

Figure 17 – Existing vehicular and pedestrian entry points (source: Mayoh Architects, A.MP.007)

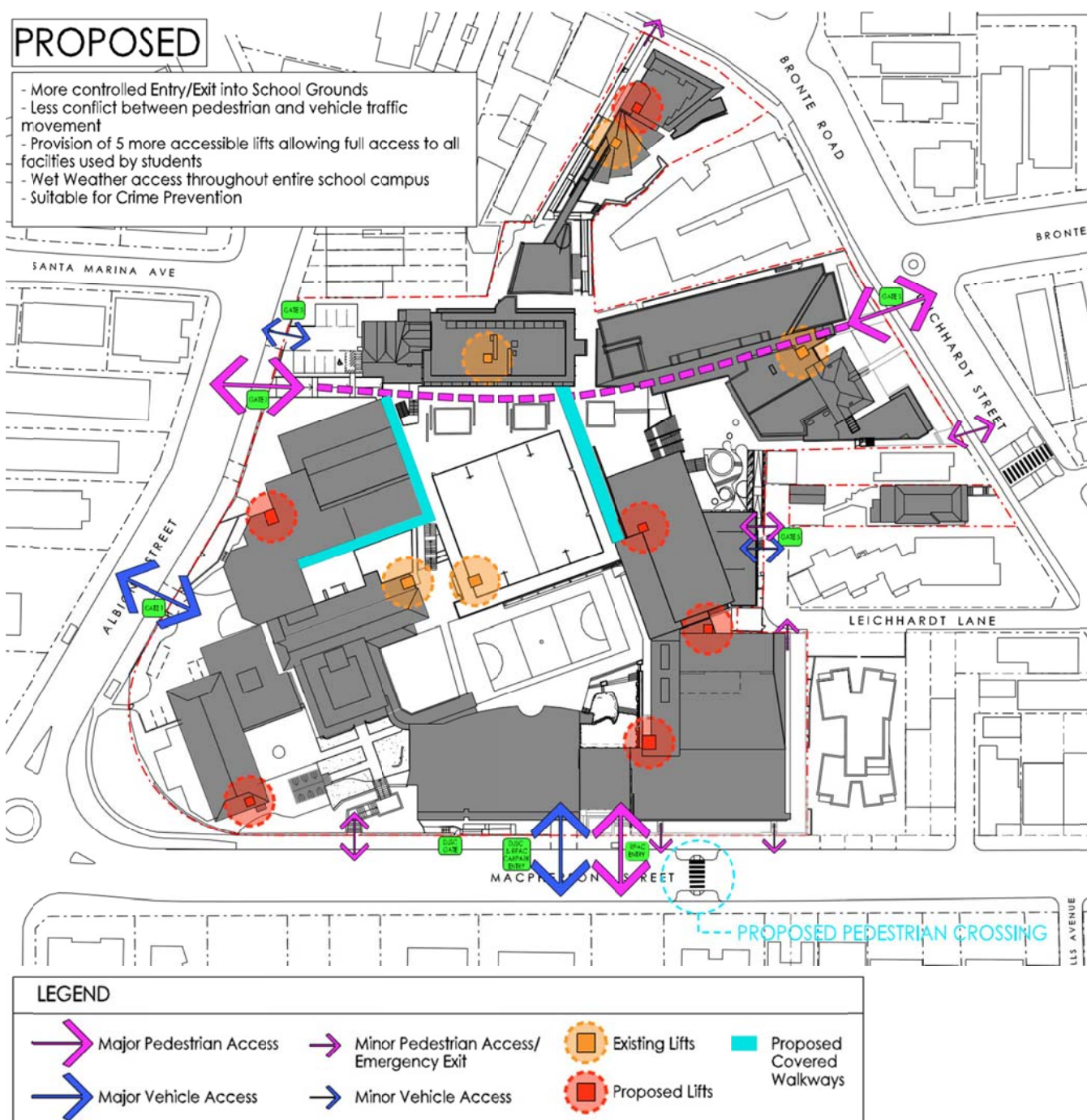


Figure 18 – Proposed vehicular and pedestrian entry points (source: Mayoh Architects, A.MP.007)

### 3.8 Landscape concept

(SEAR 3)

#### 3.8.1 Landscape area and building footprint

**Table 5** compares the existing, existing + approved and proposed site coverage, paved areas, playground areas and landscaped areas based upon the calculations shown the Landscaped Area and Footprint Plan by Mayoh Architecture (A.MP.008, **Appendix C**). The calculations show that the Campus Master Plan:

- Increases the building footprint/site coverage by 1,961m<sup>2</sup> above existing conditions and 976m<sup>2</sup> above the existing + approved buildings
- Increases the playground area (covered and uncovered) by 119m<sup>2</sup>
- Reduces the deep soil landscaped area by 421m<sup>2</sup>
- Reduces the paved circulation areas by 1,080m<sup>2</sup>
- Reduces vehicular/service areas by 641m<sup>2</sup>.

#### 3.8.2 Landscape design

SILK Consulting Landscape Architects in association with Lightbox Landscape has prepared a Landscape Master Plan for the site (MP-100, **Appendix C**, reproduced as **Figure 19**) which shows the following proposals:

- Albion Street
  - New planting to Albion Street including a feature tree at the north-western corner of the site and feature trees to the new main senior school entry
- Macpherson Street
  - Street tree removal and replacement (four trees) to the south of RPAC
  - Landscaping to the new formal entry to the senior school from Macpherson Street
- Bronte Road
  - New street planting to Junior School entrance
  - New street planting and landscape treatment to approved Nan Hind Centre extension
- RPAC
  - Reinstate rubble wall with low shrub planting along the southern edge of RPAC
  - New palm planting to eastern side boundary (adjoining 4 Macpherson Street) with lush textured understorey planting and green wall to the upper level of RPAC (as discussed in more detail at Section 4.4)
- Internal landscape upgrades, new courtyards/gardens, internal links and green walls.

#### 3.8.3 Tree removal/retention

An Arboricultural Assessment Report has been prepared by TALC (**Appendix E**) which notes that the proposed RPAC building envelope necessitates the removal of 20 trees on the site. The trees proposed to be removed are also illustrated on DA-L-02 (**Appendix F**). The Arboricultural Assessment Report states that:

- Trees 6, 26, 27, 28, 29, 30, 31, 32 and 33 (nine trees) should be retained and protected
- Trees 1, 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 34, 35, 36 and 37 (20 trees) are to be removed and replaced noting that:
  - 10 of these trees are in poor condition and are within or close to the RPAC building footprint
  - Six of these trees are in fair condition but are within or close the RPAC building footprint

- Four of these trees are Melaleucas planted within the footpath to Macpherson Street (T22-T25). They are in fair condition, but removal and replacement of these trees is proposed to enable the safe construction of RPAC (as discussed in more in the Construction Management Plan, **Appendix G**).

Tree removal and replacement will take place as part of the Stage 1 proposal.

A condition of consent should be imposed requiring implementation of the tree protection measures set out in the Arboricultural Assessment Report.

**Table 5 – Landscaped areas and building footprint**

Site area 22,290m <sup>2</sup>	Existing	Existing + approved DAs	Campus Master Plan	Net change proposed by Campus Master Plan
Building footprint/ site coverage	9,831m <sup>2</sup> (44%)	10,816m <sup>2</sup> (48.5%)	11,792m <sup>2</sup> (52.9%)	<u>Above existing</u> +1,961m <sup>2</sup> <u>Above existing + approved</u> +976m <sup>2</sup>
Playground				
• Uncovered	5,624m <sup>2</sup> (25%)		5,329m <sup>2</sup> (24%)	
• Covered	394m <sup>2</sup> (2%)		808m <sup>2</sup> (4%)	
• Total	6,018 (27%)		6,137m <sup>2</sup> (27.5%)	+119m <sup>2</sup>
Deep soil landscape	5,650m <sup>2</sup> (25%)		5,229m <sup>2</sup> (23%)	-421m <sup>2</sup>
Paved circulation area	2,972m <sup>2</sup> (13%)		1,892m <sup>2</sup> (8%)	-1,080m <sup>2</sup>
Vehicle/service area	1,281m <sup>2</sup> (6%)		640m <sup>2</sup> (3%)	-641m <sup>2</sup>





Figure 19 – Landscape Master Plan (source: Silk Consulting Landscape Architects, MP-100)

### 3.9 Population

In October 2013, St Catherine's School had an enrolment of 970 students, with 202 employees (including 175 full time and 27 part time employees). The Campus Master Plan will provide the potential for up to:

- 230 additional students to be introduced progressively over a 15 year period (ie. total 1,200)
- 10 additional employees (approximately).

On average, the proposal will provide for 14 to 16 additional students per year over a fifteen year period starting at 2015 and ending at 2029.

### 3.10 Staging

(SEAR 5)

As illustrated on the Staging Diagram by Mayoh Architects (**Figure 20** and Drawing No. A.000, **Appendix C**), the Campus Master Plan is to be constructed in five stages. Stages may be divided into sub-stages and may not be commenced sequentially. The stages, which will be completed over a period of around 15 years, comprise:

#### Stage 1

- Construction of RPAC, demolition of existing pool, tree removal/replacement, associated landscaping work, relocation of demountable building, and minor internal alterations to DJSC, minor removal of landscaping at Gate 1 and reconfiguration of existing car park.

#### Stage 2

- Construction of JBH site new build, renovations to J Block, demolition of existing car park, associated landscaping including new pedestrian entry off Albion Street, associated BCA and accessibility upgrades.

#### Stage 3

- New infill building underneath existing Lenthal Building, minor demolition works to adjoining building. Internal space reallocation, associated landscaping works, associated BCA and accessibility upgrades.

#### Stage 4

- Reallocation of existing spaces in Administration Building, DJSC, Isabel Hall Wing, St John's Building, Junior School Building including internal demolition and construction work and associated BCA and accessibility upgrades.

#### Stage 5

- Demolition of 319A and 317 Bronte Road and construction of an extension to the Nan Hind Centre.

The detailed design and use of Stage 1 - RPAC is described at Section 4.0. Further DAs will be submitted for the detailed design and use of each subsequent stage, although the detailed design of Stage 5 – Nan Hind Centre Extension has already been approved (Project 2 of DA 140/2011).



## MASTERPLAN STAGING

- Stage 1** Construction of RPAC, demolition of existing pool, tree removal, associated landscaping work, relocation of demountable building, minor internal alterations to existing DJSC, minor removal of landscaping at Gate 1 and reconfiguration of existing car park.
- Stage 2** - Construction of Jane Barker Hall, renovations to J-Block, demolition of existing car park, associated landscaping including new pedestrian entry off Albion St, associated BCA and accessibility upgrades.
- Stage 3** New Infill building underneath existing Lenthall Building, minor demolition works to adjoining building, internal space reallocation, associated landscaping works, associated BCA and accessibility upgrades.
- Stage 4** Reallocation of existing spaces in Administration Building, DJSC, Isabel Hall Wing, St. John's Building, Junior School Building including internal demolition and construction work and associated BCA and accessibility upgrades.
- Stage 5** Demolition of No. 319A and No. 317 Bronte Rd and construction of extension to Nan Hind Centre (approved DA)

Figure 20 – Campus Master Plan Staging (source: Mayoh Architects, A.000)



## 4.0 Stage 1 - RPAC

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### 4.1 Overview

As illustrated on the architectural plans prepared by Mayoh Architects (**Appendix C, PART 2**), the Stage 1 – RPAC proposal comprises:

#### **PART 2 - Detailed design approval for RPAC (Stage 1 of the Campus Master Plan)**

1. Demolition of the existing swimming pool, change rooms, portable classroom
2. Tree removal and replacement
3. Construction and use of RPAC in the location of existing swimming pool and the approved commenced Indoor Sports Complex (DA 258/89) to include basement car parking, an aquatic centre with associated amenities, multi-purpose hall, auditorium accommodating 489 attendants with associated amenities and research centre
4. Landscaping of the site.

**Table 6** lists the RPAC analysis plans and drawings, showing in red the drawings for which consent is sought.



**Table 6 – Stage 1 - RPAC analysis plans and drawings**  
(consent is sought for the plans highlighted in red)

Plan/author	Drawing reference		Issue	Date
PART B – RPAC	A.001	SITE SURVEY 1		
PROJECT, by Mayoh Architects	A.001	SITE SURVEY 2		
	A.003	SITE ANALYSIS		
	A.004	DEMOLITION PLAN		
	A.100	FLOOR PLAN – LEVEL 1		
	A.101	FLOOR PLAN – LEVEL 2		
	A.102	FLOOR PLAN – LEVEL 3		
	A.103	FLOOR PLAN – LEVEL 4		
	A.104	FLOOR PLAN – LEVEL 5	A	3/07/2014
	A.105	FLOOR PLAN – LEVEL 6		
	A.106	FLOOR PLAN – LEVEL 7		
	A.107	ROOF PLAN		
	A.150	ELEVATIONS – SOUTH AND EAST		
	A.151	ELEVATIONS – NORTH AND SOUTH		
	A.160	SECTIONS – A, B & C		
	A.161	SECTIONS – D, E & F		
	A.800	PHOTOMONTAGES		
Landscape Plan, by SILK Consulting	DA – L01	DEVELOPMENT APPLICATION LANDSCAPE PLAN	E	19/08/2014
	DA – L02	DEVELOPMENT APPLICATION LANDSCAPE PLAN	C	26/6/2014
Landscape Architects	DA – L03	DEVELOPMENT APPLICATION LANDSCAPE SECTIONS	C	14/08/2014
Civil Engineering Works, by Henry & Hymas	14165_DA_C000	COVER SHEET	02	26/05/2014
	14165_DA_C110	GENERAL ARRANGEMENT PLAN - BASEMENT LEVEL	02	26/05/2014
	14165_DA_C120	GENERAL ARRANGEMENT PLAN - LEVEL 2	02	26/05/2014
	14165_DA_C140	GENERAL ARRANGEMENT PLAN - LEVEL 4	03	18/08/2014
	14165_DA_C200	STORMWATER MISCELLANEOUS DETAILS & PIT LID SCHEDULE	02	26/05/2014
	14165_DA_C201	OSD TANK DETAILS	03	18/08/2014
	14165_DA_C250	STORMWATER CATCHMENT PLAN POST - DEVELOPMENT	02	26/05/2014
	14165_DA_C251	STORMWATER CATCHMENT PLAN PRE - DEVELOPMENT	02	26/05/2014
	14165_DA_C800	SERVICES OVERALL SITE PLAN	03	18/08/2014
	14165_DA_C801	SERVICES DETAIL PLAN	03	18/08/2014
	14165_DA_SE01	SEDIMENT & EROSION CONTROL PLAN	02	26/05/2014
	14165_DA_SE02	SEDIMENT & EROSION CONTROL TYPICAL DETAILS	02	26/05/2014

## 4.2 Built form and urban design

(SEAR 3)

A level by level description of Stage 1- RPAC follows:

- Basement car parking (22 spaces) and plant rooms, to a level approximately 3m below the existing pavement. Due to the sloping topography of the site, shoring/retaining walls will be required to the perimeter of the basement
- Level 2 accommodates a 12 lane swimming pool (25m x 30m) and a learn to swim pool suspended above the car park. Associated change rooms will be below ground on the higher portion of the site
- Level 3 comprises fitness rooms, orchestra pit and back of house facilities associated with the Performing Arts Auditorium
- Level 4 forms the stage to the Performing Arts Auditorium, a multi-purpose hall, terrace and foyer spaces and at ground level adjoins the neighbouring JKSC
- Level 5 comprises tiered seating to the Performing Arts Auditorium as well as a new boardroom
- Level 6 accommodates the Research Centre suspended over the open space next to the existing JKSC (Level 4)
- Level 7 comprises teaching space at a mezzanine level within the Research Centre.

Photomontages of the proposed Stage 1 – RPAC proposal and photographs of the physical model that accompanies this EIS follow at **Figures 21 to 24**. The methodology used to prepare the photomontages is set out in the Visual Impact Assessment by BASE 3D (**Appendix R**).

A schedule of external materials and finishes is shown on the elevations (A.150 and A.151, **Appendix C**)

Mayoh Architects has also prepared the following design statement for Stage 1 – RPAC.

### **Function / Circulation / Precincts**

The RPAC project is comprised of a number of stacked and interlocking facilities being basement car park, Aquatic Centre, auditorium accommodating 489 attendants, Multi-Purpose Hall and Research centre for Years K – 12.

RPAC is sited in an underutilised corner of the campus. It forms the missing link in a chain of circulation, activation and security around the periphery of the school campus. This chain is comprised of a number of interconnecting buildings over seven levels, with a complete pedestrian circuit made possible by new undercover walkways, stairs and lifts provided in RPAC. Buildings, existing and proposed, are orientated internally to overlook a central green space used for sport and play. The valuable green open space is a unifying zone, forming physical and visual connections across the site. A significant and valued element within this central green open space is a large magnolia tree, which the RPAC building aims to enhance and celebrate by providing a setback from, outlook to and complimentary ground level vegetation to surround.

The facilities incorporated in RPAC will consolidate and enhance a number of interlocking precincts. A Sporting Precinct is created by introducing an underground link connecting the existing JKSC with the RPAC Aquatic Centre and associated amenities. A Performing Arts Precinct is created by linking existing theatre and music rehearsal facilities in the DJSC with RPAC auditorium and associated back-of-house. The Research Centre, used by students from all years, is located between the senior school main Academic Precinct and Junior School Precinct. Redundant spaces are created across the school campus as a result of RPAC, which triggers the

opportunity to consolidate other precincts, being Science and TAS/Visual Arts through other future building and renovation.

A new entry point is created on Macpherson Street via RPAC that will provide direct access to the Multi-Purpose Hall, Performing Arts, Aquatic Centre facilities, as well as a secondary senior student entry point for drop off and pick up. Additional conflict between vehicle and pedestrian paths of travel are avoided by utilising the existing DJSC car park entry off Macpherson Street to gain access to the proposed RPAC car park. Vehicle entry from Leichhardt Lane is maintained for emergency, service or theatre equipment related vehicles only.

### ***Massing / Materials / Streetscape***

RPAC aims to unify an eclectic mix of materials and architectural styles that exist within the school campus whilst expressing a unique and contemporary character. Materials and finishes are shown on A.150 at **Appendix C**).

Three prefabricated panel walls anchor RPAC to three major datum levels across the campus, being Macpherson Street, the lower central open space and the upper central open space. These anchors integrate RPAC with the existing palette of concrete, brick and sandstone.

The introduction of other materials such as glass (framed and unframed), feature framed windows, pre-finished external cladding, a timber lined soffit, flat metal roofs, exposed structural steel, stainless steel balustrades and green walls provide a transparency, lightness and contemporary feel to the RPAC building.

From Macpherson Street, the RPAC building mimics a similar proportion and bulk to that of the existing DJSC to its west. RPAC's southern façade will off-set the heaviness of the DJSC's existing four storey brick façade and small window openings, with contemporary building materials such as a glass curtain wall and metal window framing that will appear lighter and more transparent by comparison.

A transparent node for pedestrian entry and vertical circulation is located between the DJSC and RPAC on the Macpherson street frontage. This node has glazed north and south exterior walls creating a visual connection from the street to the central open space and magnolia tree, offering a borrowed landscape to those outside the school grounds.

The most sensitive interface of RPAC in relation to its neighbours is on the eastern boundary shared with a residential flat building at 4 Macpherson Street. The building has been setback by 4m at the base and 8.2m at the top. This setback allows for a wide zone of substantial trees and low lying vegetation that is at a similar ground level to that of the neighbouring property. This landscape buffer running the full length of the eastern boundary continues vertically up the façade of the building in the form of a steel frame supporting climbing vegetation. Residents of 4 Macpherson Street will look out onto a multi-layered landscape that will conceal the majority of the eastern façade of the RPAC building.

Minimal openings in the eastern façade of RPAC have been allowed to protect the privacy and acoustic amenity for neighbouring residents. Fixed glazed windows are located at a level below any residential unit floor level to allow light into the Aquatic Centre, ensuring no overlooking.

On the eastern boundary adjacent to Leichhardt Lane, the Research Centre has a two storey scale, consistent with the existing three storey neighbouring residential flat building in the street. The building is setback 1.2m to 1.8m from the lane boundary and buffered with vegetation at ground level. The Research Centre is located above an undercroft, allowing movement of prevailing winds. The articulation of deep framed rectangular windows on the eastern facade of the Research Centre reflects a domestic scale and character, complimentary to the surrounding context.

**EXISTING – MACPHERSON STREET**



**PROPOSED – MACPHERSON STREET WITH EXISTING AND REPLACEMENT TREES**



**Figure 21 – Photomontage of RPAC – Macpherson Street – with trees**



**EXISTING – MACPHERSON STREET**



**PROPOSED – MACPHERSON STREET TREES SHOWN IN CLOUD**



**Figure 22 – Photomontage of RPAC – Macpherson Street – trees shown in cloud**

**EXISTING – INTERNAL VIEW**



**PROPOSED – INTERNAL VIEW**



**Figure 23 – Photomontage of RPAC – internal view**





Figure 24 – Photographs of the model

### 4.3 Access, parking and loading

#### (SEAR 6)

Additional basement car parking for 22 cars is proposed under the RPAC. Access will be via a new internal connection from the existing basement parking area under the DJSC, utilising the existing two-way driveway on Macpherson Street.

This car parking will be allocated for staff parking during the week but will be available for visitors to the RPAC building in the evening and on weekends for major events.

As noted in Section 3.6, the Campus Master Plan accommodates a total of 75 on-site car parking spaces (including 56 existing spaces) resulting in a net increase of 19 spaces.

Stage 1 of the Campus Master Plan also includes introduction of a mini bus turning and parking area at Gate 1 (being the administration entrance from Albion Street). Service vehicles will continue to access the site off Albion Street.

Waverley Council currently collects waste and recyclable materials in Leichhardt Lane. The Council truck reverses along Leichhardt Lane from Leichhardt Street before 7am prior to school activity commencing and before traffic builds up in Leichhardt Street. This arrangement will continue.

### 4.4 Landscaping

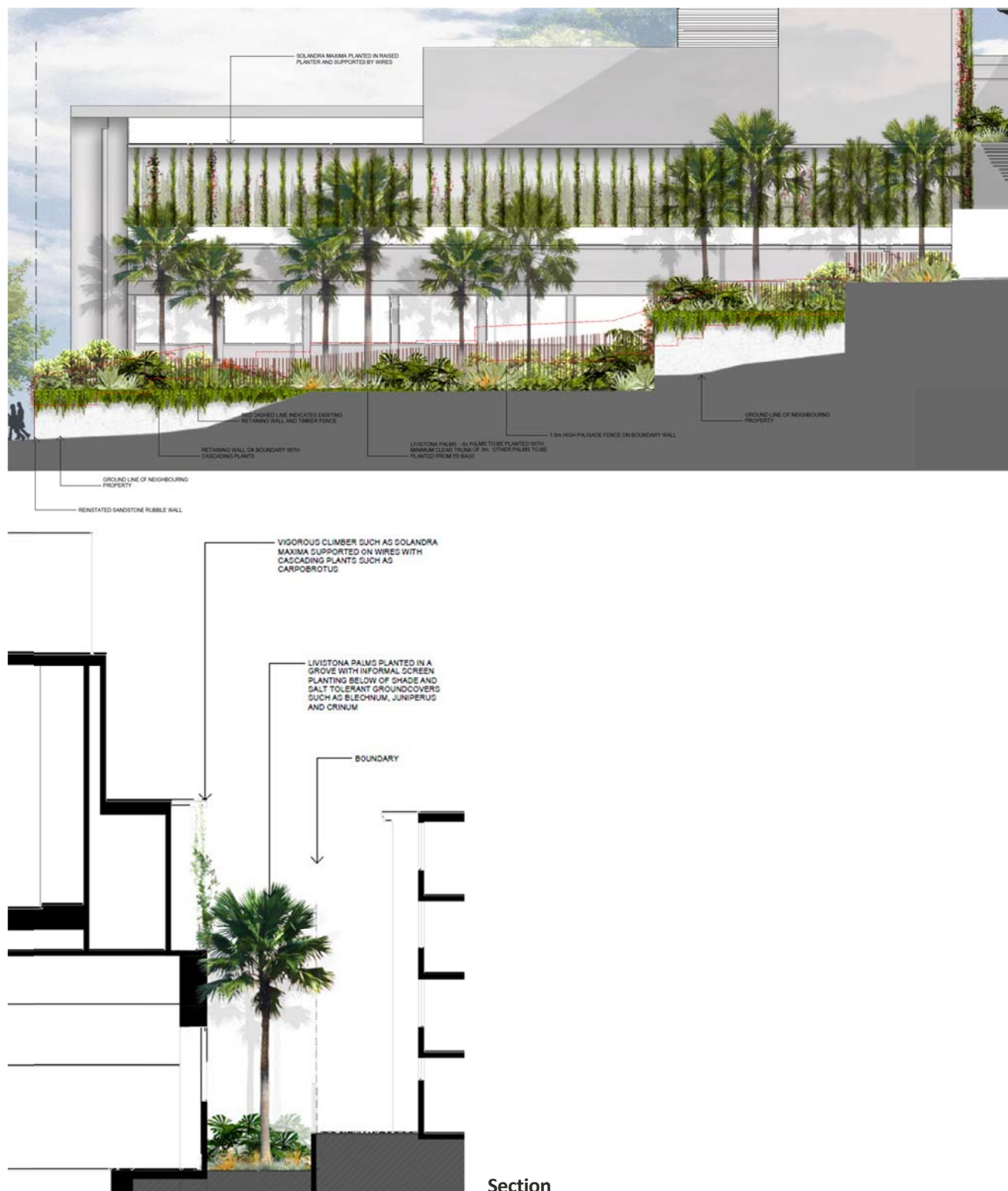
#### (SEAR 3)

The following components of the Landscape Master Plan would be completed as part of Stage 1 - RPAC (as illustrated on DA-L-01 to DA-L-03, **Appendix F**):

- Tree removal on the RPAC site and Macpherson Street tree removal and replacement to the south of RPAC
- Informal shrub planting such as banksia and rosemary along street frontage
- Reinstatement rubble wall on the southern edge of the RPAC site
- Vertical screen planting to the eastern elevation of the proposed RPAC, planted with a vigorous climber such as Solandra Maxima and cascading plants such as Carpbrotus (as illustrated on section at **Figure 25** and DA-L-03, **Appendix F**)
- New planting including mature palms to the 4m eastern side boundary setback area (adjoining 4 Macpherson Street) with lush textured understorey planting and green wall to the upper level of RPAC (a landscaped elevation and section showing the proposed setback treatment follows at **Figure 25**). The level of the proposed setback planting has been positioned to maximise its visibility for residents at 4 Macpherson Street, so that the landscaping presents as an extension of their land (see A.150 - East Elevation Landscape, **Appendix C**)
- New planting and landscaped elements including the space between RPAC and DJSC which accommodates a very large and significant Magnolia tree, to the west of the proposed Research Centre and within parts of the Junior School.



## East elevation – landscape



**Figure 25 – RPAC landscape East Elevation to 4 Macpherson Street and Section (source: Silk Consulting, DA-L-03)**

## 4.5 Events and hours of operation

### *(SEAR Plans and Documents)*

#### **Performing arts and social events**

The school currently holds a number of events/activities both internally and externally. Current event venues on the site and their capacities are outlined below:

- JKSC - 1,000 attendants
- Isabel Hall Courtyard - 600 standing attendants
- DJSC - 250 attendants
- JBH - 250 seated attendants (to be demolished and replaced with classrooms etc)
- Cloisters holds - up to 120 attendants
- Nan Hind Centre - up to 100 attendants.

Some school events cannot be accommodated on site (for example the biennial school musical events which are held offsite at the NIDA Parade Playhouse).

The RPAC includes the following facilities that will also accommodate performing arts and social events:

- Performing arts auditorium - 489 attendants (comprising 479 fixed spaces + 10 additional wheel chair spaces)
- Multi-purpose hall - 256 attendants (replacing the functionality of the JBH).

The school has prepared a detailed schedule of existing and proposed annual activities on the site (refer to **Appendix H**), noting the existing and proposed venue, number of attendants, hours and annual frequency of occurrence. The schedule shows that:

- Most events to occur on the site after completion of the proposed RPAC already take place on the site
- There are estimated to be 120 annual events, only 25 of which are new events
- The RPAC will enable increased attendance at 10 existing events
- Events are attended by 30 to 600 attendants
- 20 of the annual events are likely to have 500 attendants and one existing event has 600 attendants (most in the evenings, three finishing no later than 6.30pm)
- New and existing events on the site are finished by 9.30pm (except for the annual boarders dance which finishes at 10.00pm – existing and proposed)
- The majority of events are school functions, with only 13 community events expected. Ten of the external events are likely to occur in the evening (6.30pm-9.30pm) and three in the afternoon (1.30pm-4.30pm). These external events are expected to relate to other local schools and amateur performing arts societies.

The events and activities outlined in the schedule will be timetabled to minimise any overlapping activities. A Plan of Management explaining the obligations of external users is included at **Appendix X**.

#### **Aquatic Centre**

The proposed Aquatic Centre will replace the existing outdoor pool with two new indoor pools including a diving facility. The schedule of existing and proposed annual activities on the site (refer to **Appendix H**) shows that:

- The new pools will be utilised seven days a week for before/after school Learn to Swim classes, squad swimming, diving and water polo (training and competition)
- The Aquatic Centre will operate between the following hours:
  - Weekdays: 6.00am to 8.00pm
  - Weekends: 8.00am to 6.00pm
- Currently the diving program is held off-site at the Waverley College pool and this will move to the new pool. The new centre will also accommodate winter water polo games and training
- The typical attendance at the Aquatic Centre will increase from a peak of 75 existing to 250 proposed when both Water Polo and Learn to Swim are occurring concurrently on the weekend.
- The Aquatic Centre, including learn to swim classes, will be fully operated and management by St Catherine's School.

## 5.0 Secretary's environmental assessment requirements

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A copy of the SEARs and accompanying advice from relevant agencies are included in **Appendix B**. **Table 7** provides a summary of the matters listed in the SEARs and identifies the section of this EIS and/or the technical studies that addresses the requirements.



**Table 7 – Summary of SEARs**

SEAR	EIS section or appendix
<b>General Requirements</b>	
• QS calculation of CIV	Section 1.2 and <b>Appendix A</b>
• Construction jobs	Section 5.17 and <b>Appendix A</b>
• Operational jobs	Section 2.9
• Environmental risk assessment	Section 7.0 and <b>Appendix Y</b>
<b>Key Issues</b>	
1. Statutory and strategic context	Section 6.1
2. Policies and guidelines	Section 6.2
3. Built form and urban design	Sections 3.2, 3.3 and 4.2
4. Amenity	Sections 6.4, 6.5, 6.6, 6.7 and 6.9
5. Staging	Section 3.10
6. Transport and accessibility	Section 6.7 and <b>Appendix I</b>
7. Ecological sustainable development	Section 6.8 and <b>Appendix J</b>
8. Noise	Section 6.9 and <b>Appendix K</b>
9. Heritage	Section 6.10 and <b>Appendix D</b>
10. Aboriginal heritage	Section 6.11 and <b>Appendix L</b>
11. Sediment, erosion and dust control (construction and excavation)	Section 6.12 and <b>Appendix M</b>
12. Utilities	Section 6.13 and <b>Appendices M and N</b>
13. Contributions	Section 6.14
14. Drainage	Section 6.15 and <b>Appendix M</b>
15. Waste	Section 6.16 and <b>Appendix O</b>
<b>Plans and documents</b>	
Architectural drawings	<b>Appendix C</b>
Site Survey Plan, showing existing levels, location and height of existing and adjacent structures /buildings and boundaries	<b>Appendix C</b>
Site Analysis Plan	Section 2.0 and <b>Appendix C</b>
Stormwater Concept Plan	<b>Appendix M</b>
Shadow Diagrams	<b>Appendix C</b>
View Analysis / Photomontages	Sections 4.2 and 6.5, <b>Appendices C and R</b>
Landscape Plan	<b>Appendix F</b>
Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan	<b>Appendix G</b>
Plan of Management for community use of facilities on site (if proposed)	<b>Appendix X</b>
Geotechnical and Structural Report	<b>Appendix P</b>
Arborist Report	<b>Appendix E</b>
Schedule of materials and finishes	<b>Appendix C</b>
<b>Consultation</b>	Section 6.21 and <b>Appendix S</b>

## 6.0 Environmental assessment

This section of the EIS considers the environmental effects of the proposal, with reference to the Key Issues listed in the SEARs (**Appendix B**).

The Environmental Risk Assessment and Mitigation Measures at Sections 7.0 and 8.0 complement the findings of this section.

### 6.1 Statutory context

(SEAR 1)

The following are relevant to the proposal:

- Environmental Planning and Assessment Act 1979 (**EP&A Act**)
- State Environmental Planning (State and Regional Development) 2011 (**SEPP SRD**)
- State Environmental Planning Policy (Infrastructure) 2007 (**SEPP Infrastructure**)
- State Environmental Planning Policy No. 55 – Remediation of Land (**SEPP 55**)
- Waverley Local Environmental Plan 2012 (**Waverley LEP 2012**)
- Waverley Development Control Plan (**Waverley DCP**).

An assessment of compliance with these plans follows.

#### 6.1.1 Environmental Planning and Assessment Act, 1979

The EP&A Act establishes the assessment framework for SSD. Under s. 89D of the EP&A Act, the Minister for Planning is the consent authority for SSD. Section 78A (8A) requires that a DA for SSD is to be accompanied by an EIS.

This EIS describes the staged DA for the Campus Master Plan (building envelopes, GFA, population, parking spaces, access arrangements etc) and the detailed design and use of proposed Stage 1 - RPAC. Future DAs will be lodged for the detailed design and use of subsequent stages. Section 83B of the EP&A Act sets out the requirements for a staged DA.

#### 6.1.2 State Environmental Planning Policy (State and Regional Development) 2011

The SEPP SRD identifies development which is declared to be State Significant. Clause 15 of Schedule 1 specifies the following as SSD:

*Development for the purposes of educational establishments (including associated research facilities) that has a capital investment value of more than \$30 million.*

The proposal is a SSD as it has a CIV of:

- \$62,490,000 for the Campus Master Plan
- \$38,683,407 for the RPAC.

It is therefore a SSD (see attached cost estimate by Altus Page Kirkland, **Appendix A**).

#### 6.1.3 State Environmental Planning Policy (Infrastructure) 2007

The proposal is subject to the provisions of SEPP Infrastructure. The aim of this Policy is to facilitate the effective delivery of infrastructure across the State. Division 3 relates to Educational Establishment however, complying development pursuant to SEPP Infrastructure is not available as the site is a heritage item.

Given the number of additional students, cl. 104 of the Infrastructure SEPP (traffic generating developments) is relevant to the proposal, necessitating referral of the DA to Roads and Maritime Services (**RMS**).

#### 6.1.4 SEPP 55 - Remediation of Land

Clause 7(1)(A) of SEPP 55 requires the consent authority to consider whether land is contaminated. A Preliminary Environmental Site Assessment has been prepared by EIS (**Appendix Q**). The Site Assessment notes that the site has been used as a school since at least 1859. Based upon their review of existing and past uses and analysis of soil sampling, EIS concludes that the site is suitable for the proposed additions and alterations.

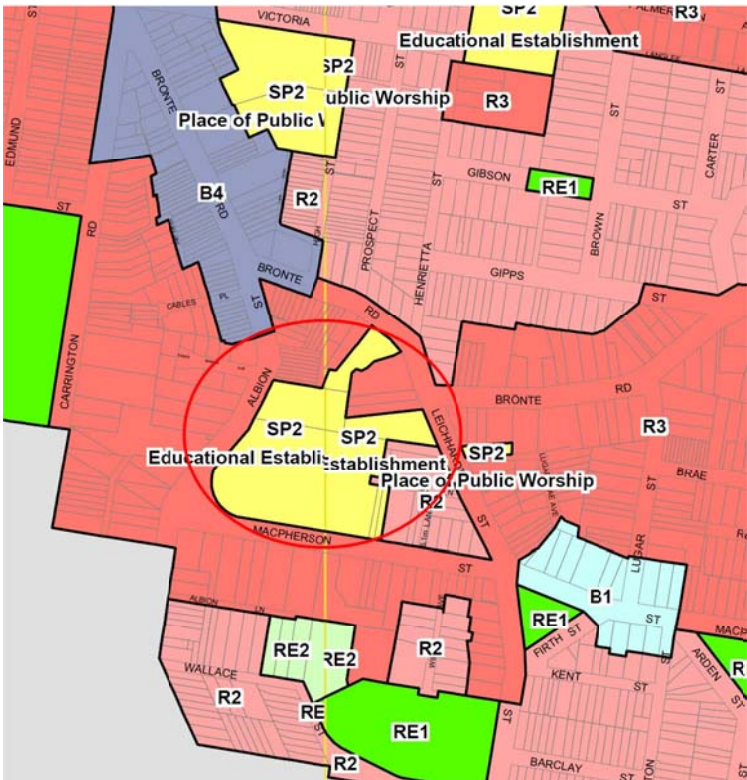
#### 6.1.5 Waverley Local Environmental Plan 2012

A detailed in **Table 8**, the following provisions in WLEP 2012 apply to the site:

- **Zoning/Permissibility** – The site is in the following zones (refer to **Figure 26**):
  - Zone SP2 Infrastructure (Educational Establishment) – *Educational establishments* are permitted with consent
  - Zone R3 – Medium Density Residential (part of the Junior School at 323-325 Bronte Road) - *Educational establishments* are permitted with consent
  - Zone R2 – Low Density Residential (the Headmistress' residence at 5 Leichhardt Street) – no work proposed.
- **Heritage** - The site accommodates local heritage items (I444, 1486, I487 and I521) and is within the Charing Cross Conservation Area (C7) (refer to **Figure 27**). Section 6.2 of the SoHI (**Appendix D**) considers the compliance of the proposal with Waverley LEP 2012 and concludes that it complies.
- **Building height standard** – Pursuant to clause 4.3 of Waverley LEP 2012, the site is subject to a 9.5m height standard (other than the Headmistress' residence which has an 8.5m height standard). The Campus Master Plan proposes the following two new buildings that exceed the 9.5m height standard (heights have been calculated by Mayoh Architects):
  - **Stage 1 - RPAC** which has the following heights:

Multi Purpose Hall roof	11.16m – 15.16m
Performing Arts roof	12.7m - 16.57m
Flytower roof	15.82m – 19.08m
Research Centre roof	7.23m - 14.12m
  - **JBH site new build** which has a height of 9.27m to 10.33m.
- **FSR development standard** - Pursuant to clause 4.4 of Waverley LEP 2012, the site is subject to a 0.6:1 FSR standard. With a proposed FSR of 1:1, the proposed Campus Master Plan exceeds the FSR standard.

In accordance with cl. 4.6 of Waverley LEP 2012, application is made for an exception to the 9.5m height and 0.6:1 FSR standards, as addressed in detail at **Appendix T**. A summary of the two cl. 4.6 requests is provided after **Table 8**.



### Figure 26 – Waverley LEP 2012 – Land Zoning Map









**Land Zoning Map - Sheet LZN\_001**

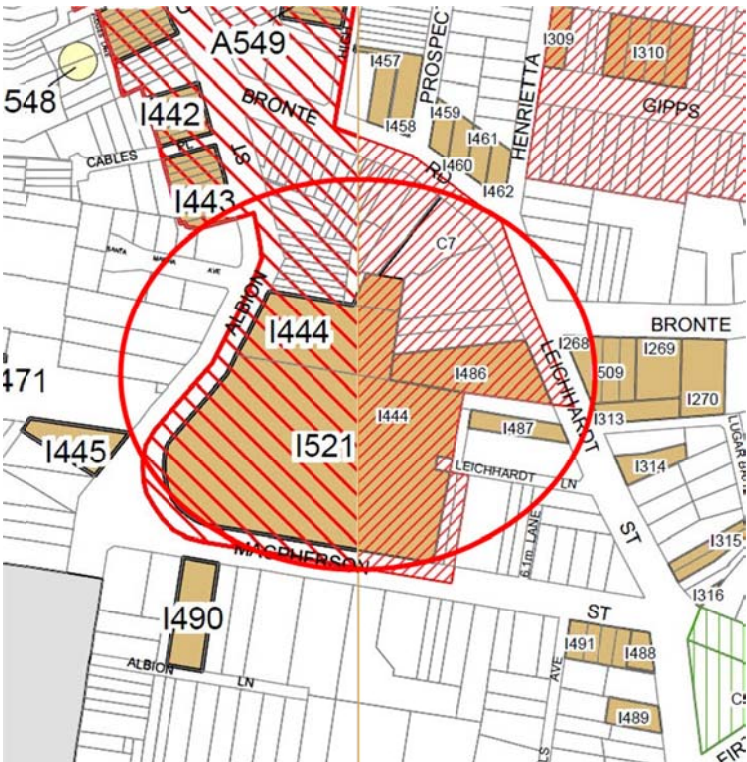
Zone	
B1	Neighbourhood Centre
B3	Commercial Core
B4	Mixed Use
E2	Environmental Conservation
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
RE1	Public Recreation
RE2	Private Recreation
SP2	Infrastructure



## Heritage Map - Sheet HER\_001

**Heritage**

	Conservation Area - General
	Conservation Area - Landscape
	Item - General
	Aboriginal Object
	Item - Archaeological
	Item - Landscape



**Figure 27 – Waverley LEP 2012 – Heritage Map**



**Table 8 – Compliance with Waverley LEP 2012**

Waverley LEP 2012	Control	Proposal/compliance
<b>Aims of Plan</b> (cl. 2.1)	<ul style="list-style-type: none"> <li>To promote and co-ordinate a range of commercial, retail, residential, tourism, entertainment, cultural and community uses to service the local and wider community,</li> <li>To maintain and reinforce Bondi Junction as the primary commercial and cultural centre in Sydney's eastern suburbs,</li> <li>To provide for a range of residential densities and range of housing types to meet the changing housing needs of the community,</li> <li>To provide an appropriate transition in building scale around the edge of the commercial centres to protect the amenity of surrounding residential areas,</li> <li>To protect, maintain and accommodate a range of open space uses, recreational opportunities, community facilities and services available to the community,</li> <li>To enhance and preserve the natural environment through appropriate planning, protecting the integrity of natural systems and by protecting existing trees,</li> <li>To identify and conserve the cultural, environmental, natural, aesthetic, social and built heritage of Waverley</li> </ul>	<p>✓ Consistent with the relevant aims, the proposal:</p> <ul style="list-style-type: none"> <li>Promotes community infrastructure and services to meet the existing and projected demand for educational establishments.</li> <li>Conserves the social and built heritage of Waverley.</li> </ul>
<b>Zone objectives and Land Use Table</b> (cl.2.3)	<ul style="list-style-type: none"> <li>Zone SP2 Infrastructure (Educational Establishment) – <i>Educational establishments</i> are permitted with consent</li> <li>Zone R3 – Medium Density Residential (part of the Junior School at 323-325 Bronte Road) - <i>Educational establishments</i> are permitted with consent.</li> <li>Zone R2 – Low Density Residential (the Headmistress' residence at 5 Leichhardt Street) – no work proposed</li> </ul> <p>Refer to Land Zoning Map extract at <b>Figure 26</b></p>	<p>✓ Permitted with consent.</p>
<b>Zones objectives and</b> (cl. 2.3(2))	<p>Objectives of Zone SP2 Infrastructure (Educational Establishment)</p> <ul style="list-style-type: none"> <li>To provide for infrastructure and related uses</li> <li>To prevent development that is not compatible with or that may detract from the provision of infrastructure.</li> </ul> <p>Objectives of Zone R3 Medium Density Residential</p> <ul style="list-style-type: none"> <li>To provide for the housing needs of the community within a medium density residential environment.</li> <li>To provide a variety of housing types within a medium density residential environment.</li> <li>To enable other land uses that provide facilities or services to meet the day to day needs of residents</li> </ul>	<p>✓ Consistent with the Zone SP2 objectives, the Campus Master Plan and RPAC provide infrastructure.</p> <p>✓ Consistent Zone R3, the Campus Master Plan improves school facilities to meet the day to day needs of residents.</p>
<b>Height of buildings</b> (cl.4.3)	9.5m height standard	<p>x Proposed max height is 19.08m (see <b>Appendix T</b></p>

Waverley LEP 2012 Control		Proposal/compliance	
		and summary below).	
<b>Floor space ratio</b> (cl.4.4)	0.6:1 FSR standard	x	Proposed total FSR is 1:1 (see <b>Appendix T</b> and summary below).
<b>Exception to development standards</b> (cl.4.6)	See <b>Appendix T</b>	✓	See <b>Appendix T</b> in relation to the height and FSR non-compliances.
<b>Preservation of trees or vegetation</b> (cl.5.9)	A person must not ringbark, cut down, top, lop, remove, injure or willfully destroy any tree or other vegetation to which any such development control plan applies without the authority conferred by: development consent, or a permit granted by the Council.	✓	Development consent is sought to remove/replace 20 trees on/near the site (refer Section 3.8.3). An Arborist Report has been prepared ( <b>Appendix E</b> ).
<b>Heritage Conservation</b> (cl. 5.10)	The objective of clause 5.10 is to preserve and enhance the heritage significance of items and conservation areas. As shown on the Heritage Map extract at <b>Figure 27</b> , the site includes the following heritage items and is within the following conservation area: <ul style="list-style-type: none"> <li>• I444 - Georgian style stone building, St Johns, St Catherine's Girls School, 26 Albion Street</li> <li>• I521 - St Catherine's School and Grounds, Macpherson Street</li> <li>• I486 - Late Victorian mansion, 1 Leichhardt Street</li> <li>• I487 - Late Victorian Italianate style house, 5 Leichhardt Street</li> <li>• C7 - Charing Cross Conservation Area—General</li> </ul>	✓	As detailed in the SOHI at <b>Appendix D</b> , the proposal will conserve the heritage significance of the site and Waverley. No known archaeological sites or items of Aboriginal significance are located on site (see <b>Appendix L</b> ).
<b>Earthworks</b> (cl. 6.2)	The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.	✓	A detailed Construction Management Plan ( <b>Appendix G</b> ) has been prepared for Stage 1 - RPAC, setting out measures to minimise the impacts of construction (including earthworks).
<b>Flood planning</b> (cl. 6.3)	The clause seeks to ensure that development does not result in unreasonable adverse floor impact on development or surrounding sites.	✓	A Stormwater Management Plan has been prepared in accordance with the Waverley LEP 2012 and Waverley DCP 2012 ( <b>Appendix M</b> ).

## SUMMARY OF CL. 4.6 EXCEPTION TO DEVELOPMENT STANDARDS REQUEST – HEIGHT

### ***Relevance of the height standard***

- The 9.5m height standard does not appropriately reflect the existing *educational establishment* on the site
- The 9.5m height standard in Waverley LEP 2012 has been virtually abandoned on the site as many existing and approved buildings exceed the 9.5m height standard
- The 9.5m height standard, which would normally reflect a medium density residential form and which applies to nearby sites in Zone R3, is not reasonable for the site which is in Zone SP2 and which is occupied by an existing *educational establishment*
- The functional requirements of the proposed non-complying elements necessitate a built form that has a height greater than 9.5m (as illustrated by the facilities analysis by Mayoh Architects (A.MP.006, **Appendix C**))
- Council has recently approved major alterations and additions at Waverley College (located at 131 Birrell Street, Waverley), that have a height of up to 14m where the height standard is also 9.5m (DA-239/2013 approved 12 December 2013).

### ***Urban design and streetscape***

- Proposed Stage 1 – RPAC which has a height greater than 9.5m:
  - Occupies a portion of the site that already has a commenced development consent for an Indoor Sports Complex (DA 258/89) which exceeds the 9.5m height standard. The bulk of the approved/commenced Indoor Sports Complex as viewed from Macpherson Street is comparable to proposed Stage 1 – RPAC
  - The photomontage and model illustrate that proposed Stage 1 – RPAC sits comfortably within the streetscape of Macpherson Street
  - The southern elevation of proposed Stage 1 – RPAC (A.150, **Appendix C**) has an appropriate street building height that provides a transition between the DJSC and adjoining residential flat building at 4 Macpherson Street
- The proposed JBH site new build:
  - Occupies a portion of the site that accommodates the existing JBH which partially exceeds the 9.5m height standard.

### ***Height standard objectives***

- The proposal satisfies the relevant objectives of the height standard (cl. 4.3(1)) as follows:
  - (a) *to establish limits on the overall height of development to preserve the environmental amenity of neighbouring properties,*  
The proposal will not give rise to any unreasonable or unexpected adverse amenity impacts for surrounding properties (in terms of overshadowing, views and privacy impacts), as detailed at Section 6.0 of the EIS. In relation to overshadowing, the EIS demonstrates that the RPAC will not affect solar access to living rooms in 4 Macpherson Street, other than an impact of around one hour on 21 March and 21 June to a maximum of three living rooms facing north. The affected living rooms will each retain five to six hours of sunlight which is well in excess of the SEPP 65/Residential Flat Design Code rule of thumb which recommends 70% of apartments in a development receive a minimum of three hours of direct sunlight to living rooms and private open spaces between 9am and 3pm in midwinter.

- (b) *to ensure that buildings are compatible with the height, bulk and scale of the existing character of the locality and positively complement and contribute to the physical definition of the street network and public space.*
- The photomontage and model illustrate that proposed Stage 1 – RPAC sits comfortably within the streetscape of Macpherson Street.
  - Many existing and approved buildings on the site have a height that exceeds the height standard and as such non-complying buildings are consistent with the character of the locality. The adjoining residential flat building to the east at 4 Macpherson Street, located in Zone R2, also has a height greater than 9.5m (noting that an 8.5m height standard applies to that property).
  - The southern elevation of proposed Stage 1 – RPAC (A.150, **Appendix C**) shows that the RPAC has an appropriate street building height that provides a transition between the DJSC and adjoining residential flat building at 4 Macpherson Street.
  - The proposed Stage 1 – RPAC street height is comparable with the approved/commenced Indoor Sports Centre street height.

#### SUMMARY OF CL. 4.6 EXCEPTION TO DEVELOPMENT STANDARDS REQUEST – FSR

##### ***Relevance of the FSR standard***

- The 0.6:1 FSR standard does not appropriately reflect the existing educational establishment on the site, which already exceeds the standard (with an existing FSR of 0.8:1) and is subject to approved DAs that further increase the departure (to 0.9:1)
- The 0.6:1 FSR standard, which would normally reflect a detached housing form and which applies to nearby sites in Zone R2, is not reasonable for the site which is in Zone SP2 and which is occupied by an educational establishment
- The proposed Campus Master Plan increases the GFA on the site (above the Existing + Approved DAs) by 2,684m<sup>2</sup> (13%) and the portion of the site to be occupied by the proposed Stage 1 - RPAC already has a commenced development consent for an Indoor Sports Complex (DA 258/89)
- Nearby sites are subject to FSR standards that are commensurate with the total proposed on the site (1:1) as follows:
  - Land to the south of the site, beyond Macpherson Street, is in Zone R3 Medium Density Residential, and is subject to a 0.9:1 FSR standard
  - Land to the north of the site, along Bronte Road and within Charing Cross Village, is in Zone B4 Mixed Use and is subject to a 1:1 FSR standard
  - Land to the east of the site, along Macpherson Street, is in Zone B1 Neighbourhood Centre and is subject to a 1:1 FSR standard.

Given these precedents, an FSR of 1:1 is not out of character with the built form permitted on other nearby sites (particularly those that are not occupied by detached housing).

##### ***Urban design and streetscape***

- The photomontage and model illustrate that proposed Stage 1 – RPAC sits comfortably within the streetscape of Macpherson Street.
- The southern elevation of proposed Stage 1 – RPAC (A.150, **Appendix C**) shows that it has an appropriate street building height and bulk that provides a transition between the DJSC and adjoining residential flat building at 4 Macpherson Street.



### **FSR standard objectives**

- The proposal satisfies the relevant objectives of the FSR standard (cl. 4.4(1)) as follows:

*(c) to ensure that buildings are compatible with the bulk, scale, streetscape and existing character of the locality,*

The photomontage and model illustrate that proposed Stage 1 – RPAC sits comfortably within the streetscape of Macpherson Street. The southern elevation of proposed Stage 1 – RPAC (A.150, **Appendix C** to the EIS) shows that the RPAC has an appropriate street building height that provides a transition between the DJSC and adjoining residential flat building at 4 Macpherson Street.

*(d) to establish limitations on the overall scale of development to preserve the environmental amenity of neighbouring properties and minimise the adverse impacts on the amenity of the locality.*

The proposal will not give rise to any unreasonable or unexpected adverse amenity impacts for surrounding properties (in terms of overshadowing, views and privacy impacts), as detailed at Section 6.0 of the EIS. Notably, in relation to overshadowing, the EIS demonstrates that the RPAC will not affect solar access to living rooms in 4 Macpherson Street, other than an impact of around one hour on 21 March and 21 June to a maximum of three living rooms facing north. The affected living rooms will each retain five to six hours of sunlight which is well in excess of the SEPP 65/Residential Flat Design Code rule of thumb which recommends 70% of apartments in a development receive a minimum of three hours of direct sunlight to living rooms and private open spaces between 9am and 3pm in midwinter.

### **SUMMARY OF ISSUES RELEVANT TO BOTH VARIATIONS**

#### **Impacts**

- As detailed in Section 6.0 of the EIS, the proposed Campus Master Plan and Stage 1 RPAC development will not give rise to any unreasonable or unexpected adverse amenity impacts for surrounding properties (in terms of overshadowing, views/outlook and privacy impacts)
- The Campus Master Plan has been designed to reduce paved surfaces on the site and minimise the loss of deep soil landscaped area. Mayoh Architects calculate that the Campus Master Plan (Drawing A.MP.008, **Appendix C**):
  - Increases the playground space by 119m<sup>2</sup>
  - Decreases paved circulation areas by 1,080m<sup>2</sup>
  - Decreases vehicular/service areas by 641m<sup>2</sup>
  - Decreases deep soil landscaped area by just 421m<sup>2</sup> (which equates to 1.9% of the total site area).
- The SoHI by NBRSP+Partners (**Appendix D**) concludes that the heritage impacts of the proposal are minimal and positive
- The Traffic Assessment by ARUP (**Appendix I**) concludes that the traffic impacts of the Campus Master Plan and Stage 1 – RPAC will be acceptable.

#### **Zone objectives**

- The proposal satisfies the objectives of Zone SP2 Educational Establishment as follows:
  - *To provide for infrastructure and related uses*  
The proposal is for an infrastructure use.

- *To prevent development that is not compatible with or that may detract from the provision of infrastructure*

The proposal is compatible the provision of infrastructure and will materially improve the function and amenity of the existing *educational establishment* on the site.

- The objectives of Zone SP2 Educational Establishment would be defeated and thwarted if compliance with the height and FSR standards was required as it would:
  - Necessitate demolition of existing education buildings
  - Preclude completion of approved DAs
  - Preclude construction of the required infrastructure developments on the site.

### **Objects of the Act**

The Objects of the Act are satisfied as:

- The departure from the height and FSR standard in Waverley LEP 2012 will have no negative consequences in terms of the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment
- The departure from the height and FSR standard in Waverley LEP 2012 allows for the orderly and economic use of the site in a manner which otherwise achieves the outcomes and objectives of the relevant planning controls.

### **Public interest**

- To cater for the projected growth in school aged children in the catchment to 2031 (see Section 6.16), the following would be required:
  - Number of schools within the catchment remain the same: Each existing school would need to accommodate on average 167 more students (approximately seven new classrooms, accommodating 24 children)
  - New schools are constructed to accommodate increase: 16.6 new primary schools and 5.5 new secondary schools would be required.
- The proposal to increase the student population of St Catherine's by 230 students over the next 15 years (to 1,200 students) will accommodate a proportion of this projected growth in school aged children.
- Other positive social and economic impacts include:
  - Supporting the continued successful operation of Australia's oldest independent school for girls
  - Improving educational facilities for existing and future St Catherine's students and staff
  - Providing opportunities for use of the RPAC by members of the extended school community (including other schools in the catchment)
  - Ongoing employment within the school (+ 10 jobs) plus construction jobs (94 construction jobs for Stage 1 RPAC) and expenditure
- No unreasonable public disadvantages have been identified as it has been demonstrated that any environmental or other impacts associated with the development are minimal and/or can be adequately managed
- If approved, the consent will be subject to a condition requiring the payment of s. 94A contribution.

### Other tests

- The proposed variations satisfy the tests and considerations established in *Wehbe v Pittwater Council* [2007] NSW LEC 82 and *Winten Developments Pty Ltd v North Sydney Council* [2001] NSWLEC 46.

### 6.1.6 Waverley Development Control Plan 2012

As detailed in **Table 9**, the proposal is consistent with the general design provisions in the Waverley DCP 2012 (Waverley DCP 2012 does not set specific controls for educational facilities).

**Table 9 – Compliance with Waverley DCP 2012 – Part B General design provisions**

Control	Compliance	Comment
4. Tree preservation	✓	The tree preservation objectives and controls seek to preserve trees and other vegetation within Waverley. The proposal seeks consent for the removal and replacement of trees and other vegetation. For a further discussion regarding the preservation, removal and retention of trees, see Section 3.8 and 4.4.
5. Stormwater management	✓	As detailed in the Civil Engineering Report and Plans by Henry & Hymas (see Section 6.15 and <b>Appendix M</b> ), stormwater controls including roof water harvesting and OSD, will be implemented as part of Stage 1 – RPAC to ensure that the proposal does not adversely impact on stormwater flows and water quality of the stormwater system downstream of the site.
6. Accessibility and adaptability	✓	The proposal substantially improves accessibility throughout the site to reinforce the accessibility objectives and controls in the Waverley DCP 2012.
7. Transport	N/A	The site is located in parking zone B. The Waverley DCP 2012 does not specify car parking, bicycle parking or motorcycle parking rates applicable to educational establishments.
8. Heritage	✓	As detail in Section 6.10 and the SoHI at <b>Appendix D</b> , the proposed will have a minimal and positive heritage impacts.

## 6.2 Strategic context

### (SEAR 2)

The following strategic plans and policies are relevant to the proposal:

- NSW 2021 State Plan
- Draft Metropolitan Strategy for Sydney 2031
- Draft East Subregional Strategy
- NSW Bike Plan
- Planning Guidelines for Walking and Cycling

An assessment of compliance with these plans and policies follows.

### 6.2.1 The NSW 2021 State Plan

The NSW 2021 State Plan was adopted in September 2011. It is a ten year plan that aims to *"rebuild the economy, provide quality services, renovate infrastructure restore government accountability and strengthen local environments & communities"*. It establishes action plans and targets with respect to identified areas for attention.

A Section of the Plan is devoted to the delivery of Education and a key component of this is to improve education and learning outcomes. The following State Plan goals are relevant to the proposal:

- Improve education and learning outcomes for all students (Goal 15)

It is critical that NSW has an educated and skilled workforce to drive a productive and growing economy. The delivery of high quality, accessible and relevant training will support workforce participation and the growth of industry and business.

The proposed improvements to St Catherine's School provides an opportunity to build on the strength of an existing knowledge asset, which will ensure better access to local and regional learning opportunities.

- Invest in critical infrastructure (Goal 19)

The right infrastructure in the right places is essential to achieving economic growth, because it improves productivity and makes us more competitive. Infrastructure NSW will strongly encourage the involvement of the private sector to further boost infrastructure activity, and ensure infrastructure is delivered on time and on budget, free from political interference.

St Catherine's School is both the oldest Anglican girls' school and the oldest independent girls' school in Australia. Established in March 1856, the school has occupied its current site in Waverley since 1859. The proposal will see the current school upgraded with state-of-the-art facilities which complement the school's commitment to providing a broad, challenging and vibrant education within a nurturing environment.

- Enhance cultural, creative, sporting and recreation opportunities (Goal 27)

Enhanced participation in arts, sporting and recreation activities contributes to economic, social and cultural development across the State and delivers benefits to the community and the economy. By supporting Aboriginal, multicultural and local activities we will strengthen communities, and encourage increased sporting participation to support healthy lifestyles.

The proposal includes a new Aquatic Centre in place of the existing, aged outdoor pool. The new Aquatic Centre will enhance the current educational curriculum for Sport/PDHPE. The proposal will also enhance the current educational curriculum for Performing Arts by introducing a new state-of-the-art professional grade auditorium, which addresses the constraints of the existing "playbox theatre" within the DJSC (ie. small spectator gallery,



insufficient back-of-house facilities, inadequate size to accommodate school performances etc).

#### 6.2.2 Draft Metropolitan Strategy for Sydney 2031

The draft Metropolitan Strategy for Sydney to 2031 is a new plan to guide Sydney's growth to 2031. The draft Metropolitan Strategy is a consultation document and was placed on public exhibition until 28 June 2013.

The Strategy sets out a new plan for the city's future over the next two decades and supports the key goals, targets and actions contained in NSW 2021 State Plan. It includes the following objective:

*Achieve productivity outcomes through investment in social infrastructure such as education, health, cultural and sporting facilities (Objective 16).*

The proposal will introduce a new Research Centre which reflects a contemporary world-leading teaching and learning environment for staff and K-12 students, equipped with a broad variety of leading edge and learning based technology the new Research Centre will promote and support future economic activity.

#### 6.2.3 NSW Bike Plan

The NSW Bike Plan outlines a ten year bicycle infrastructure plan and features encouragement actions to make cycling easy and accessible. The NSW Bike Plan outlines how the NSW Government will work in partnership with local councils, communities and businesses to grow bike-riding over ten years.

The NSW Bike Plan will help make NSW one of the world's best places to ride a bike. The NSW Bike Plan outlines how the NSW Government will work in partnership with local councils, communities and businesses to grow bike-riding over the next ten years.

The Campus Master Plan includes 15 new bicycle parking spaces, as shown on **Figures 15 and 16** and A.MP.007, **Appendix C**).

The Traffic and Transport Assessment by ARUP (**Appendix I**) identifies the following additional initiatives which could be adopted by the School to promote cycling:

- Additional way finding signage, including distances to and from major hubs close to the School
- Development and testing of alternative bus shelter design to reduce obstacles for cyclists on bus corridors. Specific opportunities apply to the Albion Street and Macpherson Street frontages
- Increased mode share of cyclists if a greater number of end of trip facilities are provided including showers and lockers.

If considered appropriate, these initiatives could be required as conditions of consent.

#### 6.2.4 Planning Guidelines for Walking and Cycling

These guidelines aim to improve consideration of walking and cycling. Planning has an important role to play, particularly as it influences urban form, which sets the scene for walkability and cycle-ability for decades to come. It is anticipated that improving practice in planning for walking and cycling will create more opportunities for people to live in places with easy walking and cycling access to urban services and public transport. This will help reduce car use and create healthier neighbourhoods and cities.

As detailed in Section 3.7.2, the Campus Master Plan improves pedestrian amenity and function and crime prevention through environmental design principles will be adopted (see **Table 10**).

### 6.2.5 Draft East Subregional Strategy

The draft East Subregional Strategy is an intermediate step in translating the Metropolitan Plan at a local level and acts as a broad framework for the long-term development of the area, guiding government investment and linking local and state planning issues.

The following directions and actions are relevant to the proposal:

*A2.4 – Utilise local assets to encourage learning and innovation;*

The proposal retains and improves an existing *educational establishment* in a way that encourages learning and innovation, consistent with the draft East Subregional Strategy.

### 6.3 Built form and urban design

*(SEAR 3)*

The Campus Master Plan described at Section 3.0 establishes the following for the site:

- Site layout
- GFA
- Building footprint
- Height/massing/building envelopes
- Open spaces and tree planting master plan.

The appropriateness of the proposed height, bulk and scale of the proposal; in particular proposed Stage 1 – RPAC; is addressed in the clause 4.6 variation requests, as summarised at Section 6.1.5. The design quality of proposed Stage 1 – RPAC is addressed in detail at Section 4.2 which includes images and a design statement by Mayoh Architects. **Table 10** demonstrates that the proposal implements Crime Prevention Through Environmental Design (**CPTED**) principles.

**Table 10 – Implementation of crime prevention through environmental design principles**

CPTED Principle	Measure to be incorporated into the proposal
<p><b>Surveillance</b></p> <p>Good surveillance means that people can see what others are doing. People feel safe in public areas when they can easily see and interact with others. Would be offenders are often deterred from committing crime in areas with high levels of surveillance. From a design perspective, 'deterrence' can be achieved by:</p> <ul style="list-style-type: none"> <li>• Clear sightlines between public and private places.</li> <li>• Effective lighting of public places.</li> <li>• Landscaping that makes places attractive, but does not provide offenders with a place to hide or entrap victims.</li> </ul>	<p>Surveillance will be maximised by:</p> <ul style="list-style-type: none"> <li>• Lighting (automatic) will be installed at site entries</li> <li>• The main pedestrian paths through the site (including the main spine) will be well lit</li> <li>• Boarders and boarding staff reside on site in a designated building which is suitably protected and is subject to security monitoring</li> <li>• On site security patrols occur outside of school hours. Hours vary between term and non-term time, as well as between week day and weekend times</li> <li>• Extra security is engaged for larger events</li> <li>• The landscape master plan reduces the density of planting in some areas, improving sightlines and reduces opportunities for concealment.</li> </ul>
<p><b>Access control</b></p> <p>Physical and symbolic barriers can be used to attract, channel or restrict the movement of people. Effective access control can be achieved by creating:</p> <ul style="list-style-type: none"> <li>• Landscapes and physical locations that channel and group pedestrians into target areas.</li> <li>• Public spaces which attract, rather than discourage people from gathering.</li> <li>• Restricted access to internal areas or high-risk areas.</li> </ul>	<p>Access control will be maximised by:</p> <ul style="list-style-type: none"> <li>• Controlling public access to the site via fencing/gates</li> <li>• Extending the School's strict control over entries to the school. Entry points are generally open only for morning drop off and afternoon pick up. Outside of these times, entry to the school is currently restricted to Gate 1, Albion Street and the Junior School entry only</li> <li>• During school hours, access to the school only occurs after visitors sign-in at either the main reception (in the Senior School) or at the Junior School Reception. Visitor badges are issued and any unidentified people on campus not displaying a visitor badge have their identify queried by staff</li> <li>• Access to existing and proposed parking areas will be restricted as follows: <ul style="list-style-type: none"> <li>– Staff at manager level or higher</li> <li>– Staff with significant tenure</li> <li>– Visitors who have been issued a pass allowing them access to open the relevant car park gate</li> </ul> </li> <li>• No new driveways are proposed, minimising site entry points</li> <li>• Out of bounds areas are clearly marked and fenced off to ensure entry does not occur</li> <li>• All staff is issued programmable passes which provide them access to buildings. Access levels vary according to the needs of staff and the performance needs of their roles.</li> <li>• Visitors may be provided a programmable pass which allows them to access designated areas relevant to their purpose at the school.</li> <li>• Programmable passes cover entry to relevant buildings as well as the time zones at which entry has been allowed.</li> </ul>
<p><b>Territorial reinforcement</b></p> <p>Community ownership of public spaces sends positive signals. Well used places also reduce opportunities for crime and increase risk to criminals.</p>	<p>Territorial reinforcement will be maximised by:</p> <ul style="list-style-type: none"> <li>• High quality landscaping and ongoing maintenance of grounds</li> <li>• Providing physical barriers (fencing) to preclude access from the street</li> </ul>

CPTED Principle	Measure to be incorporated into the proposal
<p>Territorial reinforcement can be achieved through:</p> <ul style="list-style-type: none"> <li>• Design that encourages people to gather in public space and to feel some responsibility for its use and condition.</li> <li>• Design with clear transitions and boundaries between public and private space.</li> <li>• Clear design cues on who is to use space and what it is to be used for.</li> </ul>	<ul style="list-style-type: none"> <li>• Signage will be used to direct pedestrian and vehicular access.</li> </ul>
<p><b>Space management</b></p> <p>Space management ensures that space is appropriately utilised and well cared for. Space management strategies include activity coordination, site cleanliness, rapid repair of vandalism and graffiti, replacement of burned out pedestrian and car park lighting and the removal or refurbishment of decayed physical elements.</p>	<p>Space management will be maximised by:</p> <ul style="list-style-type: none"> <li>• The School's Facilities team monitors the buildings and spaces on campus to ensure that they are kept clean, tidy and that maintenance occurs in a timely manner</li> <li>• The School operates a rolling three year capital expenditure program to ensure that its buildings and spaces are well maintained and that regular maintenance work is scheduled</li> <li>• Ad hoc work such as vandalism and graffiti is reported to the Facilities team by staff or security who monitors the campus outside of school hours. Security report such work to Facilities in their daily reporting back to the School. The School provides sufficient financial resources to ensure that ad hoc repairs occur promptly.</li> </ul>



## 6.4 Solar access and overshadowing

### (SEAR 4)

The section of the EIS considers solar access/overshadowing and includes an assessment of the proposal's impacts using the consolidated and revised solar access planning principle established by the Land and Environment Court in *The Benevolent Society v Waverley Council* [2010] NSWLEC 1082.

#### 6.4.1 Overshadowing impact

Stage 1- RPAC is the only component of the Campus Master Plan that will cast shadows onto adjoining residential properties, specifically the adjoining residential flat building at 4 Macpherson Street.

Mayoh Architects has prepared diagrams that illustrate the shadows cast by the proposed RPAC on 4 Macpherson Street (A.700-A.708, **Appendix C**). The shadow studies compare the impact of the existing development, the approved Indoor Sports Complex (DA 258/89), a complying 9.5m high building and the proposed Stage 1 - RPAC. Shadow diagrams have been prepared in plan and elevation for the following times of year:

- 21 March
- 21 June
- 21 December.

A summary of the proposed Stage 1 - RPAC shadow studies follows.

##### 21 March

- Western elevation of 4 Macpherson Street (no living rooms):
  - 9am to 1pm - No new overshadowing of the western elevation of 4 Macpherson Street
  - After 2pm - The RPAC will cast a shadow onto windows in the western elevation of 4 Macpherson Street. The affected windows are to bedrooms, bathrooms and a store/laundry. No living rooms are affected. Some of the affected windows would also be overshadowed by the approved Indoor Sports Complex and/or a building that complied with the 9.5m height standard.
- Northern elevation of 4 Macpherson Street:
  - 9am to 1pm - No overshadowing of the northern elevation of 4 Macpherson Street
  - After 2pm – At 2pm, the RPAC will cast a small shadow onto bedrooms in the northern elevation of 4 Macpherson Street. At 3pm, the shadow will affect two living rooms - Around 6 hours of solar access to living rooms in March will be retained.

##### 21 June

- Western elevation of 4 Macpherson Street (no living rooms):
  - 9am to 12 noon - No new overshadowing of the western elevation of 4 Macpherson Street
  - After 1pm - The RPAC will cast a shadow onto windows in the western elevation of 4 Macpherson Street. The affected windows are to bedrooms, bathrooms and a store/laundry. No living rooms are affected. Some of the affected windows would also be overshadowed by the approved Indoor Sports Complex and/or a building that complied with the 9.5m height standard.
- Northern elevation of 4 Macpherson Street:

- 9am to 2pm - No overshadowing of the northern elevation of 4 Macpherson Street (and the impact between 2pm and 5pm is very minor) – More than 5 hours of solar access to north facing living room windows and balconies will be retained in midwinter
- 3pm –The RPAC will cast a shadow onto five living room and bedroom windows in the northern elevation of 4 Macpherson Street.

#### 21 December

- Western elevation of 4 Macpherson Street (no living rooms):
  - 9am to 2pm - No new overshadowing of the western elevation of 4 Macpherson Street
  - After 3pm - The RPAC will cast a shadow onto a small number of windows in the western elevation of 4 Macpherson Street. The affected windows are to bedrooms, bathrooms and a store/laundry. No living rooms are affected. Some of the affected windows would also be overshadowed by the approved Indoor Sports Complex and/or a building that complied with the 9.5m height standard.
- Northern elevation of 4 Macpherson Street:
  - No impact.

#### 6.4.2 Solar access planning principle

The Court's consolidated and revised solar access planning states:

*Where guidelines dealing with the hours of sunlight on a window or open space leave open the question what proportion of the window or open space should be in sunlight, and whether the sunlight should be measured at floor, table or a standing person's eye level, assessment of the adequacy of solar access should be undertaken with the following principles in mind, where relevant:*

Waverley DCP 2012, Part C, cl. 2.15(c) states the following solar access control (noting that this applies to multi unit and multi dwelling housing, which is relevant to the impact of the proposal on the apartments at 4 Macpherson Street):

- (c) *Direct sunlight to north facing windows of habitable rooms and all private open space areas of adjacent dwellings should not be reduced to less than 3 hours between 9.00am and 3.00pm on June 21.*

The proposal fully satisfies the Waverley DCP 2012 solar access control as north facing windows and balconies in the apartment building at 4 Macpherson Street will receive more than 5 hours of solar access between 9.00am and 3.00pm on June 21 (as illustrated by A.MP.706 – A.MP.708, **Appendix C**), well in excess of the 3 hour requirement set by the DCP.

In any event, an assessment of each point in the Court's solar access planning principle follows (the Court's principle is shown in *italics*).

- *The ease with which sunlight access can be protected is inversely proportional to the density of development. At low densities, there is a reasonable expectation that a dwelling and some of its open space will retain its existing sunlight. (However, even at low densities there are sites and buildings that are highly vulnerable to being overshadowed.) At higher densities sunlight is harder to protect and the claim to retain it is not as strong.*

Land around the site St Catherine's school is occupied by a mixture of residential flat buildings, semi detached, attached and detached dwellings. The site and adjoining lands have an overall urban character and would be characterised as medium density, diminishing the claim to retain sunlight when compared to low density sites.

The claim to retain full sunlight to the western elevation of the residential flat building at 4 Macpherson Street is also reduced as this portion of the school site is presently free of

buildings, it is underutilised and benefits from a commenced consent for a new Indoor Sports Centre (DA 258/89).

- *The amount of sunlight lost should be taken into account, as well as the amount of sunlight retained.*

The amount of sunlight lost at 4 Macpherson Street is discussed above in Section 6.4.1 and is illustrated on the shadow diagrams prepared by Mayoh Architects (A.700-A.708, **Appendix C**). As noted above, the northern and eastern elevations of the residential flat building at 4 Macpherson Street will enjoy very good solar access and living rooms to the apartments are orientated away from the western elevation that overlooks the site and that will be affected by proposed Stage 1 - PRAC.

- *Overshadowing arising out of poor design is not acceptable, even if it satisfies numerical guidelines. The poor quality of a proposal's design may be demonstrated by a more sensitive design that achieves the same amenity without substantial additional cost, while reducing the impact on neighbours.*

The proposed Stage 1 - RPAC results from a detailed site and facility analysis (A.MP.003 – A.MP.005, **Appendix C**) and has been amended to respond to issues raised during pre-lodgement consultation (refer to Section 6.21).

- *For a window, door or glass wall to be assessed as being in sunlight, regard should be had not only to the proportion of the glazed area in sunlight but also to the size of the glazed area itself. Strict mathematical formulae are not always an appropriate measure of solar amenity. For larger glazed areas, adequate solar amenity in the built space behind may be achieved by the sun falling on comparatively modest portions of the glazed area.*

This part of the principle has limited relevance to the proposal as north facing windows will receive more than 5 hours of sunlight.

- *For private open space to be assessed as receiving adequate sunlight, regard should be had of the size of the open space and the amount of it receiving sunlight. Self-evidently, the smaller the open space, the greater the proportion of it requiring sunlight for it to have adequate solar amenity. A useable strip adjoining the living area in sunlight usually provides better solar amenity, depending on the size of the space. The amount of sunlight on private open space should ordinarily be measured at ground level but regard should be had to the size of the space as, in a smaller private open space, sunlight falling on seated residents may be adequate.*

The western elevation of the residential flat building at 4 Macpherson Street, which is partly overshadowed by the proposal, does not incorporate any private open spaces.

The overshadowing impact on north facing balconies at 4 Macpherson Street is minor and complies with the solar access control in Waverley DCP 2012 (noting that the north facing balconies/windows will receive more than 5 hours of solar access, as illustrated by A.MP.706 – A.MP.708, **Appendix C**).

- *Overshadowing by fences, roof overhangs and changes in level should be taken into consideration. Overshadowing by vegetation should be ignored, except that vegetation may be taken into account in a qualitative way, in particular dense hedges that appear like a solid fence.*

Consistent with the Court's principle, the existing and proposed shadow studies by Mayoh Architects take into account shadows cast by fences, roof overhangs and changes in level and ignore shadows cast by existing vegetation (even though existing trees along the eastern boundary of the site would overshadow 4 Macpherson Street).

- *In areas undergoing change, the impact on what is likely to be built on adjoining sites should be considered as well as the existing development.*

This part of the principle is not relevant as the site is not within an area undergoing change and adjoining sites are unlikely to undergo major redevelopment.

#### 6.4.3 Solar access conclusion

The proposal fully satisfies the Waverley DCP 2012 solar access control as north facing windows and balconies in the apartment building at 4 Macpherson Street will receive more than 5 hours of solar access between 9.00am and 3.00pm on June 21 (as illustrated by A.MP.706 – A.MP.708, **Appendix C**), well in excess of the 3 hour requirement set by the DCP and consistent with the SEPP 65/Residential Flat Design Code rule of thumb for solar access.

In any event, the site is located in a medium density area, diminishing the claim to retain sunlight when compared with low density areas. The claim to retain full sunlight to the western elevation of the residential flat building at 4 Macpherson Street is further reduced as this portion of the school site does not contain any buildings, is underutilised and benefits from a commenced consent for a new Indoor Sports Centre (DA 258/89).

Given this, the overshadowing impact of the proposal on 4 Macpherson Street is reasonable and predicable and satisfies the Court's consolidated and revised solar access planning principle.

#### 6.5 Views/outlook

(SEAR 4)

No water, iconic or significant views will be affected by the proposal. The proposed Stage 1 - RPAC will however alter the western outlook from apartments in the residential flat building at 4 Macpherson Street that have a western aspect (11 out of 16 apartments). For the following reasons, the impact is reasonable and minimised:

- The approved/commenced Indoor Sports Complex (DA 258/89) occupies part of the RPAC footprint and would similarly alter the outlook from 4 Macpherson Street and would necessitate the removal of trees on the site and within the street footpath
- The affected windows at 4 Macpherson Street are to bedrooms, bathrooms and a store/laundry (the internal apartment layout of 4 Macpherson Street is illustrated on drawings A. 101 - A104, **Appendix C**)
- Living room outlooks will not be affected by the proposal as all of the apartments at 4 Macpherson Street have living rooms that face north, south or east
- The proposed RPAC is setback 4m to the eastern side boundary (at the ground level), stepping to 5.295m and 8.2m to the fly tower. In comparison, the approved Indoor Sports Complex is setback just 2m from the eastern side boundary and around 1m to the approved fire stairs, diminishing opportunities for screen planting between the building and 4 Macpherson Street
- Vertical screen planting is proposed to the eastern elevation of the proposed RPAC, planted with a vigorous climber such as Solandra Maxima and cascading plants such as Carpbrotus (as illustrated on section at **Figure 25** and DA-L-03, **Appendix F**)
- Palm planting to eastern side boundary is proposed with a lush textured understorey planting and a green wall to the upper level of RPAC. The level of the new planting is designed to maximise the amenity offered to 4 Macpherson Street so that the setback area presents as an extension of their property (as illustrated on the elevation **Figure 25** and DA-L-03, **Appendix F**).



## 6.6 Privacy

### (SEAR 4)

Any potential loss of privacy for the adjoining residents in the residential flat building at 4 Macpherson Street is mitigated as:

- Buildings (existing and proposed) are internally orientated to the central green space used for sport and play and/or are orientated to the surrounding streets
- The eastern elevation of the proposed Aquatic Centre incorporates fixed windows with obscure glazing that are located a level below any residential unit floor level to allow natural light into the Aquatic Centre, while preventing overlooking (this also inhibits looking in to the Aquatic Centre)
- The eastern elevation of the proposed Auditorium and Multi-Purpose Hall (which coincides with the adjoining apartments) does not incorporate any clear/open-able windows or doors
- Proposed entries and break out terraces are centrally located between the proposed RPAC and existing DJSC
- The eastern side setback area will be out of bounds for students and access will be available for maintenance only
- The proposal offers a significant privacy improvement when compared with the approved/commenced Indoor Sports Complex (DA 258/89) which is setback just 1-2m from the eastern side boundary and included multiple windows (refer to **Figure 3**).

East facing windows to the proposed Research Centre, glazed with clear glass, face Leichhardt Lane. The adjoining residential flat building at 7 Leichhardt Street does not have windows in its western elevation. Any potential for angled views to the northern elevation of 7 Leichhardt Street would be limited given that the proposed rooms are seminar/staff spaces used by small groups during standard school hours only.

## 6.7 Transport and accessibility

### (SEAR 6)

#### 6.7.1 Construction

The Traffic and Transport Assessment by ARUP (**Appendix I**) incorporates a construction traffic management plan. In summary, it sets out the following:

- **Construction routes:** Construction activities at St Catherine's School will generate vehicle trips primarily Albion Street and Macpherson Street. The main access roads will be via the state road network and vehicles will likely originate from this network. The majority of trips will likely be generated from the west and will access the site from the Eastern Distributor via Darley Road. Trips from the north may access the site via Carrington Road, while trips from the south may access the site via Frenchmans Road
- **Construction traffic:** 75 personnel (maximum expected on site) will generate a potential 75 car trips (assuming everyone drives). However, construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the school peak periods. Heavy vehicle trips generated would be 2,700 over the span of the excavation and demolition period resulting in the order of 42 truck movements per day or four peak hour trips.

The cumulative impact of construction traffic is assessed as follows:

#### **Road network impacts**

*The traffic generation of this magnitude is less than the amount of trips generated and assessed for the operational phase of the development and therefore the potential impacts are anticipated to be minimal.*

*It is anticipated that construction of the driveway laybacks on Macpherson Street may require possession of the northern kerbside parking lane. This would be required to occur outside of peak times and near existing drop-off zones to minimise the impact on parking.*

### **Parking**

*There will be no room on the school site for parking of construction staff and trade vehicles associated with the construction of the development. On-street car parking will be utilised by workers who drive during various stages of construction.*

### **Pedestrians**

*Pedestrians on Macpherson Street will be impacted from walking past the site during construction. Traffic controllers with appropriate accreditation will hold construction vehicles and allow pedestrians to cross these work areas. This arrangement is envisaged to be required only during construction of vehicular access to the RPAC site from Macpherson Street and subsequent restoration of the kerb. During all other phases of construction of RPAC, construction vehicles will be required to give way to pedestrians on entry and exit to the site.*

## **6.7.2 Operational**

A Traffic and Transport Assessment has been prepared by ARUP (**Appendix I**). It concludes as follows in relation to event management, parking assessment and traffic assessment:

### **Event management**

- *There are a number of annual events currently held in existing on-site facilities that will be relocated into the Performing Arts Auditorium which will increase the capacity of events from 250 to 500. There are a number of new events also planned with a capacity of 500 that will be held in the Performing Arts*

### **Auditorium**

- *The majority of other events to be held in the Performing Arts Auditorium, the Multi Purpose Hall, the RPAC and the JKSC already occur on-site and there is no planned change to the frequency or size of these events; and*
- *The venue use will be scheduled so that events in the various venues do not overlap leaving limited opportunity for additional external hire of the venues to that currently programmed.*

### **Parking assessment**

- *At-grade car parks accessed from Albion Street will be rationalised, and a new basement car park on Macpherson Street will bring the total campus parking provision to 75 car spaces (a net increase of 19 spaces);*
- *A car parking demand of up to 160 cars is anticipated for the large capacity events, with approximately 113 cars parking on-street, well within the existing on-street car parking availability of 200 car spaces (available within 5 minutes' walk of the School between 7.30 and 8.00pm);*
- *A number of strategies could be investigated to reduce the reliance of on-street car parking for major events at the School including operating a shuttle bus loop service within the Eastern Suburbs on a route with designated pick-up points; and*

- *On-street 'No Parking' zones will be amended with better management strategies for more efficient drop-off and pick-up activities to occur.*

**Traffic assessment**

- *Traffic movements at the key access points into the site currently operate efficiently;*
- *The roundabouts encourage parents to loop and turnaround, providing more efficiency for drop-off and pick-up activity (resulting in a more localised congestion rather than overall road network congestion);*
- *Additional traffic movements estimated are conservative as many of them would likely be vehicles already counted in the surveys or not additional due to sisters at the School already;*
- *It is expected there will be minimal change in staff trips with only a minor increase in staff proposed at the School and only a minimal increase in car parking on the site;*
- *There is a forecast increase in peak hour traffic of 172 cars in the AM peak hour, 150 cars in the PM peak hour and 79 cars in the weekend peak hour as a result of the Master Plan and Stage 1 development;*
- *Traffic modelling indicates that additional traffic generated by the School will have a modest impact on the operation of the roundabout intersections along Macpherson Street;*
- *There are opportunities for a mode shift away from private vehicle travel, with the site located along key bus routes to Bondi Junction, and walking and cycling available; and*
- *School drop off and pick up generally is quite concentrated before the indicative start and finish time. While there may be a level of congestion experienced, this is usually short-term (i.e. over the course of 15 minutes) and the expected traffic flows would not cause considerable impacts to the overall peak hour of the local road network.*

ARUP also recommend a number of transport actions, as summarised in **Table 11**. A condition of consent could be imposed requiring implementation of the actions.

**Table 11 – Recommended transport actions (source: ARUP, page 53)**

Action	Description	Result
Rationalisation of the “No Parking” signposting	All zones to be 8:00am to 9:00am and 2:30pm – 4:00pm in Leichhardt Street, Macpherson Street and Albion Street.	Improved legibility of “No Parking” in school zones
Macpherson Street Drop-off / pick-up school zone	Increase in length from 17 to 20 spaces. It is proposed to relocate the zebra crossing so that the vehicle queue is continuous which will result in improved operation.	Improved traffic flow.
Macpherson Street Drop-off / pick-up school zone	The new school pedestrian access is moved to the east on Macpherson Street which will move it closer to the front of the school zone.	Encourages cars to move to the front of the queue.
Leichhardt Street Drop-off / pick-up school zone	Relocated bus zone. This was approved at the 22 April 2014 Waverly Traffic Committee meeting.	Improved single queuing area for cars. This will improve behaviour of drivers.
Leichhardt Street Drop-off / pick-up school zone	Consider relocating Years 3-4 pick-up from Leichhardt Street to Macpherson Street.	Reduces use of Leichhardt Street zone and hence improved traffic flow.
Management of school zones	A staff member to be present in Leichhardt Street, Macpherson Street and Albion Street. Controllers to be briefed and given written instructions for effective traffic management.	Improved traffic flow and school zone safety.
Junior student registration scheme	This would require each car to display a number or the child’s name on the windscreen to allow the traffic controllers to match children with their car as it approaches the pick-up area.	This results in a quicker turnover of spaces in the pickup zone.
New car park under the RPAC Building	This will add 22 spaces to the existing 25 spaces in the DJSC resulting in 47 car parking spaces.	These 47 spaces will be available for visitor use in the evenings and at weekends for major events.
Work Place Travel Plan	Reduce use of private vehicle for staff access to the site.	Reduced on-street car parking demand.



## 6.8 Ecologically sustainable development

(SEAR 7)

Cundall has completed a report titled *Environmentally Sustainable Design Approach to accompany the Campus Master Plan* (with specific recommendations included for Stage 1 RPAC) (Appendix J).

The Cundall Report considers a variety of ESD initiatives that could be implemented at the design, construction and operational phases considering measures that would minimise demand for resources, water and energy. Measures to be adopted in the proposal will be fully investigated at the detailed design phase. At this stage, the applicant is proposing to explore the following initiatives, with a view to achieving equivalent to a minimum four star Green Star rating:

- Enhanced commissioning processes including an independent commissioning agent and building tuning
- ISO14001 certified Environmental Management Plan
- Waste management to ensure construction waste is recycled
- Environmental learning resources incorporated into the building design
- Maintenance staff consulted throughout the process to improve the maintainability of systems
- Increased outside air rates for air conditioning, plus well designed supply and return air locations and CO2 monitoring and control
- Design to provide high levels of daylight and external views
- Good acoustic design
- Selection of materials with low toxicity (carpet, paint, adhesives, composite wood products)
- Lighting design with appropriate light levels, well zoned, efficient external lighting and high frequency ballasts
- Detailed energy and water sub-metering system
- Sensors for all back of house areas
- Cyclist facilities and proximity to public transport
- Low flow amenity fittings
- Landscape irrigation system which uses 100% rain water
- Concrete and steel with high recycled content from appropriate sources
- Flooring, joinery and loose furniture with good environmental attributes.

## 6.9 Acoustic impacts and light spill

(SEAR 4 and 8)

A Construction & Operational Noise Report has been prepared by Wilkinson Murray Pty Limited (Appendix K). The report considers construction and operational noise impacts noting that the following residential receivers may be affected by the proposal (and noise monitoring equipment was placed in each location):

1. Albion Street - Multi storey residential buildings
  2. Macpherson Street - Multi storey residential buildings to the east of the school and on the southern side of the street
  3. Leichhardt Lane - Mix of single and multi-storey residential building to the east of the school.
- The findings and recommendations of the acoustic report follow.

### 6.9.1 Construction noise and vibration

#### *Noise*

Construction noise may be above construction noise management levels at nearby residences during excavation and construction stages.

Exceedances of up to 16dBA at residences to the east of the site are expected during the excavation period when major equipment is located on site. This magnitude of exceedance is consistent with similar sites where residences overlook development sites.

During the structure stage, the magnitude of exceedance will reduce due to the nature of construction activities. Fitout works are less noise intensive and this is reflected in general compliance at residences during this stage.

Greater exceedances are predicted on Saturdays due to more stringent noise management levels that are triggered by the proposed extended hours of operation on this day.

Based on these findings the adoption of reasonable and feasible noise management and mitigation will be required. These measures should be determined in detail when a contractor is appointed, as recommended by Wilkinson Murray Pty Limited.

#### *Vibration*

The Noise Report notes that the highest vibration levels will occur when construction equipment is located on the eastern side of the site near residences on Macpherson Street and Leichhardt Lane.

A review of the site plant and surrounding receivers indicates that the minimum distance between the vibration generating activities and surrounding buildings, including heritage buildings, will be in the order of 6-7 metres. Therefore the use of medium to large rock breakers should be carefully managed at distances closer than 20 metres from residence.

It is recommended that trial testing of vibration levels be conducted where identified equipment having the potential to exceed the human comfort criteria is proposed.

Structural damage vibration criteria in residential buildings are much higher than human comfort criteria, and predicted vibration levels are within these criteria under most circumstances. The exception, should heavy rock breakers be used, is for areas near eastern residences on Macpherson Street. Therefore, the uses of alternative excavation measures, such as rock saws on excavators are recommended. If hammers are required, test vibration monitoring is recommended to ensure that vibration levels at residences are not excessive.

#### *Noise and vibration management plan*

The Noise Report recommends the preparation of a construction Noise and Vibration Management Plan for the site that addresses:

- Noise and vibration monitoring
- Response to complaints
- Responsibilities
- Monitoring of noise emissions from plant items
- Reporting and record keeping
- Non compliance and corrective action
- Community consultation and complaint handling.

### 6.9.2 Operational noise & vibration

The Noise Report considers the potential operational impacts of the Stage 1 – RPAC proposal. The report notes that operation noise may arise from:

- **Evening musicals in the Performing Arts Auditorium** - An essential component of the acoustic design of the proposed Performing Arts Auditorium is to control external noise intrusion so the noise from outside is inaudible, being generally below 20dBA. As a result, walls and ceilings to the auditorium will consist of masonry and composite constructions that provide a high level of sound isolation. This will also result in containment of noise emitted from the theatre to nearby residences.
- **Evening functions in the Multi Purpose Hall** – The Noise Report assessment shows that use of the Multi Purpose Hall under the most intense conditions will comply with the most stringent site specific noise criteria during the proposed hours of operation.
- **Use of the Aquatic Centre** - The proposed fully enclosed Aquatic Centre will replace the existing outdoor pool area. It is proposed to use these areas between 6.00am-8.00pm on weekdays and 8.00am-6.00pm on weekends. Whilst the proposed hours of use represent an increase in hours of operation, noise will be contained within the pool area by the new building. Use of the Aquatic Centre under the proposed operational conditions will comply with the most stringent site specific noise criteria during the proposed hours of operation.
- **Mechanical services** – Mechanical plant such as rooftop exhausts, air-conditioning and chillers associated with the proposal should be assessed at the time of detailed design and selection, having regard to nearby residential properties surrounding the development, and to future uses in the school area. As mechanical services equipment has not been selected and designed, Wilkinson Murray recommend that a condition of consent be imposed stating that mechanical services must comply with specified noise criteria (the Noise Report notes that this should be readily achievable).
- **Road traffic noise** - Existing facade reflected traffic noise levels are currently above recommended RMS traffic noise levels for the day and night periods. The maximum increase associated with proposed operations will result in a minor increase in the order of 0.1dBA. This increase is well below the increase of 2dB which is described as the acceptable level of increase by the RMS.

### 6.9.3 Noise conclusion

The Noise Report concludes that:

*A construction and operational noise assessment of the St Catherine School Campus Masterplan and Stage 1 RPAC development at Waverley has been conducted. Site-specific noise criteria that are applicable to this entire project have been presented. These have been determined for surrounding receivers to be applied on all State Significant Development applications. A noise assessment has been conducted for the proposed construction activities associated with Stage 1 to determine the potential for noise and vibration impact at surrounding receivers. Exceedances of noise management levels are expected at many surrounding receivers.*

*Vibration associated with on-site construction activities has the potential to impact on residences to the east of the site should large equipment, such as rock breakers be used. Trial monitoring and selection of less vibration intensive equipment is recommended.*

*Accordingly, management of noise from construction activities will be required to be included in the Site Construction Environmental Management Plan.*

*Site specific operational noise criteria for mechanical services have been determined for the project based on ambient noise monitoring. A preliminary review of major plant indicate that noise levels will comply with established noise criteria during proposed operation with minor acoustic treatment. A review of all plant with respect to site specific noise criteria is required at detailed design stage. At this stage any necessary noise mitigation should be determined and included in the detailed design of mechanical design .*

*By satisfying the relevant criteria at the subject site, compliance will readily be achieved at surrounding noise sensitive receptors. Noise emission from the site will be addressed during the detailed design phase.*

*A review of potential noise from activities inside the new buildings such as concerts, swimming use has determined that patron noise is likely to be well below site specific noise objectives for all proposed hours of operation.*

Should consent be granted, a condition should be imposed requiring compliance with the construction noise and vibration recommendations in the Noise Report.

#### 6.9.4 Light spill

Automatic block out blinds will be installed to the Aquatic Centre windows in the east elevation (facing bedrooms at 4 Macpherson Street) to curtail light nuisance for the adjoining residents (as illustrated by A.150, **Appendix C**).

#### 6.10 Heritage

(SEAR 9)

NBRS has prepared a SoHI (**Appendix D**) which provides a detailed history of the site. **Figure 28** is an extract from the SoHI noting the relative significance of buildings.



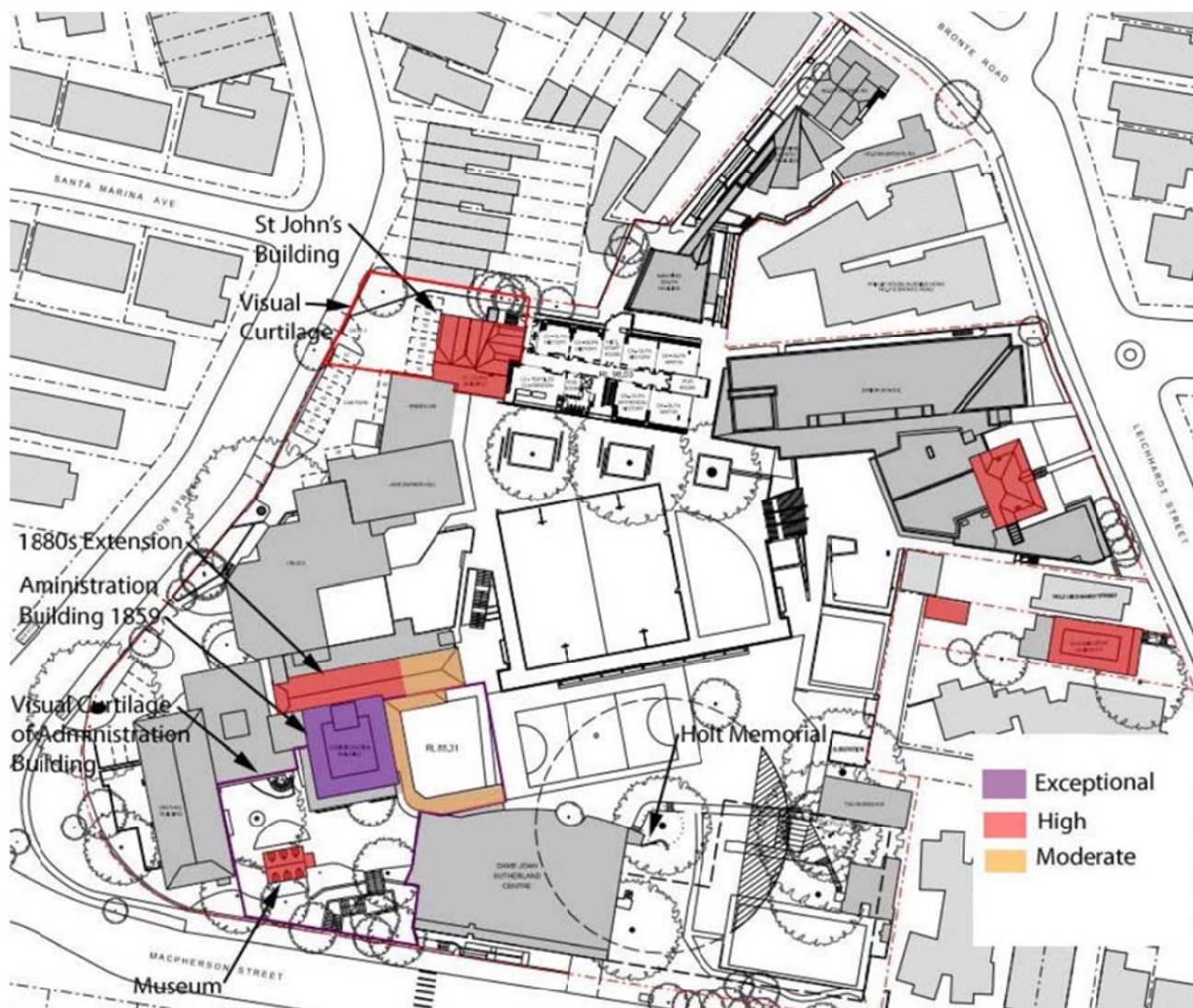


Figure 4 — Diagram showing buildings at St Catherine's School with heritage significance at a local level. The level of significance refers to the original fabric only for the specified building. The actual curtilages of the St John's Building and the Administration Building are their allotments, but the visual curtilages are shown here.

Figure 28 — Heritage significance (source: NBR)

The key findings of the SoHI, which consider the Campus Master Plan and Stage 1 - RPAC are summarised below:

- The Campus Master Plan would not involve the demolition of any building with heritage significance (and minor internal works will have no significant heritage impact)
- The proposed RPAC is substantially removed from the immediate context of the individual heritage components of the site
- The proposed RPAC would have no physical impact on the nineteenth-century buildings on the site or the C7 Conservation Area; nor would the RPAC be visible from the conservation area outside of the School, nor be visible from any nineteenth-century building within the School
- In future stages, in particular the new building proposed for the JBH site, the south-western setting of the St John's Building would be improved by the demolition of existing adjoining structures and the redesign of the area giving a wider visual catchment and potential for improved landscaping on the Albion Street frontage of the School site
- The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:
  - The outdoor swimming pool would be demolished and replaced by RPAC. The 1971 pool does not have identified heritage significance. Part of the heritage significance of this site is its association with the education of girls over a period of 150 years. The proposed continued upgrading of the facilities maintains this use on the site which was established specifically for the purpose. The significance of the early buildings of the site is enhanced through their ongoing viability as less significant parts of the site are upgraded to meet contemporary education needs.
  - The sandstone rubble wall along the Macpherson Street boundary between the DJSC and 4 Macpherson Street would be affected by the works, but the stone would be reinstated in same form as a retaining wall. The stone in this wall has been adjusted and remodelled in the past. The poor condition of the wall would be addressed by remodelling the stones.
  - Buildings and structures to be demolished on the site would be archivally recorded.

The SoHI by NBRIS concludes that:

*The proposed RPAC development described above would not adversely affect the identified heritage significance of the St Catherine's School heritage item or the role of the place in the C7 Conservation Area. The RPAC would be visually isolated from buildings with heritage significance. I recommend that the heritage aspects of this application be approved.*

### 6.11 Archaeology and Aboriginal heritage

(SEARs 9 and 10)

Austral Archaeology Pty Ltd has prepared an Aboriginal and Historical Archaeological Assessment, Statement of Heritage Impact (**Appendix L**). The Assessment concludes that the site is 'disturbed' land, that there is little likelihood of finding any archaeological material is low to very low and that there are no Aboriginal sites located within the impact area. The Assessment states the following conclusion and recommendation:

#### **Conclusions**

*A search of the Aboriginal Heritage Information Management System (AHIMS) Database returned no sites within 50 metre boundary of the study area. Given the site's documented history of use and continuous development since European settlement, it is clear that this location qualifies as 'disturbed' land according to the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010b).*

*Two areas have been identified as archaeologically sensitive within the study area; they are considered to have low potential to contain in-situ archaeological material (Figure 8.1). The archaeological material may comprise the remains of a wooden structure built in 1887, identified as the school 'Hospital' and parts of an 1889 residential building identified as the 'Cottage' that was utilised by St Catherine's from the mid-20th century.*

*It is concluded that the St Catherine's School site has very low to low archaeological potential and any possible features would be of Local significance and low research potential. The construction of the proposed RPAC building is unlikely to remove any surviving archaeological remains within the designated sensitive zones (Figure 8.1).*

### **Recommendations**

*The following recommendations are made in conjunction with Figure 11.1. It is recommended that:*

- 1) No further investigative work need be undertaken in regards to the Aboriginal cultural heritage at St Catherine's School, Waverley. This report documents the results of a site inspection in April 2014 that resulted in no Aboriginal sites being located within the current impact area. The survey and background research also confirmed the disturbed nature of the study area.*
- 2) No further archaeological investigation needs to be undertaken in the areas assessed to contain low, very low or nil archaeological potential and that works in these areas can proceed with caution. These areas are marked green on Figure 10.4.*
- 3) In the event that historical archaeological relics not assessed or anticipated by this report are found during the works, all works in the immediate vicinity are to cease immediately and a qualified archaeologist be contacted to assess the situation and consult with the Heritage Branch of the OEH regarding the most appropriate course of action.*
- 4) In the event that Aboriginal archaeological material or deposits are encountered during earthworks, all works affecting that material or deposits must cease immediately to allow an archaeologist to make an assessment of the find. The archaeologist may need to consult with the Office of Environment and Heritage (OEH) and the relevant Aboriginal stakeholders, regarding the find. Section 89A of the NPW Act 1974 requires that the OEH must be notified of any Aboriginal objects discovered within a reasonable time.*
- 5) Should the proposed development be altered significantly from the proposed concept design, then a reassessment of the heritage/archaeological impact may be required. This includes any impacts not explicitly stated in Section 10 and includes the installation of any subsurface services.*
- 6) One copy of this report should be lodged with the local studies collection of the local library, and an additional copy should be lodged with the New South Wales Heritage Branch library*  
...

A condition of consent should be imposed requiring implementation of the recommendations in the Aboriginal and Historical Archaeological Assessment.

### **6.12 Sediment, erosion and dust control (construction and excavation)**

*(SEAR 11)*

The Civil Engineering Plans by Henry & Hymas include Sediment and Erosion Control Plans for Stage 1 – RPAC (14165\_DA\_SE01 and SE02, **Appendix M**). Similar plans will be prepared for future stages of the Campus Master Plan.

### 6.13 Utilities

(SEAR 12)

Woods & Grieve has prepared an Electrical and Hydraulic Services Brief (**Appendix N**) and Henry & Hymas has prepared a Civil Engineering Report and Plans (**Appendix M**). A summary of the utilities described in these reports follows:

- Power supply

The school is currently fed from a 1000A direct supply from substation 184 located in Leichhardt Lane towards the eastern boundary of the school. Preliminary advice received from Ausgrid states that the maximum supply that is able to be delivered to the school is 1400A from the existing substation. This will require the existing substation to be augmented to have the existing feed upgraded.

Preliminary advice received from Ausgrid also states that the school currently has a maximum demand of 800A, which was confirmed on site with the maximum demand reading taken off the Main Switchboard power meter of 855A.

Preliminary estimates of the maximum demand of the proposed RPAC development are in the order of 400-500A based on recommended allowances as determined by AS3000.

As such, the total maximum demand of the school (including the proposed RPAC development) is in the order of 1300-1400A. This will mean that the supply to the school following the substation augmentation is likely to be at capacity.

- Power distribution

The existing site main switchboard requires an upgrade to comply with the latest regulations.

New submains cabling will be provided to the proposed RPAC building from the site MSB. Other stages of the Campus Master Plan are likely to be serviced by existing cabling.

- Communication infrastructure and distribution

It is not anticipated that the proposal will require modification of the existing telecommunication infrastructure. New fibre optic cabling will be provided to the proposed RPAC.

- Cold water

The existing school is being supplied by various water connections. Each connection appears to be extended from adjacent town's main infrastructure bordering the site including Albion, Macpherson and Leichhardt Streets. All connections are of copper material and vary from 40mm-80mm in size.

It is anticipated that the existing pool meter and associated underground cold water routes are to be maintained. Provisions are to be made for a new metering device for Stage 1 facilities.

- Hot water

The Stage 1 works will require further localised electric instantaneous/storage hot water systems.

Both gas and electric heating systems will be investigated for Stage 1 works

- Gas

The school is being supplied by various gas connections. Each connection appears to be extended from adjacent town's main infrastructure bordering the site including Albion and Macpherson Streets. All connections are of copper material and vary from 20mm-50mm. It is anticipated that the existing pool meter and associated underground gas routes will be



removed to facilitate demolition works with provision of a new gas metering device for Stage 1 facilities.

- Rainwater harvesting

The Stage 1 RPAC proposal integrates the existing 15,000L tank (to be demolished) with the 8,000L volume required to service RPAC. The combined tank will feed the new toilets, basement wash down hose taps and surrounding landscape irrigation.

- Fire hydrants and sprinklers

To be upgraded as required to the new and altered facilities.

- Sewer

The site is being drained by a 225mm house sewer service running through the open courtyard eventually discharging to Leichhardt Street. From this house service, 100mm-150mm branches serve each building, groups of buildings as required. The RPAC footprint lies over the sewer line where diversion works will be required to facilitate new building structure and to maintain sewer serviceability. It is proposed to privatise the sewer main for Stage 1 as it is only servicing the school (subject to Sydney Water approval). Refer to the Civil Engineer's Report (**Appendix M**) for further details.

- Internal Refurbishment Works – new services will be provided as required at each stage of development.

#### 6.14 Contributions

(SEAR 13)

The proposal is subject to the provisions of Waverley Council Development Contributions Plan 2006 (Amendment No. 5) which enables Council to impose a condition requiring the payment of a levy based on development cost (a 1% levy would apply to the proposal). A detailed cost report would be submitted to Council prior to release of the construction certificate for Stage 1 RPAC to enable calculation of the 1% levy.

#### 6.15 Drainage

(SEAR 14)

Henry & Hymas has prepared a Civil Engineering Report and Plans that form part of Stage 1 – RPAC (**Appendix M**). Which describes the following existing and proposed stormwater system:

##### 6.15.1 Existing drainage system

The site presently drains to two stormwater pits on the northern side of Macpherson Street. These stormwater pits drain to the southern side of Macpherson Street via 300mm diameter pipes. Council's existing network will not be altered as part of Stage 1 - RPAC. Any existing stormwater connections to the eastern pit in Macpherson Street will be removed and a new 300mm diameter pipe installed to the rear of the pit chamber as part of the proposed works.

##### 6.15.2 Proposed drainage system

The drainage system for Stage 1 - RPAC has been designed to collect all concentrated flows from the proposed building, the existing JKSC, and the existing turfed and landscape areas. The piped drainage system has been designed to convey the 1 in 100 year ARI with adequate provision for overflows in the event of system blockages.

Stage 1 RPAC includes an OSD tank in accordance with Waverley Council's 'Water Management Technical Guidelines (Dec 2007)'. The OSD tank has been sized to limit the post-developed site discharges up to the 1 in 100 year ARI to the pre-developed 1 in 5 year ARI discharges in accordance with these guidelines. The peak pre and post development flows from Stage 1 - RPAC are summarised in **Table 12** below.



**Table 12 – Pre and Post Developed Flows**

	5 year ARI	20 year ARI	100 year ARI
Pre-developed Flow (L/s)	287 L/s	287 L/s*	287 L/s*
Post developed Flow (L/s)	208 L/s	242 L/s	263 L/s

\* Post-developed site discharges up to the 1 in 100 year ARI to be limited to the pre-developed 1 in 5 year ARI discharges.

Stage 1 - RPAC will also implement a rainwater tank in accordance with Council's 'Water Management Technical Guidelines (Dec 2007)'. The rainwater tank will be utilised for toilet flushing, laundry use, and irrigation of the proposed building. One third of the volume of the rainwater tank will be used to offset the OSD requirements as allowed in these guidelines, thus the OSD component will be reduced to 94.3m<sup>3</sup>.

## 6.16 Waste

(SEAR 15)

An Operational Waste Management Plan has been prepared for the Campus Master Plan by Waste Audit (**Appendix O**). The report provides an overview of the proposed waste and recycling practices. Specifically, the report provides:

- Estimates of the quantity of waste and recycling generated by the new facilities
- Details of recommended systems or the management of the estimated waste profile
- A review of the proposed waste areas to ensure consistency with waste systems, and council requirements
- An outline of the waste management practices to maximise recycling initiatives and ensure the effective management of waste.

The report recommends waste and recycling systems and procedures including an onsite waste storage area which is to be located to the north of the substation and accessed from Leichhardt Lane. Waste and recycling are to be collected by Waverley Council (twice weekly for mixed recycling and general waste and fortnightly for vegetation).

## 6.17 Construction

(SEAR Plans and Documents)

ADCO has prepared a Preliminary Construction Management Plan for Stage 1 - RPAC (**Appendix G**). It addresses the following issues:

- Site protection
- Site access
- Materials handling
- Tree protection
- Traffic management
- Noise & vibration monitoring
- Sediment, erosion & dust controls.

Key construction management procedures relevant to the EIS are summarised as follow:

- Following an investigation of several options for erection of a B Class Hoarding, ADCO determined that in order to maximise the number of street trees retained without compromising safety throughout the construction duration, a minimum of 25m frontage will be

required for the erection of B Class hoarding. This necessitates the removal of four street trees. These trees will be replaced upon completion of construction

- Macpherson Street will be used for all site access. It will be made clear to all suppliers and sub-contractors that deliveries are not to be made via Leichhardt Lane
- All vehicles approaching the site, whether entering or parking in the construction work zone, will travel along Albion Street and will leave by continuing along Macpherson Street into Leichhardt Street (left in, left out). Trucks will enter the site in a forward direction, turn within the site and exit, turning left on Macpherson Street in a forward direction
- When the construction works zone is in use and materials are delivered or trucks are entering and exiting the site, the footpath along Macpherson Street and the road itself will be patrolled by qualified Traffic Controllers to ensure the safety of pedestrians and motorists
- Preliminary Construction Traffic Management Planning advice has been prepared by ARUP with advice from ADCO and will form the basis of a detailed Construction Management Plan to be prepared prior to construction commencement
- All recommendations and protection measures detailed within Arboricultural Report will be followed for the duration of construction
- Noise and vibration minimisation measures set out in the Construction & Operational Noise Report, by Wilkinson Murray Pty Limited will be adopted
- The sediment and erosion controls measures proposed by Henry & Hymas will be implemented
- Dust control measures will be incorporated in Site Management Plans to prevent dust arising from construction causing a nuisance to the School and neighbouring properties
- A Construction Waste Management Plan will be formulated detailing the likely source of waste, how and where it will be disposed of. Recycling of demolition and excavation materials will be maximised.

#### 6.18 Social and economic benefits

Urbis has completed a Demographic Assessment<sup>3</sup> (**Appendix U**) which considers the existing and projected demographic profile of the catchment served by St Catherine's School. A summary of their key findings follows:

- 95% of the school's students reside in 16 postcodes in the local government areas (LGAs) of Waverley, Randwick, Woollahra, Botany Bay and Sydney
- Historical population trends indicate that the population of the catchment increased by 17% (66, 612 people) since 1996
- Future population projections show that the population of the catchment will increase by 34% from 487,600 in 2011 to 653,400 by 2031 (165,650 more people)
- The number of children will increase by 46.8% (equivalent to +37,450 more children) by 2031
- The total school aged child population in the catchment will increase by 50.8% (equivalent to +27,900 more children) from 54,900 in 2011 to 82,800 in 2031
- In 2031, there will be 117,400 children in the catchment, 57,021 (49%) of which would be female. Of the 82,800 school age children (5-19 years), 40,265 would be female
- The projected increases in children is higher than the increase in total population which suggest that more families with young children are projected to move to the catchment

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<sup>3</sup> Urbis relied upon ABS Census 1996, 2006 and 2011 data and NSW Planning & Environment Population Projections.

- There are currently 167 schools in the catchment
- To cater for the projected growth in school aged children in the catchment to 2031, the following would be required:
  - Number of schools within the catchment remain the same: Each existing school would need to accommodate on average 167 more students (approximately seven new classrooms, accommodating 24 children are required to maintain existing rates of provision in the future)
  - New schools are constructed to accommodate increase: 16.6 new primary schools and 5.5 new secondary schools would be required.

The proposal to increase the student population of St Catherine's by 230 students over the next 15 years (to around 1,200 by 2029) will accommodate a proportion of this projected growth in school aged children.

Other positive social and economic impacts include:

- Supporting the continued successful operation of Australia's oldest independent school for girls
- Improving educational facilities for existing and future St Catherine's School students and staff
- Providing opportunities for use of the RPAC by members of the extended school community (including other schools in the catchment)
- Ongoing employment within the school (+ 10 jobs) plus construction jobs (94 construction jobs for Stage 1 RPAC) and expenditure.

#### 6.19 BCA and accessibility

*(SEARs Plans and Documents)*

AE&D has prepared a BCA Compliance Report (**Appendix W**) that concludes that:

*This report provides a Building Code of Australia 2013 (BCA) compliance assessment of the proposed Masterplan and RPAC building for St Catherine's School at 26 Albion Street, Waverley [sic].*

*The primary purpose of this report was to identify the non-compliance matters contained in the proposed design against the current Deemed-to-Satisfy (DTS) Provisions of the BCA and to provide compliance recommendations to overcome the DTS non-compliances.*

*This report provided a BCA assessment table in Section 3.0 that summarises the identified non-compliance matters and offers specific recommendations that are also outlined in the Executive Summary.*

*Further, if compliance with the Deemed-to-Satisfy Provisions is not achievable or desirable, Alternative Solutions could be further developed and verified by an appropriately qualified BCA Consultant or Fire Safety Engineer.*

Access Australia has prepared two Accessibility Reports (in relation to the Campus Master Plan and Stage 1 - RPAC) (**Appendix V**). The Access Reports consider the proposed conditions on the site with respect to the following standards and provide recommendations to achieve compliance:

- Australian Building Codes Board (**ABCB**) 2010
- DDA Access to Premises Standard (**APS**)
- BCA access requirements
- Australian Standards, including current AS1428.1, AS1428.2, AS1428.4, AS1735.12, AS2890.6
- Waverley Council access requirements as applicable.

A condition of consent should be imposed on the consent to require compliance with the recommendations in the BCA and Access Reports.

## 6.20 Geotechnical and structural report

### *(SEARs Plans and Documents)*

A Geotechnical Investigation has been prepared by JK Geotechnics (**Appendix P**). The report notes that rock excavation to a depth of around 8.8m is required for Stage 1 – RPAC (to construct the basement car park). The report provides recommendations to prevent any damage or destabilisation of buildings on and near the site during demolition, excavation and construction of Stage 1 – RPAC. Recommendations include the preparation of detailed dilapidation reports on the neighbouring building and structures to the east (4 Macpherson Street) and the adjoining school buildings prior to the commencement of any demolition or excavation.

Cardno has prepared a Structural Report (**Appendix P**) that considers the findings of the Geotechnical Investigation and identifies the relevant structural considerations.

A condition of consent should be imposed on the consent to require compliance with the recommendations in the Geotechnical Investigation and Structural Report.

## 6.21 Consultation

### *(SEARs Consultation)*

In preparing the Campus Master Plan and Stage 1 DA, St Catherine's School and its consultant team has consulted the following stakeholders:

- Waverley Council planners (including attendance at two formal pre-lodgement meetings)
- Waverley Councillors
- Charing Cross Precinct
- Local residents
- St Catherine's community
- Relevant utilities providers.

A Community Consultation Schedule has been prepared noting the consultation events, the key matters raised at each event and the amendments made to address the stakeholder concerns (**Appendix S**). The evolution of design for Stage 1 - RPAC is also illustrated on the Design Evolution Diagram by Mayoh Architects, also included in **Appendix S**. A summary of key issues matters raised and the response of the applicant follows in **Table 13**.



**Figure 29 – Community consultation, 14 August 2014**



**Table 13 – Consultation outcomes and responses (key issues)**

Key issues	Raised by	Response
Location of the RPAC	<ul style="list-style-type: none"> <li>Residents of 4 Macpherson St</li> </ul>	A detailed site analysis was carried out to determine siting options for each component of the Campus Master Plan including the RPAC (discussed at Section 2.2 and based upon A.MP.003-006, <b>Appendix C</b> ).
Bulk and height of the RPAC	<ul style="list-style-type: none"> <li>Residents of 4 Macpherson St</li> <li>Charing Cross Precinct</li> </ul>	<p>The design of the RPAC has been amended in response to bulk and height issues raised during community consultation, as illustrated by the Design Evolution Diagram at <b>Appendix S</b> and including the following changes:</p> <ul style="list-style-type: none"> <li>Fly system amended to increase setback from eastern side boundary</li> <li>Vertical landscape screen provided to eastern side elevation</li> <li>Planting within eastern side setback area provided at a lower level to maximise visibility for residents at 4 Macpherson Street</li> <li>Upper level setback introduced to eastern side boundary</li> <li>Roof top plant internalised</li> <li>Overall height of RPAC reduced by 0.66m.</li> </ul>
Solar access impact of the RPAC	<ul style="list-style-type: none"> <li>Residents of 4 Macpherson St</li> </ul>	The amendments described above reduced overshadowing to 4 Macpherson Street (a detailed assessment of overshadowing is provided in Section 6.4).
Noise, privacy and lighting nuisance impact of the RPAC	<ul style="list-style-type: none"> <li>Residents of 4 Macpherson St</li> <li>Charing Cross Precinct</li> <li>Waverley Council</li> </ul>	<ul style="list-style-type: none"> <li>A detailed assessment of acoustic impacts (operational and construction) has been carried out by Wilkinson Murray noting that the RPAC has been designed to control internal and external noise intrusion (see Section 6.9 and <b>Appendix K</b>)</li> <li>Privacy protection measures are described at Section 6.6, noting that the only east facing openings in the RPAC are fixed obscure glazed windows to the Aquatic Centre (no balconies face east)</li> <li>Automatic block out blinds will be installed to the east facing windows in the Aquatic Centre to curtail lighting nuisance.</li> </ul>
Loss of trees	<ul style="list-style-type: none"> <li>Residents of: <ul style="list-style-type: none"> <li>Wider community</li> <li>4 Macpherson St</li> </ul> </li> <li>Charing Cross Precinct</li> <li>Waverley Council</li> </ul>	Tree removal and replacement is addressed in the Arboricultural Assessment Report by TALC ( <b>Appendix E</b> and discussed at Section 3.83). The Assessment identifies trees impacted by the proposal and recommends tree protection measures. Extensive replacement planting is proposed.
Adverse impacts of construction activity	<ul style="list-style-type: none"> <li>Residents of: <ul style="list-style-type: none"> <li>Wider community</li> <li>Leichhardt Lane</li> <li>4 Macpherson St</li> </ul> </li> <li>Charing Cross Precinct</li> </ul>	<p>To minimise the adverse impacts of construction, work will be carried out in accordance with the:</p> <ul style="list-style-type: none"> <li>Construction Management Plan, by ADCO (<b>Appendix G</b>)</li> <li>Construction Traffic Management Plan, by ARUP (<b>Appendix I</b>)</li> <li>Construction and Operational Noise Report, by Wilkinson Murray (<b>Appendix K</b>).</li> </ul>
Traffic generation, inadequate on-site parking and	<ul style="list-style-type: none"> <li>Residents of: <ul style="list-style-type: none"> <li>Wider community</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>A Traffic and Parking Assessment (<b>Appendix I</b> and discussed at Section 6.7) has been prepared by ARUP identifying existing traffic congestion and parking conditions and forecasting the expected impact</li> </ul>

Key issues	Raised by	Response
encourage other modes of transport	<ul style="list-style-type: none"> <li>– Leichhardt Lane</li> <li>– 4 Macpherson St</li> <li>• Charing Cross Precinct</li> </ul>	<p>of the proposal. ARUP recommend mitigation strategies to improve existing and future issues (including measures to improve the efficiency of pick-ups and drop-offs)</p> <ul style="list-style-type: none"> <li>• Car parking on the site is to be increased by 19 spaces (from 56 to 75 spaces)</li> <li>• 16 bicycle racks are provided in the Campus Master Plan.</li> </ul>
Service vehicle access	<ul style="list-style-type: none"> <li>• Residents of Leichhardt Lane</li> <li>• Charing Cross Precinct</li> </ul>	A dedicated service entry point is proposed from Albion Street as part of Campus Master Plan.
Negative impacts from increase in student numbers	<ul style="list-style-type: none"> <li>• Residents of: <ul style="list-style-type: none"> <li>– Wider community</li> <li>– Leichhardt Lane</li> <li>– 4 Macpherson St</li> </ul> </li> <li>• Charing Cross Precinct</li> </ul>	<ul style="list-style-type: none"> <li>• The Demographic Analysis, by Urbis (<b>Appendix U</b> and discussed at Section 6.18) shows that additional school places are required to meet the projected growth in school aged children in the catchment to 2031 (an average of 167 students for each existing school or 16.6 new primary schools and 5.5 new high schools)</li> <li>• The proposed gradual increase in students at St Catherine's (230 students to 2029) will accommodate some of this demand.</li> </ul>
Compliance with controls	<ul style="list-style-type: none"> <li>• Residents of: <ul style="list-style-type: none"> <li>– Wider community</li> <li>– Leichhardt Lane</li> <li>– 4 Macpherson St</li> </ul> </li> <li>• Charing Cross Precinct</li> <li>• Waverley Council Planners</li> </ul>	Clause 4.6 exception to development standards requests are included in the EIS justifying the proposed departures from the FSR and height standards ( <b>Appendix T</b> and discussed at Section 6.1.5).
Impact of activities in the RPAC and school generally	<ul style="list-style-type: none"> <li>• Residents of: <ul style="list-style-type: none"> <li>– Wider community</li> <li>– Leichhardt Lane</li> <li>– 4 Macpherson St</li> </ul> </li> <li>• Charing Cross Precinct</li> <li>• Waverley Council Planners</li> </ul>	<p>An indicative usage profile for existing and proposed facilities on the site has been prepared (<b>Appendix H</b> and discussed at Section 4.5). It shows that the majority of activities to be accommodated in the RPAC already occur on site.</p> <p>A Plan of Management has been prepared to ensure that all activities are management responsibly (<b>Appendix X</b>).</p>
Waste management	<ul style="list-style-type: none"> <li>• Residents of: <ul style="list-style-type: none"> <li>– Leichhardt Lane</li> <li>– 4 Macpherson St</li> </ul> </li> <li>• Charing Cross Precinct</li> </ul>	A Waste Management Plan has been prepared by Waste Audit ( <b>Appendix O</b> and discussed at Section 6.16). It notes that existing waste collection arrangements with Council will continue and it recommends strategies to minimise waste generation.
Public access to the new RPAC	<ul style="list-style-type: none"> <li>• Charing Cross Precinct</li> </ul>	It is estimated that around 13 annual community events will be accommodated in the RPAC. All community events are expected to relate to other local schools and/or amateur performing arts societies. A Plan of Management has been prepared to ensure that all activities are managed responsibly ( <b>Appendix X</b> ).

## 7.0 Environmental risk assessment

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The measures required to mitigate the impacts associated with the proposal works are detailed in the Environmental Risk Assessment (**ERA**) prepared by Sandrick Pty Ltd (**Appendix Y**). The ERA has been prepared generally in accordance with AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines and ISO/IEC 31010:2009 Risk Management – Risk Assessment Techniques and identifies the potential environmental impacts associated with the proposal.

The ERA addresses environmental risks associated with proposed Stage 1 – RPAC only as it would have the greatest impact relative to the remaining stages of the proposed Campus Master Plan. Mitigation measures detailed in the ERA may also be adopted in later stages (which will be subject to separate DAs for detailed design).

In general, the ERA identifies and prioritises perceivable risks and sets a process to mitigate these risks. Elimination of these risks is the primary objective however where this is not feasible, control measures are to be implemented and monitored as required.

The key risk items identified in the ERA that have a residual risk rating of “high” are associated with the construction stage of RPAC (and not its operation).

Given the nature of the development and the general density of the suburb of Waverley, the risks identified as “high” (primarily transport related) are believed to be consistent with the majority of construction activities undertaken in the inner-city suburbs of Sydney, and will be managed appropriately.

In accordance with the Risk Management Process, the Control Measures prescribed in the ERA will be implemented and monitored on a regular basis. If the control measures identified are less effective than anticipated, or the risk requires additional control measures, further mitigation measures will be agreed with the client and project team and implemented as appropriate.

## 8.0 Mitigation measures

The collective measures required to mitigate the impacts associated with the proposal are detailed in **Table 14** below. These measures have been derived from the previous assessment in Section 6.0 and the appended consultant reports.

**Table 14 – Mitigation measures**

Mitigation measures
<b>Residential amenity</b>
<p><b>Privacy</b></p> <ul style="list-style-type: none"> <li>Buildings (existing and proposed) are internally orientated to the central green space used for sport and play and/or are orientated to the surrounding streets</li> <li>The eastern elevation of the Aquatic Centre incorporates fixed windows with obscure glazing that are located a level below any residential unit floor level</li> <li>The eastern elevation of the proposed Auditorium and Multi-Purpose Hall (which coincides with the adjoining apartments); does not incorporate any clear/open-able windows or doors</li> <li>Proposed entries and break out terraces are centrally located between the proposed RPAC and existing DJSC</li> <li>The eastern side setback area will be out of bounds for students and access will be available for maintenance only</li> </ul>
<p><b>Light spill</b></p> <ul style="list-style-type: none"> <li>Automatic block out blinds will be installed to the Aquatic Centre windows in the east elevation (facing bedrooms at 4 Macpherson Street) to curtail light nuisance for the adjoining residents.</li> </ul>
<p><b>Views/outlook</b></p> <ul style="list-style-type: none"> <li>RPAC is setback 4m to the eastern side boundary (at the ground level), stepping to 5.295m and 8.2m to the fly tower.</li> <li>Vertical screen planting is proposed to the eastern elevation of the proposed RPAC, planted with a vigorous climber such as Solandra Maxima and cascading plants such as Carpbrotus</li> <li>Palm planting to eastern side boundary is proposed with a lush textured understorey planting and a green wall to the upper level of RPAC. The level of the new planting will maximise the amenity offered to 4 Macpherson Street so that the setback area presents as an extension of their property.</li> </ul>
<p><b>Noise and vibration</b></p> <ul style="list-style-type: none"> <li>Implement the recommendations set out in the Construction &amp; Operational Noise Report, by Wilkinson Murray Pty Limited (<b>Appendix K</b>). Recommendations include: <ul style="list-style-type: none"> <li>Preparation of a Site Construction Environmental Management Plan to manage noise and vibration from construction activities</li> <li>Design of the proposed Stage 1 – RPAC to meet the most stringent site specific noise criteria during the proposed hours of operation.</li> </ul> </li> </ul>
<b>Landscaping and tree removal/replacement/protection</b>
<ul style="list-style-type: none"> <li>Implement the Landscape Master Plan by SILK Consulting Landscape Architects at each stage of the Campus Master Plan (<b>Appendix F</b>)</li> <li>Implement the Stage 1 - Landscape Plan by SILK Consulting Landscape Architects as part of the Stage 1 works (<b>Appendix F</b>)</li> <li>Replace the four Macpherson Street street trees (T22-25) to be removed to enable safe construction of proposed Stage 1 - RPAC with similar species</li> <li>Implement the tree protection measures set out in the Arboricultural Assessment Report, by TALC (6 August 2014) (<b>Appendix E</b>)</li> </ul>

## Mitigation measures

### Traffic, parking and accessibility

- On-site events are to be timetabled to minimise overlapping of activities
- Existing parking under the DJSC and the proposed parking under the RPAC Building (47 spaces in total) will be made available for visitor use in the evenings and at weekends for major events
- At completion of the Campus Master Plan, on-site parking will be increased from 56 to 75 spaces (+ 19 spaces)
- 15 bicycling parking spaces are to be provided as part of the Campus Master Plan
- Service vehicles will continue to access the site off Albion Street (service and construction vehicles will not use Leichhardt Lane)
- Implement the recommended transport actions in relation to the following (as set out in the Traffic and Transport Assessment by ARUP (**Appendix I**)):
  - Rationalisation of the “No Parking” signposting
  - Macpherson Street Drop-off /pick-up school zone
  - Macpherson Street Drop-off /pick-up school zone
  - Leichhardt Street Drop-off /pick-up school zone
  - Leichhardt Street Drop-off /pick-up school zone
  - Management of school zones
  - Junior student registration scheme
  - New parking under the RPAC Building
  - Work Place Travel Plan

### Events, hours of operation and management

- New and existing events on the site will be finished by 9.30pm (except for the annual boarders dance with finishes as 10.00pm – existing and proposed)
- External events and activities will comply with the Plan of Management included in the EIS (**Appendix X**)
- The Aquatic Centre will operate between the following hours:
  - Weekdays: 6.00am to 8.00pm
  - Weekends: 8.00am to 6.00pm
- The Aquatic Centre, including learn to swim classes, will be fully operated and management by St Catherine’s School.

### ESD

- Implement ESD initiatives, selected from those listed in the ESD Report by Cundall (**Appendix J**), to achieve equivalent to a minimum four star Green Star rating.

### Social and economic

- To meet the projected demand for additional school places in the catchment, the Campus Master Plan provides the potential for up to:
  - 230 additional students to be introduced progressively over a 15 year period (ie. total 1,200)
  - 10 additional employees (approximately).
- Supporting the continued successful operation of Australia’s oldest independent school for girls
- Improving educational facilities for existing and future St Catherine’s School students and staff
- Providing opportunities for use of the RPAC by members of the extended school community (including other schools in the catchment)



### Mitigation measures

- Ongoing employment within the school (+ 10 jobs) plus construction jobs (94 construction jobs for Stage 1 RPAC) and expenditure.

### Heritage and archaeology

- Implement the recommendations of the Statement of Heritage Impact, by NBRS + Partners (**Appendix D**) including archival recording of buildings on the site to be demolished
- Implement the recommendations of the Aboriginal and Historical Archaeological Assessment, Statement of Heritage Impact by Austral Archaeology (**Appendix L**) including the requirement to cease work in the unlikely event that historical archaeological relics or Aboriginal archaeological material or deposits are encountered.

### BCA and accessibility

- Implement the recommendations of the BCA Compliance Report by AE&D (**Appendix W**)
- Implement the recommendations of the two Accessibility Reports by Access Australia (in relation to existing conditions, the Campus Master Plan and Stage 1 RPAC) (**Appendix V**)
- Install new lifts are proposed, including three in the RPAC and one in the JBH site new build, to facilitate accessibility throughout the site.

### Geotechnical considerations (including protection of adjoining buildings)

- Implement the recommendations of the Geotechnical Investigation has been prepared by JK Geotechnics (**Appendix P**) to prevent any damage or destabilisation of buildings on and near the site during demolition, excavation and construction of Stage 1 – RPAC
- Recommendations include the preparation of detailed dilapidation reports on the neighbouring building and structures to the east (4 Macpherson Street) and the adjoining school buildings prior to the commencement of any demolition or excavation for the RPAC.

### CPTED

- CPTED measures will be adopted in accordance with **Table 11** of the EIS.

### Stormwater, sediment and erosion control

- Implement the Civil Engineering Report and Plans by Henry & Hymas a that form part of Stage 1 – RPAC (**Appendix M**) including OSD and a rainwater tanks sized to comply with Waverley Council's 'Water Management Technical Guidelines' (Dec 2007).

### Services

- Modify or extend existing utilities to the site as recommended by Woods & Grieve (Electrical and Hydraulic Services Brief (**Appendix N**)) and Henry & Hymas (Civil Engineering Report and Plans (**Appendix M**)).

### Waste

- Implement the recommendations of the Operational Waste Management Plan by Waste Audit (**Appendix O**) including waste management practices to maximise recycling initiatives and ensure the effective management of waste.

### Construction management

To minimise the adverse impacts of construction, work will be carried out in accordance with the:

- Construction Management Plan, by ADCO (**Appendix G**)
- Construction Traffic Management Plan, by ARUP (**Appendix I**)
- Construction and Operational Noise Report, by Wilkinson Murray (**Appendix K**).

## 9.0 Conclusion

St Catherine's School seeks consent for the following proposal on its site at 26 Albion Street, Waverley:

- PART 1 Conceptual approval for a Campus Master Plan that comprises demolition works, new buildings, alterations and additions, access arrangements, circulation and landscaping
- PART 2 Detailed design approval for Stage 1 of the Campus Master Plan comprising construction of the new Research, Performing Arts and Aquatic Centre (**RPAC**).

The Campus Master Plan and Stage 1 – RPAC have considerable merit, as summarised below:

- The Campus Master Plan proposes a strategic and coordinated plan to manage the School's physical and population growth plans over the next 15 years (noting that the school does not have an existing population cap)
- Stage 1 - RPAC proposes a high standard of architectural and landscape design, appropriate given the site's heritage significance and landscape setting
- Stage 1 - RPAC proposes a built form that appropriately responds to the site conditions and context, noting that the location of the RPAC already has development consent for an Indoor Sports Complex (DA 258/89)
- The proposal includes measures to minimise adverse impacts on residential amenity for nearby residents (overshadowing, views, privacy, noise, visual impact, light spill, stormwater etc)
- The Traffic Assessment by ARUP concludes that the traffic impacts of the Campus Master Plan and Stage 1 – RPAC will be acceptable and traffic and parking initiatives are recommended to improve existing conditions and minimise new impacts
- Construction management measures will be adopted to minimise any potential adverse impacts of construction (in particular noise, vibration, traffic, parking and tree damage/loss)
- The proposal to increase the student population of St Catherine's by 230 students over the next 15 years (to around 1,200 by 2029) will accommodate a proportion the projected growth in school aged children in the catchment
- Other positive social and economic impacts include:
  - The continued successful operation of Australia's oldest independent school for girls, improving educational facilities for existing and future St Catherine's School students and staff
  - Providing opportunities for use of the RPAC by members of the extended school community (including other schools in the area)
  - Ongoing employment within the school (+ 10 jobs) plus construction jobs (94 construction jobs for Stage 1 - RPAC) and expenditure.

As set out in this EIS, the proposal has considerable merit and will have minimal and reasonable environmental effects that can be effectively managed. It is therefore requested that the Minister or her delegate approve the Campus Master Plan and the detailed design and use of Stage 1 – RPAC.

## Appendix A

Quantity Surveyor's Cost Estimate, by Altus Page Kirkland (19 August 2014)

## Appendix B

Secretary's environmental assessment requirements (29 January 2014)

## Appendix C

Architectural Plans and information, by Mayoh Architects (Issue A, 3 July 2014)



## Appendix D

Statement of Heritage Impact, by NBRS + Partners (August 2014)

## **Appendix E**

Arboricultural Assessment Report, by Tree and Landscape Consultants (6 August 2014)

## **Appendix F**

Landscape Plans and Report, by SILK Consulting Landscape Architects

## Appendix G

Construction Management Plan, by ADCO (15 July 2014)

## Appendix H

St Catherine's School – Indicative Usage Profile, by St Catherine's School (July 2014-  
Rev 8)



## Appendix I

Traffic and Transport Assessment, by ARUP (18 August 2014)

## Appendix J

Environmentally Sustainable Design Approach to accompany the Campus Master Plan, by Cundall (26 June 2014)

## **Appendix K**

Construction & Operational Noise Report, by Wilkinson Murray Pty Limited  
(September 2014)

## **Appendix L**

Aboriginal and Historical Archaeological Assessment, Statement of Heritage Impact  
by Austral Archaeology (28 August 2014)

## **Appendix M**

Civil Engineering Plans and Report, by Henry & Hymas (August 2014)



## Appendix N

Electrical and Hydraulic Services Brief, by Woods & Grieve (15 August 2014)

## Appendix O

Operational Waste Management Plan, by Waste Audit (11 July 2014)

## **Appendix P**

Geotechnical Assessment, by JK Geotechnics (8 November 2013) and Structural  
Report, by Cardno (24 June 2014)

## Appendix Q

Preliminary Environmental Site Assessment, by EIS (27 May 2014)

## Appendix R

Visual Impact Assessment (including photomontages), by BASE 3D (19/05/2014)



## Appendix S

Community Consultation Schedule (18 August 2014) and Design Evolution Diagram  
by Mayoh Architects (Issue A, July 2014)

## **Appendix T**

Clause 4.6 Exception to development standards requests (height and FSR), by  
Robinson Urban Planning (15 August 2014)

## Appendix U

Demographic Assessment, by Urbis (July 2014)

## Appendix V

Access Reports, by Access Australia (6 August 2014)

## **Appendix W**

BCA Compliance Assessment Reports, by AE&D (28 July 2014)



## Appendix X

Plan of Management for private use of the RPAC, by St Catherine's School (7 August 2014)

## Appendix Y

Environmental Risk Assessment, by Sandrick Pty Ltd