



Based on the NSW Government Architect Office “Better Placed Policy”, Schedule 4 of the Educational Establishments and Child Care Facilities SEPP “Design Quality Principles” and the requirements of the SEARs, this report has been prepared to summarise the process, responses and incorporation of design objectives in the proposed new Amity College, Leppington Campus. This report should be read in conjunction with the Architectural, Landscape and Civil Engineering drawings, the Environmental Impact Statement (EIS) and detailed reports.

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AMITY COLLEGE - MISSION

The College strives to create a school environment that is conducive to learning in all aspects of life. The inspiring and compassionate nature of the staff, coupled with a diverse and challenging curriculum, sets the foundations of academic and creative excellence. Comprehensive Pastoral Care programs and strong ties with parents enhance and support the holistic development of each student.



THE COLLEGE LOGO

The College vision and mission is captured in the College's vibrant logo; which is an open book that symbolises the notions of inspiring, inquiring, exploring, learning and achieving. At Amity College, we aspire to establish a culture of excellence in the light of diversity and harmony as expressed in its lively colours.

1. INTRODUCTION & PROJECT OVERVIEW

1.1 Introduction

Amity College is a comprehensive co-educational school operating across 3 campuses with over 1900 enrolments from years Kindergarten -12, first established in 1996.

The vision of Amity College is the achievement of academic and creative excellence as well as the nurturing of morally and socially responsible students who are inquiring, knowledgeable, caring and contributing individuals in our local and global communities.

The proposed school will be a combined primary and secondary campus with a potential student population of 1000 students on a new 2.23ha site in Leppington. Gran Associates Australia Pty Ltd was engaged by Amity College to consult with stakeholders and prepare the framework to guide the building program for the whole site.

The school will provide educational facilities that cater for 21st century (C21) teaching pedagogy and learning methods. The planning, design and construction of a new campus is an important development for Amity College enabling a modern curriculum and integrated learning where technology connects student-based activity in an interactive manner.

1.2 Brief and Project Description

The Design Principles of the Master Plan are:

- Community and Citizenship
- Academic Achievements & Rigour
- Flexibility and Visibility
- Outdoor Connections
- Future Ready & Seamless Technology
- Sustainability

The Schools teaching programs will focus on:

- Critical Thinking & Adaptability
- Communication & Collaboration
- Citizenship
- Differentiation
- Hands on Learning

The design features the College wished to include in its building design is grouped into 4 functional spaces: Learning paces, Heart of school, Specialty spaces and outdoor spaces.

1. Learning Spaces:

- Flexible/Varied
- Transparency
- Common spaces

-

- Adjacencies
- Adjacencies
- Furniture & divisions
- Inside/Outside

2. Heart Of School

- Learning Centre (library) include auditorium
- Administration
- Entry & security
- Cafeteria

3. Specialty Spaces

- STEM/STEAM
- Technology & Media
- Humanities
- Performing Arts
- Multipurpose Hall
- Wellbeing

4. Outdoor Space

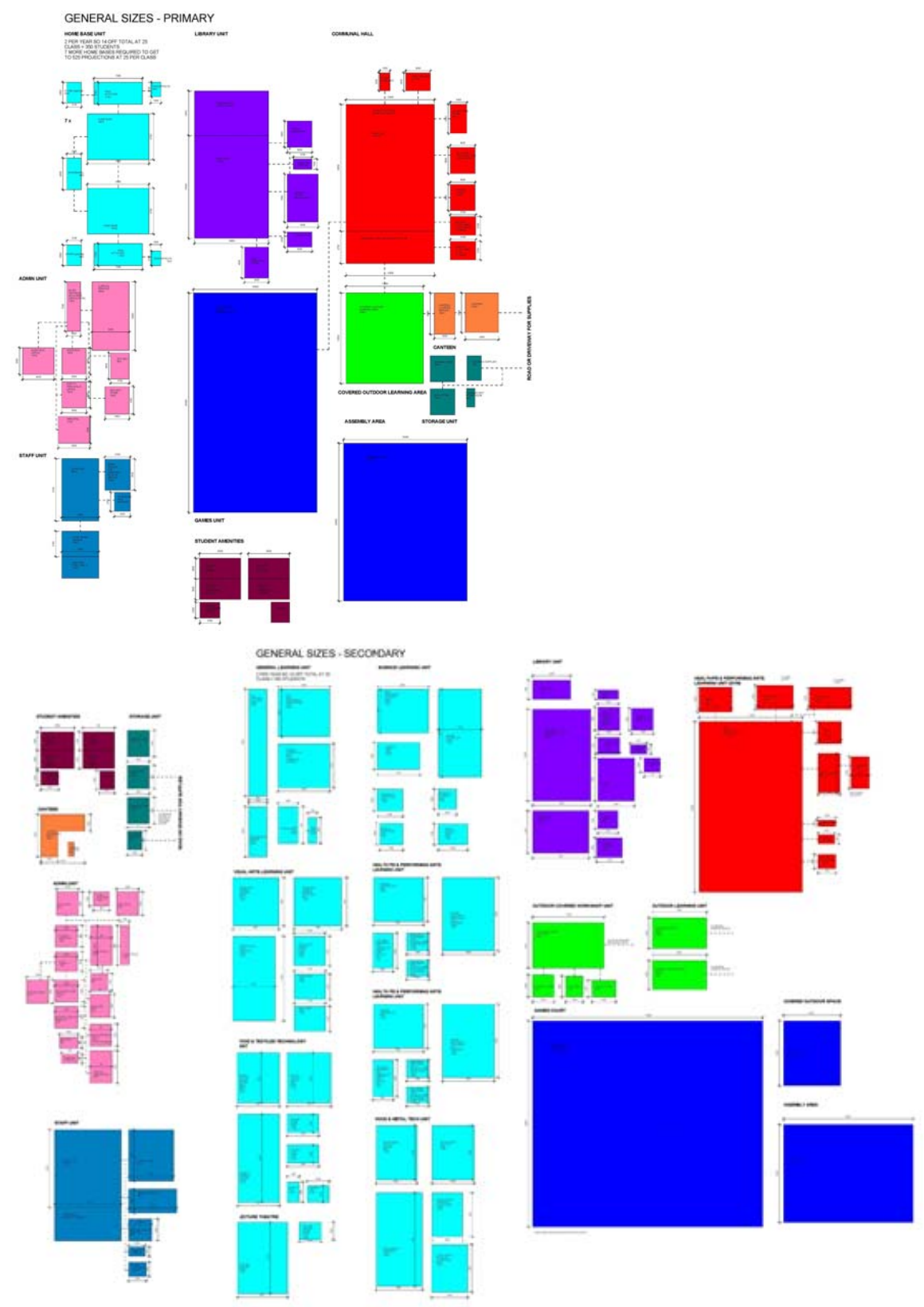
- Indoor/outdoor
- Outdoor garden
- Water Features
- Courtyards
- Covered areas
- Green space/activities
- Sports

The proposed school will be a combined primary and secondary campus with a potential student population of 1000 students on a new site in Leppington. The completed school will have a kindergarten, 3-stream primary and 3-stream secondary school.

Leppington is in the heart of Western and South Western Sydney Priority Growth Areas which is to include a Major Town Centre. Part of the Camden City Council, Leppington Precinct will be accommodating a population of 26,000 residents and 8600 households by 2036, as well as a new civic precinct comprising a TAFE campus, council community facilities, train services and an integrated health care centre. The proposed new school will make a positive contribution to the precinct development.

The new school has been designed to incorporate and support 21st Century (C21) teaching and learning principles. It will provide for current and future technologies and will be constructed to be adaptable for future use in flexible ways.

Fig. 1 – General Areas Primary and Secondary



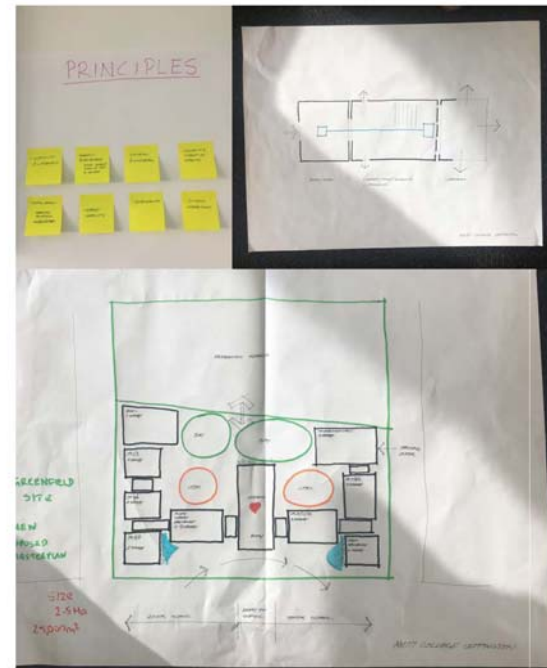
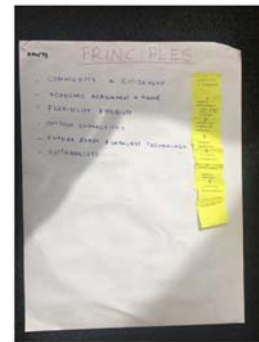
SUMMARY AREAS

ITEM	Gross Floor Area (m2)
Primary	3555
Secondary	5510
Administration	550
Staff	620
Library	760
Community (students, parents and school community use)	740
Circulation (exc. Informal learning)	2175
Support	1630
Total	15540

1.3 Accommodation Schedule

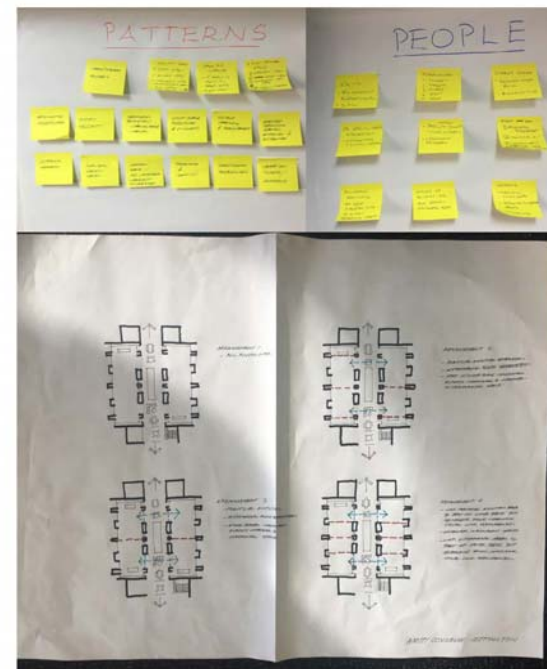
AIS NSW WORKSHOP

WITH AMITY COLLEGE -
 TOMORROW'S ENVIRONMENTS FOR LEARNING
 (TEL)
 APRIL 2018



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 APRIL 2018



1.4 Design Process

The Amity College School Board formed a committee to prepare a master plan for strategic planning and to submit a development application for the new school under the ESEPP 2017, with the Dept. of Planning. The Leppington Campus Master Plan committee have been meeting regularly since 8 February 2018. They are high level representatives of the school community and key staff and reflect the diverse view of the school community. Their members include the Board, school leaders, teachers, parents and alumni.

The Master Plan has been shared with parents, students, staff, P&F Assoc., and School Alumni for feedback/improvements before the final approval by the School Board.

The College consulted with Liverpool Council (meeting 10/10/18 and emails between college town planning consultant and Council) and wrote to local Community Groups in order to inform the design process. For further details refer also EIS Consultation section.

The preliminary Master Plan was workshopped with the NSW Association of Independent Schools "Tomorrow's Environments for Learning" TEL workshop series. This forum allowed for peer and international expert review and feedback, both of which contributed to the development of the design.

The school and the design team met with the NSW Government Architect on 5/11/18 and 3/12/18 and presented the project. The panel advised that it supports the overall design approach, including reference to several good precedents to inform the design.

Refer also *Appendix DR2 Design Process – Government Architect Masterplan Presentation 12/18* and *Appendix DR3 Government Architect Review Comments*

Fig. 2 – AIS Workshop



Fig. 3 – Aerial Location Photograph

1.5 Key Design Considerations

1.5.1 Site Context and Locality

The Project Site is at No. 85 Byron Road and No 63 Ingleburn Road at Leppington. It is located approximately 39km southwest of the Sydney CBD and forms a part of the NSW Government's South West Priority Growth Area within the Camden Local Government Area. The school site lies approximately 1.2km away from the planned Leppington Major Centre and railway station. It is roughly rectangular in shape and has an area of approximately 2.2ha.

The Project Site is bounded to the south-east by Byron Road and to the north-east by Ingleburn Road. The lots adjacent to the site are currently undeveloped, however the lots to the south will be developed as a low density residential area, with lots to the north-west and to the north-east developed for the purposes of medium density housing. Some 300m away to the south, fronting Byron Road, is a site approved for a 894 place primary and high school, to be developed by the Anglican Schools Corporation.

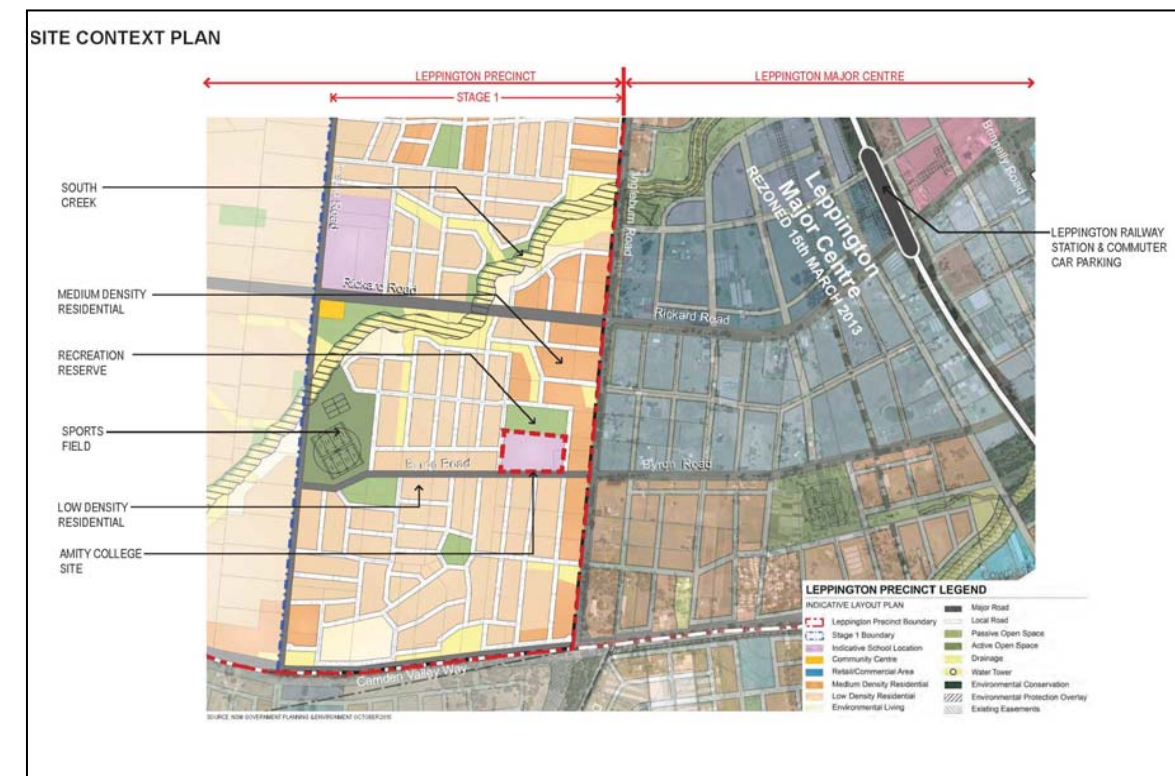


Fig. 4 – Site Context Plan

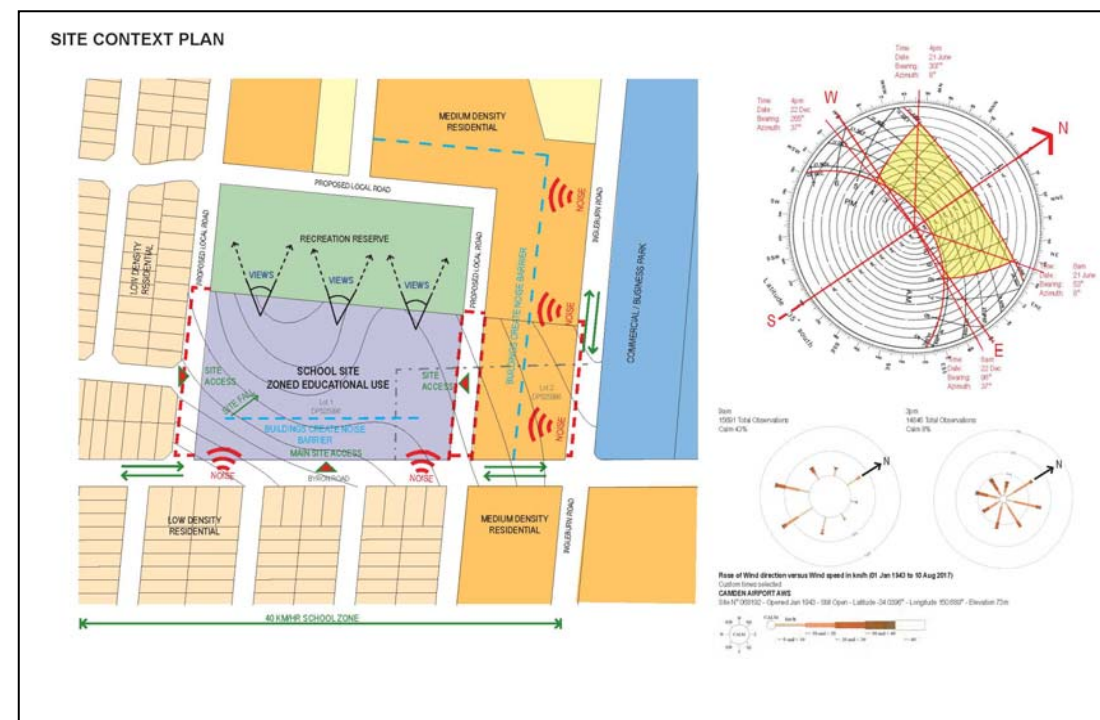


Fig. 5 – site context Plan



Fig. 6 – Site Existing Vegetation

1.5.2 Site Conditions

Elevations along the southern boundary of the site range from RL 102m AHD, nearest Byron Road, to RL 98.0m in the south-west corner, a fall of 4m over a distance of approximately 125m. Refer also Fig. 5 Site Context Plan. The site has a reasonably gentle downward slope to north. The Leppington Precinct envisages that Ingleburn Road, located approximately 86m to the north-east of the school site, will become a major road with Byron Road to be a collector road.

1.5.3 Vegetation

The site contains trees forming a part of the Cumberland Plain Woodland, including a patch of regrowth vegetation in the southern portion, in a poor condition – refer Fig. 6. Due to their poor condition, these trees will be removed but will be replaced with trees native to the area to maintain biodiversity and to provide shade. Existing introduced shrubs and bushes will be removed and replaced with a diversity of native plants appropriate to the educational and campus setting.

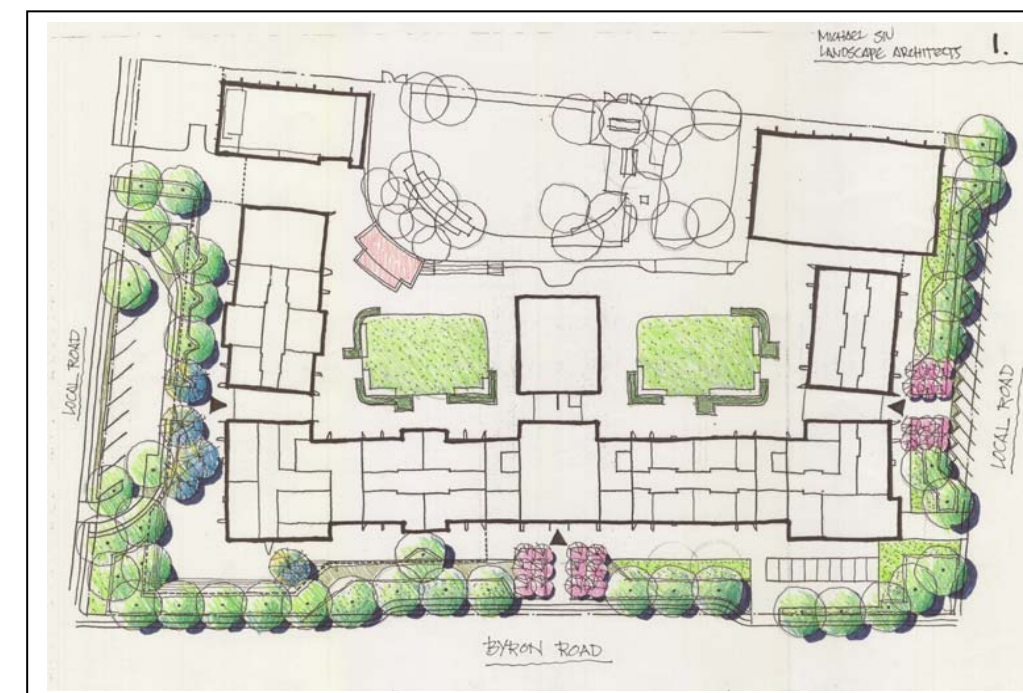


Fig. 7 – Preliminary Landscape Layout

It should be noted that the Leppington Precinct was the subject of detailed ecological studies, undertaken on behalf of the Department of Planning & Infrastructure in 2014. These studies found that the project site contained trees forming part of the Cumberland Plan Woodland) in poor condition (source: Ecological Australia on behalf of the Department of Planning & Infrastructure *Leppington Rezoning Assessment Biodiversity and Riparian Studies June 2014*). Importantly, prior to final release of the Leppington Precinct, a decision was made by the Department of Planning & Environment to zone the larger stand of this vegetation for the purposes of a school and, once rezoned, to not require this vegetation stand to be retained (source: *NSW Department of Planning and Environment Leppington (Stage 1) Finalisation Report October 2015*).

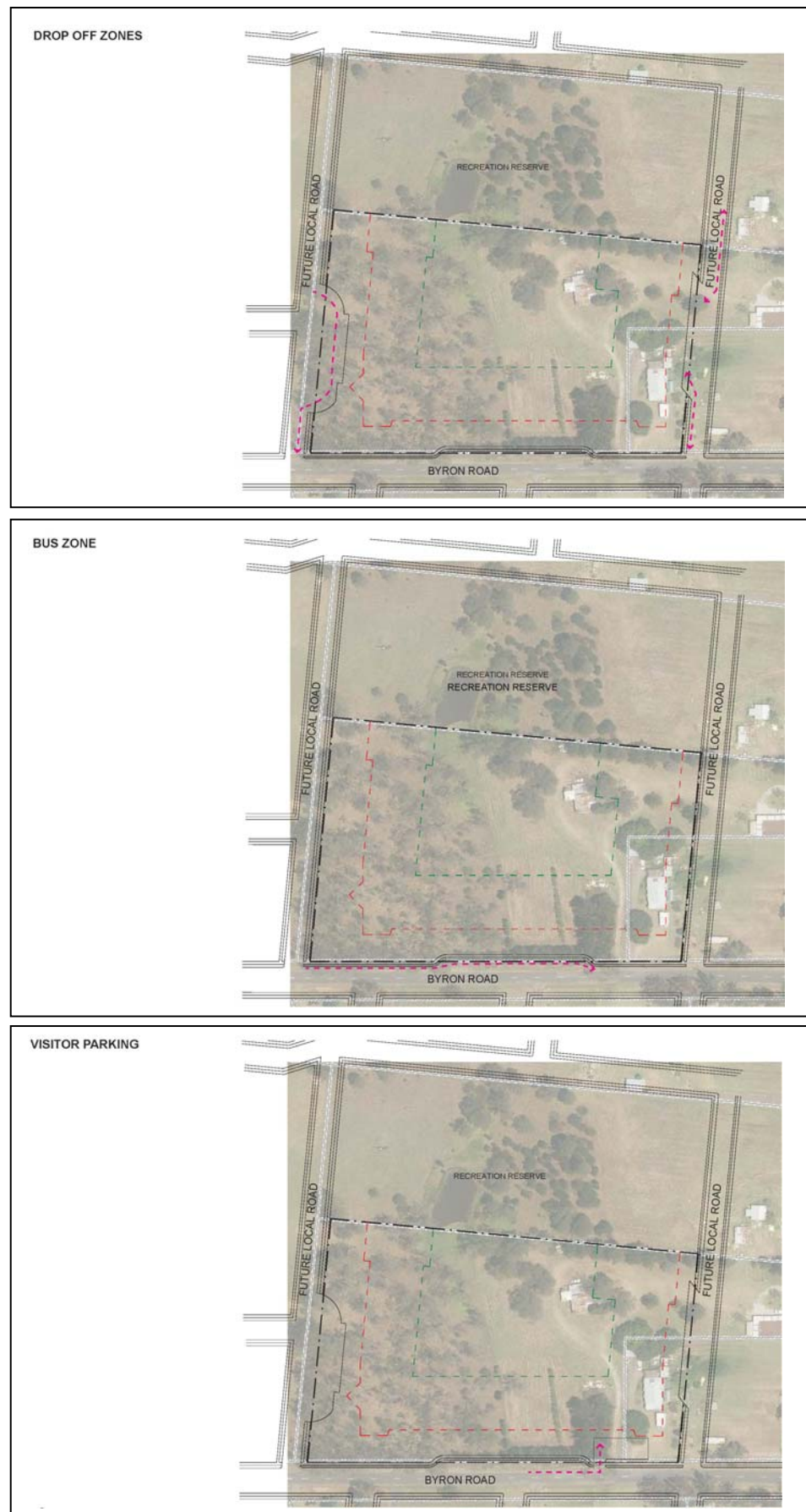


Fig. 8 – Drop Off & Bus Zones and Visitor Parking

1.5.4 Circulation

Circulation around and into the site is carefully designed to provide minimal intrusion to the local area in school morning and afternoon rush hours as well as to provide controlled entry to the school both during and out of school hours. Drop off zones for Primary and Secondary will be located on the north east and south west local roads. The bus zone as well as visitor parking will be located at the front of the school on the collector road, Byron Road. Refer Figs 8 & 9. As parts of the school will be available for community use, circulation to and within these areas will be carefully controlled to maintain school security.



Fig. 9 - Parking

The School has been laid out to locate the two storey Primary School buildings to the high point (south east) of the site with the three storey Secondary School buildings at the low point (north east) of the site. Refer Fig. 10. Circulation within the site will allow for a variety of internal and external circulation routes throughout the school. Internally, the circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces. The central spine includes light wells to bring central light into the lower floor as well as providing visual connections and spaces for connections.

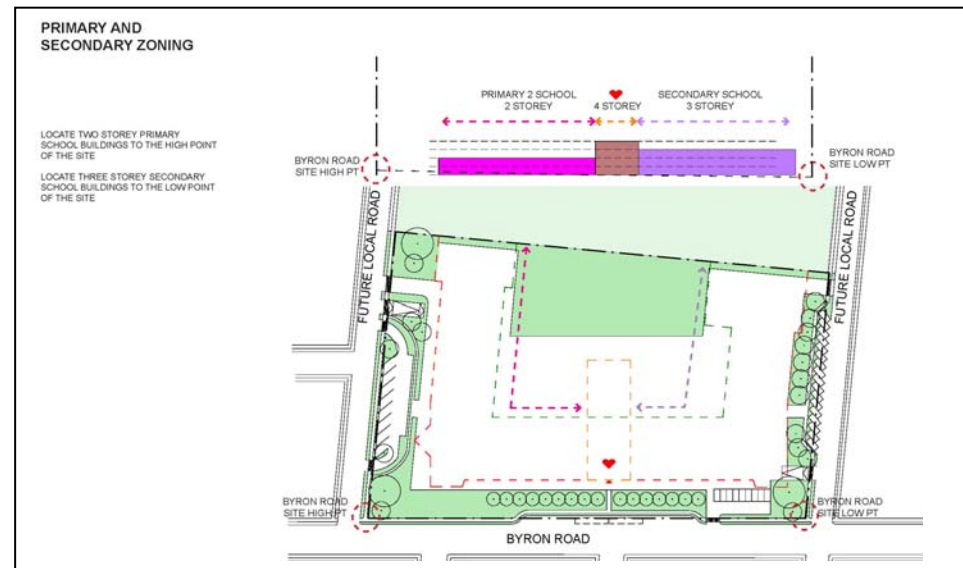


Fig. 10 – Primary and Secondary School Zoning

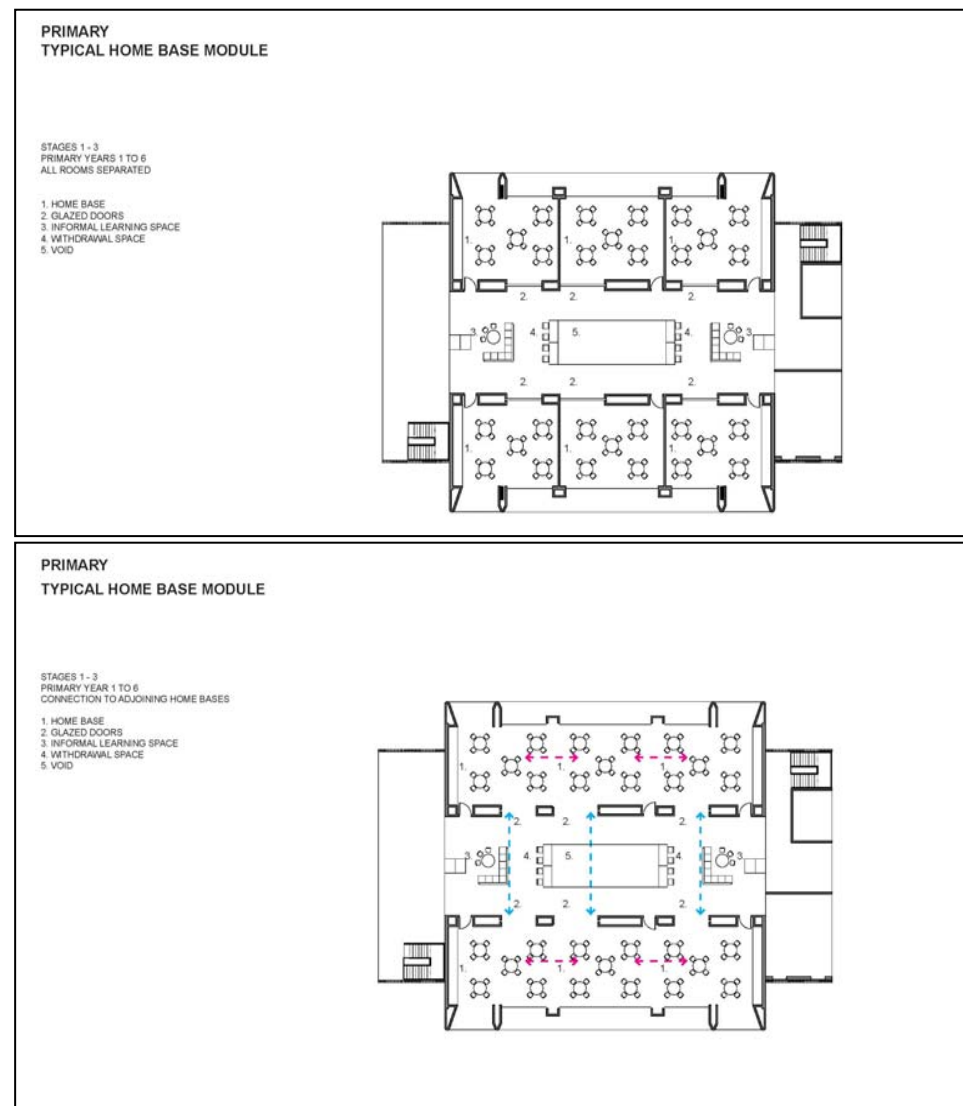


Fig. 11 – Typical Homebase Module Showing Flexible Layouts

1.5.5 C21 Teaching and Learning Principles

Probably the most fundamental principle of 21st Century Learning (C21) is Flexibility of methods and spaces for learning. The proposed school buildings are constructed using a modular structural and functional grid that provides for a variety of different spaces ranging from large open group spaces through smaller structured directed learning spaces to small group rooms for focused activity. The circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces. Refer Fig. 12. The central spine includes light wells to bring central light into the lower floor as well as providing visual connections and spaces for connections. Refer to Fig. 11 for different combination of spaces provided by the modular system.

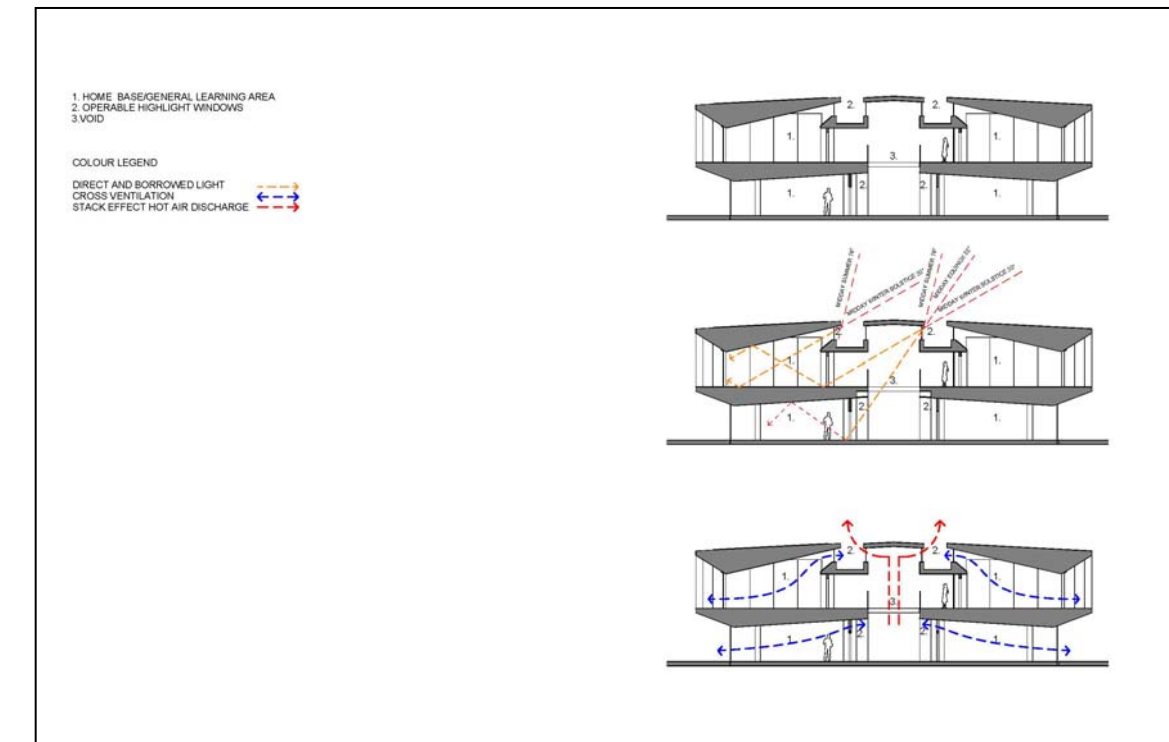


Fig. 12 – Typical Module Cross Section

The provision of dedicated Science, Technology, Engineering and Maths (STEM) spaces will also provide for project based learning. The modular system also allows for STEM activities to be more embedded into the different learning spaces as it becomes more a more integral part of the educational process.

The substantial use of glazing both internally and externally provides for visual connections between teaching spaces and out to the external environment. The articulated ceilings in combination with the expansive external glazing will bring light and natural ventilation deep into the rooms contributing to a natural environment supportive to C21 learning. Refer Fig. 12.



Fig. 13 – Site Layout

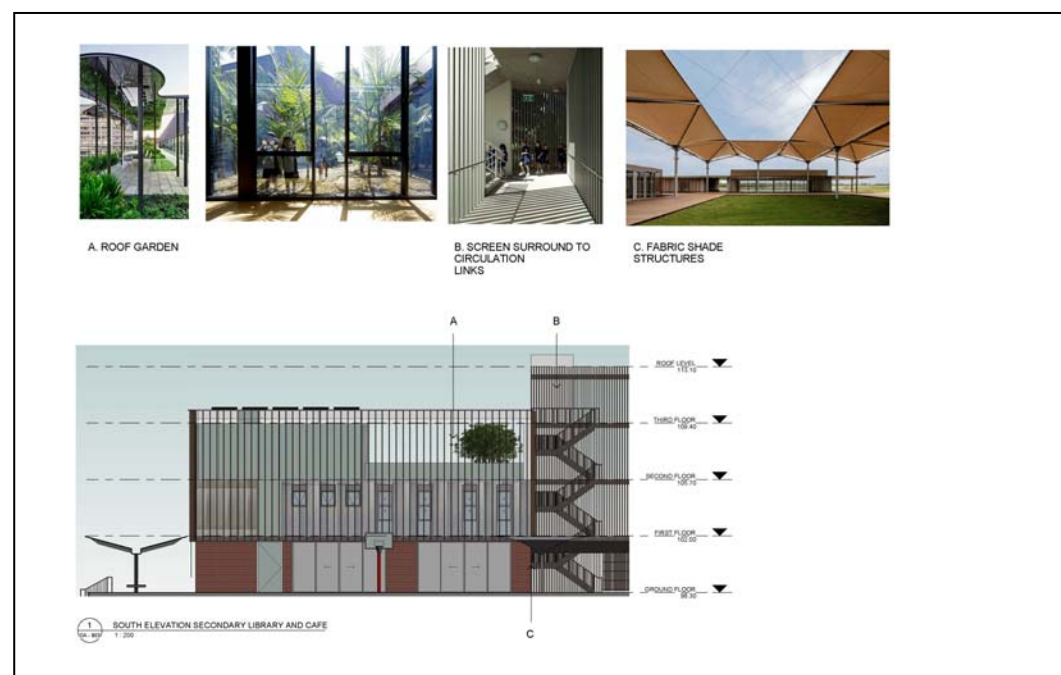


Fig. 14 –Material Palette

1.5.6 Environmental Factors

Solar Exposure and Prevailing Winds –as noted above the site has a reasonably gentle downward slope to north (Fig. 5). This is ideal for the buildings to address the northerly aspect. However it also provides the challenge of controlling summer solar heat gain on the north and west faces. Prevailing cold southwest winter winds will be mitigated by the building wing along the southwest boundary. Refer Fig. 13. Controlled ventilation will take advantage of the summer northerly and southerly breezes for cooling.

Energy conservation will be achieved in a variety ways in this project. It will incorporate passive heating and cooling principles – high openable windows with interior clerestory and double height circulation spaces provide cross ventilation and vertical extraction (stack effect). Profiled ceilings will assist in light control and ventilation. The school buildings are generally oriented towards the north east, taking advantage of the sun's passage through the day. Deep eaves will provide shading in summer while admitting winter sun. Refer also Figs. 5 & 12.

The development will incorporate solar panels that will contribute to the school's energy use with the potential to back feed the energy grid out of school hours.

Rainwater harvesting will be used for landscape irrigation and will be incorporated in the school's agricultural program. The project incorporates a school garden that will be incorporated in the school's agricultural program.

All of these principles will be incorporated in the buildings in a demonstrable fashion so that they can be used as educational tools. For example, the solar panels will be connected to meters in educational spaces for the students to map electrical use and generation.

1.5.7 Sustainability

The modular structural and functional grid of the new school buildings will allow for a variety of different uses as well as different spaces as the school develops in size and complexity. As is shown by the staging diagrams, different parts of the school are used for different functions in different stages of the development. We recognize that learning methods constantly change over time. The flexibility of the modular system will support the evolving education system. This flexibility means that changes will be easily incorporated into the existing buildings with minor changes, as well as extending the useful life of the building.

Materials have been selected to minimise embodied energy while ensuring longevity. For example, simple things such as ceiling tiles can be selected to incorporate a high percentage of recycled materials, lowering the energy required to produce the material. Locally produced materials have a lower transport component which is a significant part of the total energy required to place the material in the building. The school will be designed to be durable, resilient and adaptable, enabling it to evolve over time to meet future requirements.



Fig. 15 – Security and Community Use

1.5.8 Accessibility

The school has been planned to be accessible to both the school community and the local and greater communities. In particular the Multipurpose and Primary School Halls will address both the street and the adjacent recreation zoned area. They will be easily separable from the rest of the school in order that they may be used for out-of-hours community use. The Central “Heart of School” is designed to provide a welcoming space for the greater school community as well as the local community for gathering and meeting, providing a venue for smaller, informal presentations and performances.

As parts of the school will be available for community use, circulation to and within these areas will be carefully controlled to maintain school security. Circulation within the site will allow for a variety of internal and external circulation routes throughout the school. Refer Fig. 15. Internally, the circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces. Refer Figs. 11 & 13.

The circulation routes provide accessibility for people with disabilities linking the separate primary and secondary blocks with the central “Heart of School” containing the administration. Internal vertical movement for people with disabilities will be provided by lifts. External changes of level will all incorporate accessible ramps.

1.5.9 Provision for Current and Future Technologies

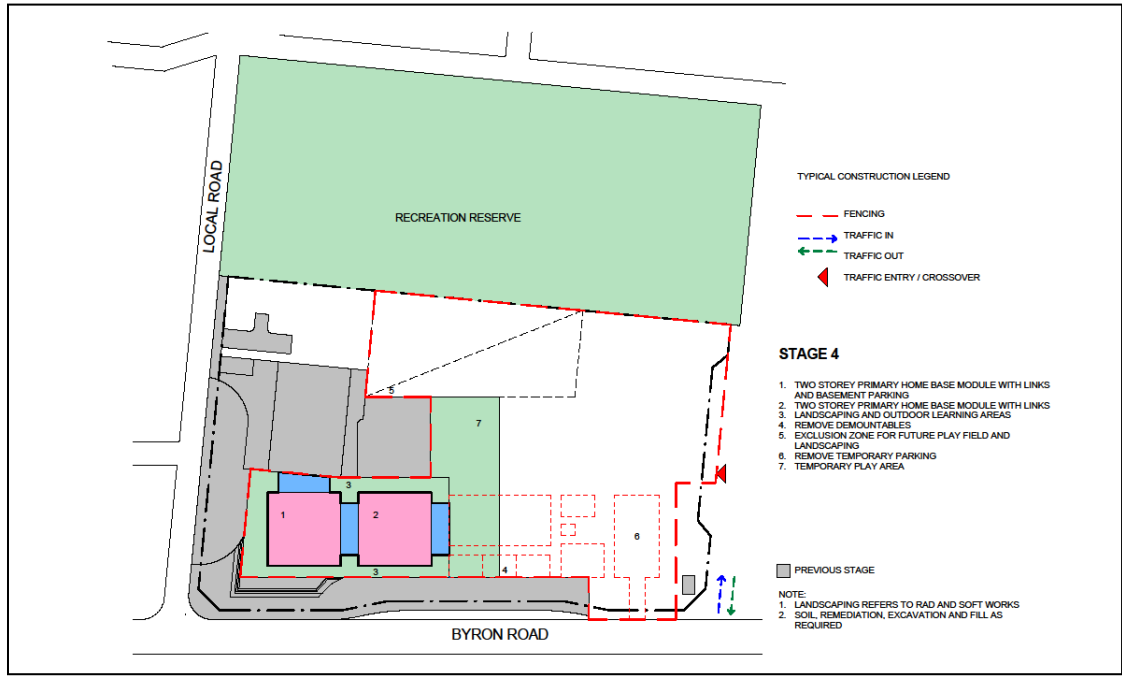
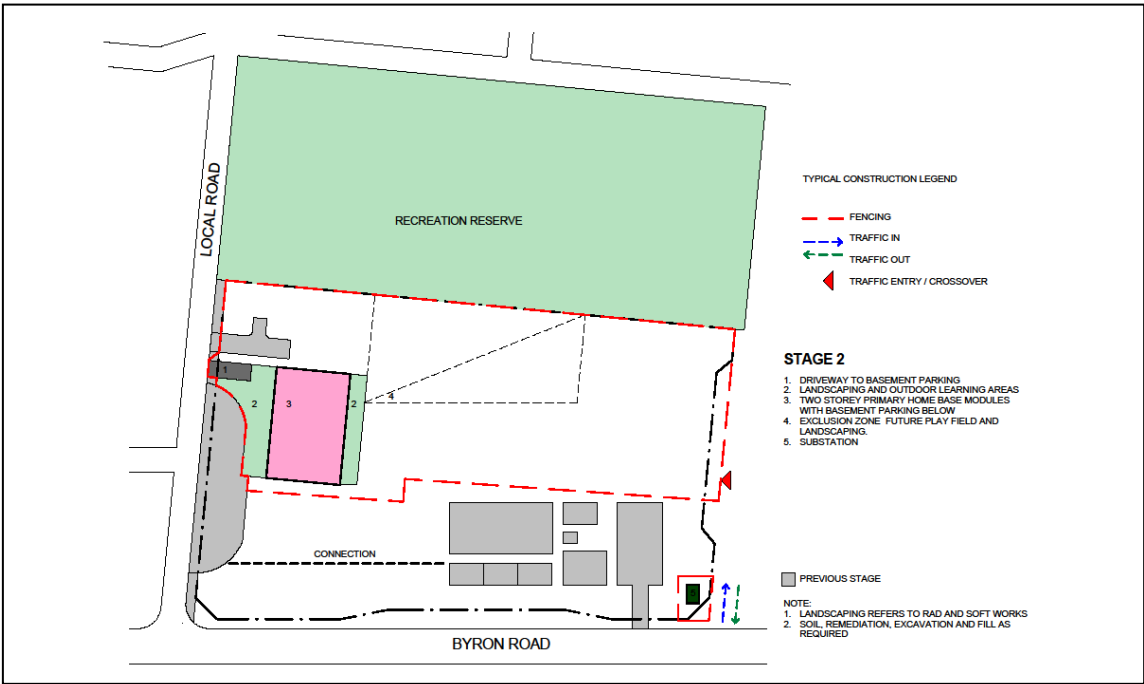
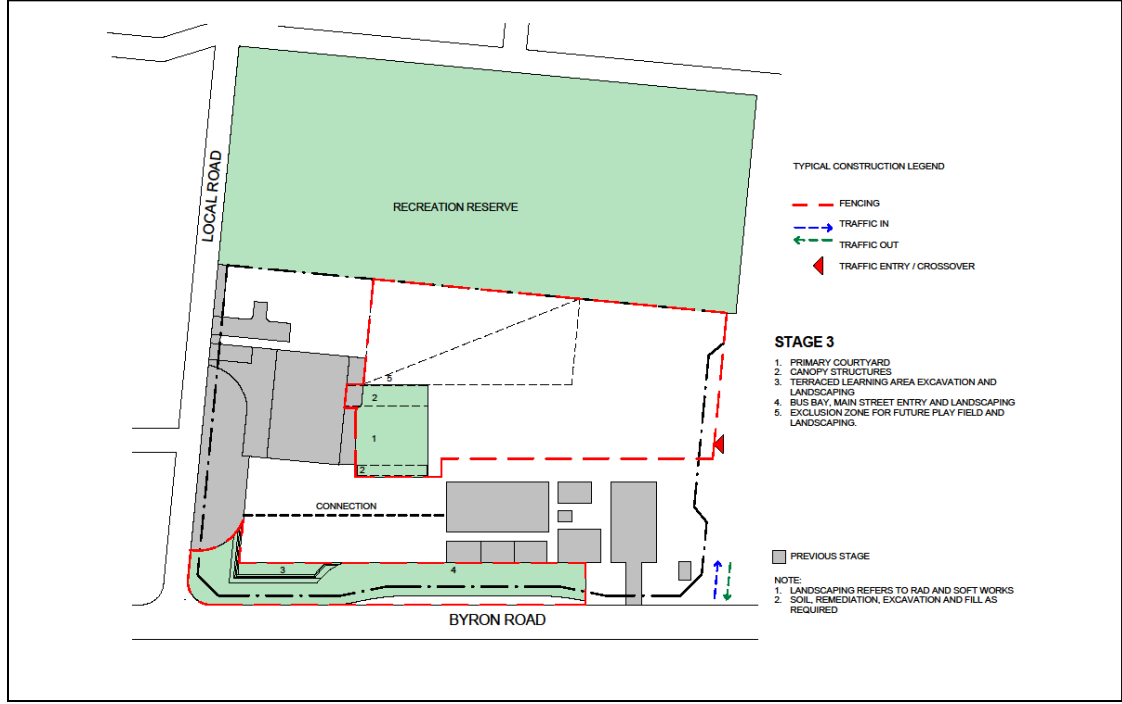
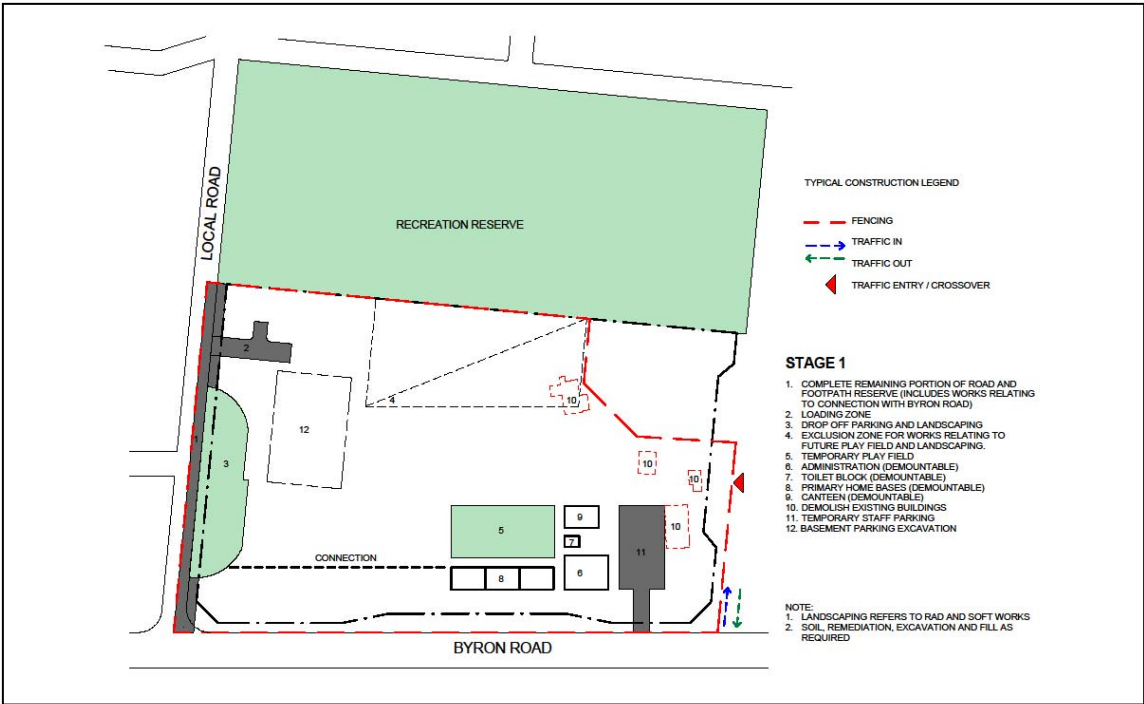
Amity College’s Prestons campus currently incorporates a highly developed IT unit supporting iPads for senior school students and incorporating these in the school’s curriculum and teaching methods. This includes facility for students to connect to each other for group and individual support. This technology will be implemented and developed in the new school. The new school at Leppington will also be equipped with facilities for connected learning with remote locations to allow group collaboration across different states and internationally. New and emerging technologies support and encourage design creativity. The design provides for “Maker Spaces” within the learning areas as well as specialist spaces for more technical requirements. The use of future technologies will be supported by the flexibility provided by the modular system.

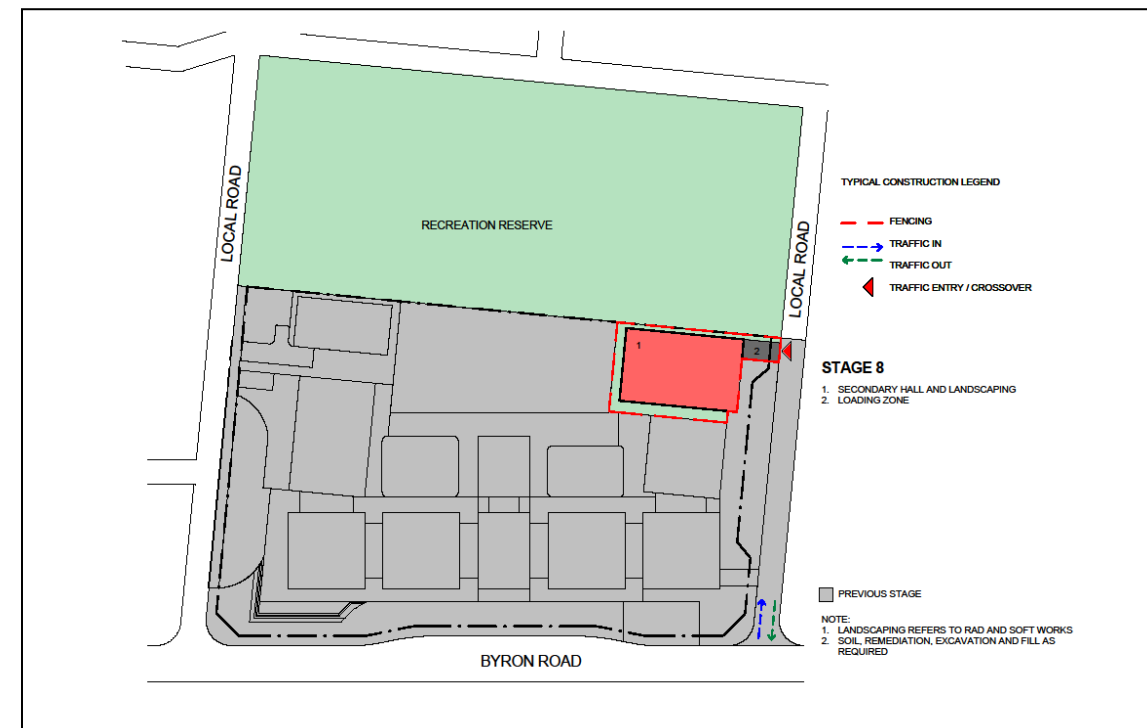
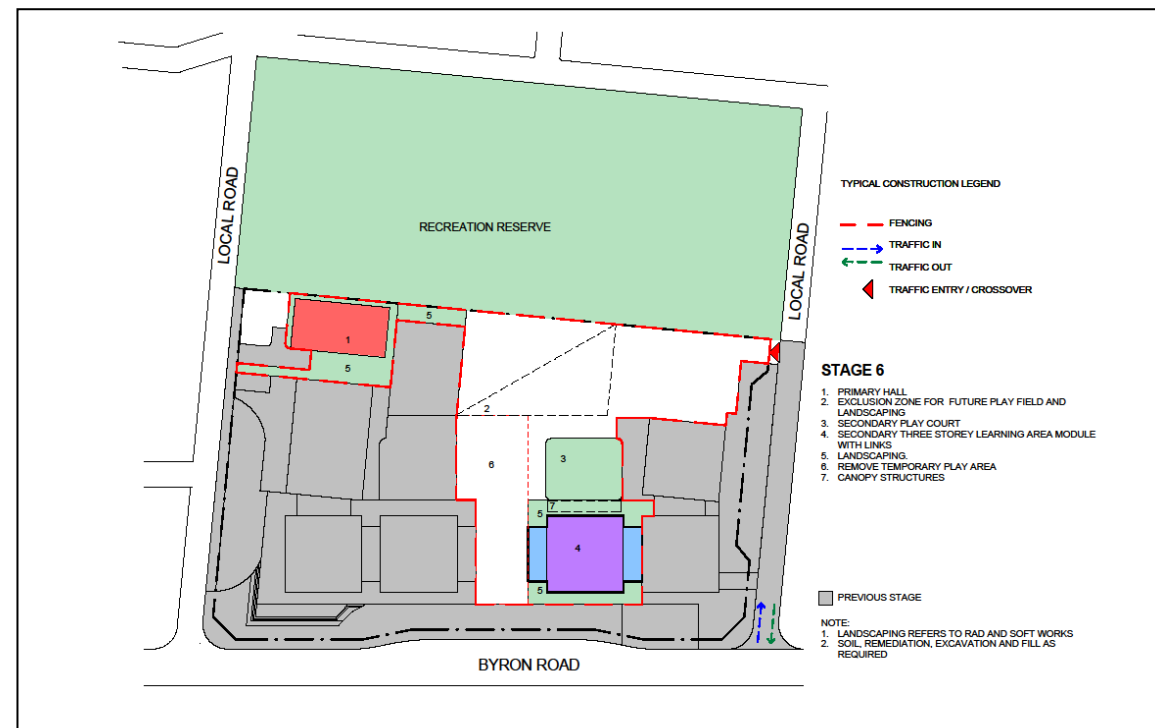
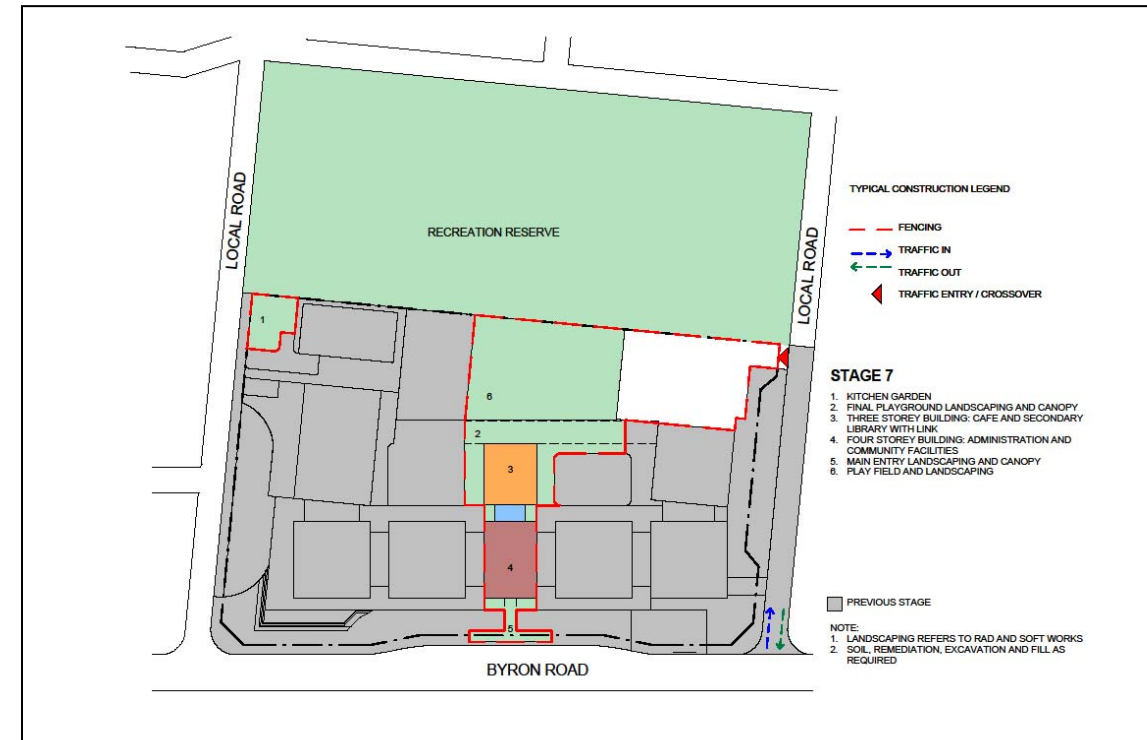
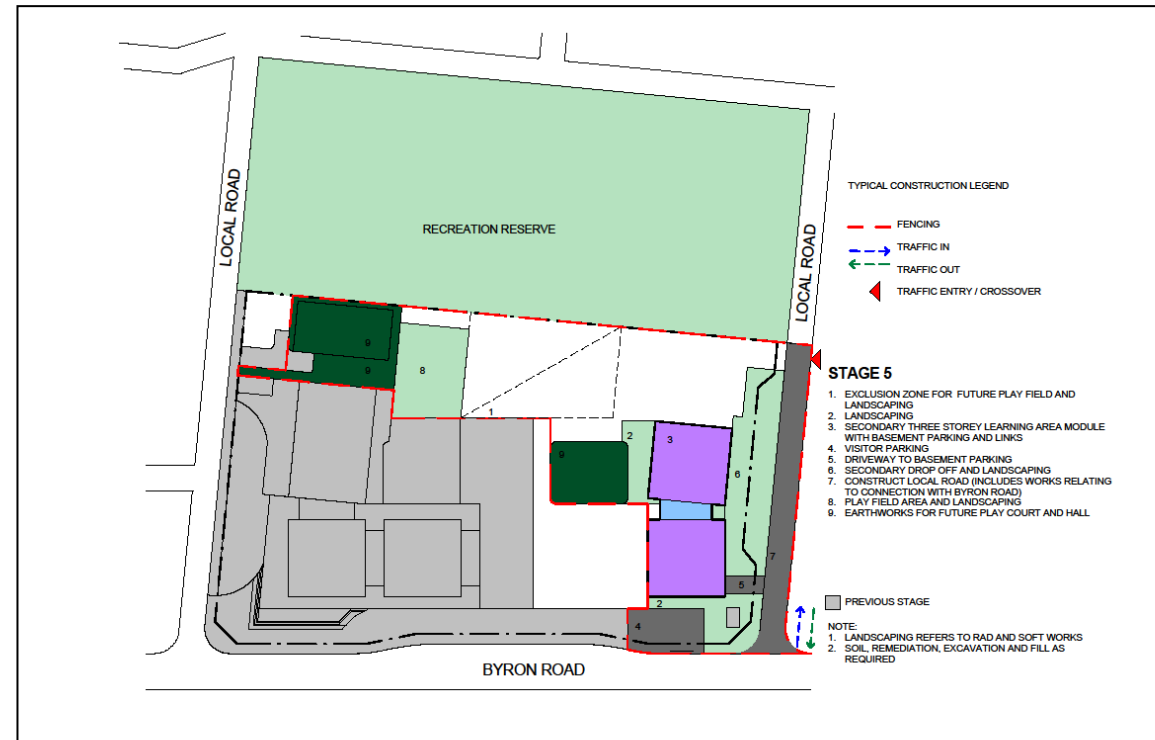
1.5.10 Adaptability of Buildings for Future Use in Flexible Ways

The modular structural and functional grid of the new school buildings will allow for a variety of different uses as well as different spaces as the school develops in size and complexity. As can be from the staging diagrams in the next section, different parts of the school are used for different functions in different stages of the development. It is recognized that learning methods constantly change over time. The flexibility of the modular system will support the evolving education system.

2. STAGING

The below diagrams show the proposed staging of the development.





DESIGN QUALITY PRINCIPLES	
Item	Response
1. Context, built form and landscape	
<i>Respect and respond to its physical context, neighbourhood character, streetscape quality and heritage.</i>	Considered
<i>Consider interpretation of Aboriginal cultural heritage within the design of buildings and open spaces in consultation with local Aboriginal community.</i>	Not applicable
<i>Respond to its natural environment including scenic value, local landscape setting and orientation</i>	Considered
<i>Retain existing built form and vegetation where significant</i>	Considered
<i>Include tree planting and other planting that enhances opportunities for play and learning</i>	Considered
<i>Ensure landscaping improves the amenity within school grounds and for uses adjacent to the school</i>	Considered
<i>Be informed by a current Conservation Management Plan (CMP) and consider local heritage items both on the school site and in the local neighbourhood</i>	Not applicable
<i>Take advantage of its context by optimising access to nearby transport, public facilities and local centres</i>	Considered
<i>Consider height and scale of school development in relationship to neighbouring properties.</i>	Considered

3. RESPONSE TO EDUCATION SEPP DESIGN QUALITY PRINCIPLES

3.1 Context, Built Form and Landscape

The proposed school is located in the Leppington Priority Precinct. This precinct is in the early stages of development. The lots adjacent to the site are currently undeveloped, however the lots to the south will be developed as a low density residential area, with lots to the north-west and to the north-east developed for the purposes of medium density housing. Some 300m away to the south-west, fronting Byron Road, is a site approved for a 894 place primary and high school, to be developed by The Anglican Schools Corporation. The school site is bounded on the south east by a feeder road (Byron Road) and will be bounded on the north east and south west by local roads (to be constructed). The design takes advantage of this by locating car drop-off/pick up zones on the local roads and bus bays on the feeder road. The buildings are arranged around two play courtyards, opening to the north west towards a larger play area and the future recreation reserve. Refer Figs. 5 & 10.

The site was not identified as significant to the local community, with no archaeological sites or relics found on site.

The proposed buildings will be arranged around two north facing play courtyards, opening to the north west towards a larger play area and the future recreation reserve. In accordance with the *Department of Planning & Environment Leppington Stage 1 Finalisation Report* this recreation reserve is intended to be co-shared with the local council for passive and active play. There is also a terraced courtyard adjoining other outdoor learning areas for the primary school. This courtyard takes advantage of the site slope to provide an amphitheatre type space as well as a buffer to Byron Road. Refer also Fig. 10.

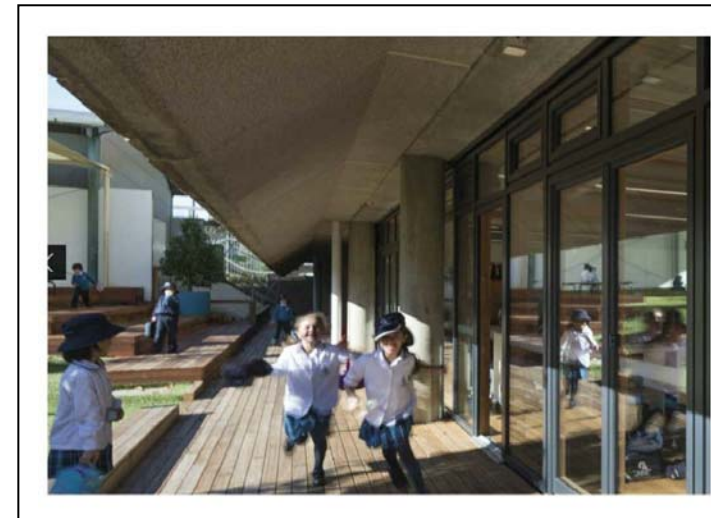


Fig 16 – Aluminium framed sliding doors connect indoor and outdoor spaces

The existing buildings on the site consist of two nondescript residences and some storage sheds in average to poor condition. Retention of these buildings is not worthwhile.

Due to their poor condition, the trees will be removed and will be replaced with trees native to the area to maintain biodiversity and to provide shade. The landscaping has

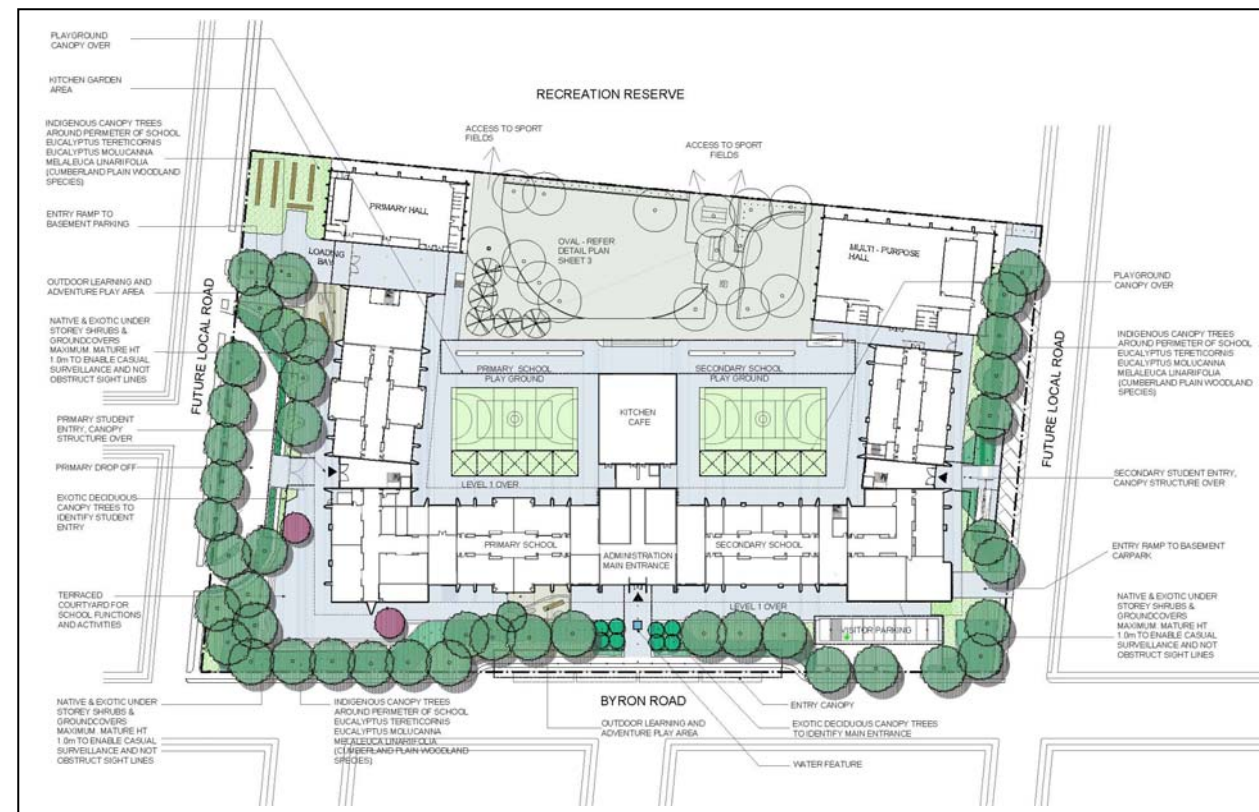


Fig. 17 – Landscape Masterplan

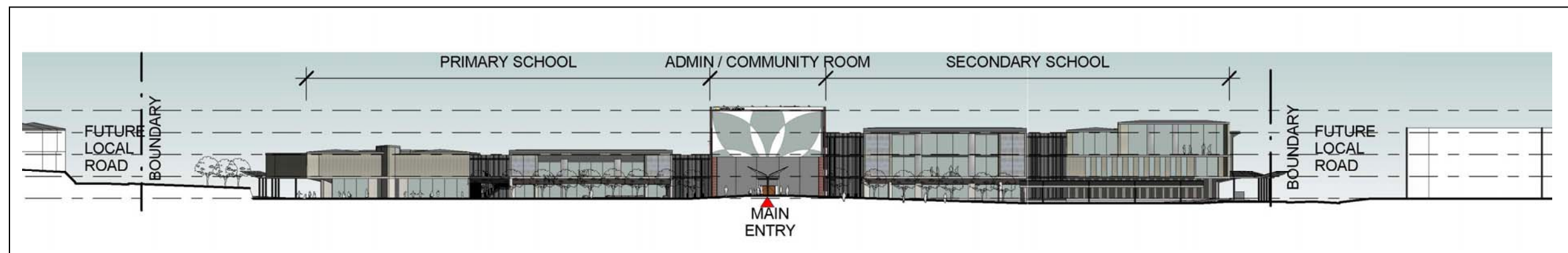


Fig. 18 – South Elevation

been carefully designed to provide shade and to support learning and play in the external environment.

Landscaping has been designed with the concepts of Shelter, Play and Learning as underlying principles. The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces. Trees and planting around the perimeter of the school will articulate the various entries and external spaces around the school and will provide a visual gradient from the street edge to the buildings.

The site neither has nor requires a Conservation Management Plan

The school site lies approximately 1.2km away from the planned Leppington Major Centre and existing railway station and will be connected by bus to the railway station. Existing Public bus routes are provided along nearby Ingleburn Road. The school will provide bicycle parking and is within a short distance of the planned pedestrian and bicycle network (refer *Camden Growth Centre Precincts Development Control Plan*)

The school varies in height from 2 stories (Primary) to 3 stories (Secondary) along the south-west/north-east with the central “Heart of School” being 4 stories high emphasising the public entry to the school. The lower 2 storey section relates to the lower density 2 storey single residential zoning to the south-west and the 3 storey section is adjacent to the 3 plus storey medium density zoning to the north-west. Refer also Figs. 10 and 18.

DESIGN QUALITY PRINCIPLES	
Item	Response
2. Sustainable, Efficient and Durable	
<i>Be responsive to local climate including sun, wind and aspect.</i>	Considered
<i>Select materials and approaches to detailing that are robust and durable.</i>	Considered
<i>Integrate landscape, planting and Water Sensitive Urban Design (WSUD) principles to enhance amenity and building performance.</i>	Considered
<i>Include deep soil zones for ground water recharge and planting.</i>	Considered
<i>Minimise reliance on mechanical systems.</i>	Considered
<i>Include initiatives to reduce waste, embodied energy and emissions, through passive design principles and the use of advanced energy production systems where possible.</i>	Considered
<i>Maximise opportunities for safe walking, cycling and public transport access to and from the school.</i>	Considered



Fig 19 – A variety of robust materials provides for longevity and tactile stimulation

3.2 Sustainable, Efficient and Durable

As noted in Section 1.5.6, the site has a reasonably gentle downward slope to north. This is ideal for the buildings to address the northerly aspect. Prevailing cold south-west winter winds will be mitigated by the building wing along the south-west boundary. Controlled ventilation will take advantage of the summer northerly and southerly breezes for cooling.

The proposed planting will include native trees and diversity of native plants appropriate to the educational and campus setting that will enhance amenity and building performance. WSUD is addressed by harvesting rainwater for reuse in the landscape

All landscape planting will be in deep soil with the exception of the Library roof garden.

The project will incorporate passive heating and cooling principles – high openable windows with interior clerestory and double height circulation spaces provide cross ventilation and vertical extraction (stack effect). Profiled ceilings will assist in light control and ventilation. The school buildings are generally oriented towards the north-east, taking advantage of the sun's passage through the day. Deep eaves will provide shading in summer while admitting winter sun. Mechanical heating and cooling, where provided will be interfaced with these passive systems to minimise energy use. Refer also Section 1.5.6

Materials have been carefully selected reduce embodied energy. The school will be designed to be durable, resilient and adaptable, enabling it to evolve over time to meet future requirements. Materials are also chosen for their tactile and biophilic characteristics. For example, the use of timber is conducive to a warm, natural environment. Refer also Section 1.5.7.



Fig. 20 – A mixture of natural materials, including timber

The school site lies approximately 1.2km away from the planned Leppington Major Centre and railway station and will be connected by bus to the railway station. Public bus routes are provided along nearby Ingleburn Road. The school will provide parking for 78 bicycles and will be connected to the planned pedestrian and bicycle network serving the Leppington Precinct (refer Fig. 2.12 Schedule 5 Leppington Priority Precinct forming part of Camden Growth Centre Precincts Development Control Plan).

DESIGN QUALITY PRINCIPLES	
Item	Response
3. Accessible and Inclusive	
<i>Establish security requirements early to ensure any required secure lines can be designed and integrated with built form.</i>	Considered
<i>Balance security with accessibility and inclusiveness by minimising the use of fencing particularly along street frontages.</i>	Considered
<i>Engage students, educators and the community in development of the vision and design brief for the school.</i>	Considered
<i>Allow for passive and dynamic play of different age groups.</i>	Considered
<i>Provide school frontages and entrances that are visible, engaging and welcoming.</i>	Considered
<i>Encourage access for members of the community to shared facilities after hours.</i>	Considered
<i>Ensure clear and logical wayfinding across the school site and between buildings for all users including after hours community users.</i>	Considered
<i>Ensure accessibility for all users of the site.</i>	Considered
<i>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.</i>	Not Applicable



Fig. 21 – Modular system provides clear circulation and security

3.3 Accessible and Inclusive

Security of the students is very important to the school and has been carefully considered in the design. Public entry is restricted to the central entry on Byron Road. Access to the interior of the school is controlled in Reception. Student entry and egress at start of school and end of school will be via supervised main access points adjacent to the pickup/drop off areas and the bus bays. The college actively supports community use of the school facilities. These are generally the multipurpose hall, the primary school hall and community facilities in the “Heart of the School”. These areas can all be secured from the rest of the school during out of hours use.

Security at the perimeter of the school has been carefully considered to provide a mix of perimeter fencing set back from the street edge behind carparking and landscaping (in the primary school) and the face of the building also set behind carparking and landscaping (secondary school). This maintains a sense of openness and welcoming while maintaining security. On many occasions the wall of the building itself is the security element.

The development of the Master Plan has involved consultation with shared with parents, students, staff, P&F Assoc., School Alumni, Liverpool Council, NSW Association of Independent Schools and NSW Government Architect Refer also to Section 1.4 and “Consultation” section of the EIS.

The external plays areas are generally separated into a primary and secondary games courts as well as a structured early primary play area. These areas open out to a large play area which is connected the shared recreation reserve. Refer also Fig. 15.

The street elevations have been carefully designed to provide articulated faces that respond in scale to the domestic surroundings. They are set back from the street edges with a mix of landscaping and parking/dropoff. This maintains a sense of openness and welcoming while maintaining security. A covered entry structure provides a welcoming gesture to the street to all entry points. Refer Fig. 18.

The college actively supports community use of the school facilities. These are generally the multipurpose hall and community facilities in the “Heart of the School”. These areas can all be secured from the rest of the school during out of hours use.

The layout of the school into Primary, Secondary and central “Heart of School” wings with central circulation spines and is orderly and logical and provides for easy wayfinding and establishment of security during out of hours use.

As parts of the school will be available for community use, circulation to and within these areas will be carefully controlled to maintain school security. Circulation within the site will allow for a variety of internal and external circulation routes throughout the school. Internally, the circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces.

The circulation routes provide accessibility for people with disabilities linking the separate primary and secondary blocks with the central “Heart of School” containing the administration. Internal vertical movement for people with disabilities will be provided by lifts. External changes of level will all incorporate accessible ramps.

DESIGN QUALITY PRINCIPLES	
Item	Response
4. Health and Safety	
<i>Locate buildings and design facades that optimise fresh air intake and access to daylight.</i>	Considered
<i>Prioritise pedestrians and avoid conflicts between vehicles and people.</i>	Considered
<i>Provide covered areas for protection from sun and rain.</i>	Considered
<i>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.</i>	Considered
<i>Support passive surveillance, including through the location of toilets and areas for communal use outside of school hours.</i>	Considered
<i>Incorporate Crime Prevention Through Environmental Design (CPTED) principles.</i>	Considered
<i>Clearly define access arrangements for after school hours.</i>	Considered
<i>Consider location and number of toilet facilities to allow safe use by different age groups and genders.</i>	Considered

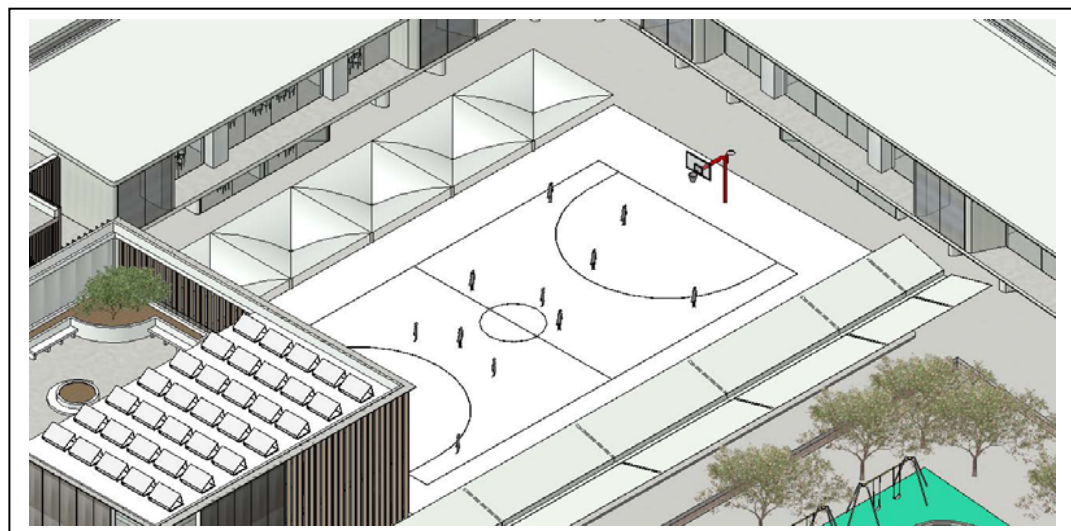


Fig. 22 - A variety of covered spaces provides protection from sun and rain

3.4 Health and Safety

The design incorporates passive heating and cooling principles – high openable windows with interior clerestory and double height circulation spaces provide cross ventilation and vertical extraction. Profiled ceilings will assist in light control and ventilation. The school buildings are generally oriented towards north-east, taking advantage of the sun's passage through the day. Deep eaves will provide shading in summer while admitting winter sun. Atria provided in the central circulation spaces bring light deep within the building. Refer also Section 1.5.6 and Figs. 5 & 12.

The school site is bounded on the south-east by Byron Road and will be bounded on the north-east and south-west by local roads (to be constructed). The design takes advantage of this by locating car drop-off/pick up zones on the local roads and bus bays on Byron Road. In so doing, this will separate pedestrians and vehicles (and different vehicle scales) simply and effectively

The first storey overhangs the ground floor to provide covered external circulation around the buildings. The games courts are provided with shade structures. A covered structure is provided along the north-west side of the games courts and a covered entry structure provides a welcoming gesture to the street to all entries.

The school will provide bicycle parking and connects with the planned pedestrian and bicycle network serving the Leppington Precinct (refer Fig. 2.12 Schedule 5 Leppington Priority Precinct forming part of Camden Growth Centre Precincts Development Control Plan forming part of Camden Growth Centre Precincts Development Control Plan).

The out of hours community use facilities are generally the multipurpose hall, primary school hall and community facilities in the "Heart of the School". These areas can all be secured from the rest of the school during out of hours use. Amenities and other common facilities are located in the links between the modules.

Refer Environmental Impact Statement Crime Prevention Through Design (CPTD)

The out-of-hours community use facilities are generally the multipurpose hall, primary school hall and community facilities in the "Heart of the School". These areas can all be secured from the rest of the school during out of hours use. They are all easily accessible from the street without compromising the security of the school.

Amenities and other common facilities are located in the links between the modules. This allows for age appropriate use in the different sections of the school as well as passive surveillance from circulation spaces and common areas. The bank of toilets located under the primary school hall is located conveniently to the playing field.

DESIGN QUALITY PRINCIPLES	
Item	Response
5. Amenity	
<i>Be integrated into, and maximise the use of the natural environment for learning and play.</i>	Considered
<i>Ensure access to sunlight, natural ventilation and visual outlook wherever possible.</i>	Considered
<i>Facilitate flexible learning by providing access to technology.</i>	Considered
<i>Seek opportunities for buildings and outdoor spaces to be learning tools in themselves.</i>	Considered
<i>Provide a diversity of indoor and outdoor spaces to facilitate informal and formal uses.</i>	Considered
<i>Provide buffer planting in setbacks where appropriate to reduce the impact of new development.</i>	Considered
<i>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.</i>	Not Applicable
<i>Locate buildings away from noisy roads and other noise sources to ensure acoustic levels within teaching and learning spaces are acceptable.</i>	Considered
<i>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.</i>	Considered

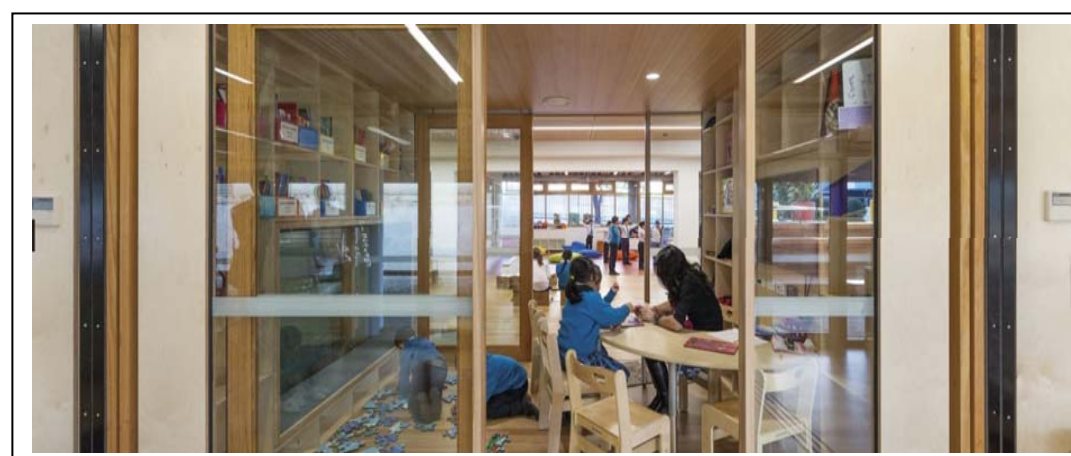


Fig. 23. – Operable walls provide a variety of flexible spaces

3.5 Amenity

Landscaping has been designed with the concepts of Shelter, Play and Learning as underlying principles. The classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces, including a terraced courtyard.

High openable windows with interior clerestory and double height circulation spaces provide cross ventilation and vertical extraction. Profiled ceilings will assist in light control and ventilation. The school buildings are generally oriented towards north east, taking advantage of the sun's passage through the day. Deep eaves will provide shading in summer while admitting winter sun. Atria provided in the central circulation spaces bring light deep within the building. Refer also Section 1.5.6 and Figs. 5 & 12.

The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces. All classrooms are provided with large areas of external glazing, appropriately shaded, for light and external views

The College's Prestons campus currently incorporates a highly developed IT unit supporting ipads for senior school students and incorporating these in the school's curriculum and teaching methods. This includes facility for students to connect to each other for group and individual support. This technology will be implemented and developed in the new school. The new school will also be equipped with facilities for connected learning with remote locations to allow group collaboration across different states and internationally. New and emerging technologies support and encourage design creativity. The design provides for Maker spaces within the learning areas as well as specialist spaces for more technical requirements. The use of future technologies will be supported by the flexibility provided by the modular system.

Sustainability principles will be incorporated in the buildings in a demonstrable fashion so that they can be used as educational tools. For example, the solar panels will be connected to meters educational spaces for the students to map electrical use and generation.

The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces to provide for learning in various indoor and outdoor contexts.

A school garden has been incorporated in the design.

A fundamental principle of 21st Century Learning is flexibility of methods and spaces for learning. The school is designed using a modular structural and functional grid that provides for a variety of different spaces ranging from large open group spaces through smaller structured directed learning spaces to small group rooms for focused activity. The circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces. The central spine includes light wells to bring central light into the lower floor as well as providing visual connections and spaces for connections. Refer to fig. 11 for different combination of spaces provided by the modular system.

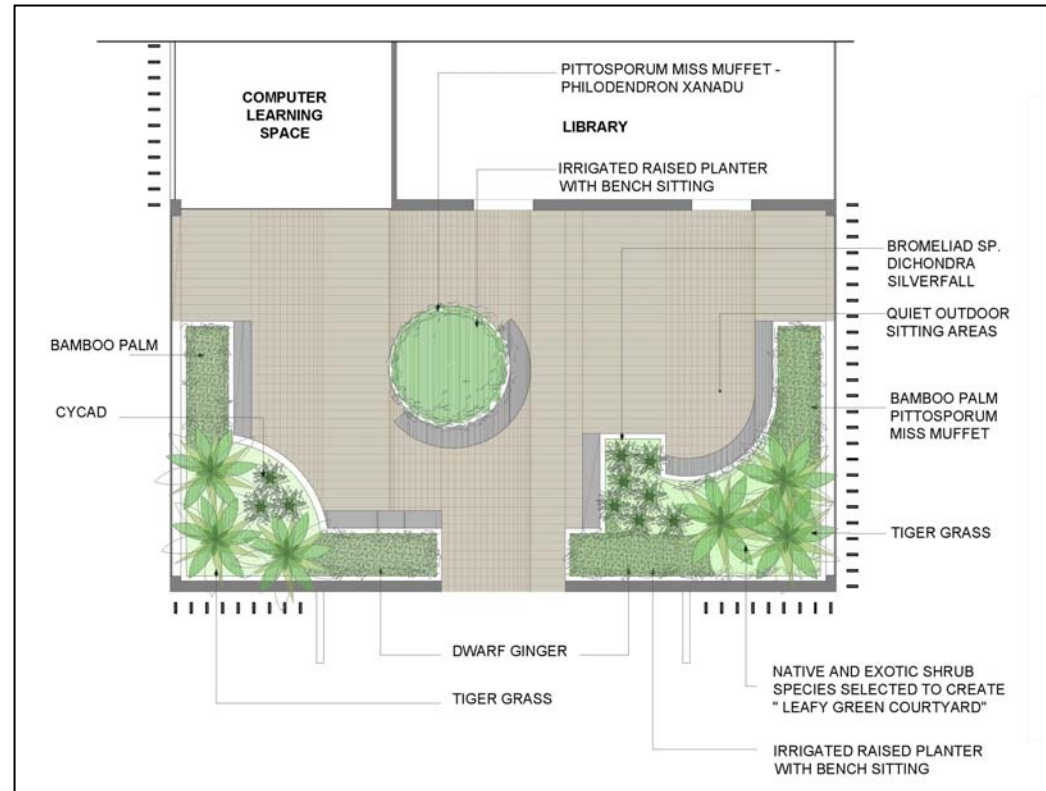


Fig. 24 – Upper Floor Library Terrace

Landscaping has been designed with the concepts of Shelter, Play and Learning as underlying principles. The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces. Refer also Fig. 32.

The buildings are all set back from the streets (approx. 9m to 22m). Trees and planting around the perimeter of the school will articulate the various entries and external spaces around the school and will provide a visual gradient from the street edge to the buildings.

The proposed school does not front any noisy roads, as identified in the State Government's master planning process for Leppington (refer Leppington Precinct Planning Report – Department of Planning and Environment June 2014). Ingleburn Road is identified as a future noisy road. However the school is set back sufficiently from the road to avoid future road traffic noise along this transport route. As well as this the proposed Medium Density zoning will result in a more dense development between the school and Ingleburn Road. The face of the building along Byron Road is set back from the road approximately 16.8m. There are no extreme noise sources affecting the school site. Refer also Acoustic Report.

DESIGN QUALITY PRINCIPLES	
Item	Response
6. Whole of Life, Flexible and Adaptive	
<i>Be integrated into, and maximise the use of the natural environment for learning and play.</i>	Considered
<i>Allow for future adaptation to accommodate demographic changes, new teaching and learning approaches and the integration of new technologies.</i>	Considered
<i>Be based on a masterplan of the school site that includes the testing of options for future potential growth.</i>	Considered
<i>Take a whole-of lifecycle approach when considering cost and consider wider public benefits over time. Provide capacity for multiple uses, flexibility and change of use over time.</i>	Considered
<i>Respond to the findings of a site appraisal including in-ground conditions, contamination, flora and fauna, flooding, drainage and erosion, noise and traffic generation.</i>	Considered
<i>Understand the potential impacts of future local projected growth.</i>	Considered
<i>Design learning spaces to cater for a range of learning styles and group sizes</i>	Considered
<i>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.</i>	Considered

3.6 Whole of Life, Flexible and Adaptive

Landscaping has been designed with the concepts of Shelter, Play and Learning as underlying principles. The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces.

The modular structural and functional grid of the building will allow for a variety of different uses as well as different spaces as the school develops in size and complexity. As can be from the staging diagrams, different parts of the school are used for different functions in different stages of the development. It is recognized that learning methods constantly change over time. The flexibility of the modular system will support the evolving education system.

The masterplan has been based on the staged growth of the school to a maximum size of approximately 1000 students. The shared use of the recreation reserve will provide for additional external space.

Amity College recognises the position of the school in the local community. For this reason it actively supports community use as well as shared use of the adjacent recreation reserve. Provision of parking spaces on the school site for out-of-hours use by the neighbouring reserve is a case in point.

Refer to specialist site investigation reports for in-ground conditions, contamination, flora and fauna, flooding, drainage and erosion, noise and traffic generation.

Leppington is in the heart of South Western Sydney Priority Growth Areas which is to include a Major Town Centre. Part of the Camden City Council, Leppington Precinct will be accommodating a population of more than 26,000 residents and 9000 households by 2036, as well as a new civic precinct comprising a TAFE campus, council community facilities, train services and an integrated health care centre. The proposed new school will make a positive contribution to the precinct development.

The new school has been designed to incorporate and support C21 teaching and learning principles. It will provide for current and future technologies and will be constructed to be adaptable for future use in flexible ways. The design incorporates a modular structural and functional grid that provides for a variety of different spaces ranging from large open group spaces through smaller structured directed learning spaces to small group rooms for focused activity (Refer also Fig. 11). Specialist spaces – tiered learning, laboratories, staff meetings are provided using different combinations in the modular grid as well as in the central “Heart of School” wing.

DESIGN QUALITY PRINCIPLES	
Item	Response
7. Aesthetics	
<i>Reflect a commitment to and investment in design excellence.</i>	Considered
<i>Create engaging and attractive environments.</i>	Considered
<i>Achieve a purposeful composition of materials and elements through a rigorous design process.</i>	Considered
<i>Provide an engaging environment for pedestrians visually and materially along public street frontages.</i>	Considered
<i>Seek opportunities to enhance public facing areas with landscaping and ensure landscape and building design are integrated.</i>	Considered
<i>Integrate service elements with the building design.</i>	Considered
<i>Balance internal spatial requirements with an external mass and scale that responds to its environment.</i>	Considered
<i>Avoid long stretches of security fencing to public facing areas through arrangement of building edges, landscaping, gates and other openings.</i>	Considered
<i>Look for opportunities to include public art.</i>	Considered

3.7 Aesthetics

The Master Plan has been developed over 12 months of consultation with parents, students, staff, P&F Assoc., and School Alumni for feedback/improvements before the final approval by the School Board. The College consulted with Camden Council and reached out to local Community Groups in order to inform the design process. The preliminary Master Plan was workshoped with the NSW Association of Independent Schools “Tomorrow’s Environments for Learning” TEL workshop series. This forum allowed for peer and international expert review and feedback, both of which contributed to the development of the design. The design team met with the Government Architect on two occasions and has incorporated the Design Panel’s comments in the design. Refer also Response to Government Architect Review Comments below. (refer also “Consultation” section of the EIS.

The circulation and learning spaces have purposefully been combined in a wide, flexible circulation spine that provides a variety of spaces as well as connections between spaces. The central spine includes light wells to bring central light into the lower floor as well as providing visual connections and spaces for connections.

Landscaping has been designed with the concepts of Shelter, Play and Learning as underlying principles. The ground floor classrooms, particularly in kindergarten and early Primary, have been designed to open out and extend into external spaces to provide for learning in various indoor and outdoor contexts.

The school is designed to be durable, resilient and adaptable, enabling it to evolve over time to meet future requirements. The material selection is based on simplicity of construction, robustness and economy.

The street elevations have been carefully designed to provide articulated faces that respond in scale to the domestic surroundings. They are set back from the street edges with a mix of landscaping and parking/dropoff. This maintains a sense of openness and welcoming while maintaining security. A covered entry structure provides an inviting gesture to the street.

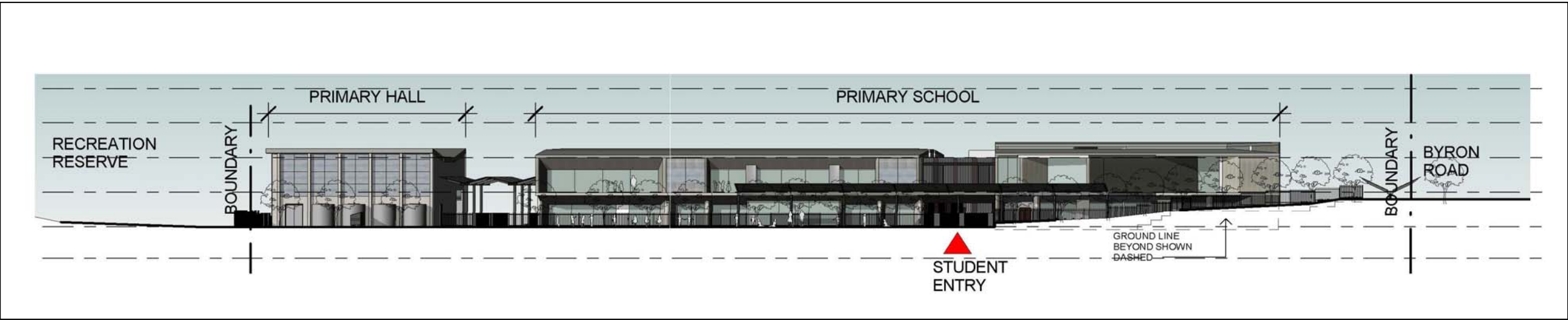


Fig. 25 – Primary School (South West) Elevation



Fig. 26 – A variety of materials and large openings will support different activities and link inside and outside

Fig. 28 – Secondary School (North East) Elevation

The buildings are set back from the street edges with a mix of landscaping and parking/dropoff. This maintains a sense of openness and welcoming while maintaining security.

Trees and planting around the perimeter of the school will articulate the various entries and external spaces around the school and will provide a visual gradient from the street edge to the buildings.

Mechanical heating and cooling systems will be interfaced with passive systems to minimise energy use.

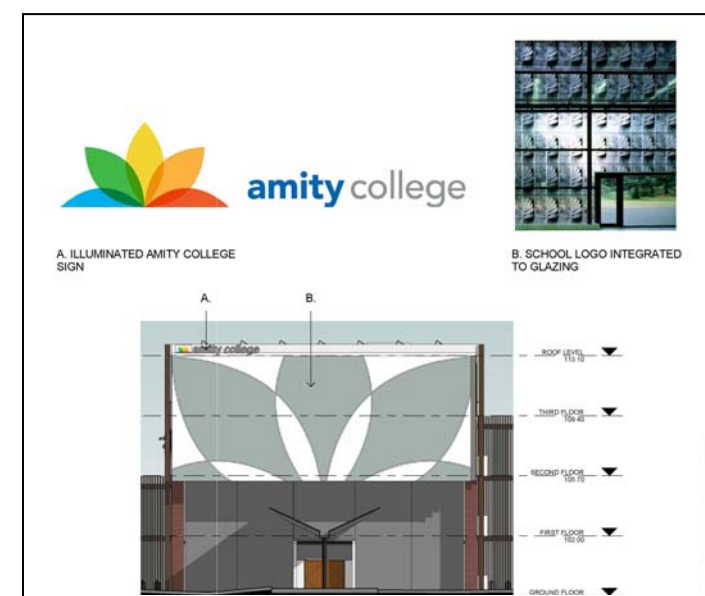


Fig. 27 – The Amity College Logo Artwork will be incorporated in a restrained fashion into the building façade over the main entry

The concept of water link will be interpreted in various ways from the main entry connecting the main entry through the “Heart of School” to the canteen.

Environmental graphics will be used as identification and wayfinding elements as well as responding to the school identity.

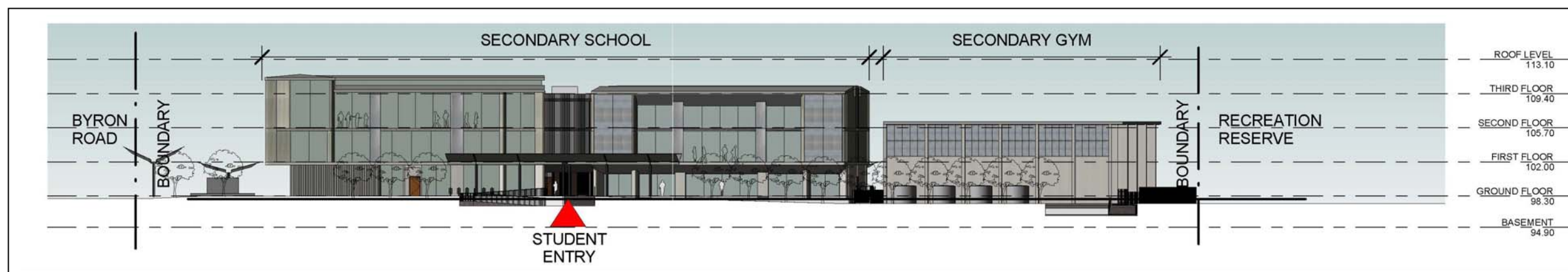




Fig. 29 – Ground Floor/Site Plan showing Primary and Secondary Playgrounds

4. RESPONSE TO GOVERNMENT ARCHITECT REVIEW COMMENTS

The school and the design team met with the NSW Government Architect on 5/11/18 and 3/12/18 and presented the project. The panel provided the following review comments. Refer also *Appendix DR3 Government Architect Review Comments*

Generally the panel supports the overall design approach of the project, including reference to several good precedents to inform the design.

Noted

Detailed sections, modelling and simulations should be provided to demonstrate that passive design strategies will work as intended

The project will incorporate fundamental passive heating and cooling principles – high openable windows with interior clerestory and double height circulation spaces provide cross ventilation and vertical extraction (stack effect). Profiled ceilings will assist in light control reflecting light deep into the spaces as well as minimising direct sunlight in the teaching spaces in the hot times of the day. The school buildings are generally oriented towards the north east, taking advantage of the sun's passage through the day. Deep eaves will provide shading in summer while admitting winter sun. Refer also Figs. 5 & 12.

Refer Fig. 12

Refer drawings DA-300 – 304 Sections

DA-310 Typical Home Base Cross Section

Mechanically assisted natural ventilation systems should be investigated and integrated as part of the active/passive environmental control of the building.

Mechanical heating and cooling systems will be interfaced with passive systems to minimise energy use. Refer also Infrastructure Report.

Masterplan illustrating staged construction to be provided

Refer Section 2 – Staging

Refer drawings DA-600 - 607

Arborist report to be provided. As many existing trees as possible should be retained on the site and integrated into the parking areas, setbacks and open space areas

Refer Arborist Report

The site contains trees forming a part of the Cumberland Plain Woodland, including a patch of regrowth vegetation in the southern portion, in a poor condition – refer Fig. 6. Due to their poor condition, these trees will be removed but will be replaced with trees native to the area to maintain biodiversity and to provide shade

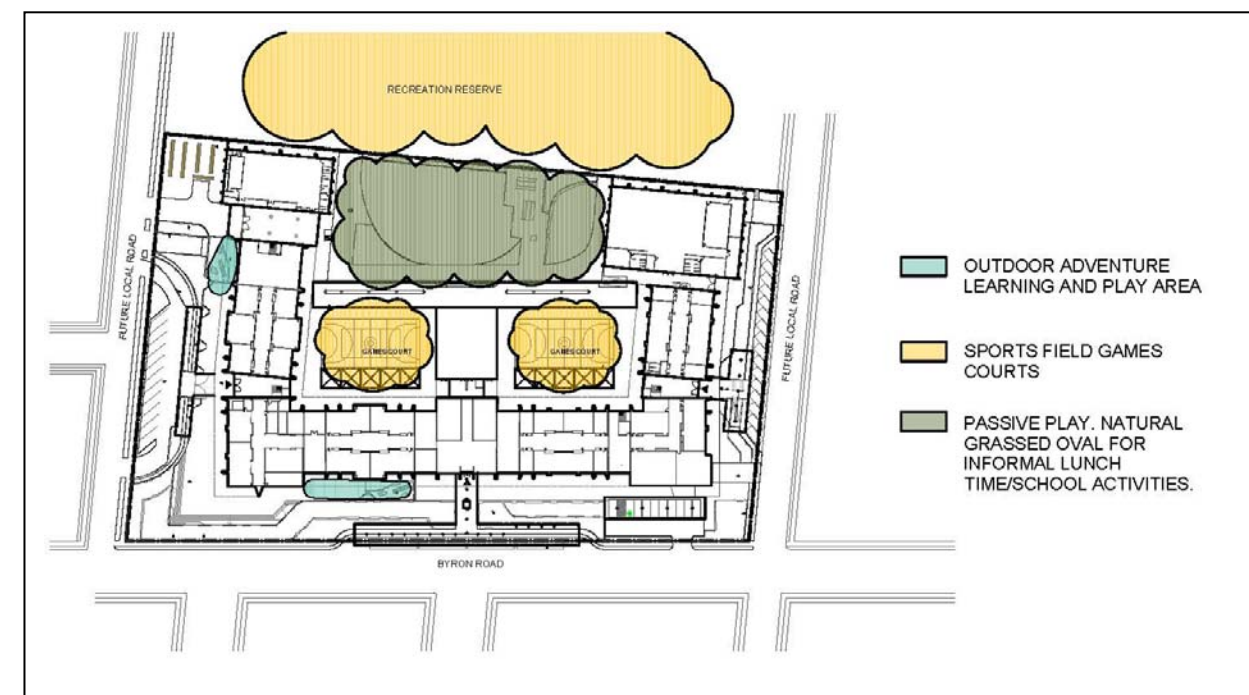


Fig. 30 – Active/Passive Play



Fig. 31 – Tree Canopy

Playground for primary school to be clearly articulated and illustrated

Refer Fig. 29

Refer drawings DA-010 Site Plan
 DA-100 Ground Floor Plan
 Landscape Plan LC2/4

It should also be noted that the primary and secondary play times will be staggered to permit maximum shared use of the play areas.

Differentiation of open space areas for primary and secondary schools to be clearly articulated

Refer Fig. 29

Refer drawings DA-010 Site Plan
 Landscape Plan LC2/4

Passive and active play areas should be clearly indicated

The primary and secondary playgrounds will be marked with games courts and will be the active play areas. The lower level (north-west) playground will be for passive play. The southern corner of this area will be separated for primary play equipment.

Refer Fig. 30

Refer drawings DA-010 Site Plan
 Landscape Plan LC1/4

A detailed landscape plan to be provided

Refer drawings Landscape Drawings LC1/4 – 4/4

Stormwater flows, OSD and WSUD to be clearly indicated on the landscape plan

Refer site drainage design ****

Maximise tree canopy cover and shade structures to outdoor areas, particularly around the edges of the free-play area

As can be seen in Fig. 31, considerable tree canopy is proposed around the free play area. As well as this, shade structures are proposed over the primary and secondary active play areas as well as a linking canopy/colonnade located at the north-west side of the active play area overlooking the passive play area (Refer Fig. 29).

Refer Figs. 29 & 31

Refer drawings DA-100 Ground Floor Plan
 Landscape Plan 1/4

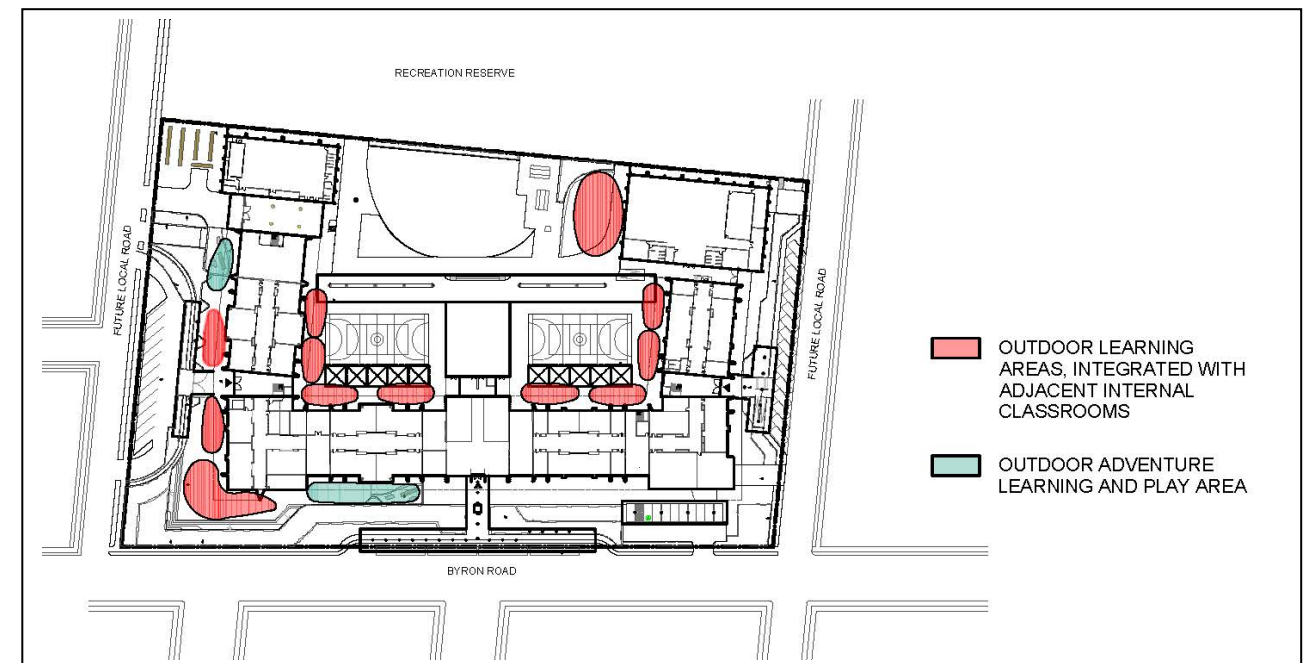


Fig. 32 – Outdoor Learning Spaces



Fig. 33 – Entry Canopy at Byron Road

Provide whole of site sections

Refer drawings DA-300 - 304 Site Sections

Demonstrate how level changes are accommodated at transitions between external and internal spaces

The levels of the buildings and the surrounding landscape paving have been designed to permit level entry to the school by the main school entry on Byron Road and the Primary School student entry on the local road at the south-west boundary. The secondary school student entry is set approximately 1.5m above the ground level at the proposed local road on the north east boundary. This level change is handled by ramp and stairs. Primary school ground floor teaching spaces all open out directly to the adjoining external spaces at the same level in order to have a direct connection with outdoor learning spaces. All external spaces are accessible.

Refer Fig. 32

Refer drawings DA-010 Site Plan
DA-100 Ground Floor Plan
DA-300 - 304 Site Sections

Investigate options for entry canopy addressing Byron Rd and providing a strong welcoming gesture to the street and public domain

The design has been revised to include a "Y" shaped canopy structure that reaches out from the building entry on Byron Road and extends on either side at the bus bay. This not only provides a welcoming gesture to the street but it also provides shelter to students arriving, leaving and waiting at the bus bay. This simple "Y" shaped structure is repeated at the playground as noted above.

Refer Fig. 33

Refer drawings DA-010 Site Plan
DA-300 - 304 Site Sections
Dwgs DA-200 & 201 Elevations

Indicate bicycle parking locations

Refer drawings DA-100 Ground Floor Plan
DA-105 Basement Floor Plan

Demonstrate how sustainability teaching tools will be integrated into the design of the building

Sustainability principles will be incorporated in the buildings in a demonstrable fashion so that they can be used as educational tools.

Some examples are:

- the solar panels will be connected to meters in educational spaces for the students to map electrical use and generation.



Fig. 34 – Materials

- Rainwater harvesting tanks will be located strategically with gauges to demonstrate harvested water use for landscaping
- The school garden will be an important teaching tool.

Provide information relating to external and internal materials. The panel encourages the use of timber (as noted in the precedent images) internally in student areas

Materials have been selected to reduce embodied energy. The school will be designed to be durable, resilient and adaptable, enabling it to evolve over time to meet future requirements. Materials are also chosen for their tactile and biophilic characteristics. Timber will be used in a variety of internal and teaching spaces. Links between indoor and outdoor spaces will be reinforced by the use of similar materials in internal and external settings (refer also Figs 16 & 34)

Refer Figs. 19 & 20

Refer drawings DA-210 – 214 Materials Selections

APPENDIX DR1 ARCHITECTURAL AND LANDSCAPE DRAWINGS

ARCHITECTURAL

DA - 000	DRAWING LIST & LOCATION
DA - 001	SITE ANALYSIS PLAN
DA - 010	SITE PLAN
DA - 100	GROUND FLOOR PLAN
DA - 101	FIRST FLOOR PLAN
DA - 102	SECOND FLOOR PLAN
DA - 103	THIRD FLOOR PLAN
DA - 104	ROOF PLAN
DA - 105	BASEMENT FLOOR PLAN
DA - 110	TYPICAL HOME BASE PLAN GROUND FLOOR 01
DA - 111	TYPICAL HOME BASE PLAN GROUND FLOOR 02
DA - 112	TYPICAL HOME BASE PLAN FIRST FLOOR 01
DA - 113	TYPICAL HOME BASE PLAN FIRST FLOOR 02
DA - 200	NORTH & EAST ELEVATIONS
DA - 201	SOUTH & WEST ELEVATIONS
DA - 300	SECTION AA & BB
DA - 301	SECTION CC & DD
DA - 302	SECTION EE & FF
DA - 303	SECTION GG & HH
DA - 304	SECTION II
DA - 310	TYPICAL HOME BASE CROSS SECTION
DA - 600	STAGING PLAN STAGE 1
DA - 601	STAGING PLAN STAGE 2
DA - 602	STAGING PLAN STAGE 3
DA - 603	STAGING PLAN STAGE 4
DA - 604	STAGING PLAN STAGE 5
DA - 605	STAGING PLAN STAGE 6
DA - 606	STAGING PLAN STAGE 7
DA - 607	STAGING PLAN STAGE 8
DA - 700	SHADOW DIAGRAMS 9AM
DA - 701	SHADOW DIAGRAMS 12PM
DA - 702	SHADOW DIAGRAMS 3PM
DA - 800	MATERIALS, COLOURS AND PRECEDENTS
DA - 801	MATERIALS, COLOURS AND PRECEDENTS
DA - 802	MATERIALS, COLOURS AND PRECEDENTS
DA - 803	MATERIALS, COLOURS AND PRECEDENTS
DA - 804	MATERIALS & COLOURS SCHEDULE
DA - 900	PERSPECTIVE VIEWS 1 & 2
DA - 901	PERSPECTIVE VIEW 3

LANDSCAPE

LC00 – K23503 – COVER SHEET
LC1/6 – K23503 – LANDSCAPE PRINCIPLES
LC2/6 – K23503 – LANDSCAPE MASTERPLAN
LC3/6 – K23503 – LANDSCAPE OVAL
LC4/6 – K23503 – LIBRARY TERRACE/PLANT SCHEDULE
LC5/6 – K23503 – LANDSCAPE STAGING PLAN
LC6/6 – K23503 – LANDSCAPE STAGING PLAN

