Environmental Impact Statement

State Significant Development (SSD 9483)
Upgrades to Chatswood Public School and Chatswood High School
5 & 24 Centennial Avenue, Chatswood

PLANNING. URBAN DESIGN.
RETAIL AND ECONOMIC. HERITAGE

Printed: 23 March 2020
File Name: 20618A Chatswood PS & HS/Reports/20618A.EIS.docx
Project Manager: Stephen Earp
Project Number: 20618A
Client: School Infrastructure NSW

Document Control

Version	Prepared By	Reviewed By	Issued To	Date
Draft	P. Smith	S. Earp	SINSW + Johnstaff	20 February 2020
Draft	P. Smith	S. Earp	SINSW + Johnstaff	25 February 2020
Draft	P. Smith	S. Earp	SINSW + Johnstaff	4 March 2020
Final Draft	P. Smith	S. Earp	DPIE	16 March 2020
Final	P. Smith	S. Earp	DPIE	23 March 2020

11 Dartford Road, Thornleigh NSW 2120
207/506 Miller Street, Cammeray NSW 2062

PO Box 230
Pennant Hills NSW 1715

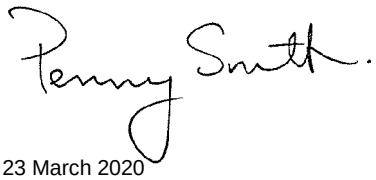
t: 02 9980 6933
e: dfp@dfpplanning.com.au

DFP Planning Pty Limited
ACN 002 263 998

www.dfpplanning.com.au

DECLARATION

ENVIRONMENTAL IMPACT STATEMENT

Applicant Name:	New South Wales Department of Education
Applicant Address:	Level 4, 35 Bridge Street, Sydney NSW 2000
Land to be developed:	5 Centennial Avenue, Chatswood (Lot 1 DP812207 & Lot C DP346499) and 24 Centennial Avenue, Chatswood (Lot 1, DP 725204; Lots 16-20 Section 8 DP 2273; Lots 18-21 Section 7 DP 2273 and Lots 20-23 Section 6 DP 2273)
SSD Application Number:	SSD 18_9483
Proposed development:	Upgrade of Chatswood Public School (5 Centennial Avenue) and Chatswood High School (24 Centennial Avenue) to deliver: • More than 150 new and refurbished innovative learning and teaching spaces; • Increased quality active play space; • Specialist teaching facilities such as science, art and music rooms; • Dedicated performing arts spaces; • New sports facilities and recreational areas; and • New libraries and administration facilities.
ENVIRONMENTAL IMPACT STATEMENT	This report is an Environmental Impact Statement which addresses all relevant matters required by Section 4.12(8) (formerly s.78A) of the *Environmental Planning and Assessment Act 1979* and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.
DECLARATION	The undersigned certify that we have prepared the contents of this Environmental Impact Statement and to the best of our knowledge it: • addresses all relevant matters listed under Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*; • contains all available information that is relevant to the environmental assessment of the development to which the EIS relates; and • is not, by its presentation or omission of information, false nor misleading.
PREPARED BY **Name:** **Qualifications:** **Address:** **Signature:** **Date:**	 Penelope Smith B. Urban & Regional Planning (Hons) PIA (Assoc) 11 Dartford Road, Thornleigh NSW 2120  23 March 2020
Name: **Qualifications:** **Address:** **Signature:** **Date:**	Stephen Earp B. Planning (Hons) RPIA 11 Dartford Road, Thornleigh NSW 2120  23 March 2020

11 Dartford Road
Thornleigh NSW 2120

PO Box 230
Pennant Hills NSW 1715

t: 02 9980 6933
f: 02 9980 6217

e: dfp@dfpplanning.com.au

DFP Planning Pty Limited
ACN 002 263 998

www.dfpplanning.com.au

Contents

Contents

Contents

Tables

Contents

Figures

Contents

Contents

Appendices

Contents

Abbreviations

AADT	annual average daily vehicle trips
AECG	Aboriginal Education Consultative Group
AEP	Annual Exceedance Probability
AS	Australian Standard
ASS	acid sulfate soils
BCA	Building Code of Australia
BC Act	*Biodiversity Conservation Act 2017*
CIV	capital investment value
CMP	construction management plan
COLA	covered outdoor learning area
Council	Willoughby City Council
CPTED	crime prevention through environmental design
DA	development application
DCP	development control plan
DDA	*Disability Discrimination Act 1992* (Cth)
DFP	DFP Planning Pty Limited
DoT	NSW Department of Transport
DP	Deposited Plan
DPIE	NSW Department of Planning, Industry and Environment
EEC	endangered ecological community
EFSG	Educational Facilities Standards and Guidelines
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPA	NSW Environmental Protection Authority
EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPI	environmental planning instrument
ESCP	erosion and sedimentation control plan
ESD	ecologically sustainable development
FTE	full time equivalent
GANSW	Government Architect NSW
GFA	gross floor area
IEC	Intensive English College
LALC	Local Aboriginal Land Council
LEP	local environmental plan
LGA	local government area
OSD	on site detention
PRG	project reference group
RAP	remediation action plan
RL	reduced level
RMS	NSW Roads and Maritime Services
SDRP	State Design Review Panel
SEPP	State Environmental Planning Policy
SEARs	Secretary's Environmental Assessment Requirements
SINSW	School Infrastructure NSW
SRD SEPP	*State Environmental Planning Policy (State and Regional Development) 2011*
SSD	State Significant Development
TfNSW	Transport for NSW
VENM	Virgin Excavated Natural Material
WSUD	water sensitive urban design

Executive Summary

The NSW Department of Education proposes upgrades to Chatswood Public School and Chatswood High School to increase the capacity of both schools and provide new and upgraded facilities. This will involve site preparation work, the relocation of the Chatswood Intensive English Centre, the removal of 62 trees, and construction of six (6) new school buildings to provide a total of 60 permanent learning and teaching spaces at Chatswood Public School and 123 permanent learning and teaching spaces at Chatswood High School, with associated upgrades to core facilities, landscaping and play-spaces.

Across the two schools, the upgrades will support high-quality educational outcomes to meet the needs of students within the local community and deliver innovative learning and teaching spaces as follows:

- More than 150 new and refurbished permanent innovative learning and teaching spaces which facilitate the removal of 53 demountable classrooms;
- Increased quality active play space;
- Specialist teaching facilities;
- Dedicated performing arts spaces;
- New sports facilities and recreational areas; and
- New libraries and administration facilities.

As the works have a capital investment value exceeding $20 million, the project is deemed to be State Significant Development under *State Environmental Planning Policy (State and Regional Development) 2011*. The proposed works will generate up to 266 new construction jobs and up to 20 new full time equivalent operational jobs.

Chatswood Public School is located at 5 Centennial Avenue and Chatswood High School is located at 24 Centennial Avenue, within the Local Government Area of Willoughby. Chatswood Public School is listed as a heritage item of local significance under Willoughby Local Environmental Plan 2012 and Building A and Building B are identified as heritage items on the Department of Education's Section 170 Heritage Register under the Heritage Act 1977.

The Public School is zoned R2 Low Density Residential, and the High School is zoned part SP2 Special Uses – Educational Establishment and part E2 Environmental Conservation under Willoughby Local Environmental Plan 2012. Development for the purpose of an educational establishment is permissible with consent in both the R2 and SP2 zones, where works are proposed.

The Department of Education has consulted with the local community, Willoughby Council and State government agencies throughout the design of the development. Feedback provided through this time has been incorporated and addressed in final design and supporting documentation.

Environmental impacts associated with the proposed development have been the subject of detailed assessment, including impacts associated with built form, heritage, biodiversity and traffic/parking. The assessment finds that while the proposal will generate impacts, these impacts can generally be mitigated such that their outcomes are acceptable.

The proposed works have been assessed on balance as providing significant public benefit to the immediate local and surrounding district through the provision of increased enrolment capacities for both the primary and secondary aged students within new educational facilities.

This Environmental Impact Statement report has been prepared under Part 4 of the *Environmental Planning and Assessment Act 1979,* in accordance with the Secretary's Environmental Assessment Requirements for SSD 9483 issued by the Department of Planning, Industry and Environment, and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*. The works proposed under this DA will be subject to the recommendations of specialist reports so as to ensure appropriate outcomes are achieved.

The proposed works have been designed to, and will be carried out in, the interests of the public. The works will meet the project objectives to provide additional capacity at both schools within high-quality, future-focussed learning and teaching facilities.

Executive Summary

Accordingly, it is requested that the Minister for Planning and Public Spaces grant approval to the proposed State Significant Development application as set out in this report.

1 Introduction

1.1 Overview

1.1.1 Purpose of Report

DFP Planning Pty Ltd (DFP) has been commissioned on by School Infrastructure NSW (SINSW) on behalf of the Department of Education (DOE) to prepare an Environmental Impact Statement (EIS) to accompany a development application (DA) to the NSW Department of Planning, Industry and Environment (DPIE) for proposed upgrades to Chatswood Public School and Chatswood High School.

The proposed development is for an educational establishment with a capital investment value (CIV) of more than $20 million and accordingly, is deemed to be State Significant Development (SSD) pursuant to Clause 15(2) of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (the SRD SEPP).

On 6 August 2018, the Secretary of the DPIE issued Secretary's Environmental Assessment Requirements (SEARs) (**Appendix 1**) for SSD Application No. 9483.

This report has been prepared in accordance with the SEARs, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation) to enable assessment and determination of the proposal.

1.1.2 Project Objectives and Summary

The upgrades to Chatswood Public School and Chatswood High School involve the construction of new school facilities, site service upgrades and the relocation of the Chatswood Intensive English Centre (IEC) from the current location on the Chatswood High School site.

With a growing reputation for educational excellence, including opportunity classes at the Public School and a selective stream at the High School, both schools have seen significant enrolment growth exceeding predicted current and future capacity, with resulting pressure on available space and facilities at each school.

The proposed works will support high-quality educational outcomes to meet the needs of students within the local community and deliver innovative learning spaces. The works will generate significant benefits for both school communities, including new and refurbished learning and teaching spaces and specialist teaching facilities, improvements in the quality of active play space as well as new sports facilities and recreation areas, and new library, performing arts and administration facilities. The upgrades proposed at each school are detailed below:

- Upgrades to Chatswood Public School, including the provision of:
    - 53 x homebases (comprising 25 existing, 28 new spaces);
    - Four (4) x special program classrooms (music, language etc);
    - Three (3) x special support unit classrooms;
    - Increased quality play spaces;
    - Retention of heritage buildings A and B;
    - New hall;
    - New car parking facilities and
    - Associated site works and landscaping.
- Upgrades to Chatswood High School, including the provision of:
    - 123 Classrooms (comprising 21 existing and 102 new spaces)
    - New administration and staff facilities;

1 Introduction

- New hall; and
- Associated site works and landscaping.

1.2 Site History

Chatswood Public School and Chatswood High School are located in Chatswood in the Sydney Metropolitan Area of NSW. Chatswood Public School was established in 1883 and Chatswood High School was established in 1959.

Table 1 describes the historical development of both sites.

Table 1	Chronological History of the Site
Year	**Building Expansion Works**
Chatswood Public School (Pacific Highway site)	
1895	First building on Chatswood Public School site
1896	Chatswood Public School is officially opened at Pacific Highway site
1896	Teacher's residence built
1898	Single storey extension along the Pacific Highway is made to the original building
1899	Infants department is added
1902-03	A two-storey wing is added to the north of the existing building
1908	Two more classrooms and cooking room added to the Centennial Avenue side of the site
1912	Playground is extended into three terraced areas – "The Lowers"
1915	A second storey is added to the original building along the Pacific Highway side featuring two steeple-like towers at end
1927-29	A two-storey, 10 room building constructed for the infant classes on the western side of the site (**Figure 1**)
1958	Widening of Pacific Highway meant school lost its front garden
1974	Building C (the Cottage) and its grounds were purchased
1990	Main building was sympathetically restored
Chatswood High School (Centennial Avenue site)	
1954	The land at 24 Centennial Avenue is taken over by the Department of Education
1956	Chiselhurst House is demolished
1959	Chatswood High School is opened
1968	Construction of school hall
1970s	Demountable buildings are used as facilities for the school's Intensive English Centre
2007	Two-storey specialised TAS block is completed
2009	Refurbishment of the canteen, library and science areas

Figure 1 illustrates the main school building as it was in 1930, as shown in the Heritage Impact Statement (**Appendix 19**). The second storey extension was added to the original building in 1915, creating one large two storey building. **Figure 2** and **Figure 3** illustrate the main frontages of each school site as they appear today.

1 Introduction

Figure 1 Main School Building of Chatswood Public School in 1930

Figure 2 Chatswood Public School (Building A) from Pacific Highway

Figure 3 Chatswood High School (Building J) from Centennial Avenue

1 Introduction

1.3 Site Context

1.3.1 Location

The Chatswood Public School and Chatswood High School sites are located at 5 and 24 Centennial Avenue, Chatswood respectively (see **Figure 4**).

Chatswood Public School (Highway Site) is located on the northern side of Centennial Avenue (no. 5) and has primary frontage to Pacific Highway and Centennial Avenue, and secondary frontages to Jenkins Street and James Street.

Chatswood High School (Centennial Avenue site) is located on the southern side of Centennial Avenue (no. 24) and has a primary frontage to Centennial Avenue, with secondary frontage to Eddy Avenue, DeVilliers Avenue, Oliver Road and Freeman Road.

Figure 4 Site Location

1.3.2 Site Description

Chatswood Public School comprises three (3) lots and Chatswood High School comprises fourteen (14) allotments as described in **Table 2** (see survey at **Appendix 5**).

Table 2 Site Description

Street Address	Lot / DP	Area (ha)
Chatswood Public School 5 Centennial Avenue, Chatswood	Lot 1, DP 812207	1.97ha
	Lot 2, DP 812207	
	Lot C, DP 346499	
Chatswood High School 24 Centennial Avenue, Chatswood	Lot 1, DP 725204	5.97ha
	Lots 20-23, Section 6, DP 2273	
	Lots 18-21, Section 7, DP2273	
	Lots 16-20, Section 8, DP 2273	
COMBINED TOTAL		**7.31 hectares**

1 Introduction

Chatswood Public School

The Pacific Highway site has multiple road frontages, including frontage to:

- Pacific Highway (120m);
- Centennial Avenue (168m);
- Jenkins Street (38m); and
- Access from James Street.

Chatswood Public School contains a range of educational and ancillary buildings that have been constructed and expanded at various stages since 1895, including classrooms, administration/staff facilities, amenities, multi-purpose hall and recreation facilities as follows:

- Building A is a two storey Federation Arts and Crafts style building constructed in 1895 that has local heritage significance. The building is brick in construction and runs north-south adjacent to Pacific Highway.
- Building B is a part two-storey, part four-storey brick building that was constructed around 1925-27 that has local heritage significance. The building runs north-south midway down the site towards Jenkins Street. The two-storey portion of the building is opposite Building A at the other end of the playground and the four-storey portion sits down into 'the Lowers'.
- Building D is a two-storey demountable building that runs east-west on the corner of Centennial Avenue and Pacific Highway.
- Building H is a single-storey brick building that runs east-west and adjoins the south-western portion of Building A.
- Building I is a two-storey brick building constructed in the Building Education Revolution that runs east west adjacent to Jenkins Street behind Building B.
- Car Parking includes a car parking area for approximately 16 staff vehicles, accessed off Pacific Highway, and a small parking area for two (2) staff vehicles, accessed off Jenkins Street.

There are also a number of demountable classrooms across the site, two (2) covered outdoor learning areas (COLAs) over the main playground space between Building A and Building B, and covered walkways throughout the site (**Figure 5**).

The site sits at the top of steeply sloping terrain and falls from RL106.82 at the Pacific Highway frontage to RL96.52 at the south-western edge of the site at Jenkins Street, representing a fall of 10.3m across the site as identified in the Survey at **Appendix 5**. The natural topography of the land means the site enjoys district views toward the National Park, good solar access and natural ventilation.

The Pacific Highway site contains a variety of mature trees and areas of hard stand playground space. 'The Lowers' contain sports courts and would have required significant cut and fill to create. There are retaining walls around the site to retain level, useable playground space and building platforms.

1 Introduction

Figure 5 Aerial photograph of Chatswood Public School site

Chatswood High School

The Centennial Avenue site has multiple road frontages, including frontage to:

- Centennial Avenue (250m);
- De Villiers Avenue (87m);
- Eddy Road (260m); and
- Access from Oliver Road.

Chatswood High School contains a range of educational, recreation and ancillary buildings that have been constructed at various stages since 1959. Built form includes classrooms, administration/staff facilities, multi-purpose hall, and recreation facilities, as follows:

- Buildings A-E are two and three storey classroom buildings forming part of the original campus layout, with access from a common forecourt assembly area.
- Building F is a part two part three-storey building comprising administration, staff and classroom facilities forming part of the original campus layout.
- Building H is a multi-purpose hall of brick construction with a height equivalent to a two-storey building. Primary entry/exit from building is to the north-west.
- Building I is a single storey classroom building located centrally within the original campus layout, with access from the common forecourt assembly area.
- Building J is a performing arts hall of brick construction with frontage to Centennial Avenue.
- Building K is a two-storey classroom building with stairwell and ramp access to surrounding areas, overlooking the sports fields to the east.
- Building M is a three-storey classroom building situated behind Building F, which is connected to Centennial Avenue via an elevated walkway.
- Building N is a single storey demountable addition to Building J, used as classrooms for music and performing arts.
- Sports Facilities include recently upgraded sports courts, comprising two (2) full sized basketball courts and one (1) half-sized basketball court, and one (1) full sized artificial turf football pitch. These facilities are subject to a joint-use agreement with Willoughby Council.

1 Introduction

- Car Parking includes a main parking area for 102 staff vehicles (92 marked parking bays and 10 informal parking bays) accessed from De Villiers Avenue, and a secondary parking area for 18 staff vehicles, including 2 spaces for drop-off/pick-up servicing the Bush Campus accessed from Oliver Road.
- Intensive English Centre (IEC) Buildings comprise a collection of approximately 14 demountable structures on the western side of Buildings A-D.
- Bush Campus Buildings comprise a collection of approximately 15 demountable structures on the eastern side of the sports field.

The permanent and demountable buildings are supported by a network of covered walkways, COLAs and landscaped areas across all levels of the site. The site has a complex fall of topography, however in general terms the site falls from RL95.72 at the north-eastern corner at Centennial Avenue to approximately RL70.5 at the southern boundary to Eddy Road, representing a fall of 25.22m across the site.

The site is heavily vegetated, with natural topography and remnant vegetation still prevalent across the site. Surveys carried out by Eco Logical Australia (**Appendix 31**) identify the predominant plant community type across the site to be "*Sydney Blue Gum – Blackbutt – Smooth-barked apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion*", which is a threatened ecological community (refer **Section 6.4.2**).

The eastern portion of the site is identified as having minor flooding impacts in the Swaines Creek Flood Study, which was carried out in March 2014 (**Figure 6**). However, the proposed works are not located on the flood affected portion of the site.

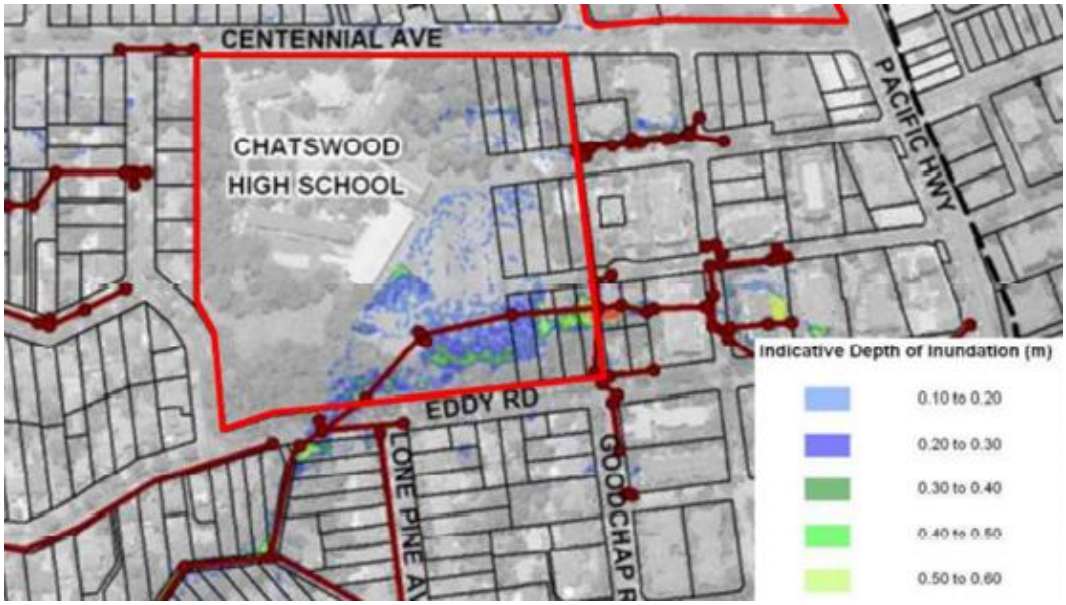


Figure 6 Extract of Swaines Creek Flood Study, March 2014 (Source: Stormwater Management Report by WGE)

Playground space is distributed between active play areas (such as the playing fields and forecourt) and passive play areas amongst the landscaped/bushland areas of the site.

1 Introduction

Figure 7 Aerial photograph of Chatswood High School site

1.3.3 Surrounding Development

The sites are situated on the western side of the Chatswood central business district (CBD), which comprises a major public transport hub within 300 metres of the Pacific Highway site and 500 metres of the Centennial Avenue site (**Figure 8**).

The Pacific Highway site is adjacent to B5 Business Development zones along the western side of Pacific Highway, to the north of the site. To the east is the B3 Commercial Core zone including high density commercial and residential development. The land to the west and north west is zoned R2 Low Density and contains predominately low density residential development. To the south of the Pacific Highway site is R4 High Density Residential zone, which is located to the east of the Centennial Avenue site and contains medium and high density residential development. Building typologies and heights of the surrounding area are shown in **Figure 9**.

The Centennial Avenue site is predominately surrounded by low density residential development to the north, west and south, consisting of buildings generally having a rise of one (1) to two (2) storeys. High density residential development is located to the west with built form ranging from four (4) to eight (8) storeys in height depending on the slope of the land.

There are three (3) heritage listed houses in proximity to the Centennial Avenue site, one immediately to the west of the site (60 Centennial Avenue (Item I167) and two (2) opposite the site to the north (19 Centennial Avenue (Item I66) and 9 Centennial Avenue (Item I245)). All are listed under Willoughby Local Environmental Plan 2012 as "*House (including original interiors)*".

1 Introduction

Figure 8 Surrounding Development

Figure 9 Building Typologies and Heights (Architectus)

Photos of the site and surrounds are provided at **Appendix 6**.

1.3.4 Surrounding Road Network

Roadways adjoining and surrounding the school sites include State and local roads, including:

- **Pacific Highway** – Classified State road under the jurisdiction of Transport for NSW – Roads and Maritime Services (TfNSW RMS) adjoining the eastern side of the Chatswood Public School site. This road serves as a major north-south arterial link in the Sydney basin, providing connectivity between the Warringah Freeway in the south to the M1 Pacific Motorway in the north.

  Pacific Highway has a posted speed limit of 60km/h with 40km/h school zone restrictions during school hours (8am-9:30am and 2:30pm-4pm), and services six (6) lanes of traffic (this is subject to tidal traffic flow arrangements for evening peak periods to provide four (4) lanes northbound and two (2) lanes southbound).

Kerbside parking is not permitted along the road corridor. A pedestrian overpass provides east/west access above the road carriageway, with stairs and motorised escalators (but no lift) (**Figure 10**).

- **Centennial Avenue** – local road under the jurisdiction of Willoughby City Council adjoining the southern side of the Chatswood Public School site and the northern side of Chatswood High School site. The road is a two-way, two-lane carriageway with on-street car parking provided on both sides of the road (**Figure 11**).

  The road has an east-west alignment from its intersection with Pacific Highway in the east to a cul-de-sac in the west. Centennial Avenue comprises raised pedestrian crossings for both the Public School (**Figure 12**) and High School sites (**Figure 13**). The road has a posted speed limit of 50km/h with 40km/h school zone restrictions during school hours.

- **Jenkins Street** – local road adjoining the western side of the Chatswood Public School site. The street is a two-way carriageway with on-street parking and time-limited P5 parking zones on both sides of the street (this serves as a drop off/pick up zone during school hours). The road has a north-south alignment from its intersection with Centennial Avenue in the south, through to Fullers Road in the north. The road has a posted speed limit of 50km/h with 40km/h school zone restrictions during school hours.
- **Oliver Road** – local road adjoining the eastern side of the Chatswood High School site, providing access/egress to a small drop off/pick up and parking area currently servicing the Bush Campus facilities (**Figure 14**). The road is a one-way, one-lane westbound land from its intersection with Pacific Highway in the east through to its intersection with Whitton Road. The carriageway is two-way, two-lane between Whitton Road and the High School site. Unrestricted kerbside parking is generally well occupied by commuter car parking for Chatswood Train Station.
- **Freeman Road** – local road adjoining the eastern side of the Chatswood High School site, ending in a cul-de-sac. There is no vehicular entry from this road onto the High School site. The road provides no kerbside parking restrictions.
- **Eddy Road** – local road adjoining the southern side of the Chatswood High School site. The road is a two-way carriageway with an east-west alignment, with access generally obtained from the Pacific Highway. The only vehicular access from Eddy Road onto the site is for emergency vehicle access only. The road has a posted speed limit of 50km/h with 40km/h school zone restrictions during school hours.
- **De Villiers Avenue** – local road adjoining the western side of the Chatswood High School site. The road is a two-way carriageway that provides north-south access generally between Eddy Road in the south and Centennial Avenue to the north.
- **James Street** – local road adjoining the northern side of the Chatswood Public School site. No vehicular access is achieved to the school site from James Street, only pedestrian access. The street serves only local residents and while being two-way, is essentially a laneway in width and function.

1 Introduction

Figure 10 Pedestrian overpass on Pacific Highway near entry to Chatswood Public School

Figure 11 View of Centennial Avenue from corner of Jenkins Street looking toward Chatswood CBD

1 Introduction

Figure 12 Pedestrian Crossing adjacent to Chatswood Public School on Centennial Avenue

Figure 13 Pedestrian Crossing on Centennial Avenue adjacent to main entry to Chatswood High School

1 Introduction

Figure 14 View of vehicular access gate at end of cul-de-sac on Oliver Road

Vehicular access to the Pacific Highway site is obtained from the Pacific Highway (to the main staff car park) and Jenkins Street (to a secondary staff car park). Vehicular access to the Centennial Avenue site is obtained from De Villiers Avenue (to the main staff car park), Oliver Road (to the secondary car park/drop off area), Centennial Avenue (for service vehicle access) and Eddy Road (for emergency vehicle access).

Pedestrian access is available to both sites from all road frontages, excluding Freeman Road for the Centennial Avenue site.

Both sites are located within a well-established cycling network providing a number of dedicated shared cycling paths and routes in the vicinity of the schools. Signage and pavement markings are provided within the vicinity of the site to indicate dedicated on-road cycle routes, including Eddy Road and De Villiers Avenue/Dardanelles Road.

1.3.5 Surrounding Transport Network

The Chatswood Interchange facilitates a variety of high-frequency public rail and bus transport services, and is located approximately 300m east of the Pacific Highway site and 500m east of the Centennial Avenue site.

Rail Services

The Chatswood Train Station is serviced by frequent train services for the T1 north Shore, Northern and Western Lines, as well as the new Sydney Metro Norwest between Chatswood and Tallawong. At peak hours, T1 trains departing Chatswood for Sydney CBD and the northern and western suburbs arrive at the station approximately every two (2) minutes. Sydney Metro trains arrive every four (4) minutes during peak hours and every 10 minutes outside of peak hours.

In terms of current load conditions, the data available for the Chatswood district indicates that the existing T1 North Shore, Northern and Western Line experiences heavy loadings on approach to Chatswood, with seating capacities reached well before this station particularly in the morning peak. However, the only data available at this time was collected before the Sydney Metro was in operation, and therefore there may be changes to these load conditions.

TTPP observed (**Appendix 21**) that heavy rail use remains generally quite high, however future expansions of the Metro system will continue to alleviate this demand.

Bus Services

The Chatswood Bus Interchange provides connection to a wide range of bus services operation to/from areas of the Sydney CBD, Northern Beaches, North Shore, Willoughby, Parramatta, Macquarie University and Bondi. The main bus stands for these networks are located along Victoria Avenue, Railway Street and Orchard Road within Chatswood.

In terms of current bus occupancy, the data available from 2016/2017 through TfNSW indicates that general bus occupancy is classified as “many seats available”, with the exception of a number of services during the school peak hours which are classified as “few seats available”. It can be concluded that the bus services in the local/surrounding area have available spare capacity.

1.3.6 Design Development

Development of Masterplan

The upgrades to Chatswood Public School and Chatswood High Schools re-imagine how the school community will grow and develop into the future. The project aims to increase the capacity at both schools by providing permanent innovative learning and teaching spaces as follows:

- 60 permanent learning spaces at Chatswood Public School; and
- 123 permanent learning spaces at Chatswood High School.

The natural benefits and constraints of both sites have been key features in the design process. Consultation with students early on revealed that they greatly appreciate the natural landscape of both sites, but most particularly of the Chatswood High School site.

The design has sought to celebrate the natural beauty across these campuses with improved linkages to the unique settings of each site through the creation of new viewpoints to appreciate the surrounding/district biodiversity and landform and new opportunities for learning and play in the natural settings.

Both sites have significant constraints that have also influenced the design, including:

- In-ground services;
- Steep terrain;
- Existing structures, including two (2) heritage buildings constructed between 1985 and 1929 on the Pacific Highway site:
- Building A – Federation Arts and Crafts style building constructed in 1895; and
- Building B – classroom building constructed in 1927-29;
- Transitioning scale and context with neighbouring development; and
- Mature trees, existing landscape character and biodiversity corridors.

Figure 15 indicates the heritage items on the Chatswood Public School site, which include the two buildings described above and The Lowers, which have been a central consideration of the design development process from the inception of the project.

1 Introduction

Chatswood CBD + 'Building A' Heritage item

Pacific Highway + 'Building A' Heritage Item Beyond

'Building B' Heritage Item

'The Lowers' – Retaining Wall Heritage Item

Figure 15 Heritage items, Chatswood Public School

The design and approach to the upgrades has progressed significantly from the initial concept plan at **Figure 16** that was endorsed as part of the business case for the redevelopment of the site.

The initial approach to the upgrade of Chatswood Public School (Pacific Highway site) and Chatswood High School (Centennial Avenue site) was a 'three schools' model, with the primary school (K-6) and middle school (7-9) being located on the Centennial Avenue site and a senior school (10-12) located on the Pacific Highway site.

This approach was considered the best response to the site constraints, design objectives of the schools and desired future focussed and accessible learning spaces outcomes. However, following consultation with Government Architect NSW (GANSW), the Masterplan and concept designs were revised to locate the Primary School and Middle School to the north-western and north-eastern portions of the Centennial Avenue site.

These changes provided an opportunity to provide more level and discrete play areas and improve connectivity to the High School. The evolution of the design concepts for the site are illustrated in **Figure 16** and **Figure 17**.

1 Introduction

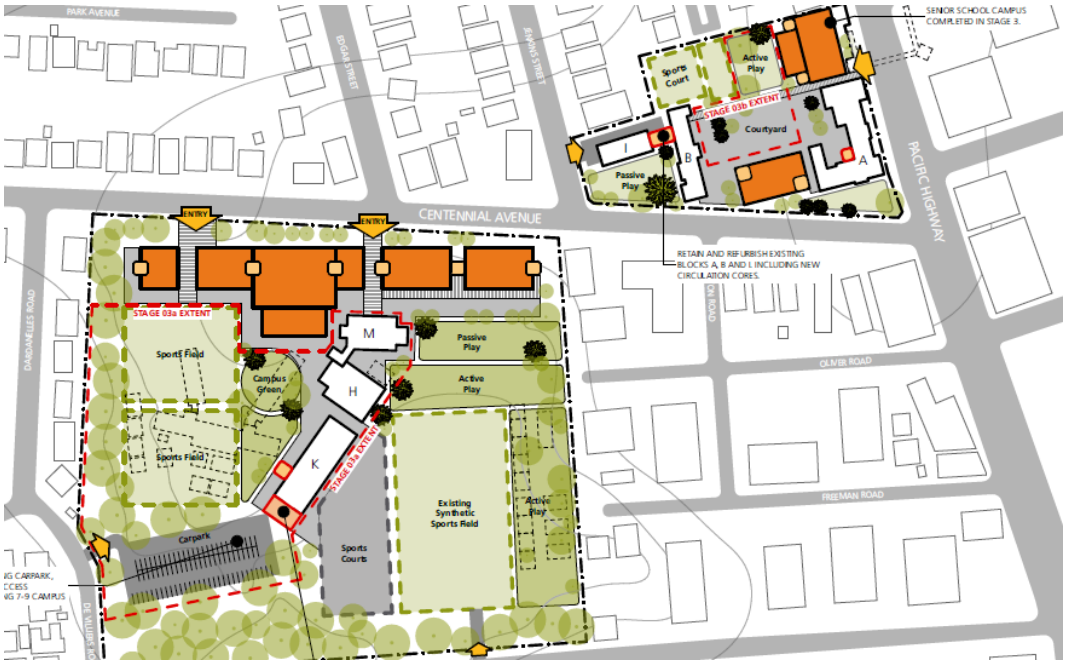


Figure 16 Endorsed concept plan (Shaq Architecture)

Figure 17 Developed concept plan (Architectus)

SINSW continued liaising with school communities, residents and technical stakeholders throughout this time, and extensive feedback demonstrated a need to review the masterplan. A revised masterplan was announced in September 2019, which adopted a change of approach to the design of the schools to retain the Primary School on the Pacific Highway site and the High School on the Centennial Avenue site, and to better respond to the constraints presented at each site.

In terms of constraints, both sites have significant constraints which have influenced the design response including in-ground services, steep terrain, existing structures (including

heritage items), neighbouring residential scale and context, mature vegetation, landscape character and biodiversity corridors (**Figure 18**).

The revised masterplan more effectively utilises the topography of the land, protects heritage buildings, preserves biodiversity zones and provides greater operational efficiencies. This revised masterplan is reflected in the documentation now submitted for assessment.

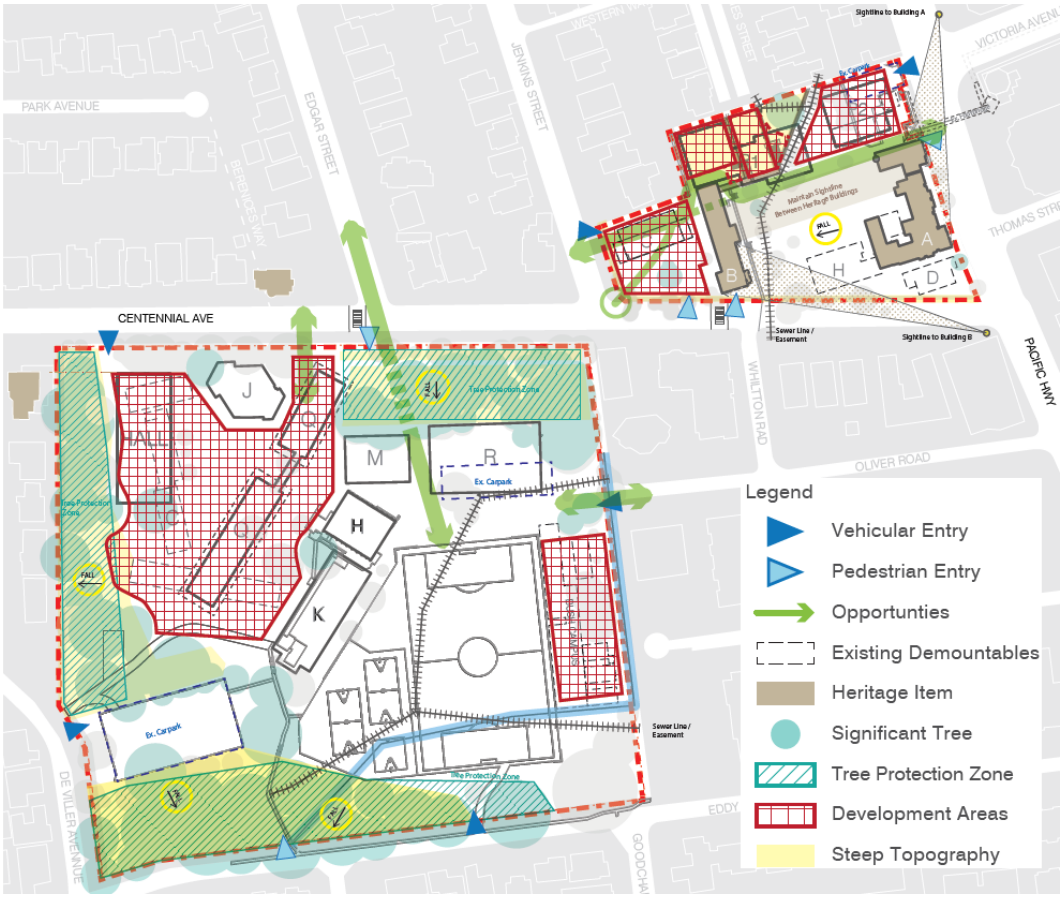


Figure 18 Key site constraints

Development of Final Scheme

Architectus has prepared a Design Analysis Report (**Appendix 7**) which provides an analysis of the site context, identifies the opportunities and constraints of the site and details urban design strategies for the site which support the proposed built form as well as providing an assessment of the proposal against the Design Quality Principles set out under *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017*.

The Design Analysis Report also provides details of the materials and finishes, landscape treatments, photomontages and other information that provides details of the design analysis which has informed the final design.

The design concept has focused on two (2) distinct campuses, the 'city campus' (Pacific Highway) and the 'bush campus' (Centennial Avenue) and is based on the education rationale of neighbourhoods and collaborative learning.

The Pacific Highway site is adjacent to Chatswood CBD and accordingly is set in an urban context. The built form, scale, articulation and materiality of surrounding buildings is civic and commercial in character. The site's heritage character softens and accentuates the urban scale with the introduction of brick and sandstone in a finer scale comparative to the commercial core. The design concept for the city campus is "a school on a hill" (**Figure 19**).

> *"The Pacific Highway site is elevated high from the main road frontage with a far-reaching outlook to the north and west. The terrain follows down Centennial Avenue. In this way, the Pacific Highway site has the character of "a school on a hill.""*

1 Introduction

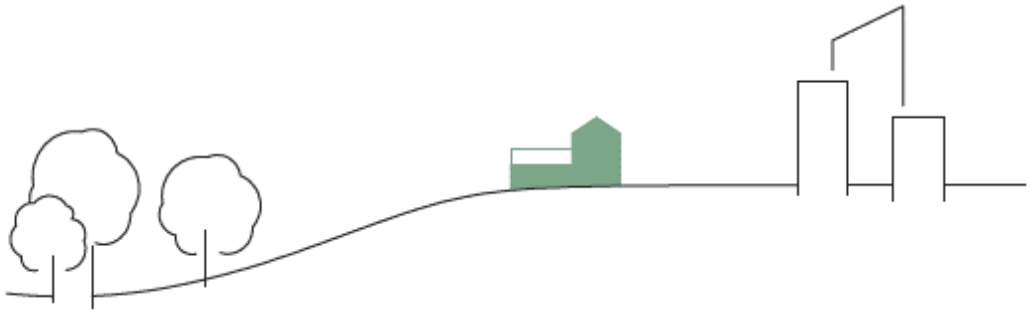


Figure 19 Extract from Design Analysis Report – "a school on a hill"

Topography, heritage, open space and interface with the surrounding urban context were considered during design development. **Figure 20** indicates how these factors were considered during the development of massing.

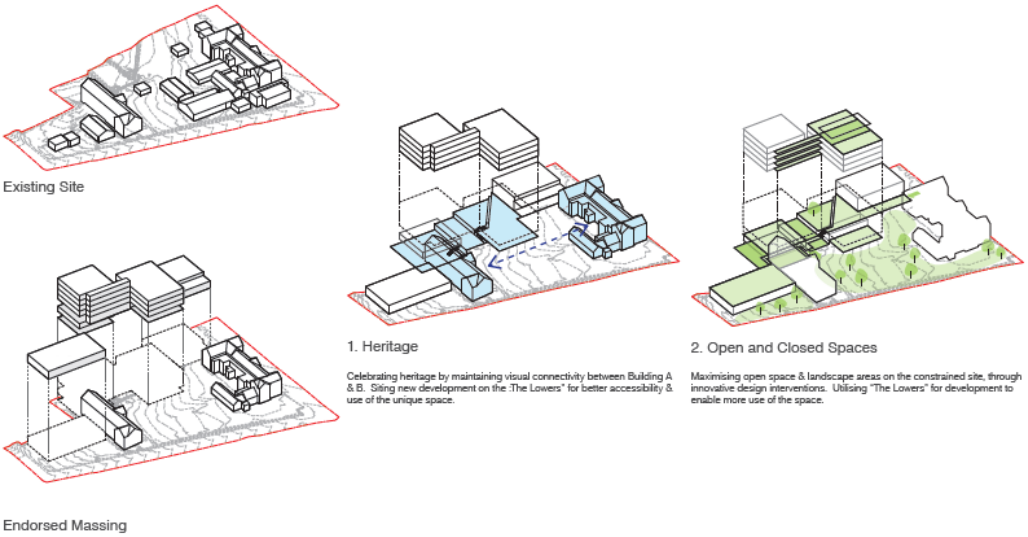


Figure 20 Chatswood Public School – massing development

Figure 21 and **Figure 22** demonstrate how the proposed massing for Chatswood Public School will present within the streetscapes of Centennial Avenue and Pacific Highway.

Figure 21 Chatswood Public School – proposed Centennial Avenue streetscape

Figure 22 Chatswood Public School – proposed Pacific Highway streetscape

Centennial Avenue site is located further down the hill and is nestled in the trees; landscape is a prominent influence on the site with and access to, and views of, green space creating a natural learning environment (**Figure 23**).

1 Introduction

"The architecture, interior design and outdoor spaces are designed and arranged in a variety of settings to encourage a range of social interactions and opportunities for learning that integrates with the context. In this way, the Centennial Avenue site has the character of "a school in the trees".

Figure 23 Extract from Design Analysis Report – a school in the trees

Topography and connection to landscape and existing vegetation were considered during the design development. **Figure 24** indicates how these factors were considered during massing development for Chatswood High School.

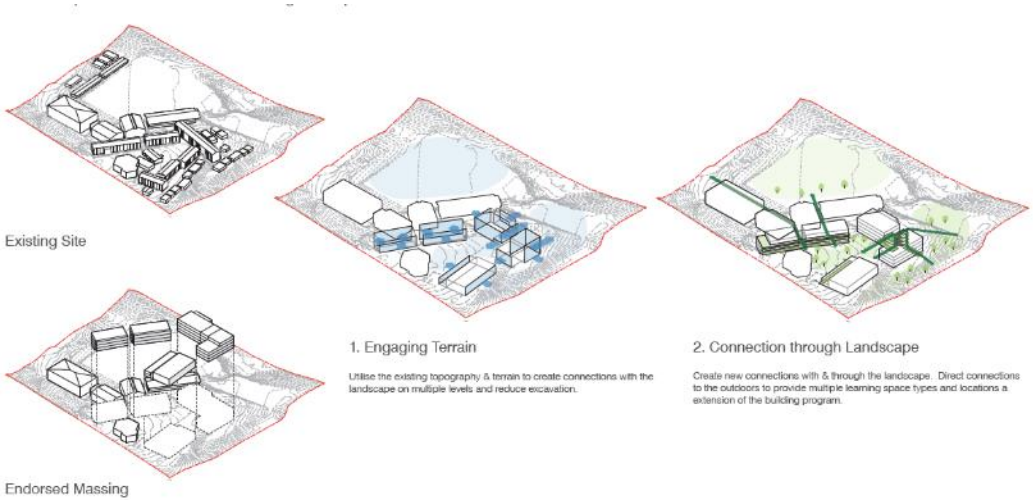


Figure 24 Chatswood High School – massing development

Figure 25 indicates how the proposed massing will present to the Centennial Avenue street frontage.

Figure 25 Chatswood High School – proposed Centennial Avenue streetscape

A description of the proposed development is provided in **Section 2** while assessment of the environmental impacts of the proposal are set out in **Section 6**.

1.3.7 Construction Impacts

The following details the construction impacts and how these will be mitigated (where appropriate):

- Timing for each works package will be as follows:
    - Removal of existing demountable classrooms and installation of new single storey demountable classrooms on Centennial Avenue site – exempt development: July-October 2020;
    - Installation of double storey demountable classrooms on Centennial Avenue site and Pacific Highway site – development application: July-October 2020;

- Construction of Building R on Centennial Avenue site – complying development: October 2020-December 2021;
- Demolition of buildings C, D and E on Centennial Avenue site – development without consent: October 2020-February 2021;
- Removal of existing IEC demountable classrooms on Centennial Avenue site: October 2020-January 2021 inclusive;
- Demolition of buildings A, B, I and F on Centennial Avenue site – development without consent: February 2021

- Both schools will remain operational during all construction works;
- There will be physical separation between operational parts of the sites and the construction works at all times; and

Construction impacts will be minimised by implementing acoustic recommendations and by managing construction operations around school needs.

1.3.8 Separate Works Packages

Three separate works packages are currently being carried out across the site. These works are summarised in **Table 3**.

Table 3 Summary of Separate Works Packages

Works Package	Scope of Work	Planning Pathway	Status
Works Package 1	Installation of temporary school buildings on both sites and associated landscaping and car park works.	Exempt Development	Partially underway, not yet completed
Works Package 2	Construction of Building R and associated substation with related tree removal works at Centennial Avenue site.	Complying Development and Tree Removal Applications TVPA 2-2018/364 and TVPA-2019/428	Currently preparing CDC application. Works scheduled to commence around October 2020 and conclude before 2022.
Works Package 3	Demolition of existing buildings, refurbishment of Building A at Pacific Highway site and Buildings M, H and K at Centennial Avenue site.	Development Without Consent	Works scheduled to commence October 2020 and be completed throughout the life of the main build.

To enable the proposed building works, the Intensive English College will be relocated to an alternate location. This process is likely to commence prior to the commencement of site enabling works.

2 Project Description

2.1 Project Summary

The key aspects and features of the proposal are set out in **Table 4** and shown in **Figure 26** and **Figure 30**.

Table 4 Summary of Key Aspects of Project

Aspect	Description
Project Summary	Site preparation, tree removal and construction of six (6) new school buildings to provide a total of 60 permanent learning and teaching spaces at Chatswood Public School and 123 permanent learning and teaching spaces at Chatswood High School, with associated upgrades to core facilities, landscaping and play-spaces.
Site Preparation[1]	• Removal of 38 trees from the Pacific Highway site and 24 trees from the Centennial Avenue site (62 trees in total); • Demolition of Building D, Building H, Building I and three (3) covered outdoor learning areas (COLAs) at the Pacific Highway site; • Bulk earthworks; and • Civil works
Built Form	**Chatswood Public School (CPS):** • Building P1 – Six (6) storey building comprising 17 homebases and covered outdoor play spaces. • Building P2 – Part four (4) part five (5) storey building comprising 12 homebases, covered outdoor learning area (COLA), canteen, amenities, kiln, staff facilities and rooftop uncovered play-space. • Building G – Hall with stage and seating for 264 people and outside hours school care (OHSC) facilities. • New 18 space carpark off Jenkins Street with sports court above. **Chatswood High School (CHS):** • Building Q – Administration – Part three (3) part four (4) storey administration and staff building including reception, library, general learning spaces and COLA. • Building S – Science and General Learning – Part four (4) part five (5) storey building comprising 42 general learning spaces and two (2) workshops with associated areas. • Building T – Hall – Two (2) storey multi-purpose hall including stage, sports room facilities, four (4) general learning spaces and associated areas.
Landscaping	• Landscaping works including the planting of 77 new trees, hedges, decorative shrubs, grasses, groundcovers and mass native planting. Specific gardens and landscaping features will include a kitchen terrace garden, terrace garden, shade-loving garden, sensory garden, planting under existing trees, water sensitive urban design (WSUD) native planting, climbers on tensile wires, and turf.
Infrastructure	• Installation of new supporting infrastructure, including power and communications infrastructure; and • Minor and major stormwater drainage systems for both sites with the minor system accommodating a 1 in 5 year ARI via a piped system and OSD and the major system accommodating a 1 in 20 year ARI via overland flow paths. The stormwater drainage system will incorporate a 240m³ on-site detention (OSD) tank, a new rainwater tank and utilisation of the existing connection into the Council system via a headwall at Mann Street.
Remediation	Remediation works proposed on CPS site in accordance with Remediation Action Plan (**Appendix 13**).
Site Area	**CPS:** 1.57ha **CHS:** 5.97ha
Uses	Educational establishment
Access	Vehicular access altered for Chatswood Public School through location of parking from Pacific Highway entry to Jenkins Street entry. Vehicular access altered for Chatswood High School through amendment of Oliver Street car parking area into dedicated drop off/pick up bays.

[1] *Note: Supplementary packages of work will be undertaken via alternative planning pathways in order to facilitate the construction of the proposed buildings, including demolition works and the installation of demountable classrooms. These enabling works do not form part of this SSD application and are referenced only for context in regard to the preparation of the site for the works now proposed. Refer to* ***Section 1.3.8*** *for more information*

2 Project Description

Table 4 Summary of Key Aspects of Project	
Aspect	**Description**
Car parking	• **CPS:** 18 spaces existing – 18 spaces proposed, including relocation of main parking area from Pacific Highway access to Jenkins Street access. • **CHS:** 120 spaces existing – 104 spaces proposed, resulting from removal of Oliver Street car parking area and replacing with dedicated drop off/pick up bays.
Bicycle parking	• **CPS:** 0 spaces existing – 60 spaces proposed • **CHS:** 0 spaces existing – 84 spaces proposed

Hours of operation	• Operational hours of CPS and CHS, inclusive of Outside of Schools Hours Care (OSHC) are proposed to remain – 6.45am-6.15pm
	• **CPS**:
	  ○ OSHC: 6.45am – 9am and 3pm – 6.15pm
	  ○ School Hours: 9am – 3pm
	  ○ Extra-Curricular: 3pm – 4pm
	• **CHS**:
	  ○ OSHC: N/A
	  ○ School Hours: 8.20am – 3.30pm
	  ○ Extra-Curricular: 7.20am-9.20am and 2.30pm – 4.30
	  ○ Saturday School of Community Languages (SSCL): 7am – 2pm.

Community use	• Community use of the halls proposed between 4pm-10pm on weekdays and 6am-8pm weekends. • SSCL will continue operating within the CHS grounds every Saturday 7am-2pm.
Construction hours	• 7am – 6pm Monday to Friday • 8am – 1pm Saturday; and • No work on Sundays or public holidays.
Jobs	• Up to 266 construction jobs. • Up to 20 new operational jobs (full time equivalent).
CIV	Exceeds $20 million (refer to **Appendix 8**)

2.2 Physical Layout and Design

Chatswood Public School

The new buildings (P1, P2, G and the car park) will be positioned along the northern boundary of the site, allowing for retention of ground-level play space, responding to topography, relocating vehicle entry from Pacific Highway to Jenkins Street, and enabling secure community access to the hall (Building G) (**Figure 26**).

The layout of buildings is provided at **Figure 27**, **Figure 28** and **Figure 29**.

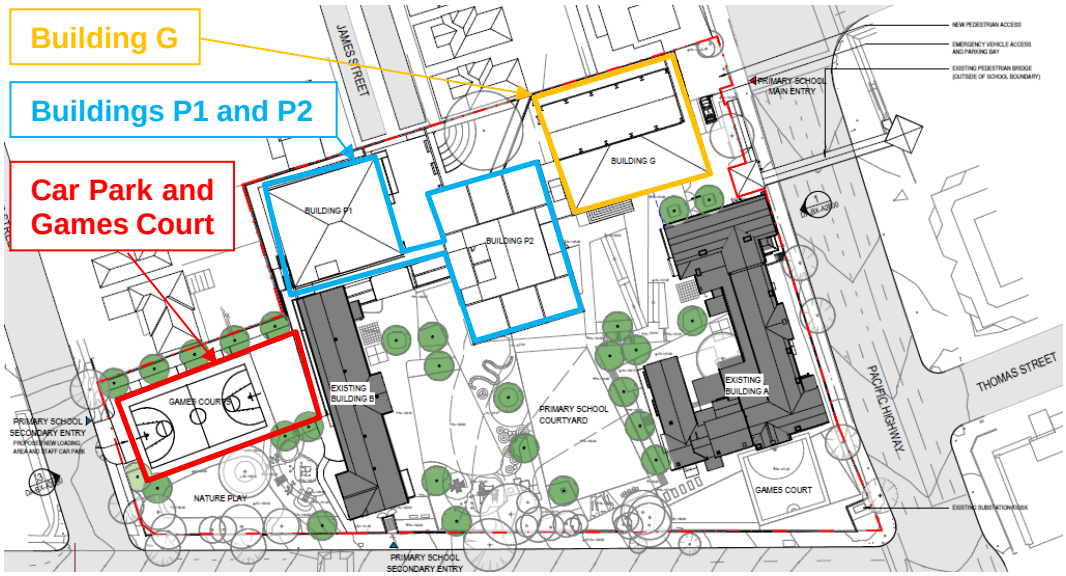


Figure 26 Proposed site plan for Chatswood Public School

2 Project Description

Figure 27 Building P1 and P2 Floorplate (at Level 2)

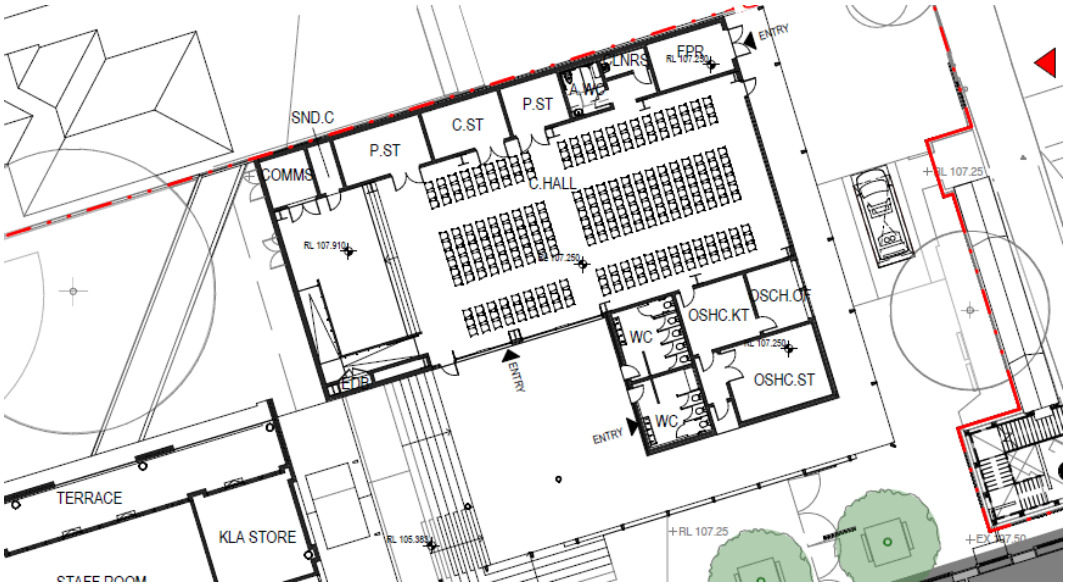


Figure 28 Building G Floorplate (at Ground Floor)

2 Project Description

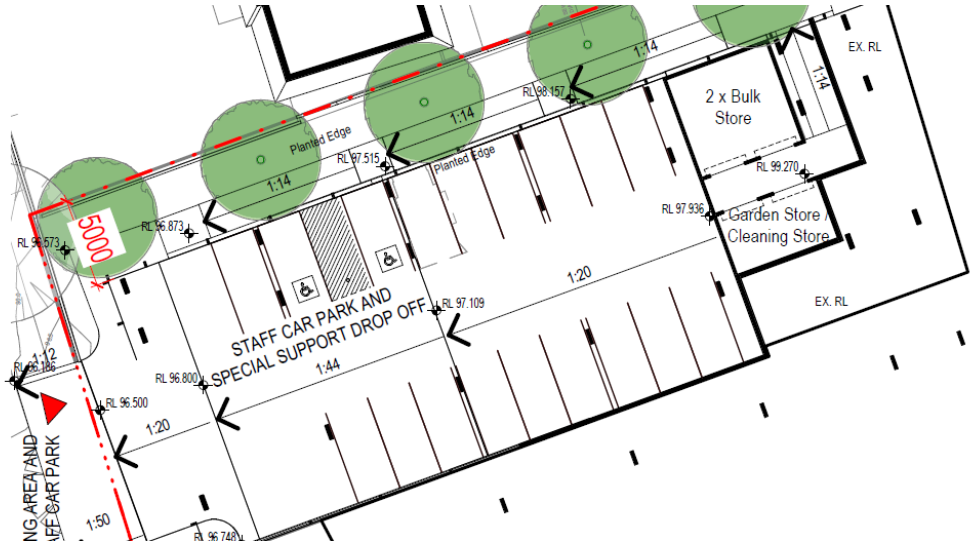


Figure 29 Car park layout (sports court above) (at Lower Ground Level)

Chatswood High School

The new buildings (Q, S and T) are positioned within substantially the same footprint and alignment as the existing High School campus layout (forming a 'V' shape to create a central courtyard) (**Figure 30**). Buildings are setback from the western boundary and maintain suitable setbacks from Centennial Avenue. Building heights vary in response to topography and improve accessibility and connectivity between all facilities.

The layout of buildings is provided at **Figure 31**, **Figure 32** and **Figure 33**.

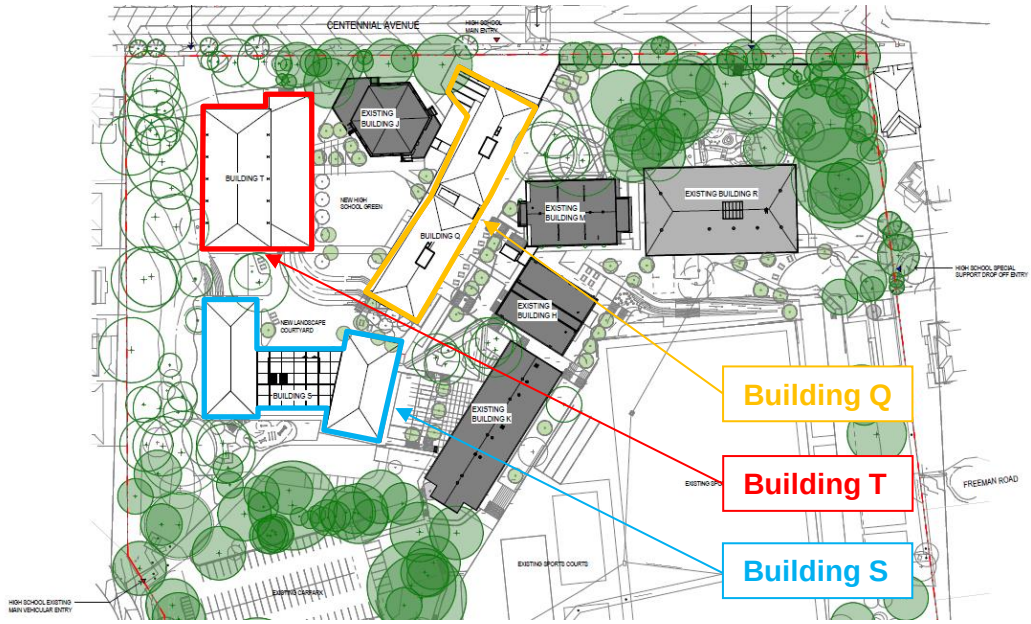


Figure 30 Proposed site plan for Chatswood High School

2 Project Description

Figure 31 Building Q Floorplate (at Ground Level)

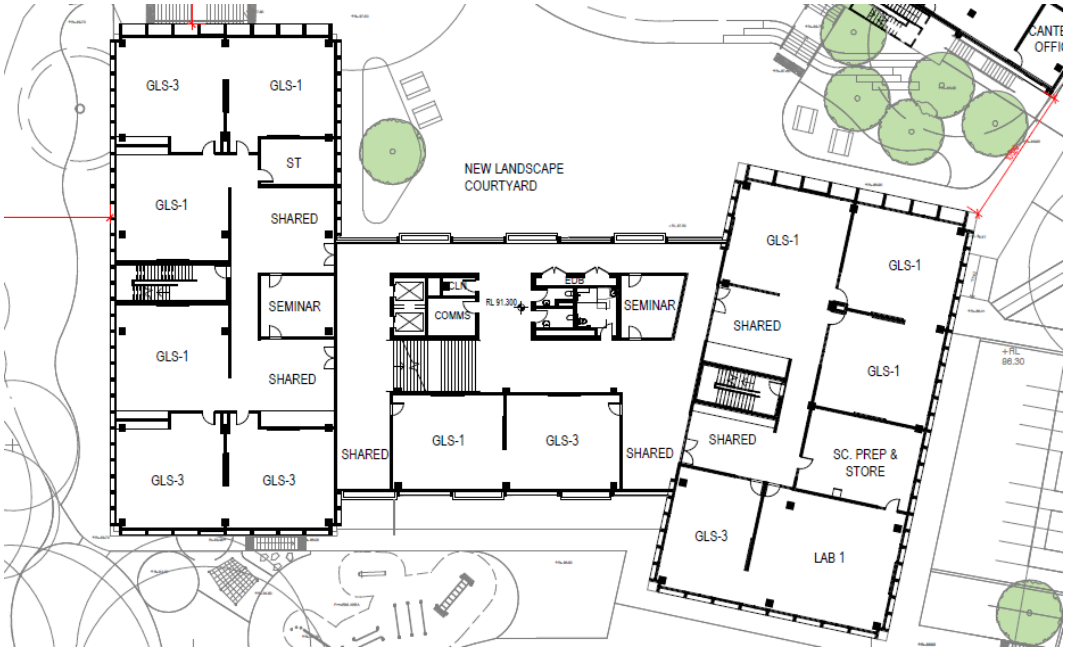


Figure 32 Building S Floorplate (at Ground Level)

2 Project Description

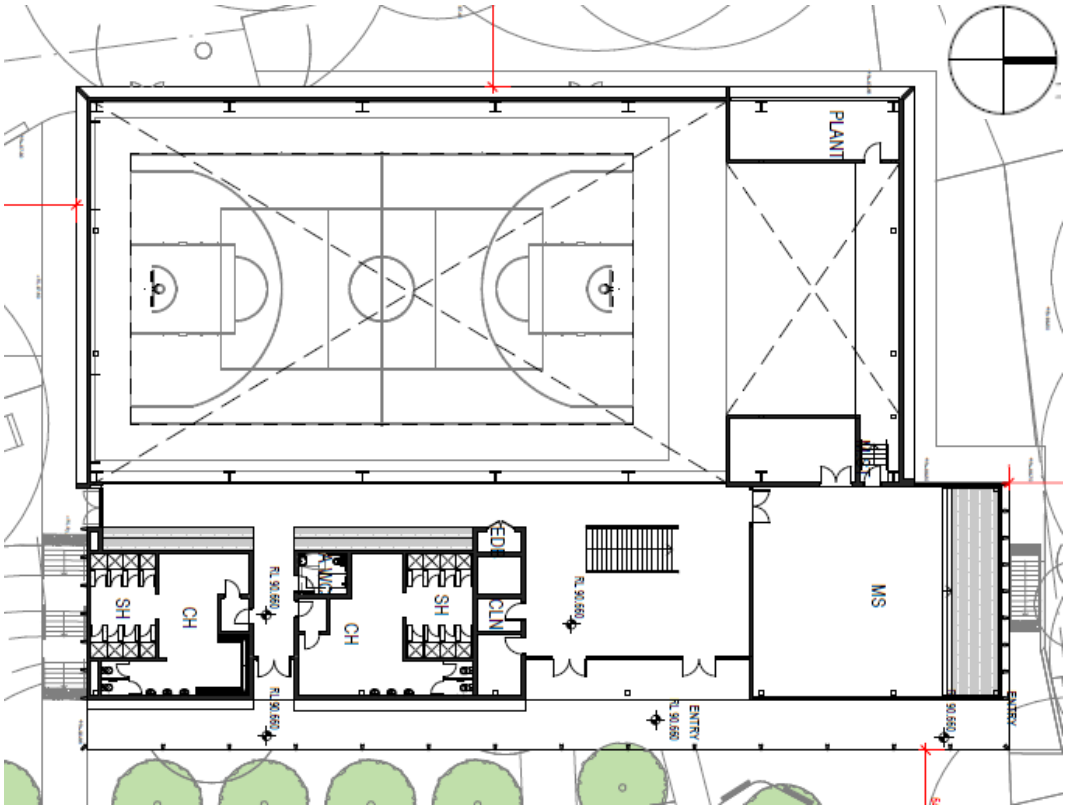


Figure 33 Building T Floorplate (at Ground Level)

3 Strategic Context

3.1 Strategic Justification and Project Need

Over the coming four (4) years, the NSW Government is investing $6.7 billion to deliver 190 new and upgraded schools to support communities across NSW. By 2031, it is expected that there will be a 21% growth in student numbers across the State, 164,000 of which will be in the public schools' system, with 80% of this growth anticipated in the Sydney Metropolitan region.

The upgrade of the Chatswood Public School and Chatswood High School sites is planned to address the NSW Department of Education's legislative obligation to provide places for students seeking to be educated at a public school. This will be achieved through an upgrade of the existing campuses delivering 60 learning spaces for Chatswood Public School and 123 learning spaces for Chatswood High School.

The project will provide appropriate core facilities and replace existing demountable classrooms with permanent facilities in line with the Department's Education Facilities Standards and Guidelines (EFSG) and will facilitate 21st Century and Future Focused learning objectives.

The Project Objectives are as follows:

- To provide additional learning spaces to cater for forecast demand;
- To provide a high-quality built form and open spaces that are adaptable and flexible to cater for future educational needs;
- Provide specialist learning areas in accordance with EFSG requirements; and
- To provide safe and efficient access for students, teachers, visitors and service personnel.

The Chatswood Public School and Chatswood High School sites are both subject to a range of drivers for change, allowing for a response to population demand, accommodating the needs of the catchment population, achieving asset suitability and incorporating significant improvements to sustainability at both school sites.

3.2 Strategic Plans

3.2.1 State Policies

Table 5 provides a summary assessment of the proposed development against the relevant provisions, goals and objectives of relevant State policies.

Table 5 Response to Provisions, Goals and Objectives of State Policies

State Policy	Response
NSW State and Premier's priorities • Improving education results for children • Increasing the number of Aboriginal young people reaching their learning potential • Greening our city	The proposal is consistent with relevant State and Premier priorities as it will: • Create new jobs for construction workers, teachers, support staff and maintenance workers • Provide educational infrastructure to support the growing population in the locality; • Provide specialist educational facilities for students with special support needs; • Provide a high-quality environment to enable a high quality publicly funded education; and • Provide a safe learning environment and education regarding personal protection and welfare.
The Greater Sydney Regional Plan, A Metropolis of three cities: North District Plan	The project is consistent with Greater Sydney Regional Plan as it proposes to provide additional, modern, educational facilities to accommodate meet the future educational needs of the community.
Future Transport Strategy 2056	The strategy sets six state-wide outcomes to guide investment, policy and reform and service provision. The proposal will support the relevant

3 Strategic Context

Table 5 Response to Provisions, Goals and Objectives of State Policies	
State Policy	**Response**
Relevant vision outcomes: • Successful places • Accessible services • Sustainability	vision outcomes identified in the NSW Future Transport Strategy 2056 by: • Encouraging active travel by being located adjacent to Chatswood CBD, with shared pathways and pedestrian overpass, thereby minimising walking and cycling distances from within the precinct and encouraging multi-purpose trips. • Being located adjacent to Chatswood residential area thereby providing for ease of access by walking and cycling. Active travel to the school, (particularly for school staff) is further encouraged through the provision of end of trip facilities. • Encouraging the use of public transport through the provision of school bus services in addition to the site's location within 400 metres of Chatswood Rail and Bus Interchange; and • Supporting more environmentally sustainable travel by adopting green travel initiatives to discourage private car use in favour of more sustainable means.
State Infrastructure Strategy 2018-2038 Building the Momentum	The proposal is consistent with this Strategy as it provides direct investment to address forecast growth in enrolment. The upgrades will provide a modern digitally enabled learning environment for students that can be shared with the community.
Sydney's Cycling Future 2013	The proposal includes the provision of 144 bicycle parking spaces across the two sites and cycling is actively encouraged in the Green Travel Plan and through the provision of end of trip facilities.
Sydney's Walking Future 2013	Pedestrian access to the site is aided by the overpass on Pacific Highway, signalised crossings and controlled pedestrian crossings to improve safety for pedestrians.
Sydney's Bus Future 2013	The site is located within 400 metres of Chatswood Bus Interchange. Students and staff can access school and public bus transport for travel to and from school.
Crime Prevention Through Environmental Design (CPTED) Principles	This report provides a CPTED assessment of the proposal at **Appendix 4**. The assessment considers the objectives and desired outcomes of the principles/strategies employed by CPTED.
Healthy Urban Development Checklist, NSW Health	The design of the proposed state-of-the-art educational facilities is consistent with the relevant aspects of the Healthy Urban Design Checklist as it will: • Give students access to fresh, nutritious and affordable food; • Make use of residential zoned land and not reduce the availability of agricultural land; • Include recreational facilities promoting physical activity; • Promote walking and cycling through provision of appropriate infrastructure within and immediately adjoining the site; • Promote public transport use as it is within 400 metres of Chatswood Bus and Train Interchange; • Proximity to housing and employment thereby reducing trip generation and car dependence; • Include CPTED principles in its design to promote a safe environment for students and visitors to the school; and • Provide equitable access to facilities.
Better Placed: An integrated design policy for the built environment of NSW (GANSW, 2017) This policy aims to ensure a well-designed built environment that is: • Healthy for the community • Responsive to the needs and aspirations of local people • Integrated • Equitable and • Resilient	The project team met with the Government Architect and State Design Review Panel four (4) times through development. The project meets the objectives of this policy as follows: • The site is located in a walkable environment and provides a range of play spaces designed to promote physical activity • The proposal is responsive to the needs and aspirations of the community by providing additional, state-of-the-art educational facilities • The proposal is integrated into the community being adjacent to residential community, public transport, cycling and pedestrian infrastructure and the CBD. • The proposal provides educational facilities for all students including those with special needs

3 Strategic Context

Table 5 Response to Provisions, Goals and Objectives of State Policies	
State Policy	**Response**
Design Guide for Schools (GANSW, 2018) This policy aims to: • Promote and champion good design processes and outcomes for schools across NSW; and • Deliver schools that respond positively to their physical, social and environmental context; and • Support the delivery of excellent learning environments.	Schedule 4 of the Education SEPP sets out the seven (7) design quality principles which must be addressed as part of any development application for a school (refer **Section 4.7.4**). the Design Guide for Schools provides further guidance around each of the seven (7) design principles, and outlines design considerations to be considered for school projects. The Design Analysis Report (**Appendix 7**) provides an analysis of the design against the design quality principles and finds that the proposal satisfies the principles, including responses to heritage context, biodiversity values, site circulation/accessibility, safety and security, amenity of learning spaces, adaptability of learning environments, and quality of character and materiality.
Environmental Design in Schools (GANSW, 2018) This policy aims to provide school principals and school communities with a holistic understanding of environmental design.	The Environmental Design guide presents strategies for passive design as opportunities for making positive, sustainable change in the building or running of a school. The strategies set out in the Environmental Design guide have been incorporated into the proposal with common objectives with the EFSG and green star system, seeking to achieve environmentally sensitive design (ESD) and ensure its integration into school development. The proposal implements ESD principles and new facilities will achieve a far superior resource efficiency than the current facilities. This has been achieved in light of the need for protection from environmental constraints such as noise and privacy impacts.
Greater Sydney Commission's North District Plan 2006 sets out the following relevant goals for infrastructure: • Infrastructure to align with forecast growth. • Infrastructure adapts to meet future needs. • Infrastructure use in optimised	The project is consistent with the infrastructure goals of the North District Plan as it will provide additional, modern, educational facilities to accommodate forecast growth and meet the future educational needs of the community. The proposal will optimise use of the infrastructure through community use of facilities, particularly the two new multi-purpose halls as well as sporting facilities and classroom spaces.

4 Statutory Context

4.1 Planning Approval Pathway

The proposal comprises the construction of new educational establishment facilities with a CIV exceeding $20 million. Pursuant to Clause 15(2) of the SRD SEPP, the proposed works are classified as an SSDA.

4.2 Permissibility

Chatswood Public School is zoned R2 Low Density Residential (R2 zone) and Chatswood High School is zoned predominately SP2 Infrastructure (Educational Establishment) (SP2 zone) and partly E2 Environmental Conservation (E2 zone) (**Figure 34**).

Both the SP2 zone and the R2 zone are prescribed zones under the Education SEPP and educational establishments are permissible with both zones. There are no works proposed in the E2 zone.

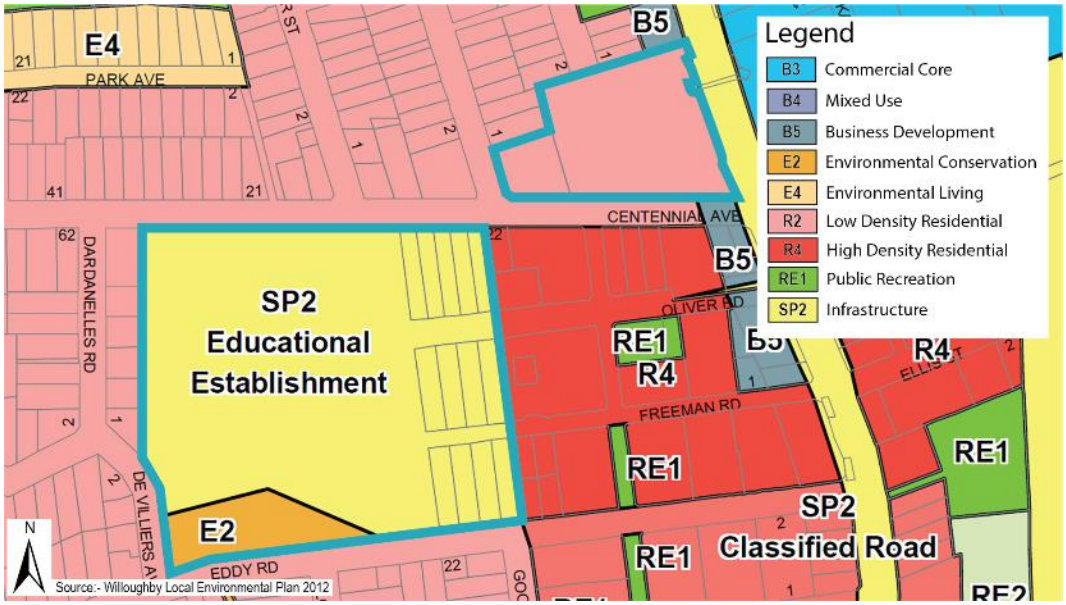


Figure 34 Extract from Willoughby LEP zoning map

4.3 Statutory Approvals

4.4 Commonwealth Department of Environment and Energy

4.4.1 Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Part 3 Division 1 Subdivision C of the EPBC Act provides, amongst other things, that a person must not take an action that has, will have or is likely to have a significant impact on:

- a listed threatened species included in the extinct in the wild, critically endangered, endangered or vulnerable categories; or
- a listed threatened ecological community included in the critically endangered or endangered categories;

unless a '*controlled action*' approval has been granted under Part 9 Section 133 of the EPBC Act. The Commonwealth Minister for the Environment and Energy is responsible for the decision on such an approval.

A BDAR prepared by Eco Logical Australia (**Appendix 31**) has identified two species on site that are listed under the EPBC Act:

- Blue Gum High Forest, which is listed as a threatened ecological community; and

- *Pteropus poliocephalus* (Grey-headed Flying-fox), which is listed as a vulnerable species.

A detailed assessment of the impacts on these species is contained at **Section 6.4.2** of this EIS. However, the BDAR concludes the proposed works are not considered likely to cause a significant impact on a threatened species or a threatened ecological community that is listed under the EPBC Act and accordingly, a controlled action approval is not required under section 133.

4.5 NSW Department of Planning, Infrastructure and Environment (DPIE)

4.5.1 Heritage Act 1977

The *Heritage Act 1977* contains provisions relating to the protection of items of State heritage significance or items of potential significance.

Section 57 relates to items listed in the State Heritage Register or to which an interim heritage order applies and development relating to such items triggers the integrated development provision of the EP&A Act. Neither site comprises an item listed on the State Heritage Register or subject to an interim heritage order.

Building A and Building B are listed on the Department of Education's Section 170 Register, however no works are proposed to these buildings under this SSDA. It is noted that Chatswood Public School is identified as an item of local heritage significance under Willoughby LEP 2012, and this is discussed further at **Section 6.2.2**.

The Archaeological Assessment provided at **Appendix 20** concludes that:

> *"Both campuses have been assessed as having no archaeological potential or significance. No excavation permits or further approvals are required."*

4.5.2 National Parks and Wildlife Act 1974 (NPW Act)

The NPW Act contains provisions relating to the protection of native terrestrial fauna, flora and Endangered Ecological Communities (EEC) and contains the primary statutory controls relating to Aboriginal heritage in NSW.

Section 90 of the NPW Act does not apply to SSD pursuant to Section 4.41 of the EP&A Act, however provisions relevant to Section 90 of the NPW Act have been considered in the body of this assessment.

An Aboriginal Cultural Heritage Assessment (ACHA) has been prepared by Eco Logical Australia (ELA) (see **Appendix 10**), which provides an assessment of the Aboriginal cultural heritage values of the site. The findings of the ACHA are discussed in detail at **Section 6.2.1**.

4.6 Transport for NSW (TfNSW) – NSW Roads and Maritime Services (RMS)

4.6.1 Roads Act 1993

Section 138(1) of the *Roads Act 1993* relates to works associated with public roads and provides that a person must not:

> *"(a) erect a structure or carry out a work in, on or over a public road, or*
>
> *(b) dig up or disturb the surface of a public road, or*
>
> *(c) remove or interfere with a structure, work or tree on a public road, or*
>
> *(d) pump water into a public road from any land adjoining the road, or*
>
> *(e) connect a road (whether public or private) to a classified road,*
>
> *otherwise than with the consent of the appropriate roads authority."*

The site is surrounded by public roads with active frontages to Pacific Highway and Centennial Avenue. The proposal comprises modifications to the existing vehicle crossing on Jenkins Street, which will require the consent of the roads authority.

4 Statutory Context

4.7 Mandatory Matters for Consideration

4.7.1 Environmental Planning and Assessment Act 1979

Section 1.3 – Objects of the EP&A Act

Section 1.3 of the EP&A Act sets out the Objects of the Act. An assessment of the proposed development's consistency with these Objects is provided at **Appendix 4**. The assessment concludes that the proposal is consistent with the Objects of the Act.

Section 1.7 – Application of Part 7 of Biodiversity Conservation Act 2016 and Part 7A of Fisheries Management Act 1994

Section 1.7 states that this Act has effect subject to the provisions of Part 7 of the Biodiversity Conservation Act 2016 (it is noted that the Fisheries Management Act does not apply to the site) that relate to the operation of this Act in connection with the terrestrial and aquatic environment. The impacts of the proposed works on the biodiversity values of the site are assessed at **Section 6.4.2** of this EIS. This assessment concludes that three (3) ecosystem credits are required as a result of the unavoidable impacts on native vegetation from the proposed works.

Section 4.33 – Determination of Crown Development Applications

The proposed development is submitted by the NSW Department of Education and so is classified as a *Crown development application* under Section 4.32. Section 4.33 of the EP&A Act sets out matters to be considered by consent authorities in the determining or imposition of a condition upon a Crown development application.

Section 6.28 – Crown subdivision, building, demolition and incidental work

The EP&A Act requires that Crown building work cannot commence until it is certified that the work complies with the Building Code of Australia (BCA). As discussed in **Section 6.8** and set out in **Appendix 27**, the proposed works are capable of satisfying the provisions of the BCA.

4.7.2 Biodiversity Conservation Act 2016

Part 7 of the Biodiversity Conservation Act 2016 (BC Act) sets out provisions relevant to biodiversity assessment and approvals under the EP&A Act. Specifically, Clause 7.9 applies to an application for development consent under Part 4 of the EP&A Act for SSD. This includes the proposed development.

Clause 7.9(2) and (3) set out the following requirements:

> *(2) Any such application is to be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.*
>
> *(3) The environmental impact statement that accompanies any such application is to include the biodiversity assessment required by the environmental assessment requirements of the Planning Agency Head under the Environmental Planning and Assessment Act 1979.*

Eco Logical Australia has prepared a Biodiversity Development Assessment Report (BDAR) (**Appendix 31**) which meets the requirements of the Biodiversity Assessment Method 2016 (BAM) established under 6.7 of the BC Act. A detailed assessment of the biodiversity impacts of the proposal is provided in **Section 6.4.2** of this EIS.

This assessment concludes that while the majority of native vegetation on the Centennial Avenue site will not be impacted by the proposed works, a section of Blue Gum High Forest (PCT 1237) requires removal to facilitate the works and therefore three (3) ecosystem credits are required.

4.7.3 State Environmental Planning Policy (State and Reginal Development) 2011

Clause 15 of Schedule 1 of the SRD SEPP identifies development for an educational establishment that has a CIV of more than $20 million as SSD as specified in **Appendix 8**.

4 Statutory Context

WT Partnership has prepared a Capital Investment Value Report which confirms that the CIV of the proposed development will be greater than $20 million. For the purposes of confidentiality, the CIV Report will be submitted to DPIE separate to the DA submission.

Clause 11 of the SRD SEPP outlines that DCPs (whether made before or after the commencement of the SEPP) do not apply to SSD.

4.7.4 State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017

Part 4 of the Education SEPP sets out specific development controls for schools, which are addressed in **Table 6**.

Table 6 Education SEPP Part 4 - Schools

Requirement	Response
Clause 35(6)(a): Evaluation of design quality principles in Schedule 4	Architectus has prepared a Design Analysis Statement (**Appendix 7**) which provides an evaluation of the proposal against the design quality principles under Schedule 4.
Clause 35(6)(b): Does development enable shared community use of school facilities	The proposed development will enable (and maintain) the shared community use of school facilities (refer **Section 2.1**).
Clause 35(9): DCP controls relating to Clause 35 subclauses (1), (2), (3), or (5) does not apply	Noted, but notwithstanding, an assessment against DCP controls has been provided at **Appendix 4**.
Clause 42: Development consent may be granted even though development would contravene a development standard imposed by this or any other EPI.	Development contravenes Willoughby LEP as follows: • Clause 4.3 Height of Buildings (8.5m) – proposed maximum HOB 30.3m • Clause 4.4 FSR (0.4:1) – proposed FSR 0.55:1 Assessment on Built Form is contained in **Section 6.1** of this EIS.
Clause 57 Traffic generating development: Referral to RMS required if development will result in educational establishment being able to accommodate 50 or more additional students.	Proposal will result in accommodation of 50 or more additional students. Accordingly, DPIE must give written notice of the application to the TfNSW (formerly RMS). As discussed at **Section 5.3.1** of this EIS, the project team has carried out consultation with TfNSW and has incorporated that feedback into the body of this DA submission.

4.7.5 State Environmental Planning Policy (Infrastructure) 2007

Clause 102 of the Infrastructure SEPP relates to the impacts of road noise or vibration on non-road development, and is triggered for land which adjoins a road corridor with an annual average daily traffic (AADT) volume of more than 40,000 vehicles. If triggered, it requires the consent authority to consider the potential effects of road noise or vibration on an educational establishment.

Based on Transport for NSW traffic volume viewer information, Pacific Highway has an AADT volume of more than 40,000 vehicles per day. Accordingly, road noise and vibration has been considered in the Acoustic Assessment (**Appendix 25**) and a series of mitigation measures have been proposed including specifying construction materials and insulation for external walls, ceiling and roof systems and specifications for glazed windows and doors throughout the proposed buildings. A detailed discussion of noise impacts is provided at **Section 6.6**.

4.7.6 State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 relates to remediation of contaminated land and requires, amongst other things, investigations to be undertaken as part of the development assessment process, to determine whether the subject land is likely to be contaminated and if so, what remediation work is required.

4 Statutory Context

Detailed site investigations (DSI) were carried out by JBS&G Australia Pty Ltd (JBS&G) (**Appendix 12**) at both the Centennial Avenue site and the Pacific Highway site in accordance with SEPP 55 and NSW Environmental Protection Agency (EPA) endorsed criteria. A Remediation Action Plan (RAP) has been prepared for the Pacific Highway site in accordance with relevant guidelines made or endorse by the NSW EPA, inclusive of National Environmental Protection Council (NEPC) and SEPP 55 requirements (**Appendix 13**).

The assessment concludes that the Centennial Avenue site is suitable for the proposed development and, subject to successful implementation of the measures contained in the RAP, the Pacific Highway site can be made suitable for the proposed development. Contamination is discussed further in **Section 6.8**.

4.7.7 Draft State Environmental Planning Policy (Remediation of Land)

The Department of Planning and Environment (now DPIE) exhibited the proposed SEPP from 1 January to 13 April 2018. It is proposed the new land remediation SEPP will:

- Provide a state-wide planning framework for the remediation of land maintain the objectives and reinforce those aspects of the existing framework that have worked well;
- Require planning authorities to consider the potential for land to be contaminated when determining development applications and rezoning land;
- Clearly list the remediation works that require development consent; and
- Introduce certification and operational requirements for remediation works that can be undertaken without development consent.

In light of the above, it is considered that the assessment of the proposed development within this report satisfactorily considers relevant matters, and that the proposal is acceptable in these regards.

4.7.8 Draft State Environmental Planning Policy (Environment)

DPIE exhibited the proposed SEPP until 31 January 2018 which seeks to protect and manage the natural environment and proposes to simplify the planning rules for a number of water catchments, waterways, urban bushland, and Willandra Lakes World Heritage Property.

It proposes consolidating the following seven existing SEPPs:

- State Environmental Planning Policy No. 19 – Bushland in Urban Areas
- State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011
- State Environmental Planning Policy No. 50 – Canal Estate Development
- Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment
- Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No.2-1997)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- Willandra Lakes Regional Environmental Plan No. 1 – World Heritage Property.

It is considered that the environmental assessment within **Section 6** of this EIS satisfactorily considers relevant matters and that the proposal is acceptable in these regards.

4.7.9 Willoughby Local Environmental Plan 2012

A detailed assessment of the proposed development against the relevant provisions of Willoughby Local Environmental Plan 2012 (LEP) is provided in **Appendix 4**. In summary, the proposal is generally consistent with the provisions of the LEP with the following exceptions:

- Clause 4.3 Height of Buildings (HOB): The Pacific Highway site has an HOB control of 8.5 metres. P1 is proposed to have a maximum height of 30.3 metres.

- Clause 4.4 Floor Space Ratio (FSR): The Pacific Highway site has an FSR control of 0.4:1 and the proposed works will have an FSR of 0.55:1.

Clause 42 of the Education SEPP negates the requirement to prepare a Clause 4.6 written variation request for a non-compliance with a development standard classified as State Significant Development. Notwithstanding, the impacts of these non-compliances on surrounding residential development has been assessed in **Section 6.1** of this EIS.

The assessment concludes that while P1 and P2 will have some bulk and scale impacts on neighbouring properties, these impacts can be appropriately mitigated and the development will provide permanent, modern teaching facilities to meet the growing needs of the community and equitable, accessible paths of travel throughout the site. The built form will provide a visual transition between low density residential development and medium-and-high-rise development along Pacific Highway. Accordingly, the non-compliances are considered to be acceptable and in the public interest.

4.7.10 Willoughby Development Control Plan 2016

It is noted that Clause 11 of the State and Regional Development SEPP and Clause 35(9) of the Education SEPP exclude the application of Development Control Plans to SSDAs. Notwithstanding, an assessment of the proposed development against the provisions of Willoughby DCP 2016 that may otherwise be deemed relevant is provided at **Appendix 4**.

In summary, the proposal is generally consistent with the provisions of the DCP with the following exceptions:

- Car parking provision – 174 spaces required, 122 proposed.
- Onsite detention tank provision – one (1) catchment is provided with on-site detention, while the remaining two (2) catchments (which accommodate a reduction in pervious area) do not have any on-site detention proposed.

A merit assessment of these non-compliance is provided in **Appendix 4**.

5 Consultation

5.1 General

In accordance with the SEARs issued by the Department of Planning and Environment, the project team has carried out consultation with the following stakeholders:

- Willoughby City Council;
- Department of Planning and Environment;
- NSW Government Architect;
- Transport for NSW;
- NSW Roads and Maritime Services;
- Utility Providers;
- Special interest groups including Local Aboriginal Land Council and registered Aboriginal stakeholders;
- Affected landowners, particularly those adjacent to P1;
- Chatswood High School P&C, Staff and Students;
- Chatswood Public School P&C, Staff and Students;
- Relevant Community Groups.

Consultation was carried out between early 2018 and February 2020. SINSW has prepared a Community Engagement Summary Report (**Appendix 9**) which details all consultation carried out for the proposal. Details of the consultation carried out by the project team are set out in the following sections.

5.2 Community Engagement

5.2.1 Project Reference Group

The main role of a Project Reference Group (PRG) is to provide feedback and local knowledge to the project team and where appropriate to act as a communication channel through which to feed information between the wider School community and project team.

A PRG was formed for the Chatswood Schools Upgrade Project, which comprised the following representatives (see **Table 7**):

Table 7 Project Reference Group for Chatswood Schools Upgrade Project

Project Reference Group Members	Role
NSW Department of Education	Project Director
NSW Department of Education	Manager Asset Management Unit
NSW Department of Education	Principal Chatswood Public School
NSW Department of Education	Principal Chatswood High School
NSW Department of Education	Direction of Educational Leadership
NSW Department of Education	Communications Team members
Chatswood Public School - Parent & Citizens Association (P&C)	President
Chatswood High School - Parent & Citizens Association (P&C)	Representatives
Johnstaff	Project Managers
Architectus	Architects

5 Consultation

The PRG has been consulted with extensively throughout the design development process, including initial design workshops and monthly meetings which provide the PRG with opportunity to have input on the design of the school. The PRG vision is closely tied to the final proposal now submitted for assessment and determination.

To date, there have been more than 29 PRG meetings and these will be on-going throughout the project as necessary now that schematic design is complete, to ensure the project is carried out in accordance with the initial visions and objectives of the PRG.

5.2.2 Community and Community Groups

Multiple community engagement strategies were carried out to ensure a broad range of the community was canvassed about the project. Key community stakeholders were identified as school staff, parents, local community, Council and Aboriginal community.

The Community Engagement Summary Report (**Appendix 9**) details all consultation carried out for the proposal, including with community groups. Engagement strategies include:

- School community engagement:
- Design consultation sessions with staff and students;
- Meetings, workshops and school tours;
- Project reference group meetings;
- School newsletter;
- Updates on school app;
- P&C meetings
- Community information sessions
- General communications
- Project webpage
- Information pack
- Project updates
- Works notices
- Contact channels – emails and 1300 project number

A total of 11 community workshops and meetings have been held with over 600 attendees. In addition, regular Design User Group meetings have been held.

Round 1 consultations were held in September 2018 with three (3) information sessions for members of the teachers, parents and carers and other members of the school community. A total of 142 people attended these sessions and feedback forms were completed by 68 attendees.

Round 2 consultation was in the form of Design User Group workshops held in February 2019 with stakeholder groups from the Public School and High School and included the school leadership teams as well as school staff. The focus of these workshops was to further refine the educational vision for the schools as well as the spatial options across both sites. Nine (9) workshops were held. In addition, a full day of user focus groups was undertaken.

Round 3 consultation involved a schematic design walk through with school leadership and provided opportunities for feedback on the design of the new buildings, landscape, traffic management, parking and other ideas for the upgrade project.

Targeted community consultation has also been carried out to include input from the most impacted residential properties. Under the original masterplan design, potential impacts on the

property at 60 Centennial Avenue were discussed in an individual meeting with the property owner, with separate follow-up consultation after the adoption of the revised masterplan (now current proposal). Under the revised masterplan, an individual meeting was held with an affected land-owner with information of the proposed design and potential impacts provided. Follow up calls and letterbox drops were made to keep the landowner informed of the project's progress.

Feedback received from the above community consultation has been taken into consideration in the preparation of this EIS, including steps to address key concerns, as summarised in **Table 8**.

Table 8 Response to Key Concerns from Consultation

Key Concern	Response	References
• Current public school enrolments exceed capacity proposed for upgrade.	SINSW will upgrade Chatswood Public School to accommodate current enrolments and retain the Bush Campus for as long as required. The Department is currently investigating site options, include a NSW Department of Transport site on Mowbray Road for a new primary school in the Chatswood area to create an additional 1,000 primary school places for Chatswood.	N/A
• Ability of proposed upgrade to meet future demand.		N/A
• Maintaining separate sites for primary and secondary schools.	The revised masterplan maintains separate sites for the primary and secondary schools. Upgrades are proposed for each school at their existing sites.	N/A
• Relocation of the Intensive English Centre (IEC).	The IEC is to be relocated to St Ives High School to provide much needed capacity for Chatswood High School. Students graduating from the Chatswood IEC are enrolled in high schools across Sydney's northern suburbs, and this will be maintained into the future. Construction is underway for the upgrade of St Ives High School, with new facilities planned for the IEC.	N/A
• School parking availability.	The Department of Education encourages staff to make sustainable transport choices in line with their Green Travel Plan. Parking will be provided at both properties, with special support pick up/drop off access through Oliver Road.	**Section 6.3** **Appendix 21**
• Proposed building heights, scale and bulk.	The opportunities and constraints of each site were considered in detail before building locations were resolved. The final location of buildings has been determined on a balance of generated impacts (which can be mitigated) and positive impacts. The mitigation of adverse impacts such as overlooking, overshadowing and visual impacts is detailed in the assessment within this EIS. Mitigation measures have been proposed to provide a suitable level of amenity consistent with the objectives of the height and FSR provisions of Council's LEP.	**Section 6.1** **Appendix 7**
• Maintained public accessibility of the schools.	Early consultation required the design to consider out of school hours and community use. School halls have been placed near the entrance to each school, allowing ease of accessibility while maintaining school security.	**Appendix 2**
• Protection of vegetation and biodiversity zones.	The proposal has been designed with input from an ecologist and arborist to minimise impacts on biodiversity. The final design utilises most of the existing building platforms and minimises tree removal. Full assessment of the biodiversity impacts of the proposal are set out in this EIS.	**Section 6.4.2** **Appendix 11** **Appendix 31**
• Visual and acoustic impacts on neighbouring properties.	Visual and acoustic impacts of the proposed development have been considered and addressed in the design of the proposal, particularly having regard to the neighbouring properties to the Pacific Highway site on Jenkins Street and James Street. Assessment of visual and acoustic impacts are discussed in this EIS.	**Section 6.1** **Section 6.6** **Appendix 7** **Appendix 25**
• Traffic congestion, noise and general disturbances from	Traffic impacts are assessed in detail and appropriate mitigation measures have been adopted to respond to the anticipated increase in traffic. Noise impacts from traffic have	**Section 6.3** **Section 6.6**

5 Consultation

Table 8 Response to Key Concerns from Consultation		
Key Concern	**Response**	**References**
school drop off and pick up.	been assessed for intrusion into school buildings, with appropriate mitigation measures adopted in response to these impacts. Noise impacts external to the site resulting from traffic will remain consistent with current conditions.	**Appendix 21** **Appendix 25**
• Managing impacts on students during construction.	The proposal has included preparation of a Preliminary Construction Management Plan which outlines a range of actions to minimise impacts on students and residents, and which incorporates the mitigation recommendations of the construction noise and vibration assessment prepared by Day Design, including the use of quieter equipment to minimise noise, restriction of impulsive tonal noise to be restricted to the hours of 9am and 4pm, management plans for construction vehicles and use of 'quacker' reversing alarms rather than 'beeping' alarms.	**Appendix 25** **Appendix 33**
• Managing impacts on residents during construction.		

Community consultation will continue throughout the assessment and construction phases of the project. Future consultation will include:

- Ongoing management of content for the dedicated Project website.
- Ongoing management of Consultation Manager Database.
- Ongoing project information dissemination to provide timely and clear information, including newsletters, media releases, factsheets, community updates, letterbox drops.
- Presentation of 3D models of new school.
- Launch of new school logo and uniform.
- Dedicated school Facebook page.

5.3 Public Authority Engagement

5.3.1 Transport for NSW and the former Road and Maritime Service

TfNSW and RMS issued comments for inclusion in the SEARs for the proposed development. Following issuing of the SEARs, the project team consulted with the RMS to discuss matters relating to the proposed upgrades of Chatswood Public School and Chatswood High School.

A meeting was held on 10 April 2019 with the project team and officers from NSW Roads and Maritime Services (RMS). Discussion related to traffic management, pedestrian routes, student drop off and pick up zones and car parking.

There were no objections raised by any parties to the proposal, and all matters raised which required further action/information/assessment have been addressed in the body of the documentation supporting this DA.

A draft copy of the TAIA was issued to TfNSW for review and comment prior to submission on 25 February 2020. At the time of printing, a response had not been received from TfNSW however it is anticipated that feedback will be provided for consideration at the Response to Submissions stage of the SSDA assessment.

5.3.2 NSW Government Architect

The project team has carried out consultation with Government Architect NSW (GANSW) through attendance at the State Design Review Panel (SDRP) on 18 July 2018, 20 February 2019, 27 March 2019 and 9 November 2019.

The first three meetings were based around the previous concept of a split campus structure. Based on feedback provided by the SDRP, the proposal was amended to incorporate specific changes to the overall design, primarily responding the character and physical connection between the two sites. The final meeting was to present the revised concept of retaining the

public school on the Pacific Highway site and the high school on the Centennial Avenue site. The SDRP noted:

> *"Despite the site complexity and various programmatic changes, the design team continues to produce thoughtful and well-resolved responses."*

The SDRP recommendations and the design team response are provided in **Table 9**.

Table 9 Design response to GA feedback

GA feedback	Design response
Material resolution – with distinct material character for the two sites	The facades and finishes are distinctly different between the two sites, with the Pacific Highway site responding the heritage buildings and incorporating brick work facades, while the Centennial Avenue site is more modern with glazed finishes that reflect the natural environment of the site.
Transition spaces – exploring the thresholds between built/natural and old/new	The proposal has adopted a range of interim spaces inside, between and outside of buildings, including adoption of material junctions to provide contrast and relief across the site.
Landscape plans – develop as an organising feature for the site	Landscape plans have been developed with this feedback in mind and provide a sense of connection between the built form and natural environment
Precinct plan – logistics for shared facilities, boundary, wayfinding, supervision	CPTED principles have been incorporated into the design and are discussed further at **Appendix 4** of this EIS.
Integrated topography – enhance spatial response to topography	The buildings on both sites respond to the topography, with the Pacific Highway site particularly focusing on this aspect of using built form to provide accessible paths of travel through the steep topography of the site.
Environmental performance – detail ventilation, lighting and other strategies	Environmental performance has been addressed in the design and the ESD report at **Appendix 28.**
Indigenous engagement – report on local community consultation	An ACHA has been prepared for the project (**Appendix 10**) and consultation has been undertaken with the LALC and registered Aboriginal parties.

Architectus has provided a detailed response to the most recent SDRP minutes at **Appendix 7**.

5.3.3 Willoughby City Council

Meetings were held with Willoughby City Council on 16 April 2019 and 29 November 2019 to discuss the proposal and gather feedback. **Table 10** provides an overview of key issues raised and the design/ project response.

Table 10 Consultation Summary 'Willoughby City Council' - Key Issues and Response

Key Issue	Design Response
Traffic Congestion	Addressed within the Traffic and Accessibility Impact Assessment (**Appendix 21**).
Preservation of district views	District views have been preserved within the site and built form to have a minimal impact on district views for neighbouring dwellings
Preservation of heritage curtilage	Both Building A and B are being retained and the curtilage around Building A will increase as a result of the proposal
Solar access to play areas	Solar access diagrams in Design Analysis Report indicate solar access for the Pacific Highway site will be improved in the morning and approximately 50% of the main play space will receive direct solar access during the lunch break. There is good solar access on the Centennial Avenue site, which is filtered through the existing established vegetation.

5 Consultation

Table 10 Consultation Summary 'Willoughby City Council' - Key Issues and Response	
Key Issue	**Design Response**
Biodiversity concerns for Centennial Avenue	Biodiversity Development Assessment Report prepared at **Appendix 31**, which concludes that vegetation removal will be offset by the purchase of biodiversity credits (**Section 6.4.2**).
Arborist report – show trees to be retained/removed	Arborist report prepared at **Appendix 11** and Landscape plans at **Appendix 14** detail trees proposed for retention and removal.
Community use of buildings and sports facilities	Community use will be enhanced by proposed development due to the provision of two new multi-purpose halls. No change proposed to existing use of community use of sports facilities.
Interface issues with P1 and neighbouring properties – consider overshadowing, overlooking, noise and building bulk introduced by reduced setbacks.	Addressed in the Design Analysis Report at **Appendix 7** and at **Section 6.1.2**. The assessment considers a range of matters arising from the building height and setbacks, including overshadowing, noise/acoustic amenity, privacy, bulk and scale, and view loss. The assessment concludes that impacts generated by the proposed Building P1 are considered acceptable and are capable of being mitigated against such that an acceptable level of amenity is achieved at adjoining properties.

5.3.4 Utility Providers

BSE has consulted with Ausgrid and telecommunications providers (**Appendix 18**) and WGE has consulted with Sydney Water and Jemena Gas (**Appendix 17**) as part of the preliminary design process. This consultation ensured a complete understanding of the project specific requirements was obtained to inform the proposed augmentation of infrastructure, incoming lead-in services capacity and proposed point of entry locations of services from the boundary.

6 Environmental Assessment

The following subsections provide a detailed assessment of the following environmental issues:

- Built form and urban design;
- Aboriginal cultural heritage;
- European heritage significance;
- Traffic, transport and parking;
- Tree removal and biodiversity;
- Landscape;
- Noise and vibration; and
- Ecologically sustainable development.

Other environmental issues are assessed in **Table 13** and the suitability of the site for development is assessed in **Table 14**.

6.1 Built Form and Urban Design

The brief for the project requires a unique approach to each school site, with consideration of the unique opportunities and constraints that present at each property. The design context of the Pacific Highway site sits within a transitional zone atop a hill between high-rise development and low-density residential development. The design context of the Centennial Avenue site is comprised of a valley topography within a heavily vegetated bush setting.

Architectus has set out the approach to the analysis of the site constraints and opportunities, as well as the design response to these matters, in a Design Analysis Report (**Appendix 7**). The Design Analysis Report identifies the urban residential context of the site and surrounds, and sets out the environmental factors and pedagogical approach that informed the design including:

- Existing urban context and interface with neighbouring built form;
- Existing site heritage and interface with neighbouring dwellings of local heritage significance;
- Environmental factors including climate analysis, topography of the land, existing view corridors and existing vegetation
- Clear and well-defined pedestrian and vehicle access points which respond to the surrounding road, pedestrian and bicycle networks;
- Existing services and easements;
- Existing built form to be retained within each site;
- Consideration of security and proposed after-hours access;
- Learning community model of site organisation for Chatswood Public School; and
- Learning neighbourhood model of site organisation for Chatswood High School.

6.1.1 Pacific Highway Site

Site and Design Context

The Pacific Highway site was designed around the concept of a ‘city campus’ due to its interface with Chatswood CBD and ‘a school on a hill’ due to its topographical location. An opportunities and constraints study of the site identified the main site constraints, which are steep topography and preserving the heritage items including their curtilage and sightlines to and between them.

6 Environmental Assessment

The study then identified the areas of the site suitable for development (**Figure 35**). The proposed built form has been designed to improve view lines and provide appropriate interface with the existing heritage buildings (Buildings A and B), and to retain 'the Lowers' outdoor play spaces.

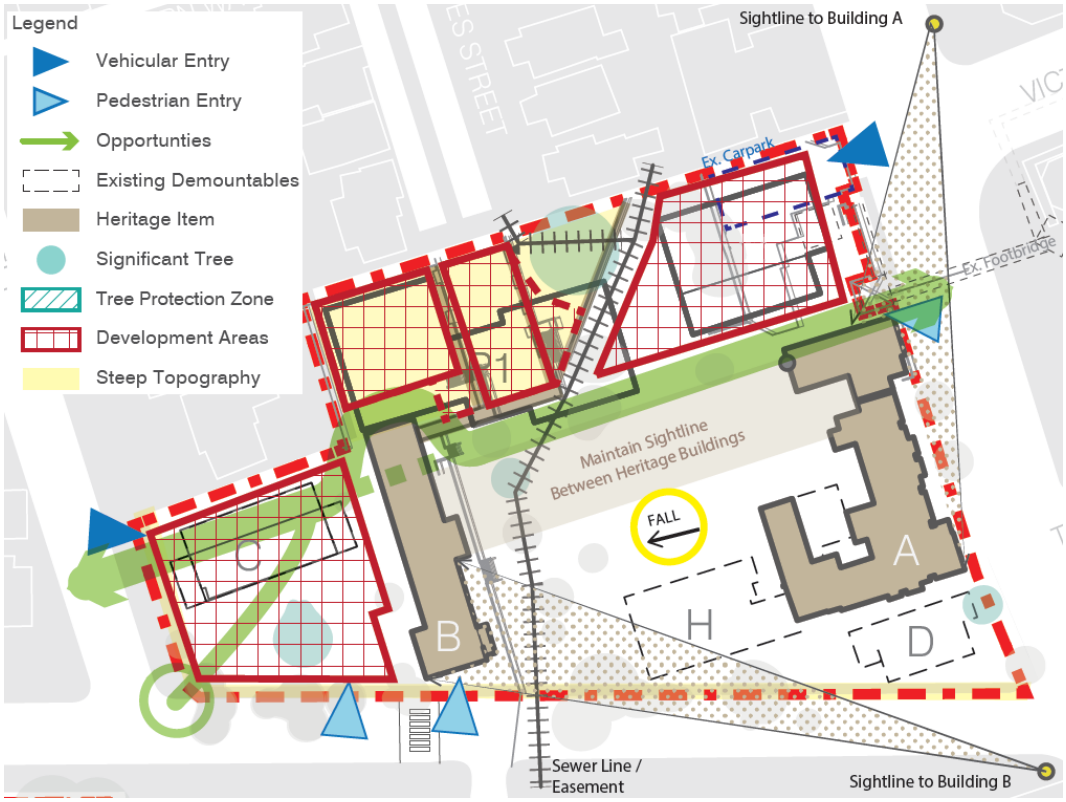


Figure 35 Site constraints and developable area – Pacific Highway site

The proposal includes the demolition of Buildings D, H and I as well as the three (3) COLAs adjacent Buildings A and H at the Pacific Highway site. Building D is a two (2) storey demountable classroom structure. Building H is a non-sympathetic addition for a hall to Building A which is being removed to improve play space and open up views to Building A. Building I is a Building Education Revolution classroom building that will need to be demolished to accommodate additional classroom and play space.

Four (4) new buildings are proposed for Chatswood Public School along the northern boundary of the site between Jenkins Street and Pacific Highway (**Figure 36**), including:

- Building G – hall;
- Building P (which includes Buildings P1 and P2) – homebases; and
- New car park with sports court above.

6 Environmental Assessment

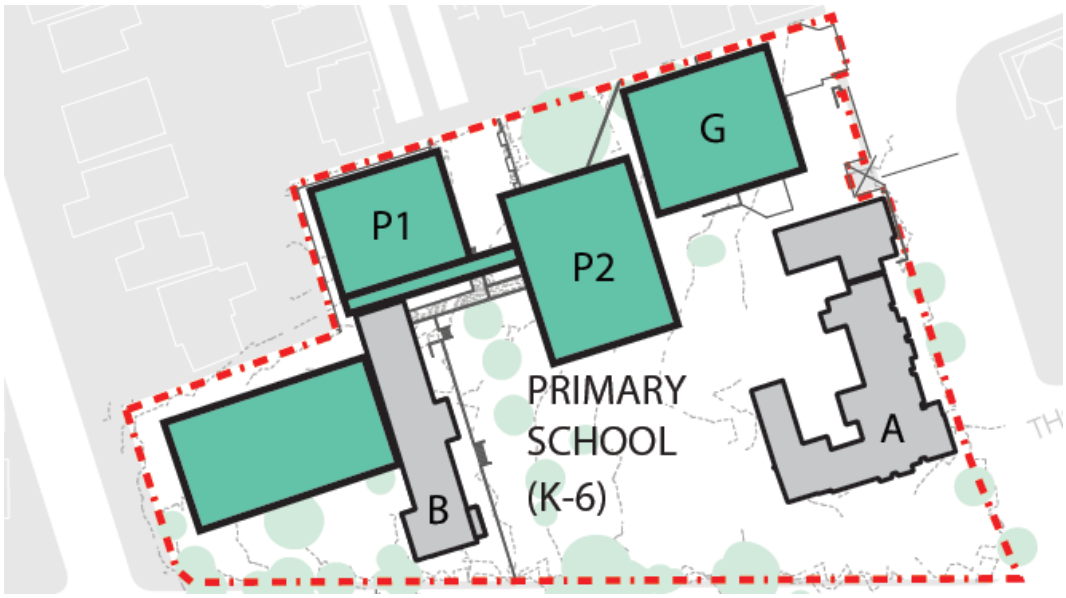


Figure 36 Pacific Highway proposed site layout

Building G

Building G is a new single-storey hall with a stage, seating for 264 people, a communications room, PE store rooms, chair store, cleaners store, OHSC kitchen/store/office, and toilet facilities (**Figure 37**).

The hall will provide a new interface with the public domain at the Pacific Highway frontage, with layout and treatment designed in response to view corridors to/from Building A. This location is also supportive of the potential future community use of the hall, allowing immediate access to the building from the public domain without requiring internal access to the site.

Proposed Building G is set back 12.8 metres from the Pacific Highway, which preserves view corridors from Pacific Highway (southbound) to heritage Building A (see **Figure 38**). Building G will house the multi-purpose hall and OSHC facility. It is a low-level built form in the context of the school that is part single and part double height. The building is constructed of glazing and brick, the upper level has a gable roof, which echoes the built form of Building A.

6 Environmental Assessment

Figure 37 Perspective of Building G from Pacific Highway with Building P2 in the background.

Figure 38 Building A (left) and Building G (right) viewed from Pacific Highway

Buildings P1 and P2

Buildings P1 and P2 have been designed around the existing significant topographical fall across the site and will encompass and retain the play-space in 'the Lowers', while significantly improving accessible paths of travel throughout the site.

Building P1 reads as a rise of seven (7) storeys but comprises five (5) storeys of built form and two (2) storeys of covered play space. The building 'steps' up the site and will accommodate the special support unit in addition to primary school learning spaces. It will encompass the bottom level of the Lowers play space on Lower Ground 2 and an over-height covered play space area on Ground level. The remaining five (5) levels will comprise learning facilities and ancillary uses (**Figure 39**).

Building P2 is a four (4) storey building with uncovered play space on the roof area. The ground level contains the canteen and specialist classrooms in a reduced footprint, while Level 1 contains the library at a full floorplate and the upper levels contain learning spaces and ancillary facilities. Building P2 provides connectivity to the main play area as well as a walkway connection to Building P1.

Building P2 is located 3.3 metres from the south-west corner of Building G and Building P1 is located north-west of Building P2, with a building separation of 9.33 metres. P1 is setback

4.55 metres from the western (rear) boundary and between 2.01 and 3.1 metres from the northern (side) boundary.

The east-west facades of Buildings P1 and P2 are articulated brick to interface with heritage buildings A and B. The brickwork also provides visual privacy and includes narrow glazing to reduce harsh sunlight. There is a “green cutout” through the centre of the eastern façade to provide connection with the outdoors, which is screened to create a sense of privacy. **Figure 40** is a southern perspective of Buildings P1 and P2.

Figure 39 Perspective of P1 looking west adjacent to Building P2

Figure 40 Southern perspective of Buildings P1 and P2

Carpark and Sports Court

A new car parking area is proposed off the existing Jenkins Street access, providing 18 spaces including drop off/pick up for the Special Support Unit students with associated bulk/gardening storerooms and adjacent loading and waste storage area.

A structure is then proposed above the car park to provide an additional games court, with internal elevated ramp access to Building P1 above the existing footpaths adjacent to Building B.

The carpark and sports court will be setback 5 metres from the northern (side) boundary with the neighbouring residential dwelling and between 2.75 metres and 3.75 metres from the Jenkins Street (western) frontage.

Discussion of Built Form

The north-south facades are highly glazed to increase passive natural lighting, link views between teaching spaces and outdoor spaces and highlight the significant views towards the Lane Cove district. The facades include articulated brick pop-outs to provide a playful rhythm and a spandrel for shading.

P1 and P2 respond to the topography of the site and will create accessible paths of travel from the Lowers through to the upper parts of the site, which is a significant improvement from the existing situation where the Lowers are only accessible via stairs.

An undercover carpark will be constructed adjacent to Jenkins Street for 18 vehicles and will have a sports court located above it. **Figure 41** presents a streetscape from Jenkins Street.

Figure 41 Jenkins Street streetscape

In practical and operational terms, the proposal has been developed through a comprehensive consultation process (refer **Section 5**) including input from the existing school community, PRG, residents, Department of Education, Government Architect and the relevant statutory authorities.

Part of the process has included a review of pedagogy, which has provided an opportunity to transition towards a learning community model (refer **Appendix 7**) and to provide accessible learning spaces, including flexible spaces which enable teaching to occur in a variety of methods.

The Design Analysis Report prepared by Architectus provides an assessment of the Design Quality Principles for schools set out in the Education SEPP, as prepared by the GANSW. The Design Statement confirms that the proposed development is consistent with the design quality principles, achieving a high-quality design outcome that is representative of a thought-out, tested and community-led design process and can be summarised as follows:

- Design is distinct and responds well to context, landscape, steep topographpy and heritage values. Materiality ties in with existing built form on site and provides a good transition between residential development and commercial development on Pacific Highway.
- Ecologically sustainable principles have been incorporated into built form and landscaping.

- Accessibility is significantly improved from existing conditions, with accessible paths of travel from Jenkins Street through P1 and P2 to the heart of the site providing equity and inclusivity.
- Diverse range of indoor and outdoor learning and play spaces provide improved amenity for students. Design includes good sight lines and territorial reinforcement to support supervision and safety of students.

The proposal promotes good design and improved amenity of the built and natural environment in response to the environmental, social, historical and contextual factors of the site.

6.1.2 Assessment of Impacts on Neighbouring Dwellings – Building P1

Building P1 has a building height of 30.3 metres, which exceeds the 8.5 metre height of buildings control for the site under Willoughby LEP 2012 (see **Figure 42**). Given the location of P1 and P2 adjacent to existing residential dwellings located on Jenkins Street and James Street, the environmental impacts of the proposed built form have been assessed, with particular regard to the neighbouring properties.

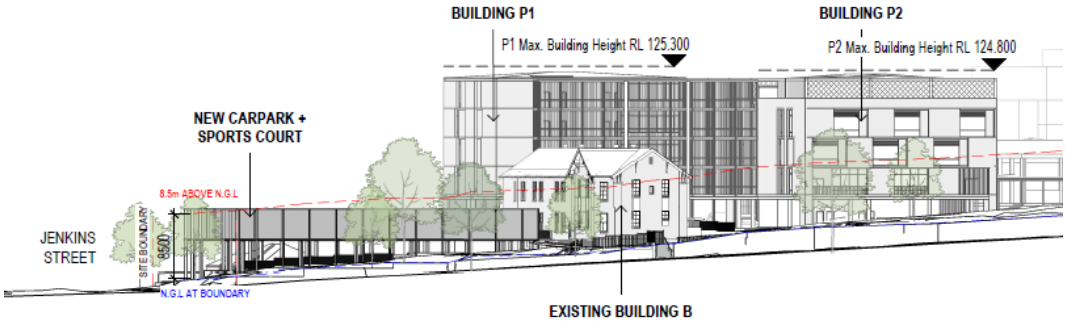


Figure 42 Southern elevation of P1 and P2 indicating 8.5 metre height limit (red line)

The assessment of impacts on neighbouring dwellings has included consideration of the following matters arising from the building setbacks and height:

- Overshadowing
- Noise/acoustic amenity;
- Privacy;
- Bulk and scale; and
- View loss.

These impacts are discussed in turn below.

Overshadowing

Architectus has prepared solar impact plans and perspectives of existing and proposed conditions for neighbouring properties, in particular for No. 1 and No. 3 Jenkins Street, which are located directly to the west of proposed P1. The solar impact assessment (**Appendix 7**) indicates that the Chatswood CBD high-rise development presently overshadows these properties up to 10am. From this point to 12pm, Building P1 will contribute moderate additional overshadowing to the private open space of No. 1 Jenkins Street, after which both No. 1 and No. 3 Jenkins Street will have full solar access to their dwellings and more than 50% of their private open space unimpeded by the proposed building. This is compliant with Willoughby DCP solar access requirements.

The extent of impacts at 10am, 11am and 12pm are highlighted in **Figure 43**, with the blue line indicating the P1 and P2 shadow outline for comparison.

6 Environmental Assessment

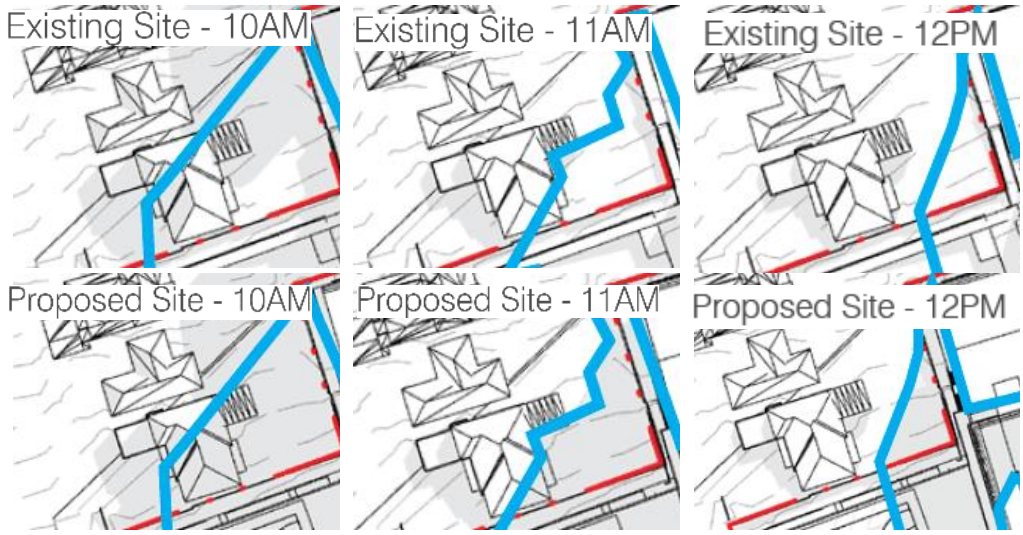


Figure 43 Existing and proposed solar conditions from proposed development 10am-12pm

Noise/Acoustic Amenity

An acoustic assessment has been prepared by Day Design (**Appendix 25**) that examines the operational noise impacts of the proposal. This assessment concluded that subject to the implementation of the recommended mitigation measures (suitable glazing, building materials and playground management), the proposal complies with the applicable noise criteria. A detailed assessment is provided in **Section 6.6**.

Privacy

With regard to privacy impacts of P1 on No. 1 and No. 3 Jenkins Street, **Figure 44** is a view from Jenkins Street facing Chatswood CBD, indicating the relationship between Building P1 and the adjoining properties. Windows are minimised on this western elevation, and the covered play area will be landscaped and treated to ensure the privacy of the adjoining properties is protected.

Figure 44 View of western façade of P1 from Jenkins Street

Bulk and Scale

With regard to the bulk and scale, current views from neighbouring properties to the Lowers comprises a series of brick retaining walls to cater for the significant level change. The current views therefore comprise a bulk and scale that is not natural, softened or articulated (see **Figure 45**).

6 Environmental Assessment

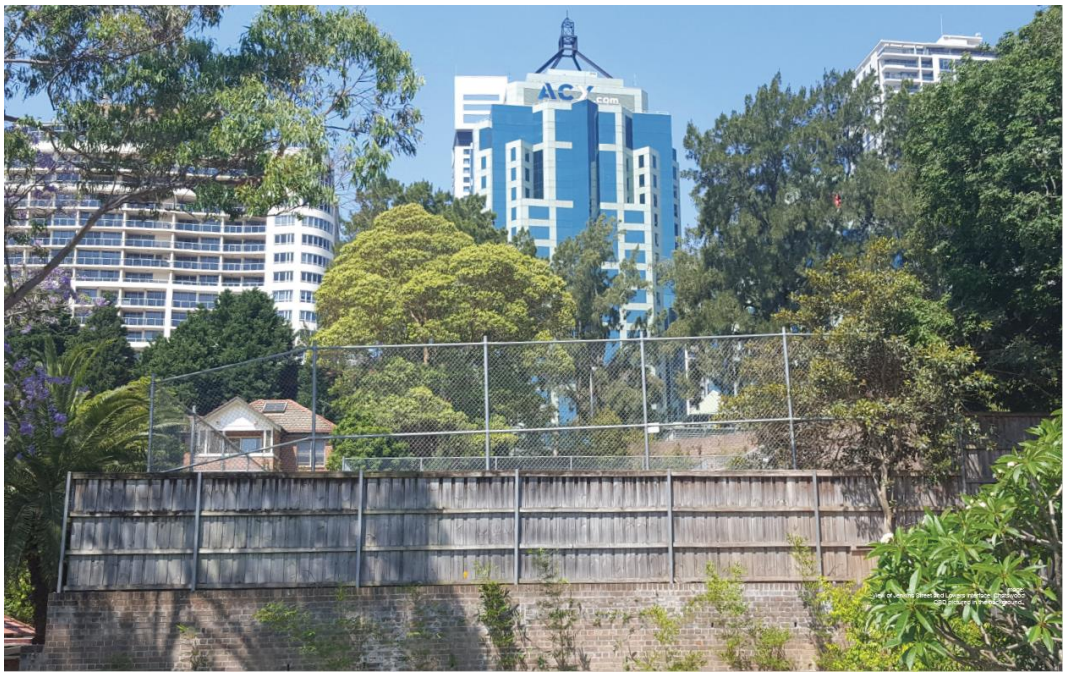


Figure 45 View of interface between Jenkins Street properties and the Lowers

P1 is located uphill from Jenkins Street and the open play space on Ground Level (which appears to be Level 3 from Jenkins Street) is below street level for Pacific Highway. Therefore, the building presents as a four (4) storey building from that street level. The building creates a transition up the hill to connect the lower portion of the school site with upper portion to create accessible paths of travel and utilise the available space. The building is a transition between the low density residential developments and the high density/rise Chatswood CBD buildings to the east over Pacific Highway.

The extent of the impact of bulk and scale to neighbouring properties is therefore dependent on the location of the viewer and contrast between current and proposed built form/mass. In the worst case scenario, the building will read as seven (7) storeys in height from a ground level that is lower than the base of the building, thereby accentuating the building height. In these cases, the built form would not be viewed in its entirety at any standard viewing scenario (sitting, standing or moving about in private open space).

Where the building is viewed more in its entirety, the building's design lends to high quality façade treatment that will increase the visual interest from that of the existing brick retaining walls of the Lowers.

View Loss

This EIS has given high-order consideration to the planning principles set out in *Tenacity Consulting v Warringah [2004] NSWLEC 140* as a means to assess the potential for view loss. The *Tenacity* case identifies four (4) planning principles to assess view loss caused by proposed development (see **Table 11**).

Tenacity does not strictly apply in this instance, as Building P1 will not impact district views for residential properties due to the location and orientation of land. Existing district views enjoyed by residential properties are generally to the east/north-east (away from the proposed building). Building P1 may potentially result in view impacts upon view corridors to/from the City, and therefore these must be the subject of assessment.

Table 11 View sharing assessment from Tenacity Consulting v Warringah	
Principle	**Assessment**
Assessment of views to be affected	The view that will be affected from the Jenkins Street properties is the view through to the heritage buildings on the Chatswood Public School site and through to the Chatswood CBD. It is an obscured view based on existing vegetation and structures. The view impact will be partial, as indicated in **Figure 44** above.
What part of the property are the views obtained from?	The views are obtained from the open space at the rear of the house and some windows on the eastern elevation of the house. Most views would not be enjoyed from a sitting or standing position, but would require the resident to be scanning an elevated horizon to capture glimpses of the Chatswood CBD buildings.
Extent of the impact	The proposed Building P1 will have a partial impact on the views to heritage Building B, and Chatswood CBD.
Reasonableness of the proposal that is causing the impact	Building P1 presents as a seven-storey structure to No. 1 and No. 3 Jenkins Street on the western elevation. However, P1 presents as a four-storey structure from Pacific Highway on the eastern elevation. The building is providing essential educational infrastructure while also enabling the school to maximise outdoor play-space on the constrained site. The building is significantly improving accessibility through the site. No. 1 and No. 3 Jenkins street already look up at the very tall retaining walls that create 'the Lowers' play space on the Public School site. The built form is sympathetic to existing heritage structures on the site and is working with the topography of the site to create improved outcomes for students, particularly for those in the special support unit. Having regard to the above, the reasonableness of the proposal is considered justified in the introduction of minor view impacts to obscured view corridors to heritage Building B and the Chatswood CBD at the elevated horizon level.

Assessment Conclusion

The morning sun on the site and surrounding dwellings is currently significantly impacted by the high-rise built form in Chatswood CBD. The assessment of the impacts of Building P1 on neighbouring dwellings indicates a minor impact to solar access from existing conditions at No.1 and No.3 Jenkins Street, around 11am. However, these properties will maintain good solar access throughout the afternoon. The properties on James Street are located north of the site and accordingly will not be impacted by overshadowing from P1 and P2. Acoustic impacts are considered satisfactory subject to implementation of mitigation measures.

The bulk and scale of P1 is in line with the steeply sloping topography of the site. The dwellings on Jenkins Street already have an outlook dominated by steep retaining walls that are the equivalent height of the Ground Floor (level 3) open play space provided in P1. The presentation of the four-storey built form on the eastern elevation is consistent, or lower in height, than approved and existing development adjacent to the Pacific Highway site. The assessment against the *Tenacity* principles establishes that neighbouring sites will still have partial views through to Chatswood CBD, which is not considered to be a view of significant value.

Accordingly, the environmental impacts of proposed P1 and P2 on these properties are considered acceptable and are capable of being mitigated against such that an acceptable level of amenity is achieved at adjoining properties.

6.1.3 Centennial Avenue site

Site and Design Context

The Centennial Avenue site has been designed around the concept of a bush campus or 'a school in the trees' due to its mature trees surrounding the site and cascading terrain. The built form was designed to utilise the existing topography and create connections with the landscape. The organisation of buildings and learning spaces was designed around a learning neighbourhood model (refer **Appendix 7**).

6 Environmental Assessment

Three (3) new buildings are proposed in the general location of the original campus layout (**Figure 46**), in the north-western corner of the Centennial Avenue site, including:

- Building Q – administration, staff, library and general learning spaces;
- Building S – General learning spaces; and
- Building T – hall and general learning spaces.

Figure 46 Centennial Avenue site layout

In regard to the topography, as there is a fall across the site the footprints of the new buildings are positioned and designed to respond to the slope of the site to achieve the most level access arrangements between facilities whilst minimising the extent of earthworks required to accommodate the buildings. This has resulted in the 3-4 and 4-5 storey presentations of buildings Q and S respectively.

Building Q

Building Q is a four-storey building located adjacent to the main pedestrian entry from Centennial Avenue and runs north-east to south-west on a diagonal to the street frontage. Building Q is set back 12.84 metres from the northern boundary and consists of two structures with a void in the centre. In response to the topography of the site, the building will present as a three (3) storey structure to the public domain (**Figure 47**) and a four (4) storey building to the school interior (**Figure 48**). A total of 12 general learning spaces are provided, as well as a variety of specialist learning spaces.

The northern portion of the building will house the administrative functions of the school, while the southern portion will include the library, teaching spaces and the canteen. The building facades are articulated concrete in a modular pattern with glazing.

6 Environmental Assessment

Figure 47 Building Q as viewed from Centennial Avenue

Figure 48 Western façade of Building Q indicating the void in between the two structures

Building S

Building S is the largest of the new high school buildings and is located south of Building Q and Building T adjacent to existing Building K. Building S is a part four (4) part five (5) storey building (**Figure 49**), comprising a combination of general learning spaces and specialist facilities including science labs and workshops. The building includes outdoor leaning spaces on the upper level, which connect the built form to the landscape. The east-west facades will be modular pattern, articulated concrete, while the north-south facades will contain open breezeways and external circulation.

6 Environmental Assessment

Figure 49 Perspective of Building Q (left) and Building S (right)

Building T

Building T is a new hall two storeys in height, inclusive of a mezzanine level, located in the north-western corner of the site in a north-south alignment. Building T is setback 12.49m from Centennial Avenue and 23.88m from the western property boundary. The building comprises a multi-purpose sports area with stage, teaching spaces, amenities, plant and storage.

The hall is rectangular in shape and runs in a north-south direction. The hall will be constructed from brick, concrete and glazing. Building T utilises the natural topography of the site to locate the hall down the hill with the main entryway and circulation area on the upper level opening onto the new high school green in the centre of the new buildings.

Discussion of Built Form

The proposal has been developed through a comprehensive consultation process (refer **Section 5**) including input from the existing school community, PRG, residents, Department of Education, Government Architect and the relevant statutory authorities. Part of the process has included a review of pedagogy, which has provided an opportunity to rationalise existing development on the site and organise the site into learning neighbourhood model. The new buildings will provide a modern, flexible learning environment to cater for the educational needs of the expanding population in the local area.

The Design Analysis Report prepared by Architectus provides an assessment of the Design Quality Principles for schools set out in the Education SEPP, as prepared by GANSW. The Design Statement confirms that the proposed development is consistent with the design quality principles, achieving a high-quality design outcome that is representative of a thought-out, tested and community-led design process and can be summarised as follows:

- Design is distinct to the bush campus and responds well to context and landscape. Materiality ties in with existing built form on site and the wider urban context.
- Design has focused on retention of trees and biodiversity values. However, where tree removal is unavoidable, the impact will be offset via the purchase of biodiversity credits. Ecologically sustainable principles have been incorporated into built form and landscaping.
- Accessibility has been improved throughout the site and all proposed buildings are consistent with intent of the DDA, providing equity and inclusivity.

- Diverse range of indoor and outdoor learning and play spaces provide improved amenity for students and the wider community. Design includes good sight lines and territorial reinforcement to support supervision and safety of students.

6.1.4 Assessment of impacts on Neighbouring Dwellings

The proposed built form is located a significant distance from neighbouring residences and accordingly the proposal will have no impact on privacy or overshadowing. Detailed assessment is provided with regard to the interface between neighbouring items of heritage significance and the proposed built form (**Section 6.2.2**), which concludes that the development will have minimal impact on these items. Acoustic assessment at **Section 6.6** concludes that subject to implementation of the recommended mitigation measures, the acoustic impacts of the proposal are acceptable.

6.2 Heritage Significance

6.2.1 Aboriginal Cultural Heritage

An Aboriginal Cultural Heritage Assessment (ACHA) (**Appendix 10**) has been prepared for both the Centennial Avenue and Pacific Highway sites by Eco Logical Australia (ELA. The ACHA was produced in accordance with the *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011); the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010); the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010); and relevant statutory controls.

Aboriginal community consultation was undertaken for the project following the *Aboriginal cultural heritage consultation requirements for proponents 2010* and resulted in the registration of ten (10) unique Registered Aboriginal Parties (RAPs) for the project. The RAPs were involved in consultation throughout the project and provided feedback on the ACHA where relevant.

An extensive AHIMs search was conducted, which identified 37 registered Aboriginal sites or places within 3.5km of the study area but found no registered sites or places within or adjacent to the site.

A site survey was carried out on both campuses by the archaeologist and the heritage site officer from the Metropolitan Local Aboriginal Land Council (LALC). The survey identified both campuses as being heavily disturbed due to the extent of development, accordingly survey coverage was restricted to exposed soils and fill soils.

The results of community consultation and a site survey of both campuses conducted by an Archaeologist and a Heritage Site Officer with the Metropolitan Local Aboriginal Land Council has identified that:

> *Zero Aboriginal heritage sites will be harmed by the proposed development. No archaeological mitigation measures are required.*

The ACHA provided two (2) recommendations as follows:

> ***Recommendation 1 – No AHIP warranted, works may proceed with caution***
>
> *No AHIP is warranted for the study area. Although general measures will need to be undertaken. These general measures include:*
>
> - *Aboriginal objects are protected under the NPW Act regardless if they are registered on AHIMS or not. If suspected Aboriginal objects, such as stone artefacts are located during future works, works must cease in the affected area and an archaeologist called in to assess the finds.*
> - *If the finds are found to be Aboriginal objects, the OEH must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.*

- *In the extremely unlikely event that human remains are found, works should immediately cease and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, the OEH may also be contacted at this time to assist in determining appropriate management*

Recommendation 2 – Submit ACHA/ATR to AHIMS

In accordance with Chapter 3 of the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) the ACHA should be submitted for registration on the AHIMS register within three months of completion.

An Archaeological Assessment (**Appendix 20**) has also been prepared in accordance with NSW Heritage Branch guidelines including *Archaeological Code of Practice and Assessing Significance for Historical Archaeological Sites and Relics (2009*). This report also concluded neither the Pacific Highway site, nor the Centennial Avenue site is considered to have historical or Aboriginal archaeological potential.

6.2.2 European Heritage Significance

Chatswood Public School

Chatswood Public School is identified as an item of local heritage significance (I106) in Willoughby LEP. Accordingly, the heritage significance of the site, and nearby heritage properties, has been central to the design development of the proposal as detailed in the Design Analysis Report (**Appendix 7**). A Statement of Heritage Impact (SOHI) has been prepared by Nimbus Architecture & Heritage (Nimbus) (**Appendix 19**) in accordance with the guidelines of the Australian ICOMOS Charter for places of Cultural Significance (revised 2013) and NSW Heritage guidelines.

The SOHI identifies that Chatswood Public School has been in continuous operation since it opened in January 1896. Buildings were constructed across the site to meet the growing demand for student places, which peaked in 1933 with 2,045 students from K-12 on the site. The former Office of Environment & Heritage website provides the following statement of significance for Chatswood Public School.

> *Chatswood Public School building (built 1883) is locally significant as a grand school building in a setting which gives aesthetic significance to the streetscape. It is socially significant for all the children who attended the school and for its association with the early growth of the area.*

In order to inform the design and development of the site and retain the heritage significance, Nimbus has undertaken an assessment of the site and its buildings against the evaluation criteria set out by the NSW Department of Planning, NSW Heritage Branch to establish which elements are of heritage significance in order to inform the sympathetic development of the site. Nimbus found:

> *Chatswood Public School buildings A and B (commenced in 1895) are locally significant as grand school buildings in a setting which gives aesthetic significance to the streetscape, provides undisturbed views and vistas west towards Blue Gum Reserve and further to Lane Cove National Park and provides distinctive designated open space for children (called 'The Lowers').*
>
> *The school has historical association with Charles McCartney, a well-known Australian cricketer and Brett Whiteley, a notable Australian Artist.*
>
> *The school is socially significant for all the children who attended and for its association with the early growth of the area. It is a rare example of an early, local school that is largely intact. The school has representative significance as an institution that has continued in use since c.1883, retaining significant built fabric from three distinct phases of expansion.*

Buildings A and B and the Lowers (see **Figure 50**, **Figure 51** and **Figure 52**) are being retained under the proposal.

6 Environmental Assessment

Figure 50 Façade of Building A

Figure 51 Building B façade (part two-storey, part four-storey)

Figure 52 The Lowers and district views, with Building B in top left corner.

6 Environmental Assessment

An assessment of the proposed works including the construction of Buildings P1, P2 and G (the Hall) has identified that the works will have a minor overall cumulative impact upon the heritage significance of Chatswood Public School. Further, the visual impact of the redevelopment has been mitigated as far as possible by minimising the mass and scale of buildings due to topography of the site, which means their interface with Buildings A and B are not overbearing (see **Figure 53**, **Figure 54** and **Figure 55**).

Figure 53 Pacific Highway Elevation – development interface with heritage significant Building A

Figure 54 Centennial Ave Elevation – development interface with heritage significant Buildings A & B

Figure 55 View of school from corner of Pacific Highway and Centennial Avenue

Nimbus also assessed the impact of the redevelopment of Chatswood Public School on nearby items of local heritage significance including I66 (house at 19 Centennial Avenue), I238 (old fire station at 767 Pacific Highway) and I245 (house at 9 Centennial Avenue) and found that no physical or visual impact will occur to these items as a result of the proposed redevelopment.

The proposed redevelopment will create increased curtilage around Building A due to demolition of existing structures on site. This in combination with the single storey massing of the hall has been assessed as contributing to the retention of Building A's significance.

The proposed design of the new buildings such as glazing to allow the façade to be broken down into various components, further allows the heritage buildings to be visually set apart from the proposed new structures.

The proposed retention of mature trees along the streetscape will also mitigate the visual impact of the bulk and scale of new buildings on the site and the relocation of the at-grade carpark from Pacific Highway to an undercover carpark at the rear of the site will ensure that

carparking does not have adverse visual impact on the heritage streetscape and will enhance views to Building B.

Chatswood High School

A SOHI has also been prepared by Nimbus for the redevelopment on the Chatswood High School site (**Appendix 19**). Chatswood High School is not identified as an item of local heritage significance, however, it is in proximity to four items of heritage significance, as identified in Willoughby LEP. **Figure 56** is an extract from Willoughby LEP indicating the location of the heritage items in relation to the High School site.

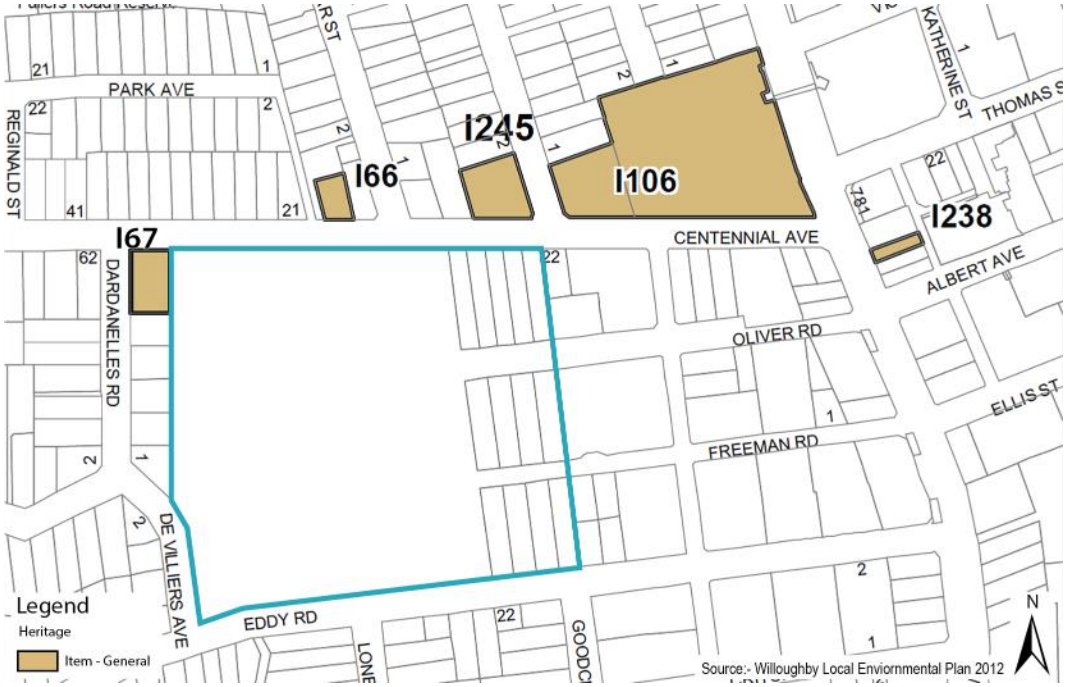


Figure 56 Extract from Willoughby LEP Heritage Map

There are three items of local heritage significance in proximity to the proposed works, I245, I66 and I67. Item I66 (19 Centennial Avenue) and Item I67 (60 Centennial Avenue) are in the closest proximity to the proposed works at Chatswood High School, Architectus has prepared perspectives (**Appendix 7**) comparing the existing view from I66 and I67 and the proposed view following completion of the works, an extract is at **Figure 57**.

6 Environmental Assessment

Figure 57 View impacts as a result of the proposal for heritage item I66 – 19 Centennial Avenue

With regard to item I66 and item I245, the SOHI concluded that the proposed works will have a "negligible visual impact" to the setting of these heritage items due to their respective locations on the opposite side of Centennial Avenue.

Item I67 is adjacent to the western boundary of the site and will be in closest proximity to proposed Building T. The SOHI describes the impacts of the proposal on I67 as follows:

> *The proximity of proposed Building T to locally listed heritage Item I67 will be more apparent when viewed from Centennial Avenue. Siting Building T further away from the adjoining boundary allows the single storey heritage cottage, (item I67) to have increased visual curtilage when viewed from the streetscape context. Building T is clearly illustrated as separate with a bush setting of approximately 2,440 m² and a Passive Sensory zone of approximately 890 m² along its western boundary to heritage item I67.*

Additional mitigation measures have been considered in design and landscaping with the visual impact of the buildings on the Centennial Avenue streetscape reduced as a result of the north-south orientation of the buildings as opposed to running parallel to the street frontage and the retention of significant trees along the Centennial Avenue frontage and western boundary of the site adjacent to I67.

The SOHI has concluded that the new development respects the established patterns in the streetscape in terms of setbacks, siting, landscaped settings, and fencing and will have a minor to negligible visual impact upon the setting of the heritage items in the vicinity of Chatswood High School due to its scale, massing and form. The perspectives in **Figure 57** support this conclusion.

6.3 Traffic, Transport and Parking

The Transport Planning Partnership (TTPP) has prepared a Transport and Accessibility Impact Assessment (TAIA) (**Appendix 21**), which provides details of transport and accessibility impacts relating to the proposed redevelopment of Chatswood Public School and Chatswood High School, as required by the SEARs.

In order to address the SEARs, the TAIA has considered current and future potential school populations on the site. Surveys, observations and interviews with staff and students were undertaken in order to understand the existing travel demands and mode choice behaviour at Chatswood Public School and Chatswood High School.

The NSW Government has committed to the planning of a new primary school in the Chatswood area to ease current and future demand on Chatswood Public School, accordingly, the TAIA has based the traffic and transport assessment on the following school population scenarios:

- Moderate occupancy: 3,200 students (1,200 primary school and 2,000 high school students)
- High occupancy: 3,600 students (1,600 primary school students and 2,000 high school students)

For assessment purposes, until a new primary school is constructed, the 'worst case' scenario would be the high occupancy rate. However, once a new primary school is constructed and operational environmental impacts would be based on the moderate occupancy rate.

The TAIA outlines and assesses:

- existing transport, parking, traffic and accessibility conditions for the site and surrounds;
- car parking, pedestrian and bicycle requirements;
- the traffic generating characteristics of the proposed development;
- suitability of the proposed access arrangements; and
- the transport impact of the development on the surrounding road network.

6 Environmental Assessment

6.3.1 Access

Chatswood Public School

Chatswood Public School currently has two main pedestrian access points and two vehicle access points. A kiss and drop zone is located along Centennial Avenue and Jenkins Street.

During construction works, construction vehicles will access the site via Pacific Highway. Pedestrian access points will remain the same, with fencing and hoardings to prevent unauthorised access to the construction site.

Upon completion of works, the primary vehicle access point will be at the Jenkins Street carpark (**Figure 58**). Jenkins Street carpark will also be the site for waste collection and loading as well as special support drop off/ pick up. The vehicle access point on Pacific Highway will only be used for loading access to the multi-purpose hall and for emergency vehicle access.

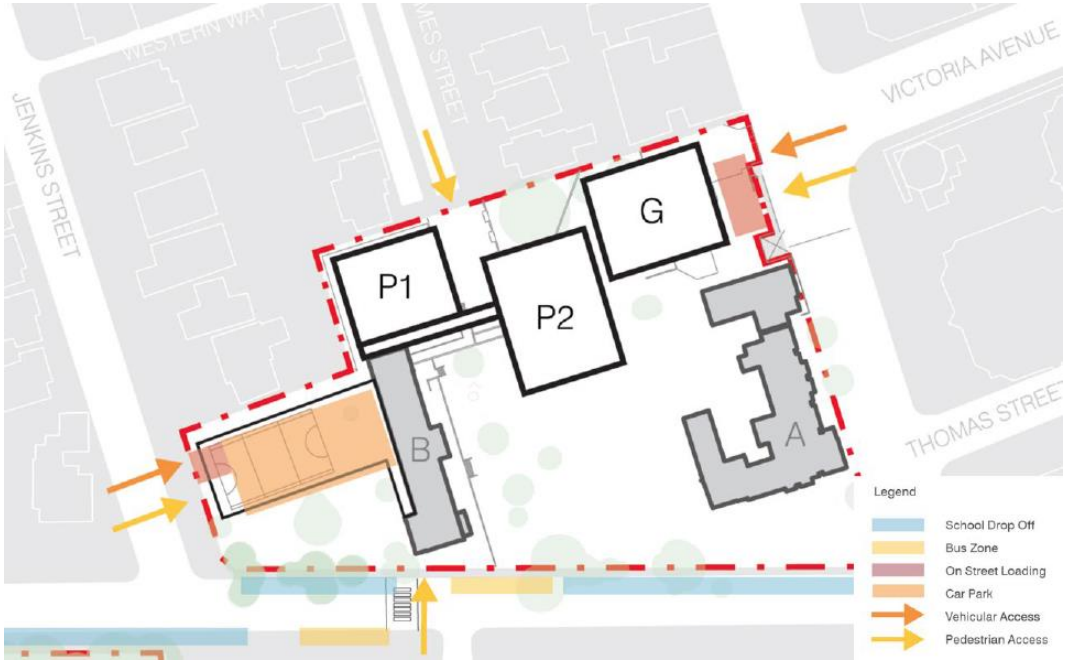


Figure 58 Proposed vehicle and pedestrian access arrangements

In order to establish how students and staff access the site, a survey was undertaken, which provides the following travel mode share statistics. These statistics have been used to assess the proposed traffic and transport impacts of the development.

- Public School Staff:
    - 69% travel by car (65% driver and 5% passenger)
    - 21% public transport (11% train, 8% bus and 2% combination)
    - 10% walk
- Public School Students:
    - 59% walk
    - 30% car passenger
    - 10% public transport (5% train, 4% bus and 1% combination)
    - 1% cycle

There is well established pedestrian infrastructure to provide safe access to the site including signalised crossings on Pacific Highway, pedestrian overpass over Pacific Highway,

pedestrian crossings along Centennial Avenue near Whitton Avenue and Edgar Street, which provide adequate infrastructure to safely accommodate the 59% of students and 10% of staff walking to and from the site, and provides good connectivity to key transport nodes.

The TAIA has demonstrated that the site is well serviced by a range of public transport options and that major train, bus and metro routes have capacity to accommodate the proposed increase in students and staff.

Chatswood High School

Chatswood High School currently has two pedestrian access from Centennial Avenue and secondary pedestrian access points from Oliver Road and Eddy Road. Vehicle access is via Centennial Avenue, De Villiers Avenue and Oliver Road, with Emergency vehicle access from Eddy Road as indicated in **Figure 59**. A kiss and drop zone is located along Centennial Avenue.

Figure 59 Proposed vehicle and pedestrian access to Chatswood High School

The survey of High School students and staff revealed the following travel mode share statistics:

- Chatswood High School Staff:
    - 85% travel by car (80% driver and 5% passenger)
    - 14% travel by public transport (12% train, 2% bus and 1% combination)
- Chatswood High School Students:
    - 57% public transport (27% bus, 24% train and 6% combination)

- 26% walk;
- 17% travel by car (1% driver, 16% passenger)

The majority of High School students access the site via public transport. There is adequate pedestrian infrastructure between the site and key public transport interchanges as detailed above. The TAIA has demonstrated that the public transport network has capacity to accommodate the proposed increase in students and staff. In addition there is a network of off-road and on-road cycle paths leading to the site to facilitate travel by bicycle.

6.3.2 Traffic

Existing traffic network performance has been analysed using SIDRA intersection modelling to establish the Level of Service (LoS) of nearby intersections. Existing conditions are identified in **Figure 60**.

	Intersection	Signal Control	AM Peak		PM Peak	
			Ave. Delay (sec)	LoS	Ave. Delay (sec)	LoS
1	Pacific Highway – Victoria Avenue	Signal	26	B	22	B
2	Pacific Highway – Centennial Avenue	Signal	26	B	55	D
3	Pacific Highway – Albert Avenue/ Oliver Rd	Signal	28	B	28	B
4	Fullers Road – Edgar Street	Priority	51	D	68	E

Figure 60 Existing LoS for nearby intersections

These statistics indicate that most intersections are operating at a satisfactory LoS with the exception of Fullers Road-Edgar Street intersection currently experiences an LoS of D in the morning peak and E in the afternoon peak; and Pacific Highway and Centennial Avenue, which currently experiences an LoS of D in the afternoon peak.

As discussed above, given that public schools may vary in their enrolments, the TAIA has considered four potential traffic generation scenarios:

1. Low Occupation – 1,200 primary and 1,800 high school students
2. Moderate/High Occupation – 1,600 primary and 1,800 high school students
3. Moderate Occupation – 1,200 primary and 2,000 high school students
4. High Occupation – 1,600 primary and 2,000 high school students

The potential traffic generation of future scenarios has been estimated based on the survey data for mode share travel statistics discussed above (**Figure 61**).

6 Environmental Assessment

Table 8.2: Future Morning Peak Trip Generation

Site	Student Population				AM Trip Rate (trip / student)	Peak Hour Trip Generation			
	Scenario 1: Mid PS + Mid HS	Scenario 2 High PS + Mid HS	Scenario 3: Mid PS + High HS	Scenario 4: High PS + High HS		S1	S2	S3	S4
Chatswood Public School	1,200	1,600	1,200	1,600	0.26	312	416	312	416
Chatswood High School	1,800	1,800	2,000	2,000	0.17	303	303	336	336
AM Total						**615**	**719**	**648**	**752**

Table 8.3: Future Afternoon Peak Trip Generation

Site	Student Population				AM Trip Rate (trip / student)	Peak Hour Trip Generation			
	Scenario 1: Mid PS + Mid HS	Scenario 2 High PS + Mid HS	Scenario 3: Mid PS + High HS	Scenario 4: High PS + High HS		S1	S2	S3	S4
Chatswood Public School	1,200	1,600	1,200	1,600	0.27	324	431	324	431
Chatswood High School	1,800	1,800	2,000	2,000	0.12	213	213	237	237
PM Total						**537**	**644**	**561**	**668**

Figure 61 Future morning and afternoon peak trip generation for four (4) traffic generation scenarios

The data indicates that scenario 1 and 3 have similar traffic generation potential to the existing school operations. It is expected that Scenario 1 or 3 would occur with the construction of the new local Primary School as committed to by the State Government. Scenario 2 and 4 are considered to be short term scenarios until the new Primary School is operational.

In considering the high occupancy scenario that is likely to occur between now and the time that a new Primary School is opened, the net difference in traffic generation is +123 trips in the AM and +109 trips in the afternoon.

The effect of the high occupancy scenario on intersection performance has been modelled through SIDRA. It is expected that the high occupancy scenario would not occur until 2036 and that it is likely that the new Primary School will have opened prior to this time. **Figure 62** and **Figure 63** indicate the impact of a high occupancy scenario based on the current rate of staff and student trip generation on intersection performance in 2036.

6 Environmental Assessment

	Intersection	Signal Control	Year 2036 Future Base				Year 2036 Future Base + Development			
			AM Peak		PM Peak		AM Peak		PM Peak	
			Average Delay (sec)	Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)	Level of Service
1	Pacific Highway – Victoria Avenue	Signal	45	D	22	B	134	F	22	B
2	Pacific Highway – Centennial Avenue	Signal	52	D	135	F	60	E	150	F
3	Pacific Highway – Albert Avenue/ Oliver Road	Signal	28	B	29	B	29	C	29	B
4	Fullers Road – Edgar Street	Priority	116	F	104	F	162	F	143	F

Figure 62 Level of Service impact of high occupancy scenario

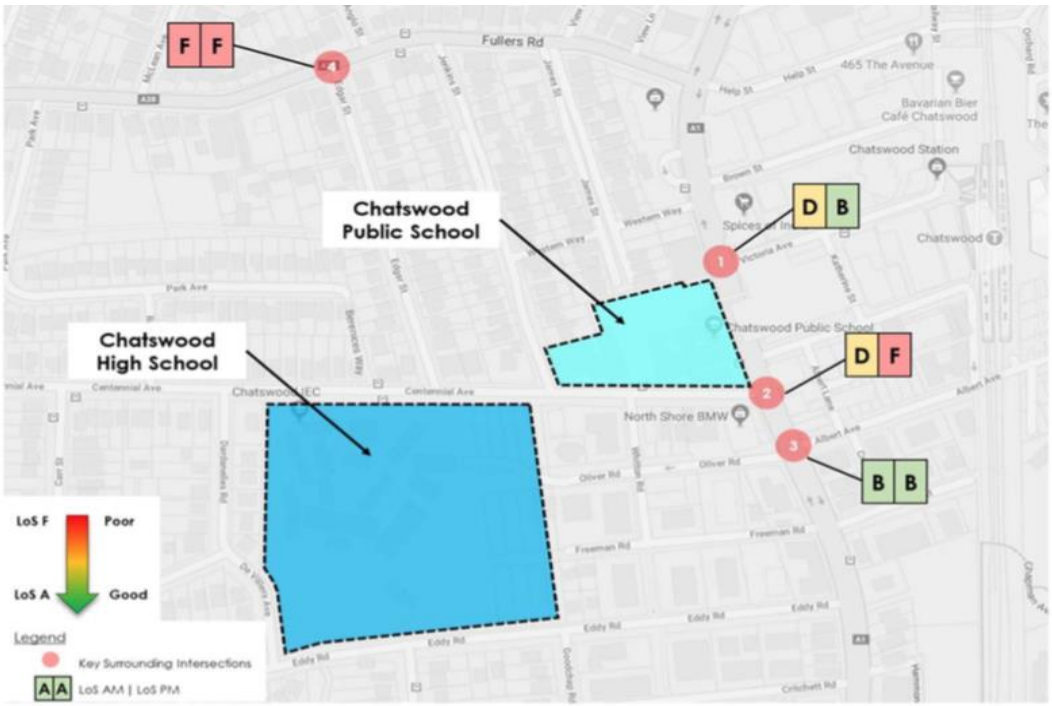


Figure 63 Level of Service impact at surrounding intersections in morning and afternoon peaks

Analysis conducted in the TAIA identifies that in order to reduce traffic impacts on the surrounding road network during the high occupancy scenario, total development traffic would need to reduce by 16 per cent (a reduction of 107-120 car trips to/from the site). A reduction of this measure will return traffic impacts to existing conditions. Mitigation measures proposed to achieve this reduction include:

- Provision of a shuttle bus (capacity 50 passengers) to/from the school to service an area where a large portion of students live;

- Implementation of a green travel plan to encourage alternative transport methods and provide a package of initiatives to discourage single occupancy car trips;
- Staggering start and finish times for both schools;
- Additional parking restrictions on surrounding streets.

The Green Travel Plan (**Appendix 22)** is targeting a mode share reduction of 5% of staff car drivers and 5% of student car passengers to mitigate traffic impacts on the surrounding road network. The impacts of this shift in mode share are provided in **Figure 64**.

	Future Population	Future Peak Hour Trip Generation		Existing Peak Hour Trip Generation		Net Difference	
		AM	PM	AM	PM	AM	PM
CPS Staff	122	77	73	71	67	+6	+6
CPS Student	1,600	276	293	276	293	0	0
CHS Staff	134	99	93	79	75	+20	+18
CHS Student	2,000	163	102	201	123	-38	-21
Total		**615**	**561**	**627**	**558**	**-12**	**+3**

Figure 64 Extract of Future Traffic Generation (with Green Travel Plan measures)

This these figures indicate that a 5% mode share shift away from car use would result in traffic generation for the high occupancy rate (3,600 students) that is similar to the existing circumstances. Accordingly, subject to implementation of mitigation measures, the traffic conditions during the 'high occupancy' scenario can achieve a future development traffic generation comparable with the existing, such that the post-development network performance would be similar with the future base scenario (i.e. no upgrade/proposal).

6.3.3 Drop Off/Pick Up

The sites are surrounded by a mix of long-term and short-term on-street car parking, the majority of car parking is generally short-term, with one (1) to two (2) hour parking restrictions. In addition, a P5 minute zone is provided along Centennial Avenue and Jenkins Street during school drop-off and pick-up times for the school, accommodating around 17 car parking spaces. No Parking Zones are also provided along Centennial Avenue to facilitate drop-off and pick-up activities with both of the schools.

Details of the existing on-street parking restrictions within a 400m radius of each school site are provided at .

6 Environmental Assessment

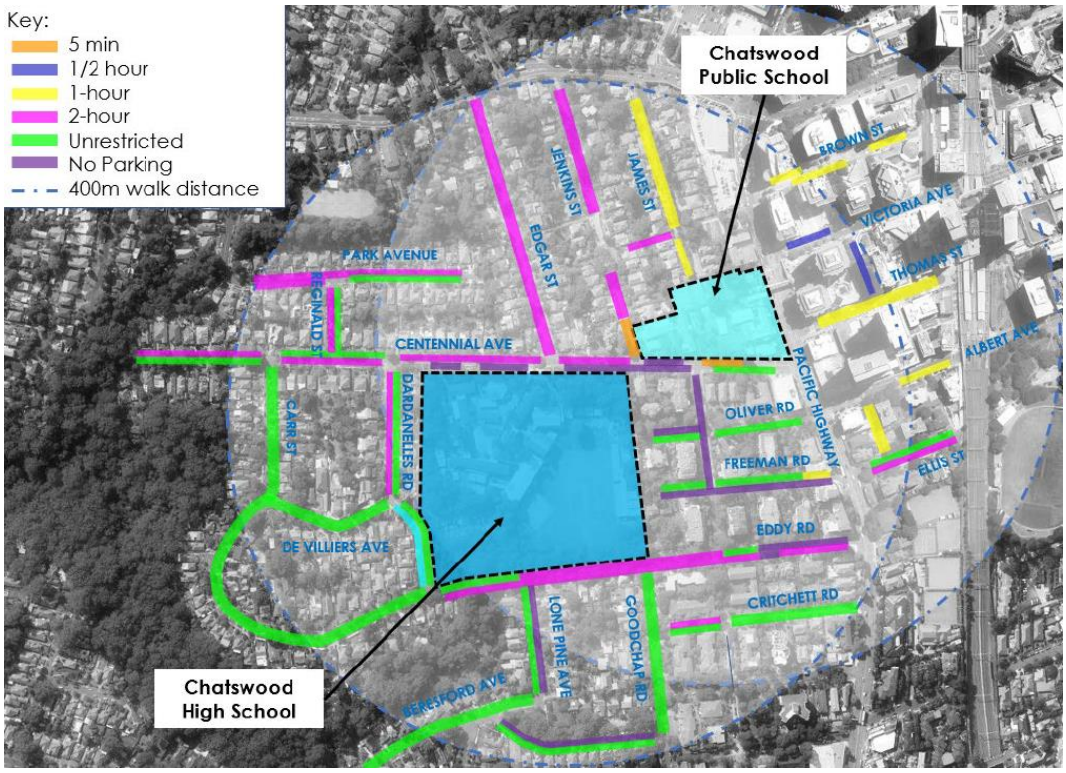


Figure 65 On-street parking restrictions

TTPP carried out on-site observations and based on those, the existing drop-off areas are currently operating poorly, with the majority of drop-off and pick-up activities occurring near the Jenkins Street/Centennial Avenue intersection. The majority of drop off and pick up activities occur on the northern side of Centennial Avenue and in Jenkins Street, compared to the southern side of Centennial Avenue.

Upgrade works occurring under other planning pathways (refer **Section 1.3.8**) include the provision of four (4) drop off/pick up spaces off Oliver Road for the Special Education students.

During the construction period of the proposed works, a temporary drop off zone will be provided on the southern side of Centennial Avenue, opposite the existing drop off zone.

Under the final arrangements, all existing drop off/pick up areas will be retained, and therefore impacts of the estimated increase in the school traffic generation associated with potential population increase will require mitigation. The TAIA (**Appendix 21**) outlines a number of mitigation measures that can be considered for implementation in effort to reduce the future school car use and improve the operation of the drop off/pick up areas, including:

- Staff can be assigned to Centennial Avenue drop off/pick up zone at the Public School to enforce compliance of the 5 minute parking and 'no parking' restriction;
- The 5 minute parking zone along Jenkins Street can be extended further north to provide more drop off/pick up spaces for primary students;
- Parents of primary students can be informed about alternative drop off/pick up zones along Centennial Avenue, west of Jenkins Street to improve parking demand; and
- School start and finish times can be staggered to reduce concentration of drop off/pick up activities.

The above measures are included in the Mitigation Measures at **Appendix 3**.

6 Environmental Assessment

6.3.4 Parking

Existing car parking provision for Chatswood Public School and Chatswood High School is provided in **Figure 66**.

Site	Existing Population	Roads and Maritime Car Parking Rate	Roads and Maritime Car Parking Requirement	Existing Car Parking Provision
Chatswood Public School	1,337 students	Min: 0.03 space per student Ave: 0.11 spaces per student Max: 0.15 spaces per student	Min: 40 spaces Ave: 147 spaces Max: 201 spaces	36 car spaces (including 18 spaces in Oliver Road Centennial Avenue Site)
Chatswood High School	1,670 HS students + 150 IEC students		Min: 55 spaces Ave: 200 spaces Max: 273 spaces	104 car spaces
Total			**Min: 95 spaces** **Ave: 347 spaces** **Max: 474 spaces**	**140 spaces**

Figure 66 Existing car parking provision

An assessment of proposed car parking provision based on a High Occupancy scenario of 3,600 students, 256 staff and 844 hall seats against the requirements in Willoughby DCP is provided in **Figure 67**.

Site	Proposed Occupancy Scenario	DCP Car Parking Rate	DCP Car Parking Requirement	Future Car Parking Provision
Chatswood Public School	• 122 staff • 1,600 students • 264 hall seats	• 1 space per 2 staff, plus • 1 space per 10 tertiary students, plus • 1 space per 10 seats in assembly hall.	87 car spaces	18 car spaces
Chatswood High School	• 134 staff • 2,000 students • 580 hall seats		145 spaces	104 car spaces
Total			**232 spaces**	**122 spaces**

Figure 67 Extract of assessment against DCP car parking rates

It is noted in the DCP that the assembly hall component of a school "may be inclusive of all other requirements", in which case the realistic DCP rates for parking provision of the proposed High Occupancy scenario would be 148 car parking spaces. Furthermore, an assessment against the Roads and Maritime trip generation study for schools is provided at **Figure 68** and indicates that a minimum of 108 car parking spaces is suitable.

6 Environmental Assessment

Site	Proposed Occupancy Scenario	Roads and Maritime Car Parking Rate	Roads and Maritime Car Parking Requirement	Proposed Car Parking Provision
Chatswood Public School	1,600 students	Min: 0.03 space per student Ave: 0.11 spaces per student Max: 0.15 spaces per student	Min: 48 spaces Ave: 176 spaces Max: 240 spaces	18 car spaces
Chatswood High School	2,000 students		Min: 60 spaces Ave: 220 spaces Max: 300 spaces	104 car spaces
Total			Min: 108 spaces Ave: 396 spaces Max: 540 spaces	122 spaces

Figure 68 Assessment of proposed car parking provision against RMS trip generation study for schools

The school's proximity to Chatswood Interchange supports an increase of students and staff travelling to school by public transport, as per the approach in the Green Travel Plan (**Appendix 22**). On a practical level, given the significant site constraints on the Pacific Highway site, provision of additional car parking would be very difficult and would result in a reduction in play space or learning space for students, which would not represent a positive outcome for the school.

In considering the suitability of proposed car parking arrangements, which are similar to those currently provided, the RMS trip generation study for schools considers a rate of 0.03 parking spaces per student acceptable. Based on this rate, a minimum of 108 car parking spaces for the development would be required. This is satisfied by the provision of 122 (18 on the Pacific Highway site and 104 on the Centennial Avenue site).

In considering the environmental impacts of the under-provision of car parking based on DCP rates, the adequacy of on-street car parking has been considered. An on-street parking occupancy survey carried out by TTPP identified that there were at least 191 unrestricted car parking spaces available within 400 metres of the site during the busiest period of the day. These spaces are more than sufficient to accommodate the parking demand generated by the schools, which cannot be accommodated onsite.

In addition, the Green Travel Plan's mode share targets aim for a reduction of 5% of staff car drivers of 5% and 5% of student car passengers as discussed above. The impact of these measures during the 'high occupancy' scenario will reduce car parking demand to similar levels as the existing, pre-development circumstances and proposed carparking provision is therefore considered to be acceptable.

6.4 Tree Removal and Biodiversity

6.4.1 Tree Removal

Eco Logical Australia inspected 61 trees on the Pacific Highway site and 219 trees on the Centennial Avenue site. The proposed works will require the removal of 62 trees across both sites as detailed in **Table 12**, and as depicted at **Figure 69** and **Figure 70** .

Table 12 Trees Proposed for Removal

Retention Value	Pacific Highway Site	Centennial Avenue Site
Low	12 trees (Tree Nos: 19-21, 35, 40, 44, 58-62 and 64)	9 trees (Tree Nos: 20, 191, 219, 225-227, 232-234)
Medium	26 trees (Tree Nos: 4-18, 22, 31, 33, 36-39, 41-43, 52)	15 (Tree Nos: 21, 33, 45, 46, 83, 87, 89, 92-94, 98, 126, 132, 189, 200)
High	-	-
Total Trees for Removal	**38**	**24**

6 Environmental Assessment

In addition, the following three trees of high retention value are identified as being impacted by the proposed works. Every effort will be made to preserve their long-term viability including the involvement of a qualified arborist in design discussions and to implement protection measures. However, despite these efforts there is a possibility that their retention may not be viable. Details are as follows:

- Tree 84 – changes to the construction of the large steps is being considered to enable retention;
- Trees 39 and 95 – demolition and construction will be close to the root zone, retention of the concrete path and ground level of the existing building will assist in providing the best chance of successful retention and long-term viability.

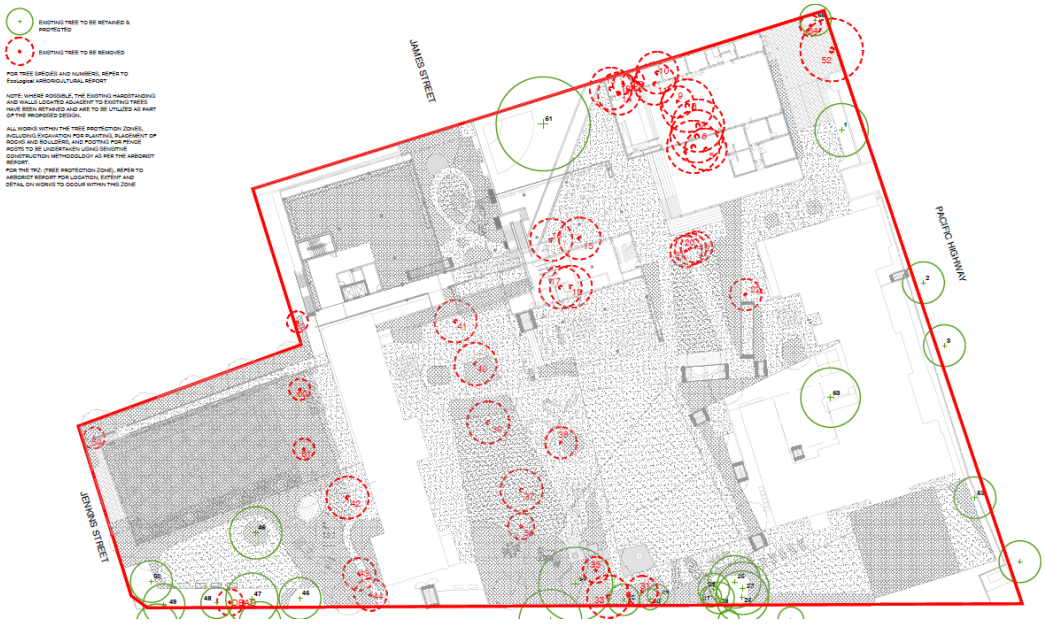


*Figure 69 Tree removal plan Chatswood Public School (see **Appendix 14**)*

*Figure 70 Extract of tree removal plan Chatswood High School (see **Appendix 14**)*

Appropriate measures that comply with *AS 4970-2009 – Protection of Trees on Development Sites* will be put in place to protect the remaining 34 trees on the Primary School site and 191 trees on the High School site, which includes 124 trees with a medium retention value and 56 trees with a high retention value.

Replacement planting will be undertaken as indicated in the landscaping plans at **Appendix 14** and discussed at **Section 6.5**. While the development requires some tree removal, replacement planting of 77 trees, will result in a nett gain of 15 trees across the two sites.

6.4.2 Biodiversity

Eco Logical Australia has prepared a Biodiversity Development Assessment Report (BDAR) (**Appendix 31**) which meets the requirements of the Biodiversity Assessment Method 2016 (BAM) established under 6.7 of the Biodiversity Conservation Act. The report identifies potential impacts on flora and fauna species as detailed in the following discussion.

The Centennial Avenue site contains a large extent of native vegetation mapped as *PCT 1237 Sydney Blue Gum – Blackbutt – Smooth barked Apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion* is located in the southern portion of the Centennial Avenue site and is zoned E2 Environmental Conservation. PCT 1237 conforms to Blue Gum High Forest, which is listed as part of the critically endangered ecological community (CEEC) under the BC Act and the EPBC Act. Blue Gum High Forest is also listed as Serious and Irreversible Impact (SAII) entity. The area of Blue Gum High Forest vegetation in the E2 zone will not be impacted by the proposed development.

A second patch of PCT 1237 has been mapped along the western perimeter of the Centennial Avenue site and will be impacted by the proposed works, requiring the removal of 0.006ha of PCT 1237_weedy.

The remaining vegetation within the development site has been planted using native indigenous canopy species. While this vegetation does not clearly conform to any PCT, it has been identified using a 'best-fit' PCT as conforming to PCT 1237. However, this planted patch of vegetation does not correspond to a threatened ecological community (TEC). The proposed works require the removal of 0.14ha of PCT 1237_native planted.

The patch of Blue Gum High Forest that will be impacted by the development has been assessed in the BDAR. This assessment concluded that the proposed development is unlikely to result in serious and irreversible impacts on the Blue Gum High Forest. However, three (3) ecosystem credits are required due to the unavoidable impacts on native vegetation from the proposed works. An extract from the BDAR detailing this is provided at **Figure 71**.

PCT ID	PCT Name	Ancillary	Vegetation Formation	Total impacts (ha)	Credits required
1237	Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion	Weedy	Wet Sclerophyll Forests (Shrubby sub-formation)	0.006	1
1237	Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion	Planted native	Wet Sclerophyll Forests (Shrubby sub-formation)	0.14	2

Figure 71 Extract from BDAR detailing Ecosystem Credit Requirements

In this regard, payment will be made to the Biodiversity Conservation Trust (BCT) to purchase the equivalent of three (3) Sydney Blue Gum PCT biodiversity credits.

The BDAR also identified one species of fauna listed on the EPBC Act, Pteropus poliocephalus (Grey-headed Flying-fox), in this regard the BDAR states:

> *One Matter of National Environmental Significance (MNES) was identified as having potential to be adversely affected by the proposed works. Pteropus poliocephalus (Grey-headed Flying-fox) is listed as Vulnerable under the EPBC Act and it is considered that this species is likely to use some of the development site for foraging. An assessment of the Commonwealth Significant Impact Criteria was undertaken for the Grey-headed Flying-fox and concluded that the project would not have a significant impact on this species. As such, a referral to the Commonwealth is not required.*

6 Environmental Assessment

An Assessment of Significance was carried out in accordance with the requirements of the EPBC Act and concluded that the works as proposed do not include the removal of significant amount of habitat and therefore sufficient foraging habitat will continue to be available for the grey headed flying fox.

Accordingly, the proposed works are not considered to have an unacceptable impact on an MNES species or the site's biodiversity. The works do not require referral under the EPBC Act and the impacts on biodiversity are considered acceptable.

6.5 Landscape and Play Space

A landscape strategy has been developed by Occulus (**Appendix 14**) in concert with the design development of the built form. The landscaping works improve accessibility to and within each site and continues to promote the movement of students between formal and natural play areas.

A range of surface finishes and materials will be utilised across the sites to respond to function, maintenance and longevity requirements. Level changes across the sites are accommodated through the use of ramps, stairs, tiered bleachers and sandstone tiered seating. Play spaces have been designed to accommodate new play equipment, fitness equipment, bike racks, outdoor furniture and covered walkways.

The design of Chatswood Primary School enables better connection for use of 'The Lowers' and provides new play areas within the levels of the buildings, including a new mid-level COLA and a roof top play space. The proposed open space on the Pacific Highway site will increase3 from the existing 4.5m^2 per student to 9m^2 per student, which represents a significantly improved outcome from existing conditions (**Figure 72**).

Figure 72 Primary School Play Space

The existing Centennial Avenue site offers ample open space for students, the proposed design will improve connections to open space to improve use for students. The Centennial Avenue site will maintain open space of 14.3m^2 per student.

New planting is proposed across both sites, providing a total of 77 new tree species with pot sizes between 75L and 100L, allowing for mature heights of 5m-25m which will allow for a significant improvement to natural shading from the tree canopy (**Figure 73** and **Figure 74**).

6 Environmental Assessment

The proposed replanting will ensure a net gain in trees provided on the site by 15 additional trees.

Figure 73 Proposed landscaping for Chatswood Public School

Figure 74 Proposed landscaping for Chatswood High School

6.6 Noise and Vibration

6.6.1 Operational Acoustic Assessment

Day Design has prepared an Acoustic Assessment Report (**Appendix 25**) in accordance with to the relevant policies and guidelines identified in the SEARs, and notes that acceptable noise limits are derived from the EPA's *Noise Policy for Industry* for intrusive noise impacts, and the Association of Australasian Acoustical Consultants (AAAC) *Technical Guideline for Child Care Centre Noise Assessment* noise criteria for children in outdoor areas.

6 Environmental Assessment

The Acoustic Assessment Report considers the potential impacts of noise emission from school activities at both moderate and high occupancy rates on nearby residential receivers. and the level of noise intrusion from surrounding roads. The Acoustic report provides recommendations (where relevant) to ensure that relevant criteria is complied with, throughout both the construction and operational phases of the development.

Figure 75 identifies the location of acoustic loggers, which were used within the site and at nearby sensitive receivers to determine the acoustic environment. With regard to the reliability of the data collected, the Acoustic report confirms that:

> *"Atmospheric conditions were ideal for noise monitoring. Noise measurements were therefore considered reliable and typical for the receptor area."*

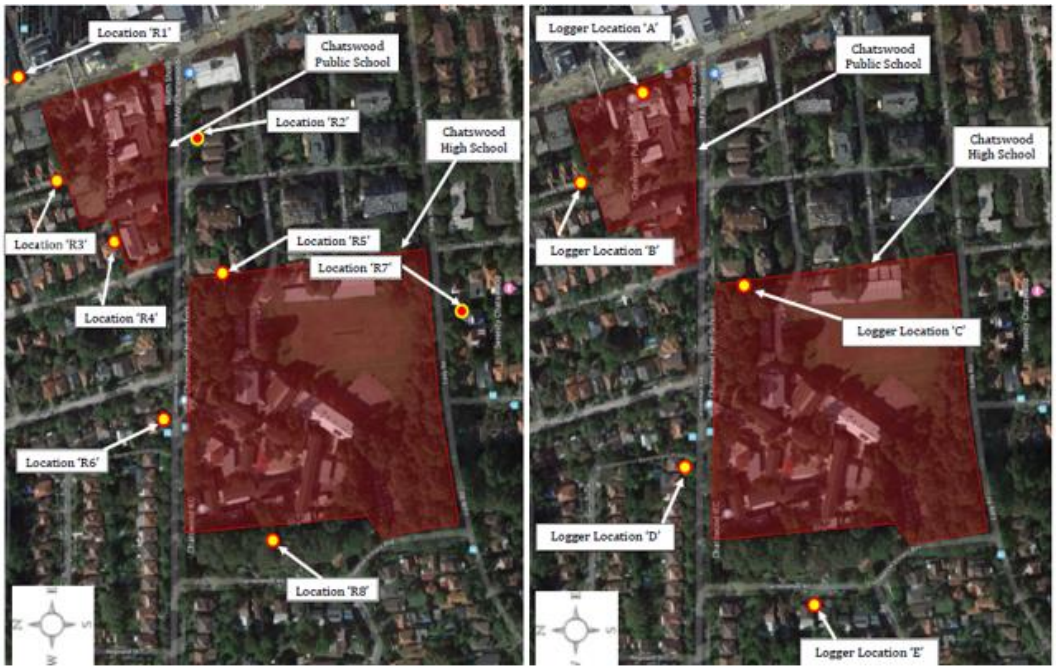


Figure 75 Location of acoustic loggers used to determine existing acoustic environment

Based on noise loggers assessing existing ambient noise conditions, **Figure 76** identifies the acceptable outdoor play noise levels for the proposed development.

6 Environmental Assessment

Location	Time Period	L_{90} Rating Background Level (dBA)	Existing Ambient L_{eq} Noise Level (dBA)
Location 'A' – Chatswood Public School (Front of site, facing Pacific Highway)	Day (7 am to 6 pm)	57	70
	Evening (6 pm to 10 pm)	57	70
	Night (10 pm to 7 am)	48	67
Location 'B' – 1A James Street, Chatswood (Front Balcony, towards Public School Active Play)	Day (7 am to 6 pm)	45	53
	Evening (6 pm to 10 pm)	41	53
	Night (10 pm to 7 am)	37	48
Location 'C' – Chatswood High School (School grounds, adjacent to 1-3 Oliver Road, Chatswood)	Day (7 am to 6 pm)	46	54
	Evening (6 pm to 10 pm)	43	53
	Night (10 pm to 7 am)	40	51
Location 'D' – 21 Centennial Avenue, Chatswood (Front Yard, facing Centennial Avenue)	Day (7 am to 6 pm)	43	57
	Evening (6 pm to 10 pm)	41	58
	Night (10 pm to 7 am)	34	51
Location 'E' – 8 Dardanelles Street, Chatswood (Front Yard, facing Dardanelles Street)	Day (7 am to 6 pm)	37	52
	Evening (6 pm to 10 pm)	35	55
	Night (10 pm to 7 am)	30*	45

*Actual measured ambient noise level was 28 dBA

Figure 76 Acceptable outdoor play noise levels

In order to assess the 'worst case scenario' for acoustic impacts at neighbouring residents, predicted noise levels have been considered for the high occupancy situation (1,600 Public School students and 2,000 High School students). Predicted noise levels from outdoor play are presented in **Figure 77**.

6 Environmental Assessment

Receptor Location	Predicted Noise Level (dBA)	AAAC Noise Criteria (dBA)
Pacific Highway Site		
R1 – 809-811 Pacific Highway, Chatswood	61	67
R2 – 10 Centennial Avenue, Chatswood	55	55
R3 – 1A James Street, Chatswood	61	55
R4 – 1 Jenkins Street, Chatswood	54	53
Centennial Avenue Site		
R5 – 1-3 Oliver Road, Chatswood	63	53
R6 – 19 Centennial Avenue, Chatswood	52	53
R7 – 24 Eddy Road, Chatswood	62	53
R8 – 7 Dardanelles Road, Chatswood	45	47

Figure 77 Extract of predicted L_{eq} outdoor noise levels – high occupancy scenario

Predicted noise levels exceed AAAC noise criteria at R3, R4, R5 and R7. However, guidance from the NSW EPA with regard to playground noise refers to legal precedent (*Meriden School v Pedavoli [2009] NSWLEC 183*), which concludes that

> *"Reasonable noise emission from a school development during school hours is expected and acceptable."*

The Acoustic Consultant recommends that the noise criteria detailed in *Technical Guideline for Child Care Centre Noise Assessment* is applied to the outdoor areas of the school. The relevant criteria is L_{eq}, 15 min noise level emitted for the outdoor play area shall not exceed the background noise level by more than 10dB at the residential assessment location.

In this case, both sites are existing schools with existing outdoor play noise emission, the increase of between 1dB and 10dBs can be further mitigated by acoustic treatment of the undercroft play areas, which will reduce the level of reverberant noise build up by 3dB at nearby residences. Therefore, the increase in noise emission from existing conditions for the limited duration of recess and lunch breaks is therefore considered acceptable.

With regard to noise emission from the two new multipurpose halls, the impacts for normal school use and out-of-school-hours use (such as regular band practice, OSHC and occasional evening events) has been assessed and found to be compliant with noise criteria even with the large doors open.

Noise emission from mechanical plant has been assessed based on up to 10 condenser units located on the rooftop of each building surrounded by privacy ventilation louvres. Predicted noise levels are compliant with noise criteria at all residential receptors except for R8 (7 Dardenelles Road, Chatswood). Design solutions will be able to mitigate the slight 2dB forecast noise exceedance at this location.

With regard to road noise intrusion both sites will be impacted by traffic noise from Pacific Highway and Centennial Avenue, which carry heavy traffic volumes. Based on noise measurements at appropriate logger locations, mitigation measures are required to reduce traffic noise by up to 30dB in the classrooms adjacent to Pacific Highway and up to 18dB in the classrooms closest to Centennial Avenue on the High School site.

Mitigation measures to reduce noise intrusion include external façade, ceiling and roof construction methods and materials, glazing requirements and acoustic treatments for

mechanical plant. Mitigation measures are detailed in the Acoustic Assessment at **Appendix 25** and a summary is provided at **Appendix 3**. The implementation of the mitigation measures has been assessed as necessary to ensure compliance with the recommended internal noise levels.

Based on the data and assessment provided, the proposed upgrades to Chatswood Public School and Chatswood High School will be able to meet acceptable noise level requirements of the EPA NSW Noise Policy for Industry. Implementation of the façade construction recommendations will meet the recommended internal noise levels for classrooms.

6.6.2 Construction Noise and Vibration

A practical consideration of forecast construction noise and vibration has been undertaken in accordance with *AS2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites* and the quantitative method for assessing construction noise provided by the *NSW EPA Interim Construction Noise Guideline July 2009* has also been used in the assessment. The latter policy has been used to establish a 'noise affected level' for each residential receiver, which may generate community reaction to noise the 'highly noise affected level of 75dBA, which may generate strong community reaction to noise.

Predicted construction noise levels at nearby residential receivers are presented in **Figure 78**.

Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
Pacific Highway Site			
R1 – 809-811 Pacific Highway, Chatswood	60 - 71	67	No
R2 – 10 Centennial Avenue, Chatswood	60 - 64	55	No
R3 – 1A James Street, Chatswood	64 - 77	55	No
R4 – 1 Jenkins Street, Chatswood	62 - 64	53	No
Centennial Avenue Site			
R5 – 1-3 Oliver Road, Chatswood	56 - 73	53	No
R6 – 19 Centennial Avenue, Chatswood	59 - 72	53	No
R7 – 24 Eddy Road, Chatswood	54 - 57	53	No
R8 – 7 Dardanelles Road, Chatswood	56 - 69	47	No

Figure 78 Calculated construction noise levels at nearby residential receptions

There are unacceptable noise impacts forecast at all residential receptors during construction of between 4dB and 22dB. It should be noted that in addition to mitigation measures that are proposed, as school buildings are erected, they will act as a noise barrier to adjoining residential receptors.

Mitigation measures include operational management, distance from receptors, enclosure of mobile plant, screening with sound barriers and silencing through low noise options for plant and machinery. These measures are detailed in the Acoustic Report at **Appendix 25** and summarised with all Mitigation Measures at **Appendix 3**. The relative effectiveness of these measures in presented in **Figure 79**.

Control by	Nominal Noise Reduction Possible, dB
Distance	Approximately 6 dB for each doubling of distance
Screening	Normally 5 dB to 10 dB maximum 15 dB
Enclosure	Normally 5 dB to 25 dB maximum 50 dB
Silencing	Normally 5 dB to 10 dB maximum 20 dB

Figure 79 Relative effectiveness of Construction Mitigation Measures

Based on the relative effectiveness of the proposed mitigation measures, implementation of these measures (in isolation or combination depending on noise reduction required) is considered likely to be effective in mitigating the proposed construction noise exceedance of up to 22dB at nearby residences.

With regard to vibration, ground borne vibration levels can vary greatly at different distances and receptor locations. Recommended safe working distances are provided at **Figure 80** and the Acoustic Assessment Report has recommended compliance monitoring of ground borne vibration is carried out at the nearest residence during use of vibratory machinery.

Plant Item	Rating/Description	Safe Working Distance	
		Cosmetic Damage (BS7385)	Human Response (OH&E Assessing Vibration – A Technical Guideline)
Small Hydraulic Hammer	300 kg - 5 to 12T Excavator	2 m	7 m
Medium Hydraulic Hammer	900 kg - 12 to 18T Excavator	7 m	23 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	20 m
Pile Boring	≤800 mm	2 m (nominal)	N/A
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure

Figure 80 Recommended safe working distances for vibration generating plant

If unattended vibration monitors trigger an alarm that ground borne vibration is exceeding the recommended acceptable levels for cosmetic damage, vibration causing works should cease immediately and alternative solutions considered.

A Construction Noise and Vibration Management Plan outlining how and when mitigation measures will be implemented will be prepared prior to the commencement of construction works.

6.7 Ecologically Sustainable Development

BSE has prepared an ESD Report (**Appendix 28**) that identifies sustainability targets for the development, which will be achieved by an integrated approach to the building design through minimising energy consumption (passive measures), consumption optimisation (energy efficiency and use of renewable resources as identified in **Figure 81**.

6 Environmental Assessment

Load Reduction (minimising the need for resource consumption e.g. energy, water and material)	Passive Design
	Building fabric improvements
	Maximise use of natural lighting
	Maximise use of Natural ventilation
Optimising energy and water consumption	High efficiency Heating, Ventilation and Air Conditioning
	High efficiency lighting
	High efficiency hot water systems
	High efficiency appliances
Use of renewable resources (renewable energy and rainwater harvesting)	Application of Solar Energy or Solar thermal systems where practical
	Rainwater harvesting

Figure 81 Extract from ESD report detailing strategy to achieve sustainability targets

Specific measures include:

- Water efficient fixtures and fittings;
- Minimum use of water-cooled air conditioning systems;
- Native and water efficient species for landscaping;
- Installation of an 88kW photo voltaic (PV) system (final design, size and configuration to be completed during for construction design stage). A system of this size is expected to generate 142.3MWh per annum; and
- Two x 3,000L rainwater tanks.

The development has been assessed as being capable of meeting or outperforming the:

- Standard SEARs ESD requirements; and
- National Construction Code (NCC) Section J (Energy Efficiency).

The development has also been benchmarked against Green Star in accordance with the SEARs. However, SINSW is seeking to verify the implementation of the proposed ESD measures against the ESD requirements of the EFSG.

In addition to the assessment carried out by BSE, the principles of ESD (as set out under Clause 7(4) of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*) are addressed below:

- ***The Precautionary Principle***: The proposal does not present any threat of serious or irreversible environmental damage, as detailed within this assessment. In this regard, the precautionary principle does not need to be exercised.
- ***Inter-Generational Equity***: The works proposed as part of this DA will ensure that the health, diversity and productivity of the environment are maintained and enhanced to the benefit of future generations, having regard to the ESD initiatives discussed above and environmental outcomes achieved through architectural and engineering design.
- ***Conservation of Biological Diversity and Ecological Integrity***: The Pacific Highway site does not present any issues of biological diversity or ecological integrity. A BDAR has been prepared for the Centennial Avenue site, which concludes that the proposed development will have not have serious or irreversible impacts on biodiversity, subject to the purchase of biodiversity offsets to mitigate the impact of unavoidable removal of a section of Blue Gum High Forest. The majority of land on both sites is already managed and in part developed, and impacts external to the site (such as noise, traffic,

overshadowing and stormwater) have been assessed and the outcomes determined to be supportable.

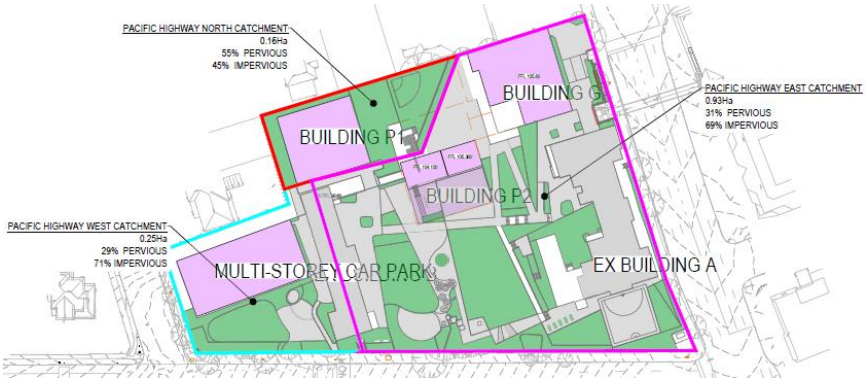
- ***Improved Valuation, Pricing and Incentive Mechanisms***: As discussed above the proposal will adopt a number of ESD initiatives. All up front and ongoing costs associated with the environmental performance of the proposed development have been considered in the design of the proposal, and are considered reasonable and acceptable.

6.8 Other Environmental Issues

An assessment of other environmental issues associated with the proposed development is provided in **Table 13**.

Table 13 Assessment of Other Environmental Issues

Issue	Assessment Findings

Stormwater Drainage	Stormwater works are proposed to accommodate the new built form and landscaping works having regard to flood impacts, stormwater runoff volumes and detention (stormwater quantity), stormwater quality treatment measures (stormwater quality) and erosion and sedimentation control (**Appendix 15** and **Appendix 16**).
	
	All roof areas will be drained through downpipe systems or syphonic systems, designed convey the minor storm runoff from the roof to in-ground drainage systems. Road and car parking areas will be drained through conventional pit and pipe gravity drainage inlet structures where it will be conveyed to in-ground piped drainage systems.
	
	The stormwater system will conveying the minor storm runoff from the roof to in-ground drainage systems which will drain to one (1) of three (3) legal points of discharge, including Centennial Avenue, Jenkins Street and James Street for the Pacific Highway site, and Eddy Avenue, Dardanelles Road and De Villiers Avenue for the Centennial Avenue site
	
	Willoughby DCP sets out the following stormwater attenuation requirements for the sites:
	
	• Pacific Highway site:
	  ○ East Catchment East: 196m^3 / 135L/s PSD
	  ○ West Catchment: 26m^3 / 18L/s PSD
	  ○ North Catchment: 20m^3 / 14L/s PSD
	• Centennial Avenue site: 317m^3 / 218L/s PSD
	
	 
	
	Figure 82 Extract of Civil Plan at Appendix 16
	
	However, the proposed development will result in increased pervious area from existing conditions and therefore create a reduction in run-off during storm events (see **Figure 83** to **Figure 86**), with the exception of Pacific Highway north catchmentFigure 85. The stormwater retention system has been designed in accordance with the improvement in site conditions from pre-development conditions as opposed to DCP requirements.

6 Environmental Assessment

Table 13 Assessment of Other Environmental Issues

Issue	Assessment Findings
	<table><tr><th>STORM EVENT</th><th>PREDEVELOPMENT FLOW (L/s)</th><th>POST DEVELOPMENT FLOW (L/s)</th></tr><tr><td>5YR</td><td>318</td><td>295</td></tr><tr><td>20YR</td><td>446</td><td>420</td></tr><tr><td>100YR</td><td>594</td><td>539</td></tr></table> *Figure 83 Pacific Highway East Catchment Pre & Post Development Discharge Flows* <table><tr><th>STORM EVENT</th><th>PREDEVELOPMENT FLOW (L/s)</th><th>POST DEVELOPMENT FLOW (L/s)</th></tr><tr><td>5YR</td><td>85</td><td>78</td></tr><tr><td>20YR</td><td>119</td><td>114</td></tr><tr><td>100YR</td><td>157</td><td>147</td></tr></table> *Figure 84 Pacific Highway West Catchment Pre & Post Development Discharge Flows* <table><tr><th>STORM EVENT</th><th>PREDEVELOPMENT FLOW (L/s)</th><th>POST DEVELOPMENT FLOW (L/s) UNATTENUATED</th><th>POST DEVELOPMENT FLOW (L/s) ATTENUATED</th></tr><tr><td>5YR</td><td>52</td><td>53</td><td>49</td></tr><tr><td>20YR</td><td>73</td><td>74</td><td>66</td></tr><tr><td>100YR</td><td>99</td><td>100</td><td>87</td></tr></table> *Figure 85 Pacific Highway North Catchment Pre & Post Development Discharge Flows* <table><tr><th>STORM EVENT</th><th>PREDEVELOPMENT FLOW (L/s)</th><th>POST DEVELOPMENT FLOW (L/s)</th></tr><tr><td>5YR</td><td>688</td><td>607</td></tr><tr><td>20YR</td><td>983</td><td>864</td></tr><tr><td>100YR</td><td>1,270</td><td>1,170</td></tr></table> *Figure 86 Centennial Avenue Site Pre & Post Development Discharge Flows* Based on the pre/post development impacts, stormwater quantity is required to be controlled in North Catchment of the Pacific Highway site with an on-site detention tank. The North Catchment has an area of 0.16Ha and therefore requires an OSD tank of 5kL to attenuate post-development flows. The proposed development will otherwise provide for additional water retention capacity onsite based on existing conditions, which reduces the need for OSD tanks as discharge flows from the remaining catchments will be controlled to be less than the pre-development runoff conditions. Stormwater quality treatment measures are proposed to achieve required efficiencies. This approach will result in the proposed development having improved run-off conditions from pre-development conditions and is therefore considered acceptable.
Flooding	Wood and Grieve Engineers has considered flood risk as part of the Stormwater Management Plan (**Appendix 15**) which confirms that while a section in the south eastern portion of the Centennial Avenue site is mapped as being flood affected, the proposed buildings, playground spaces and circulation areas are located outside of the extent of a 1:100 year flood event and their assessment conclude that there is minimal risk of flooding across the site.
Soil Erosion and Sediment Control	The Stormwater Management Report includes an Erosion and Sediment Control Plan (**Appendix 16**) which details the management strategies to be implemented during construction to minimise the impacts of sedimentation and erosion across the site. The proposed strategies satisfy the Landcom design guide “Managing Urban Stormwater – Soils and Construction” (the Blue Book).
Social Impacts	A Social Impact Assessment has been provided at **Appendix 32**. The proposed development will improve the social wellbeing of the Chatswood community and surrounds through the provision of purpose-designed, high-quality educational facilities which are designed to achieve best practice outcomes pursuant to the BCA and other relevant standards and guidelines. Forecasted growth for the area has shown a high need for the expanded state of the art school facilities, and there is an expectation that a redevelopment

Table 13 Assessment of Other Environmental Issues	
Issue	**Assessment Findings**
	of the site will achieve a quality, fit-for-purpose outcome that enables a focus on future learning methodology. In order to provide the buildings required to support the increased demand on the Centennial Avenue site, the Intensive English College (IEC) is being relocated to St Ives High School site. St Ives High School is located more centrally within the region served by the IEC, which will reduce travel time and improve access for some students. However, unlike the existing site, St Ives High School is not located adjacent to a major public transport hub, which may impact ease of travel arrangements for some students. However, the site can be accessed by Gordon Train Station and a series of bus services operate between the train station and the school. Therefore, on balance, the social impacts of the relocation of the IEC are considered to be acceptable. The proposal will meet the increase in demand for school places at Chatswood Public School and Chatswood High School by providing a high quality and highly durable outcome that will assist in meeting the educational needs of the wider precinct for the foreseeable future. Accordingly, the proposal will have substantial positive social impacts through the provision of new educational establishment social infrastructure, and through the continuation of the established use of the site for an educational purpose. The site is also used extensively by the community out-of-school-hours and the proposed works will improve the available facilities and support the ongoing shared use of the site.
Accessibility	An Accessibility Assessment has been undertaken by Mackenzie Group within the BCA and Access Report (**Appendix 26**) which provides a review of all aspects of access to and within the site with respect to the Building Code of Australia (BCA), *Disability Discrimination Act 1992* (*Cth*) (DDA), Universal Guidelines and relevant Australian Standards. Statements prepared by Mckenzine Group at **Appendix 26** and **27** confirm that the proposed development is capable of compliance with the intent of the Disability Discrimination Act (DDA) 1992, Disability (Access to Premises – Buildings) Standard 2010, the Building Code of Australia and relevant Australian Standards. Therefore, accessibility to and within the site is considered to be acceptable at this planning stage of documentation.
Contamination	JBS&G carried out a detailed site investigation (DSI) (**Appendix 12**) on both campuses. The DSI for the Centennial Avenue site concluded that the site does not present any unacceptable risks to human and ecological health and is considered suitable for use as an educational establishment without remediation work. However, the DSI for the Pacific Highway site identified potentially unacceptable risks to human and ecological health at several locations primarily associated with petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs). These findings relate to materials below the hard surface areas and are not exposed to site users. These materials will be encountered when earthworks are carried out for the new buildings. Accordingly, JBS&G has prepared a Remediation Action Plan (RAP) for the Pacific Highway site (**Appendix 13**), which concludes that subject to the successful implementation of the measures described in the RAP, the site can be made suitable for use as an educational establishment and is therefore consistent with the requirements of SEPP 55. A validation will be undertaken upon completion of the remediation works.
Crime Prevention Through Environmental Design	A detailed CPTED Assessment has been carried out at **Appendix 4**, which outlines that the proposed development has been designed having regard to the CPTED principles. • Territorial re-enforcement – fencing, landscaping, proposed and existing built form and existing signage establish a 'civic' domain, encouraging communal responsibility for the public areas and clearly communicating to people where they should and should not be. • Surveillance – the proposal promotes strong natural surveillance of both the public domain and interior of the site through placement of administration facilities and proposed buildings on both sites, which create open visual corridors. The site will include lighting to deter criminal activity. • Access control – the proposed development will utilise physical barriers, including fencing, gates, built form and landscaping to provide access control. Symbolic barriers will be utilised including signage, landscaping, waste servicing areas and natural direction of pedestrian traffic to the administration office. • Space/Activity Management – The Pacific Highway site achieves natural community control by orienting buildings to the exterior of the site and locating play space toward the interior of the site. The Centennial Avenue site achieves this

Table 13 Assessment of Other Environmental Issues	
Issue	**Assessment Findings**
	through buildings and existing mature vegetation located along the site boundaries. The design, landscaping and signage will combine to reinforce CPTED principles and represent a positive security outcome for the schools.
Structural Adequacy	Wood and Grieve Engineers has prepared a Structural Design Statement (**Appendix 24**) which confirms that the proposed upgrades to Chatswood Public School and Chatswood High School will be designed to comply with relevant provisions of the BCA, Willoughby City Council, NSW Government requirements, Section 6.28 of EP&A Act and relevant Australian Standards.
Waste	A Construction Waste Management Plan (CWMP) (**Appendix 29**) and an Operational Waste Management Plan (OWMP) (**Appendix 29**) have been prepared by Foresight Environmental. The Plans identify the likely waste streams to be generated during the construction and operation phases of the development. The Waste Management Plans outline measures to avoid the generation of unnecessary waste, minimise the volume of waste to be collected, and recycle, reuse and recover waste generated by the proposed works. With regard to waste collection for the Pacific Highway site, the CWMP indicates that waste will continue to be collected from the Pacific Highway car park during construction works. Upon completion of the works, the OWMP identifies that the Public School will generate approximately 2,126kg of waste per week, which will be stored and collected from the Jenkins Street carpark by a Medium Rigid Vehicle (MRV), swept paths are appended to the OWMP. The Centennial Avenue site, will generate approximately 2,180kg of waste per week during operation and will continue to be collected from the two onsite waste storage areas, accessed from De Villiers Avenue and from Oliver Road respectively during construction and post-construction. Both of these locations enable a waste collection vehicle to enter and exit the site in a forward direction. Waste collection for both sites will occur outside of standard school operational hours to ensure there is no conflict with students accessing the site
Wind Impacts	On the Pacific Highway site, the new built form responds to topography which creates natural wind pathways between high and low density development of the city. New built form will provide opportunities for protection from wind when moving between facilities, and will not contribute to wind-funnelling. Structural conditions and student amenity in response to wind are satisfactory. On the Centennial Avenue site, new built form is situated predominantly within the existing 'V' shape campus layout and although additional height is being introduced, this is not expected to contribute to wind-funnelling due to the valley topography within which the site is located. Structural conditions and student amenity in response to wind are satisfactory.
Building Code of Australia	McKenzie Group has prepared a Building Code of Australia (BCA) and Disability Discrimination Act/ Access Compliance Review (**Appendix 27**) which confirms that the works will generally be able to achieve compliance with the provisions of the BCA through compliance with deemed-to-satisfy provisions and where necessary, through the documentation of an alternative solution. Full certification of BCA compliance will be provided prior to the commencement of works for the Section 6.28 certificate and Crown Certificate stage.

6.9 Contributions

The proposed development is for social infrastructure by a Crown developer, and therefore is not subject to the levying of development contributions. Consistent with the advice from DPIE in Circular D6, a DA for a Crown authority for 'educational services' is not subject to the levying of contributions for open space, community facilities, parking, or general local and main roads.

6.10 Suitability of the Site for Development

An assessment of the suitability of the site for the proposed development is carried out in **Table 14**.

6 Environmental Assessment

Table 14 Assessment of Suitability of the Site for Development	
Issue	**Assessment Findings**
Geotechnical	Pells Sullivan Meynink (PSM) have prepared a Geotechnical Assessment (**Appendix 12**) which establishes excavation conditions, footing requirements and ensures appropriate earthworks are undertaken to support the proposed structures. Geotechnical investigations established the Centennial Avenue site to be generally underlain by silty clay and clay topsoil, fill and residual soil to depths of 1-6 metres overlaying bedrock consisting of laminite, siltstone and interbedded siltstone and sandstone at the deeper levels. The Pacific Highway site is generally underlain by silty clay and clay fill and residual soil to depths of up to 1.6 metres, overlying bedrock consisting of siltstone and laminite. The geotechnical report has recommended that structures within scope AS2870 be designed for a site classification of Class 'M' (moderately reactive clay) for both sites due to the presence of clay fill layer deeper than 1 metre. This information will ensure that structural engineering can be designed in accordance with site conditions.
Groundwater	Groundwater was not encountered in any of the boreholes during or shortly after completion of the site investigation. Existing topsoil is not suited for reuse as engineered fill but may be reused for landscaping purposes.
Salinity	PSM conducted a salinity and soil aggressiveness assessment (**Appendix 12**). Laboratory test results indicated soils to be non-saline on both sites. On the basis of soil sulfates and pH testing, the soil is considered to be non-aggressive to buried concrete structures and steel piles.
Utilities	The Hydraulic Report (**Appendix 17**) and Infrastructure Management Report (**Appendix 18**) have assessed the existing capacity and adequacy of the existing site utilities. As a result of these investigations, it is found that some augmentation and upgrades to the power supply networks are required. Communication, mechanical services and hydraulic services will all be upgraded to ensure adequacy capacity for the future school facilities.

The above assessment finds that the site is suitable for development, having regard to subsurface conditions, contamination and utility servicing.

6.11 Public Interest

In accordance with Section 4.15(1)(e) of the EP&A Act, the proposed development is in the public interest as it:

- Will meet the current and future education demands for residents of Chatswood and the surrounding catchment area;
- Will ensure the established use of the site as an educational establishment (being of cultural heritage significance) is enhanced and safeguarded for the long-term;
- Will provide high quality learning and teaching spaces with flexible layout arrangements and durable finishes ensuring the proposal operates as a long-life, high utility and low maintenance educational establishment;
- Has been designed in accordance with the visions, objectives and expectations of the community, the Department of Education and design experts;
- Incorporates appropriate design and urban design analysis to ensure the best design outcome is achieved for the site, students and surrounds in the interests of all stakeholders;
- Is permissible in the land use zones and is generally consistent with relevant planning controls and legislation;
- Will provide a net increase in the number of trees across the two sites, by 15 additional trees;
- Will minimise the potential for environmental amenity impacts through both the construction and operational phases;

- Achieves appropriate environmental performance outcomes in relation to acoustic amenity, traffic movements, stormwater drainage and waste management;
- Will be provided with adequate connection to necessary infrastructure and servicing to ensure the development operates smoothly at full capacity; and
- Is capable of meeting the deemed to satisfy provisions of the BCA and the spirit and intent of the DDA.

7 Evaluation and Conclusions

The proposed upgrades to Chatswood Public School and Chatswood High School have been assessed in accordance with the SEARs issued by DPIE and consultation carried out with the public and relevant public agencies.

The proposal is consistent with the objects of the EP&A Act, including ecologically sustainable development, and is consistent with the State's strategic planning objectives for the site as set out in the Greater Sydney Regional Plan – North District Plan as it will create jobs and will provide additional permanent, modern educational facilities to meet the future educational needs of the community which facilitates the removal of demountable classrooms.

The proposed works have been assessed on balance as providing significant public benefit to the immediate local and surrounding district through the provision of increased enrolment capacities for both primary and secondary aged students within new educational facilities.

The project team has carried out consultation with a wide range of stakeholders, including State government departments, local government, community and experts in the design of schools. The advice received throughout the consultation process has informed the consideration of heritage significance, built form impacts and traffic management and has been incorporated into the current proposal where possible, reflecting a commitment to provide a quality and objective-driven outcome.

The public interest is served by the proposed development through the provision of:

- Increased supply of classrooms and facilities at both Chatswood Public School and Chatswood High School within new permanent and improved education facilities to cater for increased enrolment pressures and projected student growth within the Chatswood locality, facilitating the removal of demountable classrooms;
- Consolidated and further investment in public infrastructure in an established centre, with excellent connectivity to existing and developing public transport facilities;
- Works with a significant capital investment value that will provide new and improved educational infrastructure to support the local community;
- 266 new construction jobs and up to 20 additional full-time equivalent operational jobs.

Environmental impacts of the proposal have been assessed and are capable of mitigation to achieve acceptable levels of impact subject to a number of measures being adopted, as set out in the assessment material supporting this EIS. Mitigation measures proposed under this project are summarised at **Appendix 3**.

Accordingly, it is recommended that the Minister for Planning and Public Spaces approves the proposed SSDA.