth proposed as a design motif which drives the design of the metal screening. The image on the bottom right was an early development of this, showing the moth clustering on the corner of the building. The screen is a perforated metal, with varying degrees of solidity. The moth type variations are also diagrammed here, indicating variations in transparency and folds integrated into the screen.

The moth clusters are located at key locations around the school, indicated on the site plan diagram on the left, by the lime coloured stripes. The locations include the main street corner, main entry, secondary entry, and COLA.

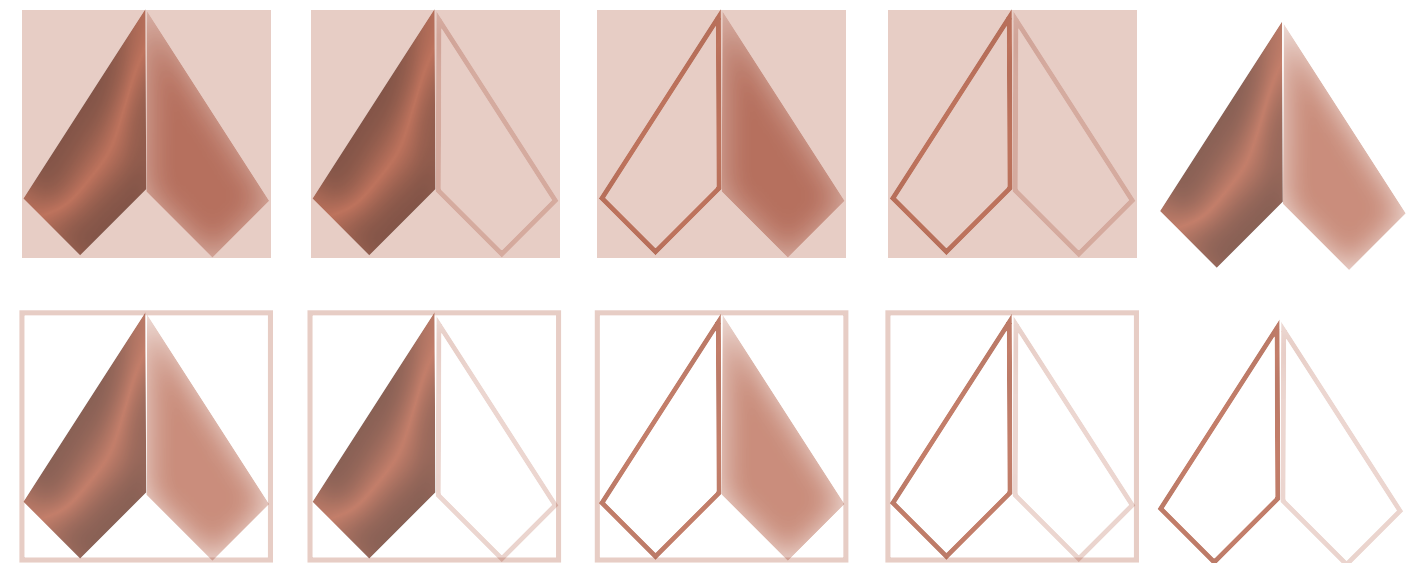
The moth types also allow for a scattering of individual moths scattered in other locations.



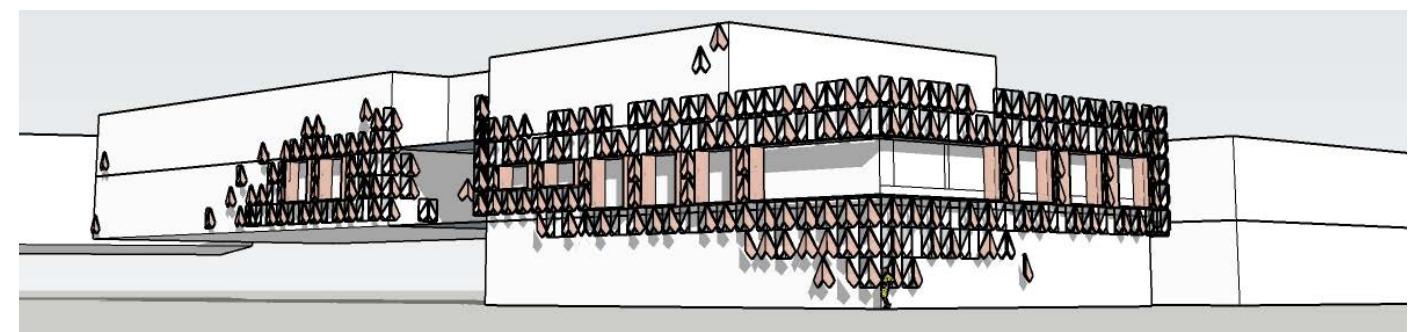
Golden Sun Moth



Moth Cluster



Concept for Moth Type Variations in Metalwork

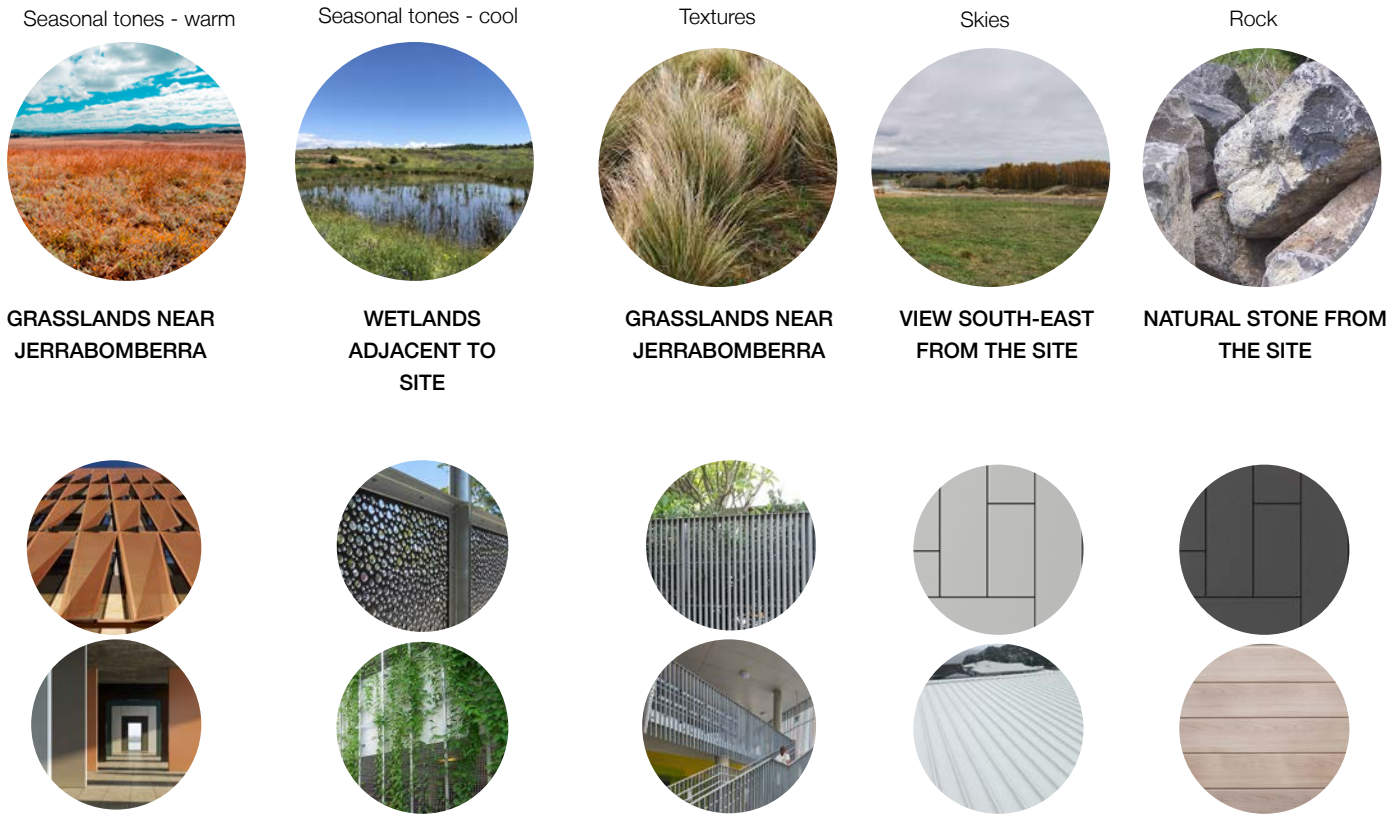


3D View - Concept for Moth Clusters on Proposed Buildings

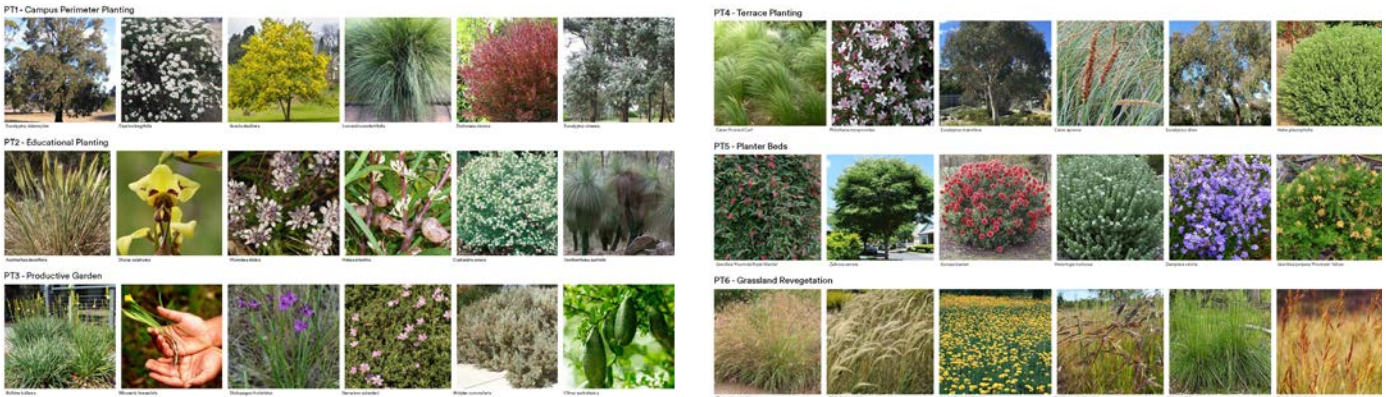
Materiality

The materials palette is based on the local landscapes and how they change through the seasons.

The planting palette is another opportunity for engagement with local knowledge and Country. A schematic palette has been prepared based on desktop research, however it will be refined collaboratively during the detailed design stage.



Relationship Between Proposed Materials + Country



Schematic Planting Palette

Further Opportunities for Engagement

Engagement with local Indigenous representatives will be ongoing. The project team is expecting to undertake specific engagement and collaboration on the following items, as a minimum:

- Design resolution of the moth motif to engage with local artists
- Opportunities for engagement with artists, such as coloured pavements, and design of decals on skylights and entrance doors
- Naming of buildings, spaces and places around the school
- Design of signage and wayfinding
- Resolution of the final planting palette



Precedent for wayfinding signage



Signage to be designed in collaboration with local artists [indicative precedent image only]



Precedent for using light as artwork: *Bogong Cluster*. *Physically distant, socially connected*

2020 Jonathan Jones

[indicative precedent image only]



Concrete in entry forecourts and main COLA to incorporate artworks [indicative precedent image only]

F Sustainable, Efficient and Durable

F Sustainable, Efficient and Durable

Principle 2 | Sustainable, Efficient and Durable

Good design combines positive environmental, social and economic outcomes. Schools and school buildings should be designed to minimise the consumption of energy, water and natural resources and reduce waste and encourage recycling. Schools should be designed to be durable, resilient and adaptable, enabling them to evolve over time to meet future requirements.

Design Quality Principle 2, Schedule 4, Education SEPP

1 Ecological Sustainable Development (ESD)

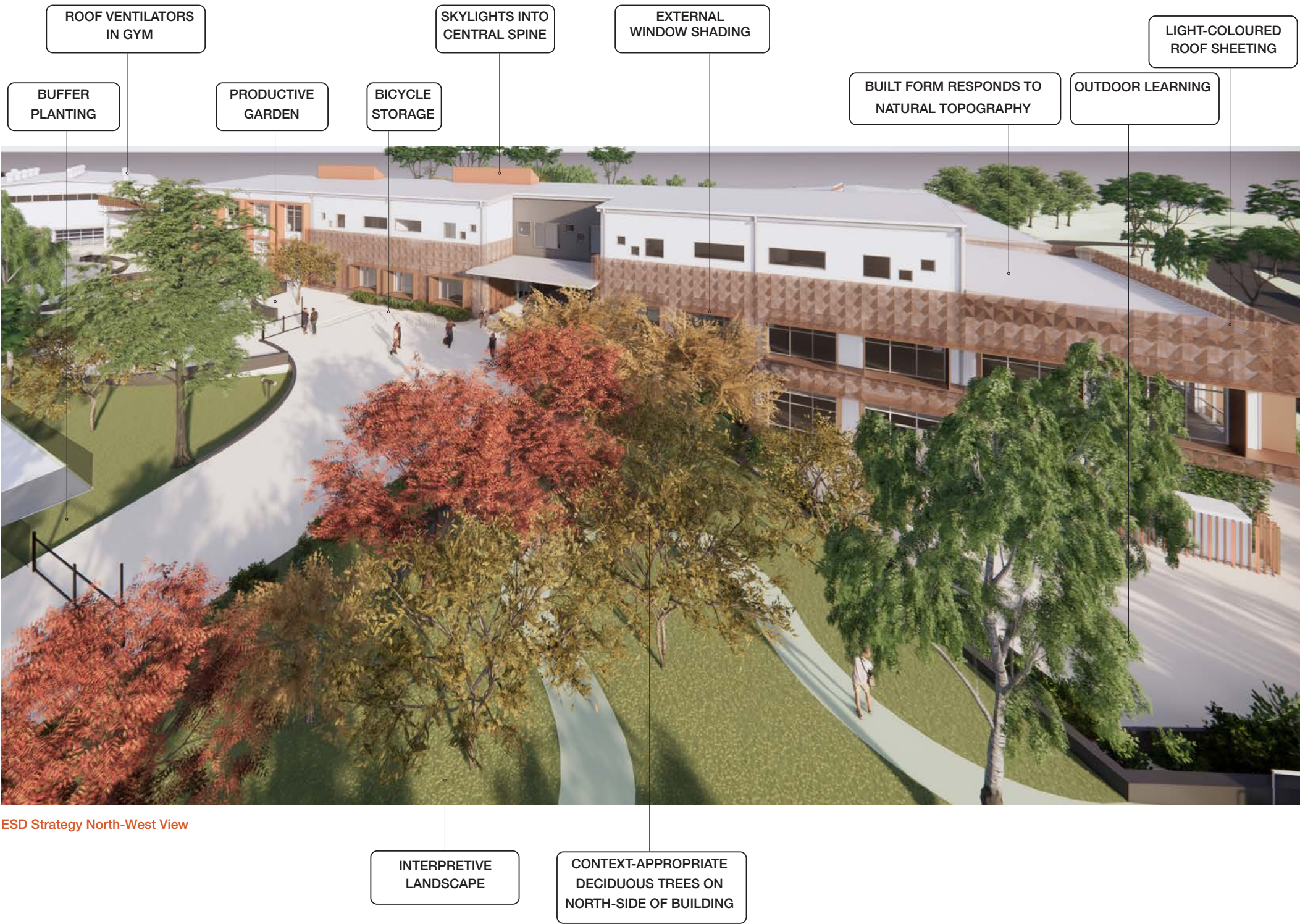
The project has been developed using the principles of ESD and has been assessed against a suitable accredited rating framework - Greenstar. The project is expected to achieve a high level of environmental sustainability and is targeting a 4 Star rating, which is deemed to represent an Australian Best Practice development.

These ESD principles adopted for the project will contribute to the conservation of resources and future resilience across the whole life cycle of the project; from construction, through to the operational phase.

An ESD Report has been prepared by NDY for this EIS, and includes ESD strategies and recommendations for the development.

MMoC

The project is to be delivered via Modern Methods of Construction in line with SINSW DfMA (Design for Manufacture and Assembly) Guidelines. The DfMA Guidelines have been developed to facilitate and contribute to the DoE's sustainability objectives and 'Sustainability Pillars of the Department of Education'. The DfMA approach has been identified to improved sustainability through reduced CO2 emissions, material and water waste; improve health, safety and productivity; as well as make design efficiencies and allow for future adaptability and flexibility.



2 Passive Design

The project is designed to use passive design principles to reduce the energy demand of the buildings in operation and improve indoor environment quality and thermal comfort for students and staff.

The project proposes the following passive design principles:

- Design of facades that respond to the local climate including sun, wind and aspect to minimise peak heat loads in summer and use passive heating in the winter.
- High levels of daylight through skylights and windows.
- Line of sight to high quality external views and visual amenity
- High performance glazing
- High levels of thermal insulation
- Vertical and horizontal sunshades
- External materials that are robust, light weight, durable and low maintenance
- All paints, sealants, adhesives, floor coverings and composite timbers used internally will be low VOC.
- Engineered wood products to meet formaldehyde limits
- Acoustic separation between different spaces

3 Energy Efficiency

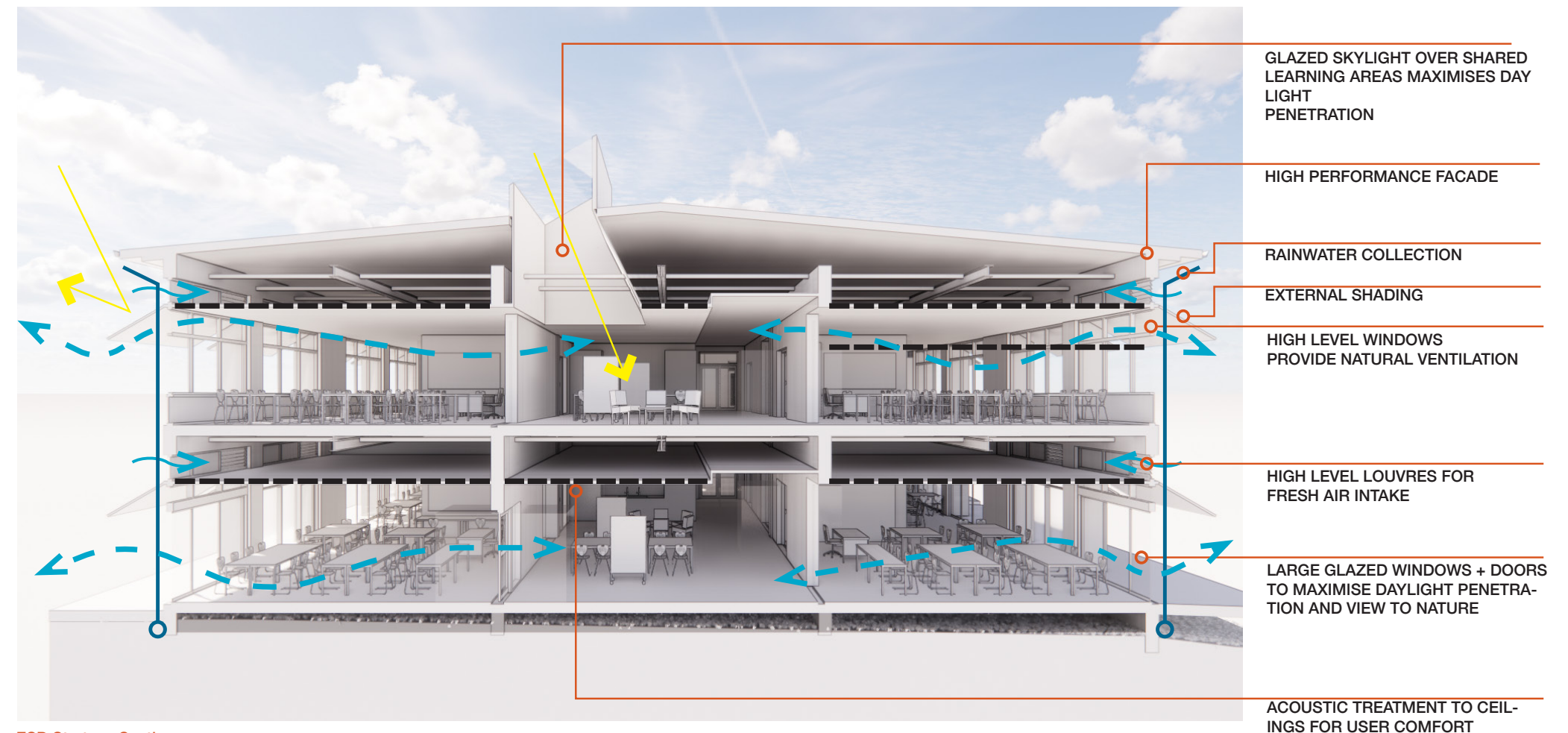
The following energy efficient initiatives are proposed for the project:

- Energy modelling demonstrating a reduction in energy consumption of the proposed building compared to a reference building.
- Use of natural ventilation and energy efficient mixed-mode air conditioning to provide high indoor air quality with reduced energy input. The mechanical system will incorporate heat recovery.
- Energy efficient lighting and smart control systems.
- Energy efficient hot water system.
- Metering and monitoring of all services so that they can be managed efficiently.
- Roof top PVs to reduce the peak electricity demand
- Elimination of the use of gas for heating and cooling (all-electric services)

4 Water Efficiency

The following water efficient initiatives are proposed for the project:

- Water efficient fixtures and fittings (high WELS ratings),
- Rainwater collection from the roof and stored for use on-site (landscaping irrigation, toilet flushing) to reduce potable water consumption
- Landscape design predominantly specifying native species, for reduced water requirements



ESD Strategy Section

5 Waste and Recycling

The following waste and recycling initiatives are proposed for the project:

- Best practice waste management principles in operation, and construction and demolition waste diversion from landfill
- Opportunity to Engage a qualified waste auditor to undertake a waste audit of the site to determine waste and recycling streams and generation rates
- Incorporation of separate bins for waste and recycling for separation of waste streams.

A Construction Waste Management Plan (CWMP) and Operational Management Plan (OWMP) report have been prepared for this EIS.

6 Transport

Active transport and sustainable transport strategies include provision of good end of trip facilities (e.g. secure bike parking, showers and lockers for staff and change facilities for students) to encourage active transport.

These are located near the school main entrance from the Northern road. Additional bike parking is also provided adjacent to the secondary entrance at the eastern site boundary from David Madew oval to encourage active transport through direct, legible connections to the adjacent neighbourhoods.

Convenient and generously proportioned western entrance to the bus bay area. The bus bay also includes a 6m wide pavement for students to wait.

The existing bus network will be expanded to serve the existing public school and new high school.

G Accessible and Inclusive

G Accessible and Inclusive

Principle 3 | Accessible and Inclusive

School buildings and their grounds should provide good wayfinding and be welcoming, accessible and inclusive to people with differing needs and capabilities.

(Note. Wayfinding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space.)

Schools should actively seek opportunities for their facilities to be shared with the community and cater for activities outside of school hours.

Design Quality Principle 3, Schedule 4, Education SEPP

1 Accessible Campus

Due to the complexity of the existing site topography, accessibility has been a key driver behind the design of the new high school.

The ground floor level has been set based on the contours of the northern stub road. This means that the main entrance to the school can be reached via a gently (1:21) walkway leading from the street to the visitor and student receptions.

Several of the key outdoor play and learning areas have also been based on this RL, including the main quadrangle, the productive garden, the hall COLA and the canteen COLA.

The lower ground floor has been designed to allow an accessible connection from the bus bays into the school. A 1:14 ramp connects the footpath at the bus bay into the Lower Ground floor.

The open space is divided into an upper playground (ground floor) and lower playground (lower ground floor). The upper playground has level access from the Administration, Library, Food Technology, Gym, Canteen and PE/Performance Units.

The lower playground has level access from the Support Unit, Visual Arts, Materials, Wood and Metal, and Outdoor Workshop units.

In between the two main playground levels, a range of landscapes spaces are provided, which are wheelchair accessible wherever possible. A series of 1:33 and 1:21 walkways wrap around the southern and eastern sides of the upper playground, creating an unobtrusive connection from the lower playground, past the sports courts, and up to the hall. When a more direct route is preferred, the lift can be used.

The north-west corner of the site is complex in topography, however selected areas of the Educational Walk, and the entirety of the Yarning Circle are fully accessible in this zone.

The productive garden, adjacent to food technology, is also fully accessible.

Student and staff amenities are accessible on all storeys.

For vehicular access, there are 2 x accessible car spaces provided in the car park, and 1 x accessible car space provided in the kiss-and-drop. These three spaces are all the most proximate to the main pedestrian entry to the school.

2 Accessible Buildings

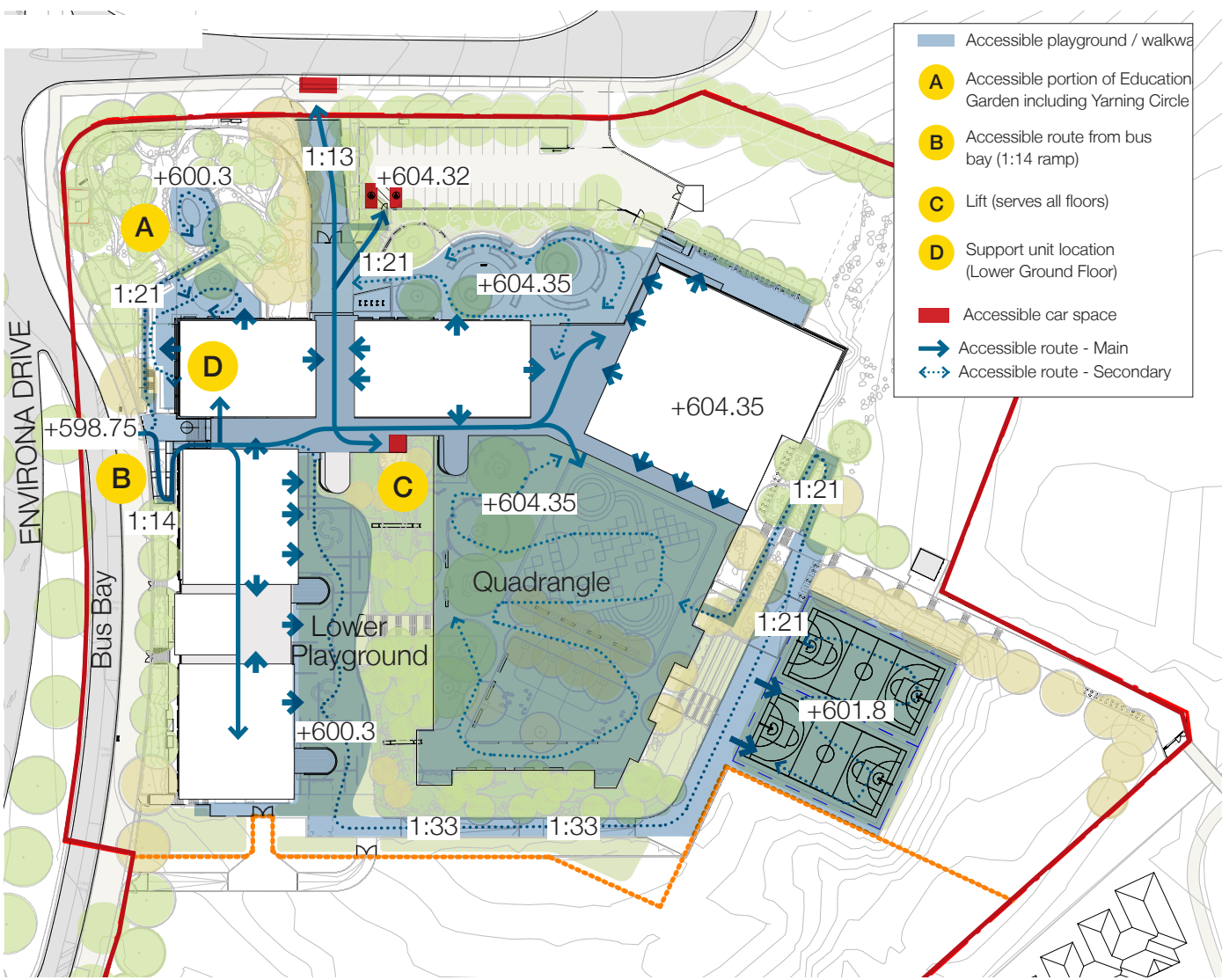
The new high school campus will provide access for people with a disability and provide a continuous accessible path of travel, clear way finding guidance and the equitable provision of accessible facilities.

New building work will be designed in accordance with the Building Code of Australia (BCA), the relevant Australian Standards (AS 1428, AS 2890.6, AS 1735.12) and the Disability Discrimination Act's obligation of equitable and dignified access. This project will be designed to AS 1428.1 – 2009 and AS1428.2 - 1992.

Hearing augmentation will be required in spaces provided with an inbuilt amplification system.

Access provisions that will be provided include:

- Walkways and ramps provided in accordance with AS 1428.1.
- Stairs provided in accordance with AS 1428.1, including contrasting slip resistant nosings, tactile ground surface indicators and handrails both sides of stairs.
- Minimum clearances provided through doors of 850mm.
- Minimum circulation widths and clearances at doors provided in accordance with AS 1428.1.
- New doors must have a luminance contrast of 30% provided around doorways in accordance with AS 1428.1.
- All new door hardware is to be lever action.
- Visual indicators provided on full height glass windows and doors.
- Switches and controls located between 900mm and 1100mm and no closer than 500mm from internal corners.
- Accessible toilets and ambulant facilities provided in accordance with AS 1428.1.
- Signage in accordance with AS 1428.1.



Accessibility Strategy

3 Community Engagement and Use

The Department of Education have conducted community engagement and liaison with the Jerrabomberra community and Queanbeyan Palerang Regional Council throughout the project's development to understand and address issues raised.

Key issues have included:

- Site selection
- Impact of the new school on community facilities such as the David Madew Oval
- Traffic Management

A summary of the DoE's community engagement is listed below:

- A project update was produced and distributed to the local community in November 2020 – similar project

updates will continue to be issued to residents to provide ongoing information on the project's progress as project milestones are reached.

- The Department's 'community consultation hub' was deployed in November 2020 in nearby Googong to facilitate one-on-one consultation with the community – the hub was promoted through social media, print media and a targeted email campaign
- All registered attendees to the hub were able to participate in a survey - a post survey project update is being prepared that details the findings from the 695 people that completed the month long survey in November 2020.

The project seeks to further connect with Traditional Custodian's through a number of opportunities which include the integration of interpretive signage, artwork, place names, educational opportunities, cultural practices and cultural land management.

4 Wayfinding Signage Strategy

A wayfinding strategy is to be provided for the project to ensure the new school campus is legible and to enhance the understanding and experience of the new development. The signage strategy will be developed to comply with the DoE EFSG which outlines wayfinding and safety signage requirements. Below is a list of signage types that form part of the school's wayfinding and identity. It should be noted that statutory signage is excluded from this list, but will be required to be provided.

4.1 Entry Signage

A feature sign will be positioned at the street corner of Environa Drive and the northern stub road. This will be large enough to be legible to people driving past the school on Environa Drive.

Smaller signs, but of matching materiality and design, will be positioned at the main pedestrian entry on the northern stub road, at the bus bay entry, and at the eastern entry from David Madew Oval.

4.2 Digital Noticeboard Sign

A digital noticeboard sign will be provided facing Environa Drive, for the school to display key dates, events and messages.

4.3 Directional Signage

Maps and markers will be provided at key locations throughout the campus, directing people to key nearby buildings such as Administration, Amenities and the Gym. Inside the buildings, similar signage is to be provided.

4.4 Interpretation and Identity Signage

A graphic overlay for the school will be developed during detailed design. This overlay will interpret Country, and also form part of the school's identity.

4.5 Building Identification Signage

Each building will be labelled (for example, Building A North), and then the key spaces within them will be labelled (for example, Canteen).



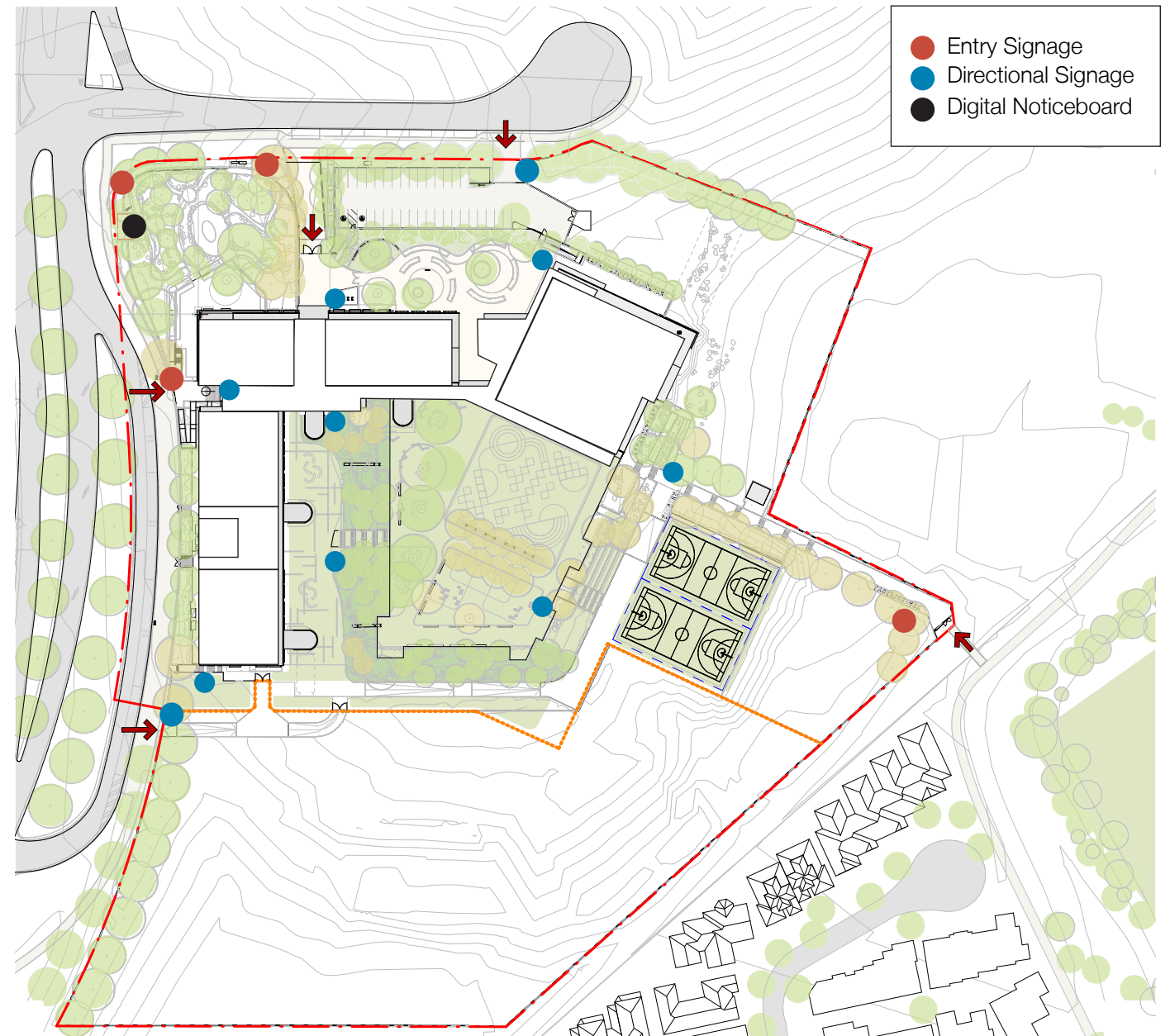
Precedent Image for Interpretative Signage
Source: TKD Architects



Precedent Image for Directional Signage
Source: TKD Architects



Precedent Image for Building Identification Signage
Source: TKD Architects



Key Entry Signage and Wayfinding Signage Locations
Source: TKD Architects



Precedent Image for Entry Signage



H Health and Safety

H Health and Safety

Principle 4 | Health and Safety

Good school development optimises health, safety and security within its boundaries and the surrounding public domain, and balances this with the need to create a welcoming and accessible environment.

Design Quality Principle 4, Schedule 4, Education SEPP

1 Healthy Buildings

The new High School in Jerrabomberra proposes to optimise natural ventilation and natural light while balancing thermal comfort and energy efficiency to benefit the health and well-being of building occupants.

Indoor products such as paints, sealants, adhesives, floor coverings, composite and engineered wood products will be specified to meet low VOC and formaldehyde limits.

Biophilic design principles have been considered from early on in the concept, with skylights for viewing the sky, trellises for bring plants onto the buildings, and a materials palette based on the surrounding landscape colours.

2 Pedestrian Amenity

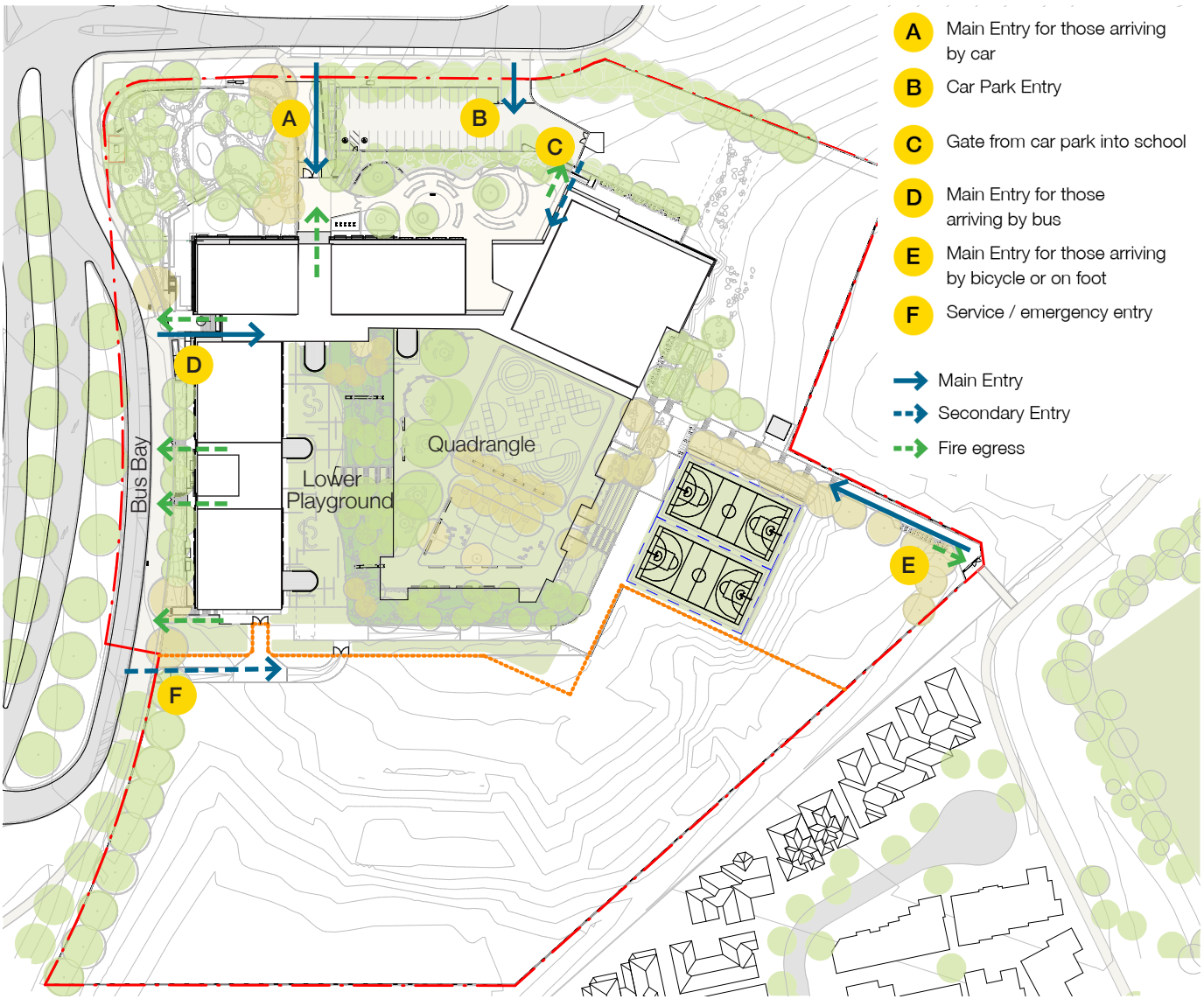
The high school campus is proposed to be a pedestrian friendly campus where priority is given to pedestrians. A clear hierarchy has been established across the campus to minimise potential conflicts.

Generous pedestrian entries are positioned based on desire-lines and the natural site topography. These tie in to important spaces within the school, such as Administration and the Library.

The new landscaped spaces are designed to respond to the 4 landscape principles of identity, access, green amenity and diverse spaces. Key features include avenue planting, low height walls for informal seating, semi enclosed outdoor learning areas, vegetated garden beds, shade trees, open play space, turfed embankments and tiered seating.

Covered walkways, covered outdoor learning spaces and canopy tree's throughout the campus provide protection from the sun and rain.

Bicycle parking enclosures and unsheltered hoops are provided at the northern and eastern school entrances. End of trip facilities are provided for staff within the staff unit and for the students within hall changing amenities.



Entry Points



Perspective of Entry Forecourt

3 Car parking and Servicing

The car park is located at the north of the site, which is readily accessible from the northern stub road. Enviro-na Drive is fully occupied by the bus bays, and also is unlikely to be suitable for staff vehicular access into the school.

The car park is securely fenced, with planting around the outside of the fence as a visual buffer. 34 staff car spaces are provided, including 2 accessible car spaces. The accessible car spaces are located at the north-west corner of the carpark, which is the closest point in the car park to the main pedestrian entrance of the school.

The waste collection area is also inside the car park, incorporating adjacent to main entry for ease of collection.

Deliveries to the canteen, gym, food technology and administration can all occur from the car park.

Deliveries to the Wood and Metal Workshop are better served from the bus bay, via a temporary loading zone for use only when buses do not require use of the bus bay.

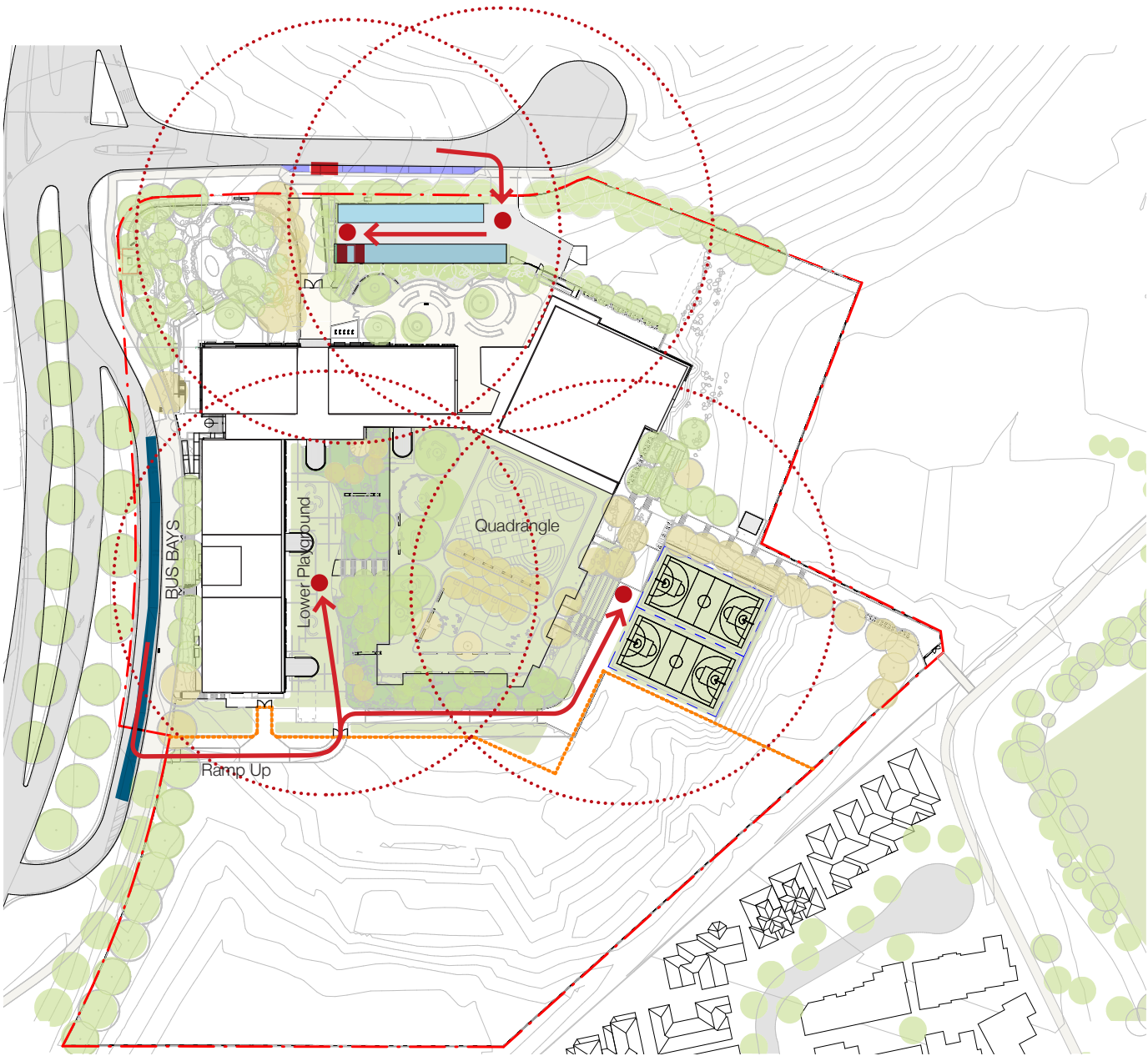
Emergency vehicular access is also provided to the site. Two entrance points are provided due to the division of the playground into “upper” and “lower” levels. These locations are shown in the diagram to the right.

4 Crime Prevention Through Environmental Design (CPTED)

The proposed High School in Jerrabomberra incorporates Crime Prevention Through Environmental Design (CPTED) to create a safe and secure environment that encourage activity, vitality and viability, enabling a greater level of security. The design incorporates the four main principles of natural surveillance, access control, territorial reinforcement and space management:

- The campus is typically located within secure private grounds and protected by a 2.1m high palisade fence and gates. Fencing lines have been set back from the boundary with low level planting in front, so that their visual impact is reduced.
- The school is naturally surveilled from within the school campus by staff who will be using the facility at all times when the school is open.
- Within the school, all spaces will be supervised by the school staff at all times when being used.
- The staff administration area and public reception is located adjacent to the northern stub road entrance.
- The entry forecourts are design as high quality spaces with the opportunity for the public and students to gather.
- There are views across the school play areas from the high school site and school buildings.

- External lighting will be provided to illuminate external spaces and avoid dark shadows.
- Clear sightlines of the building have been maximised and landscaping designed so as to not obstruct surveillance.
- The school will be well maintained and will be highly used.
- The school will be provided with an integrated system of security cameras and alarms in accordance with DOE requirements.



Vehicular Access
Source: TKD Architects

- Accessible car space
- Shared zone
- Car space
- Car pick-up/drop-off
- Bus pick-up/drop-off
- Route for emergency vehicle access
- End of emergency vehicle access route
- ⋯ 60m radius from emergency vehicle

I Amenity

I Amenity

Principle 5 | Amenity

Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.

Schools located near busy roads or near rail corridors should incorporate appropriate noise mitigation measures to ensure a high level of amenity for occupants.

Schools should include appropriate, efficient, stage and age appropriate indoor and outdoor learning and play spaces, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage and service areas.

Design Quality Principle 5, Schedule 4, Education SEPP

1 Amenity to Neighbours

The school has been designed to have a considerate and desirable visual impact on the neighbouring streets and communities. Its massing has been minimised and based on the natural topography, and its form has been broken down into proportional elements. The materials palette ties into the natural landscape.

2 Visual Privacy

The new buildings are located away from neighbouring residential properties. New timber lap and cap fencing to the adjoining residential boundaries and a landscape buffer will be provided.

Views out from the building focus on the grasslands to the west and south-west, and on the school playgrounds to the east and south-east.

The land to the north of the site rises up, and so the fall of the land limits the distance of views possible in that direction.

The buildings are expected to reflect the setbacks and scale that will be generated by the future commercial buildings associated with the Poplars development area.

3 Visual Amenity

The new buildings are located away from neighbouring residential properties.

The predominantly 2 storey height of the buildings are in keeping with the town's character and scale. The roof eaves typically comply with the LEP 8.5m and 12m height limits and a shallow roof pitch minimises any additional

height impact.

Large landscaped setbacks are provided between the new buildings and adjacent site boundaries, retaining the open character of the surroundings reducing overall bulk and scale and providing a high quality streetscape and public spaces.

The buildings have been articulated via breaks in the facade, materiality and sunshading, which all work to break down the building scale and create a finer grain aesthetic.

4 Shadowing

Shadow diagrams have been prepared for the proposed development. These diagrams largely demonstrate that the shadow impacts of the proposed development to neighbours have no adverse impact throughout the year.

Summer Solstice 21 December

The shadow diagrams show that the proposed High School in Jerrabomberra has no shadow impacts to neighbours.

Winter Solstice 21 June

The shadow diagrams show that the proposed High School in Jerrabomberra has no shadow impacts to neighbours.

Refer to the Shadow Diagrams for further information.

5 Wind Impacts

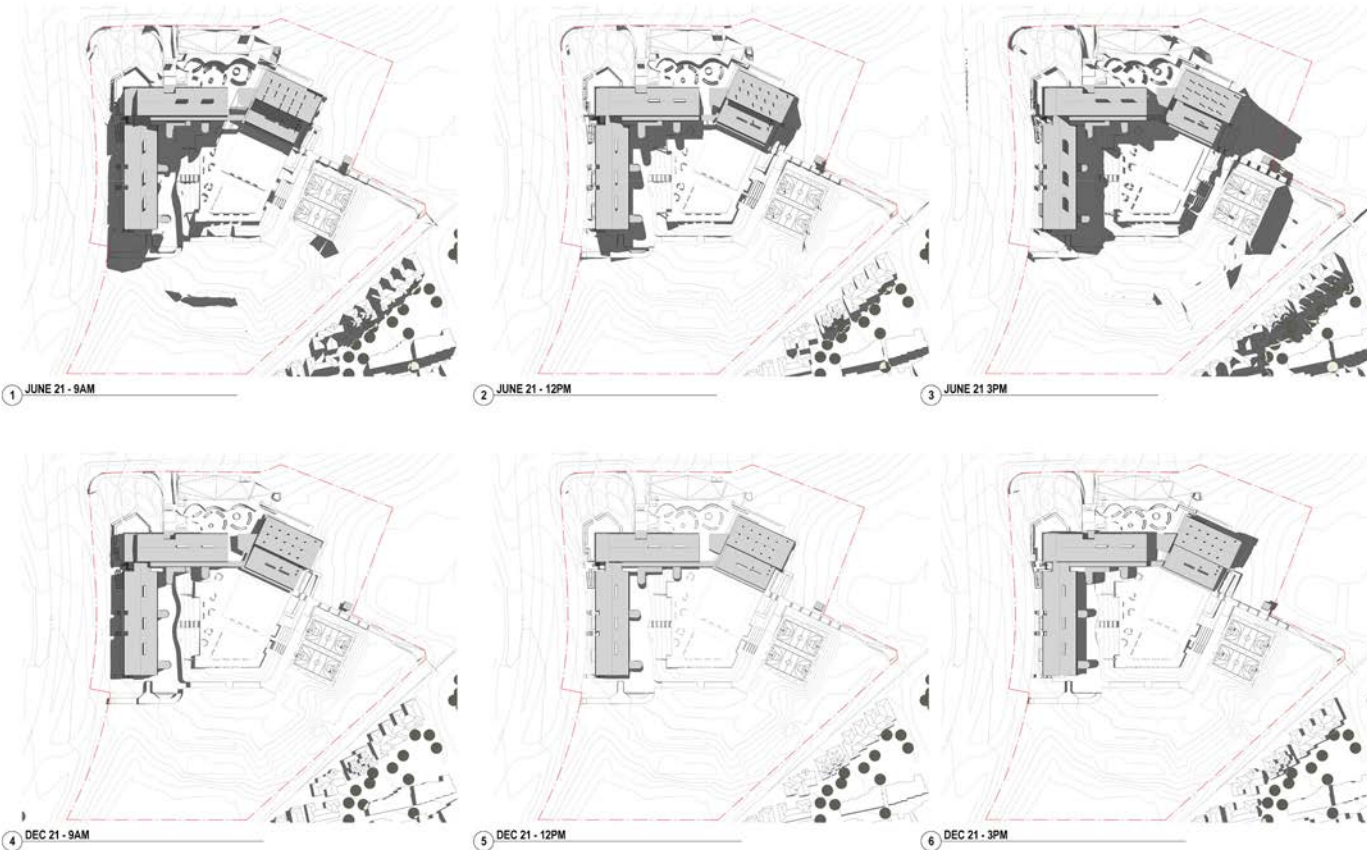
The project is not expected to have any wind impacts to the surrounding locality.

6 Acoustic Impacts

A Environmental Noise and Vibration Assessment prepared by Acoustic Logic has been prepared for the EIS. The report summarises that the proposed new High School in Jerrabomberra generally complies with the Educational SEPP criteria and will not impact adjacent residences.

It makes recommendations around school operations, external plant, external speakers, ground maintenance and waste collection.

The report also summarises the expected impact of nearby Canberra Airport and recommends that buildings be constructed in accordance with AS2021-2015.



Shadow Diagrams

7 Lighting Impacts

External lighting will be provided to illuminate external spaces and avoid dark shadows. Lighting shall generally be low height, low intensity and discreetly positioned to avoid spill lighting and compliance with AS1158.1 and AS4282. Obtrusive lighting will be carefully considered during the external lighting design to ensure compliance with AS4282 in order to minimise any spill onto neighbours or to the night sky.

Section 5 of Aviation Report - Obstacle Limitation Surface (OLS) investigation, also considers lighting impacts of the development due to its proximity to the airport. The report states that the school site is located outside the 4.5 km distance from the end of the runway, hence is outside the zone within which lighting restrictions apply.

J Whole of Life, Flexibility and Adaptation

J Whole of Life, Flexibility and Adaptation

Principle 6 | Whole of Life, Flexibility and Adaptation

School design should consider future needs and take a whole-of-life-cycle approach underpinned by site wide strategic and spatial planning. Good design for schools should deliver high environmental performance, ease of adaptation and maximise multi-use facilities.

Design Quality Principle 6, Schedule 4, Education SEPP

1 Flexibility and Adaptation

The new High School in Jerrabomberra is designed to be flexible and adaptable.

Learning spaces and breakout spaces are designed with large glazed sliding doors to provide connections and opportunity for flexible learning environments that can accommodate individual classrooms or co-teaching models.

The library and hall are designed to accommodate a wider range of activities, including functions, sporting and community uses where there is a need for large indoor spaces.

The project is to be delivered via Modern Methods of Construction in line with SINSW DfMA (Design for Manufacture and Assembly) Guidelines. The DfMA Guidelines have been developed to facilitate and contribute to the DoE's sustainability objectives and 'Sustainability Pillars of the Department of Education'. The DfMA approach has been identified to allow for future adaptability and flexibility. Through use of a standardised planning grid, efficient structural grid and standardisation of room areas, flexibility is provided for a range of spaces that can be utilised for high school, primary school and specialist spaces, future proofing the ability to steer education and pedagogy towards cross disciplinary learning methods.

2 Whole of Lifecycle

The project has been designed to consider a whole-of-lifecycle approach in consideration of a wider public and environmental benefit over time.

The ESD principles adopted for the project will contribute to the conservation of resources and future resilience across the whole life cycle of the project; from construction, through to the operational phase.

Whole-of-lifecycle initiatives include:

- External materials that are robust, durable and low maintenance
- Incorporation of PV panels on the roof to supplement energy consumption
- Rainwater harvesting and reuse, reducing overall water demand
- Flexible internal planning defined by a regular planning grid

3 Future Development

The proposed facilities are designed in accordance with the DoE's Educational Facilities, Standards and Guidelines to meet the needs of the high school, with core facilities, such as the library, hall, canteen, administration and staff areas sized to suit its future needs.

The school site and masterplan allows opportunity for expansion and connectivity if additional learning spaces are required in the future.



K Aesthetics

K Aesthetics

Principle 7 | Aesthetics

School buildings and their landscape setting should be aesthetically pleasing by achieving a built form that has good proportions and a balanced composition of elements. Schools should respond to positive elements from the site and surrounding neighbourhood and have a positive impact on the quality and character of a neighbourhood.

The built form should respond to the existing or desired future context, particularly, positive elements from the site and surrounding neighbourhood, and have a positive impact on the quality and sense of identity of the neighbourhood.

Design Quality Principle 7, Schedule 4, Education SEPP

1 Relationship to the Context of the Site

The existing context is in a period of transition, due to its position within a new business park subdivision. This is discussed in the site analysis section of this report.

The building responds to the changing character by providing an urban edge to the new street frontages, and a landscape edge to the grasslands and existing residential neighbourhoods.

1.1 Characteristics of the Urban Edge

The street-facing components of the school follow the alignment of the new roads currently under construction. Neighbouring future development along these roads can be expected to follow a similar alignment. Further, the buildings heights can also be expected to be similar, since the same LEP height limits will apply.

1.2 Characteristics of the Landscape Edge

The grasslands and neighbourhood-facing components of the school are occupied by outdoor play space, outdoor learning, sports courts and other landscape facilities. The arrangement of buildings opens out to this landscape, and protects it from the future traffic that could be expected on Environa Drive once it is complete.

1.3 Articulation

The elevational treatment of each building across the campus considers the issues of bulk and scale, with a series of breaks in the building, verandahs, external stairs and facade treatments which bring a fine-grain appearance to the buildings.

Each of these measures are described in more detail within the below section.



3D View - North-West Aerial



3D View - North-West Corner



3D View - West Elevation



3D View - East Elevation + Lower Terrace

2 Facade Composition

The facade composition for each component of the school campus has been developed in accordance with the Design Guidelines and Development Parameters established for the project.

Generally the facade composition for each component responds to the surrounding development, urban context and unique environmental conditions.

2.1 Building A Western and Northern Facades

Building A is L-shaped, with one facade oriented to Environa Drive and one facade oriented to the northern stub road.

The facades are proportionally longer than they are tall. Breaking the building lengths vertically is therefore the most effective way to modulate the perceived scale of the buildings. For this reason, Building A is broken down into a series of “neighbourhoods”, with the size of each

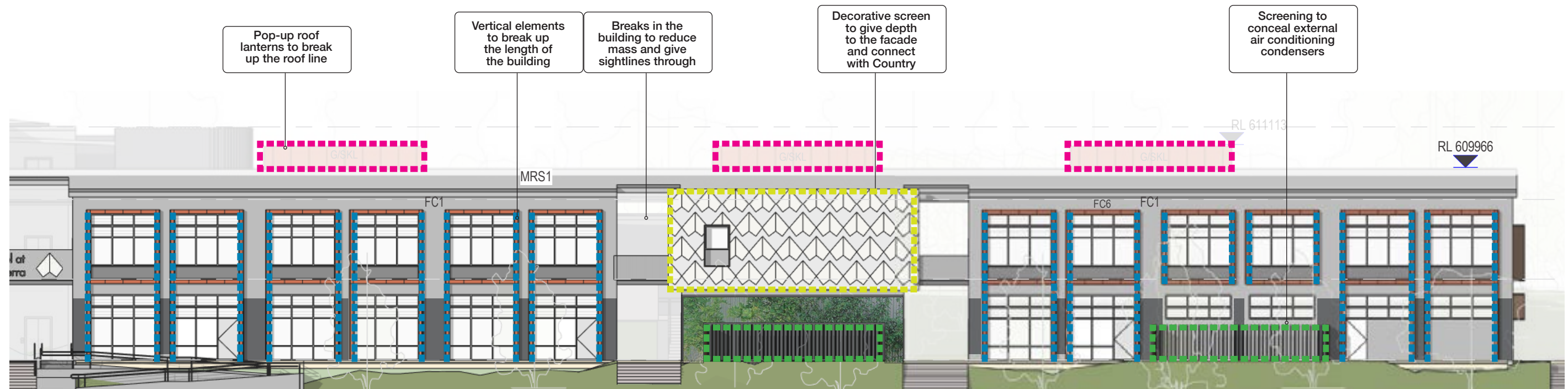
neighbourhood based loosely on the area required to accommodated 6 x GLS spaces.

The mass is then further broken down by a series of articulating devices, including vertical sunshading and floor to ceiling glazing accentuating the vertical direction. Form follows function, in that the teaching spaces can be read externally as they all utilise this facade typology.

Key locations around the building have increased visual emphasis via use of the decorative “moth” screen. This

screen is located on the street corner, which is the Library, to communicate the story of the place in what will be one of the more prominent faces of the school identity.

The same screening is used at other specific locations around the school, such as to the main school entry/ Admin, the Gym building and main COLA space.



Building A - Western Elevation Facade Composition (Southern end)

Source: TKD Architects



Building A - Western Elevation (Northern end)

Source: TKD Architects

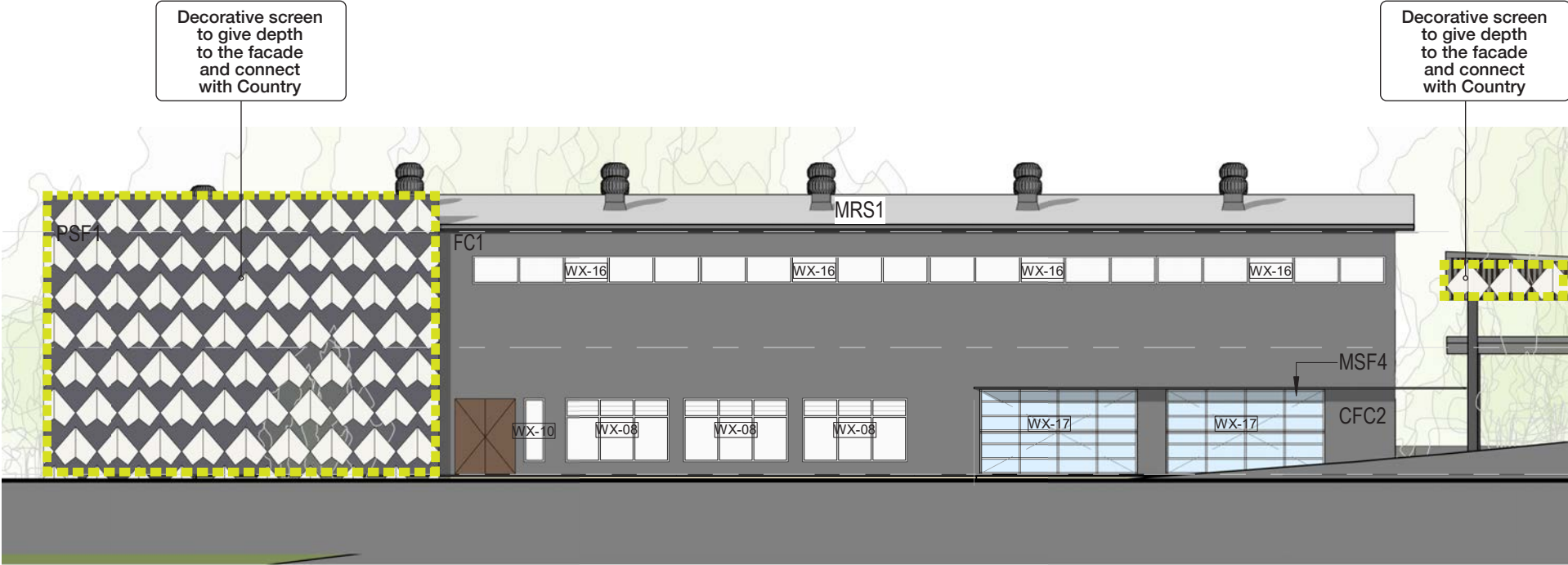
2.2 Building A Eastern and Southern Facades

The Eastern and Southern facades of Building A are based on the same concept as the west and the north. Since these facades are inward-facing, rather than street-facing, the decorative gestures are more subtle. Screening to the external stairs utilises the same powdercoated aluminium, but will less folding. The screens stop at the second-to-last stair landing, giving space under the stairs for planter boxes and sightlines through. Rogue moths are dotted on the screens in key locations. The open spaces between buildings feature flat-plate steel balustrades and screening.

2.3 Building B

Building B utilises the same articulation tools, but adapts them to be more suitable for the gym use. High level windows and glazed tilt-up doors give a sense of openness and indoor/outdoor connectivity. The decorative screen wraps the north-eastern corner of the building, so that Building B ties in to the overall aesthetic of the school, and so that the moth motif is visible from the eastern residential neighbourhoods.

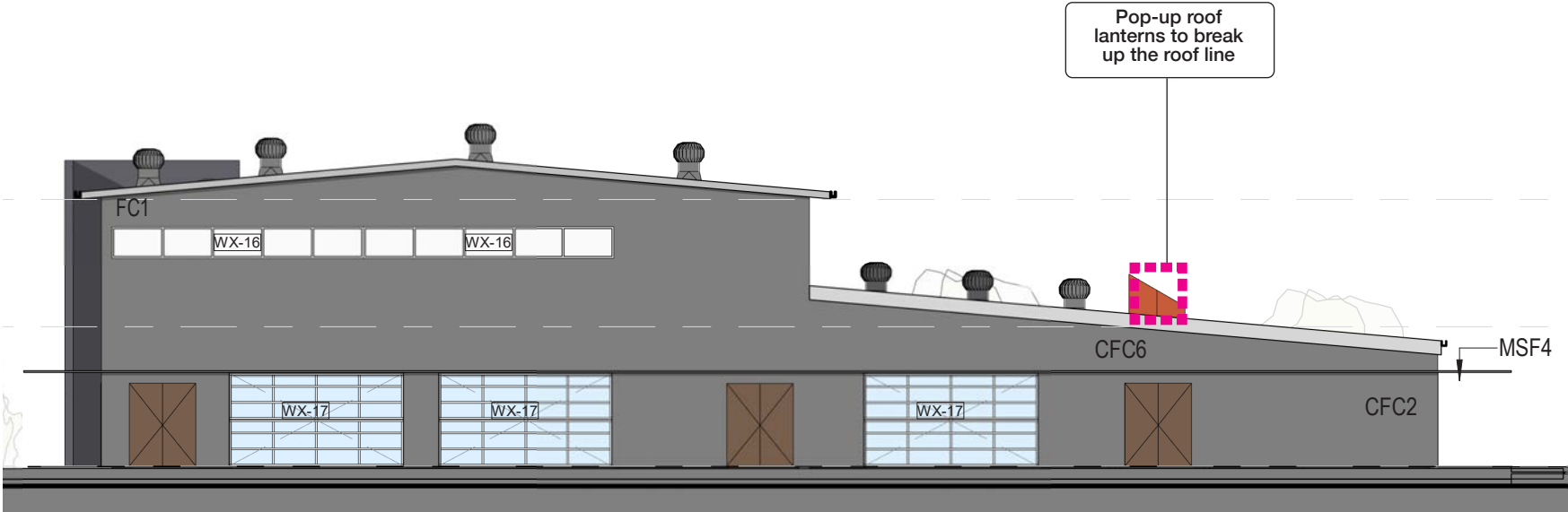
While the gym roof does need to be high, for the functionality of the sports court inside, the roof over the PE/Performance Unit classrooms is lowered so that the scale of the hall is brought down to be more sensitive to the open space and playground.



Building B - North Elevation Facade Composition
Source: TKD Architects



Building A - Eastern Elevation
Source: TKD Architects



Building B - West Elevation Facade Composition
Source: TKD Architects

3 Materials and Finishes

The surrounding landscape has provided the key point of departure for the materials palette concept. Materials have been selected for their natural tones and textures, as well as for durability and maintenance characteristics.

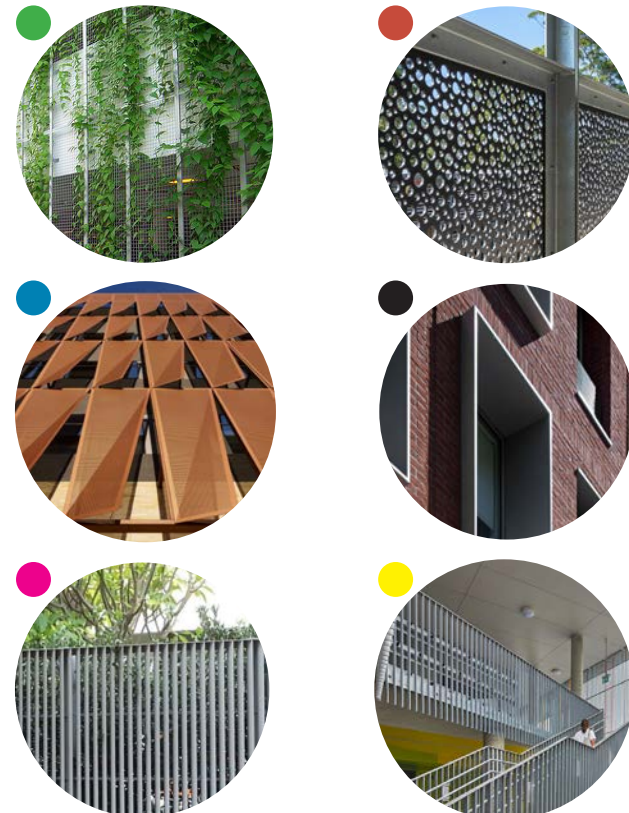
The MMoC methodology adopted for the project has also required materials to be lightweight and easily transportable.

Through-coloured fire cement cladding forms the primary cladding material and is selected to meet the above characteristics, low embodied energy and it's earthy quality and colours which provide a connection to country, responding to the natural surrounding landscape.

The feature screen around the building is prefinished, folded and perforated aluminium, folded into abstracted moths, to communicate the importance of moths to the local ecology and Indigenous stories.

Metal roofing is the best solution insofar as roof cladding, as the roof pitch has been minimised to keep the building appearing low-lying in the landscape.

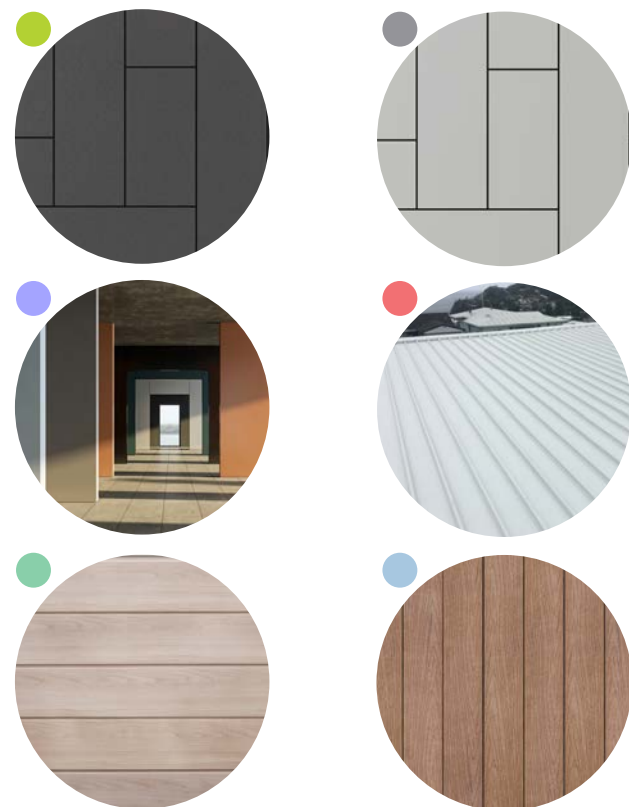
Trellises are used around the facades to bring landscape onto the building, and integrate the school further with the aesthetic of the site.



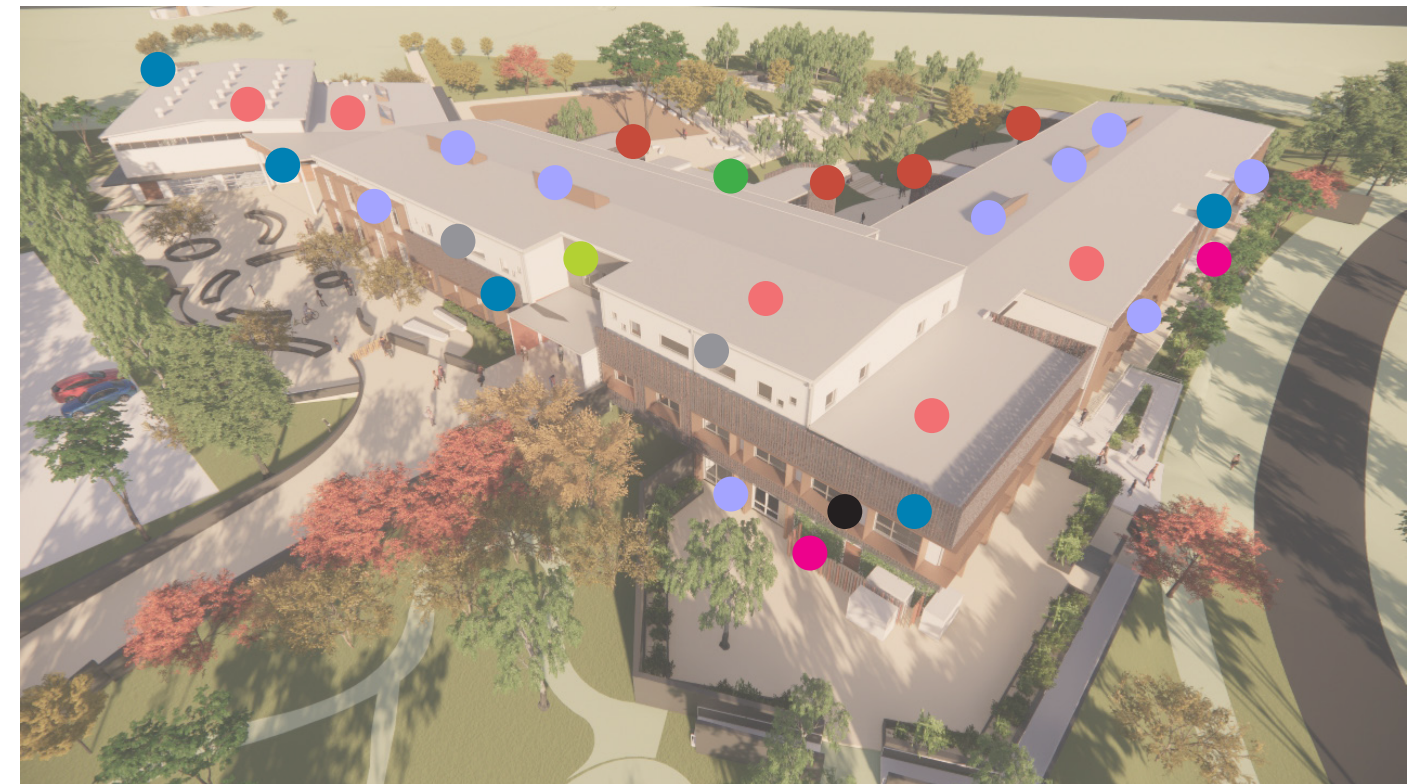
Screening Materials



Natural Inspiration



Cladding Materials



Aerial View from the North-West with Materials Keyed
Source: TKD Architects



Eye-level View from the North-West with Materials Keyed
Source: TKD Architects

4 Services Integration

Services have been designed to have minimal visual impact on the building aesthetic. This has been achieved via careful location of services, screening and planting. It should be noted that some services, for example, the hydrant booster, are required to be visible.

4.1 Waste Management

A bulk waste pad is located in the car park, away from the street façades, but adjacent to the car park access to enable ease of collection. The waste pad is proposed to be screened by angled, powdercoated aluminium screening.

Refer to Section H within this report for the Site Servicing Strategy.

4.2 Integration of Mechanical Plant

Mechanical plant has been located at ground level and lower ground level for safe access and housed within screened enclosures integrated into building and landscape response throughout the site to minimise visual and acoustic impact.

4.3 Substation

A substation is located towards the north-west corner of the site. Due to connections to infrastructure and required distances to the building, the location of this is limited. However it has been set back from the street corner as far as possible to allow for school signage and planting.

4.4 On-site Detention Tank (OSD)

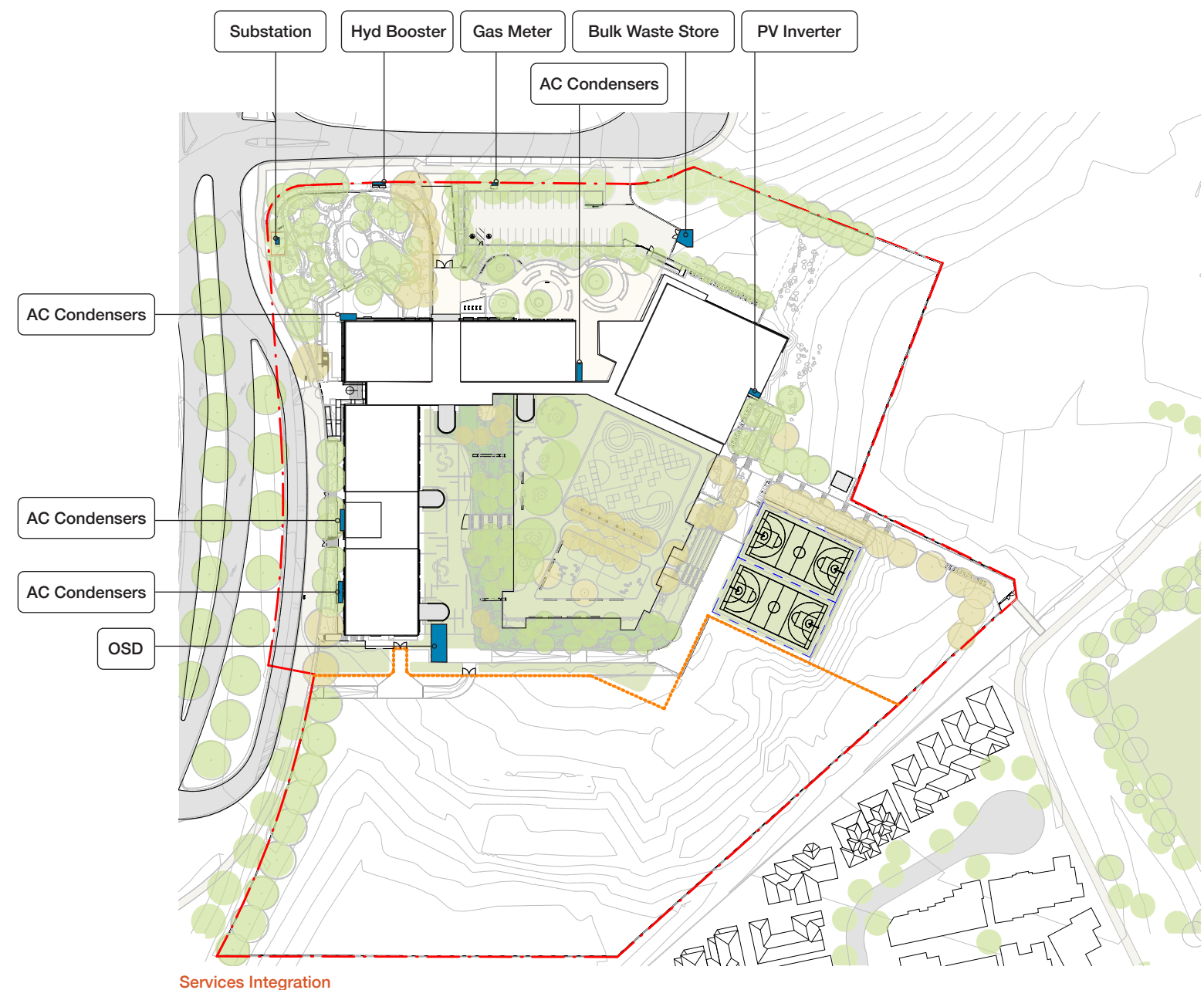
The OSD is below-ground, with pits and edges coordinated with the landscape design in this zone.

4.5 Hydrant Booster + Gas Meter

The hydrant booster is required to be visible from the main school entrance. The visual impact has been mitigated by slightly setting it in from the boundary and co-locating it with school wayfinding and low planting. The same strategy has been employed for the gas meter, which has a specific distance requirement away from the booster.

4.6 Solar PV

Solar panels are to be provided on the roof of Building B. A cupboard is provided to house the inverter, and it has been positioned to minimise its visual impact.



L Response to GANSW Discussion and Comments

L Response to GANSW Discussion and Comments

1 SDRP 1 Comments

Connection with Country

SDRP Advice	Response	AECG Recommendations	Design Team Response
<div>a. Early engagement with the Aboriginal Education Consultative Group is commended, as is the design team's scheduled walking on Country to understand the site.</div> <div>b. Learnings from walking on Country should be incorporated into the proposed design of the school and work to celebrate the natural features of the site as well as contribute to the school's identity.</div>	<div>The walk on Country occurred on 7.4.2021 and then again on 18.6.2021. A summary of the April walk is provided to the right.</div> <div>The walk on Country provided a huge amount of inspiration for the project. A column is included in the table to describe how the learnings have been incorporated, or could be incorporated during subsequent design stages.</div>	<div>Ridge lines in the distance are important and could be considered or referenced in the design. In winter, the ridge lines are snow-capped.</div> <div>Main school entrances should be wide enough for people to gather.</div> <div>Abundance of stone on site – probably basalt - Opportunity to store on site & use throughout the design. The rocks are important and should be celebrated.</div> <div>Proposed external pavements could be used for integration of Indigenous design – could incorporate patterns by engaging with a local artist</div> <div>Use of natural materials in the pavements and design critical to establish link to the country/site & community.</div>	<div>The buildings step down the site, following the natural topography. This also allows views out from the buildings to the south, where the ridge lines can be seen. The roof lanterns pop up from the principal roofs with an angular form reminiscent of the mountain peaks. The project's colour palette is based on seasonal changes, incorporating cool tones that speak to the sub-alpine region, and ochre tones which speak to the grasslands during warmer months. These relationships could be further explored in later design stages, once the school's graphic overlay is conceived.</div> <div>The school main entrances are specifically designed to allow for gathering of people in a range of settings. There is a civic main entrance from the northern stub road, which is designed as a generous avenue. Two garden walls curve back from the street to draw pedestrians towards the main entry gates. The path itself is generous in its proportions, being around 9m wide. It incorporates planting, seating, signage and bicycle storage.</div> <div>The landscape design incorporates the use of rocks which are found on site. They are used extensively as part of the Educational Walk, and within the battered slope in the main playground. The yarning circle is formed by these rocks, arranged in an ellipse around a central gathering space.</div> <div>The landscape design includes coloured concrete and synthetic play surfaces that could incorporate patterns designed by a local artist. A range of colours and locations has been allowed for.</div> <div>Natural materials for pavements are used where possible, however the scope is somewhat limited due to accessibility, slip resistance and durability/maintenance requirements for schools. The design has scope to achieve the character of natural materials, via treatment of concrete pavements (such as colours, aggregates and textures) and the integration of soft landscape edges. Where paths are not required to be wheelchair accessible, decomposed granite has been proposed, reflecting the natural volcanic materials found on site.</div>

A strong support for the development and its response to Connecting with Country were key outcomes from the consultations with Ngambri Elder Woman, Dr Matilda House and the AECG.

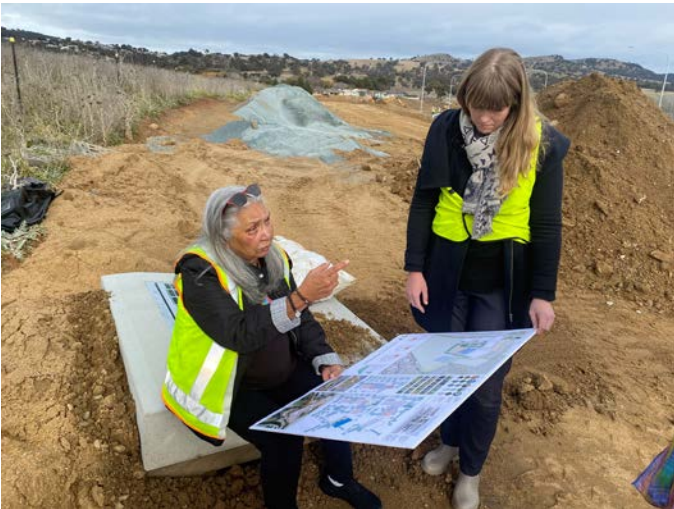


Photo from site meeting with Dr Matilda House on 18.6.2021

SDRP Advice

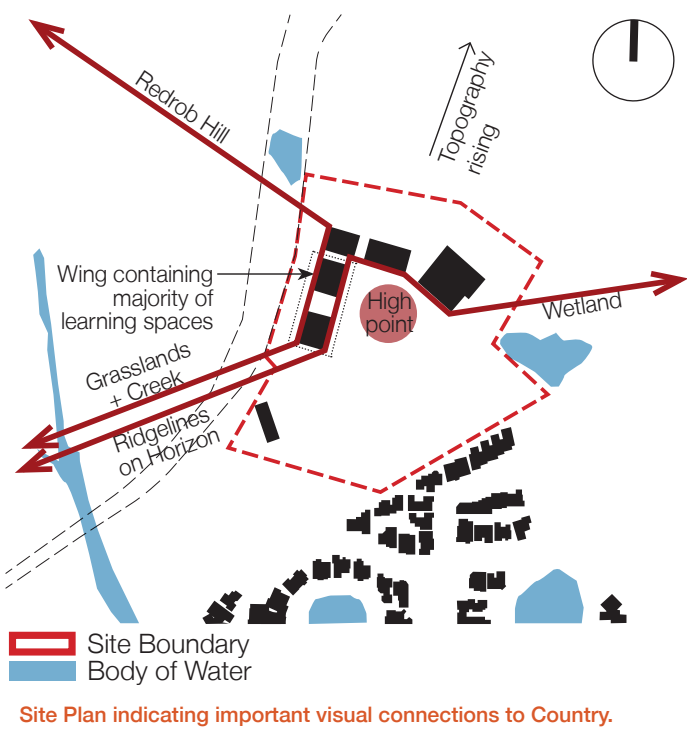
Response

AECG Recommendations	Design Team Response
Site fencing needs to consider the impact to the indigenous community. Historical impact of children being taken from schools as part of the stolen generation and the institutional feel fencing invokes. Fencing could be located in planting to soften, painted black to recede into the landscape & where possible use the building as the secure line.	The fence line has been set back from the street edge to allow for planting between the public footpath and the fenceline. Signage has been incorporated into the fence as well, with feature signage on the street corner and at the three main pedestrian entrances, to ensure that these areas are legible and welcoming. The design of this signage will be developed during the detailed design stage, and could be undertaken in collaboration with local artists or Indigenous elders. The fence has been specified as a black powdercoat, as this will allow it to visually recede in the landscape.
Creation of a 'yarning circle' in the landscape shown on the north-west corner site corner was suggested. Could use rocks excavated from the site.	A yarning circle has been added into the design in the location suggested. It includes rocks from the site.
Opportunity for art in the architectural form could be considered.	The external metal screens have been designed with a folding pattern inspired by the local moths.
The Golden Sun Moth is significant to the site and should be referenced, habitat provided and opportunity for interpretation. In January and February, Bogong moths come out of the rocky outcrops visible in the distance from the site.	The Bogong moth has been used as the departure point for the design of the folding metal screens.
References to Country need to be integrated throughout the whole site – not just in the northern street frontage/ north-west street corner	Awareness of Country is fully integrated throughout the scheme, with the high point of the site being the key strategic driver to how the buildings have been located on site. This is supplemented by materials choices, colour palettes, and will be further expanded via graphic design overlay and naming of buildings, once these aspects are developed.
The site was unlikely to have been heavily treed in the past – more alpine type plants. Trees would have been Yellowbox and Stringybark. Trees proposed beside the quadrangle: need to have places to sit under them. Sitting under trees is important, especially if it can be near water.	Places to sit under trees are included in the landscape plan in a variety of locations, including beside the main quadrangle.
It was recommended that a location for smoking ceremonies be provided. A fire pit was requested for the purpose. Context Landscape to consider and advise.	The location of a fire pit for a smoking ceremony is to be determined prior to construction of the school. The proposed yarning circle or high point of the site are two possible options.
It was noted that vertical black bars should be avoided. Although no problematic bars were flagged in relation to the Jerrabomberra scheme, TKD should review design for any vertical bars which could be substituted.	Fencing is to be setback from the boundary by landscaping to provide a softer edge to the school and screen elements of the fencing. The colour of the fencing will also be explored in the next phase.

c. The broader context of the school, including the mountain ranges, rivers and wetlands on the site, are an opportunity to connect with Country and should be woven into the pedagogy and design of the school.

Agreed. The walk on Country also supported this, with discussion around connection to the ridge lines in the distance. This recommendation is achieved by the design in the following ways:

- Visual Connections to the Broader Context: The buildings are set close to, but not directly on top of the high point of the site. They wrap the high point on two sides, putting it at the centre of the life of the school. This location is where the school's main quadrangle is located, so the broader context is the backdrop to important school gatherings and events -- not to mention day-to-day as part of the playground.
- Visual Connections from Learning Spaces: The facade treatment allows for generous glazing so that the broader context is also a part of the learning spaces. The main learning spaces are located in the north-south running wing of Building A, which is the most ideal location for looking across the grasslands to Jerrabomberra Creek and beyond. The grasslands will not be built out by the future Poplars Business Park.
- Landscape: The landscape and civil design allows for natural systems to be observed and to function. The southern and eastern boundaries as substantial open green space.



Glazing to learning spaces looks over the local views



Boxes around windows provide sunshading but also frame views from key areas, such as the library

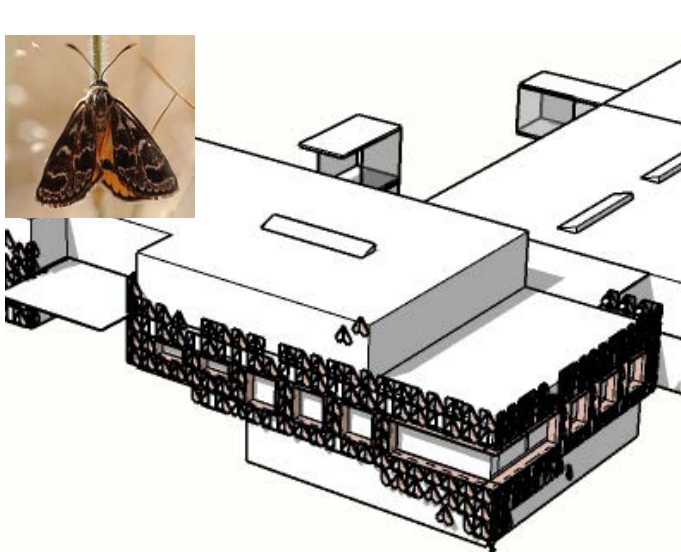
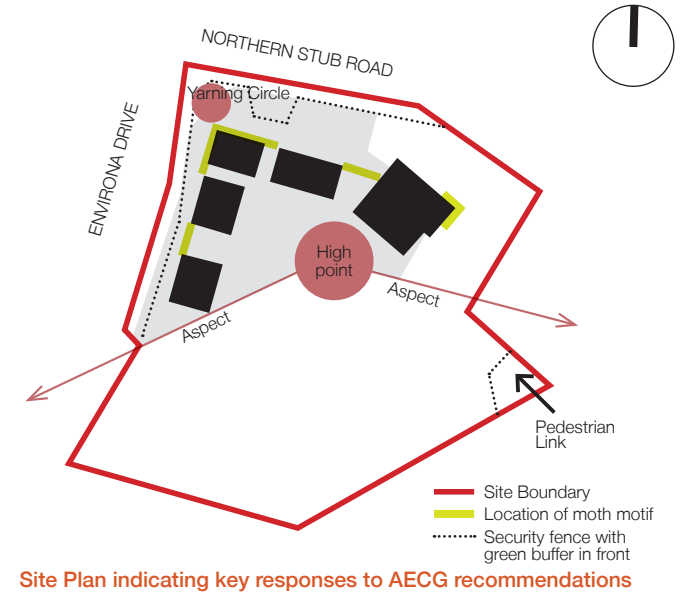
d. Further consultation with Aboriginal communities or groups is needed to understand and inform the response to local Aboriginal cultural heritage. The response should not be confined to landscaping, but also incorporated into the masterplanning, architecture, wayfinding and interiors.

Noted. During the initial and second walk on Country with the AECG representatives, the proposed master plan, architecture and landscape were discussed, and recommendations have been incorporated such as:

- The bogong moth has been used as a formal inspiration for the decorative screening around the building;
- The school fence has been set back from the boundary with planting added in front;
- Yarning circle added into Educational Walk; and
- Other items described in Section E of this report.

Wayfinding and interiors will form part of future consultation with the AECG representatives. Opportunities for contributions during the detailed design phase include:

- Naming of buildings
- Design of patterns in pavement colours
- Design of decals in wayfinding and window treatments



Concept model for Golden Sun Moth motif cluster on library corner

e. Provide a management plan for the process of interpretation for the anticipated Aboriginal artefacts on the site.

An ACHA has been prepared by Ecological for this EIS, and includes recommendations around management of artefacts on site.

Master Plan and Landscape

SDRP Advice	Response
a. The guiding principles – purpose, place, people – are supported, but not yet realised in the current proposal.	<p>The principles are abstract concepts that we have interpreted into physical form in the following ways:</p> <p><i>1.1 Purpose</i></p> <p>A sense of purpose is gained by providing students with cues that encourage them to look beyond their current circumstances -- they should be aware of where they are in the world, and aware of what exists beyond it. In a physical sense, these cues are generated via the following:</p> <ul style="list-style-type: none">• Provision of opportunities to look out beyond the campus -- Realised in the design by locating the buildings on the elevated part of the site, by picture windows, framing of windows particularly in the library corner, and by outdoor spaces, covered and uncovered. A connection can be made between the materials in the school and the materials in the context beyond.• Provision of opportunities to look up to the sky -- Realised in the design via a series of generously proportioned roof lanterns. These run down the centre of each neighbourhood of learning spaces. The glazed portion of the lantern is the upward-angled face. The idea is that the sky is framed as an ever-changing artwork overhead, with clouds drifting -- or sometimes zipping -- by. Internally, the side of each lantern is chamfered, so that light and its effects are drawn more widely into the interior space than they otherwise would be. <p><i>1.2 Place</i></p> <p>The principle of “place” is realised in the design by both recognition of the inherent qualities of the site, as well as placemaking within the school in its capacity as a new place.</p> <ul style="list-style-type: none">• Connection to the existing place -- The building set-out and overall site master plan is a direct result of the site topography and the opportunities it presents. The buildings step down the slope, creating physical connections to the ground at the ground floor and at the lower ground floor. The angle of the buildings allows them to capture views out from learning spaces. The material palette uses natural landscape colours and textures as its inspiration, with a mix of earthy tones from the soil, teal tones from the sub-alpine vegetation, and greys from the skies.
	<ul style="list-style-type: none">• Placemaking -- The building set-out also creates new places on site. The front forecourt is predominantly occupied by a productive garden and an educational walk, in a deliberate message around the importance of the landscape. Inside the school courtyard, a framework of diverse places is clear, with its built edges defined by school buildings, and its green edges defined more subtly, by gentle slopes and planting. <p><i>1.3 People</i></p> <p>The principle of People is realised in the design via establishing a school identity, and fostering a sense of community ownership and accountability for the school.</p> <p>Design elements that establish the identity of the school include:</p> <ul style="list-style-type: none">• The arrangement of uses on site -- the productive garden is deliberately located at the front door, and adjacent to food technology. Wood/Metal and Art workshops are deliberately co-located so that there is a definite creative hub which has indoor/outdoor connectivity.• Aesthetic overlay -- the motif of the moth is part of local identity and stories. The materials palette is founded on natural materials and colours for the purpose of establishing an identity which is connected to Country.• Opportunities for later customisation -- Engagement with local artists is planned for a later design stage, to create a graphic overlay used in wayfinding and decals. The naming of the school and its buildings is also planned for consultation. <p>Design elements which allow for a sense of ownership and community include:</p> <ul style="list-style-type: none">• The provision of a semi-commercial kitchen, co-located with the main COLA space and the Gym so that it will be possible to invite visitors to the school to try the food that is being prepared;• Location of the Library on the street corner, with the decorative screening making it a memorable landmark in the street considers the opportunity for community use and enabling it to act as a “public” face.• New pathways and access roads will enable links to the neighbourhood, the primary school and nearby sports facilities.

SDRP Advice

- b. The strict orthogonal masterplan as a result of the MMoC procurement strategy does not respond to the steep topology of the site, creating awkward outdoor spaces such as the eastern side of the north south wing. Option 1B is more dispersed and has a clearer response to the topography. Further resolution of the preferred masterplan option is required, and this should be overlaid onto the natural site contours to demonstrate a site-specific response.

Response

The orthogonal master plan is a result of site conditions, rather than as a result of MMoC. It represents a balance between the alignment of the site contours and the alignment of the two adjacent streets. The current scheme also reflects the likely future alignment of other buildings on the street, once the Poplars precinct is complete. The alignment maximises the amount of play space and green space for the school's use, protected from the busy road and the north-westerly winter winds.

The series of images to the right show:

- The current masterplan overlaid onto site contours
- Option 1B overlaid onto site contours.

From these images it is evident that the current scheme, although orthogonal, is a reasonably close reflection of the topography. The alternative scheme is arguably a closer reflection, however the difference is so minor that it is unlikely to be read when the building is experienced in reality. It would be simply a gesture in plan without significant impacts in reality, so the justification to apply the rotation is tenuous.

Scheme
Current

Advantages
Provides happy medium between urban response and response to topography.
Maximises available play space and protects it from north-west wind
Reduced cut into the site at the southern end of the building compared to other options

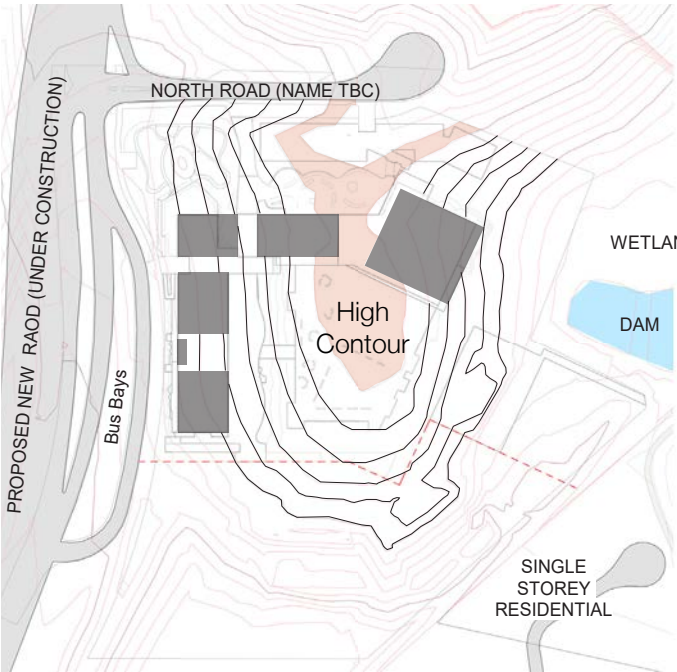
Option 1B
Dynamic architectural gesture.

Scheme
Current

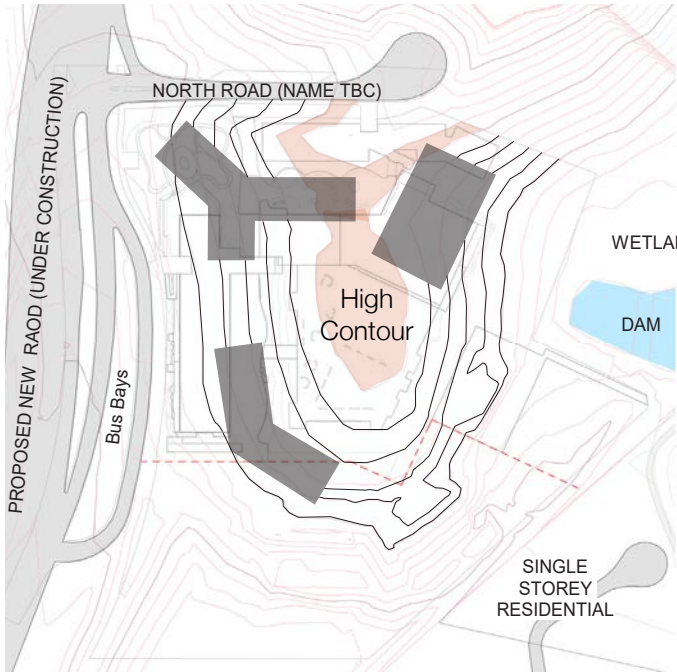
Option 1B

Disadvantages
Easy access at the southern end of the north-south wing is difficult to achieve.
Severely reduces amount of available play space. Also limits future possibility of building additional learning spaces as it is spread across almost all the buildable site area.
Building becomes very high above natural ground at the street corner
Long distances between learning spaces due to spread of buildings across site
Less opportunity to divide playground into upper and lower, so north-south wing would not have a lower ground storey.
This would mean overall it sits much higher on the site

It should also be noted that although the site is sloping, when walking on site there is not a strong perception of steepness.



Current Scheme



"OPTION 1B"



COLA

BUILDING A



SDRP Advice

Response

It is also important to note that the current scheme does not produce an awkward outdoor space on the eastern side of the north-south wing. Diagrams to demonstrate this point are provided here.

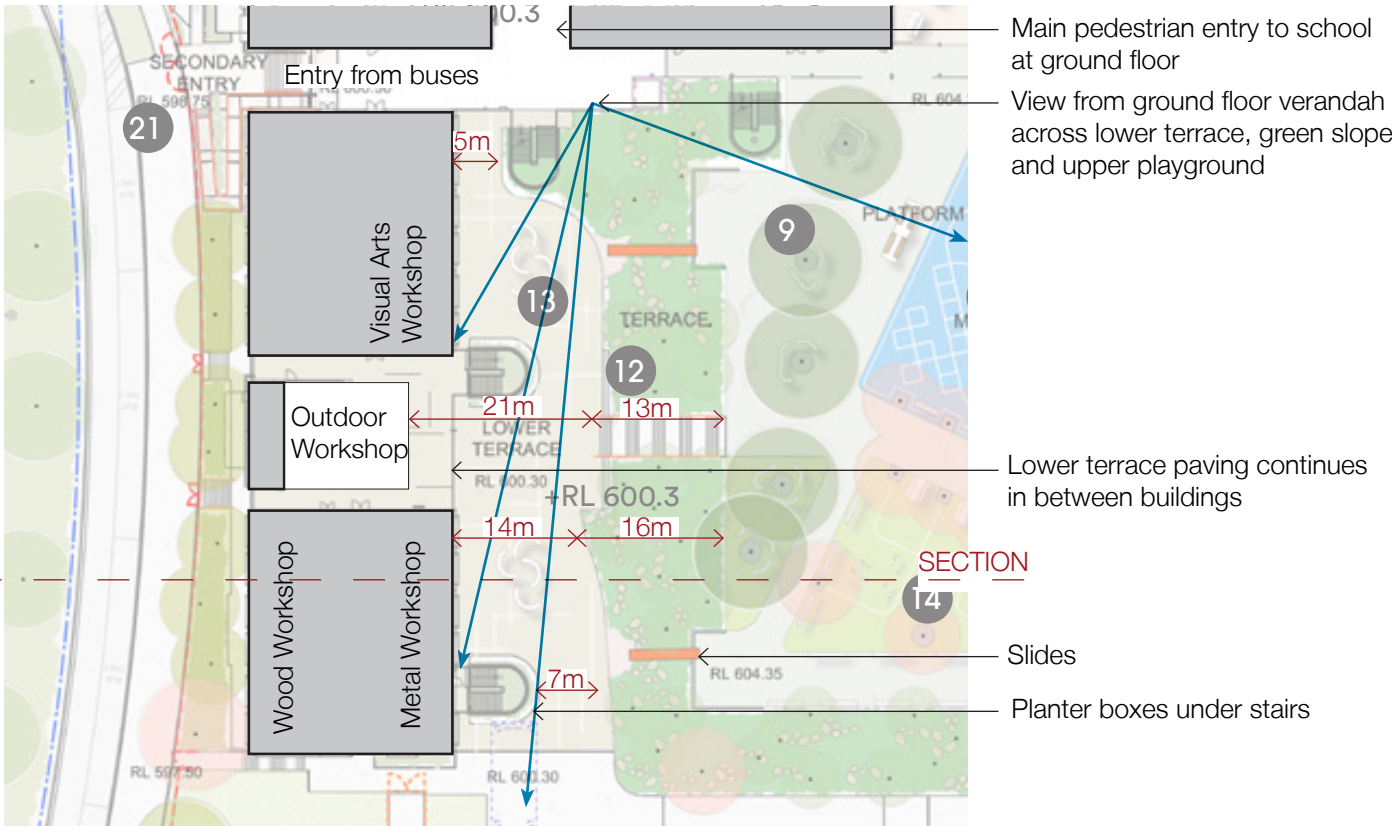
The eastern side of the north-south wing is known as the Lower Terrace, and it is an important outdoor space adjacent to the Wood and Metal Workshops, the Outdoor Workshop and the Visual Arts Workshop.

- It has been carefully designed so as not to be awkward or uninviting. Strategies to ensure this are:
- Proportions - the width of the terrace is between 14m and 21m, depending on where it is measured. There are “pinch” points around the back of the stairs, however even here the width is around 7m to the edge of the planter boxes which sit under the stairs.
 - Design of the battered slope edge - There is a gradually sloping, green battered slope along the eastern edge of the Lower Terrace. The battered slope is planted with mass planting, trees and grasses, and includes steps, sitting steps, site rocks and slides which all serve to activate and connect the Lower Terrace into the surrounding playground.
 - Relationship to Workshop spaces - the terrace is immediately adjacent to the “creative hub” of the school. It is envisaged that students can spill out onto the lower plaza when classroom activities allow, expanding the teaching spaces into the outdoors.
 - Materials and finishes - the paving of the lower terrace continues is continuous through the undercover outdoor workshop space. This expands the perceived boundaries of the lower terrace and integrates it into circulation zones.
 - Axial relationships, operating in 3 dimensions - The lower terrace forms a north-south axis of the school, and the upper playground forms an east-west axis. The two axes cross one another at a major node of the school, which forms both the ground floor school entrance and the bus bay school entrance. It is also where the one and only 3-storey circulation stair, and the lift are located. It will be an enjoyable experience to walk, at grade, through the main entrance and then emerge to the verandah elevated above the lower terrace, overlooking the battered green slope, and across to the upper playground, all at the same time.

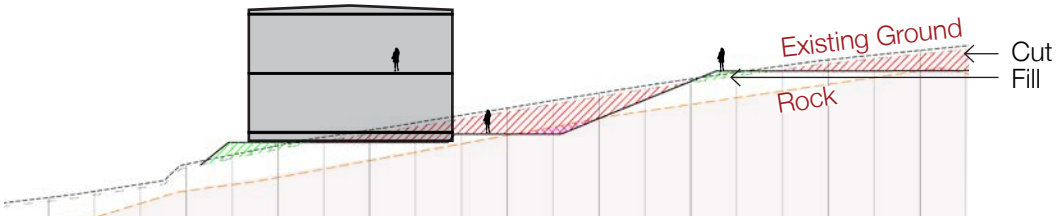
Further, the division of the playground into upper and lower terraces is part of a site-sensitive approach to this sloping site. Different building levels and landscape designs have been tested by the civil engineer as a means for determining a roughly equal proportion of cut and fill, with a slight preference for fill (due to there being volcanic rock on site into which cutting should be avoided).



Current Scheme - Image of Lower Terrace



Current Scheme - Landscape Plan of Lower Terrace



Current Scheme - Civil Section of Lower Terrace

SDRP Advice

- c. Site sections as well as 3D views are required to understand how the levels are being addressed and how the buildings sit within the landscape.
- d. Provide a plan that shows ramps, walkways and RLs of the outdoor spaces across the site and how these are accessed equitably.

Response

Site sections and 3D views were presented to the SDRP during the July 2021 review. These are also included within this design report.

An accessibility diagram has been prepared and is shown adjacent. In summary, all learning spaces and other student areas are designed to be compliant with AS1428.2. The main school entry is accessed via a 1:21 walkway which is located adjacent to 2 x wheelchair accessible car spaces and 1 x wheelchair accessible kiss-and-drop space. The bus bay entry is accessible via a 1:14 ramp. The lift is located in the crook of the L-shaped building, which is the most central location in relation to teaching and learning spaces, as well as being readily accessible from the Library, Administration and Staff Area.

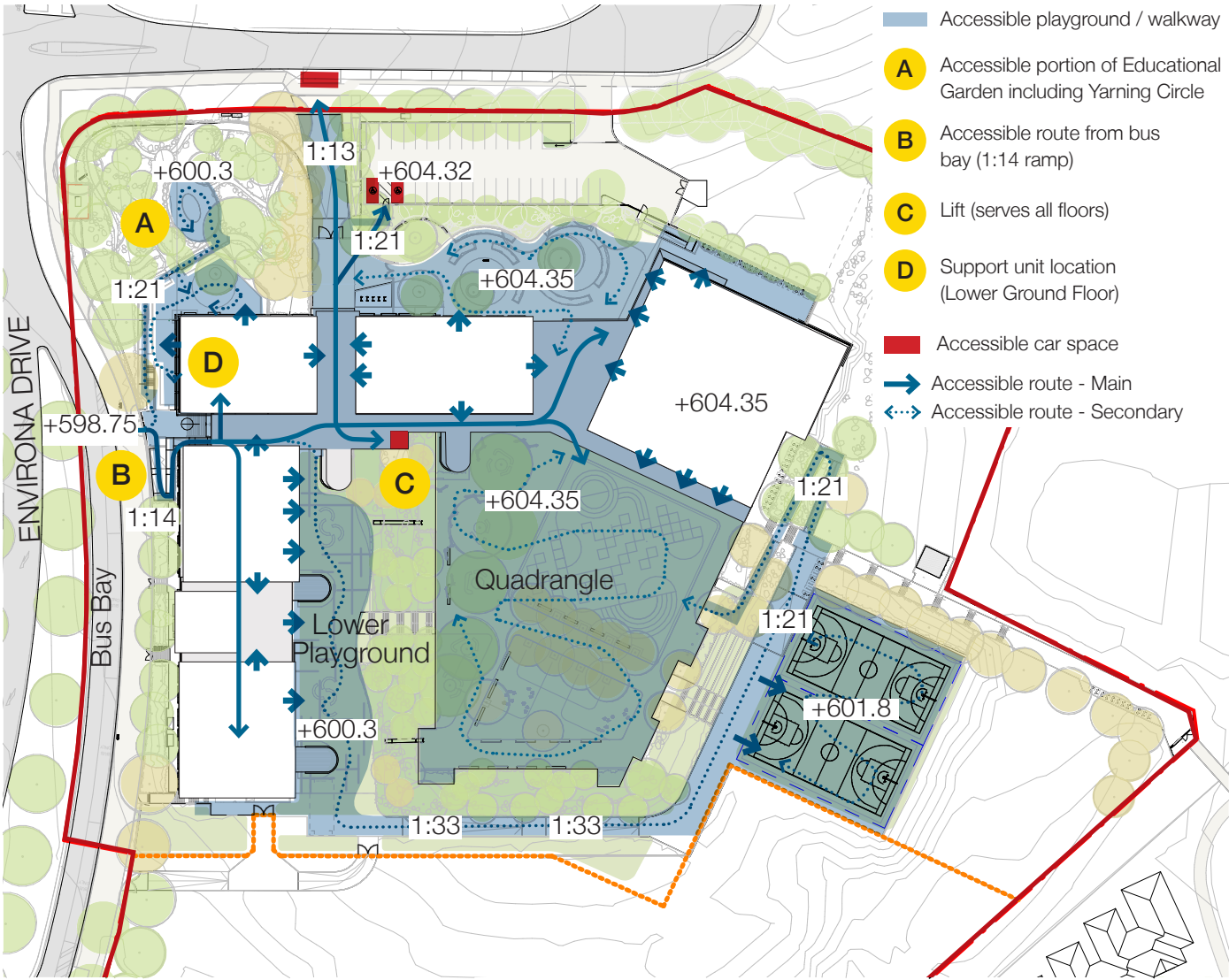
In terms of landscape, the challenges of the sloping site are addressed via integration of 1:33 walkways into the battered slope between the two main playground levels, as well as via the lift.

The main quadrangle is at ground floor level, as is the productive garden. These are both readily accessible from learning spaces and the gym.

The north-west corner of the site, although steep, it integrates a 1:21 walkway and a level yarning circle, so that the key components of the Educational Walk are wheelchair accessible.

An accessible route from the eastern entry would be extremely invasive to the site's natural topography, which is between 10-20% slope in this area. However, the eastern entry is a pedestrian and cycling entry, so it can be expected that wheelchair users are unlikely to arrive from this direction.

There are level thresholds and accessibility compliant doors from all buildings onto adjacent outdoor spaces.



Buildings

SDRP Advice

- a. Deep floor plates limit access to daylight, natural ventilation and views out from the central internal zone. While it is understood that on the lower ground floor this zone is used for store/art rooms that do not require windows, there are still shared learning spaces in this zone on both the lower ground and ground floors. Provide daylighting studies to ensure natural light penetrates all learning spaces including the eastern classrooms on the lower ground floor which are adjacent a mound that will further reduce solar access.
- b. The use of roof lanterns to provide solar access to the central internal zone is supported but does not address the daylight requirements of the learning spaces on the lower ground floor. Explore opportunities to penetrate through floors and create void spaces which are dynamic, allow solar access, and provide visual connections between floors.

Response

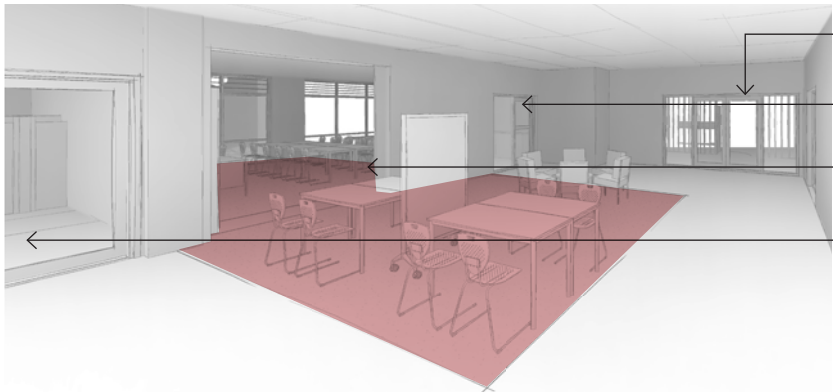
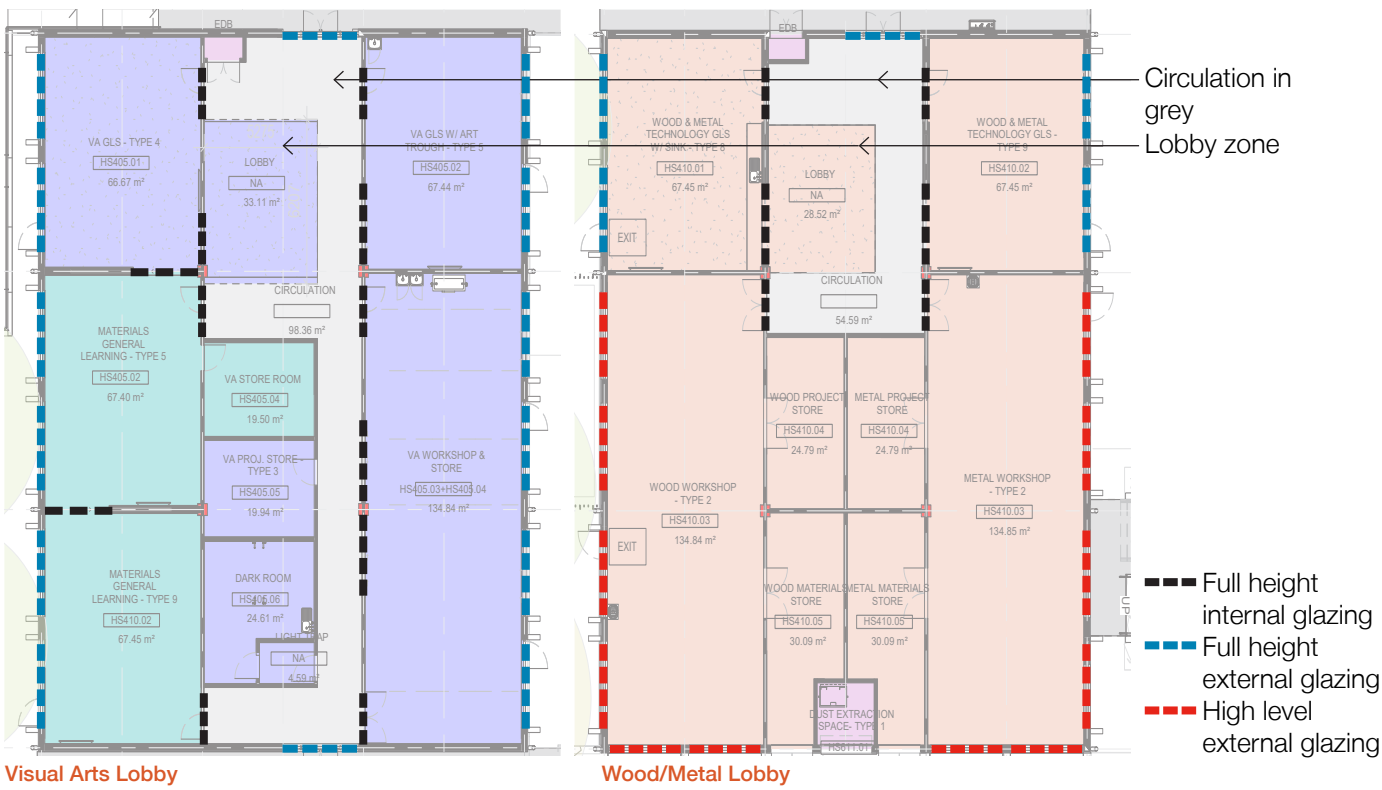
At lower ground floor, the central zone of the building is not intended to be used for learning / teaching, but is a transitional space more akin to a lobby. In the Wood + Metal Unit, the lobby is around 28m², and in the Art + Materials Unit, the lobby is around 33m², and students will be able to wait here before or after class.

Daylight studies have been completed, but they do not consider these central zones due to them not being classified as primary use spaces.

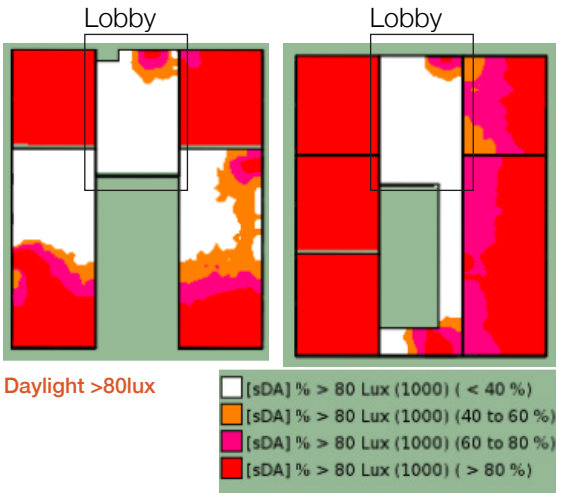
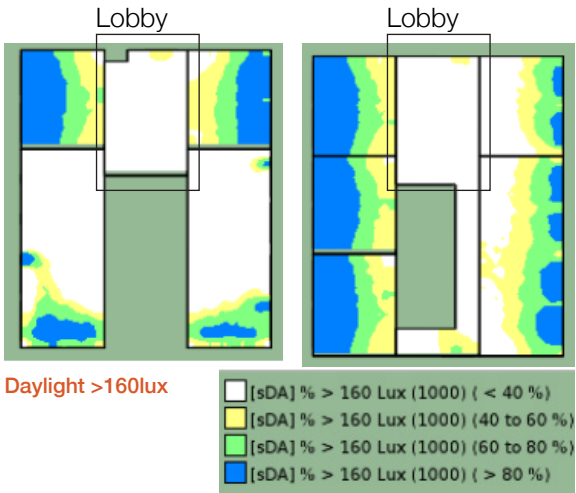
Being Type A construction, each storey of the building is its own fire compartment. Unfortunately this means that the light from the roof lanterns could only be delivered to the lower ground floor via fire-rated chimneys, severely limiting their ability to transmit light. The better outcome is to apply them only to the upper storey, where they are needed most (being above central shared learning zones). Fire engineered solutions should not be pursued, under the EFSG. For the same reason, void spaces are not able to be explored.

To improve natural daylight opportunities in these spaces, internal glazing has been provided along their perimeter as much as possible. Refer to the diagram to the right for the extent of internal glazing.

External glazing along the building edges has been made full-height at lower ground floor, with the exception of the Wood/Metal Workshops (due to safety reasons).



- Glazed double doors to outdoor covered workshop beyond
- Glazed swing door with sidelight to teaching spaces beyond
- Glazed sliding doors to teaching spaces beyond
- Glazed swing door with sidelight to teaching spaces beyond



SDRP Advice

c. Explore opportunities to adapt the modular building system to be place-based and site-specific.

Response

This comment requires a two-tier approach. The first tier is about the building arrangement on site, which is addressed in the response to query 2(a).

1 Establishing the Building Envelope

- Two storey building form so that the school is relatively compact on the site
- Preferred not to go above two storeys due to height limits and surrounding urban density
- Ground floor level based on the contour of the northern stub road, since Environa Drive is arterial and therefore not suited for school main pedestrian access and drop-off.

2 Adjusting the Envelope to Respond to Site Topography

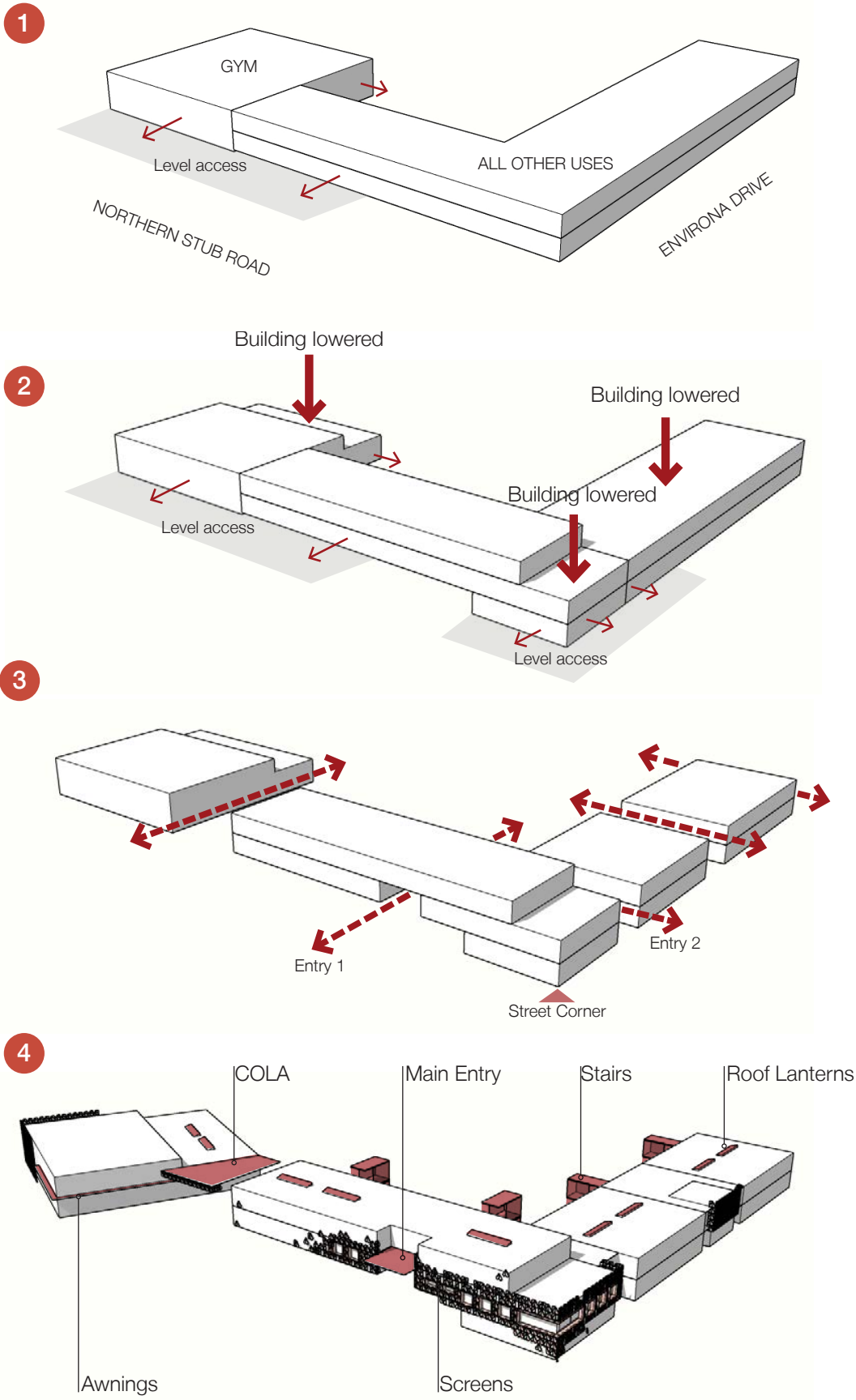
- Western-most wing lowered down to respond more closely to the level of Environa Road. Opportunity for level access between indoor and outdoor spaces created for this wing.
- Roof height lowered in Gym building where internal spaces allow, to reduce scale of the building when viewed from existing residential neighbourhoods.

3 Integrating Permeability and Access

- Building mass broken down for visual and physical permeability.
- Two main pedestrian access points located so that they are on either side of the street corner.

4 Articulation and Movement

- Gym building cranked to frame the central courtyard and to indicate its more civic use, by opening it out to the school front forecourt space.
- Weather protection added in between buildings for improved amenity in all seasons, including larger covered areas at main entrance points and outdoor learning
- Roof lanterns added to bring daylight into the upper storey shared learning spaces and circulation spine
- Vertical circulation expressed externally to break down the length of facades, to integrate activity and movement, and to ensure passive surveillance of stairs from the playground
- External sunshading screen used to articulate key views towards the school, such as the main street corner, and the Gym building when viewed from the residential neighbours.



SDRP Advice

Response

The second tier is around articulation, aesthetic and materials.

The selected materials are based on the natural colours and textures of the site and its surroundings. The images to the right align the main materials from the palette with the relevant imagery from the site.

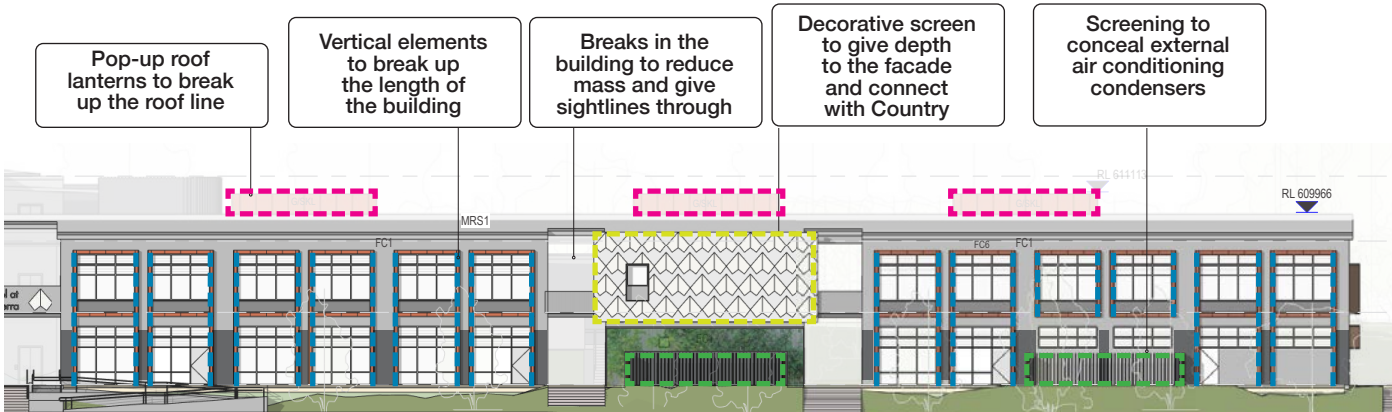


d. Further consideration should be given to the volume and scale of the built form, including articulating the western facade to break down the mass seen from Environa Drive, and the presentation to North Road.

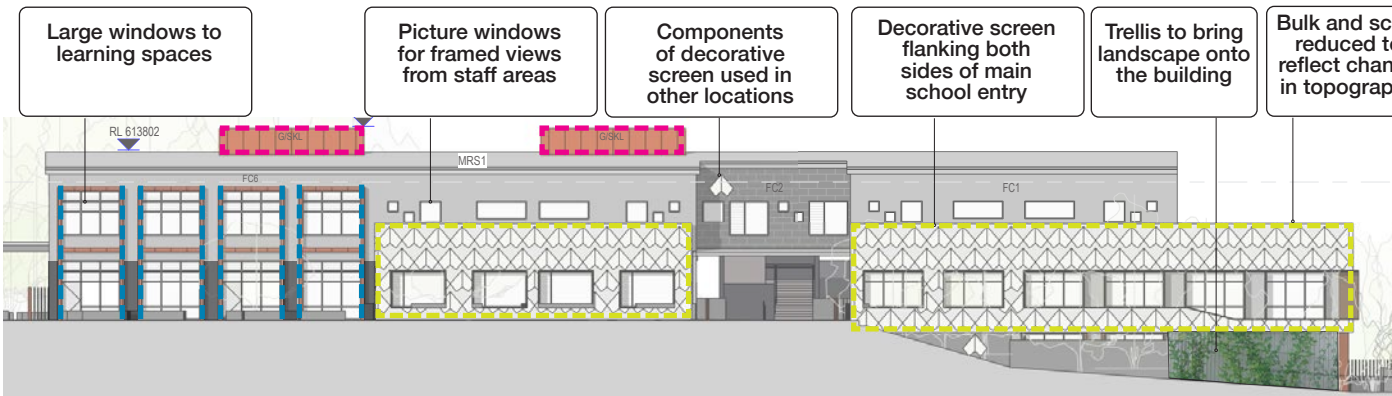
The buildings are broken down via breaks in between buildings, via stepping of the buildings down the slope, via facade articulation, materials, sunshading and roof lanterns.

The proportion of each facade treatment considers the overall length of each elevation of the building, creating a visual rhythm that is balanced around the building, and around the site topography.

The diagrams to the right explain the various facade components and how they are arranged.



Building A - Western Elevation Facade Composition (Southern end)



Building A - North Elevation

SDRP Advice

e. Detail how the sustainability strategy will be integrated into the architecture and school pedagogy.

Response

The sustainability strategy can be divided into passive design principles, active strategies and management protocols. There are pedagogical opportunities within each of these categories, particularly those which relate to biophilic principles.

1.4 Passive Design Principles

- Siting and orientation - As much of the building as possible is north-facing.
- Building mass - The bulk and scale of the building responds to the topography, minimising the required cut and fill.
- The mass is broken at intervals to facilitate natural ventilation.
- High performance building envelope - High levels of insulation and glazing values based on performance.
- Loose-fit floor plans - To enable future adaptation of use
- External shading - Protection of glazing from solar heat gain before it hits the glass
- Natural shading - Trees supplement external sunshading, on the western facade and in play areas
- Solar reflectance - Light coloured roof specified to reduce heat gain
- Skylights - Included in the central spine for additional daylighting, and awareness of the sky
- Natural ventilation - Operable windows provided throughout, with ventilation calculations in compliance with EFSG
- Water efficient design - Native plant species and sensitive landscape design to minimise water use
- Biophilia - Strong connection to the outdoors from teaching spaces. Materials selected based on site colour palette.

1.5 Active Strategies

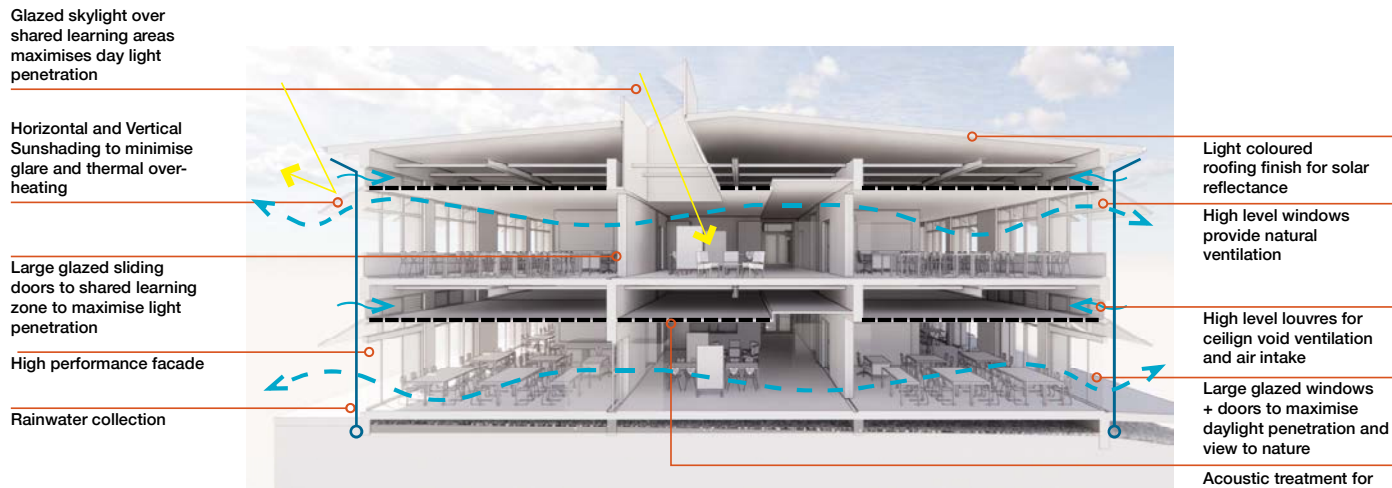
- Solar PV
- High efficiency heating and cooling powered via electricity (rather than gas)
- Roof ventilators
- Fans
- Efficient fixtures for lighting and water

1.6 Management Protocols

- Active transport - Prioritising cycling and public transport
- Productive gardens - Inclusion of learning settings to tie in with school pedagogy
- Metering and monitoring - Building management systems
- Responsible construction practices
- Responsible waste management



ESD Strategy North-West View



ESD Strategy Section

2 SDRP 2 Comments

Aboriginal Cultural Heritage

SDRP Advice

1. Demonstrate how an understanding of Country has enabled opportunities to engage in a richer way with place, beyond aesthetics and decoration, including how the use of motifs is embedded and integrated into the site, landscape, and architectural strategy.
3. Draw on the interconnectedness of Country in terms of biodiversity, significant watercourses, grasslands, and species endemic to the bioregion to inform the landscape approach.

Response

Country has been an integral strategy to the masterplan, landscape and architectural approach to site, stemming from the architectural and landscape design principles, which were developed to create a strong, place driven identity that will help instil pride in the school and community. The design has been further developed to consider the key outcomes of these Walks on Country and the Draft Connecting to Country Framework. Cultural Expression, Relationship with Country, Learning from Country and Knowledge Sharing are all embedded in the design.

Country has developed through spatial planning of the site. Central to this has been the creation of the main school quadrangle as the heart of the school at the high point of the site. It is a natural gathering space and provides opportunities for looking out and orientating oneself in the surrounding landscape.

The building form is designed to wrap around this high point, following the site's contours and creating a sense of enclosure and provision of shelter to the school, particularly from the new road and prevailing winter, north-west winds. Breaks in the building form at key entries and node points allow for distant vistas through to the landscape beyond. Siting of the built form addresses cultural concerns raised previously in this report, through the creation of a series of welcoming entrance spaces within the site boundary, which can be used by the school community for gathering at the beginning and end of the school day. The spaces include opportunities for seating and the provision of shade, a yarning circle and the connection to endemic planting and indigenous foods from the productive garden and VET cafe positioned close to the school's main entrance.

The natural topography of the site is expressed within the landscape design, through diverse terraced learning and play spaces divided by endemic planted embankments which will be characterised to reflect, repair and enhance the natural landscape. Natural rock 'floaters' excavated from the site during construction will be salvaged and redistributed throughout the site and will contribute to the character to the campus. The landscape design and planting selection will be detailed to acknowledge the hills, valleys, natural water courses and nearby grasslands. These landscaped areas will form inherent opportunities to learn from Country and care for Country for students, staff and visitors to the school.

Creative learning areas such as food technology, Visual Arts and TAS are located with a strong connection to the ground plane. The ability to extend the classroom

SDRP Advice

2. Broaden engagement with Indigenous knowledge systems to include opportunities around practices and processes, naming, massing, materiality, form, circulation and movement, interior design, landscape, art strategy and pedagogy.
4. The process for responding to artefacts within the site was unclear. Provide a strategy that demonstrates how this process will be undertaken in a culturally responsive and respectful way.

Response

into the landscape through direct access to productive gardens or outdoor project work adds a further dimension to the learning opportunities for these disciplines and reinforces the concept that the classroom extends beyond the four walls of the building. The main general purpose learning areas are within learning commons located in a raised position at ground floor level in the north south orientated wing, maximising the potential for views to the wetlands, the mountains to the west and the surrounding neighbourhood. Skylights provide a connection to sky over the shared learning collaborative areas which are central to each learning commons.

Sun shading to key building areas takes inspiration from the Bogong Moth and Golden Sun Moth which have cultural significance to the area. Development of this concept with a local indigenous artist was discussed during the walk on Country. Architectural and landscape materials throughout the site have been selected for their natural patina and/or muted earth tones relating to the natural environment.

Each of these items will contribute to the sense of connection to Country is always present.

The project seeks to further connect with Traditional Custodian's through a number of opportunities which to develop from the exterior through to the interior design; integration of interpretive signage, artwork and place names; provide opportunity for shared use agreements of school facilities; the holding of a smoking ceremony; and possibilities to learn from cultural practices and cultural land management.

The project team will seek to consult a specialist consultant over the next phases of the project, to continue to develop current and future opportunities to create a deeper Connection with Country and improve the users experience, understanding and knowledge of Country. The Consultant will integrate with the design team and will help to support the team in developing and realising the early concepts.

An ACHA report has been prepared by Ecological for this EIS. The report sets out recommendations with regards to artefacts on site. Refer to the ACHA for further information.

Connection with Country is further described in Section E within this report.

Masterplan and Landscape

SDRP Advice

5. The landscape analysis requires full consideration of the ecology endemic to the site and pre-contact landscape character. Demonstrate how the site's ecology will inform and prioritise decisions around regeneration, future landscape character, and the provision and configuration of shade trees. This should include the two moth species, in consideration of each of their different habitats, characteristics, and food sources.
6. As noted in point 4 above, provide a richer connection with the unique ecology of the site and bioregion to increase biodiversity and establish a place-based identity for the school. Draw on flora and fauna, including the wetland, grasslands endemic to the area and opportunities presented by the dam. Demonstrate how this may inform the school's pedagogical approach.

a. The connection of the built form with the topography and characteristics of the site requires further exploration. Consider how a landscape-led approach might deliver a clearer site and massing response. Provide site sections (including through the high-point of the site), and views to demonstrate how the site strategy delivers the expansive landscaped views beyond the site.

b. Provide a detailed plan and 3D views of the central outdoor space clearly showing how it will be used and how it contributes to wayfinding.

Response

A BDAR report has been prepared by Ecological for this EIS. The findings and recommendations of the report have been used to gain an understanding of the pre-contact landscape character of the site and to develop a landscape character which reflects and repairs the natural habitat where possible.

An indicative planting plan and schedule have been prepared for the project. Final species selection shall be developed over the next stages of the project with input from local knowledge holders.

The project team will seek to consult with a specialist ecological consultant over the next phases of the project to develop an approach which supports native fauna habitat across the campus while providing a safe environment for school users.

Point 4 refers to aboriginal artifacts. The design team believe the reference is to, Point 5.

The masterplan and built form have been developed to respond to the site's context, its steeply sloping topography and the newly constructed roads which border the site to the north and west. Key to this has been the consideration and creation of Connection with Country. This has been discussed in the above section.

Built form has been located to wrap around a central high point which will form a focal point for the site, providing panoramic views out from the south west to the south east. The buildings are designed to step with the steep topography, embedding them within the landform. They are located to provide shelter from the new roads and prevailing winds, but are also orientated to address the two arrival zones. Buildings are setback from the boundary recessed within landscaped entrance zones which are designed to respond to cultural concerns of inclusivity. These entrance zones and perimeter buffer zones provide opportunity to tie the new school into the natural landscape through selective planting which reflects the adjacent character.

A detailed plan of the central outdoor space which describes how it will be used, its materials and finishes, and indicative precedent images of the proposed character of the spaces is provided within the Landscape Design Report prepared by Context Landscape Architecture for this EIS.

SDRP Advice

7. The proposed edge conditions require further resolution.

a. Provide detail of all edge conditions to illustrate how the site will respond to the emerging character of the surrounding context.
- b. Explore opportunities to remove or conceal fencing particularly where buildings can form secure lines.

Response

The site is located within a portion of land designated as the Poplars Learning Precinct, within the larger Poplars development which includes precincts for education, innovation, business, sport, Industrial, technology and retail + services, as well as land retained for open space, recreation, and watercourse and grassland reserves. The development is to target industries such as defence, space, cybersecurity, information technology and scientific research sectors. The future character of this area is largely unknown at this stage although the site is currently subject to a 12 metre height limit. The Learning Precinct is located at the southern edge of the Poplars Development, nearby to the existing primary school.

The site is bordered on the southern and eastern side by land which is designated to be retained as open space, including the creek and Jerrabomberra Wetlands. The landscape design to these boundaries proposes to re-establish the natural character of the land, planting endemic grasses where possible, while complying with bushfire protection requirements.

To the west, the site is fronted by the new bus bay and new Environa Drive. A planted embankment separates and buffers the building from the bus bay. Beyond Environa Drive, a strip of land is earmarked for RE1 Recreational Land, fronting the Jerrabomberra Creek and a proposed green space that connects with the proposed regional sporting facility. The siting of the school offers good opportunities for connection to these spaces in the future.

To the north, the site is bounded by the new stub road and a proposed QPRC Innovation Hub beyond. The Hub aims to be an incubator for start-ups and emerging businesses thereby forming a pathway between education and industry. Siting of the school entrance and entry zones in close proximity to the innovation hub will support future relationships between the two uses.

We understand that the Poplars development will include a network of pedestrian and bike pathways that will provide school connections from the school's various entry points, to the surrounding neighbourhood, including the Primary School.

The fencing strategy has been developed with SINSW School Security Unit. Schools are increasingly subject to unique security risks and child protection requirements. Due to the isolated location of the site, fencing to the full perimeter has been selected as the preferred security

SDRP Advice

	<p>strategy to protect school users as well as the school's assets. The fence line has been set back from the street edge to the northern and western boundaries to allow for planting between the public footpath and the fence line to provide a soft edge to the street frontage. The fencing will be specified to comply with the Educational Facilities and Guideline and to Schools Security approval. Signage has been incorporated into the fence, with feature signage on the street corner and at the three main pedestrian entrances, to ensure that these areas are legible and welcoming.</p>	<p>path connecting the Lower Terrace and Social Plaza has been developed as an integrate response to providing an accessible connection between the two spaces and the sports courts, radiating around the main quadrangle space and tiered landscaped embankments. The path has been treated as a wide circulation path to encourage the sense of journey travelled by all. The path is at the maximum compliant grade for an accessible route. A lift is also provided connecting the two entrances.</p>
<p>c. Explore how the arrival experience, pathway to David Madew Oval and future stages can feel connected and inclusive.</p>	<p>The arrival sequence and pathway to David Madew Oval has been explored to provide a direct, pragmatic and feasible connections to the main quadrangle, gymnasium and changing rooms, which will act as the main circulation sequences between the school campus and the oval. The school is unlikely to be accessed by a person with mobility difficulties from the David Madew Oval entry as this would require traversing the Oval. Also, due to the steep level change across the site, it is not feasible to provide ramped access without a large network ramps which would also significantly extend the travel distance and would be difficult to negotiate. Therefore other opportunities are provided within the entry to the site for accessible and convenient access.</p> <p>The site and masterplan allows opportunity for expansion and connectivity and as noted above these connections will link with a network of pathways that are to be provided under the broader Poplars Development Masterplan.</p>	
<p>8. Provide a landscape plan showing the tree canopy target, trees to be retained and new tree species to be provided, connections to outdoor learning spaces and how these spaces are to be used.</p>	<p>A Landscape Report has been prepared by Context Landscape Architecture in support of this EIS. A proposed tree plan including indicative proposed tree species has been included within the landscape report and landscape drawings. The landscape site plan indicates how the external learning spaces are to be used. The proposed tree canopy target is included as part of the landscape drawings.</p>	
<p>9. The accessible path between the Social Plaza and Lower Terrace appears circuitous. Review this layout to ensure that all pedestrian movement to and within the site is safe, accessible and inclusive to people with different needs and capabilities. Consider opportunities to provide one method of movement for all.</p>	<p>The school masterplan has been developed to respond to and navigate the steeply sloping site. The ground floor level is positioned to respond to the levels of the newly constructed stub road, providing a gentle, sloped, accessible, main entrance space. The lower ground floor responds to the levels of new constructed bus bay, as well as tie in with the ground floor level. These levels have also set the levels of the Social Plaza and Lower Terrace to maximise on internal, external connections and equitable access to all learning spaces. The 4m level difference between the two floors is therefore reflected in the Social Plaza and Lower Terrace. The southern</p>	

Architecture

SDRP Advice

10. Acknowledging the criticality of climate change and reduced biodiversity, greater ambition in relation to sustainability is encouraged. Careful siting, layout, and design represent effective strategies to achieve this ambition.

Response

A ESD Statement has been prepared by NDY for this EIS. Section G within this report also discusses the proposed passive and active, site wide strategies adopted for the project.

The project has been developed to comply with the below documents:

- Better Placed – Environmental Design in Schools - (GANSW) 2018
- NSW Government Resource Efficiency Policy (mandatory compliance)
- Schools Infrastructure NSW: Educational Facilities Standard Guidelines (EFSG) (mandatory compliance)
- SINSW Design for Manufacturer and Assembly (DfMA) Guidelines

The projects mandate is to meet a minimum 4-star Green Star Design & As-Built certification under NSW Government Resource Efficiency Policy. Sustainability targets for the project are in accordance with SINSW Sustainable Development Practice Note, which is understood to be closely aligned with the NSW Government policy positions and the United Nations Sustainable Development Goals.

The masterplan has been designed to respond to the context of the site, including consideration of the site contours, site access, views and climatic analysis. Functionality of the site layout and building have undergone rigorous testing and consultation, to develop a design which is functional, optimises user experience, and achieves holistic sustainability principles to ensure a high ecologically sustainable design (ESD) outcome is achieved. The ESD initiatives proposed span across the project's design, construction and operations, and are based around the core principles of:

- Efficient use of resources (energy, water and materials)
- Enhancing indoor environment quality and occupant comfort
- Minimising ecological impacts.

A climate change risk assessment has been completed to assess the anticipated impacts of climate change and implement design strategies to mitigate these impacts.

The project is to be delivered via a DfMA approach. SINSW DfMA Guidelines have been developed to facilitate and contribute to the DoE's sustainability objectives and 'Sustainability Pillars of the Department of Education'.

The DfMA approached has been identified to improved sustainability through reduced CO2 emissions, material

SDRP Advice

11. Concern remains that the visual bulk and limited permeability creates the appearance of a dominant and unvarying mass from North Road and Environs Drive. Reduce the floorplate depth and articulate the volume to achieve greater spatial variation and porosity from the street edge.

Response

and water waste; improve health, safety and productivity; as well as make design efficiencies and allow for future adaptability and flexibility.

The design has undergone energy and daylight modelling to optimise thermal, daylight and energy efficiency, and is required to be designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements, excluding any contribution from solar PV renewable energy.

The floor plate configuration is generated from conceptual models developed by SINSW educational planners in response to high school pedagogy across the state. The model is developed from the principle that schools should no longer comprise of individual cellular classrooms and that learning areas must simulate the future work environment by providing spaces that foster a range of activities from smaller to large group collaboration. Spaces are grouped into learning commons and must have the flexibility to connect, to join together to form large spaces and the ability to facilitate breakout opportunities for smaller groups.

These concepts and models formed the basis for the Education Rationale for the project which was developed by Queanbeyan Principal Network. The Queanbeyan Principal Network consists of 20 government schools. The Network engaged in a consultation process involving a 'Discovery Workshop' which included Directors, Educational Leadership, school executive, and teaching staff from the Queanbeyan principal network. From this process a series of network values were determined. These values were considered alongside the EFSG General Education Principles to Develop the educational Rationale specific for the Monaro Schools including consideration of the local climatic conditions. The Educational Rationale is one of the key briefing documents providing the foundation for the design concept.

The above mentioned conceptual models integrated with SINSW Design for Manufacturer and Assembly (DfMA) Guidelines, which is being rolled out for new state schools. This document provides standard grid dimensions and layouts which determine the floor plate dimensions. Although the project may no longer pursue a strict volumetric approach, as a 'kit of parts' design it will still incorporate a significant component of off-site manufacture, utilising modular building components.

SDRP Advice

12. Concern is raised that the layout, deep floorplates, façade design, and massing will establish considerable operational loads through reliance on cooling and mechanical ventilation.

Response

The bulk and scale is therefore typical of a state school of its size, designed to accommodate the required facilities for projected enrolments. The bulk and scale is also likely to be of similar scale to future commercial and industrial developments.

A number of site specific strategies have been developed to reduce the overall visual bulk and scale:

- The building form has been split to respond to the site's topography, setting the north south wing 4m below the east west wing to reduce its visual impact from Environa Drive.
- The building has been set back from its boundaries and sited away from residential neighbours
- The built form has been split to create covered outdoor learning spaces, and pedestrian through routes such as the main entrance and space between Building A and B.
- Facade articulation has been designed to break the building down in to "neighbourhoods". Form follows function, in that the teaching spaces can be read externally as they all utilise this facade typology. The mass is then further broken down by a series of articulating devices, including vertical sunshading and floor to ceiling glazing accentuating the vertical direction.
- At key locations around the building an increased visual emphasis is created through the use of decorative "moth" screens, such as to the main entrance street corner, and covered learning area along Environa Drive. The screen's will communicate the story of the place.

The proposed floorplates have been developed to meet the regional educational rationale and planning requirements for a centralised shared learning space and with SINSW Design for Manufacturer and Assembly (DfMA) Guidelines for a standardised planning grid.

This floor plate model has been developed by SINSW and educational planning specialits for state schools to deliver facilities that are able to support 'future focused learning', rather than a secular model. "Hubs" and "Neighbourhoods" are designed to provide "zones" that can be shared across classes in order to create the diverse offering of spaces that best support contemporary learning and teaching practices.

In addition to facilitating future focused teaching pedagogy, the internal circulation space design responds to the climate of the area to reduce students and staff having to brave the cold winter and hot summer climate when moving between classes

SDRP Advice

- a. The deep floorplates and layout will limit opportunities to access daylight and views and will not enable natural cross ventilation for the lifetime of the building to be achieved. As requested in point 15, reduce the floorplate depth and articulate the volume to improve access to daylight and promote natural cross-ventilation.

Response

A statement from SINSW has been provided below.

The design for the new high school in Jerrabomberra has undergone a thorough engagement process with various stakeholders within the Department of Education and SINSW. The functional requirements of the school and its geographical location have influenced the internal circulation and 'learning street' that is featured in the design. The internal circulation spaces align with the future focused teaching pedagogy by facilitating greater opportunities for agile and collaborative teaching practices that extends the opportunity for learning outside of the classroom. The proposed design maximises daylight penetration whilst accommodating the functional needs of the school and has been endorsed by SINSW executive and DoE School Performance.

There is no Point 15. The design team believe the reference is to, Point 11 or 12. These points have been addressed above.

General learning spaces and workshops are positioned to the perimeter of the building. Large full height and width external and internal glazed windows and doors are provided to general learning spaces, which maximise on natural light, high quality views and a connection to outside throughout the floor plan. A lower ground floor level, to the north south wing, store rooms are generally located to the centre of the building. These spaces do not require high quality views or large amounts of natural light. The lobby to the wood and metal general learning spaces will be lit by glazing from the northern facade and by large internal and external glazed windows and doors to the general learning spaces. At first floor level, large glazed skylights over the central shared learning zones draw light into these spaces and provide a connection to sky.

The general learning spaces are approximately 7m deep and are suited to single sided ventilation when doors are closed. In situations when these doors are open, doors to either end of the building will assist, as well as provide ventilation to the central learning space. Reliance on cross ventilation across the width of the plan results in acoustic issues and so a balance has been struck.

SDRP Advice

- b. The large expanses of glazing on the western elevation may result in increased heat loads during warmer months requiring additional cooling. Reduce the amount of western glazing and provide detail of the shading strategy to demonstrate its effectiveness.

Response

The extent of glazing has been developed with SINSW DfMA guidelines which set window to wall ratios, as well as solar shading dependent on their climatic zone and orientation. The extent and type of glazing and shading is a compromise between multiple factors, including, daylight, glare, energy consumption and thermal comfort.

Passive design principles have been implemented in the design to reduce the energy demand of the buildings, such as:

- High performance building fabric and glazing, exceeding the minimum requirements of the NCC 2019
- Large operable natural ventilation openings
- Effective sun shading has been provided across the project to relate to the orientation of the facades

It is noted that the project is located in a relatively cool climate, and therefore heating energy will make up a larger proportion of total energy consumption in comparison to a typical Australian building. Furthermore, it is expected that a significant portion peak summer cooling periods will coincide with school holidays, further decreasing cooling energy contribution to the overall consumption. Glazing on the western façade may increase summer cooling load, but will benefit the project during winter heating operation

Building fabric performance will be verified by energy modelling for all buildings. By this means, the proposed development is targeting a minimum 10% reduction in energy consumption against a minimum NCC 2019 DtS compliant building excluding any solar PV contribution, in accordance with EFSG Section DG02.03.

- c. Demonstrate how moving to a kit of parts might establish an opportunity to mitigate bulk, provide narrower floorplates and deliver best practice building performance and energy efficiency, so that in future the school that can be adapted into a zero-carbon project.

The project has been developed to meet the below requirements:

- Accommodation and areas to provide spaces that are equitable with other schools of a similar size in accordance with SINSW Educational Facilities Standards and Guidelines (EFSG)
- To meet regional educational planning requirements for a centralised shared learning spaces.
- Compliance with SINSW Design for Manufacturer and Assembly (DfMA) Guidelines for a standard planning grid
- To maximise open play space and the open character of the site to reflect its context.

The change to a kit of parts strategy will not alter the spatial requirements for the school.

SDRP Advice

13. 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: 2020-030 for further information.

Response

The project is well positioned to achieve a high level of sustainability as outlined within this report and under point 10. The project has not been mandated to achieve net-zero.

A statement from SINSW has been provided below.

The NSW Net Zero Plan, Stage 1: 2020-2030 sets the target of 35% emissions reduction in NSW by 2030. NSW Education have committed to take a leading role as a government agency to become net zero emissions in operation by 2030. We are in the process of developing a roadmap to achieve this.

To support the net zero plan, and minimise carbon emissions within the boundaries of current policies and guidelines, the project has implemented the following initiatives:

- > *Energy use reduction target at least 10% above a NCC 2019 Deemed to Satisfy compliant building, excluding any solar PV contribution*
- > *Electrification of all air conditioning / gas use reduction activities*
- > *Passive design elements to reduce reliance on mechanical HVAC*
- > *Energy efficient building services*
- > *Onsite renewable electricity generation*
- > *Water efficient fixtures and fittings, and rainwater collection to reduce potable water consumption*
- > *Waste management initiatives for operation, construction, and demolition waste*

M Conclusion

M Conclusion

1 Summary

This Design Report outlines the design intent of the proposal and demonstrated how design quality has been achieved in accordance with the Design Guide for Schools and the Design Quality Principles outlined in Schedule 4 of the Education SEPP.

The new High School in Jerrabomberra is to provide the suburb's first high school, designed to cater for the projected enrolment and future-proofed to allow expansion of the school, should it be needed in future.

The proposal has undergone a rigorous design process, including regular reviews by internal and external stakeholders.

It is expected that the school will make a positive contribution to the local area, providing a much-needed facility, in the form of a site-responsive and unique built outcome.



North-West 3D View