ENVIRONMENTAL IMPACT STATEMENT SSD 8812

CRANBROOK SCHOOL

MAY 2018
SA6890
FORMAL LODGEMENT
PREPARED FOR CRANBROOK SCHOOL

URBIS

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Tim Blythe
Associate Director	Jacqueline Parker
Consultant	Emma Fitzgerald
Project Code	SA6890
Report Number	Final Lodgement

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DECLARATION

SUBMISSION OF ENVIRONMENTAL IMPACT STATEMENT

This EIS has been prepared in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulations 2000*.

Environmental Assessment prepared by:

Name	**Tim Blythe (Managing Partner)** Bachelor Applied Science - Planning, RMIT, VIC **Jacqueline Parker (Associate Director)** Bachelor of Planning (Hons 1), University of New South Wales Master of Urban Development and Design, University of New South Wales **Emma Fitzgerald (Consultant)** Bachelor of Arts, University of Sydney, NSW Master of Planning, University of New South Wales
Address	Urbis Pty Ltd Level 23, Darling Park Tower 2, 201 Sussex Street Sydney NSW 2000
In respect of	Development of Hordern Precinct and War Memorial Hall at Cranbrook School, Bellevue Hill

Applicant and Land Details:

Applicant	Cranbrook School C/- Urbis
Applicant Address	Urbis Pty Ltd Level 23, Darling Park Tower 2, 201 Sussex Street Sydney NSW 2000
Land to be developed	5 Victoria Road, Bellevue Hill (Lot 1 DP663630; Lots 9 – 18 DP9005; and Lots B & C DP186768)
Project	Redevelopment and refurbishment of the northern half of the site including the construction of additional educational floor space.

Declaration:
I certify that the contents of the Environmental Impact Assessment to the best of my knowledge, has been prepared as follows:

- In accordance with the requirements of Schedule 2 of the Environmental Planning and Assessment Regulations 2000; and State Environmental Planning Policy (State and Regional Development) 2011.
- The information contained in this report is true in all material particulars and is not misleading.

Name	**Tim Blythe, Managing Partner**	**Jacqueline Parker, Associate Director**
Signature		
Date	07/05/2018	07/05/2018

GLOSSARY AND ABBREVIATIONS

Abbreviation	Meaning
AAAC Technical Guide	*Association of Australian Acoustical Consultants (AAAC) Technical Guide – Child Care Centre Noise Assessment.*
AFC	Aquatic & Fitness Centre
AHIMS	Aboriginal Heritage Information Management System
AIS	Arboricultural Impact Statement
BC Act	*Biodiversity Conservation Act 2016*
BCA	Building Code of Australia
BC Regulation	*Biodiversity Conservation Regulation 2017*
BDAR	Biodiversity Assessment Report
Bio Act	*Biosecurity Act 2015*
CB	Centenary Building
CIZ	Construction Impact Zone
CLM Act	*Contaminated Lands Management Act 1997*
CMP	Construction Management Plan
Council	Woollahra Municipal Council
CPTED	Crime Prevention Through Environmental Design
CTMP	Construction Traffic Management Plan
DDA	*Disability Discrimination Act 1992* (Cth)
District Plan	*Eastern City District Plan*
DOEE	Commonwealth Department of Environment and Energy
DPE	NSW Department of Planning and Environment.
EIA	Environmental Impact Assessment
ENM	Excavated Natural Material
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	*NSW Environment Protection Authority*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ESD	Ecologically Sustainable Design

Abbreviation	Meaning
ESEPP	*State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017*
FTE	Full Time Equivalent
GANSW	NSW Government Architect's Office
HIS	Heritage Impact Statement
HMSMP	Hazardous Materials Survey and Management Plan
IMP	Infrastructure Management Plan
Industrial Noise Policy	*NSW Environment Protection Authority (EPA) Industrial Noise Policy and Noise Control Manual*
Infrastructure Strategy	*State Infrastructure Strategy 2018-2038*
LEC	Land and Environment Court NSW
LGA	Local Government Area
NIA	Noise Impact Assessment
NPW Act	*National Parks and Wildlife Act 1974*
OSD	On-Site Detention
OWMP	Operational Waste Management Plan
PAR	Photographic Archival Recording
POEO ACt	*Protection of the Environment Operations Act 1997*
PSI	Preliminary Site Investigation
Region Plan	*A Metropolis of Three Cities: Greater Sydney Region Plan*
RMS	Roads and Maritime Services
Road Noise Policy	*NSW Environment Protection Authority (EPA) Road Noise Policy*
SCRG	Scots Concerned Residents Group
SEARs	Secretary's Environmental Assessment Requirements
SEPP 55	*State Environmental Planning Policy No.55 – Remediation of Land*
SEPP 64	*State Environmental Planning Policy No. 64 – Advertising and Signage*
SEPP SRD	*State Environmental Planning Policy (State and Regional Development) 2011*
SSDA	State Significant Development Application
TfNSW	Transport for New South Wales

Abbreviation	Meaning
The Regulation	*Environmental Planning and Assessment Regulation 2000*
The School	Cranbrook School
TPZ	Tree Protection Zone
Transport Strategy	*Future Transport Strategy 2056*
UFP	Unexpected Finds Protocol
Urbis	Urbis Pty Ltd
WDCP 2015	Woollahra Development Control Plan 2015
WLEP 2014	*Woollahra Local Environmental Plan 2014*
WSUD	Water Sensitive Urban Design

EXECUTIVE SUMMARY

PURPOSE OF THIS REPORT

This Environmental Impact Assessment (EIS) was prepared by Urbis Pty Ltd (Urbis) on behalf of the Cranbrook School (the School) in support of a State Significant Development Application (SSD 17_8812) for the development of the 'Hordern Precinct Project' at 5 Victoria Road, Bellevue Hill (the 'site').

This EIS should be read in conjunction with the Secretary's Environmental Assessment Requirements (SEARs) attached at **Appendix A**, and the supporting technical documents provided at **Appendix B-Appendix GG**.

This EIS has been prepared in accordance with, and meets the minimum requirements of clauses 6 and 7 of Schedule 2 the *Environmental Planning and Assessment Regulation 2000* (the Regulation).

THE PROPOSAL

The School's redevelopment of the northern portion of their Senior School Campus dubbed the 'Hordern Precinct Project' will facilitate the School's Vision to be a world class school which encourages and enables all of its students to explore, enjoy and fulfil their potential. Construction of the new Centenary Building will provide approximately 6,258sqm of new purposefully designed teaching and learning environments, including: teaching and learning spaces, teaching terraces, a drama theatre, a dining commons, a place of worship and an assembly hall.

This will be complemented by the new Aquatic & Fitness Centre (AFC) to be constructed beneath the existing Hordern Oval, containing a 50m swimming pool, a 25m Learn to Swim pool, a multipurpose sports hall, gym and ancillary functions across approximately 6,036sqm of new accommodation. A new 126 space car park will also be accommodated beneath the Hordern Oval to ease pressure on the surrounding road network for parking servicing the school.

The proposal also involves removal of 29 staff car parking spaces and conversion of the through site driveway off Victoria Road to a drop-off/pick up zone in the morning and afternoon. During school hours this space will be a pedestrian-only zone. As a consequence, the on street parking restrictions along Rose Bay Avenue, currently providing for kerbside drop-off/pick-up can be converted to unrestricted car parking spaces for public use.

The development contributes positively to the surrounding neighbourhood, and will assist Cranbrook School in delivering on its vision of being a world class school that will support learning and the pursuit of excellence of its students in supportive and nurturing environments.

Specifically, this application seeks development consent for the following works at the site:

- Demolition of existing War Memorial Hall and Mansfield Buildings to facilitate the construction of the New Centenary Building Teaching Facility and School Chapel;
- Excavation of Hordern Oval to facilitate the construction of a sub-surface car park and new Aquatic & Fitness Centre;
- New access driveway to the proposed car park, accessed off the northern arm of Rose Bay Avenue;
- Use of the internal driveway between Victoria Road and Rose Bay Avenue to accommodate an on campus 'kiss and ride' facility to reduce traffic congestion around the school;
- Construction of a new Hordern Oval Groundsman's facility;
- Reinstatement of the Hordern Oval as a playing field; and
- Other associated works including landscaping and general site improvements.

THE SITE

The subject site is located at 5 Victoria Road, Bellevue Hill and is legally described as Lot 1 DP663630; Lots 9 – 18 DP9005; and Lots A – C DP186768. A location plan is provided at Figure 1.

The site is located within the Woollahra Local Government Area (LGA). The campus is located to the south east of New South Head Road, with a 430 metre frontage to New South Head Road, a 140 metre frontage to Victoria Road and a 370 metre frontage to Rose Bay Avenue, covering an area of approximately 4.342 hectares.

The site is a prominent feature along New South Head Road due to the scale of the school buildings, the open space and fencing and landscaping associated with the Hordern Oval.

PROJECT BACKGROUND

The School's Vision is to be a world-class School which encourages and enables all students to explore, enjoy and fulfil their potential.

The School motto *Esse Quam Videri* means 'to be rather than to seem to be' and this resonates through all aspect of School life. Culturally, the School values authenticity and integrity in all that it does; it generally errs on the side of being understated rather than brash and 'flashy'; greatly preferring substance over superficiality and generally seeking to avoid 'idle boasting' (as explicitly exhorted in the School's prayer).

The School's aim is to nurture and develop the whole individual within a strong academic framework, and to prepare its students to voyage out beyond the comfortable, with courage and confidence. The School values critical thinking and strives to build self-belief for all students.

As part of the design development of this proposal, Cranbrook issued an expression of interest to 13 Architects, including BVN, Hassell, Cox Richardson and Architectus. The final four selected from the long list to participate in the design completion was Architectus, BVN, FJMT and Tonkin Zulaikha Greer Architects. All 4 provided detailed submissions and presented to the School 25th March 2017 with Architectus being named the successful practice on the 3rd April 2017 by the Schools Major Projects Control Group Committee.

The School's objectives throughout the design competition was to review alternative approaches to the Hordern Precinct Development and strive for design excellence through the distillation of fresh ideas to respond to and enhance the positive qualities of the School's setting, landscape and heritage.

COST OF WORK AND PLANNING FRAMEWORK

Pursuant to Schedule 15 of *State Environmental Planning Policy (State and Regional Development) 2011*, development for 'alterations and additions to an existing school' with a capital investment value (CIV) of more than $20 million is identified as 'State Significant Development'.

The CIV for the proposal is calculated at over $20 million. This is detailed in the Quantity Surveyors Cost Assessment at **Appendix B**. As the cost of works exceeds $20 million, the EIS will be submitted to the NSW Department of Planning and Environment (DPE) for assessment and determination.

EMPLOYMENT GENERATION

The proposal will generate 296 FTE direct construction jobs, 275 FTE indirect construction jobs, for a total of 571 FTE construction jobs. The proposal will also generate 7.5 FTE direct operational jobs.

ASSESSMENT

The proposal has addressed the SEARs requirements issued for the project on 10 November 2017 and has been assessed the applicable planning framework. In summary:

- **The proposal satisfies the applicable local and state planning policies.**

  The proposal satisfies the objectives of all relevant planning controls and achieves a high level of planning policy compliance.

- **The proposal will not have any unacceptable impacts on neighbouring residential properties or the public domain.**

  Subject to the various mitigation measures recommended by the specialist consultants, the proposal will not have any unacceptable impacts on adjoining or surrounding properties or the public domain in terms of traffic, heritage, social and environmental impacts.

- **The proposal satisfies the SEARs as demonstrated in this EIS and accompanying specialist reports**.

  The proposal satisfies the SEARs as demonstrated in this EIS.

Considering the above and the content contained in this EIS, it is recommended that the DPE approve this SSD, subject to appropriate conditions.

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

A request was made to the Minister for the Secretary's Environmental Assessment Requirements (SEARs), pursuant to Clause 3, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000.* The SEARs are addressed within this report and included in full at **Appendix A.**

Table 1 below provides a summary of the SEARs and identifies the section of the report where the relevant requirement is addressed and/or the appendix reference for the technical consultant's report associated with that requirement.

Table 1 – Secretary's Environmental Assessment Requirements

Item / Description	**Document Reference**
GENERAL REQUIREMENTS	
The Environmental Impact Statement (EIS) must be prepared in accordance with, and meet the minimum requirements of clauses 6 and 7 of Schedule 2 the *Environmental Planning and Assessment Regulation 2000* (the Regulation). Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential environmental impacts associated with the development.	Refer to Declaration on Page I. Environmental Risk Assessment at Section 9.
Where relevant, the assessment of the key issues below, and any other significant issues identified in the risk assessment, must include: • adequate baseline data; • consideration of potential cumulative impacts due to other development in the vicinity (completed, underway or proposed); and • measures to avoid, minimise and if necessary, offset the predicted impacts, including detailed contingency plans for managing any significant risks to the environment.	Noted.
The EIS must be accompanied by a report from a qualified quantity surveyor providing: • a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Environmental Planning and Assessment Regulation 2000) of the proposal, including details of all assumptions and components from which the CIV calculation is derived; • an estimate of the jobs that will be created by the future development during the construction and operational phases of the development; and • certification that the information provided is accurate at the date of preparation.	Appendix B
KEY ISSUES	
1. Statutory and Strategic Context Address the statutory provisions contained in all relevant environmental planning instruments, including: • *State Environmental Planning Policy (State & Regional Development) 2011;*	Section 4

Item / Description	Document Reference
• *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017;* • *State Environmental Planning Policy No.55 – Remediation of Land;* • *State Environmental Planning Policy No. 64 – Advertising and Signage; and* • *Woollahra Local Environmental Plan 2014.* *Permissibility* Detail the nature and extent of any prohibitions that apply to the development. *Development Standards* Identify compliance with the development standards applying to the site and provide justification for any contravention of the development standards.	
2. Policies Address the relevant planning provisions, goals and strategic planning objectives in the following: • NSW State Priorities; • A Plan for Growing Sydney; • NSW Long Term Transport Master Plan 2012; • Sydney's Cycling Future 2013; • Sydney's Walking Future 2013; • Sydney's Bus Future 2013; • Crime Prevention Through Environmental Design (CPTED) Principles; • Healthy Urban Development Checklist, NSW Health; • Better Placed – An integrated design policy for the built environment of NSW 2017; • Greater Sydney Commission's Draft Eastern City District Plan; and • Woollahra Development Control Plan 2015.	Section 5
3. Operation • Provide details of the proposed school operations, including staff and student numbers, school hours of operation, and operational details of any proposed before/after school care services and/or community use of school facilities. • Provide a detailed justification of suitability of the site to accommodate the proposal. • Provide details of how Cranbrook School will continue to operate during construction activities, including proposed mitigation measures.	Section 6.1
4. Built Form and Urban Design	Section 6.2

Item / Description	Document Reference
• Address the height, density, bulk and scale, setbacks and landscaping of the proposal in relation to the surrounding development, topography, streetscape and any public open spaces. • Address design quality, with specific consideration of the overall site layout, streetscape, open spaces and landscape strategy, façade, rooftop, massing, setbacks, building articulation, materials, colours and Crime Prevention Through Environmental Design Principles. • Provide details of any digital signage boards, including size, location and finishes. • Demonstrate in consultation with and to the satisfaction of the Government Architect NSW that design excellence will be achieved in accordance with Schedule 4 Schools – design quality principles of State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017. • Detail how services, including but not limited to waste management, loading zones, and mechanical plant are integrated into the design of the development.	
5. Environmental Amenity • Detail amenity impacts including solar access, acoustic impacts, visual privacy, view loss, overshadowing and wind impacts. A high level of environmental amenity for any surrounding residential land uses must be demonstrated. • Detail any proposed use of the school grounds out of school hours (including weekends) and any resultant amenity impacts on the immediate locality and proposed mitigation measures.	Section 6.3
6. Transport and Accessibility Include a transport and accessibility impact assessment, which details, but not limited to the following: • accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development; • an assessment of the operation of existing and future transport networks including public transport networks, and their ability to accommodate the forecast number of trips to and from the development; • details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area; • the adequacy of public transport, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development; • the impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Council, Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network;	Section 6.4, Appendix L and Appendix M

Item / Description	Document Reference
• the identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections; • details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location- specific sustainable travel plan and the provision of facilities to increase the non-car mode share for travel to and from the site; • the impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required. Traffic modelling is to be undertaken using SIDRA network modelling for current and future years. The following intersections must be examined/modelled (but not limited to): o New South Head Road/Rose Bay Avenue; o New South Head Road/Victoria Road. • the proposed walking and cycling access arrangements and connections to public transport services; • details of any proposed school bus routes along bus capable roads (i.e. travel lanes of 3.5 m minimum) and infrastructure (bus stops, bus layovers etc.); • the proposed access arrangements (ensuring that vehicle and pedestrian access be from local roads and not major arterial roads wherever possible), including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones; • measures to maintain road and personal safety in line with CPTED principles; • proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance; • proposed number of on-site car parking spaces for teaching staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site; • an assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the development; • details of emergency vehicle access arrangements; • an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures; • service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); • proposed management of construction traffic impacts detailed within a draft Construction Traffic Management Plan, which includes:	

Item / Description	Document Reference
○ assessment of cumulative impacts associated with other construction activities (if any); ○ an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity; ○ details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process; ○ details of anticipated peak hour and daily construction vehicle movements to and from the site; ○ details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; ○ details of temporary cycling and pedestrian access during construction; and ○ traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport. **Relevant Policies and Guidelines:** • *Guide to Traffic Generating Developments (Roads and Maritime Services)* • *EIS Guidelines – Road and Related Facilities (DoPI)* • *Cycling Aspects of Austroads Guides* • *NSW Planning Guidelines for Walking and Cycling* • *Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development* • *Standards Australia AS2890.3 (Bicycle Parking Facilities)*	
7. Ecologically Sustainable Development (ESD) • Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design and ongoing operation phases of the development. • Demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice. • Include a description of the measures that would be implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.	Section 6.7
8. Social Impacts Include an assessment of the social consequences of the schools' relative location and decanting activities if proposed.	Section 6.18
9. Biodiversity • Biodiversity impacts are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the Biodiversity Conservation Act	Section 6.8

Item / Description	Document Reference
2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and Biodiversity Assessment Method. • The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016.	
10. Heritage Where relevant, include a Heritage Impact Statement that addresses the significance of, and provides an assessment of the impact on the heritage significance of any heritage items on the site and in the vicinity, and/or conservation areas and/or potentially archaeologically significant areas, in accordance with the guidelines in the NSW Heritage Manual.	Section 6.11
11. Noise and Vibration Identify and provide a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation, construction and operation, including consideration of any public address system, school bell, mechanical services (e.g. air conditioning plant), use of any school hall for concerts etc. (both during and outside school hours) and any out of hours community use of school facilities, and outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land. **Relevant Policies and Guidelines:** • *NSW Industrial Noise Policy (EPA)* • *Interim Construction Noise Guideline (DECC)* • *Assessing Vibration: A Technical Guideline 2006* • *Development Near Rail Corridors and Busy Roads – Interim Guideline (Department of Planning 2008)*	Section 6.3.3, 6.16, Appendix V and Appendix BB
12. Sediment, Erosion and Dust Controls Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. **Relevant Policies and Guidelines:** • *Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom)* • *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)* • *Guidelines for development adjoining land and water managed by DECCW (OEH, 2013)*	Section 6.16, Appendix W and Appendix X
13. Contamination • Assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55. • Undertake a hazardous materials survey of all existing structures and infrastructure prior to any demolition or site preparation works.	Section 4.4, Appendix S, Appendix T and Appendix U

Item / Description	Document Reference
Relevant Policies and Guidelines: • *Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP)*	
14. Utilities • Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure. • Prepare an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non- potable water, and water sensitive urban design.	Section 6.14
15. Contributions Address Council's Section 94 Contribution Plan and/or details of any Voluntary Planning Agreement, which may be required to be amended because of the proposed development.	Section 4.7
16. Drainage • Detail drainage associated with the proposal, including stormwater and drainage infrastructure. • Detail measures to minimise operational water quality impacts on surface waters and groundwater. **Relevant Policies and Guidelines:** • *Guidelines for development adjoining land and water managed by DECCW (OEH, 2013)*	Section 6.11, Appendix W and Appendix X
17. Flooding Assess any flood risk on site (detailing the most recent flood studies for the project area) and consideration of any relevant provisions of the NSW Floodplain Development Manual (2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity.	Section 6.11, Appendix W and Appendix X
18. Waste Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.	Section 6.15, Appendix T, Appendix U, Appendix AA and Appendix BB
19. Construction Hours Identify proposed construction hours and provide details of the instances where it is expected that works will be required to be carried out outside the standard construction hours.	Section 6.17

Item / Description	Document Reference
PLANS AND DOCUMENTS	

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents.
 	
In addition, the EIS must include the following:
 	
• Architectural drawings including but not limited to the following requirements:
  ○ dimensioned and including RLs;
  ○ plans, sections and elevations of the proposal at no less than 1:200 showing furniture layouts and program;
  ○ site and context plans that demonstrate active transport linkages with existing, proposed and potential footpaths and bicycle paths and public transport links; and
  ○ detailed annotated wall sections at 1:20 scale that demonstrate typical cladding, window and door details, including materials and general construction quality;
• Site Survey Plan, showing existing levels, location and height of existing and adjacent structures / buildings and boundaries;
• Site Plans and operations statement demonstrating the afterhours and community use strategy;
• Site Analysis Plan;
• Stormwater Concept Plan;
• Sediment and Erosion Control Plan;
• Shadow Diagrams;
• View Analysis / Photomontages, including from public vantage points;
• An integrated Landscape Plan/Strategy (including identification any trees to be removed and trees to be retained or transplanted);
• Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan detailing vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures;
• Geotechnical and Structural Report;
• Accessibility Report;
• Arborist Report;
• Salinity Investigation Report (if required);
• Acid Sulphate Soils Management Plan (if required);
• Schedule of materials and finishes including a physical material sample board (no larger than A3) with correct proportional representation of materials; and
	Noted

Item / Description	Document Reference
• A report tabling how the project responds to and upholds the design guide for schools as stipulated in Schedule 4 Schools – design quality principles of State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.	
CONSULTATION	
During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups including the school community, special interest groups and affected landowners. In particular, you must consult with: • Woollahra Council; • Government Architect NSW; • Transport for NSW; and • Roads and Maritime Services. Consultation with TfNSW and RMS should commence as soon as practicable to agree the scope of investigation. The EIS must describe 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.	Section 7, Appendix DD and Appendix EE
FURTHER CONSULTATION AFTER 2 YEARS	
If you do not lodge a development application and EIS for the development within two years of the issue date of these SEARs, you must consult further with the Secretary in relation to the preparation of the EIS.	Noted
REFERENCES	
The assessment of the key issues listed above must consider relevant guidelines, policies, and plans as identified.	Noted

1. INTRODUCTION

1.1. PROJECT OVERVIEW

The School's redevelopment of the northern portion of their Senior School Campus dubbed the 'Hordern Precinct Project' will facilitate the School's Vision to be a world class school which encourages and enables all of its students to explore, enjoy and fulfil their potential. Construction of the Centenary Building will provide approximately 6,710sqm of new purposefully designed teaching and learning environments, including: teaching and learning spaces, teaching terraces, a drama theatre, a dining commons, a place of worship and an assembly hall.

This will be complemented by the new Aquatic & Fitness Centre (AFC) to be constructed beneath the existing Hordern Oval, containing a 50m swimming pool, a 25m Learn to Swim pool, a multipurpose sports hall, gym and ancillary functions across approximately 4,728sqm of new accommodation. A new 124 space car park will also be accommodated beneath the Hordern Oval to ease pressure on the surrounding road network for parking servicing the school.

The proposal also involves removal of 29 staff car parking spaces and conversion of the through site driveway off Victoria Road to a pick-up/drop-off zone in the morning and afternoon. During school hours this space will be a pedestrian-only zone, with vehicular access prevented. As a consequence, the on-street parking restrictions along Rose Bay Avenue, currently providing for kerbside pick-up/drop-off can be converted to unrestricted car parking spaces for public use.

The development contributes positively to the surrounding neighbourhood, and will assist Cranbrook School in delivering on its vision of being a world class school that will support learning and the pursuit of excellence of its students in supportive and nurturing environments.

Specifically, this application seeks development consent for the following works at the site:

- Demolition of existing War Memorial Hall and Mansfield Buildings to facilitate the construction of the New Centenary Building Teaching Facility and School Chapel;
- Excavation of Hordern Oval to facilitate the construction of a sub-surface car park and new Aquatic & Fitness Centre;
- New access driveway to the proposed car park, accessed off the northern arm of Rose Bay Avenue;
- Use of the internal driveway between Victoria Road and Rose Bay Avenue to accommodate an on campus 'kiss and ride' facility to reduce traffic congestion around the school;
- Construction of a new Hordern Oval Groundsman's facility;
- Reinstatement of the Hordern Oval as a playing field; and
- Other associated works including landscaping and general site improvements.

The proposed works are illustrated in the architectural drawings prepared by Architectus Sydney in **Appendix C**.

As the extent of works are largely contained within the existing building envelope and face into the campus and Hordern Oval, there is will be little change to the overall perceived height, bulk, scale and setbacks of the building.

1.2. REPORT STRUCTURE

This EIS provides the following:

- A description of the site and surrounding context, including identification of the site, existing development on the site, and surrounding development;
- A detailed description of the proposed development;
- An assessment of the proposed development against the relevant strategic and statutory planning controls;

- An assessment of the key issues and impacts generated by the proposed development; and
- A detailed description of the consultation undertaken with respect to the proposal.

This EIS should be read in conjunction with the SEARs attached at **Appendix A**, and the supporting technical documents provided at **Appendix B – Appendix GG**.

1.3. PROJECT TEAM

Specialist consultants were engaged to assist in the preparation of this SSD, as outlined in **Table 2**.

Table 2 – Project Team

Discipline / Input	Consultant	Appendix
Secretary's Environmental Assessment Requirements	Department of Planning and Environment	Appendix A
Quantity Surveyors Cost Assessment	WT Partnership	Appendix B
Architectural Drawings	Architectus	Appendix C
Urban Design	Architectus	Appendix D
Landscape Architecture	Arcadia	Appendix E
Planning	Urbis	Appendix F and Appendix G
Built Heritage	Urbis	Appendix H and Appendix I
Operational Plan of Management	Cranbrook School	Appendix J
Visual Impact Assessment	Architectus & Richard Lamb & Associates	Appendix K
Traffic and Transport	Parking & Traffic Consultants	Appendix L and Appendix M
Arboricultural Impact Assessment	Botanics Tree Wise People	Appendix N
Ecologically Sustainable Development (ESD)	ARUP	Appendix O
Biodiversity Assessment Report	Travers Bushfire & Ecology	Appendix P
Wind Assessment	ARUP	Appendix Q
Acid Sulphate Soils Report	Douglas Partners	Appendix R
Phase 1 Preliminary Site Investigation	Douglas Partners	Appendix S
In-Situ Waste Classification Assessment	Douglas Partners	Appendix T
Hazardous Materials Survey and Management Plan	Parsons Brinckerhoff	Appendix U
Noise Impact Assessment	Acoustic Logic	Appendix V
Stormwater Management and Civil Design	AECOM	Appendix W and Appendix X
Infrastructure Management Plan	Northrop / Warren Smith & Partners	Appendix Y

Discipline / Input	Consultant	Appendix
Geotechnical Report	Douglas Partners	Appendix Z
Operational Waste Management Plan	Waste Audit & Consultancy Services	Appendix AA
Preliminary Construction Management Plan	Buildcorp	Appendix BB
Structural Engineering	ARUP	Appendix CC
Consultation	Elton Consulting	Appendix DD
Design Excellence	Government Architect NSW	Appendix EE
Accessibility	Morris-Goding Accessibility Consulting	Appendix FF
Building Code of Australia Report	McKenzie Group	Appendix GG

1.4. PROJECT OBJECTIVES

The redevelopment of the Hordern Oval Precinct, War Memorial Hall Precinct and Heritage Precinct by the School seeks to achieve the following outcomes within a heavily constrained site:

- Optimise the use of the site to deliver the maximum amount of useable outdoor and indoor space;
- Develop new buildings which will be durable and avoid the excesses of fashion;
- Incorporate the best principles of contemporary educational design;
- Provide flexible spaces that will readily adapt to changing educational needs;
- Be cost effective in construction and ongoing use acknowledging that the School is the owner of the buildings and so cost benefit should be assessed in the long term;
- Achieve high levels of amenity with good natural light, limited glare, views and effective natural ventilation;
- Use of high quality materials and design subject to meeting cost parameters;
- Ensure the ground plane is inviting, pedestrian friendly and sufficient for school play and breakout areas;
- Sensitively address the key heritage items on the site to ensure a complimentary and positive relationship between new and old;
- Maximise solar access to outdoor space and building floorplates;
- Minimise the impact on pedestrians of entry and exit points for both public and private transport;
- Consider the amenity of neighbours;
- Consider the address points, gateways and entry statements to the campus; and
- Ensure ease of access for all vehicles accessing the site.

The development contributes positively towards the School delivering on its vision of being a world class school that will support learning and the pursuit of excellence of its students in supportive and nurturing environments.

The project vision has been developed through an extensive consultation process, with the current proposal being the product of over ten years of engagement.

In order to facilitate the current proposal Elton Consulting were engaged to manage the recent consultation process, and to ensure effective communication about this significant piece of work with all stakeholders (refer to Consultation Report at **Appendix DD**).

Engagement and consultation is considered to be central to delivering on the school's responsibility to be a 'good neighbour', and has driven the school's engagement philosophy:

- Being open, clear and sensitive in all its dealings with stakeholders and the community;
- Making the greatest possible effort to ensure community members are aware of the proposal; and
- Providing opportunities for participation and collaboration.

To date, this has involved direct engagement with immediate neighbours, communication to 1,000 surrounding addresses, face-to-face briefings with key stakeholder groups, media briefings to reach the wider Eastern Suburbs community and drop-in sessions where interested parties could ask further questions about the proposal. This is detailed further in subsequent sections of this report.

1.5. DESIGN COMPETITION

As part of the design development of this proposal, Cranbrook issued an expression of interest to 13 Architects, including BVN, Hassell, Cox Richardson and Architectus to refine the design approach. The final four selected from the long list to participate in the design completion was Architectus, BVN, FJMT and Tonkin Zulaikha Greer Architects. All 4 provided detailed submissions and presented to the School 25th March 2017 with Architectus being named the successful practice on the 3rd April 2017 by the Schools Major Projects Control Group Committee.

The School's objectives throughout the design competition was to review alternative approaches to the Hordern Precinct Development and strive for design excellence through the distillation of fresh ideas to respond to and enhance the positive qualities of the School's setting, landscape and heritage.

1.6. PROJECT ALTERNATIVES

The proposed design responds strongly to the site constraints and opportunities and is considered the best response to both site and surrounding context. Alternatives to the current proposal include the 'do nothing' scenario which would not achieve the project objectives. The consequences of not carrying out the project are far reaching and include:

- Failure to provide suitable teaching facilities for pupils;
- Failure to provide suitable working conditions for staff;
- Increased maintenance costs of degraded sub-standard buildings; and
- Failure to reduce greenhouse gas emissions produced by the School as a result of maintaining inefficient infrastructure and assets that are not designed in accordance with the principles of ESD.

2. THE SITE AND SURROUNDING CONTEXT

2.1. SITE DESCRIPTION

The subject site is located at 5 Victoria Road, Bellevue Hill and is legally described as Lot 1 DP663630; Lots 9 – 18 DP9005; and Lots B and C DP186768. A location plan is provided at **Figure 1**.

The numerous lots comprising the site result from the original subdivision plan over Hordern Oval. It is the school's intention to retain the current lot arrangement and not amalgamate the site.

The site is located within the Woollahra Local Government Area (LGA). The campus is located to the south east of New South Head Road, with a 430 metre frontage to New South Head Road, a 140 metre frontage to Victoria Road and a 370 metre frontage to Rose Bay Avenue, and covers an area of approximately 4.342 hectares.

The site is a prominent feature along New South Head Road due to the scale of the school buildings, the open space and fencing and landscaping associated with the Hordern Oval.

The site is generally surrounded by low density residential development with small pockets of medium density residential development. The immediate locality of the site is characterised by residential and institutional developments including Cranbrook School and Scots College on the eastern side of the Road after it turns south, and the Woollahra Council Chambers on the opposite western side of New South Head Road. The School is located on a site that is predominantly an island site apart from three adjoining houses to the south west.

Figure 1 – Location Plan

Source: Urbis

2.2. EXISTING DEVELOPMENT

The existing campus is characterised by its mix of heritage buildings and more recent development.

The Cranbrook building was originally constructed by Robert Tooth on northern side of Victoria Road. The house was completed in 1859 and was named after Cranbrook, the village where he was born in Kent, England.

“Cranbrook” was acquired in 1917 by group of parishioners at St Marks in Darlinghurst, for the purpose pf establishing a Church School. The school was officially opened by the State Governor Sir Walter Davidson on 22 July 1918. The first school assembly had around 60 boys. Initially the main building housed the Headmaster and his family, as well as boarders and resident staff, and provided all the classroom space.

In 1919 a separate house was built for the Headmaster on the western side of “Cranbrook” and the first stage of a classroom block was built on the eastern side of the house.

By the end of 1920, there were 102 boarders and 99 day boys, and building work was again under way at the school. The second stage of the classroom block was completed with the addition of seven more classrooms, together with two Masters’ Common Rooms – one upstairs and one downstairs. The remaining land (Lot 14) just outside the eastern end of the school oval had been acquired following a donation by Sir Anthony Hordern. This allowed the oval to be extended to the full dimensions of a football field, and a playing field for junior boys to be created, Hordern Oval.

The School has continued this pattern of expansion and development, and as a result is a mix of high heritage value building in the eastern portion of the site and lower heritage value post-war and modern building across the central spine and western portion of the site.

The main vehicular and pedestrian access point to the campus is via Victoria Road, with car parking located along the internal driveway. Additional pedestrian entrances are off Rose Bay Avenue and New South Head Road. An aerial photograph of the site is provided at **Figure 2**. Photographs of the internal and external exterior of the existing building are provided at **Figure 3**.

Figure 2 – Aerial Photograph

Source: Urbis

Figure 3 – Photographs of Existing Development

Picture 1 – View facing south-east to Mansfield Building

Source: Urbis

Picture 2 – View facing south-west to War Memorial Hall John Saunders Pavilion

Source: Urbis

Picture 3 – View facing east along walkway above Hordern Oval

Source: Urbis

Picture 4 – View facing west from courtyard adjacent to Rose Bay Avenue entrance to school

Source: Urbis

Picture 5 – View facing north-east from behind Mansfield Building

Source: Urbis

Picture 6 – View facing west to War Memorial Hall from behind Mansfield Building

Source: Urbis

2.3. SITE CONTEXT & SURROUNDING DEVELOPMENT

The site is bounded to the north and north-west by New South Head Road, and is generally surrounded by low density residential development with small pockets of medium density residential development (see **Figure 4**). The site is located in the established residential suburb of Bellevue Hill opposite Point Piper. The context of the site is characterised by:

- **North:** The site is bounded to the north and north-east by New South Head Road, beyond which is medium and low density residential development, and Sydney Harbour.
- **East:** The site is bordered to the east by Rose Bay Avenue, beyond which is low density residential development, and pockets of medium density residential development. Further east of the site is the Scots College, another independent boy's school.
- **South:** The site is bounded to the south by Victoria Road, beyond which is low density residential development.
- **West:** The site is bordered to the west by low density residential development comprising of three adjoining houses to the south west. The Woollahra Council Chambers and Woollahra Library are located further west of the site on the opposite side of New South Head Road.

Figure 4 – Surrounding Development

Picture 7 – View facing south up Rose Bay Avenue showing residential development on opposite side of Rose Bay Avenue

Source: Google Street View

2.4. TOPOGRAPHY

The site is approximately 4.2ha in size and is situated on a hill that slopes downwards in a northerly direction. The surface levels vary between RL 40m AHD along the southern periphery to 15m AHD on the northern side with an average slope of approximately 7%.

The current site consists of significant impervious areas including paved roads, bitumen driveways, paved footpaths and buildings. Pervious areas include the grassed oval and garden beds.

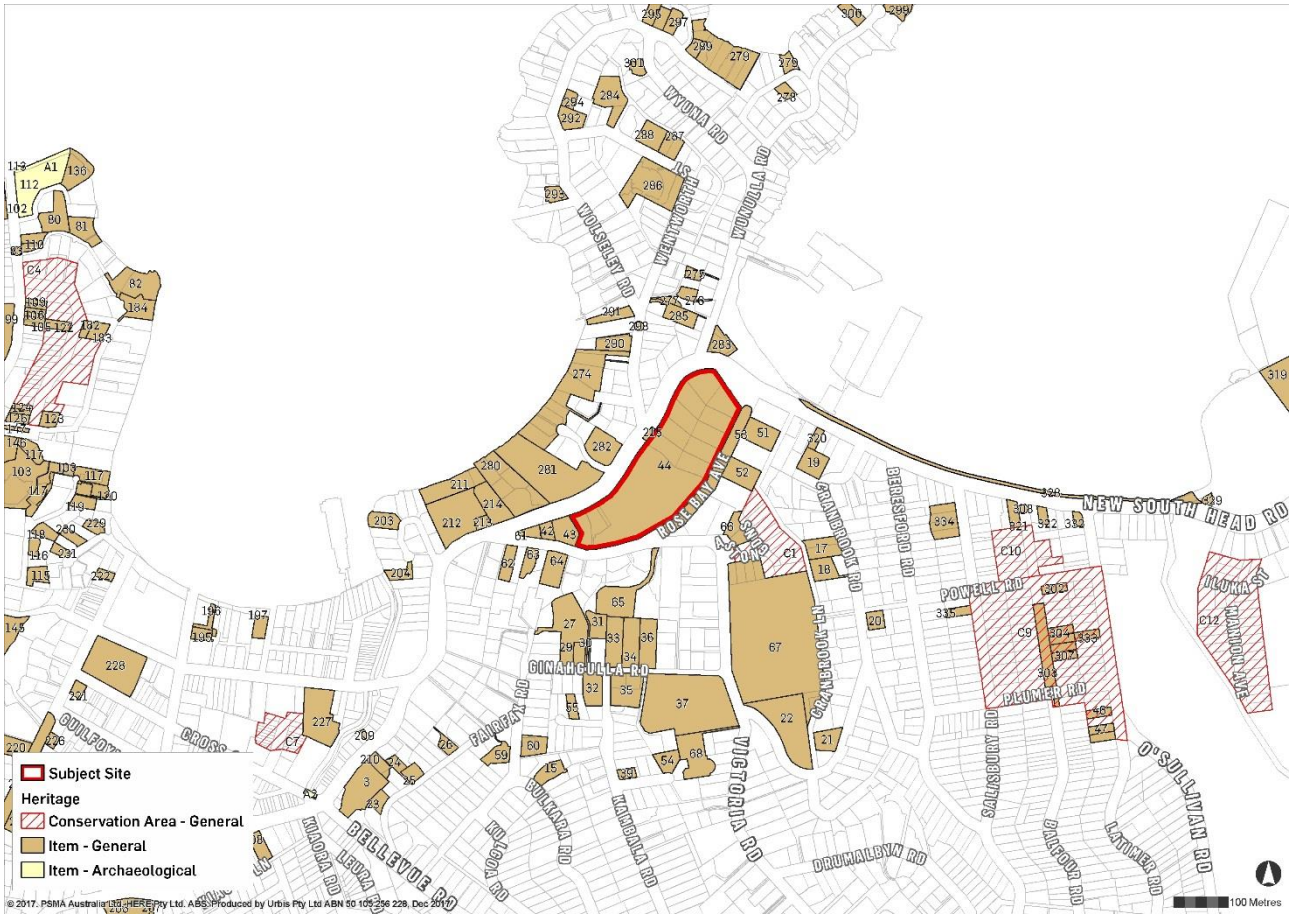
2.5. BUILT HERITAGE

The Cranbrook School Campus is a local heritage item (43 & 44) under the WLEP 2014, see **Figure 5**. The heritage listing for the main school campus includes *the buildings, including their interiors, known as "Cranbrook"; "Harvey House"; "Perkins Building" (junior school); Sick Bay; Headmaster's House; Rotunda (sports pavilion); the 2-storey sandstone building (formerly gatehouse); sandstone retaining wall with balustrade and stairway on north-west terrace of Cranbrook; gates, gateposts, bollards and stone retaining*

wall to Victoria Road; sandstone fence and retaining wall to New South Head Road; 4 sets of sandstone gateposts with iron gates to New South Head Road; 2 Hoop Pines, 3 Norfolk Island Pines, Kauri Pine, Black Booyong, Port Jackson Fig, Chilean Wine Palm.

A Heritage Impact Statement was prepared by Urbis and is attached at **Appendix H**. Heritage is addressed in detail at **Section 6.11** of this report.

Figure 5 – Extract from WLEP 2014 Heritage Map



Source: Urbis

2.6. ACCESS AND PARKING

The existing parking provisions for the site consists of a small number of allocated on-site spaces and usage of the unrestricted on street parking provision in the vicinity of the site.

The site currently provides parking for 29 vehicles with the 'Porte Cochere' at the main school entrance. These spaces are allocated to senior staff members and employees. This area is posted with a 10 k/hr speed limit and is designated as a 'shared zone' for use by vehicles and pedestrians. This area is accessed via the main school entrance off Victoria Road and the exit is via a driveway onto Rose Bay Avenue. There are also six maintenance vehicle access points to the school, three off New South Head Road and one off Victoria Road and two off Rose Bay Avenue.

In addition to the vehicular access points, pedestrian access to the site is via the following locations;

- Main gate, Victoria Road;
- Porte Cochere exit driveway, Rose Bay Avenue;
- Pedestrian access gate, Rose Bay Avenue; and
- Two pedestrian access gates, New South Head Road.

A Parking and Traffic Assessment was prepared by PTC and is attached at **Appendix L.** Traffic related matters are discussed further at **Section 6.4** of this report.

2.7. ROAD NETWORK

Key roads which provide access to the site are:

- New South Head Road (State Road); and
- Victoria Road and Rose Bay Avenue (Local Roads).

New South Head Road is a State road with a four-lane undivided carriageway that runs in an east/west alignment. It has a speed limit of 60k/hr outside of school zone times and has various parking restrictions.

Victoria Road is a local road with a two-lane undivided carriageway that runs in an east/west alignment. It has a speed limit of 50k/hr outside of school zone times and has un-restricted parking on each side.

Rose Bay Avenue is a local road with a two-lane undivided carriageway that runs in a north/south alignment. It has a speed limit of 50k/hr outside of school zone times and has un-restricted parking on each side with a small designated school drop off zone at peak times.

A Parking and Traffic Assessment was prepared by PTC and is attached at **Appendix L.** Traffic related matters are discussed further at **Section 6.4** of this report.

2.8. PUBLIC TRANSPORT

The subject site benefits from being near two ferry stops, Double Bay and Rose Bay, and is directly serviced by buses that operate from the 7 bus stops in close proximity to the site:

- New South Head Road: Routes - 323, 324, 325 and L24.
- Victoria Road: Route 326.

In additional to the STA bus routes services Cranbrook School, the school operates three private services:

- North Shore Bus Services;
- South; and
- Inner West Services.

The routes are operated by the school and drop off and pick up students at the STA bus stop located on New South Head Road at the corner of Wolseley Road. These services provide current and future parents, students and employees with an opportunity to access the site via other means than the private car.

3. PROJECT DESCRIPTION

3.1. OVERVIEW

The School's redevelopment of the northern portion of their Senior School Campus dubbed the 'Hordern Precinct Project' will facilitate the School's Vision to be a world class school which encourages and enables all of its students to explore, enjoy and fulfil their potential. The new Centenary Building will provide approximately 6,710sqm of new purposefully designed teaching and learning environments, including: teaching and learning spaces, teaching terraces, a drama theatre, a dining commons, a place of worship and an assembly hall.

This will be complemented by the new Aquatic & Fitness Centre (AFC) to be constructed beneath the existing Hordern Oval, containing a 50m swimming pool, a 25m Learn to Swim pool, a multipurpose sports hall, gym and ancillary functions across approximately 4,728sqm of new accommodation. A new 124 space car park will also be accommodated beneath the Hordern Oval to ease pressure on the surrounding road network for parking servicing the school.

The proposal also involves removal of 29 staff car parking spaces and conversion of the through site driveway off Victoria Road to a pick-up/drop-off zone in the morning and afternoon. During school hours this space will be a pedestrian-only zone, with vehicular access prevented. As a consequence, the on street parking restrictions along Rose Bay Avenue, currently providing for kerbside drop off/pick up can be converted to unrestricted car parking spaces for public use.

The development contributes positively to the surrounding neighbourhood, and will assist Cranbrook School in delivering on its vision of being a world class school that will support learning and the pursuit of excellence of its students in supportive and nurturing environments.

Specifically, this application seeks development consent for the following works at the site:

- Demolition of existing War Memorial Hall and Mansfield Buildings to facilitate the construction of the New Centenary Building Teaching Facility and School Chapel;
- Excavation of Hordern Oval to facilitate the construction of a sub-surface car park and new Aquatic & Fitness Centre;
- New access driveway to the proposed car park, accessed off the northern arm of Rose Bay Avenue;
- Use of the internal driveway between Victoria Road and Rose Bay Avenue to accommodate an on campus 'kiss and ride' facility to reduce traffic congestion around the school;
- Construction of a new Hordern Oval Groundsman's facility;
- Reinstatement of the Hordern Oval as a playing field; and
- Other associated works including landscaping and general site improvements.

The proposed works are illustrated in the Architectural Drawings prepared by Architectus Sydney in **Appendix C**.

The proposal will generate 296 FTE direct construction jobs, 275 FTE indirect construction jobs, for a total of 571 FTE construction jobs. The proposal will also generate 7.5 FTE direct operational jobs.

3.2. EDUCATION PRINCIPLES

The proposed development will support Cranbrook's Vision to be:

'A world class school, which encourages and enables all of our students to explore, enjoy and fulfil their potential and to develop strategies that enable the School's Mission to be embodied:

- *To lead all students to discover and make the most of their talents, to give of their best and to thrive in and love the pursuit of excellence;*
- *To energise the educational environment by offering a well-rounded, rich and distinctive schooling both within and beyond the curriculum and to give powerful pastoral support to each pupil in our care;*

- *To uphold the character of our Anglican foundation in order to promote the moral and spiritual development of each student and to foster the principles of service;*
- *To build resilience and confidence within our students so that each can face the challenges of the twenty-first century with personal confidence, intellectual versatility, academic hunger and optimism, and*
- *To inspire and support students to respect the integrity of differences and to lead adventurous, courageous and generous lives which contribute to the betterment of society.'*

3.3. PROPOSED WORKS

Specifically, this EIS seeks development consent for the following works at the site:

- Demolition of existing War Memorial Hall and Mansfield Buildings;
- Construction of the New Centenary Building Teaching Facility;
- Part excavation of Hordern Oval to facilitate the construction of a sub-surface car park and new AFC. Access to this subterranean car park will be via a new crossing onto the northern alignment of Rose Bay Avenue;
- Construction of a publicly accessible plaza at the northern entrance to the AFC, interfacing with New South Head Road, with associated landscaping;
- Use of the internal driveway between Victoria Road and Rose Bay Avenue to facilitate an in-campus 'kiss and ride' facility to reduce traffic congestion and improve safety around the school. This will facilitate removal of parking restrictions for kerbside drop off/pick up along Rose Bay Avenue;
- New Groundsman's facility on Hordern Oval along the Rose Bay Avenue boundary;
- New electricity substation at the north eastern portion of the site; and
- Reinstatement of the Hordern Oval playing surface above the AFC.

The majority of works are contained within the School's boundary. Some works, including landscaping and civil works, are shown outside the site boundary and as such consent from Woollahra Council will be required before these can be delivered. Works proposed to a public road will require approval under s138 of the *Roads Act 1993*.

3.3.1. Demolition of Existing War Memorial Hall and Mansfield Building and Construction of New Centenary Building

The current War Memorial Hall and Mansfield Buildings accommodate a combined total of 1,500sqm of teaching and assembly space. The new Centenary Building will have a total GFA of 6,710sqm. This results in a net increase in GFA of 5,210sqm.

The proposal seeks consent for the demolition of the existing War Memorial Hall and Mansfield Building to facilitate the construction of the 'New Centenary Building' – a five level, multi-purpose teaching facility (see **Figure 7**).

The maximum height of the new Centenary Building will be 13.3m to the top of the chimney and a maximum of 16.72m to top of the roof.

The proposed Centenary Building is comprised of eight key components, being:

- **Multifunction assembly hall**

  On Level 00 and 01 a 300 seat, double height, multifunction assembly hall (MFAH) is proposed that is capable of accommodating two full size basketball courts. The MFAH is orientated north-north-west out over the Hordern Oval in order to take advantage of the natural light which will be enjoyed as a result of floor to ceiling glazed panels. The MFAH will be primarily accessible by spectators via a foyer (with cloak room and control room) off the Camellia Court. Performer access will be via Level 00.

  To the east of the MFAH on Level 00 will be a meeting room, sports store room, chiller plant room, storage cupboard and access to the goods lift. To the west of the MFAH on Level 00 and partially beneath the

tiered seating will be two sports changing facilities to allow for competing and home teams to change separately.

To the east of the MFAH void on Level 01 will be two meeting rooms and an office space, as well as plant rooms.

To the south of the MFAH on Level 00 will be located various store rooms, plant and communications rooms.

- **Tiered performance space**

  On Level 00 and 01 a 250 seat, double height, theatre with retractable seating facing a stage is proposed. Behind the stage will be a workshop with access via the two corridors and direct access from the stage. To the east of the theatre will be two stage changing facilities which will allow co-ed performances to take place. The theatre will be primarily accessible to the audience via a foyer (with cloak room and control room) off the Camellia Court. Performer access will be via Level 00.

  A foyer serving the performance space will be located between the theatre and MFAH.

- **Dining commons**

  A Dining Commons space will be located on Level 02 for the purpose of student meals throughout the day and evening. This will be accompanied by a commercial kitchen, cold store and catering office.

  The eastern end of Level 02 includes the new loading facility off Rose Bay Avenue, waste room and other plant rooms.

- **Informal learning areas and house areas;**

  Levels 02 and 03 will accommodate flexible teaching spaces large enough to accommodate the School 'house' groups. This space will include opportunities for up to eight mentor groups to meet and work concurrently, and also function as informal learning zones.

- **Adaptable teaching spaces**

  Adaptable teaching spaces will be located on Levels 02 and 03. In addition, the 'learning terrace' on level 03 will support various teaching and learning opportunities and forums, supporting Cranbrook's pedagogy.

- **Staff offices**

  Multiple staff offices are proposed to be located throughout Levels 01, 02 and 03, proximate to teaching spaces.

- **Orchestral rehearsal area and flat floor performance space**

  An Orchestra rehearsal space and two flat floor performance spaces will be located at the western end of Level 02.

- **War Memorial Chapel and Centenary Lawn**

  A War Memorial Chapel will be sited at Level 04 adjacent the Centenary Lawn which itself forms the roof of the Centenary Building. The War Memorial Chapel is a single level space with seating for 300, within a space approximately 4.6m high. This Chapel will replace the space currently used for this purpose within the Carter Building and will be the first purpose-built chapel on the Senior School Campus. The Chapel will be used for School services, as well as public services for the Cranbrook Community.

- **Loading Bay**

  A new loading bay is proposed at level 02 fronting Rose Bay Avenue. Due to site constraints it is proposed that loading be undertaken from delivery vehicles parked in the street and transported directly to the loading bay for distribution to the School. No deliveries will occur between 10pm and 6am on any day.

- **Materials and Finishes**

  Materials and Finishes proposed for the Centenary Building include: timber battens; ceramic cladding; aluminium window frames; sandstone cladding; and Copper edge detailing.

Figure 6 - Render of western façade of the War Memorial Chapel and Perkins Building viewed from western edge of New Centenary Lawn

Source: Architectus

Figure 7 – Render of northern façade of the Centenary Building viewed from inside New South Head Road pedestrian entrance

Source: Architectus

Aquatic and Fitness Centre

It is proposed that part of Hordern Oval will be excavated to facilitate construction of the Aquatic and Fitness Centre.

It is estimated that approximately 84,000m^3 of spoil will be removed, and transported off site. Structures to be demolished include the existing groundsman's shed and sports shed at the site's northern boundary.

The AFC will comprise the following:

Level B1 (Concourse)

- Main entry and foyer off Rose Bay Avenue/New South Head Road with landscaped entry plaza at the site's frontage to these public roads;
- Tiered seating;
- Bicycle store, canteen, store rooms, plant rooms and offices;
- Subterranean car parking for 124 cars; and
- New driveway crossing onto Rose Bay Avenue, with access control within the site.

Level B2 (Pool)

- 50m swimming pool and pool concourse;
- Separate Learn to Swim pool;
- Multi-function court;
- Fitness gym;
- Shower/change rooms for school and public use; and
- Offices, plant and storage rooms.

The AFC will have a total GFA of 4,728sqm.

Presentation to New South Head Road and Rose Bay Avenue

The AFC will present to New South Head Road and Rose Bay Avenue with a new landscaped plaza space and a sweeping sandstone façade matching the curvature of the sports field above. The outwards sloping form of the AFC entrance has been designed as a security feature, restricting access to the oval above, without the need for fencing or other means of security.

The approximately 6m high sandstone wall, with embedded glazing, will allow visual connectivity from the public domain into the aquatic centre at the level below.

Figure 8 – AFC and Northern Plaza fronting New South Head Road

Source: Architectus

Materials and Finishes proposed for the Aquatic and Fitness Centre include:

- Sandstone cladding; and
- High performance glazing with bronze coloured framing.

Maintenance Shed

A replacement maintenance shed and sports store and cooling tower room will be sited above the entrance driveway along the site boundary with Rose Bay Avenue. The building containing the cooling towers will be approximately 7m high, whilst the maintenance shed will be approximately 4.9m high.

Substation

A new substation will be located at the north eastern portion of the site adjacent to the new driveway crossing.

Reinstatement of Hordern Oval

Following completion of the AFC structure, Hordern Oval will be reinstated for its primary purpose as a playing field. Approximately 10,000m3 of fill will be retained on site from the original excavation or imported to the site to level the field. The overall height of Hordern Oval will be raised in certain locations by approximately 600mm from its current height, noting that the oval currently lopes from south to north by approximately 500mm.

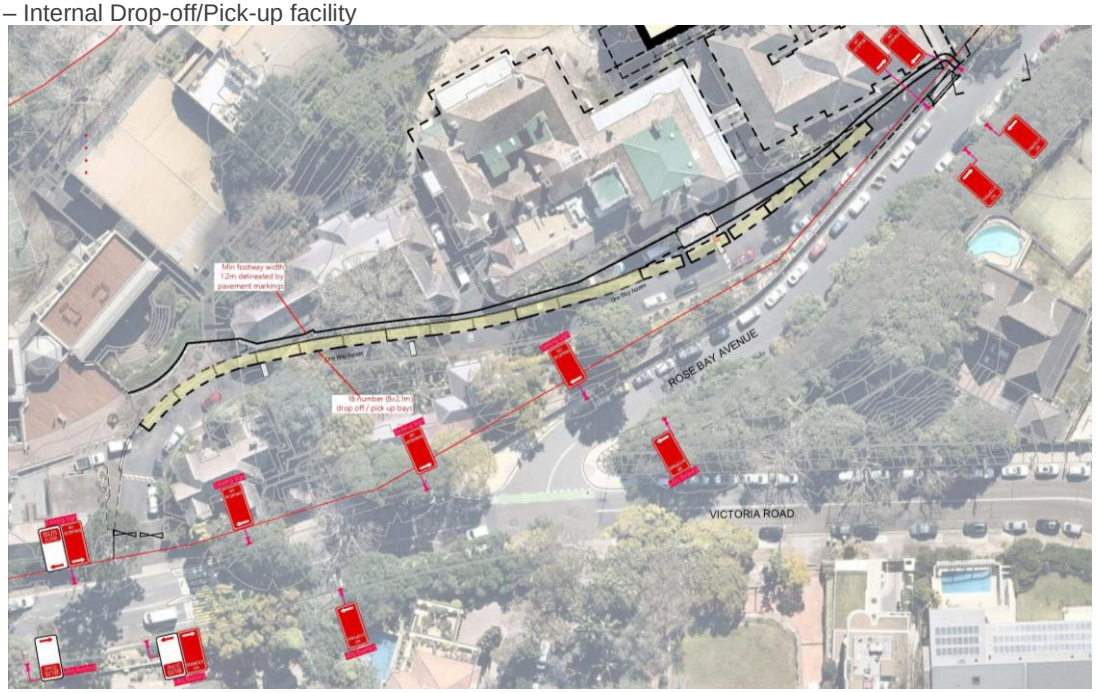
3.3.2. Alterations to internal driveway to facilitate new use as a 'kiss and ride' facility

The current internal driveway accommodates 29 staff parking bays. The proposal seeks consent to create a 'kiss and ride' facility within the internal driveway that will operate with one-way access entering off Victoria Road and exiting into Rose Bay Avenue. This will necessitate the following works:

- Line marking of 18 pick-up/drop-off / visitor parking bays for the 'kiss and ride' facility;
- Revise signage along the internal driveway;
- modification of 3 existing speed humps along internal driveway to facilitate new parking bays;
- retention of existing deliveries zone for kitchen between Cranbrook House and Harvey Building; and
- Installation of a new sliding vehicle gate to Rose Bay Avenue.

The existing and proposed gates will be utilised for access control purposes at the entrance and exit of the 'kiss and ride' facility to allow area to be a pedestrian zone between 9:30am and 2:30pm on school days;

Figure 9 – Internal Drop-off/Pick-up facility



Source PTC

3.3.3. Site Operations and Community Use

The School has prepared an Operational Plan of Management (refer **Appendix J**) to ensure that the operation of the proposed new facilities being the Aquatic and Fitness Centre, Centenary Building and Carpark are operated and managed responsibly. The Operational Plan of Management includes details of the proposed school operations, including staff and student numbers, school hours of operation, and operational details of any proposed before/after school care services and/or community use of school facilities.

3.3.3.1. Staff and Student Numbers

The enrolment capacity of the School's main campus is limited to 1115 students due to a cap imposed on the School by Woollahra Council based on enrolment figures from May 1990 (DA 88/280). The proposed works will not result in any exceedance of the current cap. The School is not currently seeking a revision of its cap. There are currently 168 full time equivalent (FTE) staff at the School's main campus.

3.3.3.2. School Hours of Operation

The School's base operating hours are currently as follows. No change is proposed to these base hours for core lessons.

Typical School operating hours:

Senior School hours for students:	Monday to Friday - 08:20am to 3:20pm
School reception operating hours:	Monday to Friday - 08:00am to 6:00pm
Core teaching staff hours	Monday to Friday – 8:00am – 4:00pm
Sports training:	Monday to Friday – 6:30am to 8:00pm
Saturday Sports:	Saturday – 8:00am to 3:00pm

Extracurricular activities occur outside core school hours on weekdays, weekends and public holidays.

Generally, extra-curricular activities commence at approximately 6:30am and conclude by 6:30pm.

It is noted that Cranbrook is a Day and Boarding school and as such students and staff live on campus full time during school term.

Aquatic Centre proposed operating hours:

It is proposed that the Aquatic and Fitness Centre operate to the following hours:

Mon – Sat:	06:00am to 9:00pm
Sun:	06:00am to 6:00pm

Chapel proposed operating hours:

It is intended that the Chapel will operate predominantly during typical School operating hours. Special events such as parent, student and old boy services will occur periodically throughout the year in the evenings or on weekends.

Centenary Building including the Multi-Purpose Hall and Theatre proposed operating hours:

It is intended that this building be used predominantly during typical School operating hours. Special events such as gala and theatrical productions, prize-givings and parent teacher evenings will occur periodically throughout the year.

3.3.3.3. In-Site Drop-off/Pickup Management

Management of drop-off/pick-up facility along the School drive will be managed during the peak drop off (7:45-8:15am) and pick-up period (3:15-3:45pm) in a similar manner to practices employed at the Junior School campus.

At drop-off, cars will join the queue of vehicles and students alight when their vehicle reaches the end of the queue.

During pick-up, students wait in a designated area and are to be called to the head of the queue when their vehicle is approaching. Approaching vehicles will place a name place in the window of their vehicle, to inform staff of the student being picked up.

The on-site pick-up/drop-off will be available for use between 6:30-9:00am and 2:30-6:30pm to cater for before and after school activities.

3.3.3.4. Community Use

Learn to Swim

The School currently operates public Learn to Swim classes in its existing 25 metre pool and these Learn to Swim classes are proposed to continue in the new Learn to Swim pool within the AFC. These Learn to Swim programs are for children who may or may not be students of the School and are expected to run for various levels of ability for 30-minute periods, between 7:30am and 7:30pm Monday to Friday, 7:30am to 5:00pm Saturday and 7:30am to 12:30pm on Sundays.

It is proposed that learn-to-swim lessons occur in the mornings and afternoons Monday to Friday, along with squad training.

Learn to Swim will also occur between 7:30am to 5:00pm Saturday, and on Sunday between 7:30am and 12:30pm.

It is anticipated that the Learn to Swim and squad training will have capacity for approximately 3,500 spaces over the 7-day schedule.

The School will not be offering gym or pool membership or entry to the general community with respect to the use of the Aquatic and Fitness Centre.

Chapel

The School currently provides public services in its chapel and these are expected to continue in the new chapel building. It is intended that the chapel be used for non-school-related services both during the school day and on weekends by the Cranbrook community.

General Community Access

The School is limited in its capacity to provide unrestrained public access to facilities as a result of its duty of care to students safety, and as a result of the current demand on facilities by school activities, especially the oval and AFC.

3.3.4. Signage

School identification and internal wayfinding will be located at the site entrances and throughout the campus. Signage details are provided on the architectural drawings at **Appendix C**.

3.3.5. Site Landscaping

The landscape design for Cranbrook School has been influenced by the coastal location of the site, the site's steep and stepped topography and the needs of various learning environments. The landscape package is included at **Appendix E**.

The key landscape features in each precinct are detailed below.

Centenary Building

- Turfed Centenary Lawn on roof of Centenary Building;
- Intimate Memorial Garden to the east of the Chapel including turfed lawn, open pergola and water body;
- Sandstone surfacing for hardstand areas;
- Feature trees in raised planters; and
- Fixed bench seating.

The planting palette for this precinct incudes: *rosmarinus officinalis, rhaphiolepis indica, buxux semperiens, westringia 'mundi', pittosporum 'silver ball', gardenia augusta* and *wisteria floribunda*.

Camellia Court to the west of Centenary Building

- Expanded Camellia Court area and building entry;
- Central walkway access;

- Expanded paved area in front of pavilion;
- New garden beds;
- Green wall application;
- Preservation of existing sandstone rock faces; and
- New raised level courtyard space.

The planting palette for this precinct incudes: *camellia japonica, gardenia augusta, hydreangea quercifolia, buxus microphylla, belchnum silver lady, philodendron Xanadu, camellia sasanqua, trachelospermum jasminoides* and *plectranthus ciliates.*

Aquatic Centre Forecourt

- Provision of a generous, granite paved shared forecourt between the AFC entrance and New South Head Road;
- Planting of sculptural vegetated buffer between the plaza space and the road way; and
- Native tree planting along the site boundary.

The planting palette for this precinct incudes: *rhaphiolepis indica, ajuga reptans, dichondra repens, hebe 'blue gem' liriope miscari 'evergreen giant', viola hederacea, hydreangea quercifolia, plectranthus 'mona lavender'* and *cupaniopsis anacardioides.*

Hordern Oval

- The northern boundary of Hordern Oval will comprise low level planting with integrated safety fencing; and
- The oval will be turfed.

3.3.6. Vegetation Removal

The proposed development will require the removal of forty-three (43) trees. Of these, 5 have been recognised as high value trees and are required for removal to allow the proposed development. The Brush Box documented as Trees 16, 17, 18 and 19 are required for removal to allow vehicular access, while the Brush Box documented as Tree 38 is required for removal to allow an alternative fire exit and pedestrian access. The Port Jackson Fig tree documented as Tree 26 is required for removal to allow adjacent ground level changes to occur.

There are 3 trees located adjacent to the proposed excavation that will require ongoing Arboricultural consideration to ensure their retention. These include the Phoenix palm documented as Tree 13, the historically significant Bunya Pine documented as Tree 39 and the mature Black Bean documented as Tree 36. **Figure 10** shows the existing vegetation on the site. This is discussed in more detail in the Arboricultural Impact Assessment at **Appendix N**. The majority of trees required to be removed are of low significance, and the trees to the north edge of the site will be replaced by the upgraded new landscaping.

The Landscape Design prepared by Arcadia (refer to **Appendix E**) identified that 36 new trees will be planted as well as over 3,000 additional shrubs and accent plantings.

Figure 10 – Existing Vegetation within the Site

Picture 8 – Vegetation along eastern boundary with Rose Bay Avenue
Source: Urbis

Picture 9 – Existing vegetation at interface of Bishop Building and Hordern Oval
Source: Urbis

3.3.7. On-Site Civil and Stormwater Works

New stormwater infrastructure is proposed to manage overland flow, comprising

- A new pit and pipe system in Rose Bay Avenue to convey stormwater to the existing Council stormwater network (to be dedicated to Council).
- New pit and pipe system within the new 'drop-off/pick-up' space to collect localised stormwater flows from the road and adjacent existing building to the upgraded system on Rose Bay Avenue.
- New grassed swale and surcharge pits with connections to existing Council drainage infrastructure to collect stormwater flows from playing field run-off (where discharge is in excess of the proposed playing field subsurface drainage system); and
- Adjustment of exiting on site stormwater infrastructure to direct to the new network (where required).
- The playing field will incorporate a specialist drainage design with either a network of subsoil pipes or drainage cells, draining to New South Head Road or Rose Bay Avenue.

Water Sensitive Urban Design components are proposed to supplemented civil drainage works. These are incorporated into the landscape design:

- Passive irrigation of vegetated areas or green roofs will provide the majority of stormwater flow treatment for the site.
- Grassed swales are located along the perimeter of Hordern Oval to control runoff from the oval.
- Irrigation for Hordern Oval will be supplied by a combination of mains and bore water supplies.
- Gross pollutant traps will be included if required for water quality purposes.

3.3.8. Works in the Road Reserve

A new vehicular site access is proposed to Rose Bay Avenue servicing the subterranean car park. Works include site grading, new cross over and footpath reinstatement.

Augmentation of parking arrangements around the site is also proposed to:

- Remove the drop-off/pick-up zone from Rose Bay Avenue;
- Allow for safe turning from proposed driveway crossings and adequate sight lines to and from these crossings; and
- Provide for a loading zone to accommodate 2 x 15m long delivery vehicles immediately adjacent the site's loading bay fronting Rose Bay Avenue.

3.3.9. Staging and Construction Management

The works will be constructed in one phase.

A Preliminary Construction Management Plan is attached at **Appendix BB**, that fully details the expected construction process and management protocol.

The proposal will generate 296 FTE direct construction jobs, 275 FTE indirect construction jobs, for a total of 571 FTE construction jobs. The proposal will also generate 12 FTE direct operational jobs.

4. STATUTORY PLANNING CONTEXT

4.1. OVERVIEW

In accordance with SEARs, the following statutory planning policies have been considered in the assessment of the proposal:

- *State Environmental Planning Policy (State & Regional Development) 2011;*
- *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017;*
- *State Environmental Planning Policy No. 55 – Remediation of Land;*
- *State Environmental Planning Policy No. 64 – Advertising and Signage;* and
- *Woollahra Local Environmental Plan 2014.*

4.2. STATE ENVIRONMENTAL PLANNING POLICY (STATE AND REGIONAL DEVELOPMENT) 2011

State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD) identifies development types that are of state significance, or infrastructure types that are of state or critical significance. Pursuant to Schedule 1 of the SEPP SRD:

> *"Development that has a capital investment value of more than $20 million for the purpose of alterations or additions to an existing school" is considered a SSD.*

The proposal is defined as 'alterations and additions to an existing school' and has a project value more than $20 million. This meets the minimum threshold of $20 million and accordingly, an SSD application has been lodged with DPE.

4.3. STATE ENVIRONMENTAL PLANNING POLICY (EDUCATIONAL ESTABLISHMENTS AND CHILD CARE FACILITIES) 2017

State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 (ESEPP) provides the legislative planning framework for the effective delivery of educational establishments and early education and care facilities across the State.

The ESEPP establishes consistent State-wide assessment requirements and controls, that override development standards contained within other environmental planning instruments. Part 4 of the ESEPP identifies school specific development controls, with *clause 35 Schools—development permitted with consent* containing the relevant controls. Part 7 of the ESEPP contains general development controls for all educational establishments and early education and care facilities across the State, with *clause 57 Traffic-generating development* being of relevance. The proposal's compliance with the controls has been addressed in **Table 3**.

Table 3 – ESEPP Compliance Table

Clause	Proposal	Compliance
Clause 35 Schools—development permitted with consent		
(1) Development for the purpose of a school may be carried out by any person with development consent on land in a prescribed zone.	The proposed development is in Zone SP2 Infrastructure which is a prescribed zone for the purposes of the ESEPP.	YES

Clause	Proposal	Compliance
(2) Development for a purpose specified in clause 39 (1) or 40 (2) (e) may be carried out by any person with development consent on land within the boundaries of an existing school.	Development consent is sought for the proposed works.	YES
(3) Development for the purpose of a school may be carried out by any person with development consent on land that is not in a prescribed zone if it is carried out on land within the boundaries of an existing school.	The proposed development is in is a prescribed zone for the purposes of the ESEPP.	N/A
(4) Subclause (3) does not require development consent to carry out development on land if that development could, but for this Policy, be carried out on that land without development consent.		N/A
(5) A school (including any part of its site and any of its facilities) may be used, with development consent, for the physical, social, cultural or intellectual development or welfare of the community, whether or not it is a commercial use of the establishment.	The 'Learn to Swim' pool will continue to used by students and the community.	YES
(6) Before determining a development application for development of a kind referred to in subclause (1), (3) or (5), the consent authority must take into consideration: (a) the design quality of the development when evaluated in accordance with the design quality principles set out in Schedule 4, and (b) whether the development enables the use of school facilities (including recreational facilities) to be shared with the community.	The EIS addresses the design quality of the development. A formal response to the Schedule 4 School Design Principles is included in the Urban Design Report prepared by Architectus (**Appendix D**). A summary of how the design addresses these principles is included in **Section 6.3.6** of this EIS (Design Excellence). The School will continue to provide access to facilities for Learn to Swim purposes.	YES
(7) Subject to subclause (8), the requirement in subclause (6) (a) applies to the exclusion of any provision in another environmental planning instrument that requires, or that relates to a requirement for, excellence (or like standard) in design as a prerequisite to the granting of development consent for development of that kind.	The *Woollahra Local Environmental Plan 2014* does not require a competitive design process to be held.	N/A
(8) A provision in another environmental planning instrument that requires a competitive design process to be held as a prerequisite to the granting of development consent does not apply to development to which subclause (6) (a) applies that has a capital investment value of less than $50 million.	The *Woollahra Local Environmental Plan 2014* does not require a competitive design process to be held.	N/A
(9) A provision of a development control plan that specifies a requirement, standard or control in relation to development of a kind referred to in subclause (1), (2), (3) or (5) is of no effect, regardless of when the development control plan was made.	The proposal is compliant with the standards and controls of the Woollahra Development Control Plan 2015.	Refer **Appendix F**.

Clause	Proposal	Compliance
(10) Development for the purpose of a centre-based child care facility may be carried out by any person with development consent on land within the boundaries of an existing school.	The proposal does not include a centre-based child care facility.	N/A
(11) Development for the purpose of residential accommodation for students that is associated with a school may be carried out by any person with development consent on land within the boundaries of an existing school.	The proposal does not include any residential accommodation.	N/A
Clause 57 Traffic-generating development		
(1) This clause applies to development for the purpose of an educational establishment: (a) that will result in the educational establishment being able to accommodate 50 or more additional students, and (b) that involves: (i) an enlargement or extension of existing premises, or (ii) new premises, on a site that has direct vehicular or pedestrian access to any road.	The school currently operates under a cap of 1115 students.	
(2) Before determining a development application for development to which this clause applies, the consent authority must: (a) give written notice of the application to Roads and Maritime Services (RMS) within 7 days after the application is made, and (b) take into consideration the matters referred to in subclause (3).	Noted.	
(3) The consent authority must take into consideration: (a) any submission that RMS provides in response to that notice within 21 days after the notice was given (unless, before the 21 days have passed, RMS advises that it will not be making a submission), and (b) the accessibility of the site concerned, including: (i) the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips, and (ii) the potential to minimise the need for travel by car, and (c) any potential traffic safety, road congestion or parking implications of the development.	Noted.	

Clause	Proposal	Compliance
(4) The consent authority must give RMS a copy of the determination of the application within 7 days after the determination is made.	Noted.	

Clause 42 of the ESEPP allows the proposal to contravene a development standard imposed by the ESEPP or any other environmental planning instrument under which the consent is granted:

> *'**State significant development for the purpose of schools—application of development standards in environmental planning instruments***
>
> *Development consent may be granted for development for the purpose of a school that is State significant development even though the development would contravene a development standard imposed by this or any other environmental planning instrument under which the consent is granted.'*

The proposal exceeds the Height of Building development standard which applies to the site. However, as per Clause 42, development consent may still be granted, without the need for a formal Clause 4.6 Variation.

Schedule 4 of the ESEPP outlines the design quality principles to which consideration must be given in the determining of applications for school developments, as discussed in detail at **Appendix D**.

4.4. STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND

State Environmental Planning Policy No.55 – Remediation of Land (SEPP 55) provides a state-wide planning approach for the remediation of land and aims to promote the remediation of contaminated land to reduce the risk of harm to human health or the environment. Clause 7(1) requires the consent authority to consider whether land is contaminated prior to the issuance of consent to a development application.

Preliminary Site Investigation

A Phase 1 Preliminary Site Investigation (PSI) has been undertaken by Douglas Partners. This PSI is included at **Appendix S**. The PSI was undertaken to

- Assess the previous land uses to determine the potential for soil and groundwater contamination on the site;
- Provide a preliminary assessment of the suitability of the site for the proposed development; and
- Provide recommendations for additional investigation, if required.

The overall approach for the PSI included a review of available historical information, an inspection of the site by an engineer and a review of limited soil sampling and laboratory analysis undertaken of the project in 2015 and 2017.

The site has been used as a School for the past 100 years, and prior to that was a private residence.

The site is not identified as being significantly contaminated under the *Contaminated Lands Management Act 1997* as at 15 March 2018. Further, the site is not on the 9 February 2018 version of the 'List of NSW Contaminated Sites Notified to EPA'.

The PSI found that the main contamination risks are considered to be associated with school operations including previous development work, day-to-day operations and maintenance. The laboratory testing indicates that the contaminant concentrations in the soil samples analysed were within the adopted health-based investigation levels. One sample (BH10/1.0m) exceeded the ecological-based investigation level for carcinogenic PAHs (2.3 mg/kg), however this is considered insignificant as all other samples were within the adopted criterion which is a very conservative value in any case.

The use of groundwater is not currently proposed and groundwater will be handled using a drainage system, where required. The risk of groundwater contamination impacting upon the development is therefore considered low.

On the basis of the investigation, Douglas Partners has concluded that the risk of significant contamination being present, that prevents the redevelopment of the site without significant remediation, is low.

If any contamination is identified during construction (e.g. waste filling) then an appropriate response will need to be developed by an environmental consultant and actioned on site to ensure site suitability. This could be undertaken by enacting an Unexpected Finds Protocol (UFP) as part of the Construction Environmental Management Plan.

Any materials required to be removed from the site will need to be classified in accordance with the current *Waste Classification Guidelines* (NSW EPA 2014).

4.5. STATE ENVIRONMENTAL PLANNING POLICY NO. 64 – ADVERTISING AND SIGNAGE

State Environmental Planning Policy No. 64 – Advertising and Signage (SEPP 64) aims to ensure that advertising and signage is compatible with the desired amenity and visual character of an area and provides effective communication in suitable locations and is of high quality design and finish. It does not regulate the content of signs and advertisements.

Clause 8 and Clause 13 of SEPP 64 prevents development consent from being granted to signage unless the consent authority is satisfied that it is consistent with the objectives of the SEPP and has satisfied the assessment criteria specified in Schedule 1.

An assessment of the proposed signage against Schedule 1 of SEPP 64 is included at **Appendix G**, which concludes that the proposed identification signage is compliant with SEPP 64 and is consistent with its objectives. On this basis, it is considered that the proposal satisfies the requirements of SEPP 64.

4.6. WOOLLAHRA LOCAL ENVIRONMENTAL PLAN 2014

The *Woollahra Local Environmental Plan 2014* (WLEP 2014) is the principal environmental planning instrument governing development at the subject site. An assessment against the relevant provisions of the WLEP 2014 has been undertaken in the subsections below. Overall, the proposal is largely compliant with all relevant provisions, with the exception of a breach to the maximum building height by the proposed Centenary Building due to the steep varied topography of the site.

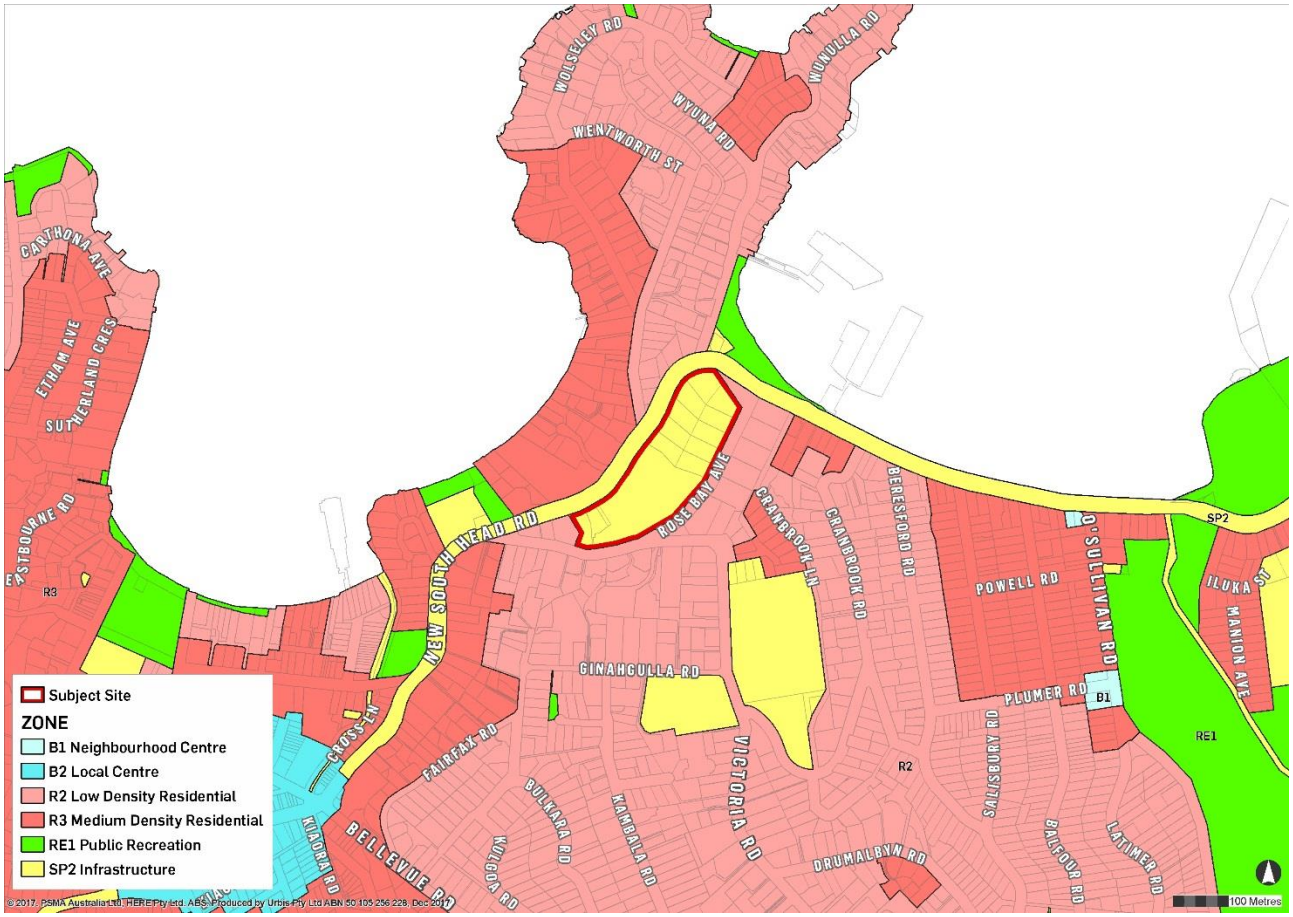
4.6.1. Zoning and Permissibility

The site is zoned as 'SP2 Infrastructure – Educational Establishment' (see **Figure 11**). The site is identified as an 'educational establishment' on the Land Zoning Map which is defined by WLEP 2014 as follows:

> *'**educational establishment** means a building or place used for education (including teaching), being:*
>
> *(a) a school, or*
>
> *(b) a tertiary institution, including a university or a TAFE establishment, that provides formal education and is constituted by or under an Act.'*

The proposed development is classified as an 'educational establishment' and is therefore, permissible with consent.

Figure 11 – Extract from WLEP 2014 Zoning Map



Source: Urbis

4.6.2. Zone Objectives

The SP2 Infrastructure – Educational Establishment Zone objectives are outlined below:

- *To provide for infrastructure and related uses.*
- *To prevent development that is not compatible with or that may detract from the provision of infrastructure*.

The proposal is consistent with these objectives for the following reasons:

- It provides for the redevelopment of existing underutilised educational facilities to provide more suitable learning environments;
- It satisfies the educational needs of students, and will provide increased employment opportunities;
- The proposed improvements to on-site car parking provision, and a dedicated 'kiss and ride' facility will reduce stress on the surrounding local road network attributable to existing demand for parking and school pick-up/drop-off requirements;
- The proposed works have been sensitively designed and sited and will not adversely impact on the identified heritage qualities of the site;
- The excavation of the Hordern Oval to accommodate the AFC and basement car parking will facilitate a more orderly use of the school's land that recognises the unique site constraints and the school's inability to physically expand the Senior School campus meaningfully beyond the current campus boundaries due to being bounded by public roads and the high land values in the locality; and
- The proposed development can be appropriately managed to ensure it will not unreasonably impact on the amenity of surrounding properties.

4.6.3. Other LEP Provisions

Other relevant provisions contained to the WLEP 2014 are addressed in **Table 4** below.

Table 4 – WLEP 2014 Compliance Table

Clause	Control	Proposal	Compliance
Clause 4.3 – Height of Buildings	'J2' or 9.5m	The proposed works have a maximum height from existing ground levels of approximately 16.72m. Refer discussion below.	No
Clause 4.4 - Floor Space Ratio (FSR)	N/A	Increase of approximately 9,938sqm.	N/A
Clause 5.10 - Heritage Conservation	The site is a local heritage item (Item 44) under the WLEP 2014. There are a number of locally listed heritage items on the site, and immediately surrounding it (see Section 2.5).	A Heritage Impact Statement has been prepared by Urbis and is attached at **Appendix H**.	Yes
Clause 6.1 - Acid Sulfate Soils	The site is identified as being Class 5 Acid Sulfate Soils	The development works are not expected to lower the groundwater on any adjacent sites. As such, the water level will not be lowered below RL 1 m AHD on adjacent Class 1, 2, 3 or 4 land, as per **Appendix R**.	Yes
Clause 6.2 - Earthworks	Development consent is required for earthworks.	Consent is specifically sought for all earthworks associated with this project.	Yes

Clause 4.3 Height of Buildings

The proposal exceeds the height of buildings development standard (Clause 4.3 of WLEP 2014) limit of 9.5m by 7.22m. Ordinarily a Clause 4.6 variation would be required to vary this height of buildings standard, however Clause 42 of the ESEPP states that *"Development consent may be granted for development for the purpose of a school that is State significant development even though the development would contravene a development standard imposed by this or any other environmental planning instrument under which the consent is granted."* As such no clause 4.6 is required.

Notwithstanding this, the proposed building height is acceptable for the following reasons:

- the proposal is largely consistent with the existing building envelope of the site;
- the new centenary building sits below the height of the heritage building immediately to the south.
- the building will be constructed into a steep hillside, and will terrace down that slope minimising the perception of bulk and scale;
- there will be minimal impact on views to the harbour or any significant vista from the public domain. Presently, views over War Memorial Hall are to trees beyond the site to the west;
- views from private residential dwellings fronting Rose Bay Avenue across the Cranbrook School site will not be materially affected by the proposed building height exceedance. Dwellings across Rose Bay avenue are elevated above the height of the proposed building and any significant views to the Harbour or City would be maintained above the proposed Centenary Building;
- the building height exceedance will not impact privacy to neighbouring residential dwellings. Trafficable terraces are oriented to the north west, away from neighbouring residences. A small garden is located to

the east of the Chapel however this space will be heavily landscaped, thereby discouraging the gathering of numerous individuals; and

- shadow diagrams provided in the architectural plan package at **Appendix C** demonstrate that no material overshadowing will be cast on neighbouring properties. That part of the building which exceeds the height standard is located to the north-west face of the building. Any shadow cast by that element of the built form will fall within the shadow cast by a complying height in the afternoon.

The proposed building height exceedance will not create any material impacts to the privacy or view amenity of neighbouring properties or from the public domain. The variation is therefore considered to be acceptable.

4.7. CONTRIBUTIONS

Discussion has been had with Woollahra Council that a Voluntary Planning Agreement (VPA) in lieu of s7.11 contributions may be a positive outcome for the development. A VPA would propose that upgrades of the public domain immediately surrounding the campus would be undertaken in lieu of a Section 7.11 payment to Council. Such public domain works upgrade works may include:

- Footpath upgrades;
- Kerbs and gutter replacement; and
- Stormwater upgrades where necessary.

Alternatively, where a s7.11 contribution is agreed, the development proposal will be subject to the provisions of Woollahra Council's s94A plan. As such, a levy to the equivalent of 1% of development cost will be payable to Woollahra Council in accordance with this policy.

Negotiations with Woollahra Council will be undertaken to agree either the terms of a VPA or payment of s7.11 contribution.

5. STRATEGIC PLANNING CONTEXT

5.1. OVERVIEW

In accordance with the SEARs, the following strategic planning policies have been considered in the assessment of the proposal:

- *NSW State Priorities;*
- *A Plan for Growing Sydney;*
- *NSW Long Term Transport Master Plan 2012;*
- *Sydney's Cycling Future 2013;*
- *Sydney's Walking Future 2013;*
- *Sydney's Bus Future 2013;*
- *Crime Prevention Through Environmental Design (CPTED) Principles;*
- *Healthy Urban Development Checklist, NSW Health;*
- *Better Placed – An integrated design policy for the built environment of NSW 2017;*
- *Greater Sydney Commission's Draft Eastern City District Plan; and*
- *Woollahra Development Control Plan 2015.*

Consistency with the relevant goals contained to the above strategic policies is discussed below.

5.2. NSW STATE PRIORITIES

NSW State Priorities is the State Government's plan to guide policy and decision making across the State. The proposed redevelopment of the site is consistent with relevant priorities contained within the Plan, including:

- **Creating Jobs:** Create 150,000 new jobs by 2019.

  The proposal will create job opportunities in manufacturing, construction and construction management during the project's construction phase of works.

- **Building Infrastructure**: Key infrastructure projects to be delivered on time and on budget across the state.

  The proposal provides a significant development opportunity that will create jobs, stimulate the economy and expand a vital service for the community. Population growth has placed substantial pressure on both public and private schools within the area. The proposal will provide world-class facilities to the students improving their educational experience.

- **Improving Education Results:** Increase the proportion of NSW students in the top two NAPLAN bands by eight per cent.

  The proposed development will contain state of the art facilities, spaces and equipment for use by students and staff. This will provide students with greater opportunities to learn and improve their numeracy and literacy skills.

Overall, it is considered that the proposed development is entirely consistent with the goals and objectives set out within the *NSW State Priorities*.

5.3. A PLAN FOR GROWING SYDNEY SUPERSEDED BY THE GREATER SYDNEY REGION PLAN

Released in December 2014, *A Plan for Growing Sydney* includes a range of goals, directions and actions that aim to support the strategic growth of Sydney over the long term.

A Plan for Growing Sydney was replaced by *A Metropolis of Three Cities: Greater Sydney Region Plan* (Region Plan) on 18 March 2018. As such the proposal has been considered against the Region Plan.

One of the key planning objectives in the Region Plan is ***Objective 6: Services and infrastructure meet communities' changing needs.*** In accordance with the Plan, this SSDA will ensure the delivery of upgraded, world class educational facilities to meet Sydney's growing educational needs. This will ensure continued provision of a high quality educational experience to students.

The proposed development is also consistent with the wider liveability and sustainability goals and directions contained within the Plan, including:

Objective 7: Communities are healthy, resilient and socially connected: The proposed development will expand an existing piece of social infrastructure that services the community by providing improved academic and non-academic facilities to match the educational aspirations of the School, and to address specific infrastructure deficiencies required for the efficient running of the School and/or to address legislative or regulatory requirements;

Objective 33: A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change: The school is close to established residential neighbourhoods, multiple bus stops and two ferry stops. Accordingly, future students, parents and staff will be encouraged to access the site via public transport or walking. This will reduce reliance on cars, decrease road congestion and generally create a healthy built environment. While the school will encourage access to the site via public transport or walking, it is recognised that this is not always feasible, as such the proposed development includes a basement car park to reduce on-street parking pressures experienced around the site; and

Objective 34: Energy and water flows are captured, used and re-used: The proposed development has been designed according to the principles of ESD in order to provide a sustainable development that minimises its impact on the environment.

The proposed development will deliver a sustainable and world class outcome to expand the facilities of the established Cranbrook Senior Campus in a manner that promotes the use of public and active transport. The redevelopment of the site will also make a valued contribution to economic growth in Sydney and provide increased employment opportunities.

5.4. DRAFT EASTERN CITY DISTRICT PLAN SUPERSEDED BY THE EASTERN CITY DISTRICT PLAN

Released in October 2017, the *Revised Draft Eastern City District Plan* includes a range of goals, directions and actions that aim to support the strategic growth of Sydney over the long term. The *Revised Draft Eastern City District Plan* was finalised as the *Eastern City District Plan* (District Plan) on 18 March 2018. As such the proposal has been considered against the District Plan.

Three of the key planning directions in the Strategy are:

E1 - Planning for a city supported by infrastructure

E3 - Providing services and social infrastructure to meet people's changing needs

E4 - Fostering healthy, creative, culturally rich and socially connected communities

In accordance with the District Plan, this SSDA will ensure the delivery of upgraded, world class educational facilities to meet Sydney's growing educational needs. This will ensure that a high quality educational experience is continued to be provided to students to support a healthy, creative, culturally rich and socially connected communities.

5.5. NSW LONG TERM TRANSPORT MASTER PLAN 2012

Future Transport Strategy 2056 is the NSW Government's update of the 2012 NSW Long Term Transport Master Plan and was finalised on 18 March 2018.

The *Greater Sydney Services and Infrastructure Plan* is Transport for NSW's 40-year plan for transport in Sydney. It is designed to support the land use vision for Sydney as identified in the Region Plan and District Plans. Building on the state-wide transport outcomes identified in the *Future Transport Strategy 2056*, the Plan establishes the specific outcomes transport customers in Greater Sydney can expect and identifies the policy, service and infrastructure initiatives to achieve these.

The focus of the plan is to enable people and goods to move safely, efficiently and reliably around Greater Sydney, including having access to their nearest centre within 30 minutes by public transport, 7 days a week. The transport system will also support the liveability, productivity and sustainability of places on our transport networks. Achieving this will require more efficient modes of transport – public transport, shared transport and walking and cycling – to play a greater role.

The subject site benefits from being near two ferry stops, Double Bay and Rose Bay. The site is well serviced by buses that operate from the 7 bus stops in close proximity to the site, as well as the School's private bus service.

The proposed development also includes a basement car park to reduce on-street parking pressures experienced around the site and relieve localised congestion. This will decrease road congestion and promote sustainable outcomes.

5.6. STATE INFRASTRUCTURE STRATEGY 2018-2038

State Infrastructure Strategy 2018-2038 was released by Infrastructure NSW on 18 March 2018 to accompany the Region Plan, Transport Strategy and District Plans.

This 20-year Strategy sets out Infrastructure NSW's independent advice on the current state of NSW's infrastructure and the needs and priorities over the next 20 years. It looks beyond the current projects and identifies policies and strategies needed to provide infrastructure that meets the needs of a growing population and a growing economy. The Strategy sets six cross-sectoral strategic directions, each designed to achieve 'more with less' and embed good practice across the infrastructure lifecycle.

The Strategic objective for the Education sector is to *'Deliver infrastructure to keep pace with student numbers and provide modern, digitally-enabled learning environments for all students.'* The proposed development will help meet this objective by improving the School's facilities enabling it to provide a better learning environment for its pupils.

5.7. SYDNEY'S CYCLING FUTURE 2013

Sydney's Cycling Future (2013) seeks to make bicycle riding a feasible transport option within Sydney by encouraging in the use of Sydney's existing bicycle network. The proposed development includes bicycle storage facilities for approximately 20 bikes in the AFC with change facilities provided. It should be noted that the school currently provides 80 bicycle parking spaces within the campus.

Woollahra Municipal Council has developed the *Woollahra Bicycle Strategy 2009*, which reviewed the *Woollahra Waverly Bike Plan 200'* and set out to develop a bicycle strategy for future implementation. The school is served by an existing on-road cycle route along Victoria Road and a proposed off-road route along New South Head Road. These routes provide access to the local cycle network and links to the greater Sydney cycle network. Parents, students and employees of the school can use the Victoria Road route to access the site via bike. This reduces reliance on cars, decreases congestion and promotes sustainable outcomes.

Bike parking is provided on School grounds which will be retained and enhanced as part of this proposal. Additional bike parking facilities will be located in the AFC adjacent the main entrance.

5.8. SYDNEY'S WALKING FUTURE 2013

Sydney's Walking Future (2013) aims to promote walking as a means of effective transport within Sydney by encouraging investment in safe, permeable walking networks.

The school is close to residential neighbourhoods which will encourage current and future parents, students and employees to access the site by walking. This will increasingly promote healthy practices within the School and decrease vehicular use.

5.9. SYDNEY'S BUS FUTURE 2013

Sydney's Bus Future (2013) outlines the NSW Government's long term plan to deliver fast and reliable bus services to meet current and future customer needs.

The site is directly serviced by buses that operate from the 7 bus stops in close proximity to the site:

- New South Head Road: Routes - 323, 324, 325 and L24
- Victoria Road: Route 326

In additional to the STA bus routes services Cranbrook School, the school operates four private services:

- North Shore Bus Services;
- Inner West Services;
- Junior School Eastern Suburbs Services; and
- Senior School Eastern Suburbs Services.

The routes are operated by the school and drop off and pick up students at the STA bus stop located on New South Head Road at the corner of Wolseley Road. These services provide current and future parents, students and employees with an opportunity to access the site via other means than the private car.

The following information has been provided by the School relating to patronage of the private services:

Table 5 – Cranbrook Private Services – 2018

	Students	**Staff**	**Bus Capacity**	**Seats Available**
Inner West	11	1	21	9
North Shore	43	2	47	2
Junior School Eastern Suburbs	21	0	21	0
Senior School Eastern Suburbs	8	0	10	2

The area is also serviced by the new 'Ride Plus' transport on demand service currently being trialled as part of the NSW Government's Future Transport program.

5.10. CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) PRINCIPLES

The principles of CPTED have been incorporated by Architectus into the proposed School design. The approach is detailed in the Architectus Urban Design Report and is attached at **Appendix D**. The *Safer by Design* evaluation process is used by the NSW Police to identify and quantify crime risks. The evaluation measures statistical probability of crime, consequence, 'hotspots' analysis and situational opportunity. The four key principles to minimise the opportunity for crime are outlined **Table 6**.

Table 6 – CPTED Principles

	Principle	**Definition**
1	Natural Surveillance	Natural surveillance is a by-product of well-planned, well-designed and well-used space. It involves maximising opportunities for passers-by and users to observe what happens in an area (the 'safety

	Principle	Definition
		in numbers' concept). Higher risk locations can also benefit from organised surveillance, which involves the introduction of formal measures such as on-site security guards or CCTV.
2	Access control	Control of who enters an area so that unauthorised people are excluded, for instance, via physical barriers such as fences, grills etc.
3	Territorial reinforcement /ownership	People are more likely to protect territory they feel they own and have a certain respect for the territory of others. This can be expressed through installation of fences, paving, signs, good maintenance and landscaping. Territoriality relates to the way in which a community has ownership over a space.
4	Space management	Ensures that space is appropriately utilised and cared for. Space management strategies include: activity coordination (i.e. having a specific plan for the way different types of activities are carried out in space), site cleanliness, rapid repair of vandalism and graffiti, the replacement of burned out lighting and the removal or refurbishment of decayed physical elements.

CPTED principles have informed the design in the following way:

- The school is an island site and generally the boundary is protected by fencing and surveillance at entry and exit points. The main access point to the school will remain as the gates on 5 Victoria Road and have CCTV camera for surveillance and gates to delineate the public from private domain.
- The orientation of the new buildings allow natural surveillance on each level with the planning limiting 'dead end spaces' or blind spots which minimises the risk of crime and maximises the opportunities for passers-by and users to observe what happens in an area. Areas which the school deem as higher risk locations will also have surveillance from CCTV camera which will link directly into the existing security system.
- The school is very well maintained with full time staff looking after the landscaped areas, the built form and the general upkeep of the site which reinforces the requirement of respect for the territory by others. The new development shall increase the amount of new public lawn, paving and landscaping which will further reinforce the pride in which the campus is held. A way finding signage will be introduced with the new development to ensure the campus is understood and avoids people loitering in unintended places.
- The full-time maintenance staff ensure that the school is appropriately utilised and cared for. Activities or events are fully coordinated with a specific management plan for the way different types of activities are carried out.

5.11. HEALTHY URBAN DEVELOPMENT CHECKLIST, NSW HEALTH

Prepared by NSW Health, the *Healthy Urban Development Checklist* seeks to ensure built environments are created within NSW that are sustainable and promote healthy habits. The proposal satisfies a range of items contained in the checklist, including:

- Encourage incidental physical activity;
- Promote opportunities for walking, cycling and other forms of active transport;
- Promote access to usable and quality public open spaces and recreational facilities;
- Reduce car dependency and encourage active transport;
- Reduce and prevent crime through design and increasing perceptions of security;
- Provide a quality streetscape that encourages activity and interaction;
- Preserve and enhance the natural, historic and cultural significance of the campus;
- Provide access to a range of facilities to attract and support a diverse population;
- Respond to existing and projected community needs and current gaps in facilities and/or services;

- Promote of a sense of community and attachment to place; and
- Protection of the natural environment.

5.12. BETTER PLACED – AN INTEGRATED DESIGN POLICY FOR THE BUILT ENVIRONMENT OF NSW 2017

Better Placed – An integrated design policy for the built environment of NSW 2017 is the New South Wales Government Architect Office's policy to guide design. Better Placed provides clarity on what the NSW Government means by good design, not just how a place looks, but how it works and feels for people, and outlines processes for achieving this. It has been created to assist everyone involved in design projects or the development assessment process and advocates that everyone has a role in ensuring our cities and towns are better places. The policy is based on seven objectives that define the key considerations in the design of the built environment:

1. Better fit: contextual, local and of its place
2. Better performance: sustainable, adaptable and durable
3. Better for community: inclusive, connected and diverse
4. Better for people: safe, comfortable and liveable
5. Better working: functional, efficient and fit for purpose
6. Better value: creating and adding value
7. Better look and feel: engaging, inviting and attractive

A meeting was held with the Government Architect's Office (GANSW) on 02 February 2018 to discuss the proposed development, the minutes of which are enclosed at **Appendix EE,** and reproduced below:

*'Overall, **GANSW commend the process undertaken to develop the proposal** which included preparation of a masterplan and a design competition* (emphasis added).

In preparation of the EIS submission, in accordance with the SEARs, GANSW note the following should be provided and incorporated into the required design report and structured to respond to the design quality principles of the Education SEPP.

- *Further information and drawings that demonstrate an integrated landscape plan*
- *Further information to demonstrate active transport strategies and linkages with existing, proposed and potential footpaths and bicycle paths and public transport links. GANSW recommend greater emphasis on how the proposal will contribute to further modal shifts in transport options away from private vehicles.*
- *Site plans and operational statement demonstrating the afterhours and community use strategy including security implications such as fences or other secure lines and whether access is free or paid.*
- *Clarification as to material specifications in particular for the blade elements at level one*
- *Further information to demonstrate the anticipates performance of proposed passive thermal control measures and/or hybrid strategy (natural ventilation; potential for photo-voltaic array).'*

All of the GANSW's requests have been actioned and incorporated into the EIS package.

5.13. WOOLLAHRA DEVELOPMENT CONTROL PLAN 2015

The *Woollahra Development Control Plan 2015* (WDCP 2015) provides guidelines to guide the design and assessment of development applications for land covered by the WLEP 2014. The WDCP 2015 contains specific controls for education establishments in Part F of the DCP.

However, under Clause 11 of *State Environmental Planning Policy (State and Regional Development) 2011*, the application of Development Control Plans is excluded when assessing SSD projects. Notwithstanding this, the proposal has been assessed against the key relevant controls of the WDCP 2015 at **Appendix F**. The proposal is generally consistent with the requirements of the WDCP 2015.

6. KEY ASSESSMENT ISSUES

The following Key Issues as per the SEARs have been assessed, with impacts noted and mitigation measures proposed where necessary in this report:

- Operation
- Built Form and Urban Design
- Environmental Amenity
- Transport and Accessibility
- Ecologically Sustainable Development
- Social Impacts
- Biodiversity
- Heritage
- Noise and Vibration
- BCA compliance
- Sediment, Erosion and Dust Controls
- Contamination
- Utilities
- Contributions
- Drainage
- Flooding
- Waste
- Construction Hours
- Arboricultural Impacts
- Wind

6.1. OPERATION

The school does not propose to change its operational parameters or increase student or staff numbers above its approved cap. As such, generally, the site will continue to operate on a status-quo basis.

The school will continue to provide Learn to Swim classes to children (both students and non-students) in the new AFC.

The School has prepared an Operational Plan of Management (refer **Appendix J**) to ensure that the operation of the proposed new facilities being the Aquatic and Fitness Centre, Centenary Building and Carpark are operated and managed responsibly. The Operational Plan of Management includes details of the proposed school operations, including staff and student numbers, school hours of operation, and operational details of any proposed before/after school care services and/or community use of school facilities.

6.1.1. Community Use of Facilities

The School currently operates public Learn to Swim classes in its existing 25 metre pool and these Learn to Swim classes are proposed to continue in the new Learn to Swim pool within the Aquatic and Fitness Centre. These Learn to Swim programs are for children who may or may not be students of the School and are expected to run for various levels of ability for 30-minute periods, between 7:30am and 7:30pm Monday to Friday, 7:30am to 5:00pm Saturday and 7:30am to 12:30pm on Sundays. Squad training will also be available during these hours.

It is anticipated that the Learn to Swim and squad training will have capacity for approximately 3,500 spaces over the 7-day schedule.

The School will not be offering gym or pool membership or entry to the general community with respect to the use of the Aquatic and Fitness Centre.

The School currently provides public services in its chapel and these are expected to continue in the new chapel building.

The School is limited in its capacity to provide unrestrained public access to facilities as a result of its duty of care to student's safety, and as a result of the current demand on facilities by school activities, especially the oval and AFC.

6.2. BUILT FORM AND URBAN DESIGN

The proposed building design has been subject to an internal design competition, and demonstrates the School's commitment to providing world-class facilities for its students.

Architectus has paid regard to the existing built form and operational layers of the campus, the campus access points, the site topography and environmental conditions to devise a built form that responds positively to the site context and topography, as well as the educational needs of Cranbrook. The buildings achieve high levels of environmental substantiality.

The new development not only looks to preserve the natural, historical and cultural significance of the campus, but looks to enhance it with timeless and classic additions which promote a range of facilities and protect the unique and natural environment of the campus. The built form complements the existing buildings on the site by nestling into the existing topography and landscape, whilst creating new connections to the existing public pathways and datums already established on the campus.

The Centenary Building & Chapel

The proposed building form is respectful of the existing heritage buildings on site and celebrates their prominent position.

The proposed Centenary Building replaces the existing War Memorial Hall and Mansfield Building but better utilises the topography of the site to minimise the visual impact of the development. The new building has a green roof which further reduces its visual appearance and reinstates the historical formal lawn which would have once complemented Cranbrook House.

The careful introduction of the chapel building within the Heritage Precinct on the newly established heritage lawn considered the impact of height and mass by presenting as a modest single storey pavilion which references the heritage building it juxtaposes with.

Through rigorous testing of the height, density, bulk and scale, setbacks and landscaping of the proposal in relation to the neighbouring buildings, streetscape and existing topography, the impact of the proposed Centenary Building and Chapel which viewed from the public domain is appropriate to the context of the site.

The improved pedestrian access from Rose Bay Avenue addresses the street frontage with a new sandstone gate and provides equitable access from street level of the new development promoting a sense of community and reaffirming attachment to place.

Aquatic and Fitness Centre

The Aquatic and Fitness Centre at the north of the site addresses the public domain with a new public plaza and landscaped area which will symbolically and physically reconnect the school to the place. The new façade offers a sweeping gesture to passing traffic and pedestrians on New South Head Road and addresses the street frontage in a welcoming way.

Removal of some of the less significant trees will re-establish views to and from the Heritage Precinct and new Centenary Building.

Design Quality

Both the Centenary Building and the Aquatic and Fitness Centre address design quality, with specific consideration to the use of local and natural materials such as sandstone and copper, whilst strategically integrating new landscaping, green roofs and environmental design principles to strive for design excellence in its urban design outcome.

In-Site Pick-Up and Drop-Off

Augmentation of the School's internal driveway between Victoria Road and Rose Bay Avenue will sympathetically respond to the heritage significance of this precinct, whilst facilitating a more organised and comprehensive approach to managing school pick-up and drop-off. The physical works will not be perceivable from outside the site. New access management by way of a new sliding gate to Rose Bay Avenue will sympathetically restrict vehicular access during core school hours.

It is intended that in-site relocation of the drop-off/pick-up zone will improve traffic management and flow in the surrounding streets and improve student and pedestrian safety in the vicinity of the school grounds.

Response to Public Domain

The campus has frontages to Victoria Road, Rose Bay Avenue and New South Head Road. The proposed development responds positively to the public domain by improving the surrounding amenity. Relocation of the drop-off/pick-up zone from Rose Bay Avenue into the site will improve traffic flow and return unrestricted car parking spaces for public use along Rose Bay Avenue.

The generous public plaza at the entrance to the Aquatic and Fitness Centre greatly enhances the public amenity of New South Head Road, activating this street frontage and providing an improved and safer pedestrian access by realigning the pedestrian access route.

An integrated landscape solution responds to the built form of the Aquatic and Fitness Centre and the natural conditions of New South Head Road with a sculptural sandstone wall hugging the plaza and providing a physical barrier and shelter from the traffic on New South Head Road.

Streetscape

The proposed design has been rigorously tested to consider the impact of the built form on the surrounding streets. Whilst the Victoria Road frontage largely remains unchanged, the new building mass and form presents itself to the Rose Bay Avenue frontage as the topography falls from the south to the north. The testing of options led the design team to arrive at a single level pavilion building to accommodate the chapel at the Heritage Precinct level. Careful analysis of the visual impact of the building influenced its placement on the site.

The bulk and mass of the Centenary Building is greatly concealed by the existing topography and further concealed by the green roof over, only revealing itself half way down Rose Bay Avenue. External views provide glimpses into the teaching terraces and external gardens which are carefully considered with screening devices to provide privacy, solar shading, and architectural excellence. The building is set back from the boundary which allows an opportunity for gardens and informal areas for collaboration, whilst providing a buffer to the public domain with integrated landscaping.

Through the selection of natural, locally sourced sandstone for its façade, the Aquatic and Fitness Centre reflects the School's commitment and investment in design excellence and betterment of the existing streetscape. Introduction of the new plaza encourages social interaction and activation of the streetscape in a prominent location visible to the community. The integrated landscape design utilises local plant species which are responsive to the local climate. The new deep soil zone along New South Head Road provides an opportunity to replant mature trees which will also enhance the streetscape.

Landscape Strategy

The landscape design strategy is a direct response to the campus and its physical context, natural character and heritage, and is a response to the architectural concept and built form.

The landscape design considers the architectural concept and harmoniously integrates with the design, enhancing on-site amenity.

Architecturally, the Centenary Building is conceived as a series of stepping sandstone formations terracing across the existing topography of the campus. The landscape provides flora reflective of the coastal typologies found around the Eastern Sydney coastline.

Each of the building's zones were interpreted through character, use, form and detail, but most importantly through repetition of materials, reinforcing the coastal significance of the School's location.

The sensitive design of the heritage lawn, introduction of reflective memorial gardens associated with the chapel, large expansive teaching terraces, and the reimagining of an extended Camelia Court, with a new planting strategy for camellia trees, demonstrate the landscape design's response to the campus' natural environment, scenic value and historical sensitivities.

Complements Surrounding Built and Natural Character

The site is located within the urbanised suburb of Bellevue Hill, which contains a variety of parklands and tree lined streets. The suburb is predominantly low-density residential but also accommodates institutional buildings such as 'The Scots College' further up Victoria Road and the Woollahra Council Chambers on New South Head Road. The proposed works have been designed to complement this existing surrounding character by:

- Providing a range of native Australian flora, turfed areas, trees and gardens into the proposed landscape design, characteristic of the surrounding parklands within the suburb;
- Constructing a range of indoor and outdoor sporting facilities at the site;
- Designing the proposed built form to be of a similar height to current buildings on this site; and

- Incorporating a range of building materials and colours into the design of the proposal that are sympathetic against the residential character of the surrounding Bellevue Hill locality.

Provides a Superior Educational Environment for Students and Staff

The Bellevue Hill campus currently contains aged buildings and structures that are not representative of a high quality educational establishment. In response to this issue, the proposed redevelopment has been specifically designed to provide a superior educational environment. Specifically, the arrangement of the buildings provides:

- Interconnected learning spaces and classrooms to encourage active learning and play;
- An abundance of open play spaces, landscaped areas and sporting facilities throughout the site;
- World-class Aquatic and Fitness Centre to replace the ageing aquatic centre on the campus. This has been located below Hordern Oval in order to maximise open space;
- Provision of 124 underground car spaces to relieve traffic congestion on the surrounding road network;
- A pedestrian circulation system that is highly permeable and representative of an inclusive built environment; and
- A central courtyard space which will increasingly encourage collaborative learning, knowledge and play amongst students and staff.

6.3. ENVIRONMENTAL AMENITY

6.3.1. View Impact

A View Study has been conducted by Architectus which was reviewed by Richard Lamb & Associates (RLA) and is enclosed at **Appendix K**. This assessment includes a comprehensive evaluation and assessment of any potential impacts on views enjoyed by surrounding residents, due to the design of the development. The east side of Rose Bay Avenue includes individual residential dwellings that are oriented to the west and north west. Those closest to the site and potentially most affected by potential visual effects and impacts of the proposed built forms include no. 23b Victoria Road, and nos. 3, 5 and 7 Rose Bay Avenue.

The views were modelled using survey information of trees and likely view points of the three surrounding properties. The School approached all three properties seeking access for accurate photos and data points. The owners of 3 Rose Bay Avenue refused RLA's request for access, as such RLA did not model the views from that dwelling. View modelling with CGI was undertaken for nos. 5 & 7 Rose Bay Avenue.

The RLA assessment found the following:

No. 23b Victoria Road

This building is located opposite and south of the Perkins Building and south of the subject site on land that is elevated significantly above the subject site and above the level of any proposed built forms. Further, the building is substantially set back from the boundary behind mature vegetation that creates a dense screen. Given its orientation, it is likely that panoramic views from the upper floors are available to the north-west to north-east. The proposed development would be far below the view lines.

No. 7 Rose Bay Avenue

Potential views from the ground and first floors may include parts of the proposed development. It is unlikely that the majority of the form of the Centenary Building will be visible in views, but parts of the single level one-storey Chapel may be visible, notwithstanding they will be filtered by vegetation that exists in the road reserve of the street and within the property itself. The extent of visual effects on the composition of views from this dwelling will partly also depend on the amount of vegetation to be removed as part of the proposal. Access to views that include scenic and valued composition features, for example Sydney CBD and icons such as the Harbour Bridge or Opera House were considered to require further in investigation.

…

The potential composition of the view from two locations in 7 Rose Bay Avenue were modelled: the open terrace on the north side of the dwelling (RL 37.1m) and a view from the first floor central bay window, with an assumed floor level of RL 40.7m.

The view from the terrace appears to be substantially blocked in the existing environment by tree canopy. Removal of some of the vegetation on the Site in the proposal will potentially result in opening up of a view toward the North Sydney CBD. The Chapel building would be visible as a taller element on the Site than currently exists directly across Rose Bay Avenue. As the Chapel is closer to the viewer than some of the existing vegetation on the Site, it would be more prominent in the view, but it would not appear likely that the Chapel will block the view of any significant iconic or scenic items in the background.

The view from the central bay window may contain part of the Harbour Bridge, depending on the extent of screening that is caused by vegetation on and beyond the development Site and possibly also a view of the North Sydney CBD. The Sydney CBD would be obscured by existing vegetation. The Chapel building would occupy part of the centre of the view that is currently occupied by some smaller trees on the Site, that are proposed to be removed. The CGI indicates that there would be no additional view blocking caused by the building to distant and scenic features. Some of the foreground view that may exist across the southern part of the existing oval would be replaced by the proposed buildings.

No. 5 Rose Bay Avenue

Potential views from the first floor may include parts of the proposed development, for example the Chapel, although this is likely to be filtered by vegetation that exists within the property and by vegetation intended to be retained on the Site. The extent of visual effects on the composition of views from this dwelling will also partly depend on the amount of vegetation to be removed as part of the proposal and whether scenic and valued features are potentially visible and may be lost.

…

The potential views from 5 Rose Bay Avenue were simulated for a first floor window on the west side and a central ground floor window. The current views from both levels appear likely to be significantly screened by vegetation with no significant presence of the Sydney CBD or scenic and cultural items and icons in the view.

In the view from the first floor window, the Chapel building will be partly visible, replacing some small trees that are proposed to be removed in the foreground. The new building does not appear likely to block the view of any existing scenic or iconic items. It is possible that removal of some non-significant trees across the upper level of the Site may in fact open up a view toward part of the Sydney CBD skyline.

In the view from the central ground floor window, the existing view is heavily screened by existing vegetation. Removal of some vegetation on the site will have the effect of slightly opening up the view into the School site and part of the Chapel building will be visible. It is unlikely that the proposal will cause significant view loss.

No.3 Rose Bay Avenue

This dwelling is further separated from the most visible above-ground elements of the proposed development compared to 5 and 7 Rose Bay Avenue and is unlikely to be affected by loss of views caused by the construction of the Hall and Chapel.

…

As a result of the deep setback from Rose Bay Avenue, the majority of the dwelling is located east of the built form of No. 5 Rose Bay Avenue, so that potential views to the subject site will be blocked or if available, would be extremely oblique.

Further, we observed that the location of mature vegetation in the front yard of No. 5 Rose Bay Avenue will provide screening effects in views towards the subject site. In our opinion it is unlikely that views over the subject site to scenic or highly valued items as defined in Tenacity will be available from No. 3 Rose Bay Avenue.

As noted above 3 Rose Bay Avenue requested that RLA did not model the views from their dwelling, this request was respected. As such a photorealistic photomontage was not prepared to analyse the potential view sharing.

No.1 Rose Bay Avenue

This dwelling is less likely that others in Rose Bay Avenue to be affected by loss of views caused by the construction of the Hall and Chapel. However as the potential for loss of views was considered to require further investigation for other dwellings, this one was included in those requiring further investigation.

…

The view was simulated from a first floor window of 1 Rose Bay Avenue. The foreground of the view would be slightly changed in composition by visibility of parts of two individual structures. There would be a slight reduction in view into the space over the existing oval but there would not be any significant view loss.

RLA assessed the potential for view loss against the principles of *Tenacity Consulting v Warringah [2004] NSWLEC 140 – Principles of view sharing: the impact on neighbours (Tenacity)* regarding potential loss of views from the private domain and *Rose Bay Marina Pty Limited v Woollahra Municipal Council and Anor [2013] NSWLEC 1046 (Rose Bay Marina)* regarding potential view loss from the public domain.

RLA concluded that *'the potential visual catchment of the SSDA is small and is confined by topography, built form and vegetation surrounding the Site. There are few view opportunities from the public domain. Views from the private domain are also limited, to a small number of dwellings in Rose Bay Avenue.'*

Specifically, they determined that the proposal would not cause significant loss of view from the public domain and would be unlikely to cause significant view loss from the private domain.

SPECIFIC MITIGATION MEASURES

No mitigation measures have been recommended.

6.3.2. Visual Privacy

The proposal has been appropriately designed to prevent adverse privacy impacts on surrounding residents, and future students and staff as:

- The School will continue to generally operate during standard school hours, when most residents are at work. This will ensure privacy is maintained during the early morning, evenings and at night;
- The proposal has been designed to face in to the existing campus and away from residential development along Rose Bay Avenue; and
- Landscaping is proposed along the eastern boundary for screening.

Accordingly, the proposal is appropriate in terms of visual privacy and no mitigation measures are required.

6.3.3. Operational Acoustic Impacts

An assessment of the likely acoustic impacts of the proposal was undertaken by Acoustic Logic. The Noise Impact Assessment (NIA) is included at **Appendix V**.

Noise monitoring was undertaken to determine the existing external noise impacts on site and also the background noise levels. The measured daytime noise levels was 54 dB(A)$L_{eq(worst\ 1\ hour)}$.

The NIA assessed:

- Noise generation from additional traffic on surrounding streets;
- Noise emissions from the daytime operation of the school as a result of the use of the internal auditorium, multi-function area and use of the general learning spaces (as classrooms);
- Noise generated from the Centenary Building (internal areas only) for after-hours functions/events between 6pm and 10pm;
- Noise generated from the proposed Aquatic and Fitness Centre;
- Noise generated by existing or new mechanical plan or equipment; and
- Noise generated by the proposed loading bay fronting Rose Bay Avenue.

An assessment of the internal acoustic conditions for the proposed Centenary Building was also undertaken.

Background noise levels were measured by unattended noise monitoring, to provide baseline data for the assessment. The anticipated noise generation was measured against:

- *Protection of the Environment Operations Act 1997 (POEO);*
- *NSW Environment Protection Authority (EPA) Industrial Noise Policy and Noise Control Manual*
- *NSW Environment Protection Authority (EPA) Road Noise Policy; and*

- *Association of Australian Acoustical Consultants (AAAC) Technical Guide – Child Care Centre Noise Assessment.*

Noise Generated by Centenary Building

Generally, the noise impacts from the proposed Centenary Building were deemed to be manageable subject to mitigation and management measures detailed below. The assessment found that no acoustic measures would be required to external walls or roof/ceiling construction. Recommendations were made as to the specifications of glazing and acoustic seals for all windows in the Centenary Building.

Noise Generated by Aquatic and Fitness Centre

The report found that as the proposed Aquatic and Fitness Centre will be located below ground, there will be no potential for noise impact on the surrounding residential receivers from events and activities which will be conducted within this facility. It was also concluded that there will be no significant increase in existing noise levels from traffic entering/exiting the proposed AFC car park off Rose Bay Avenue.

Noise Generated by Mechanical Plant

Recommendations were made for acoustic treatment of plant and equipment so as not to exceed the requisite acoustic conditions. As mechanical plant is not selected at DA stage, specifications for such treatment can only be undertaken once the mechanical plant has been selected which usually occurs prior to construction.

The cooling towers servicing the AFC and located within the new facilities management building will be appropriately treated with acoustic measures to ensure no impact on Rose Bay Avenue residents.

Noise Generated by Loading Bay

Deliveries to the loading bay will not occur between the hours of 8pm and 8am on weekends and public holidays, and 8pm and 7am on any other day.

Based on the proposed operation of the loading bay and the proximity to the nearest potentially worst affected receiver, noise from the operation of the loading bay will not impact on the surrounding receivers and will be compliant with the relevant noise level criteria.

SPECIFIC MITIGATION MEASURES

The following mitigation measures are recommended:

- Acoustic treatment of new mechanical plant shall be undertaken control noise emissions at or below the intrusiveness criteria Background + 5dB(A) $L_{eq(15minutes)}$ of Day – 49, Evening – 44 and Night – 39 as set out in section 6.3.1 (Table 9) of the NIA. Plant can be satisfactorily attenuated to levels complying with these noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar.
- Acoustic rectification treatment shall be designed for existing plant if an acoustic review determines this necessary.
- Minimum 6mm thick glazing with full perimeter acoustic seals (rubber bulb seals) are recommended to all glazing elements to the facades of the Centenary Building. the glazed assembly (glass and frame) must achieve an STC of at least 29.
- Outdoor areas of the Centenary Building shall not include amplified music or speech after 8pm.
- Management shall ensure patrons leaving the site after a function or event do so in a prompt and orderly manner.

6.3.4. Solar Access and Overshadowing

The proposed Centenary Building will benefit from unrestricted solar access into teaching and learning spaces due to its northern orientation. This will provide a high quality internal environment for these spaces.

The shadow analysis prepared by Architectus at **Appendix C** demonstrates that there will be minor shadows cast over a small portion of 7 Rose Bay Avenue from approximately 2:45pm at midwinter. This shadow does not significantly reduce solar access to this property and falls approximately in the location of its access driveway. It does not fall over the residence's primary open space.

The extent of additional overshadowing is therefore considered acceptable and no further mitigation measures are required.

6.3.5. Wind Impacts

ARUP prepared a desktop Wind Study (**Appendix Q**) in order to investigate and assess the possible wind impacts generated by the development and the resultant comfort levels both within the site and affecting neighbouring properties and the public domain. Their report concludes that:

'It is Arup's opinion that the proposed development will not cause unsafe winds either at the site or in the surrounding public areas (i.e. street frontages). The entire site's wind conditions would be suitable for the intended use. Some of the seating areas would experience elevated wind speeds for extended periods under west and north-east winds. It is recommended that additional screening be installed to reduce the number of hours these areas are considered uncomfortable.

The wind speeds at the site could be quantified using computational fluid dynamics or wind tunnel tests. However, it is Arup's opinion that this is not needed. It is expected that the seating areas may be subject to elevated winds rendering these spaces only suitable for standing and walking. The increased occurrences of elevated wind speeds will be minor.'

SPECIFIC MITIGATION MEASURES

Given the minor impacts expected from the proposal, the following mitigation measures have been identified by ARUP:

- *It is recommended that vertical screens are placed perpendicular to the balustrade on levels 3 to reduce the air flow running parallel to the balustrade under northeast or west winds.*
- *It is recommended that the internal flow paths be controlled through building management by closing the south doors of the informal learning/house area and the east doors of the war memorial chapel when high wind speeds are predicted.*
- *It is recommended that a draft assessment be conducted on the natural ventilation flow path to ensure air speeds are acceptable.*
- *Should the wind speeds in the outdoor areas require quantification, computation fluid dynamics can be used determine the percentage of time this area is not suitable for sitting.*

6.4. DESIGN EXCELLENCE

A meeting was held with the Government Architect's Office (GANSW) on 02 February 2018 to discuss the proposed development, the minutes of which are enclosed at **Appendix EE**.

GANSW commended the process undertaken to develop the proposal which included preparation of a masterplan and a design competition and provided some suggestions for incorporation into the EIS package, as outlined in **Section 5.12** of this report. All of the GANSW's requests have been actioned and incorporated into the EIS package. These are addressed in the following sections:

- *Further information and drawings that demonstrate an integrated landscape plan*.

  Refer Landscape Drawings at **Appendix E.**

- *Further information to demonstrate active transport strategies and linkages with existing, proposed and potential footpaths and bicycle paths and public transport links. GANSW recommend greater emphasis on how the proposal will contribute to future modal shifts in transport options away from private vehicles*.

  This is addressed in **Section 6.4** of this EIS.

- *Site plans and operational statement demonstrating the afterhours and community use strategy including security implications such as fences or other secure lines and whether access is free or paid.*

  Refer **Section 6.1** and Operational Management Plan at **Appendix J**.

- *Clarification as to material specifications in particular for the blade elements at Level One.*

  Blade elements are to be sandstone. Refer Architectus plan package at **Appendix C**.

- *Further information to demonstrate the anticipated performance or proposed passive thermal control measures and/or hybrid strategy (natural ventilation; potential for photo-voltaic array).*

  Refer ESD provisions detailed at Section 6.6, and at **Appendix O**.

SEPP (Educational Establishments and Child Care Facilities) 2017 – School Design Quality Principles

Architectus has thoroughly addressed the School Design Quality Principles contained within Schedule 4 of *SEPP (Educational Establishment and Child Care Facilities) 2017* within the Urban Design Report at **Appendix D**. A summary of how the proposed design addresses these principles is extracted below.

Context Built Form and Landscape

Cranbrook School's Senior School Campus is situated on steeply sloping topography along the northern face of Bellevue Hill. The site's landform has a generally north to north-westerly aspect with significant views in two directions towards the city of Sydney and out towards the Heads of Sydney Harbour. These views are highly valued by the School community for generating a sense of place but also crucially for establishing visual connectivity to and from local and distant communities. The local view is towards the city of Sydney and connects the campus to its place in Sydney. The distant view is towards North and South Head –the "gates" through which ships connected the early colony of Sydney to the outside world. The symbolism of these two views is recognised by the School as it purposefully seeks to be distinctively of its place yet simultaneously connected to a broader global community. This narrative of connectivity is given expression in the architectural and landscape solutions generated for the proposed Hordern Oval Precinct Redevelopment.

Firstly, an elevated platform – to be known as the Centenary Lawn - is proposed to be established at the highest most level of the Centenary Building. This external place will be of ceremonial purpose, connecting the proposed new Chapel with the historic Cranbrook House. Crucially however, it will also generate a gathering space from which both of the important views described above can be seen simultaneously. This will be the first time in the modern era that these views will have been re-established because the development of the War Memorial building, following the second world war, and its associated landscape of tall trees has obscured the view towards the Sydney Heads.

Secondly, the proposed development of the Aquatic and Fitness Centre will reinforce the connection with local community by transforming the northern boundary to New South Head Road from one of visual and physical separation to one of genuine

access and community engagement to the facilities available within. This is to be achieved by creating a generous portal along the proposed northern elevation of the Aquatic and Fitness Centre that will for the very first time give the School an actual point of address and access along this prominent interface with the local community. The proposed urban design for this area will improve amenity for pedestrians along this northern boundary as there will be an enhanced zone of pedestrian pavement and a landscape architecture solution that provides a physical and psychological buffer between the pavement and the busy vehicle corridor of New South Head Road.

Bounded by Victoria Road, Rose Bay Avenue and New South Head Road the School campus is characteristically described as being like an island – situated as it is within a distinctly residential community yet standing separate from that community because of its encompassing roads, associated boundary fences and historical difference of activity. Both of the view strategies described above will improve and enhance the School's physical and social relationship to its community.

The geology of the School campus is typical of the eastern suburbs of Sydney, being composed of wind-driven sand over lying bed rock strata of Hawkesbury sandstone. Originally this geology would have supported flora characteristic of the poor soils of the eastern suburbs such as native grasses and coastal Banksias. However, the native landscape has been significantly altered by the importation of exotic species during the last 150 years which now characterise the planted context as being one of diverse and exotic origin. The intent with the proposed landscape architecture for the Hordern Oval Precinct Redevelopment is to provide a balanced consideration of native and exotic species that simultaneously give expression to the location's indigenous sense of place while also speaking to the overlay of an English tradition of garden-making.

Once a landscape inhabited by indigenous Cadigal people of the Eora nation, the site for Cranbrook School was formally established as a private estate in 1856 by Robert Tooth. The first and still the most historically significant building on the site was a residence for the Tooth family – now known as Cranbrook House. Built in 1859 Cranbrook House was constructed with sandstone blocks, projecting timber verandas and slate roofing. The House has had several expansions and renovations over time, some of which were undertaken by the highly regarded Architect John Horbury Hunt. Given its originating role in the site's establishment and the

valued qualities of its architecture, Cranbrook House is the most significant architectural legacy on the School campus. Its warm coloured and oxidised sandstone exterior contributes much to the School's sense of identity and connection to place. The Cranbrook School community is very conscious of this original legacy of sandstone and recognises that many of the post WW2 campus developments have been unsympathetic to this material heritage. The proposed Hordern Oval Precinct Redevelopment seeks to re-address this approach and to set in place a harmonious palette of building materials for Cranbrook's physical environment as the School looks forward to its second century as a place of education. The majority of the external elevations proposed for both the Centenary Building and the Aquatic Fitness Centre are to be clad in sandstone sourced from the Sydney region. This strategy for external architectural appearance is underpinned by the intent to respect and respond positively to the physical context, character and heritage of Cranbrook while also generating a narrative of built form that responds meaningfully to the sandstone geology of the area – comprising as it does cliffs, headlands and rock platforms of Hawkesbury sandstone. Consistent with this approach, the landscape architecture is proposed to utilise sandstone blocks, wall panels and paving in the formation of seating benches, ground paving and in the cladding of landscape retaining structures.

The architectural built form for the Centenary Building is composed as a series of volumes intersected by planted landscape. This strategy seeks to breakdown the volume of the development and relate it as a series of functional parts that are harmoniously scaled with the neighbouring School buildings in this precinct of the campus. The datum of the ground threshold around Cranbrook House is carried across to this new development, forming the proposed Centenary Lawn with the Chapel as the upper most occupied floor level. With external terraces stepping down towards the Oval, the Centenary Building gives expression to cantilevering rock forms and wind eroded cliffs – a reference to the local geology that is further developed in the form of the Aquatic and Fitness Centre which is conceived of as an undercut headland. The curved form of the Aquatic and Fitness Centre responds to and echoes the sweeping bend of New South Head Road, engaging this new building positively with the predominant geometry of its urban context.

The banks of Hordern Oval are characterised by a singularity of tree species in the form of mature Jacarandas. These trees blossom in November each year and give the Hordern Oval Precinct a distinctive character that is fondly regarded by the School and local external community alike. The ensemble effect of these trees is to be retained with proposed additional planting of Jacarandas along the northern end of the bank and the necessary removal of one Jacaranda tree at its southern end.

Sustainable Efficient and Durable

The proposed architecture for the Hordern Oval Precinct Redevelopment is responsive to the local temperate maritime climate of Sydney's eastern suburbs. Oriented mostly towards the north, the proposed built form uses a series of screening devices and projecting balconies to provide deep passive shade to the double-glazed facades in order to minimise direct solar heat gain during the hotter weather seasons. The projecting shading will facilitate solar light transmittance during the cooler weather seasons when the sun's path has a lower angle of incidence.

Natural ventilation to the Centenary Building will draw air through the assembly hall using a stack effect at the southern edge of this space, minimising the reliance on mechanical cooling and limiting energy use.

Masonry construction using sandstone panels on a concrete frame will provide a robust and durable fabric to the proposed Centenary Building and Aquatic and Fitness Centre. Both buildings will be insulated to minimise energy losses and both buildings will have significant areas of turfed roofing that will act as a natural insulator to enhance building performance. Integrated planting is proposed for the terraces of the Centenary Building with deep soil zones proposed around the exterior for ground water recharging and the planting of trees.

Rain water and bore water is to be captured in a proposed 130 kilolitre water storage tank that will be constructed beneath Hordern Oval and used for the irrigation of its turfed playing surface.

It is not currently proposed to install photovoltaic panels on the Hordern Oval Precinct Redevelopment however roof structures on the proposed Centenary Building and field maintenance shed will be designed to support their future installation.

The improved amenity of the proposed forecourt to the Aquatic and Fitness Centre will promote safe walking while bicycle storage facilities within the proposed car park will facilitate opportunities for cycling as a mode of transport. The School has existing bus stops located on Victoria Road and New South Head Road within close pedestrian access to the proposed Hordern Oval Precinct Redevelopment.

Accessible and Inclusive

The design for the proposed Hordern Oval Precinct Redevelopment addresses the importance of safety and applies the principles of crime prevention through environmental design to ensure that security measures are designed and integrated with the built form. This includes the integration of a new pedestrian gate proposed for Rose Bay Avenue and a new access point for pedestrians and vehicles associated with the proposed Aquatic and Fitness Centre.

Currently the northern boundary of the School campus is a high fence that acts as a physical and visual barrier, separating the School from passers-by and the adjacent community. The proposed design of the Aquatic and Fitness Centre will positively transform this condition through an architectural solution for a new portal and inclined elevation that simultaneously eliminates the need for perimeter fencing and establishes a new school frontage that is visible, engaging and welcoming.

As a core component of the architectural engagement the students, educators and local community have been engaged and consulted by the design team in developing the vision and the design brief for the proposed Hordern Oval Precinct Redevelopment. This process is ongoing through the design development phase to refine solutions that will optimise accessibility and inclusiveness of the project, inclusive of the provision of diverse, attractive and accessible places to learn, play and socialise.

The accommodation for the proposed Hordern Oval Precinct Redevelopment is inclusive of a chapel, a drama theatre, an assembly hall with multi-purpose functionality, learning spaces, a fifty metre eight lane swimming pool, a learn-to-swim pool and a gymnasium. All of these facilities have great potential for access by local communities and it is the School's intention to make these available outside of normal school timetabling. Clear and logical wayfinding will be progressed in subsequent stages of design development to facilitate access and orientation through the development for all users including after-hours community users.

An access consultant is engaged on the project team to guide design outcomes that ensure accessibility for all users of the proposed development.

Health and Safety

The proposed Centenary Building is intended to be constructed on steeply sloping land with a predominantly northerly orientation. It is through this northern façade that provision has been made for natural cross ventilation to the assembly hall, facilitated by a stack effect that draws air into and through this large assembly space. Sun shading has been designed for this northern elevation to optimise access for daylighting while ameliorating the impacts of direct solar heat radiation on glass facades.

The proposed Aquatic and Fitness Centre is situated mostly beneath the surface of Hordern Oval however its northern façade is composed of a generous glazed elevation that optimises access to daylighting by positioning the length of the indoor swimming pool parallel to this orientation. Direct summer sun is shaded however the design has been developed such that either side of the winter solstice there will be direct daylighting of the pool's surface.

Pedestrian access has been prioritised over vehicles in the proposed Hordern Oval Precinct Redevelopment with a new pedestrian gate designed for Rose Bay Avenue that will separate pedestrians from vehicles for the first time in this location on the campus. At the proposed Aquatic and Fitness Centre the design provides for clear separation between pedestrian and vehicle access.

Providing covered areas for protection from sun and rain is crucial for school environments. The proposed Centenary Building has been designed with cantilevering external terraces that are sheltered by the level above. These spaces are highly accessible, oriented towards northern light and offer significant protection from direct sunlight and rain.

The proposed Aquatic and Fitness Centre is accessed directly off the adjacent pedestrian path and roadway and has been designed to accommodate bicycle storage with associated end of journey facilities.

The design for the proposed Hordern Oval Precinct Development has been developed in accordance with the principles of CPTED to identify and quantify crime risks. Safer by Design principles have been incorporated to minimise the risk of crime and to enhance perceptions of safety.

The orientation and planning of the proposed new facilities is highly transparent and supports passive surveillance opportunities, including through the centralised locations of Housemaster offices in the Centenary Building, the prominent location of the reception and lifeguard facilities in the Aquatic and Fitness Centre, and in the location of toilet and change rooms in both complexes that may have community use outside of school

timetabling. Separate toilet and change facilities for students and community have been designed into the proposed Aquatic and Fitness Centre.

After school hours access arrangements to the proposed Hordern Oval Precinct Development will be further developed during the detail design phase to ensure the safety of all users and the security of the School's infrastructure.

Amenity

The proposed Hordern Oval Precinct Development is embracing of the natural environment with turfed roofs, integrated planting on accessible terraces, deep soil planting on adjacent open space and the inclusion of an external Water Sensitive Urban Design water feature located adjacent to the proposed Chapel. These initiatives have functional and aesthetic drivers that also deliver positive outcomes for learning and play.

The proposed Centenary Building is oriented to the north with excellent access to sunlight and the integrated provision of a natural ventilation strategy. Visual outlook from all levels is focussed on the open space of the Oval with exceptional views of the harbour and distant landscapes available from the upper levels, culminating in the Centenary Lawn which will provide a significant new external and accessible surface of approximately 1000 square metres. This new external space will provide opportunity for passive and dynamic play as well be the focus for formal activities such a Remembrance Day services.

The proposed Aquatic and Fitness Centre is also oriented to the north and, as described previously, will optimise access to daylight into its internal swimming pool environment, with direct sunlight reaching the swimming pool's surface during mid-winter. The restoration of the Hordern Oval turf surface will re-establish this significant outdoor playing field as one of Sydney's best sporting amenities.

The proposed Hordern Oval Precinct Development will incorporate integrated wireless technology to facilitate seamless access to technology and associated flexible learning practices.

The opportunity for the proposed buildings and outdoor spaces to be learning tools themselves has been addressed in the initial design phases with structural clarity and the integration of passive environmental control principles finding expression in the architectural and landscape design solutions. Further development of this approach will enable more detailed elements such as building energy use monitoring stations to be incorporated in the fit-out.

A process of focussed stakeholder engagement comprising Cranbrook School students and educators has informed the development of a suite of learning modalities for the proposed Centenary Building. This diversity of indoor and outdoor spaces will facilitate multiple formal and informal uses of varied population and setting so as to cater for a range of learning styles and group sizes. This process is continuing to undergo refinement in coordination with the School's needs across the whole campus.

The landscape architecture for the proposed Centenary Building includes the integration of buffer planting to reduce the physical impact of the development on its surrounding landscape and to generate a human scale to the multi-storey development. Additionally buffer planting is integrated into the forecourt of the proposed Aquatic and Fitness Centre to provide physical and psychological separation from the busy traffic corridor of New South Head Road with the aim of positively transforming the amenity of this currently underwhelming area of the campus.

Situated on a school campus within a residential context, the proposed Centenary Building is conceived as a series of terraced platforms that follow the topography of the sloping bank to Hordern Oval, stepping down from a single storey at its upper level interface to Rose Bay Avenue the development retains an appropriate height and scale with respect to the residential properties on the opposite side of Rose Bay Avenue. The proposed Centenary Building remains below the parapet level of the adjacent Perkins Building and Cranbrook House.

The proposed Centenary Building accommodates learning spaces and as such is sensitive to acoustic intrusion. Fortunately the building as designed is located on the south-eastern side of Hordern Oval and a significant distance away from the vehicle traffic corridor of New South Head Road. However the building will incorporate significant insulation in its wall fabric, double glazing in its external elevations and a turf roof at its upper level – all of which will contribute positively to its overall acoustic performance and suitability as place for learning.

Whole of Life, Flexible and Adaptive

The proposed Centenary Building is designed to accommodate future-focussed learning spaces of varied modality. It is expected that as learning and teaching pedagogy evolves to meet a rapidly developing society

driven by technological and social change that there will be the need to allow for future adaptation. The structure of the proposed Centenary Building is designed such that the floor levels for the learning spaces can be "churned" over time with the interiors fitted out with non-structural partitions and adapted as educational needs arise. In order to inform the initial fit-out of these spaces a comprehensive stakeholder engagement process has been conducted with the School's educators and cross-referenced with the School's timetabling requirements across the whole campus and aligns with the School's anticipated decanting requirements.

The strategy for specifying building materials is to be supportive of a whole-of lifecycle approach and will be further refined during the design development phase. In principle, low energy embodied materials of robust quality and long life span will be sourced from local suppliers wherever practical.

The proposed Hordern Oval Precinct Development has been subject to intense site appraisal inclusive of extensive geotechnical investigation, sub-surface water monitoring and analysis, arboreal investigation, drainage studies, noise monitoring and traffic studies. The recommendations arising out of these appraisals have and will continue to inform the detailed design of the proposed Hordern Oval Precinct Development.

Aesthetics

Through analysis and appreciative inquiry the design team has developed a deep understanding of the School's unique social character, its siting, its topographical challenges and opportunities, the heritage-rich nature of the original buildings and associated landscaped grounds, and the aesthetic vision that the Headmaster and Executive has articulated to ensure Cranbrook's vitality and success into its second century of service.

The built solutions proposed for the Hordern Oval Precinct Development are appropriately scaled and articulated to respond positively to the cascading nature of the site, to its immediate context of existing built forms and to the surrounding context of the residential neighbourhood. Materials such as locally sourced Hawkesbury sandstone, sheet copper and high visible light transmittance glass have been selected to be harmonious to the valued legacy of heritage buildings to, be aesthetically and physically enduring and to be environmentally responsible.

Cranbrook's legacy has been shaped by its distinctive landscape setting, its heritage architecture and its enduring values and beliefs.

6.5. PARKING AND TRAFFIC

6.5.1. Operational Traffic and Parking

An Operational Traffic and Parking Assessment has been prepared by Parking & Traffic Consultants (PTC) and is enclosed at **Appendix L**. This assessment addresses parking requirements, intersection analysis, vehicular and pedestrian access, sustainable transport measures and loading and unloading. The Report also includes an evaluation and assessment of the proposed impacts associated with the reconfiguration of the internal driveway as a through road to facilitate an extended on site drop off, pick up and loading area to reduce traffic impacts on Rose Bay Avenue and Victoria Road.

Car Parking Demand Generation

Staff Parking Demand

The proposed redevelopment of the New Centenary Building and AFC will increase the school's GFA by 9,938sqm, but proposes no increase in student or staff numbers. The proposal will result in a new car park accommodating 124 car parking spaces to reduce impacts on the local road networks car parking capacity. The removal of 29 spaces from the driveway off Victoria Road results in a net increase in on-site car parking provision by 95 spaces.

Woollahra DCP requires a minimum provision of 1 space per 100sqm GFA, equating to approximately 100 spaces including 3 accessible spaces. Whilst the proposal will accommodate 95 additional spaces, as these will be used by staff who presently park on surrounding streets, it is considered that the positive impact on on-street parking surrounding the site will be substantive.

Learn to Swim Demand

The School will continue to offer Learn to Swim classes in the new AFC, relocating from its existing swimming pool facility.

Lean to swim classes for various levels will be run for 30 minute periods 7:30am and 7:30pm Monday to Friday, 7:30am to 5:00pm on Saturdays and 7:30am to 12:30pm on Sundays.

The peak activity period for the Learn to Swim facility is between 4:30pm and 5:30 pm Monday to Friday when it will generate demand for up to 100 vehicles.

This peak demand sits outside the school staff core hours of 8:00am – 4:00pm and as such parking will be available in the AFC car park for Learn to Swim patrons.

The provision of the car park also increases the availability of on-street parking in the vicinity of the school, which would be available for patrons of the Learn to Swim facility, should the need arise. Given the peak activity periods are outside of peak school usage, the on-street car parking will be predominantly be vacated at these times.

The peak activity for the Learn to Swim facility is also outside of the network peak traffic along Rose Bay Avenue and westbound along New South Head Road and therefore should not have an adverse impact on the traffic activity on the external network and should be within daily volume variations.

On Site Drop-Off/Pick-Up

A demand assessment of the internal drop-of/pick up driveway determined that 16 spaces are required to cater to the time of highest demand, being afternoon pick-up. This required allocation has informed the design.

Whilst the development is not proposing any increase in student or staff numbers, and therefore will not generate additional traffic movements, the proposal to relocate pick-up and drop-off within the existing site will alter the vehicle movements undertaken at the Victoria Road gate. As the pick-up activity falls outside the network peak period, only the effect of the drop off activity in the AM peak period was assessed, as this represents the worst case scenario.

SIDRA modelling was undertaken of the Victoria Road / Site access gate intersection, having regard to the peak morning vehicle generation. It found that during the weekday AM peak (7am-9am), the intersection will operate at LOS A, in both an east and westbound direction.

On Street Parking Provision

With the proposed relocation of the pick-up/drop-off within the existing School grounds, the provision of on-street loading zones and the proposed new driveway to access the underground car park off Rose Bay Avenue, alterations are proposed to the existing on-street parking provisions.

- The existing school drop off/pick up zone along Rose Bay Avenue will generally be reallocated as un-restricted parking;
- Two x 15m loading zones will be provided along Rose Bay Avenue;
- Two areas of ‘no stopping’ will be provided to assist vehicle exiting left out of the two exit driveways (Rose Bay Ave Gate and underground car park driveway); and
- No stopping restriction will be provided on the inside of the 90 degree bend in Rose Bay Avenue to improve the visibility in this location.

This will result in the following improvement in on- street parking provision.

Table 7 – Comparison of On-Street Parking Provision Pre and Post Development

	Current On Street Parking	**Proposed / Resultant On Street Parking**
Unrestricted Parking	98 spaces	112 spaces
10P Monday – Friday	3 spaces	
Restricted Parking	16 spaces	6 spaces
Drop Off /Pick Up	16 spaces	
Loading Zone (9am-2.30pm M-F)		2 loading spaces (15m)

The proposed on-street parking changes result in a net gain of approximately 11 unrestricted parking spaces (including the existing 10P spaces) and a reduction of approximately 10 restricted spaces. Therefore, the proposed changes should have no effect on the on-street parking provisions in the vicinity of the site.

It is noted that the provision of the 124 space car park as part of the AFC should increase the availability of on-street parking in the vicinity of the school, with staff utilising the new parking facility.

Aquatic and Fitness Centre Car Park and Access Driveway

The design of the car parking driveway access to the AFC has been assessed as acceptable.

- The car park access and parking arrangements have been designed in accordance with Section 2 *Australian Standard AS2890.1.*
- The 11m driveway width meets the requirements of *Australian Standard AS2890.1.*
- The visibility from the driveway to the left and right has been assessed as meeting the requirements of *Australian Standard AS2890.1.*

Public and Active Transport

- The site is well serviced by public footpaths, bus transport, and bike links. Bus services to the eastern suburbs and City travel along New South Head Road to the north of the site, connecting with Rose Bay Ferry Wharf and Double Bay Ferry Wharf. The School provides private bus transport for staff and students to the Northern Beaches, Inner West and Southern Suburbs of Sydney. As noted in the traffic and parking assessment, 40% of students currently take the bus to school, and 54% travel home by that method of transport. A total of 11% of staff travel to the School by means other than driving a car.
- Bike paths are located on Victoria Road and New South Head Road, connecting with regional bike routes. The School currently provides 80 on site bike spaces, and an additional 20 spaces are provided for in the AFC. This total of 100 bike spaces is marginally below the Woollahra DCP requirement for 118 students and staff bike spaces. This is considered to be acceptable given the ability of the School to retrofit the facilities to deliver more bike parking as travel behaviour and demand for these spaces evolves. Such provision will promote healthier an alternative mode of transport for both staff and students. Given that there is no proposed increase in staff or student numbers as part of the development, the provision of 20 additional spaces has been deemed acceptable, in accordance with the DCP requirements.
- The School actively discourages students from driving their own cars to school, and encourages staff to take bus services where practical.
- It is acknowledged that there is a significant percentage of students being driven to school. Whilst the school encourages bus transport (both public and school-provided), ultimately it is the choice of students and families as to the method of travel to and from school.
- Cranbrook is willing to work further with Council and Transport for NSW to further promote public and active travel to and from school, for students and staff.

Site Servicing

Due to site limitations, built heritage and trees of significant importance, it is not possible to provide service vehicle access areas within the site. It is proposed that servicing will occur on-street in two designated loading bays. The bays will be 15m in length to accommodate the expected largest vehicle (Medium Rigid Vehicle). Bays will operate between 9:30am and 2pm weekdays. Outside of these times the bays will revert to on-street parking spaces.

Overall the proposed traffic and parking arrangements will:

- Increase traffic movements to the Victoria Road gate, however this will have no detrimental effect on the surrounding road network and will remove unsafe practices currently being undertaken on-street as part of the current pick-up and drop-off process.
- Result in no net change in parking availability on-street.
- Provide on-site car parking at a rate above the minimum required by the Woollahra DCP.
- Provide for loading and servicing of the site in an efficient manner.

- Continue to support use of public and active transport to and from the school by staff and students, as well as the private bus services provided by Cranbrook to northern, inner west and southern Sydney.
- Not result in any change to the operation of the surrounding road network as no additional traffic movements will be generated by the proposal.

Overall the anticipated volume of traffic generation to and from the site for both the daily school student and staff demand, and Learn to Swim, has been assessed as acceptable within the current road network. It is reiterated that the student enrolment cap is not being increased as part of this proposal and as such no additional traffic generation should occur as part of this proposal.

SPECIFIC MITIGATION MEASURES

The proposed parking and on site pick-up/drop-off facilities have been assessed as complying with relevant Australian Standards. Subject to the imposition of the recommended parking restrictions in Rose Bay Avenue, it is considered that the proposed parking and access arrangements will operate successfully.

6.6. ACCESSIBILITY

An Accessibility Report was prepared by Morris-Goding Accessibility Consulting and is attached at **Appendix FF**. This assessment has considered the proposed development for compliance against the AS1428 series, Building Code of Australia (BCA), DDA Access to Premises Standards (including DDA Access Code) and ultimately the *Disability Discrimination Act 1992* (Cth) (DDA).

The development has been reviewed to ensure that ingress and egress, paths of travel, circulation areas, amenity, facility and car-parking comply with relevant statutory guidelines.

The assessment confirms that:

> *'In general, the development has accessible paths of travel that are continuous throughout. In line with the report's recommendations, the proposed development has demonstrated an appropriate degree of accessibility. The Development Application drawings indicate that compliance with statutory requirements, pertaining to site access, common area access, and accessible amenities and facilities, can be readily achieved.'*

SPECIFIC MITIGATION MEASURES

The report contains a number of recommendations in order to ensure compliance as outlined below:

- **Ingress and Egress**:
  - **Aquatic & Fitness Centre**: Ensure each leaf of the main entry doorway at the principal pedestrian entrance has a minimum clear width of 850mm.
  - **Centenary Building**: Provide an entry door adjacent the bi-fold doors on level 00 that satisfies AS1428.1.
- **Emergency Egress**:
  - **Egress from War Centenary Building**: Provide at least one handrail within each fire-isolated stairway. All handrails are required to be of a consistent height.
  - **Egress from Aquatic & Fitness Centre Building**: Provide at least one handrail within each fire-isolated stairway. Fire stair handrails are
  - **Wheelchair Refuges**: Consideration to be given to providing one wheelchair refuge on each commercial floor level. Any wheelchair refuge space is to have internal dimensions of 800mm x 1300mm. Any wheelchair refuge does not necessarily need to be located within a fire-isolated stairway; rather, it could be located in any fire-isolated area. (Advisory)
  - Where wheelchair refuges are provided, consideration to be given to providing a device for emergency communications adjacent to each refuge space. (Advisory)
- **Paths of Travel**:

- **New Oval**: An accessible path of travel will be required from the existing pathway at RL 18.25 down to the sports oval.
- **Common-Use Stairways**: All of the above stairways will be detailed to possess appropriate access features for compliance with AS1428.1(2009) during design development stage.

- **Aquatic & Fitness Centre Facilities**:
  - **Swimming Pools (Level B2)**: Provide one accessible means of entry respectively into the 50m swimming pool and the learn-to-swim pool for compliance with clause D3.10 of the DDA Access Code 2010 / BCA.

    Based on a grand total of 504 fixed seats, provide a minimum of 11 wheelchair spaces within the main pool hall for compliance with clause D3.9 of the DDA Access Code 2010 / BCA.

- **Sanitary Facilities**:
  - **Centenary Building Level 03**: Strictly according to BCA, an accessible toilet is required with adjacent ambulant WCs. Conversely a performance based solution can be developed during DD stage.
  - **Centenary Building Level 02**: The fixtures of the accessible toilet are to comply with AS1428.1. The ambulant cubicles are to comply with AS1428.1.
  - **Centenary Building Level 01**: Provide an accessible toilet at the entry foyer adjacent the theatre in accordance with DDA Premises Standards.
  - Ambulant cubicles will also be required in accordance with AS1428.1
  - A performance solution could be developed with regards the lack of accessible toilet the staff amenities.
  - **Centenary Building Level 00**: Provide a combined accessible WC/shower room on level 00 adjacent the change room area.
  - **Aquatic & Fitness Centre Level B2**: On level B2, provide an accessible shower within each accessible toilet room.
  - On level B2, there accessible toilets should have pans that are left and right transfer in accordance with DDA Premises Standards.

    Fixtures and fittings within accessible toilets and ambulant cubicles to comply with AS1428.1(2009).

- **Accessible Car Parking**:
  - **Level B1 Car Park**: Ensure the vertical clearance over the FFL of each accessible car bay and their associated shared areas is a minimum of 2500mm for compliance with AS2890.6(2009).

    Ensure the vertical clearance over the FFL of the vehicular path of travel from the car park vehicular main entrance to each accessible car bay is a minimum of 2200mm throughout for compliance with AS2890.6(2009).
  - **Visitor Car Parking / Drop-Off Bays**: Consideration to be given to providing one accessible drop-off bay. If provided, any accessible drop-off bay should have internal dimensions of 3.2m (width) x 7.8m, and should have a 1:8 kerb ramp at the rear. Any accessible drop-off bay should also be located on flooring that has a maximum cross-fall of 1:33 for a bituminous surface.

- **Signage and Communications**:
  - **Hearing Augmentation**: Any teaching space, chapel, function, theatre, hall that has an in-built system of audio amplification will require a system of hearing augmentation at that area.

6.7. ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

The development's Ecologically Sustainable Design (ESD) strategy is articulated in Architectus' Urban Design Report at **Appendix D**, and is reproduced below. An ESD Report has also been prepared by ARUP and is

included at **Appendix O**. Overall, the primary objective of the proposed development is to achieve Australian 'Best Practice' for sustainable design. Methods under consideration to achieve this include:

- 5 -star Green Star in principle rating;
- Reduce water demand by using rainwater capture and reuse; and
- Improve urban environment by including high quality landscaping.

It is noted that the only statutory sustainability metric applicable to the School development is BCA Section J. The proposal will exceed these requirements.

The sustainability strategies to be incorporated into Hordern Precinct Development focus on creating a comfortable, flexible and community focussed space providing learning and teaching facilities alongside social study and collaboration spaces which are centred upon the following core principles:

- Comfort and Wellbeing;
- Energy and Carbon;
- Materials;
- Water;
- Management; and
- Transport.

Comfort and Wellbeing

The following indoor environment quality strategies are being investigated to achieve sustainability performance in a manner that also improves the occupant experience of the space:

- The air conditioning system will be designed with ducted fresh air which will exceed Australian Standards.
- The acoustic insulation of the building will be designed to provide appropriate and comfortable acoustic conditions for occupants.
- Installation of efficient, flicker free lighting.
- The lighting levels and glare reduction will comply with best practice guidelines.
- Maximise the accessibility to high quality external views.
- Maximise the amount of natural daylight to the building. This provides passive solar heating during winter and increases the solar access to occupants while minimising solar gain during the summer.
- Indoor air quality will be improved by eliminating products, such as paints and carpets that do not meet appropriate minimum VOC standards.
- The building design will promote a high level of thermal comfort for occupants by controlling the envelope gains and designing to best practice HVAC standards.

Energy and Carbon

Energy is a key sustainability driver of the design of the Hordern Oval Precinct redevelopment. The overall strategy targets a significant improvement over the BCA Section J requirements and of the development of systems to generate energy onsite.

The fabric performance requirements are addressed in the design by optimising the glazing performance and shading configuration for each orientation. This is to ensure that thermal comfort is achieved, and solar gains moderated. This allows effective application of the mixed-mode ventilation strategy, and efficient operation of the mechanical system.

As HVAC systems contribute to a large percentage of overall energy consumption in educational buildings, minimising this is a key principle in the design of Cranbrook School. To address this, the majority of the building is designed to provide the opportunity of mixed mode operation.

The use of waste heat reclaimed from the HVAC system to heat the pool and vice versa for the multipurpose building is being investigated to decrease energy consumption while maintaining comfort for occupants.

In addition to an efficient mechanical system, the following principles are some that have been employed to reduce energy consumption:

- Use of high efficiency lighting with motion and daylight sensors.
- Energy efficient appliances throughout the building.
- Green roofs above the AFC and Centenary Building will reduce thermal loads on the façade while having a positive effect on the microclimate.
- Metering and monitoring of energy sources and usage to promote awareness of consumption.

Materials

Robust and durable materials shall be selected on the project to ensure longevity whilst the following material selections will be considered to address the consumption of resources within the construction of the building:

- Minimisation of PVC throughout building services.
- The use of sustainable timber (FSC timber products) wherever timber is used.
- Reduction of non-reused or recycled content in the concrete mixes.
- Post-consumer recycled content structural steelwork, reinforcement bars and mesh will be maximised.
- Low VOC materials will be used for flooring, paint, adhesives and sealants.
- Low formaldehyde emission engineered woods produces will be used.
- All thermal insulants will be selected to avoid the use of ozone depleting substances in both their manufacture and composition.
- The building will aim to reduce to construction waste going to landfill by reducing or recycling building materials. Waste management during construction will ensure an 80% recycling rate during demolition and construction.

Water

The water strategy focuses on; reducing potable water through efficient fixtures and monitoring water use. In addition, stormwater runoff from the site will be designed so as to not negatively affect the surrounding habitats.

Rainwater harvesting and reuse will be key to reducing potable water demand in Cranbrook School. A site wide strategy to water is proposed with the aim of a centralised tank to source non-potable water for irrigation of the oval. This will be supplemented by bore water.

Management

The following management strategies are being considered to improve the project's sustainability by influencing areas where decision making is crucial:

- The building will undergo a high level of commissioning and tuning upon completion to ensure the building services operate efficiently and to their full potential.
- A best proactive formal environmental management plan will be implemented for procedures during construction of the building.
- The project will implement best practice waste management systems allocating areas, size and collection strategies. This will include the collection and separation of distinct waste streams and the feasibility of off-site waste management.

Transport

The following transport strategies are aimed at minimising occupant dependency on using private cars in order to reduce overall greenhouse gas emissions:

- The building is located in an area which has readily accessible transport options and which are close to a range of amenities, providing viable alternatives to use of private cars.
- Bicycle facilities will be provided to staff and students, including secure bicycle parking, lockers and showers.

SPECIFIC MITIGATION MEASURES

Overall there is a significant commitment being made to ESD principles to meet or exceed BCA Section J requirements.

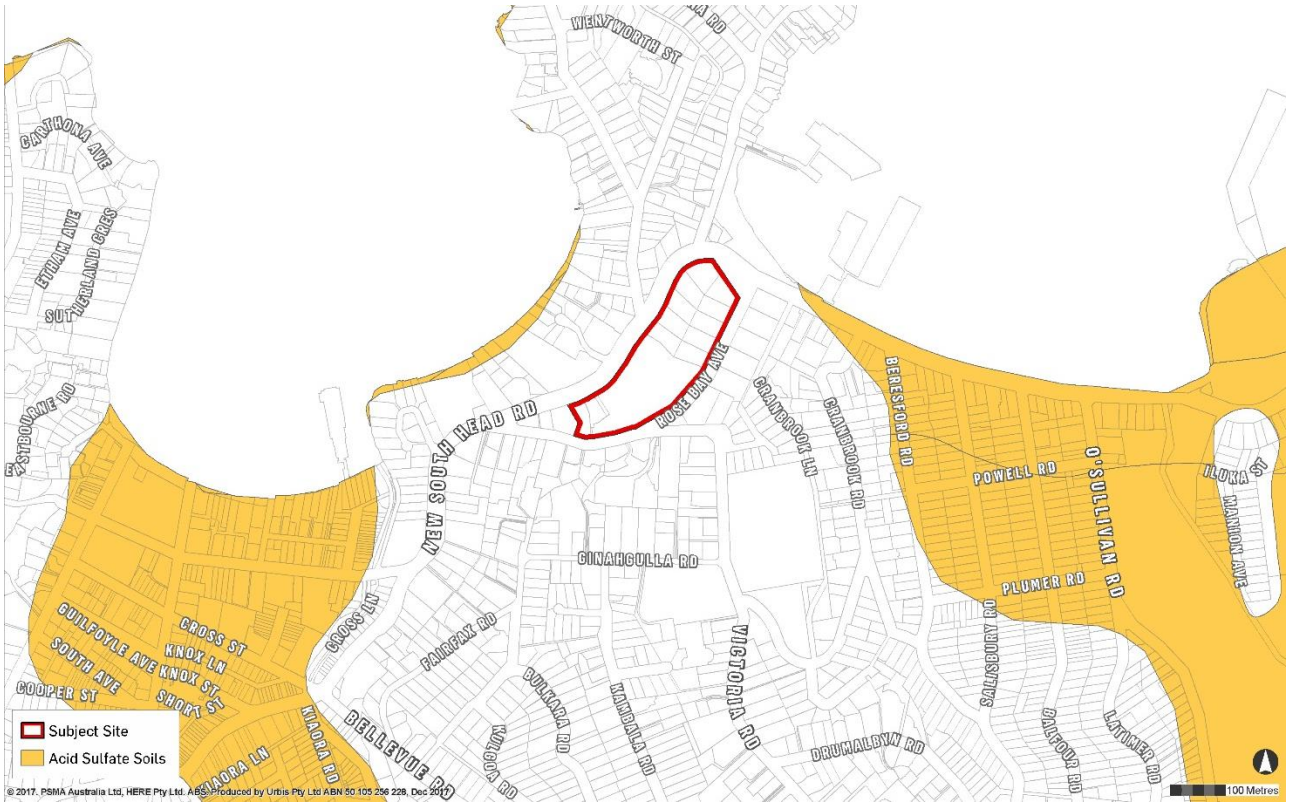
No further recommendations or mitigation measures are required.

6.8. ACID SULFATE SOILS

The site is classified as Class 5 acid sulfate soils, which requires an acid sulfate soils management plan to be prepared for any *works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.*

Advice on Acid Sulphate Soils has been prepared by Douglas Partners (refer to **Appendix R**). It finds that development works are not expected to lower the groundwater on any adjacent sites. As such, the water level will not be lowered below RL 1m AHD on adjacent Class 1. 2 or 3 land. The report concludes that *'…Douglas Partners confirms that development consent in relation to acid sulphate soils is not required and that an Acid Sulphate Soils Management Plan will not be required for the project.'*

Figure 12 - Extract from WLEP 2014 Acid Sulfate Soils



Source: Urbis

6.9. REMOVAL OF TREES

An Arboricultural Impact Statement (AIS) was undertaken by Botanics Tree Wise People and is enclosed at **Appendix N**. As part of the AIS, a total of sixty-three (63) trees have been individually assessed. These are located within 15m of the proposed construction footprint. Additional trees not formally assessed include the stand of mature Brush Box on the site's northern boundary, being over 20m from the proposed Construction Impact Zone (CIZ).

The report also identified four (4) historically significant trees documented within the portion of the school grounds where works are proposed. It should be noted that one of these trees has entered a cycle of decline and is recommended for removal irrespective of this development. The remaining historically significant Norfolk Island Pines and Kauri Pine have been documented as essential for retention and will be preserved.

The proposed development will require the removal of forty-one (41) trees. Of these five have been recognised as high value trees but are required for removal to accommodate the proposed development:

- Three Brush Box trees (Trees 16, 17, 18 and 19) are required for removal to allow vehicular access, while
- One Brush Box (Tree 38) is required for removal to allow an alternative fire exit and pedestrian access.
- The Port Jackson Fig (Tree 26) is required for removal to allow adjacent ground level changes to occur.

There are 3 trees located adjacent to the proposed excavation that will require ongoing arboricultural monitoring to ensure their retention. These include:

- the Phoenix palm (Tree 13)
- the historically significant Bunya Pine (Tree 39) and
- the mature Black Bean (Tree 36).

Preservation recommendations have been made based on *Australian Standard AS4970 for the Protection of Trees on Development Sites* and will be implemented accordingly. All tree pruning recommendations will be made based on *Australian Standard AS4373 for the Pruning of Amenity Trees* and will be undertaken where appropriate.

SPECIFIC MITIGATION MEASURES

The following mitigation measures are proposed in order to minimise adverse arboricultural impacts as a result of the development:

- Appointment of Site Arborist: A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of tree protection zones, fencing and signage. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture.
- Inspection Points: Give 5 working days notice to allow inspections to be undertaken at the following stages:
  - Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage by the Site Arborist;
  - Any modification of the Tree Protection Zone by the Site Arborist;
  - Works within the Tree Protection Zone by the Site Arborist; and
  - Completion of Construction Works by the Site Arborist and Site Supervisor.
- Education: Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking.
- Tree Protection Zones: Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones.
- Tree Protection Fencing: Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The trees woody roots shall not be damaged during the installation of this Tree Protection Fencing. This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process.

- Signage: Tree Protection Signage shall be attached to the TPZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at least 600 x 500mm.
- Mulching: The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of works on site. The Site Arborist shall inspect and approve the TPZ including mulching, signage, Tree Protection Fencing, Silt fencing and Signage prior to the commencement of works on site.
- Site Management: Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.
- Works within the TPZ: The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.
- Completion of Works within specified TPZ: Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstallation of fencing the TPZ shall be modified by the Site Arborist.

6.10. BIODIVERSITY

A Biodiversity Assessment Report (BDAR) has been prepared by Travers Bushfire & Ecology and is enclosed at **Appendix P.** The BDAR is comprised of an ecological survey and biodiversity assessment and has been undertaken in consideration to the *Biodiversity Conservation Act 2016* (s6.12) through the relevant process outlined by the EP&A Act.

A 'Significance of Impact Test' is provided in Appendix 3 of the BDAR. The schedules and assessment criteria under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) have also been considered for the proposal. The BDAR concludes that *'no threatened flora species have been observed or considered likely to occur in a natural state'* on the site.

'Whilst fauna survey has not been undertaken, a detailed habitat assessment was undertaken and it is considered that the habitat attributes within the subject site do not provide any significant or unique habitat of breeding importance for any threatened fauna species. Managed Landscape vegetation consisting of mostly exotic species with some (planted) non-endemic Australian species and even fewer (planted) endemic native species may provide low key foraging value.

The vegetation present within the subject site is a Managed Landscape consisting of multiple garden beds on embankments and terraces that consist mostly of exotic or cultivar species with a much smaller number of planted non-endemic and endemic native Australian species.

This Managed Landscape vegetation is not attributable to any remnant of native vegetation and is not commensurate with any Endangered Ecological Community (EEC) listed within the NSW BC Act (2016) or within the Commonwealth EPBC Act (1999).

The direct impacts of the proposal are considered to include the following:

- *Removal of approximately 0.14 ha of highly disturbed mostly exotic vegetation for the construction of the proposed new building,*
- *Removal of two (2) nest boxes located in trees within the proposed new building footprint,*
- *Removal of approximately 0.14 ha of seasonal flowering vegetation suitable for foraging by birds and flying-foxes.*

The indirect impacts of the proposal are considered to include the following:

- *Lighting and noise spillover effects onto fauna utilising the retained trees for seasonal foraging.*

These impacts are not considered to be serious and irreversible impacts (SAII). When not required, all field lighting should be switched off.

In accordance with the Significance of Impact Test of the BC Act (refer to Appendix 3 of the BDAR at **Appendix P**) *the proposed development does not trigger biodiversity offsets and is not likely to cause a serious or irreversible impact upon threatened species, endangered populations or endangered ecological communities.*

The proposal is unlikely to have a significant impact on threatened or migratory fauna species listed as matters of national environmental significance under the EPBC Act. As such, a referral to the Commonwealth Department of Environment and Energy (DOEE) is not required.'

SPECIFIC MITIGATION MEASURES

The following mitigation measures are proposed in order to minimise adverse ecological impacts as a result of the development:

- *Replacement landscaping should keep in context with the existing character of the property.*
- *Construction sediment and erosion control measures are to be installed and maintained in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) to minimise impact of possible construction sedimentation to local drainage and Sydney Harbour.*
- *Control and eradication of noxious and other invasive ecological weeds should be undertaken to prevent further invasion by these species. Invasive ecological weed species such as Camphor Laurel, Common Olive, Chilean Cestrum, Small-leaved Privet, Mickey Mouse Plant, Senna, Asparagus Fern, Fish-bone Fern, and Madiera Vine were observed within the subject site.*
- *A weed control plan be produced and enacted by the groundskeepers to control or eradicate noxious and environmental weeds as listed in Item 3 which are required to be controlled in accordance with the NSW Biosecurity Act (2015).*
- *As field activities may be ongoing until approximately 8pm, lighting on the field is required. Lighting should be turned off at other times to limit disturbances to on-site boarders, neighbours and fauna that may utilise the existing vegetation.*
- *Two (2) nest boxes currently located within the new building footprint are to be moved to nearby retained trees, or new nest boxes installed as replacements nearby.*

6.11. HERITAGE

6.11.1. European Heritage

As indicated previously at **Section 2.5**, the School is listed as a local heritage item (Item 44) under the WLEP 2014. As such, a Heritage Impact Statement (HIS) is required to assess the impact of the proposed works on the identified heritage significance of the site and is attached at **Appendix H**. Key matters raised in the HIS are:

- Hordern Oval – The proposed works to Hordern Oval would not impact on the overall significance of this element. The oval space would be retained as the proposed design would excavate and reinstate the oval. There would be no construction on the oval, as such, there would be no change in terms of bulk, scale, design, setback, or finishes.
- Perkins Building – It is proposed that the existing infill on Perkins would be removed. These proposed works would generate a positive heritage outcome. The proposed works would not add to the existing building. There would be no modification to the established bulk, scale, design, setback, or finishes.
- Proposed Demolition – The proposed demolition of War Memorial Hall and Mansfield Building and construction of the New Centenary Building would have acceptable level of impact on the Cranbrook site. It is proposed that the War Memorial Hall and Mansfield Building are demolished in order to construct the New Centenary Building. These buildings are not assessed as contributory items. The CMP has assessed the War Memorial Hall and Mansfield Building as having moderate significance. Both buildings are post-war and have been modified. The demolition of these structures would be acceptable. Refer to the Demolition Report accompanying this SSDA for further details regarding the significance of these buildings.

- New Centenary Building – The proposed development of the New Centenary Building would be supported from a heritage perspective.
  - Bulk: The bulk of the proposed New Centenary Building would be acceptable from a heritage perspective. The bulk of the proposed building is an increase to that of the War Memorial Hall and Mansfield Building, however the development would not be visually dominant. The provision of landscaped terraces on the northern elevation would break up the visual presentation of the building.
  - Scale: The proposed scale of the development is an increase to that of the extant War Memorial Hall and Mansfield Building, however, the design of the proposed development would ensure that the building is not visually dominant. The design of the New Centenary Building is referential to the topography of the site, and would site the proposed development within an excavated area of the oval embankment, which would have a minimal increase in height and would not disrupt established views to and from the site;
  - Design: As discussed above, the design of the proposed development considers the setting of the site and would involve the excavation of the oval embankment and working with the topography of the site to ensure that the bulk and scale of the development is appropriate and visually sympathetic to the heritage qualities of the Cranbrook site.
  - Setbacks: The proposed setbacks of the New Centenary Building would have no physical impact on any buildings or elements of significance on the subject site. Additionally, there would be a neutral impact on views to and from the site;
  - External colours and finishes: the proposed external finishes and colours of the development includes, tallow wood, concrete with a warm aggregate, bluestone paving, bronze aluminium detailing, and sandstone. The design of the proposed development would be clearly discernible as contemporary, whilst the proposed finishes would reference the heritage qualities of the site.

The Demolition Report (**Appendix I**) prepared for the removal of the War Memorial Hall and the Mansfield Building concluded that these buildings do not meet the criteria for heritage significance as individual elements at state or local level. It has been determined that the War Memorial Hall and the Mansfield Building do not individually make a contribution to the school site, rather, they are sympathetic buildings that contribute to the overall significance of the school. The demolition of these buildings and the construction of a similarly sympathetic development in the Centenary Building, would be acceptable from a heritage perspective.

The proposed works to Hordern Oval would not impact on the overall significance of this element. The provision of the aquatic centre and parking beneath the oval is sympathetic solution to balancing the established heritage characteristics of the site with the need to provide updated teaching and learning facilities.

Overall the proposed works are assessed as acceptable from a heritage perspective.

SPECIFIC MITIGATION MEASURES

The HIS identifies the following recommendations and mitigation measures to address any potential impact of the proposed demolition and development:

- *It is recommended that a Photographic Archival Recording (PAR) is undertaken where works are proposed, prior to any works being undertaken at the site;*
- *An assessment and inventory of all items of moveable heritage located in or connected with the War Memorial Hall shall be undertaken. These elements should be incorporated in the New Centenary Building development;*
- *An Interpretation Plan should be developed to convey the development and significance of the site to students and visitors to the site;*
- *During the excavation process, should any object with archaeological potential be uncovered, all work is to cease and a suitably qualified archaeologist engaged;*
- *A suitably qualified heritage architect/consultant should be engaged to oversee all works to buildings of identified high significance, including the Perkins Building; and*
- *A suitable protection methodology shall be prepared prior to works commencing on site to protect the significant Kauri Pine and rock face located in Camelia Court.*

6.11.2. Aboriginal Heritage

A desktop review of the site against the Aboriginal Heritage Information Management System (AHIMS) database was undertaken in order to ascertain the likelihood of the proposed development impacting on identified archaeologically significant areas.

Due to the developed nature of the site, from an Aboriginal archaeological perspective Cranbrook is unlikely to be classified as an 'archaeologically significant area'. There are no sites registered within the site boundary and as such there is no risk of harm to known sites. There are, however, two registered sites on AHIMS within a 1km buffer of Lot 1 DP663630.

While the site is proximate to the coastline of Port Jackson (areas within 200m of waters are identified in the Due Diligence Code of Practice as important landscape features), the existing development on the site fits the description of 'disturbed land' under the *National Parks and Wildlife Act 1974* (NPW Act). As such it is considered that the significance of its proximity to the coastline is negated and that 'harm' to potential objects is unlikely.

SPECIFIC MITIGATION MEASURES

Cranbrook commits to the implementation of an 'unexpected finds' protocol during all site works, especially excavation to ensure that if any items of potential archaeological significance are uncovered they are identified, managed, protected and preserved. Should any item of potential indigenous archaeological significance be uncovered, all work is to cease and a suitably qualified archaeologist be engaged to assess and record the potential artefact.

It is noted that approval will be required under the NPW Act to remove or destroy an item of archaeological significance.

All site workers are to be trained in the significance of indigenous archaeological heritage and the importance of their retention or recording.

6.12. STORMWATER MANAGEMENT & FLOODING

A Stormwater Management and Civil Design Report has been prepared by AECOM and is enclosed at **Appendix W**. This report assessed the flood risk on site, including the potential effects of climate change, sea level rise and an increase in rainfall intensity. A review of the pre-development stormwater management and hydrologic/hydraulic performance of the site was undertaken to provide a baseline condition against which the proposed development was assessed.

Stormwater management and civil design throughout the Cranbrook School site involves the interface with a number of stakeholders including the following:

- Woollahra Council – Responsible for the drainage network within the dedicated road and public realm;
- Waterways Authority – Responsible for approval to discharge stormwater into Sydney Harbour; and
- Sydney Water.

Consultation has been undertaken with each of these stakeholders and the outcomes of this consultation are reflected in the proposed design.

Stormwater Quantity Control

Woollahra Council requirements for on-site detention (OSD) of stormwater aim to reduce and mitigate the peak stormwater flow from a developed site and to allow a controlled release of stormwater to the public stormwater system. The overall development will provide stormwater quantity controls to comply with Woollahra Council requirements for post development stormwater discharge from the site to not exceed pre-development flowrates. In addition, the development lots will provide stormwater quantity controls to comply with the Woollahra Council storage and discharge requirements.

Hydraulic modelling using the DRAINS software has been undertaken to support the stormwater management approach detailed in the sections above. A model has been developed for the existing and proposed conditions and used identify peak discharge rates pre-development and post-development.

The DRAINS results for site discharge under post-development conditions found that the total peak discharge from site is reduced by 5% in the minor storm and 2% in the major storm event. By providing new pipe drainage

within the site and connections to Council subsurface system, the total overland flow has been dramatically reduced from baseline conditions.

Stormwater Quality Control

Woollahra Council details the water quality requirements for developments discharging into Sydney Harbour.

The environmental targets for stormwater runoff leaving the site are:

- *90% removal of gross pollutants (>5mm);*
- *85% removal of total suspended solids;*
- *65% removal of total phosphorous; and*
- *45% removal of total nitrogen.*

The WSUD measures proposed below ensure water quality targets are met, considering stormwater runoff from roads, parks, vegetated areas and the remaining site:

- Passive irrigation ensuring that the majority of site runoff will be directed into vegetated areas or green roofs prior to discharging to outlet locations;
- Grassed swales along the perimeter of the Hordern Oval to control runoff from the oval, towards the main outlets;
- Rainwater harvesting to supplement existing rainwater and retention tanks located on the School site; and
- Gross Pollutant Trap may be required to meet the WSUD treatment requirements. Provision of a gross pollutant trap will be investigated as part of detailed design if warranted by the resulting treatment performance of the above measures.

SPECIFIC MITIGATION MEASURES

The proposed stormwater management approach will address Woollahra Council requirements and reduce the discharge rate of stormwater from the site whilst improve the quality of that water. No further mitigation measures are identified.

6.13. HAZARDOUS MATERIALS

A Hazardous Materials Survey and Management Plan (HMSMP) was undertaken by Parsons Brinckerhoff in 2013 (refer to **Appendix U**) in order to identify and conduct risk assessments of the hazardous materials identified within all buildings located at the Bellevue Hill Senior School Campus. The relevant buildings in the HMSMP are the War Memorial Hall and Mansfield Building.

Medium risk Asbestos Containing Material (ACM) was identified on the north elevations balconies of the Mansfield Building (012) in the form of heavily weathered asbestos bituminous membrane covering the floor.

Medium risk ACM was identified within the Mansfield Building (012) Level 2 Studio 3 – 2.5 in the form of a compressed asbestos cement bench top.

Remediating works were undertaken in July 2013 by Punch Construction & Building under the supervision of Parsons Brinckerhoff (PB) and to the method and scope of Parsons Brinkerhoff's HMSMP.

- Debris under Perkins was removed from site;
- The bench in Mansfield Building was removed from site; and
- Membrane on Juliette Balcony in Mansfield was encapsulated.

No other known ACM is located within Mansfield or War Memorial Hall.

SPECIFIC MITIGATION MEASURES

- Any hazardous materials identified in the buildings to be demolished shall be removed in accordance with relevant Australian Standards and disposed of at a licenced facility.

6.14. UTILITIES

The site currently contains and is connected to all necessary services including water, gas, electricity, communications and sewage. The Infrastructure Management prepared by Northrop / Warren Smith & Partners / AECOM and attached **Appendix Y** confirms that the existing services have sufficient capacity to accommodate the proposal. A review of the existing drainage infrastructure was also undertaken by AECOM and is attached at **Appendix W** and **Appendix X**.

An Infrastructure Management Plan (IMP) report for Electrical, Telecommunications, Stormwater and Hydraulic services has been prepared by Northrop Consulting Engineers (**Appendix Y**) that outlines the existing infrastructure, detailing information on the existing capacity and any augmentation to the aforementioned services required for the proposed development. The report also details records of consultation with relevant agencies.

The IMP report details the existing hydraulic and electrical services infrastructure available to service the proposed development. It also includes details regarding any augmentation / amplifications required to service the proposed development. In this regard the following is required to adequately service the development:

- Connect an inexpensive NBN fibre to the premises to allow for business-grade traffic class services to be provided from the School's preferred provider. This connection should be from the Rose Bay Avenue frontage.
- The preferred method of increased water supply is to utilise what appears to be an existing hydrant and mains connection of the mPVC DN 200mm water main on New South Head Road. The connection may require upgrading. If this is not an existing connection this location shall still be assessed for feasibility as a new connection may be proposed.
- There are two proposed sewer connection points
  - AFC – all sewer waste will be pumped to a new connection to the SGWW DN 225mm sewer main located on Rose Bay Avenue.
  - Centenary Building – sewer waste discharge is to be gravity fed to a new connection to the VC DH 150mm sewer main on New South Head Road.
- New gas main connections and meters will need to be provide to the AFC and Centenary Buildings. The size will need to cater for domestic hot water load, pool heading load and air conditioning heat load. This is equivalent to a new load of 8,800 mj/hour. Jemena will need to confirm if any amplification of the natural gas main is required and which main will be available for connection.
- The IMP concludes that the existing electrical infrastructure is insufficient to support the proposed buildings, requiring an additional kiosk substation (subject to Ausgrid requirements). One 1000kVA pad-mounted kiosk type substation is required to supply the new building works. This substation is proposed to be located on the north eastern corner of the property at the Rose Bay Avenue frontage and will meet the requisite power requirements. The existing three substations surrounding the School (including the two substations servicing the School's existing building) are located outside the development site and will be unaffected by the proposed construction works. The existing substations shall continue to operate as normal during and after project completion.

6.15. OPERATIONAL WASTE MANAGEMENT

An Operational Waste Management Plan (OWMP) has been prepared by Waste Audit and Consultancy Services and is attached at **Appendix AA**. The OWMP has three key objectives:

1. Ensure waste is managed to reduce the amount of waste and recyclables to land fill by assisting staff and visitors to the buildings to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins to reinforce these messages.

2. Recover, reuse and recycle generated waste wherever possible.

3. Compliance with all relevant codes and policies.

Currently waste and recyclables are collected by Doyle Bros on a daily basis (ie., 5 times per week) from two kerbside locations. These are:

- 4-5 x 660 litres per day Rose Bay Road; and
- 8-9 x 660 litres bins per day New South Head Road.

All waste and recycling bins will be collected in the same vehicle and transported to the Doyle Bros Materials Recycling Facility for sorting. In addition, approximately 2 x 660 litres of organics from the kitchen will be disposed of as general waste per day.

The existing waste management system for Cranbrook School will be used to manage wastes and recyclables generated by the use of the proposed facilities.

6.16. BCA COMPLIANCE

A Building Code of Australia Report was undertaken by Mckenzie Group and is enclosed at **Appendix GG**. The report identifies that subject to detailed design the proposal is capable of compliance with the BCA.

6.17. CONSTRUCTION

A Construction Management Plan (CMP) had been prepared by Buildcorp (enclosed at **Appendix BB**) outlining the proposed construction methodology and possible impacts. Further a Concept Construction Traffic Management Plan (CTMP) has been prepared by Parking and Traffic Consultants (at **Appendix M**).

Key elements of the Construction management plans are detailed below. All construction works on site will be subject to finalisation of the CTMP and CMP having regard to project programming and staging.

Construction Hours

Construction hours are proposed to be consistent with those required by Woollahra Council. All construction activities including deliveries will be undertaken during this time.

- 7:00am to 5:30pm Monday to Friday (TBC).
- 7:00am to 3:30pm Saturday (TBC).
- No work on Sundays and Public Holidays.

Outside these hours, works, such as delivery of materials / machinery / specific site works may be required on an ad-hoc basis as required by the specific construction activity, authorities (e.g. RMS) or for safety reasons. For example the transport of wide loads that are required to meet RMS restrictions for use of a public road, or a concrete pour that requires time to cure before it can be finished off. Communication with relevant authorities and neighbours will be issued in these events occur.

The consultant assessments (e.g. acoustic and traffic) have been based on these proposed construction hours, and have provided mitigation measures as appropriate.

Construction Acoustic and Vibration Impacts

A summary assessment of acoustic impacts and management measures is identified in the Construction Management Plan.

This assessment is based on assumptions for the equipment to be used and likely noise sources. It is anticipated that noise sources may be effectively controlled by:

- Appropriate hoardings around the site and the strategic location of noisy plant and equipment away from sensitive receivers.
- Select quitter construction methods wherefore possible and appropriate particularly for piling works.
- Selection of low vibration construction work methods wherever possible and appropriate.
- Vibration monitoring and management controls for heritage structures.
- Coordination with the school and relevant stakeholders and neighbours to minimise disruption wherever possible.

Principles of a Construction Noise Management Plan are contained in the Acoustic Report prepared by Acoustic Logic at **Appendix V**. The objective of the Noise Management Plan is to set up a protocol to ensure

noise and vibration emissions from the construction works associated with the project comply with applicable standards, recommended required management controls and treatments are adopted where required, and detail the required monitoring to ensure standards are met. These will be adopted into a Noise Management Plan to be prepared prior to commencement of construction works.

Construction Traffic Management

The proposal will result in a temporary increase in construction traffic and parking requirements during the construction phase. A Concept Construction Traffic Management Plan (CCTMP) is enclosed at **Appendix M** that addresses parking requirements, intersection analysis, vehicular and pedestrian access, sustainable transport measures and loading and unloading.

The CCTMP outlines the proposed construction traffic access to the site during the various construction stages, and nominates specific measures to improve site safety to the public and workers and the construction process. In summary:

- Construction vehicles will access the site via right hand turn from New South Head Road to Victoria Road, and leave the site via Rose Bay Avenue and New South Head Road (westbound). A swept path analysis of the larges vehicle types demonstrates that the intersections can accommodate these movements without augmentation.
- It is anticipated that the maximum number of truck movements per day is 30-40 (being 3-4 per hour) which will not detrimentally impact network operations.
- Construction vehicles will use nominated site gates to access the site at respective construction stages.
- A works zone on Rose Bay Avenue will be required during demolition of the War Memorial Hall and Mansfield Building to accommodate a 19m truck and dog trailer. Due to their smaller size, 12m rigid vehicles will access the site for this demolition work.
- Access and egress to construction site gates will be managed by traffic controllers at all times.
- It is proposed to provide three 'passing bays' on the eastern side of Rose Bay Avenue (and thereby restrict parking on the eastern side of Rose Bay Avenue) to assist vehicles travelling along this road towards the Victoria Road/Rose Bay Avenue intersection. They will be approximately 45m spacing and will be delineated by the placement of 'no stopping' restrictions on the carriageway edge.
- During construction, for safety reasons, the footpath along the eastern side of Road Bay Avenue, between the Rose Bay Avenue Gate and New South Head Road will be closed. A pedestrian diversion is proposed along the western footway of Rose Bay Avenue for this period.
- During construction, a temporary car park is proposed on the western portion of Hordern Oval to accommodate staff vehicles that would otherwise utilise Rose Bay Avenue. It is noted that this arrangement is subject to further discussions with RMS as the access gate (Gate 5) is located within the existing signalised intersection at New South Head Road and Wolseley Road. A management plan will be required to manage the access and egress times for this car park.
- Construction workers will be discouraged from parking in the surrounding street network. To minimise parking demand, the site contractor will be encouraged to assist in the transportation of workers to the site. Personnel will be advised to car pool wherever practical, will be informed of public transport options and encouraged to use these facilities wherever practical.

With the measures described in the CCTMP in place, the construction activity is anticipated to have minimal disruption to the daily activities within the vicinity of the site.

Construction Waste Management

The contractor will comply with the relevant Australian Standards, conditions of consent and the measures outlined within the Construction Management Plan prepared by Buildcorp at **Appendix BB** to ensure all waste is carefully removed, packaged and transported from the site to an appropriate waste facility. This will minimise potential contact with the waste and reduce environment risk from an accidental release. Where appropriate, waste will be reused or recycled. The demolition subcontractor will be required to recycle and reuse demolition spoil wherever possible.

Spoil Disposal

An In-Situ Waste Classification Assessment was undertaken by Douglas Partners and is attached at **Appendix T.** The report was commissioned to provide information in relation to disposal options for materials that will be removed from site, including bulk excavation spoil and pile spoil. The assessment was undertaken in accordance with the requirements of *The excavated natural material order 2014*, issued by the NSW EPA under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014*. Where the Excavated Natural Material (ENM) requirements were not met, the materials were classified in accordance with Waste Classification Guidelines (NSW EPA 2014).

The samples analysed from bore holes did not possess any obvious hazardous characteristics and could not be described as hazardous waste prior to chemical analysis. All samples analysed were assessed on a visual and tactile basis as being incapable of significant biological transformation and are therefore considered to be non-putrescible. All sample mean, sample standard deviation and 95% UCL concentrations were within the CT1 criteria.

On this basis all samples of filling would be classified as General Solid Waste (non-putrescible) and would need to be disposed of at a site that is licenced to receive this category of waste.

The Waste Classification Assessment testing was carried out in accordance with the in situ assessment as outlined in the ENM Order. The majority of samples analysed meet the requirements of the ENM Order. Based on the observations at the time of sampling and the reported analytical results, it is likely that much of the site excavation will be able to be described as Excavated Natural Material upon excavation, provided that Foreign Materials Testing is undertaken prior to disposal.

SPECIFIC MITIGATION MEASURES

The following mitigation and management measures are nominated in the Construction Traffic Management Plan:

- Completion of the drop-off/pick-up zone within the school grounds prior to requiring the removal of the drop-off/pick-up zone along Rose Bay Avenue. This will ensure a safe drop-off/pick-up environment for students during construction.
- Allocation of works zones in Rose Bay Avenue during demolition of the War Memorial Hall and Mansfield Buildings.
- Provision of site plan and access diagrams to delivery drivers before reaching site, in order to minimise time on the road or in wayfinding when at site.
- Delineation of three ‘passing bays’ along Rose Bay Avenue to facilitate traffic movement along this carriageway during construction.
- Installation of a pedestrian diversion from the eastern to western side of Rose Bay Avenue (between Rose Bay Avenue Gates and New South Head Road) during construction works to improve pedestrian safety during this phase.
- Provision of staff parking spaces on the western side of Hordern Oval to mitigate against the 29 lost from on-site provision when replaced with drop-off/pick-up, and spaces lost along Rose Bay Avenue during construction works.
- Encourage construction staff to use of public transport or car-pooling to access the site. Discourage transport by private vehicle. Provide information of public transport schedules and routes.
- Management of truck access to/egress from the site at each Site Gate via a traffic controller.

The following mitigation measures are proposed for general construction practice:

- Noisy Works (e.g. rock hammering or demolition)
  - Adopt a Construction Noise Management Plan addressing the requirements contained in the Acoustic Report prepared by Acoustic Logic.
  - Construction equipment may be fitted with noise mitigation equipment wherever possible or reasonable.

  - Noisy work will be identified and communicated to relevant stakeholders and neighbours giving them sufficient notice.
  - Opportunity for noise works to be limited to approved windows of time if agreed to by all parties.
  - Noisy equipment to be located away from residential properties wherever possible.
- Dust Control
  - Appropriate hoardings to be provided around the site.
  - Ensure construction vehicles have been appropriately cleaned before exiting the site.
  - Ensure sufficient wetting down is completed during demolition and excavation activities.
  - Ensure stockpiles are sufficiently protected.
- Hazardous Materials
  - Undertake hazardous materials survey prior to commencement of works.
  - Appropriately licenced contractors engaged to remove any hazardous materials found.
  - Appropriate signage and exclusion zones maintained during applicable works.
- Sediment run off
  - Follow prescribed sedimentation and erosion control measures as provided by civil engineer.
  - Conduct regular visual inspections of silt socks and all other sedimentation controls to ensure integrity of the system is maintained at all times.
  - Provided dedicated wash-out facilities for use by relevant subcontractors.
- Unauthorised entry to site
  - Appropriate hoardings will be provided which separate all construction activities from the public and/or School.
  - Provide project updates and tours for Cranbrook staff and students in order to minimise curiosity.
  - Use appropriately located signage to deter construction site entry.
- Vibration
  - Use bored piles rather than driven piles.
  - Applicable works will be identified and communicated to relevant stakeholders and neighbours giving them sufficient notice.
  - Vibration monitors may be provided in close proximity to heritage buildings as an early warning alarm during adjacent piling and structural work.
- Site personnel behaviour (internal and external to the site)
  - Site inductions will include site requirements i.e. no inappropriate language, appropriate disposal of rubbish (no throwing rubbish on streets), legal parking of vehicles, wearing appropriate clothing.
  - Weekly tool box talks will reinforce requirements.
  - Regular check of surrounding streets to ensure compliance with site requirements.

The following mitigation and management measures are proposed for construction waste management:

- A comprehensive survey of the existing site shall be conducted to identify existing materials for reuse or recycling. Salvageable materials include sandstone, bricks, timber, and similar materials suitable for reuse.

- Excavated materials shall be reused on the site wherever possible. Any surplus materials needing to be exported from the site will be sorted into separate classifications i.e. soil, rock, concrete, steel, aluminium, timber etc. and exported to facilities which are appropriately licenced to accept them.
- Prior to commencement of demolition and excavation works, a hazardous material and contaminated ground survey will be undertaken. Any hazardous materials identified will be disposed of in accordance with statutory and EPA requirements.
- A project specific Waste Management Plan (WMP) will be developed and implemented by Buildcorp to manage all waste streams expected to be generated from the site.

The following mitigation measures are proposed prior to excavated materials disposal:

- Validation of waste classification will be required before spoil material is removed from the site.
- All spoil must be transported to a site that is licenced to receive that category of spoil/waste as appropriate.

6.18. SOCIAL IMPACTS

The proposal will have an overall long-term positive social impact on the local community. Impacts generated by the proposal are more environmental rather than social or economic, and can be managed or mitigated if the recommended measures are incorporated or implemented as part of the development.

A summary of the key possible social impacts associated with the development are outlined below:

- **Access to education and social infrastructure:** Overall the proposal is likely to enable the School to continue to provide access to education, with a higher quality of facilities. It will also continue to provide access to social infrastructure for the broader community through a joint-use arrangement of school facilities for the Learn to Swim program and use of the Chapel where appropriate.

  The potential disruption to the educational environment during construction can be mitigated through effective communication and implementation of a construction management plan (CMP).

- **Traffic and parking:** Traffic and parking impacts during construction are likely to have a temporary negative impact on the local road network. These impacts can be minimised through the mitigation measures outlined including the provision of on-site car parking, commensurate to the number of spaces temporarily displaced during construction along Rose Bay Avenue, for staff during the construction phase.

  The proposal is very likely to result in long-term reduced parking pressure on the streets surrounding the site, especially on week days and during Saturday sport events. It may have long-term positive impacts on the local road network. The provision of an additional 95 (total of 124) off-street car parking spaces will reduce the existing strain on the local road network to accommodate the parking requirements of the School.

- **Noise and vibration:** Construction noise and vibration is likely to have a temporary negative impact on the local community, including the school community and surrounding residents. The impact of construction noise and vibration can be reduced through mitigation measures and effective communication.

  Operational noise levels are not expected to change from current levels as the proposal will not increase the quantum of students at the campus. Outdoor areas of the School are currently used for outdoor activities by the School, and no appreciable change is expected to result from the school redevelopment. Potential operational noise impacts should be monitored on an ongoing basis.

- **Visual amenity:** Visual amenity impacts from the proposed development will be minor but long-term for residents to the east of the site, where the increased height of the school is concentrated. Consultation with impacted residents has been undertaken and will continue to be undertaken. Implementation of the mitigation measures, including the replacement of any trees identified for removal, will reduce the likelihood of a change in visual character for the broader local community.

A summary of the key social benefits are:

- The proposal will create temporary jobs during the construction phase, which is a long-term high positive benefit for the area;

- The proposal will provide future students and staff with new state-of-the-art facilities and spaces. This will enable high-quality teaching beyond what can currently be provided;
- The inclusion of an on-campus ‘kiss and ride’ facility will greatly assist parents in the area, and surrounding road users;
- The proposal includes sufficient areas for indoor and outdoor recreation to improve the health and wellbeing of future students and staff; and
- The proposal has been specifically designed in accordance with CPTED design principles to aid in reducing the likelihood of crime. The proposal will positively activate the site, provide many opportunities for passive surveillance and be designed with hard-ware materials that are ‘vandal-proof’.

7. CONSULTATION

Consultation has commenced on the project and will continue as the assessment of the application progresses and during construction. The purpose of the consultation process to date has been to inform and seek feedback from key stakeholders. Elton Consulting have worked to ensure relevant issues have been considered during the development of the proposal, see **Appendix DD**.

Early consultation has also been designed to gauge the level of community support and acceptance of the proposal. The objectives of the preliminary consultation were as follows:

- Identify key community stakeholders with an interest in the project;
- Provide relevant information about the proposal to residents and community stakeholders to create awareness about the proposal and forthcoming SSDA application;
- Provide a means by which stakeholders could provide comment on the development of the proposal; and
- Provide the project team with the opportunity to incorporate stakeholder feedback into the planning and development process.

The preliminary consultation undertaken in respect of the proposed development to date is documented in the Consultation Outcomes Report attached at **Appendix DD**. The key stakeholders identified in the SEARs and the Consultation Outcomes Report are:

- Woollahra Council;
- Government Architect NSW;
- Transport for NSW;
- Roads and Maritime Services;
- Service Providers; and
- Local Community including the school community, special interest groups, and affected landowners.

Stakeholder consultation commenced in 2017 and has involved direct engagement with immediate neighbours, communication to 1,000 surrounding addresses, face-to-face briefings with key stakeholder groups, media briefings to reach the wider Eastern Suburbs community and drop-in sessions where interested parties could ask further questions about the proposal.

The following sections are a summary of the consultation undertaken to date.

7.1.1. Woollahra Council

A meeting was held between representatives of the School and the Woollahra Municipal Council staff on 15 September 2017. The key items covered were:

- As Council wouldn't be the consent authority, it will make a submission and that heritage, traffic and amenity will be key aspects of that.
- Cranbrook should present to new councillors and the council's consultant experts who will help with council's submission, to ensure they fully understood the proposal.
- A separate meeting should be convened to discuss whether Cranbrook intends to follow Section 94 (now Section 7.11) or a VPA.

A full summary of the meeting is included in the Consultation Outcomes Report at **Appendix DD.**

A meeting was held between representatives of the School and the Woollahra Municipal Council Councillors on 6 November 2017, in order to brief the Councillors about the proposed development and how it will fulfil the School's needs for the future. The meeting included an overview of the project, a tour of the site and a Q&A session.

A full summary of the meeting is included in the Consultation Outcomes Report at **Appendix DD.**

7.1.2. Government Architect NSW

A meeting was held with the Government Architect's Office (GANSW) on 02 February 2018 to discuss the proposed development, the minutes of which are enclosed at **Appendix EE**, and reproduced below:

*'Overall, **GANSW commend the process undertaken to develop the proposal** which included preparation of a masterplan and a design competition* (emphasis added).

In preparation of the EIS submission, in accordance with the SEARs, GANSW note the following should be provided and incorporated into the required design report and structured to respond to the design quality principles of the Education SEPP.

- *Further information and drawings that demonstrate an integrated landscape plan*
- *Further information to demonstrate active transport strategies and linkages with existing, proposed and potential footpaths and bicycle paths and public transport links. GANSW recommend greater emphasis on how the proposal will contribute to further modal shifts in transport options away from private vehicles.*
- *Site plans and operational statement demonstrating the afterhours and community use strategy including security implications such as fences or other secure lines and whether access is free or paid.*
- *Clarification as to material specifications in particular for the blade elements at level one.*
- *Further information to demonstrate the anticipates performance of proposed passive thermal control measures and/or hybrid strategy (natural ventilation; potential for photo-voltaic array).'*

All of the GANSW's requests have been actioned and incorporated into the EIS package.

7.1.3. Roads and Maritime Services and Transport for NSW

PTC have liaised with Roads and Maritime Services (RMS) in respect to the traffic and transport arrangements proposed by the project. A Draft Construction Traffic Management Plan (**Appendix M**) was issued to RMS via email on 23 March 2018. The RMS undertook to forward the document to Transport for NSW (TfNSW).

A response was received from RMS via email on 27 March 2018 from RMS confirming that they had reviewed the CTMP and overall they had no concerns. RMS advised that more detail would be required on the following issues in the Final CTMP before approval:

- *More detail will need to be provided on how pedestrians are being managed. How will pedestrians cross the road on the southern end of the footpath closure.*
- *As mentioned, the access at Gate 5 will require additional detail to show how vehicles will be accessing and egressing the car park. Will vehicles also be using this access to leave the site?*
- *Please note, the works zones and proposed no stopping to accommodate the passing areas will be subject to Council approval.*

RMS confirmed that it had not received any comments from TfNSW.

7.1.4. Service Providers

An Infrastructure Management Plan (IMP) has been prepared in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure, refer to **Appendix Y**.

This IMP report details the existing hydraulic and electrical services infrastructure available to service the proposed Cranbrook School Senior School Redevelopment. This report also includes details consultation with existing utilities and service providers.

7.1.5. Local Community

7.1.5.1. School Community

As outlined in the Consultation Outcomes Report at **Appendix DD**, On 12 October 2017, Cranbrook School staff and students' parents were formally advised of the project. Staff were advised via email and parents were advised via e-newsletter. The e-newsletter was sent to 2,387 recipients. It detailed the project, offered a one-on-one briefing with the headmaster and advised parents of how to find out more – including attending a community information and feedback session.

7.1.5.2. Special Interest Groups

A meeting was held between representatives of the School and the *Scots Concerned Residents Group* (SCRG) on 11 September 2017. The key concern for the SCRG was identified as being parking and traffic. By the meeting's conclusion the SCRG were satisfied that this issue was being appropriately managed. A full summary of the meeting is included in the Consultation Outcomes Report at **Appendix DD**.

7.1.5.3. Affected Landowners

On 12 October 2017, Cranbrook School Headmaster sent a letter to all immediate senior school campus neighbours advising them of the proposal. The letter:

- Included a description of the proposal;
- Provided detail of efforts made in design to minimise impact on neighbours;
- Outlined the application process;
- Provided a website and email address for further information; and
- Advised there would be further community information sessions.

A copy of the letter is included in the Consultation Outcomes Report at **Appendix DD**.

7.1.5.4. General Community

On 15 November 2017, a quarter-page advertisement appeared in the news section of the Wentworth Courier newspaper advising the community of the project, detailing what it included, inviting the community to two community information and feedback sessions and providing a website address for further information about the project.

On 15 November 2017, an A5 notification identical to the above newspaper advertisement was distributed to 1,000 addresses surrounding the Cranbrook School campus. Distribution boundaries were:

- East: Beresford Road.
- South: Beresford Crescent, Cranbrook Road, Ginnahgulla Road, Preston Ave and William Street.
- West: Pearce Street and Castra Place.
- North: Sydney Harbour.

Project information has been provided on the Cranbrook School website, with the Wentworth Courier advertisement, community letterbox notification, social media, neighbour letter and e-newsletter to students' parents referring readers to this website.

7.1.5.5. Community Information Sessions

Two open community information and feedback sessions were held to provide further information about the project to interested community members. Sessions were held on

- Saturday 25 November 2017 from 11am to 12.30pm.
- Tuesday 28 November 2017 from 6pm to 7.30pm.

Both sessions were held in an informal 'drop-in' style within the school grounds.

A total of six community members attended these two sessions.

7.1.5.6. Main Issues Raised

The main issues raised by the local community are listed below and are thoroughly addressed in this EIS and accompanying consultant reports.

- Traffic and parking, including management and operation of the drop-off/pick-up facility.
- Importance of the School's heritage character.
- General amenity of neighbouring properties.

8. SECTION 4.15 ASSESSMENT SUMMARY

The proposed development has been assessed in accordance with the matters of consideration listed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* as outlined below:

Table 8 – Section 4.15 Assessment

Consideration	Comment
Environmental Planning Instrument	State and Local Environmental Planning Instruments have been assessed in **Section 4**.
Draft Environmental Planning Instruments	None relevant to this proposal.
Development Control Plans	The proposed development has been assessed against the Woollahra Development Control Plan 2015 in **Section 5.13**. Although we note the provision of Clause 11 of the SEPP (State and Regional Development) 2011 which excludes the application of DCPs to SSD.
Any Matters Prescribed by the Regulations	This EIS has been prepared in accordance with Sections 6 and 7, Part 3 in Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.
Likely Impacts of the Development	An impact and risk assessment has been provided in **Section 8** of this report. Mitigation measures to the risks and impacts identified within **Section 8** and the relevant Appendices are contained at the end of this Report.
Suitability of the Site	The site is entirely suitable for the development of the proposal as it continues the use of the Cranbrook School as an educational establishment as identified within Schedule 1 of the SRD SEPP.
Any Submission made in accordance with this Act or the Regulations	Submissions will be considered following exhibition of the application.
The Public Interest	The development is compliant with the relevant planning instruments and controls applying to this site. The proposal will not create any adverse significant social, economic or amenity impacts which cannot be mitigated via the proposed mitigation measures in this application. This project represents a significant opportunity to improve the educational facilities of the Cranbrook School.

9. MITIGATION MEASURES AND ENVIRONMENTAL RISK ASSESSMENT

The SEARs require an environmental risk analysis to identify potential environmental impacts associated with the proposal.

This analysis comprises a qualitative assessment consistent with AS/NZS ISO 31000:2009 *Risk Management–Principles and Guidelines* (Standards Australia 2009). The level of risk was assessed by considering the potential impacts of the proposed development prior to application of any mitigation or management measures.

Risk comprises the likelihood of an event occurring and the consequences of that event. For the proposal, the following descriptors were adopted for 'likelihood' and 'consequence'.

Table 9 – Risk Descriptors

LIKELIHOOD		**CONSEQUENCE**	
A	Almost certain	1	Widespread and/or irreversible impact
B	Likely	2	Extensive but reversible (within 2 years) impact or irreversible local impact
C	Possible	3	Local, acceptable or reversible impact
D	Unlikely	4	Local, reversible, short term (<3 months) impact
E	Rare	5	Local, reversible, short term (<1 month) impact

The risk levels for likely and potential impacts were derived using the following risk matrix.

Table 10 – Risk Matrix

		LIKELIHOOD				
		A	B	C	D	E
CONSEQUENCE	1	High	High	Medium	Low	Very Low
	2	High	High	Medium	Low	Very Low
	3	Medium	Medium	Medium	Low	Very Low
	4	Low	Low	Low	Low	Very Low
	5	Very Low	Very Low	Very Low	Very Low	Very Low

The results of the environmental risk assessment for the proposed development are presented in **Table 10** and are based upon the range of technical and specialist consultant reports appended to this EIS.

The table has directly related mitigation measures responding to each impact (satisfying the SEAR for a consolidated summary of all proposed mitigation measures) also based upon the range of technical and specialist consultant reports appended to this EIS.

It is considered that with the mitigation measures required the impacts resulting from the proposal will be acceptable.

Table 11 – Risk Assessment and Mitigation Measures

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Visual Impact	Impact on key views of the site from key public places	C	3	Medium	Buildings designed to sit low in the topography and into the hillside slope. Provision of landscape screening as per Landscape Drawings at **Appendix E**.
	Impact on key views from nearby residential receivers	B	3	Medium	Buildings designed to sit low in the topography and into the hillside slope. Building to be constructed in non-visually dominant colours to minimise perceived bulk, as per Architectural Drawings at **Appendix C**.
Traffic and Parking	Impacts on road network from construction phase	A	3	Medium	Implement Concept Construction Traffic Management Plan Construction as per **Appendix M**. Implement Preliminary Construction Management Plan, as per **Appendix BB**.
	Impact on key intersections as a result of operational traffic generation on the site.	A	1	High	Modelled intersections will continue to operate satisfactory. The proposed development is consistent with the intended uses for the site.
	Reduced demand for on street car parking spaces.	A	2	High	No mitigation is required as this is a positive impact.
	Operation of access and egress points to the site.	A	4	Low	Alterations to on street parking provisions to allow for restricted parking around site egress points to ensure sufficient line of sight and turning movements as recommended in the Traffic and Parking Assessment at **Appendix L**.
	Construction vehicles, plant and equipment on public roads (arriving / leaving the site)	A	3	Medium	Traffic controllers to manage construction vehicle movements to/from the site as required. Safe public access routes to be pre-agreed and maintained. Allocation of works zones in Rose Bay Avenue during demolition of the War Memorial Hall and Mansfield Buildings.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					Provision of site plan and access diagrams to delivery drivers before reaching site, in order to minimise time on the road or in wayfinding when at site. Delineation of three 'passing bays' along Rose Bay Avenue to facilitate traffic movement along this carriageway during construction. Installation of a pedestrian diversion from the eastern to western side of Rose Bay Avenue (between Rose Bay Avenue Gates and New South Head Road) during construction works to improve pedestrian safety during this phase. Provision of staff parking spaces on the western side of Hordern Oval to mitigate against the 29 lost from on-site provision when replaced with drop-off/pick-up, and spaces lost along Rose Bay Avenue during construction works. Encourage construction staff to use of public transport or car-pooling to access the site. Discourage transport by private vehicle. Provide information of public transport schedules and routes. Management of truck access to/egress from the site at each Site Gate via a traffic controller.
Pedestrian Safety	Reduction of pedestrian safety along Rose Bay Avenue footpath during construction.	B	3	Medium	Given the construction activity in this area, it is proposed to close the footway along the site frontage from the Rose Bay Avenue Gate to the intersection of Rose Bay Avenue and New South Head Road. Pedestrians will be diverted along the eastern footway on Rose Bay Avenue during construction work times.
Noise and Vibration	Impact from construction noise and vibration	B	3	Medium	Adopt a Construction Noise Management Plan addressing the requirements contained in the Acoustic Report prepared by Acoustic Logic at **Appendix V**. Restrict construction activities to only during designated times. Implement Preliminary Construction Management Plan, as per **Appendix BB**.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					Construction equipment may be fitted with noise mitigation equipment wherever possible or reasonable. Noisy work will be identified and communicated to relevant stakeholders and neighbours, giving them sufficient notice. Opportunity for noisy works to be limited to approved windows of time if agreed between all parties. Noisy equipment to be located further away from residential neighbours wherever possible.
	Vibration during excavation, piling and structural works	C	3	Medium	Use bored piles rather than driven piles. Applicable works will be identified and communicated to relevant stakeholders and neighbours giving them sufficient notice. Vibration monitors may be provided in close proximity to heritage buildings as an early warning alarm during adjacent piling & structural works.
	Increase in mechanical plant noise levels at sensitive receivers	C	3	Medium	Acoustic treatment of new mechanical plant shall be undertaken control noise emissions at or below the intrusiveness criteria Background + 5dB(A) Leq(15minutes) of Day – 49, Evening – 44 and Night – 39 as set out in section 6.3.1 (Table 9) of the NIA. Plant can be satisfactorily attenuate to levels complying with these noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar. Acoustic rectification treatment shall be designed for existing plant if an acoustic review determines this necessary.
	Increase in operational noise levels at sensitive receivers	D	3	Low	Daytime Use (Standard School Hours) – Minimum 6mm thick glazing with full perimeter acoustic seals (rubber bulb seals) are recommended to all glazed elements to the façades of the building. The glazed assembly (glass and frame) must achieve an STC of at least 29.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					Afterhours Use – Indoor Areas to be used for Functions/Events. Outdoor areas of the proposed development should not include amplified music or speech after 8pm. Management to ensure patrons leaving development after function/event, do so in a prompt and orderly manner.
	Regular School activities impacted by construction noise	A	3	Medium	Implement Preliminary Construction Management Plan, as per **Appendix BB**.
Heritage	Impacts to heritage items during demolition and development	D	2	Low	It is recommended that a Photographic Archival Recording (PAR) is undertaken where works are proposed, prior to any works being undertaken at the site. An assessment and inventory of all items of moveable heritage located in or connected with the War Memorial Hal, these elements should be incorporated in the New Centenary Building development. An Interpretation Plan should be developed to convey the development and significance of the site to students and visitors to the site. During the excavation process, should any object with archaeological potential be uncovered, all work is to cease and a suitably qualified archaeologist engaged. A suitably qualified heritage architect/consultant should be engaged to oversee all works to buildings of identified high significance, including the Perkins Building. A suitable protection methodology prior to works commencing on site to protect the significant Kauri Pine and rock face located in Camelia Court.
	Discovery of items of archaeological significance during construction	D	5	Very Low	During the excavation process, should any object with archaeological potential be uncovered, all work is to cease and a suitably qualified archaeologist engaged.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
	Disturbance of previously unidentified items of aboriginal heritage	D	2	Low	Implement an 'unexpected finds protocol' to ensure that if, during excavation, any items of potential archaeological significance are uncovered they are identified, managed, protected and preserved.
Sediment, Erosion and Dust Controls	Risk for generation and off-site transmission dust and fine particles	B	3	Medium	Appropriate hoardings to be provided around the site. Ensure construction vehicles have been appropriately cleaned before exiting the site. Ensure sufficient wetting-down is completed during demolition and excavation activities. Ensure stockpiles are sufficiently protected.
	Sediment run-off entering the storm water system or surrounding streets	C	2	Medium	Follow prescribed sedimentation and erosion control measures as provided by the Civil Engineer. Conduct regular visual inspections of silt socks and all other sedimentation controls to ensure integrity of the systems is maintained at all times. Provide dedicated wash-out facilities for use by relevant Subcontractors.
Construction Waste Management	Disposal of waste generated during demolition and construction	C	2	Medium	A comprehensive survey of the existing site shall be conducted to identify existing materials for reuse or recycling. Salvageable materials include sandstone, bricks, timber, and similar materials suitable for re-use. Excavated materials shall be reused on the site wherever possible. Any surplus materials needing to be exported from the site will be sorted into separate classifications i.e. soil, rock, concrete, steel, aluminium, timber, etc. and exported to facilities which are appropriately licenced to accept them. Prior to commencement of demolition and excavation works, a hazardous material and contaminated ground survey will be undertaken. Any hazardous materials identified will be disposed of in accordance with statutory and EPA requirements.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					A project specific Waste Management Plan (WMP) will be developed and implemented by Buildcorp to manage all waste streams expected to be generated from the site.
Spoil Disposal	Dumping of excavated spoil and potential contamination	C	2	Medium	Validation of waste classification will be required before spoil material is removed from the site. All spoil must be transported to a site that is licenced to receive that category of spoil/waste as appropriate.
Hazardous materials	Hazardous materials being encountered during demolition, excavation or construction phases	D	5	Very Low	Hazardous materials survey conducted prior to works commencing on site. Appropriately licenced contractors engaged to remove any hazardous materials found. Appropriate signage and exclusion zones maintained during applicable works.
Trees	Damage to trees identified as being retained	C	2	Medium	Adherence to all mitigation measures identified in Arboricultural Impact Assessment, including: • Appointment of Site Arborist: A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of tree protection zones, fencing and signage. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture. • Inspection Points: Give 5 working days notice to allow inspections to be undertaken at the following stages: – Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage by the Site Arborist; – Any modification of the Tree Protection Zone by the Site Arborist;

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					– Works within the Tree Protection Zone by the Site Arborist; and – Completion of Construction Works by the Site Arborist and Site Supervisor. • Education: Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking. • Tree Protection Zones: Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones. • Tree Protection Fencing: Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The trees woody roots shall not be damaged during the installation of this Tree Protection Fencing. This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process. • Signage: Tree Protection Signage shall be attached to the TPZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at least 600 x 500mm. • Mulching: The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					works on site. The Site Arborist shall inspect and approve the TPZ including mulching, signage, Tree Protection Fencing, Silt fencing and Signage prior to the commencement of works on site. • Site Management: Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height. • Works within the TPZ: The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken. • Completion of Works within specified TPZ: Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstallation of fencing the TPZ shall be modified by the Site Arborist.
Security	Increased access points for unauthorised access to the site.	A	3	Medium	The school is an island site and generally the boundary is protected by fencing and surveillance at entry and exit points. The main access point to the school will remain as the gates on 5 Victoria Road and have CCTV camera for surveillance and gates to control access to the site so that unauthorised people are excluded from this entry. The School's Operational Management Plan will ensure ongoing site security (**Appendix J**).
	Unauthorised entry to the construction site (public, students, etc.)	D	1	Low	Appropriate hoardings will be provided which separate all construction activities from the public and/or the School. Provide project updates and tours for the staff & students of Cranbrook in order to minimise curiosity.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					Erect site signage clearly delineating entrance points to construction zone and limited access to authorised personnel only.
Biodiversity	Adverse ecological impacts as a result of the development	D	2	Low	Replacement landscaping should keep in context with the existing character of the property. Construction sediment and erosion control measures are to be installed and maintained in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) to minimise impact of possible construction sedimentation to local drainage and Sydney Harbour. Control and eradication of noxious and other invasive ecological weeds should be undertaken to prevent further invasion by these species. Invasive ecological weed species such as Camphor Laurel, Common Olive, Chilean Cestrum, Small-leaved Privet, Mickey Mouse Plant, Senna, Asparagus Fern, Fish-bone Fern, and Madiera Vine were observed within the subject site. A weed control plan be produced and enacted by the groundskeepers to control or eradicate noxious and environmental weeds as listed in Item 3 which are required to be controlled in accordance with the *NSW Biosecurity Act* (2015). As field activities may be ongoing until approximately 8pm, lighting on the field is required. Lighting should be turned off at other times to limit disturbances to on-site boarders, neighbours and fauna that may utilise the existing vegetation. Two (2) nest boxes currently located within the new building footprint are to be moved to nearby retained trees, or new nest boxes installed as replacements nearby.
Wind impacts	Some of the seating areas would experience elevated wind speeds for	B	5	Very Low	It is recommended that vertical screens are placed perpendicular to the balustrade on levels 3 to reduce the air flow running parallel to the balustrade under northeast or west winds.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
	extended periods under west and north-east winds.				It is recommended that the internal flow paths be controlled through building management by closing the south doors of the informal learning/house area and the east doors of the war memorial chapel when high wind speeds are predicted. It is recommended that a draft assessment be conducted on the natural ventilation flow path to ensure air speeds are acceptable. Should the wind speeds in the outdoor areas require quantification, computation fluid dynamics can be used determine the percentage of time this area is not suitable for sitting.
Social Impacts	Site personnel behaviour both inside and external of the site (eg language, rubbish left on streets, interaction with neighbours)	B	5	Very Low	Site inductions will include site requirements. That is no inappropriate language, no throwing rubbish on streets, parking of vehicles legally and wearing appropriate clothing etc. Weekly tool box talks will reinforce requirements. Regular check of surrounding streets.

10. EVALUATION AND CONCLUSION

This EIS has been prepared by Urbis Pty Ltd on behalf of Cranbrook School in support of SSD Application (SSD 17_8812) for the development of the 'Hordern Precinct Project' at 5 Victoria Road, Bellevue Hill. For all of the reasons outlined in this EIS, the site is suitable for the proposed development:

- The land is zoned 'SP2 – Infrastructure: Educational Establishment' under the WLEP. The proposed development is permissible with consent and consistent with the land use objectives of SP2 zoning;
- The proposal is consistent with the objectives of all relevant planning controls and achieves a high level of planning policy compliance and design excellence;
- There are no significant environmental constraints limiting development; and
- Traffic can be managed and the proposal is not expected to exacerbate the existing traffic flow conditions.

The proposal is in the public interest for the following reasons:

- The proposal has been prepared having regard to Council's planning policies and generally complies with the aims and objectives of the controls for the site;
- Subject to the various mitigation measures recommended by the specialist consultants, the proposal does not have any unreasonable impacts on adjoining properties or the public domain in terms of traffic, social and environmental impacts;
- The site is well serviced by public transport and various walking and cycling routes. Further, the proposal encourages the use of non-private vehicle travel to access the site;
- The proposal will result in the development of a high-quality educational environment for staff and students that:
  - Enables delivery of an excellent academic programme;
  - Supports a fulfilling and diverse extra-curricular experience;
  - Provides an inclusive, supportive and secure pastoral environment for both primary and secondary school students; and
  - Provides efficient and environmentally sustainable facilities.
- The proposal has been designed to make a positive contribution to the overall built form of the site, having regard to topography and the heritage significance. The proposed built forms are sympathetic to the character of the surrounding neighbourhood and respect visual privacy of and significant views from neighbouring residential dwellings; and
- The proposal will contribute positively to energy efficiency and environmental sustainability. The design has incorporated many ESD features to reduce energy consumption during the life of the proposed development.

Given the site is suitable for the development and the proposal is in the public interest, this application should be approved.

- The proposal satisfies the applicable local and state planning policies;
- The proposal is highly suitable for the site;
- The proposal is in the public's best interest; and
- The proposal appropriately satisfies each item within the SEARs.

Considering the above and the content contained in this EIS, it is recommended that the Department approve this SSD Application, subject to appropriate conditions.

11. LIST OF APPENDICES

Appendix A Secretary's Environmental Assessment Requirements (SEARs)
Appendix B Quantity Surveyors Cost Assessment
Appendix C Architectural Drawings
Appendix D Urban Design Report
Appendix E Landscape Architecture
Appendix F Planning Compliance Assessment – Woollahra Development Control Plan 2015
Appendix G Planning Compliance Assessment – SEPP 64 Compliance Assessment
Appendix H Heritage Impact Statement
Appendix I Heritage Demolition Report
Appendix J Operational Plan of Management
Appendix K Visual Impact Assessment
Appendix L Operational Traffic and Parking Assessment
Appendix M Concept Construction Traffic Management Plan
Appendix N Arboricultural Impact Statement
Appendix O Ecologically Sustainable Development Report
Appendix P Biodiversity Assessment Report
Appendix Q Desktop Wind Assessment
Appendix R Acid Sulphate Soils Report
Appendix S Phase 1 Preliminary Site Investigation
Appendix T In-Situ Waste Classification Assessment
Appendix U Hazardous Materials Survey and Management Plan
Appendix V Noise Impact Assessment
Appendix W Stormwater Management and Civil Design Report
Appendix X Stormwater Management and Civil Design Package
Appendix Y Infrastructure Management Plan
Appendix Z Geotechnical Report
Appendix AA Operational Waste Management Plan
Appendix BB Preliminary Construction Management Plan
Appendix CC Structural Engineering
Appendix DD Consultation
Appendix EE NSW Government Architect Advice
Appendix FF Accessibility
Appendix GG BCA Report

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

APPENDIX B QUANTITY SURVEYORS COST ASSESSMENT

APPENDIX C ARCHITECTURAL DRAWINGS

APPENDIX D URBAN DESIGN REPORT

APPENDIX E LANDSCAPE ARCHITECTURE

APPENDIX F PLANNING COMPLIANCE ASSESSMENT – WOOLLAHRA DEVELOPMENT CONTROL PLAN 2015

APPENDIX G PLANNING COMPLIANCE ASSESSMENT – SEPP 64 COMPLIANCE ASSESSMENT

APPENDIX H HERITAGE IMPACT STATEMENT

APPENDIX I HERITAGE DEMOLITION REPORT

APPENDIX J OPERATIONAL PLAN OF MANAGEMENT

APPENDIX K VISUAL IMPACT ASSESSMENT

APPENDIX L OPERATIONAL TRAFFIC AND PARKING ASSESSMENT

APPENDIX M CONCEPT CONSTRUCTION TRAFFIC MANAGEMENT PLAN

APPENDIX N ARBORICULTURAL IMPACT STATEMENT

APPENDIX O ECOLOGICALLY SUSTAINABLE DEVELOPMENT REPORT

APPENDIX P BIODIVERSITY ASSESSMENT REPORT

APPENDIX Q DESKTOP WIND ASSESSMENT

APPENDIX R ACID SULPHATE SOILS REPORT

APPENDIX S PHASE 1 PRELIMINARY SITE INVESTIGATION

APPENDIX T IN-SITU WASTE CLASSIFICATION ASSESSMENT

APPENDIX U HAZARDOUS MATERIALS SURVEY AND MANAGEMENT PLAN

APPENDIX V NOISE IMPACT ASSESSMENT

APPENDIX W STORMWATER MANAGEMENT AND CIVIL DESIGN REPORT

APPENDIX X STORMWATER MANAGEMENT AND CIVIL DESIGN PACKAGE

APPENDIX Y INFRASTRUCTURE MANAGEMENT PLAN

APPENDIX Z GEOTECHNICAL REPORT

APPENDIX AA OPERATIONAL WASTE MANAGEMENT PLAN

APPENDIX BB PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

APPENDIX CC STRUCTURAL ENGINEERING

APPENDIX DD CONSULTATION

APPENDIX EE NSW GOVERNMENT ARCHITECT ADVICE

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APPENDIX FF ACCESSIBILITY

APPENDIX GG BCA REPORT

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