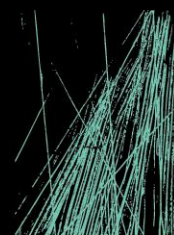


WASTE MANAGEMENT PLAN

**PITTWATER HOUSE**  
**70 SOUTH CREEK ROAD, COLLAROY**

ESD SERVICES



**JHA**

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## 1 INTRODUCTION

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Please find attached waste management plan completed by JHA sub-consultant, SLR Consulting.

# WASTE MANAGEMENT PLAN

**Pittwater House School**

**Prepared for:**

Neeson Murcutt Architects Pty Ltd  
L2, 9 Roslyn St  
Potts Point NSW 2011

SLR Ref: 610.18821-R01  
Version No: -v3.0  
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## BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Neeson Murcutt Architects Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

## DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.18821-R01-v3.0	24 October 2019	Taylor Parsons	Celine El Khouri	Andrew Quinn
610.18821-R01-v2.0	14 October 2019	Taylor Parsons	Celine El Khouri	Andrew Quinn
610.18821-R01-v1.0	11 September 2019	Taylor Parsons	Celine El Khouri	Andrew Quinn



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### Appendix A Architectural Drawings

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# 1 Introduction

## 1.1 Overview

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Neeson Murcutt Architects Pty Ltd (the Client) to prepare a waste management plan (WMP) in support of a Development Application (DA) to the Northern Beaches Council (Council), for the proposed redevelopment of Pittwater House School located at 70 South Creek Road, Collaroy NSW (the Development).

This WMP applies to the waste generated from the demolition, construction and operational stages of the Development and has been prepared using architectural drawings supplied by the Client. The drawings are attached in **Appendix A**.

## 1.2 Objectives

The objectives of this WMP are to:

- Identify potential wastes likely to be generated during the demolition, construction works and operation of the Development.
- Provide advice on how identified wastes should be handled, processed, disposed of, re-used or recycled in accordance with Council requirements, relevant Australian codes and standards and better practice waste minimisation principles.
- Help implement safe and practical options for waste collection from the Development by Council and/or private waste servicing contractors.
- Encourage waste avoidance through design, ordering and planning.

## 1.3 Review of WMP

This WMP is not a static document. It is a working document that requires review and updating to ensure ongoing suitability for the proposed on-going operations at the site.

This WMP will be reviewed and updated:

- To remain consistent with waste and landfill regulations and guidelines
- If changes are made to site waste and recycling management, or
- To take advantage of new technologies, innovations and methodologies for waste or recycling management.

Copies of the original WMP and its future versions should be retained by the site manager. Changes made to the WMP, as well as the reasons for the changes made, should be documented by the site manager as part of the review process.



## 2 Project Description

### 2.1 Site Description

The Development, shown in **Figure 1**, is formally known as Lot 1 in DP 1215531 and zoned as a low-density residential. The Development currently includes 22 buildings and external facilities such as an amphitheatre, pool and sporting oval. The Development provides early learning, primary and secondary education for its students through both single-sex and co-educational teaching programs.



Adapted from SIXmaps: <https://maps.six.nsw.gov.au/>

**Figure 1** An aerial image of the development.

### 2.2 Project Operations

The proposed demolition and construction works for the Development are shown in architectural drawings titled 'Demolition', 'Building Works' and 'Landscape + Traffic'. These are attached in **Appendix A**. According to these drawings, SLR understands that the demolition activities are expected to include:

- Removal of the landing, shed and hardstand at the north eastern street entrance
- Removal of some internal walls in the M block and the cottage facilities and maintenance building
- Removal of three demountable buildings
- Removal of three sheds in the south western area of the site
- Removal of a portion of the lower campus carpark
- Removal of slabs, paving and concrete paths in the south western area of the site
- Removal of hedges and fences on the south western border, and
- Removal of a portion of the pool fence, synthetic grass and retaining walls.

The construction activities are expected to include:

- A new bitumen slab and gravel slope at the north eastern street entrance

- 
- A new walkway to the cottage facilities and maintenance building
  - A two-storey building to be used as a new library and administration building
  - Landscaping and gravel drainage in the northern area of the site
  - A new lift and stair core,
  - A new hardstand for a playground and child collection, and
  - Two extensions to staff car parking.

Once the construction stage is completed, the Development will continue to operate as a primary and secondary school. This WMP addresses the waste generated from the entire development and accommodates the site's increase in capacity.

## 3 Better Practice for Waste Management and Recycling

### 3.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy shown in **Figure 2**. The hierarchy summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001* and is part of the National Strategy for Ecologically Sustainable Development's strategic approach.

The waste management hierarchy comprises the following principles, from most to least preferable:

- Waste **avoidance**, prevention or reduction of waste generation. Achievable through better design and purchasing choices.
- Waste **reuse**, reuse without substantially changing the form of the waste.
- Waste **recycling**, treatment of waste that is no longer usable in its current form to produce new products.
- Energy **recovery**, processing of residual waste materials to recover energy.
- Waste **treatment**, reduce potential environmental, health and safety risks.
- Waste **disposal**, in a manner that causes the least harm to the natural environment.

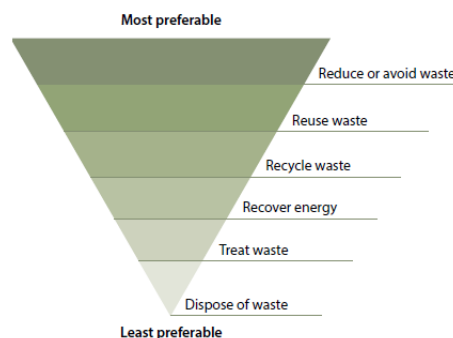


Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

**Figure 2** Waste management hierarchy

### 3.2 Benefits of Adopting Better Practice

Adopting better practice principles in waste minimisation offers significant benefits for organisations, stakeholders and the wider community. Benefits from better practice waste minimisation include:

- Improved reputation of an organisation due to social and environmental responsibility.
- Lowered consumption of non-renewable resources.
- Reduced environmental impact, for example, pollution from materials manufacturing and waste treatment.
- Reduced expenses from lower waste disposal.
- Providing opportunities for additional revenue streams through beneficial reuse.

## 4 Waste Legislation and Guidance

The legislation and guidance outlined in **Table 1** below should be referred to during the operation of the Development.

**Table 1 Legislation and guidance**

Legislation and Guidance	Objectives
Council legislation and guidelines	
Warringah Local Environmental Plan 2011 <sup>1</sup>	The Warringah Local Environmental Plan 2011 (LEP) provides the legal framework of the Warringah DCP 2011, including land use and development permitted in a set zone and was designed in accordance with the <i>Environmental Planning and Assessment Act 1979</i> section 33A. The LEP also contains provisions to conserve local heritage and protect sensitive land.
Warringah Development Control Plan 2011 <sup>2</sup>	The Warringah Development Control Plan 2011 (DCP) applies to all development proposals in the former Warringah district of the Northern Beaches local government area. The DCP supports provision of the LEP planning controls by providing detailed planning and design guidelines and should be consulted in conjunction with the LEP. The DCP has been prepared in accordance with Division 3.6 of the <i>Environmental Planning and Assessment Act 1979</i> and Part 3 the Environmental Planning and Assessment Regulation 2000.  The Warringah DCP references the Waste Management Guidelines 2016 for waste management provisions for a development.
Waste Management Guidelines 2016 <sup>3</sup>	The Waste Management Guidelines 2016 provides waste management guidance for developments built in the former Warringah district of the Northern Beaches Council. It aims to encourage appropriate management of demolition and construction wastes, manage the negative impacts of waste collection and storage and promote principles of ecological sustainability.  The sections of these guidelines applicable to the Development are Chapter 1 – Demolition, Chapter 2 – Construction and Chapter 5 – On-going waste management for non-residential developments.
State and National legislation and guidelines	
Building Code of Australia (BCA) and relevant Australian Standards	The BCA has the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
Council of Australian Governments National Construction Code 2016	The National Construction Code 2016 sets the minimum requirements for the design, construction and performance of buildings throughout Australia.
Educational Facilities Standards and Guidelines (EFSG)	The Educational Facilities Standards and Guidelines is a document prepared by the NSW Department of Education to guide personnel involved in the planning and development of government schools. While the Development is not a government school, the document provides some helpful guidance for waste management in educational institutions. Section 02.07 - Waste Management provides guidance for the removal of unnecessary waste through effective planning and resource use.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	These better practice guidelines present information on waste minimisation and resource recovery as well as information on commonly used waste management provisions. The guidelines also provide benchmarks for assessing waste production rates in Australia.

<sup>1</sup> <https://legislation.nsw.gov.au/#/view/EPL/2011/649>

<sup>2</sup> <https://eservices.northernbeaches.nsw.gov.au/ePlanning/live/pages/plan/book.aspx?exhibit=DCP>

<sup>3</sup> <https://www.northernbeaches.nsw.gov.au/services/rubbish-and-recycling/building-waste>



Legislation and Guidance	Objectives
NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21	The NSW Waste Avoidance and Resource Recovery Strategy 2014-21 is aimed at ultimately 'improving environment and community well-being by reducing the environmental impact of waste and using resources more efficiently' by presenting a framework intended to avoid and reduce waste generation, increase recycling, divert more waste from landfill, manage problem wastes better, reduce litter and reduce illegal dumping.
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	<p>The NSW EPA has issued a number of resource recovery orders and resource recovery exemptions under the POEO (Waste) Regulation 2014 for a range of wastes that may be recovered for beneficial re-use. These wastes typically include those from demolition and construction works, as well as ongoing wastes such as food waste.</p> <ul style="list-style-type: none"> <li>Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use.</li> <li>Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use.</li> </ul>
NSW EPA's Waste Classification Guidelines 2014	The NSW EPA Waste Classification Guidelines assists waste generators to effectively manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the <i>POEO Act 1997</i> and is associated regulations.
<i>Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011</i>	The POEO Act 1997 and POEO Amendment Act 2011 are administered by the NSW EPA to enable the NSW Government to establish instruments for setting environmental standards, goals, protocols and guidelines. They outline the regulatory requirements for lawful disposal of wastes generated during the demolition, construction and operational phases of a development, as well as the system for licencing waste transport and disposal.
The Work Health and Safety Regulation 2011	The Work Health and Safety Regulation 2011 provide detailed actions and guidance associated with the topics discussed in <i>The Work Health and Safety Act 2011</i> . The primary aim of the regulation is to protect the health and safety of workers and ensure that risks are minimised in work environments. Workplaces are to ensure that they are compliant with the requirements specified in the regulations. The regulations discuss items such as actions that are prohibited or obligated in work environments, the requirements for obtaining licences and registrations, and the roles and responsibilities of staff in workplaces.
<i>Waste Avoidance and Resource Recovery Act 2001</i>	<p>The <i>Waste Avoidance and Resource Recovery Act 2001</i> aims to promote waste avoidance and resource recovery and repeals the <i>Waste Minimisation and Management Act 1995</i>. Specific objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i> include:</p> <ul style="list-style-type: none"> <li>encouraging efficient use of resources</li> <li>minimising the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste</li> <li>ensuring industry and the community share responsibility in reducing/dealing with waste, and</li> <li>efficiently funding of waste and resource management planning, programs and service delivery.</li> </ul> <p>As of 2016, the addition to the Act of Part 5 defines the legislative framework for the 'Return and Earn Container Deposit Scheme' whereby selected beverage containers can be returned to State Government authorities for a monetary refund.</p>

## 5 Demolition and Construction Waste and Recycling Management

### 5.1 Targets for Resource Recovery

Council's DCP advises that construction and demolition work in Council's region should contribute to the NSW state targets for construction and demolition waste. The NSW EPA (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* advises developments contribute to the following target:

- 80% of total construction and demolition waste diverted for reuse and recycled, with receipts sufficient in demonstrating the achieved target.

It is anticipated that the waste minimisation measures in the following sections will assist the Development to meet these targets. Waste reporting and audits are required to determine the actual percentage of wastes that are being, or have been, recycled during the demolition and construction stages of the Development.

### 5.2 Waste Streams and Classifications

The demolition and construction activities are anticipated to generate the following broad waste streams:

- Demolition wastes as outlined in **Section 5.3**
- Construction waste as outlined in **Section 5.4**
- Plant maintenance waste, if applicable
- Packaging waste, and
- Work compound waste from on-site employees

A summary of likely waste types generated from demolition and construction activities, along with their waste classifications and proposed management methods are provided in **Table 2**. For further information on how to determine a waste's classification refer to the NSW EPA (2014) *Waste Classification Guidelines*<sup>4</sup>. Further information on managing demolition and construction wastes is available from the NSW EPA website<sup>5</sup>.

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<sup>4</sup> Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

<sup>5</sup> Available online from <http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition>

**Table 2 Potential waste types, classifications and management methods**

Waste Types	NSW EPA Waste Classification	Proposed Management Method
<b>Demolition</b>		
Green waste including timber, pine and particle board	General solid waste (non-putrescible) (garden waste)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling, stumps and large trees to landfill.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
<b>Construction</b>		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling, including copper and aluminium	General solid waste (non-putrescible)	Off-site recycling at metal recycling compounds and remainder to landfill
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling; Chip for landscaping; Sell for firewood <i>Treated</i> : reused for formwork, bridging, blocking, propping or second-hand supplier <i>Untreated</i> : reused for floorboards, fencing, furniture, mulched second hand supplier, and remainder to landscape supplies.
Doors, windows, fittings	General solid waste (non-putrescible)	Off-site recycling at second hand supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling, glazing or aggregate for concrete production
Asbestos	Hazardous waste	Off-site disposal at a licenced landfill facility

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal, contact <i>FluoroCycle</i> for more information <sup>6</sup>
Paint	Hazardous waste	Off-site recycling, Paintback collection <sup>7</sup> or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling, reprocessed for other uses
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling
Carpet	General solid waste (non-putrescible)	Off-site recycling, disposal or reuse
<b>Plant Maintenance</b>		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling, contact the Australian Battery Recycling Initiative <sup>8</sup> for more information
<b>Packaging</b>		
Packaging materials, including wood, plastic, including stretch wrap or LDPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact <i>Business Recycling</i> for more information <sup>9</sup>
<b>Work Compound and Associated Offices</b>		
Food Waste	General solid (putrescible) waste	Compost on-site, off-site or dispose to landfill with general garbage
Recyclable beverage containers, such as glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or at NSW container deposit scheme 'Return and Earn' facility <sup>10</sup>

<sup>6</sup> Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

<sup>7</sup> Available online from <https://www.paintback.com.au/>

<sup>8</sup> <http://www.batteryrecycling.org.au/home>

<sup>9</sup> Available online from <http://businessrecycling.com.au/search/>

<sup>10</sup> Available online from <http://returnandearn.org.au/>



Waste Types	NSW EPA Waste Classification	Proposed Management Method
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers such as soiled paper and cardboard, food and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

### 5.3 Demolition Waste Types and Quantities

The anticipated demolition works for the Development are as specified in **Section 2.2** and as shown in the architectural drawing 'Demolition' attached in **Appendix A**.

While Chapter 2 of Council's Waste Management Guidelines provides demolition waste generation rates, it requires information on exact dimensions, including heights of structures located on site. In absence of information on exact dimensions, SLR has adopted the demolition waste generation rates for an 'Office' from Appendix A of The Hills Development Control Plan (DCP) 2012.

In the absence of published and readily available waste generation rates on car parking and hardstand areas, SLR will develop 'Carpark' demolition rates based on the 'Office' rates by:

- Removing timber or gyprock and bricks as these materials are unlikely to be present in significant quantities in a modern carpark structure, and
- Increasing the rates for concrete, metal and 'other' waste, in proportion, to maintain the total assumed tonnage per 1000 m<sup>2</sup> of demolition.

The demolition waste generation rates used for this Development are provided in **Table 3**.

**Table 3 Waste generation rates applied to the Development's demolition activities**

Rate Type	Floor Area (m <sup>2</sup> )	Waste types and quantities (tonnes)				
		Concrete	Brick	Timber or Gyprock	Metal	Other
Office	1,000	7,410	1485	124	29	155
Carpark	1,000	8,980	0	0	35	188

The waste generation rates in **Table 3** are used to estimate the quantities of demolition waste shown in **Table 4**. The floor areas shown in **Table 4** have been estimated using the architectural drawings 'Area Schedules' and 'Demolition' attached in **Appendix A**.

**Table 4 Estimated types and quantities of demolition waste**

Development Component	Area (m <sup>3</sup> )	Waste types and quantities (tonnes)				
		Concrete	Brick	Timber or Gyprock	Metal	Other
Buildings	922	6,835	1,370	115	30	145
Hardstand and car parking areas	3,090	27,750	0	0	110	585
<b>Totals</b>	<b>4,012</b>	<b>34,585</b>	<b>1,370</b>	<b>115</b>	<b>140</b>	<b>730</b>

Waste estimates have been rounded up to the nearest 5 tonnes.

In the absence of appropriate demolition waste generation rates in Council's DCP and information on exact dimensions and material composition, SLR is unable to estimate quantities of demolition waste from the removal of the synthetic grass, the internal retaining walls, pool fence, stairs, awnings and the raised grass platform. These features are shown in architectural drawing titled 'Demolition', found in **Appendix A**.

While at this stage some quantities of demolition waste cannot be estimated, such as from the removal of the synthetic grass, the internal retaining walls, pool fence, stairs, awnings and the raised grass platform, better practice waste management should still be practiced and is discussed in the sections below. Should further information on types and quantities of demolition waste be required, SLR recommends that a demolition quantities survey is undertaken by a qualified professional.

### 5.3.1 Minor Excavation Waste

SLR anticipates minor excavation works will be undertaken at the Development. From the architectural drawing 'Demolition' attached in **Appendix A**, SLR understands that a raised grass platform will be excavated. In the absence of cut and fill quantities and information on exact dimensions, SLR is unable to estimate quantities of excavation waste. SLR understands that an excavation architectural drawing has been completed by Stellen Consulting and includes information on cut and fill quantities.

During excavation, care should be taken to minimise site disturbance and limit unnecessary excavation.

All excavated spoil is to be classified by an appropriately experienced environmental consultant and separated into contaminated materials, if any, uncontaminated fill or ENM. Refer to **Section 5.7** for management of stockpiles. Where possible, uncontaminated fill or ENM should be retained on site and managed appropriately for beneficial re-use for filling earthworks. As a last resort, remaining uncontaminated fill or ENM is to be sent off-site to a licenced facility in accordance with the Protection of the Environment Operations (Waste) Regulation 2014.

For contaminated material management, refer **Section 5.8** of this WMP.

SLR recommends that waste disposal records for all excavated materials is kept on-site at all times in case regulatory authorities make enquiries into the management of excavation waste.

## 5.4 Construction Waste Types and Quantities

The anticipated construction activities for the Development are as specified in **Section 2.2** as shown in the architectural drawing 'Building Works' attached in **Appendix A**.

In the absence of readily available construction waste generation rates from Council, SLR has adopted the 'Office' waste generation rates from Appendix A of The Hills Development Control Plan (DCP) 2012 for estimating the type and quantities of waste generated from construction of the buildings in the Development.

In the absence of readily available published information for 'Carpark' construction waste generation rates, SLR has developed 'Carpark' construction rates based on the 'Office' rates by:

- Removing timber, bricks and gyprock as these materials are unlikely to be present in significant quantities in a modern carpark structure, and
- Increasing the rates for concrete, sand or soil, metal and 'other', in proportion, to maintain the total assumed tonnage per 1000 m<sup>2</sup> of construction.

The construction waste generation rates are shown in **Table 5** below.

**Table 5 Waste generation rates applied to the Development's construction**

Rate Type	Floor Area (m <sup>2</sup> )	Waste types and quantities (tonnes)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5
Carpark	1,000	--	30.6	--	--	14.3	4.5	8.1

These waste generation rates in **Table 5** are used to estimate the quantities of waste generated from the construction of the Development, provided in **Table 6**. The floor areas shown in **Table 6** have been estimated using the architectural drawings 'Area Schedules' and 'Building Works', attached in **Appendix A**.

**Table 6 Estimated types and quantities of construction waste**

Development Component	Area (m <sup>2</sup> )	Waste types and quantities (tonnes)						
		Timber	Concrete	Bricks	Plasterboard	Sand or Soil	Metal	Other
Total buildings	2,229	15	45	20	20	20	0	15
Hardstand and car park	4,232	0	130	0	0	65	20	35
<b>Total</b>	<b>6,461</b>	<b>15</b>	<b>175</b>	<b>20</b>	<b>20</b>	<b>85</b>	<b>30</b>	<b>50</b>

Waste estimates have been rounded up to the nearest 5 tonnes.

#### 5.4.1 Minor Landscaping Waste

From the architectural drawing 'Landscape + Traffic', SLR anticipates that construction work for landscaping purposes will be undertaken at the Development. Based on area estimations from the drawing 'Landscape + Traffic', SLR anticipates that approximately 4,100 m<sup>2</sup> of the Development will be landscaped. Minor earthworks activities such as fill works may be required.

In the absence of information on cut and fill quantities, SLR is unable to provide an estimation of the anticipated waste generation quantities from the construction works of the landscaping areas, however better practice waste management should still be practice and is discussed in the sections below.

## 5.5 Waste Avoidance

The Building Contractor, Building Designer or equivalent roles should follow better practice waste management, as indicated in **Section 3**, and the principles of Ecologically Sustainable Development (ESD). The following recommendations are derived from better practice waste management and the Educational Facilities Standards and Guidelines.

Recommendations for the Building Designer include:

- Using prefabricated components
- Avoiding printing where possible
- Using low formaldehyde wood products, post-consumer reused timber and/or Forest Stewardship Council certified timber
- Using fittings and furnishings that have been recycled, are made from or incorporate recycled materials and have been certified as sustainable or environmentally friendly by a recognised third-party certification scheme

- Reducing the use of polyvinyl chloride products
- Preferentially using paints, floor coverings and adhesives with low VOC (volatile organic compound) content
- Avoiding unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau
- Selecting materials based on low embodied energy properties that suit the Development, such as recycled materials including recycled steel and glass-wool insulation, or concrete with slag and fly ash content
- Centralising wet areas together to minimise piping, and
- Designing for deconstruction rather than demolition.

Recommendations for the Building Contractor include:

- Applying practical building designs and construction techniques
- Minimising excavation works
- Investigating leased equipment and machinery rather than purchase and disposal
- Sorting and segregating demolition and construction wastes to ensure efficient recycling of wastes
- Preferentially selecting building materials, fittings and furnishings, including structural framing, roofing and façade cladding, that have longer life and better re-use and recycling potential
- Storing wastes on-site appropriately to prevent cross-contamination and/or mixing of different waste types
- Considering future changes proposed for the Development and preferentially selecting building materials that are adaptable and durable
- Preferentially using materials which can be disassembled for reuse
- Reducing packaging waste by:
  - Returning packaging to suppliers where practicable to reduce waste further along the supply chain
  - Purchasing in bulk
  - Requesting cardboard or metal drums rather than plastics
  - Requesting metal straps rather than shrink wrap, and
  - Using returnable packaging such as pallets and reels.
- Arranging deliveries 'as needed' to mitigate degradation, weathering or moisture damage, and
- Ensuring subcontractors are informed of and implement site waste minimisation and management procedures.

## 5.6 Re-use, Recycling and Disposal

Effective management of construction materials and C&D waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only wastes that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to **Table 2** for an outline of the proposed reuse, recycling and disposal methods for potential demolition and construction waste streams generated by the Development.

In accordance with best practice waste management and Council's Waste Management Guidelines, the following specific procedures should be implemented:



- Facilitate on-site source separation to ensure efficient recycling, as outlined in **Section 5.7.1**
- Where source separation is utilised, materials are to be kept uncontaminated to guarantee the highest possible re-use value
- Facilitate re-use of materials on-site
- Assess excavation spoil for contamination status and beneficial re-use
- Dispose of all asbestos, hazardous and intractable wastes in accordance with SafeWork NSW and NSW EPA requirements
- Retain used crates for storage purposes unless damaged
- Provide separate waste bins for recyclable and non-recyclable general wastes
- Concrete will be reused for filling, levelling or road base or recycled off-site
- Tiles and bricks will be reused or crushed for landscaping and driveways
- Steel will be recycled off-site, and all other metals will be recycled where economically viable
- Framing timber will be reused as fencing, furniture, mulch or recycled off-site at second-hand timber suppliers
- Windows, doors and joinery will be recycled off-site at second-hand suppliers, where possible
- All glass that can be economically recycled will be recycled
- All solid waste timber, brick, concrete, rock that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner
- Deliver batteries to drop off-site recycling facility, and
- Provide sufficient space for storage of garden waste and other waste materials on-site.

## 5.7 Waste Segregation, Storage and Servicing

### 5.7.1 Waste Segregation and Storage

Waste materials produced from demolition and construction activities are to be separated at the source and stored separately on-site. It is anticipated that the Development will provide enough space on-site for separate storage, for example, separate skip bins or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal
- Metal and steel, in a condition suitable for recycling at metal recycling facilities
- Timber
- Glass
- Hardstand rubble
- Uncontaminated excavation spoil, if present
- Contaminated excavation spoil, if present
- Hazardous waste, if present
- Paper and cardboard

- General co-mingled recycling waste, and
- Non-recyclable general waste.

If there is insufficient space on-site for full segregation of waste types, the Site Manager, or equivalent role, should consult with the waste and recycling collection contractor to confirm which waste types may be co-mingled prior to removal from the site.

### 5.7.2 Waste Storage Areas

Waste storage areas will be accessible and allow sufficient space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the project. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting.

All waste placed in skips or bins for disposal or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Waste containers and storage areas are to be kept clean and in a good state of repair.

In accordance with better practice waste management and Council's Waste Management Guidelines, areas designated for waste storage should:

- Allow unimpeded access by site personnel and waste disposal contractors
- Take into account environmental factors which could potentially cause an impact to the waste storage, such as slope, drainage, personnel, vehicular access and the location of watercourses and native vegetation
- Allow sufficient space for the storage of garden waste and other waste materials on-site, as based off the estimated volume calculations in **Table 4** and **Table 6**.
- Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste. For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation
- Consider visual amenity, safety and accessibility in their selection, and
- Not present hazards to human health or the environment.

### 5.7.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role is to:

- Arrange for suitable waste collection contractors to remove any construction waste from site
- Ensure waste bins are not filled beyond recommended filling levels
- Ensure that all bins and loads of waste materials leaving site are covered
- Maintain waste disposal documentation detailing, at a minimum:
  - Descriptions and estimated amounts of all waste materials removed from site
  - Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables
  - Records of waste and recycling collection vehicle movements, for example, date and time of loads removed, licence plate of collection vehicles, tip dockets and receipts from receiving facility, and

- Waste classification documentation for materials disposed to off-site recycling or landfill facilities.
- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA
- Ensure waste disposal is to suitably licensed facilities lawfully able to accept the material.
- Remove waste during hours approved by Council.

If skips and bins are reaching capacity, removal and replacement should be organised as soon as possible. All site generated building waste collected in the skips and bins will leave the site and be deposited in the approved site lawfully able to accept them.

## 5.8 Contaminated and Hazardous Wastes

During the demolition and construction phases, SLR recommends that a qualified and certified contractor is engaged to remove all contaminated or hazardous materials, for example, asbestos, and dispose of all contaminated or hazardous waste at an appropriately licenced facility.

All asbestos and other hazardous waste must be handled according to appropriate legislation and regulation including the Work Health and Safety Regulation 2011.

## 5.9 Signage

For best practice, standard signage is to be posted in all waste storage and collection areas. All waste containers should be labelled correctly and clearly to identify stored materials.

Signs approved by the NSW EPA for labelling of waste materials are available online<sup>11</sup> and should be used where applicable. A selection of signs prepared by NSW EPA is provided in **Figure 3**.



**Figure 3** Examples of NSW EPA labels for waste skips and bins

## 5.10 Site Inductions

All staff, including sub-contractors and labourers, employed during the demolition and construction phases of the Development must undergo induction training regarding waste management for the Development site.

<sup>11</sup> NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>

Induction training is to cover, as a minimum, an outline of the WMP including:

- Legal obligations and targets
- Emergency response procedures on-site
- Waste priorities and opportunities for reduction, reuse and recycling
- Waste storage locations and separation of waste
- Procedures for suspected contaminated and hazardous wastes
- Waste related signage
- The implications of poor waste management practices, and
- Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.

It is the responsibility of the Site Manager or Building Contractor to notify Council of the appointment of waste removal, transport or disposal contractors.

## 5.11 Monitoring and Reporting

The following monitoring practices are to be undertaken to improve demolition and construction waste management and to obtain accurate waste generation figures:

1. Conduct waste audits of current projects where feasible.
2. Note waste generated and disposal methods.
3. Look at past waste disposal receipts.
4. Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, it is recommended that dockets or receipts verifying recycling and disposal in accordance with this WMP are kept and presented to regulatory bodies when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists and logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

## 5.12 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation. It will be the responsibility of the Site Manager, or equivalent role, to implement the WMP, and the responsibility of employees and subcontractors to ensure that they comply with the guideline at all times.

Suggested roles and responsibilities for waste management at the site are provided in **Table 7**. Where possible, a construction environmental manager, or equivalent role, should be appointed for the demolition and construction work. An equivalent construction environmental manager role is defined to be a person dedicated to overseeing the environmental compliance and performance of a Development. Where a construction environmental manager is not appointed, responsibilities in **Table 7** for the construction environmental manager will become those of the Site Manager.

**Table 7 Suggested roles and responsibilities for demolition and construction waste management**

Role	Responsibilities
Site Manager	<ul style="list-style-type: none"> <li>Ensuring plant and equipment are well maintained</li> <li>Ordering only the required amount of materials</li> <li>Keeping materials segregated to maximise reuse and recycling</li> <li>Ensuring that waste sorting and storage areas are maintained in a tidy and functional state and do no present hazards to human health or the environment</li> <li>Ensure hazardous or contaminated materials are appropriately managed and disposed</li> <li>Ensure site records and documentation is kept and is complete</li> <li>Ensure this WMP are implemented, and</li> <li>Liaise with Council and regulatory authorities as required.</li> </ul>
Construction Environmental Manager or equivalent	<ul style="list-style-type: none"> <li>Ensuring staff and contractors are aware of site requirements for waste management</li> <li>Establishing separate skips and stockpiles and recycling bins for effective waste segregation and recycling purposes</li> <li>Developing or identifying, and using, local commercial opportunities for re-use of materials where re-use on-site is impractical</li> <li>Facilitate correct waste collection</li> <li>Engage suitable waste collection and disposal contractors</li> <li>Approval of off-site waste disposal locations and checking licensing requirements</li> <li>Arranging for the assessment of potentially hazardous or contaminated materials</li> <li>Arranging for appropriate contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements</li> <li>Monitor and maintain site environmental controls and</li> <li>Monitoring, inspection and reporting requirements.</li> </ul>

Daily visual inspections of waste storage areas may be delegated to other on-site staff. All contractors will be responsible for ensuring that their work complies with the WMP through the project induction and contract engagement process. It is the responsibility of the Site Manager to notify the relevant regulatory authorities of the appointment of waste removal, transport or disposal contractors.

## 6 Ongoing Waste and Recycling Management

### 6.1 Targets for Resource Recovery

The waste management performance of each new development should contribute to the overall NSW State targets for recycling outlined in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*. The targets include increasing waste diverted from landfill to 75% and recycling 70% of commercial, industrial and municipal solid waste<sup>12</sup>. Each commercial and industrial development can contribute to this NSW State target through an effective waste management plan.

It is anticipated that the waste minimisation measures in the following sections will assist the Development to achieve this recycling rate. Waste reporting and audits are required to determine the actual percentage of wastes that are being or have been recycled during operation.

### 6.2 Waste Streams and Classifications

The operation of the Development is anticipated to generate the following broad waste streams:

- General waste and commingled recycling
- Food and organic waste
- Bulk packaging wastes, including polystyrene and cardboard boxes
- Bulky waste items, such as furniture and e-waste, and
- Plant and general maintenance wastes.

Potential waste types, classifications, and management methods are provided in **Table 8**. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) *Waste Classification Guidelines*.<sup>13</sup> Recycling drop off locations and contacts can be found on <https://businessrecycling.com.au/> for each waste type.

<sup>12</sup> <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wastestrategy/140876-warr-strategy-14-21.pdf?la=en&hash=EC6685E6624995242B0538B18C2E80C0CA2E51B3>

<sup>13</sup> Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>



**Table 8 Potential operational waste types, classifications and management methods**

Waste Types	NSW EPA Classification	Proposed Management Method
Clean office paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard including bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Recyclable beverage containers, glass and plastic bottles, aluminium cans, steel cans	General solid (non-putrescible) waste	NSW container deposit scheme 'Return and Earn'; container recycling at off-site licensed facility
Food waste	General solid (putrescible) waste	Compost on or off-site or dispose to landfill with general garbage
Batteries	Hazardous waste	Off-site recycling, alternatively contact the Australian Battery Recycling Initiative for more information
Mobile Phones	Hazardous waste	Off-site recycling through the Mobile Muster program. Contact Mobile Muster for more information
Bulky polystyrene	General solid (non-putrescible) waste	Off-site recycling or disposal at landfill
Furniture	General solid (non-putrescible) waste	Off-site reuse or disposal to landfill
E-waste	Hazardous waste	Off-site recycling
Printer toners and ink cartridges	Hazardous waste	Off-site recycling, free disposal box or bags and pickup service exists for printer toners and ink cartridges
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill

Spent smoke detectors <sup>14</sup>	General solid (non-putrescible) waste, or Hazardous waste (some commercial varieties)	Off-site disposal at licensed facility
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Off-site recycling or disposal, contact FluoroCycle for more information
Air-conditioning parts and filters	General solid (non-putrescible) waste	Off-site recycling or disposal to landfill
Empty oil or paint drums, chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.
Garden organics - lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility

<sup>14</sup> The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's Code of practice for the near-surface disposal of radioactive waste in Australia (1992) must be met.

## 6.3 Estimated Ongoing Waste Generation

Based on communications with the Client, SLR understands that the existing waste management system is sufficient for the operations of the Development. The existing number of students at the Development is 854, and the proposed number of students by 2030 is estimated to be 1,091. The proposed redevelopment works are not anticipated to largely influence the capacity of the Development and are instead for the purpose of providing additional resources and aesthetic improvements to the existing students and staff.

Based on this, SLR does not expect a large increase in the existing waste management quantities and anticipates that the existing waste management system will be adjusted for the storage of waste and recycling quantities generated after the redevelopment works. The existing waste management system consists of the following:

- Two 3 m<sup>3</sup> general waste bins collected twice a week, and
- One 3 m<sup>3</sup> paper and cardboard recycling bin collected once a week.

SLR understands that the Client has a preference to replace the existing 3 m<sup>3</sup> bins with 240 L bins. In accordance with Section 5.2 b) of Council's Waste Management Guidelines, the waste and recycling storage area must be large enough to adequately store all ongoing waste and recycling generated quantities between collections. Calculations have been undertaken in **Sections 6.3.1** and **6.3.2** below to calculate the storage space required for 240 L bins to store the waste and recycling generated from the Development.

### 6.3.1 Waste Types and Quantities

Based on the understanding that two 3 m<sup>3</sup> general waste bins are collected weekly and one 3 m<sup>3</sup> paper and cardboard recycling bin is collected weekly, the existing waste and recycling quantities generated at the Development are 12,000 L of general waste and 3,000 L of paper and cardboard recycling per week.

SLR recommends the introduction of a co-mingled recycling bin for the collection of recyclables, other than paper and cardboard, such as recyclable containers and beverage bottles. This is in accordance with better practice waste management, encourages waste diversion from landfill and sustainable practices at the Development, and reduces the number of bins required for general waste collection.

Based on an audit undertaken on a number of schools by the Western Australia (WA) Department of Environment and Conservation<sup>15</sup>, 41% of waste generated at schools is paper and cardboard, and 10% is other recyclables. Since paper and cardboard is already diverted from the waste generated at the Development, the percentage of recyclables that is a part of the 12,000 L of waste generated weekly is assumed to be 17%. Hence the quantities of waste and recycling generated at the Development per week are shown in **Table 9** below.

**Table 9 Existing waste and recycling generated per week**

General Waste	Paper and Cardboard Recycling	Co-mingled Recycling	Total Generated Per Week
9,970 L	3,000 L	2,030 L	15,000 L

Based on the assumption that the quantities shown in **Table 9** are generated by 854 students, SLR calculated the quantities of waste anticipated to be generated in 2030 by 1,091 students. The anticipated waste and recycling quantities are shown in **Table 10**.

<sup>15</sup> WA Department of Environment and Conservation, Waste Audit Toolkit, available at: [https://www.wasteauthority.wa.gov.au/media/files/wws/waste-audit-toolkitv4\\_web.pdf](https://www.wasteauthority.wa.gov.au/media/files/wws/waste-audit-toolkitv4_web.pdf)

**Table 10 Anticipated waste and recycling generated per week**

General Waste	Paper and Cardboard Recycling	Co-mingled Recycling	Total Generated Per Week
12,740 L	3,835 L	2,595 L	19,170 L

Waste estimates have been rounded up to the nearest 5 tonnes.

### 6.3.2 Waste Storage Area Size

Based on the quantities shown in **Table 10**, the number of 240 L bins required for the collection of the waste and recycling generated at the Development was calculated, as shown in **Table 11**. An increased collection frequency has been considered to decrease the recommended storage area requirement. The collection frequency that has been accounted for is four collections of general waste per week and two collections of paper and cardboard and other recyclables per week.

To allow for easy and safe movement of bins, the bin area should provide a floor area of at least 150% the total minimum bin area. This provision has been applied to the recommended storage area in **Table 11** below. This can also act as a contingency in the event of spikes in waste generation and allow for additional bins that may be required in the future.

**Table 11 Minimum number of bins and storage area required for weekly ongoing waste**

General Waste	Number of bins required		Recommended Storage Area (m <sup>2</sup> )
	Paper and Cardboard Recycling	Co-mingled Recycling	
14 x 240 L	8 x 240 L	6 x 240 L	20

The required number of 240 L bins for the Development can be further minimised by diverting organics and recyclable containers from the general waste and co-mingled recycling stream. According to the school waste audit undertaken by the WA Department of Environment and Conservation<sup>16</sup>, 13% of the general waste stream is organics. It is recommended that this is diverted from the general waste stream by implementing composting bins and gardens at the Development and educating staff and students on their use.

Similarly, a large proportion of co-mingled recycling produced at schools is from containers often sold at tuck shops or brought by the students. The Development can take advantage of the NSW Container Deposit Scheme<sup>17</sup> and introduce bins for the collection of recyclable containers only. The Development can benefit from the revenue of the collection of the containers and educate students on the use of the Container Deposit Scheme. The container deposit location nearest to the Development can be found at <https://returnandearn.org.au/>.

Based on architectural plans provided by the Client, the areas allocated for bin storage is 22.6 m<sup>2</sup>. This is considered sufficient for the storage of the Development's general waste and recyclables quantities. SLR notes that the recommended storage area of 20 m<sup>2</sup> does not include consideration for the storage of any bulky and hazardous waste. For recommendations on bulky and hazardous waste storage, refer to **Section 6.7**.

<sup>16</sup> WA Department of Environment and Conservation, Waste Audit Toolkit, available at: [https://www.wasteauthority.wa.gov.au/media/files/wws/waste-audit-toolkitv4\\_web.pdf](https://www.wasteauthority.wa.gov.au/media/files/wws/waste-audit-toolkitv4_web.pdf)

<sup>17</sup> <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn>

SLR recommends that scheduled waste audits are undertaken approximately one month into the operational phase of the Development to quantify actual waste generation rates generated by the Development. The assessment of generated waste volumes will be influenced by staff and student attitude to recycling and disposal, and the adequacy of signage and education provided for occupants. Council offers a brief auditing program with school-specific waste alternatives, student involvement and a waste reduction action plan<sup>18</sup>. According to Council's online information, this audit is most suitable for schools with year 4 to year 6 students.

### 6.3.3 Additional Operational Waste

Based on the architectural drawings and on recommendations from the Educational Facilities Standards and Guidelines, the following additional waste streams are anticipated from the Development:

- Green waste, from landscaping activities
- Confidential documents, from staff and management activities
- E-waste, from computers used by students and staff

Less than 100 L of green garden organic landscaping waste is estimated to be generated per week. This waste will be taken by a landscaping contractor who will dispose of it at a garden organics processing facility such as Kimbriki Resource Recovery Centre.

Confidential documents are to be disposed in 240 L bins located preferably near printing locations inside the staff office areas. It is recommended that a private contractor, responsible for the collection, shredding and recycling of secured documents, is engaged to collect the 240 L bins as needed. Based on communications with the Client<sup>19</sup>, SLR understands that confidential documents are currently disposed in two 240 L bins that are collected as needed. This is sufficient for the operations of the Development.

Due to the nature of the operations of the Development, it is anticipated that significant quantities of e-waste will be generated. Where possible, it is recommended that a waste collection and recycling contract should be established to collect all e-waste and ensure it is not landfilled. A private contractor may be engaged to collect all e-waste as needed.

These waste streams may be stored in the waste storage area, or in a room designated for bulky and hazardous wastes, until collection.

### 6.3.4 Waste Storage Area Location

The existing waste storage area for the general waste and paper and cardboard recycling bins is located at the Development's Westmoreland Avenue entrance. The bins storage area is outdoor and located opposite the street entrance for heavy vehicles<sup>20</sup>. Based on conversations with the Client<sup>21</sup>, SLR understands that the waste storage area is to be relocated to the inner wall of the boundary fence, facing the previous waste storage area. The 240 L bins are to be lined up against the fence for the collection by a private waste contractor. This is shown in **Figure 4** below.

<sup>18</sup> Further information on Council's programs are found at <https://www.northernbeaches.nsw.gov.au/services/rubbish-and-recycling/school-education-programs>

<sup>19</sup> Email communication from Tony Cai, 'FW: Pittwater House School', dated 27 August 2019.

<sup>20</sup> Google Maps, 2019, located at <https://www.google.com.au/maps/@-33.7397995,151.2924607,3a,72.5y,231.45h,81.4t/data=!3m6!1e1!3m4!1sdwwkLjx2E0MtTmJcfQiTA!2e0!7i13312!8i6656>.

<sup>21</sup> Email communication from Tony Cai, 'FW: Pittwater House School Waste Management', dated 27 August 2019.

The existing location of the bin storage area in **Figure 4** shows the two 3 m<sup>3</sup> general waste bins in blue, and the 3 m<sup>3</sup> paper and cardboard bin in yellow. The proposed location of the 240 L bins, placed against the fence, is shown in red. The red arrow shows the entry and exit point of the waste collection vehicle. **Figure 4** is adapted from a figure provided by the client in email communication<sup>22</sup>.



**Figure 4 Existing and proposed waste storage area (not to scale)**

SLR understands that a traffic plan is being updated by other consultants for this Development and will address the updated carpark arrangement, where the waste storage area will be located.

In accordance with Council's Waste Management Guidelines, the waste storage area must comply with the following location requirements:

- Be no closer than 3 m<sup>2</sup> to a given building entrance
- Be void of any stormwater or waste water entry points
- Be entirely within the site boundary
- Preserve visual amenity through landscaping, and
- Not be visible to the public.

### 6.3.5 Waste Storage Area Features

In accordance with Council's Waste Management Guidelines, the waste storage area is to have the following features:

- Designated space to accommodate waste, recycling containers, crates, pallets and other reusable items
- Be clear of any service and utilities infrastructure
- Be easily kept clean and tidy at all times

<sup>22</sup> Email communication from Tony Cai, 'FW: Pittwater House School Waste Management', dated 27 August 2019.



- Comply with the BCA, related Australian Standards and legislation, and
- Be graded and drained to a drainage system approved by Sydney Water.

## 6.4 Waste Servicing

Based on communication with the Client<sup>23</sup>, SLR expects that a private waste contractor will be engaged for the waste collection. As is currently undertaken on site, the private waste contractor is to access the waste storage area through the Westmoreland Avenue entrance and collect the bins. The private waste contractor is to empty the 240 L bins from their storage location and then leave the Development through the Westmoreland Avenue entrance.

The Development's current waste collection involves a heavy vehicle for the collection of 3 m<sup>3</sup> bins. Based on communication with the Client, SLR understands that the Client intends to engage a private waste contractor that operates a smaller waste collection vehicle, for the emptying of 240 L bins. The use of a smaller waste collection vehicle will allow for greater vehicle manoeuvrability and additional flexibility in the placement of the bins on site. Additionally, based on the Client's experience, the smaller vehicle will avoid the existing safety issues regarding multiple point turns and truck blind spots on school campuses.

In accordance with better practice waste management, it is recommended that the following measures are undertaken:

- Waste collection vehicles should have convenient access to waste collection areas
- Waste collection vehicles should be able to enter and exit the Development in a forward direction, and
- A valid waste and recycling collection contract is recommended to demonstrate disposal at a waste facility lawfully able to accept the waste and the recycling when the private waste contractor is engaged. Written evidence of the valid contract is recommended to be kept on-site.

The ability and compliance of the smaller waste collection vehicle to access the Development is to be confirmed by the private waste collection contractor and a traffic specialist professional. SLR understands that an architectural drawing showing the updated traffic plan is being undertaken by traffic specialist consultants for the Development.

## 6.5 Litter Management

For the health and safety of staff and students, careful consideration should be given to litter management at the Development. Good practice litter management is encouraged to reduce the impact of the Development on the surrounding environment, increase amenity for visitors, students and staff, and minimise the likelihood of vermin and flies.

Good practice litter management controls include the following:

- The use of water refillers and bubblers to discourage the use of single use plastic water bottles
- The use of clear signage throughout the school to label bins, direct students, visitors and staff to bin locations and encourage them to manage and dispose of their waste in an appropriate way. Signage is further discussed in **Section 6.9**
- Training of employees and contractors on litter management issues and controls

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<sup>23</sup> Email communication from Tony Cai, 'FW: Pittwater House School Waste Management', dated 27 August 2019.

- Placement of litter bins on-site in high traffic areas
- Regular litter cleaning and collection when identified on-site
- Cultivating a culture of positive attitudes towards litter reduction through posters or class activities
- Using accessible communication platforms, including distributing e-newsletters and messages on the Development's commitment to the environment, and
- Promotion or sale of branded reusable items, such as Keep Cups and reusable bottles, to discourage the use of single-use plastic cups and bottles.

## 6.6 Waste Avoidance, Re-use and Recycling

### 6.6.1 Waste Avoidance

Waste avoidance measures include:

- Returning packaging materials like cardboard to the suppliers through the services of the supplier delivery trucks, allowing the reduction of waste further along the supply chain
- Providing durable cups, mugs, crockery and cutlery rather than disposable items in places such kitchens used by staff
- Presenting all waste reduction initiatives to staff as part of their induction program
- Creating a waste management project for the Development, such as a compost and veggie garden
- Participating in Council's School Education Programs to support school waste reduction, recycling and education<sup>24</sup>
- Collecting recyclable containers and participating in the state's Container Deposit Scheme<sup>25</sup>
- Encouraging teaching staff to provide waste management education to students, including the waste hierarchy and recycling, and
- Leasing equipment and machinery rather than outright purchase and disposal.

### 6.6.2 Re-use

Possible re-use opportunities include establishing in-house systems to transport products in re-useable packaging.

### 6.6.3 Recycling

Additional recycling opportunities include:

- Collecting and recycling e-wastes
- Plastic stretch wrapping and general soft plastics collection with a baler for ease of recycling
- Flatten or bale cardboard to reduce the volume of paper and cardboard wastes

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<sup>24</sup> Further information on Council's programs are found at <https://www.northernbeaches.nsw.gov.au/services/rubbish-and-recycling/school-education-programs>

<sup>25</sup> <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn>

- ## 6.7 Bulky and Hazardous Waste

SLR recommends that the size of the Development's reusable item and bulky waste storage area should be not less than 8 m<sup>2</sup>. Based on the architectural drawings attached in **Appendix A**, 9.03 m<sup>2</sup> is allocated for bulky waste storage at the Development. This is considered sufficient for the Development. The bulky waste storage area is shown highlighted in blue in **Figure 5** below, located adjacent to the bin storage area highlighted in red.

**Figure 5 Proposed bulky waste storage area (not to scale)**

## 6.8 Communication Strategies

- Improved satisfaction with services

- Increased ability and willingness to participate in recycling
- Improved amenity and safety
- Improved knowledge and awareness through standardisation of services
- Increased awareness or achievement of environmental goals and targets
- Reduced contamination of recyclables stream which can incur a collection contractor penalty fee
- Increased recovery of recyclables and organics material, if implemented, and
- Greater contribution to state-wide targets for waste reduction and resource recovery.

To realise these benefits, the following communication strategies is recommended for each site manager:

- Use consistent signage and colour coding throughout the Development, as detailed in **Section 6.9**
- Ensure all students and staff are informed of correct waste separation and management procedures
- Provide directional signage to show locations and routes to waste storage areas
- Repair signs and labels promptly to avoid a breakdown in communication
- Clearly label general and comingled waste bins to ensure no cross contamination and to identify the types of waste that may be disposed of in each bin, and
- Educate all students, staff and contractors associated with the Development, ensuring they adhere to this WMP.

## 6.9 Signage

Signs which clearly identify waste management procedures and provisions to contractors, students, staff and visitors should be distributed around the Development.

The design and use of safety signs for waste rooms and enclosures should comply with Australian Standard *AS 1319 Safety Signs for the Occupational Environment* and clearly describe the types of materials designated for each bin.

Colour-coded and labelled bin lids are necessary for identifying bins and the Australian Standard *AS 4123.7-2006 (R2017) Mobile waste containers Part 7: Colours, markings, and designation requirements* provides recommendations for the designated colours for waste bins depending on the type of waste the bins are to receive. The colours anticipated to apply to ongoing waste generated by the Development are:

- Blue: Paper and cardboard
- Yellow: Recyclables (other than paper and cardboard)
- Red: General waste
- Green: Food waste and garden organics

All bin signage should also follow the NSW EPA's standard signage<sup>26</sup>.

Additionally, key signage considerations are:

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<sup>26</sup> NSW EPA waste signs/posters <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>

- Clear and correct labelling on all waste and recycling bins, indicating the correct type or types of waste that can be placed into a given bin, as shown in **Figure 6**
- Signposts and directions to location of waste storage areas, including the composting facilities on-site, as per Council's DCP
- Clear signage in all waste storage areas to instruct users how to correctly separate waste and recycling
- Maintaining a consistent style colour scheme and system for signs throughout the Development, and
- Emergency contact information for reporting issues associated with waste or recycling management.



**Figure 6** An example of bin labels that may be used for ongoing waste

## 6.10 Monitoring and Reporting

Monitoring is recommended to ensure waste and recycling management arrangements and provisions for the Development are functional; practical and are maintained to the standard outlined in this plan, at a minimum.

Visual assessments of bins and bin storage areas should be conducted by the site manager, at minimum:

- Weekly, in the first two months of operation to ensure the waste management system is sufficient for the operation, and
- Every six months, to ensure waste is being managed to the standards outlined in this document.

In addition, audits are to be conducted on a half-yearly basis to ensure WMP provisions are maintained. Two audits are available through Council's School Education Programs which provide school-specific waste alternatives, student involvement and a waste reduction action plan<sup>27</sup>. This audit is most suitable for schools with year 4 to year 6 students.

Quantities of waste and recycling associated with disposal of waste and recycling, including dockets, receipts and other physical records should be recorded by the site manager. This is to allow reviews of the waste management arrangements and provisions at the site over time. Records of waste disposal should also be available to regulatory authorities such as the NSW Environmental Protection Authority and SafeWork NSW, upon request.

<sup>27</sup> Further information on Council's programs are found at <https://www.northernbeaches.nsw.gov.au/services/rubbish-and-recycling/school-education-programs>

Any deficiencies identified in the waste management system, including, but not limited to, unexpected waste quantities, is to be rectified by the site manager as soon as it is practical. Where audits show that recycling is not carried out effectively, management should carry out additional staff training, signage re-examination and reviews of the waste management system where the audit or other reviewing body has deemed necessary. If this waste management plan no longer sufficiently meets the needs of the Development, review and updates to maintain suitability must be undertaken.

## 6.11 Roles and Responsibilities

It is the responsibility of the site manager to implement this WMP and a responsibility of all school students, visitors and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors enlisted by the Client are to have roles and responsibilities identified and the Development's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in **Table 12**.

**Table 12 Delegated waste-related roles and responsibilities for the Development.**

Responsible Person	General Tasks
Site Managers	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP as needed to ensure the plan remains applicable to the site.
	Undertake liaison and management of contracted waste and recycling collections with Council, contractors and any relevant authorities.
	Regularly conduct waste audits to review system performance and identify any additional materials that could be recovered.
	Manage any complaints and non-compliances reported through waste audits and other sources.
	Ensure all monitoring and audit results are well documented and conducted as specified in this WMP.
	Conduct regular waste sorting, physical condition and cleanliness inspections of bins, waste storage rooms and all other waste management equipment for functionality, hygiene and safety.
	Organise cleaning and maintenance requirements for waste management equipment as required
	Ensure waste and recycling storage rooms are kept tidy.
	Monitor bins to ensure no overfilling occurs and manage unexpected waste quantities to mitigate waste overflow in storage areas
	Ensure effective signage, communication and education is provided to alert visitors, employees, site management staff and cleaners about the provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.
	Manage ongoing education on correct source separation and waste management at least every three months.
	Ensure that regular cleaning and daily transfer of bins is correctly being undertaken by the cleaners.
	Ensure all waste compactors and balers, if obtained, are maintained and operational.
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.

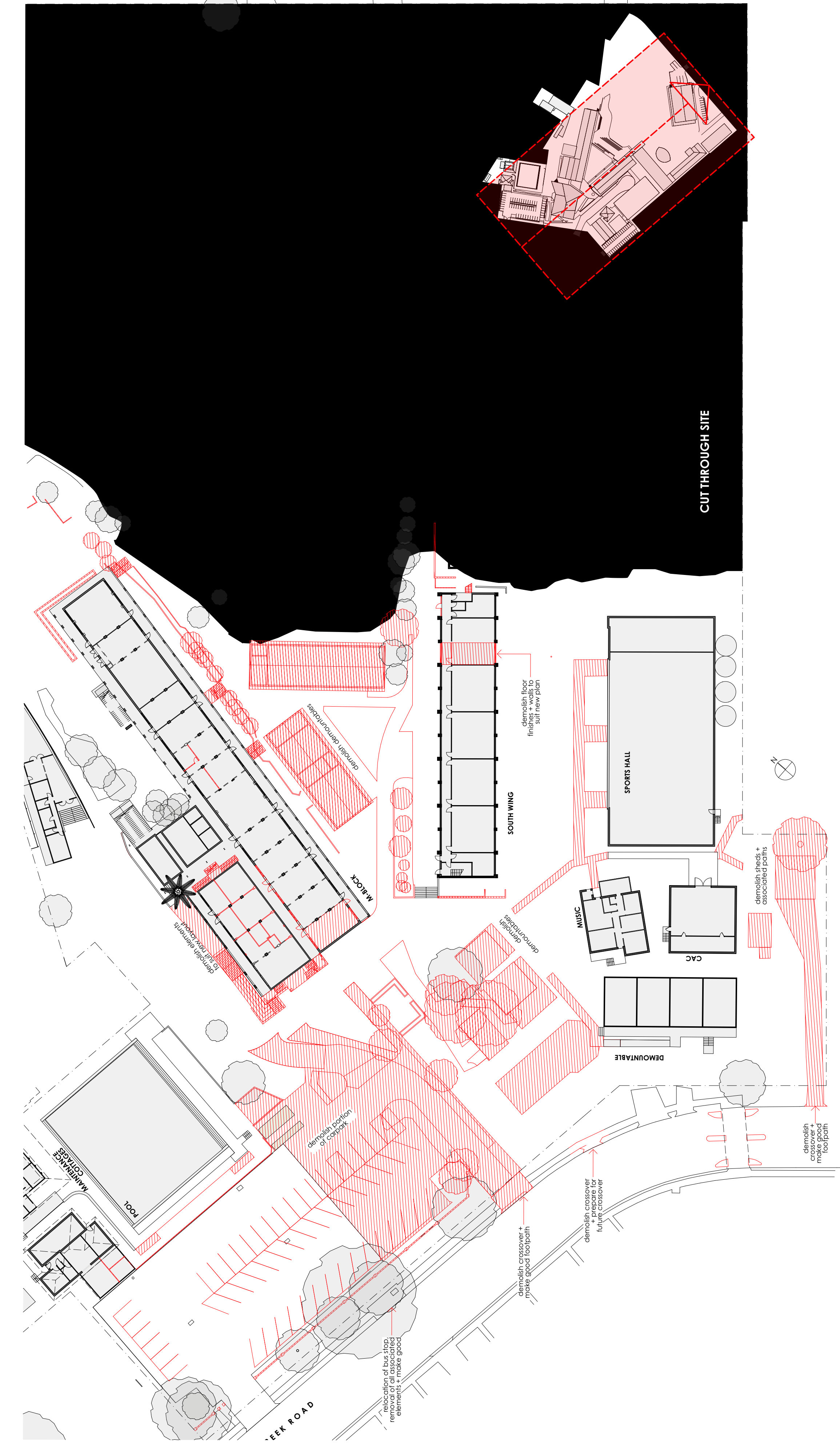


Responsible Person	General Tasks
Cleaners and caretakers	Transfer general waste, recyclables, cardboard waste and hazardous waste to centralised waste and recycling collection rooms on a daily basis or as required.
	Maintain and operate compactors and balers, if obtained, and ensure no overfilling occurs.
	Cleaning of all bins and waste and recycling rooms as per the direction of the site manager, or equivalent role.
	Monitor bins to ensure no overfilling occurs.
	Ensure bins and waste storage areas are kept tidy and clean.
	Compliance with the provisions of this WMP.
Students, visitors and staff	Adhere to all waste management directions as given by the site manager.

# APPENDIX A

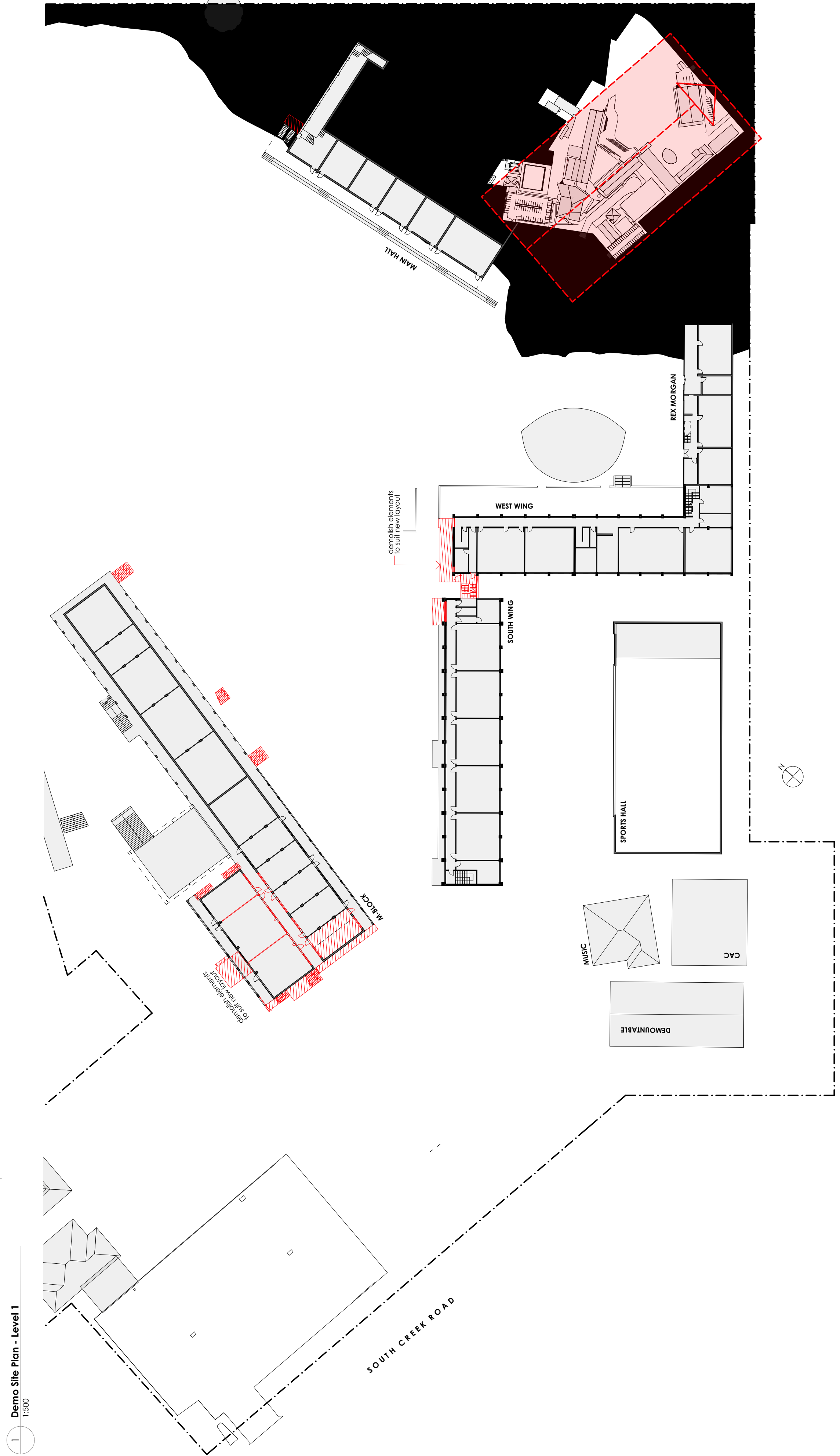
## Architectural Drawings





LEGEND				
COMPPLY WITH RELEVANT AUTHORITIES REQUIREMENTS	AD	ALUMINIUM DOOR	FGS	GLAZED FACE BRICK SCREEN
COMPPLY WITH THE BUILDING CODE OF AUSTRALIA	AW	ALUMINIUM WINDOW	FGS05	GLAZED FACE BRICK SCREEN
COMPPLY WITH ALL RELEVANT AUSTRALIAN STANDARDS	BG	ROCK GUTTER	JU	JOINERY UNIT
DIMENSIONS IN MILLIMETRES	BS	BRICK	LD-1	EXTERNAL LOUVRES - RETRACTABLE
IF DIMENSIONS DIMENSIONS ONLY	BAUS	STEEL BALUSTRADE	LD-2	EXTERNAL LOUVRES - FIXED, HORIZONTAL
DO NOT SCALE	BW	BLOCKWORK	MAT	ENTRY MAT
IF DISCREPANCY EXISTS NOTIFY ARCHITECT	EXFL	EXISTING FLOORING	MC	METAL CLADDING
COS - CONFIRM ON SITE	CONC	CONCRETE	MR	METAL ROOFING
IF IN-DOUBT ASK	CPT	CARPET	PM	PERFORATED METAL
	CT	CERAMIC TILE	RF	RUBBER FLOORING
	DN	DOWNPIPE	RWC	RAINWATER OUTLET
	EXT	EXISTING	SC	STEEL COLUMN
	TC-1	FIBRE CEMENT FLOORING	SK	SKYLIGHT
	FG	FIXED GLASS	TD	TIMBER DOOR JOINERY
	FW	FLOOR WASTE	TW	TIMBER WINDOW JOINERY

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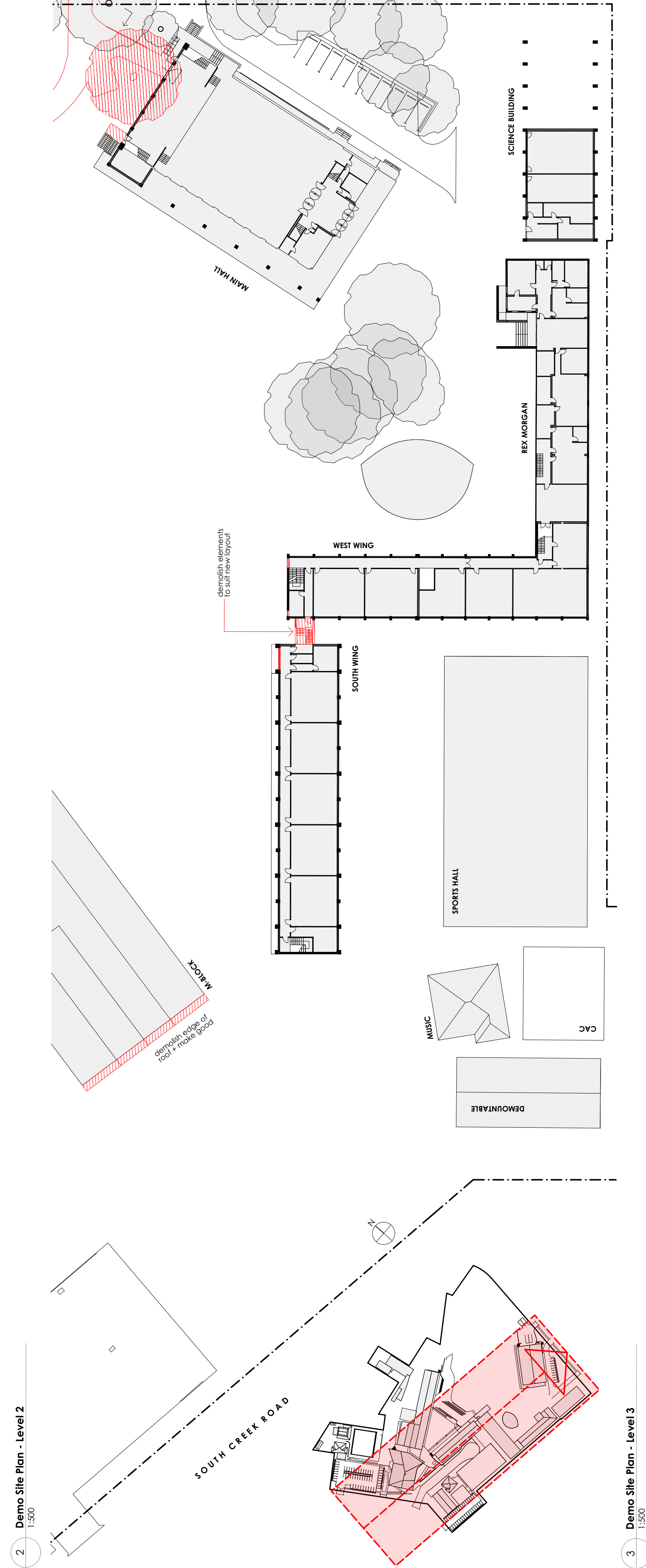


LEGEND		
EXISTING ELEMENTS TO BE RETAINED		
EXISTING ELEMENTS TO BE DEMOLISHED		

ISSUE	DATE	REVISION

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FOR <b>The Pittwater House Schools</b>					
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1801		DEMOLITION PLANS	DRAFT DA	1:500, 1:200 @A1	23/10/19

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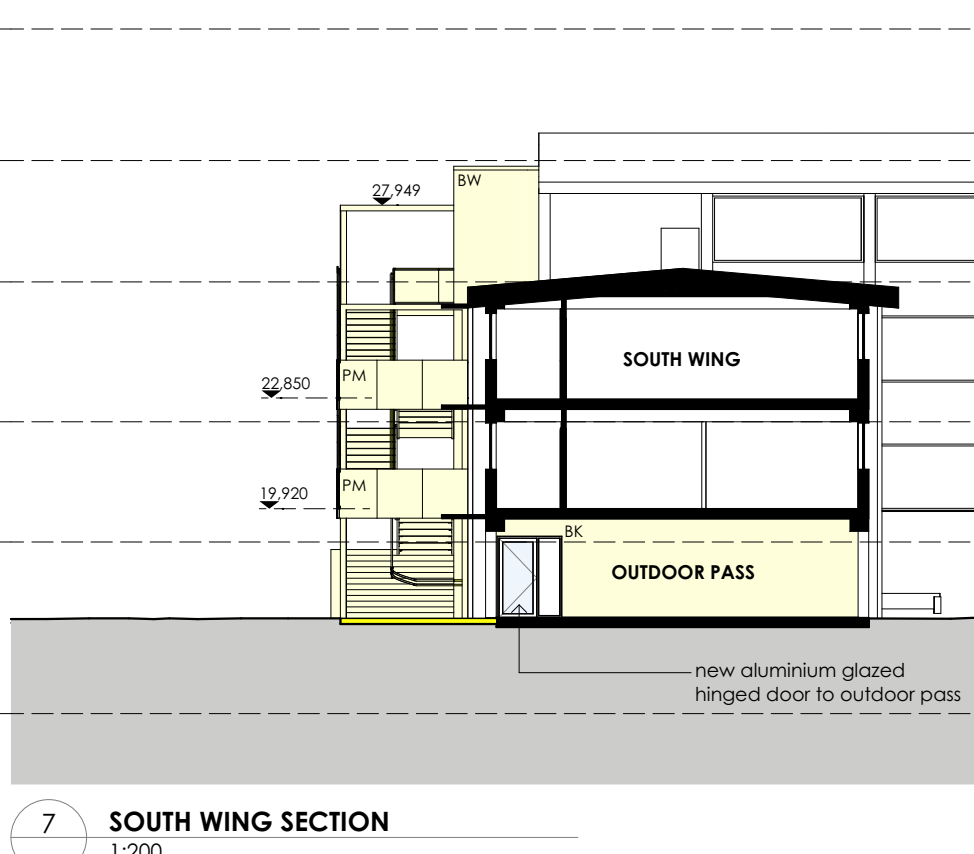
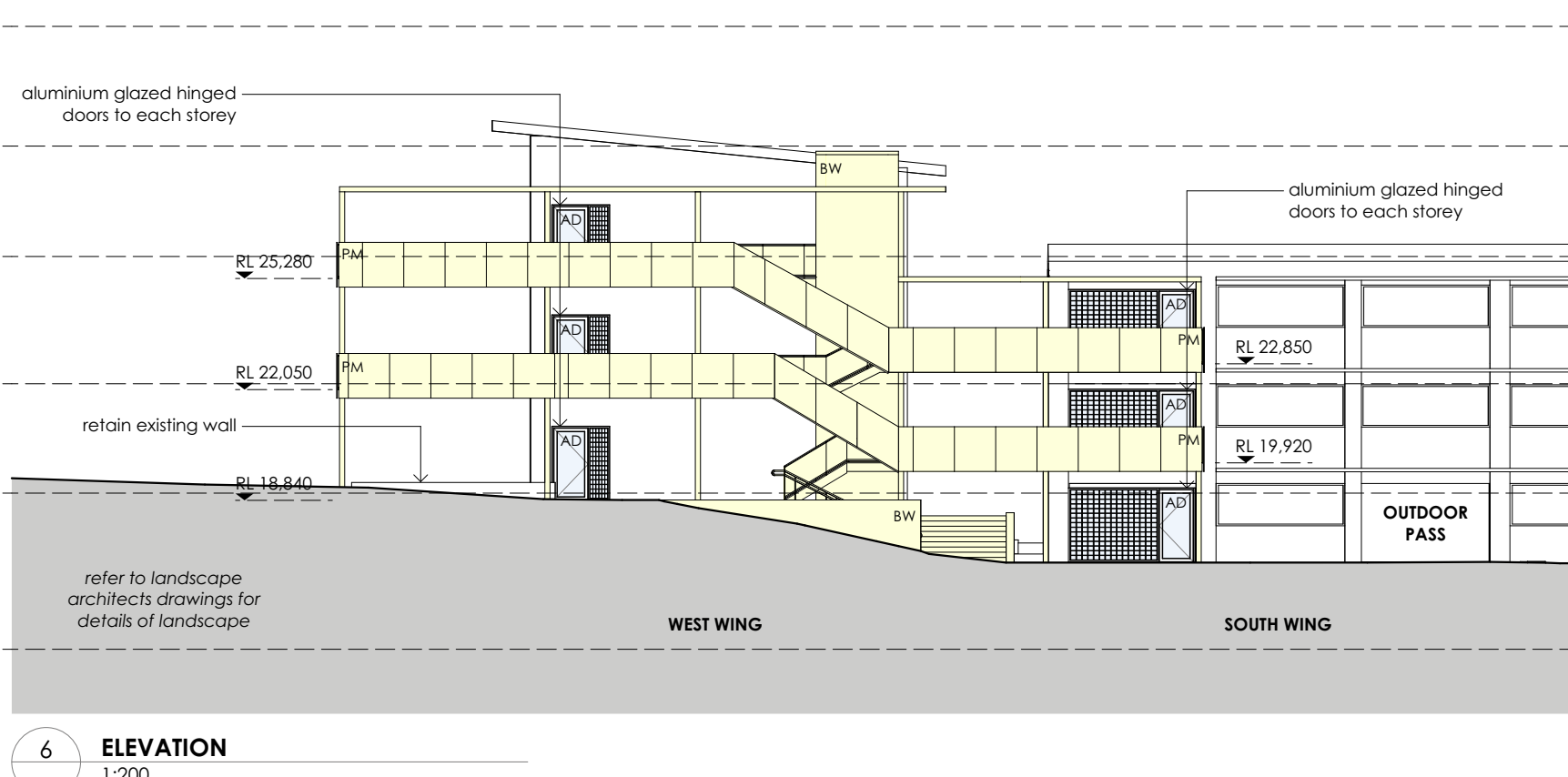
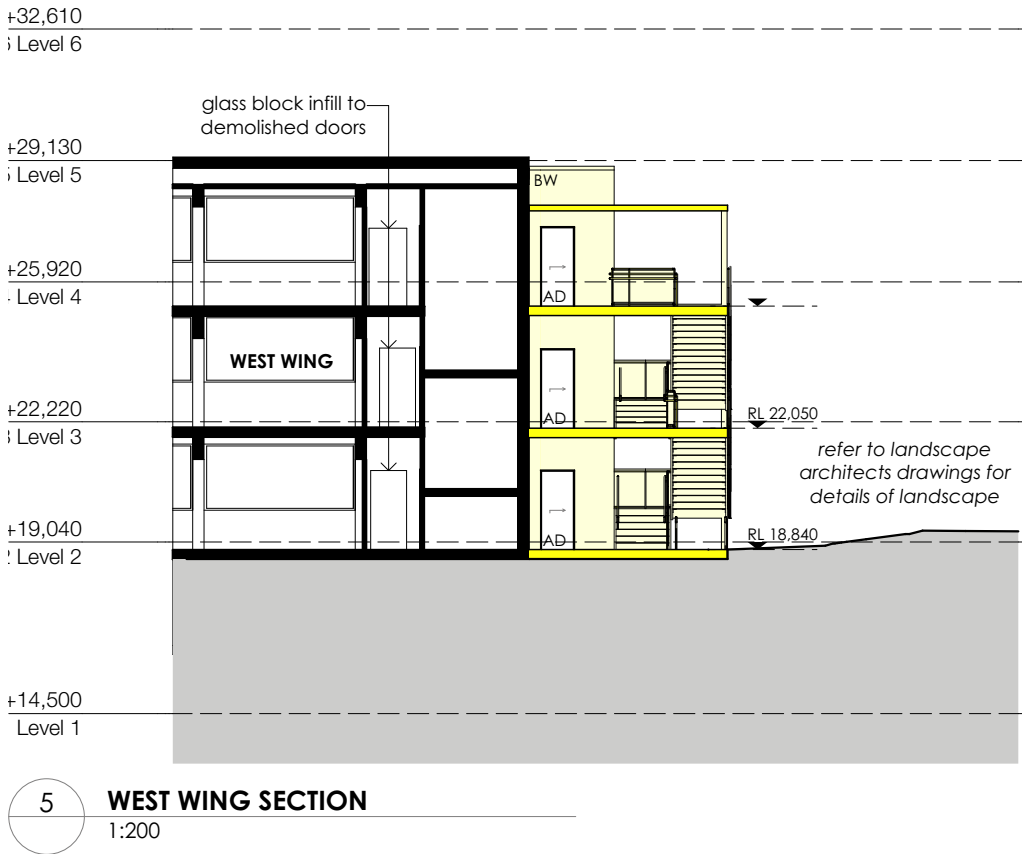
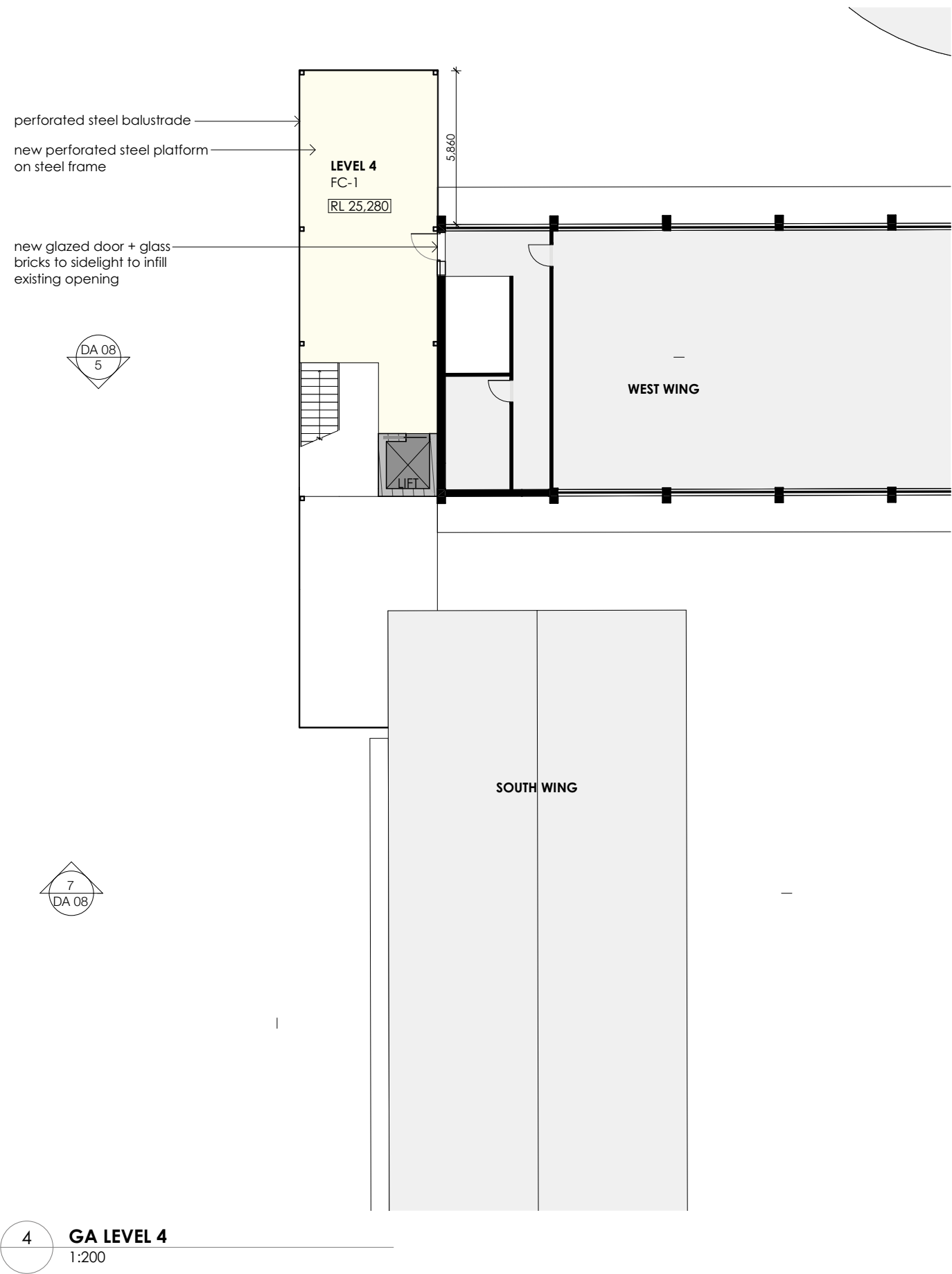
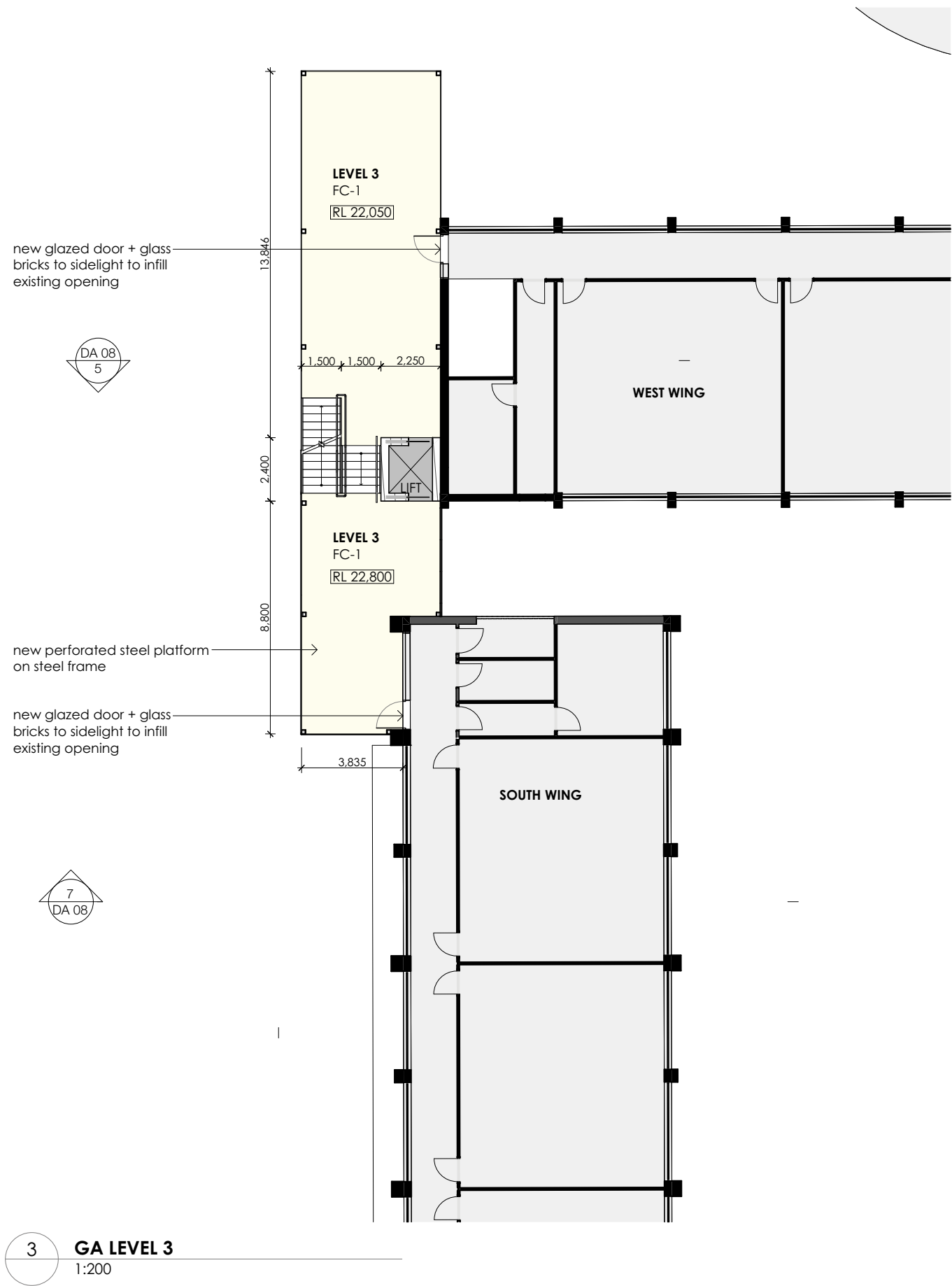
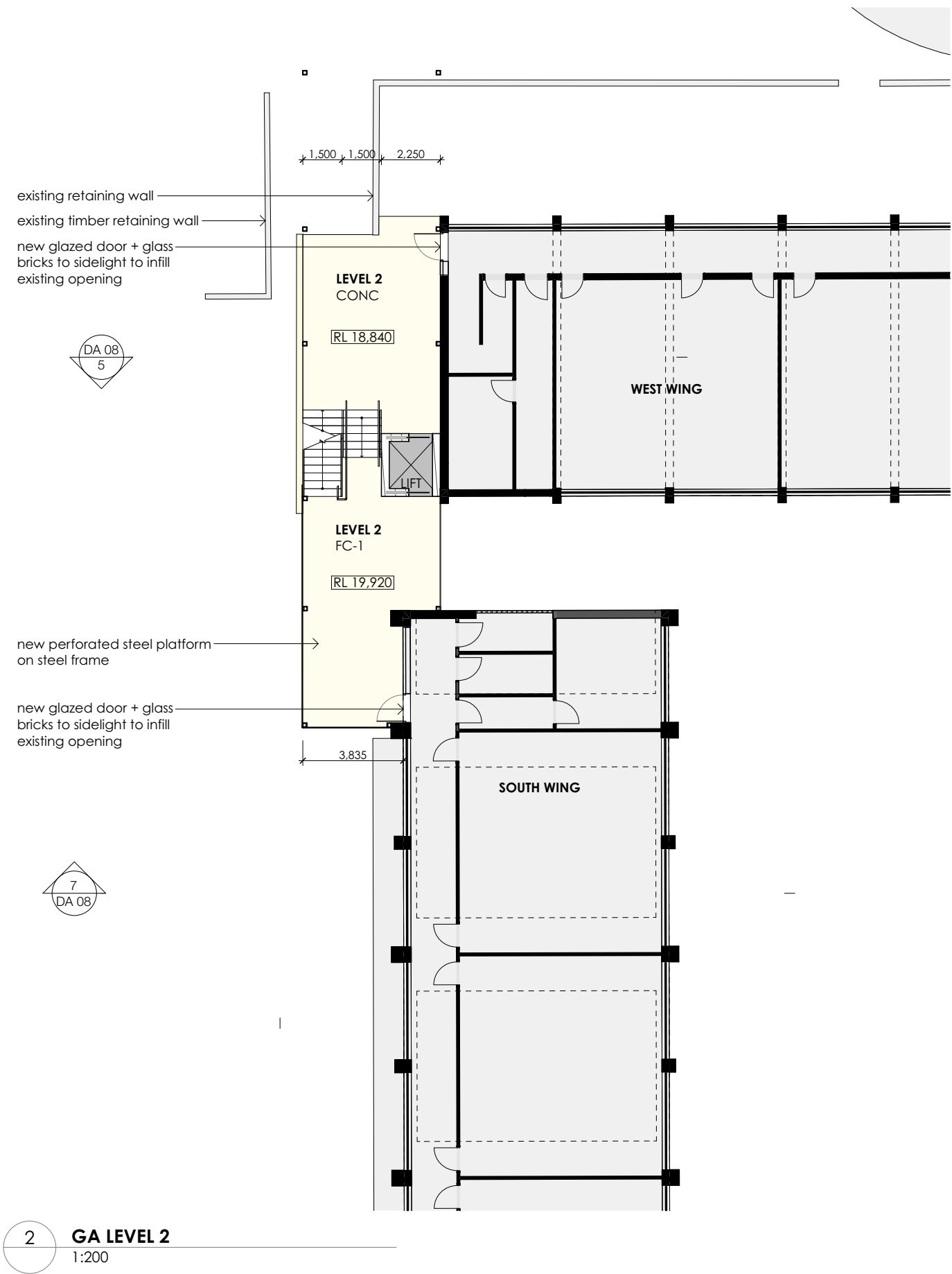
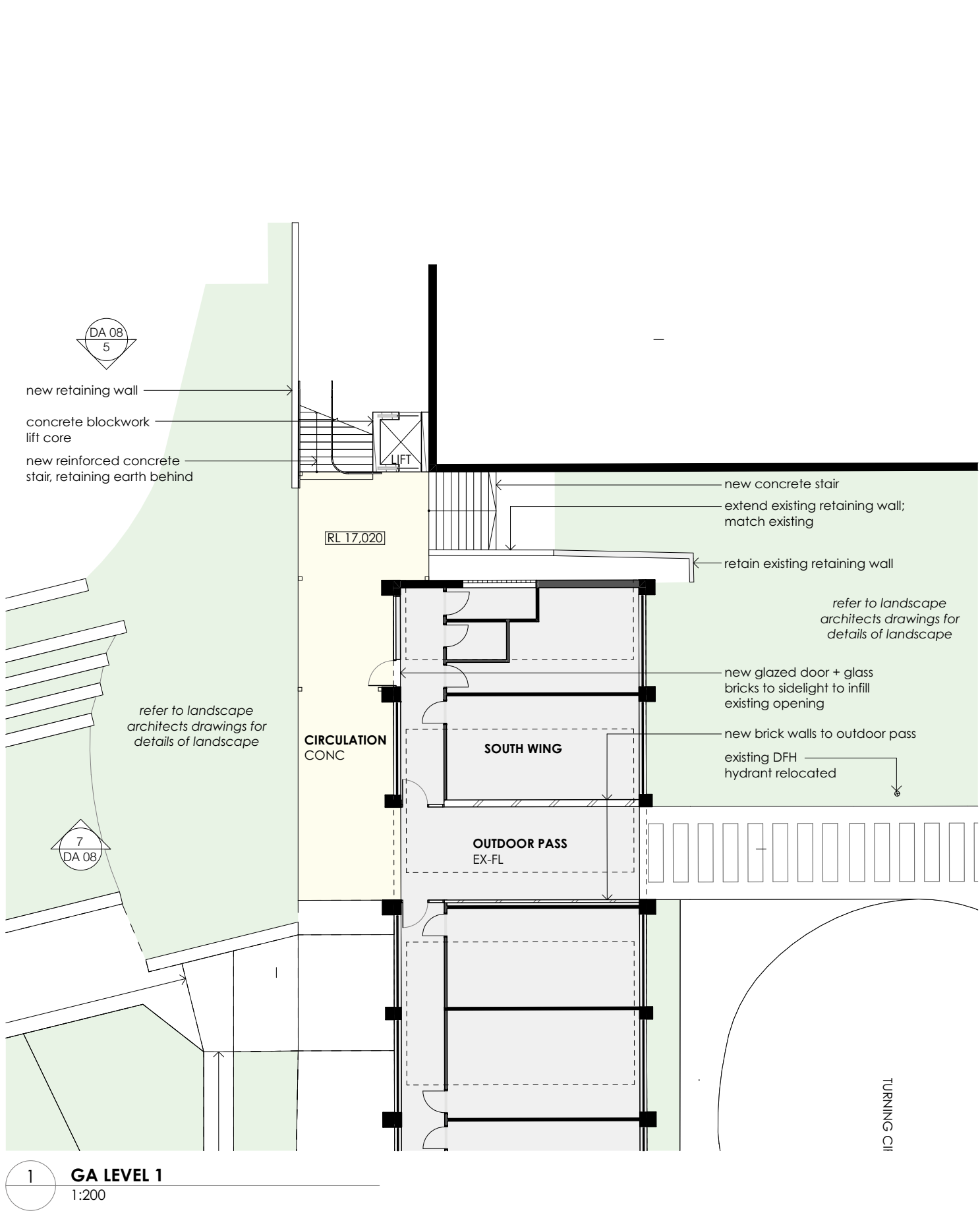
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LEGEND

AD ALUMINIUM DOOR  
AW ALUMINIUM WINDOW  
BS ROOF GUTTER  
BR BRICK  
BALUS STEEL BALUSTRADE  
BW BLOCKWORK  
EX-FL EXISTING FLOORING  
CONC CONCRETE  
CPT CARPET  
CT CERAMIC TILE  
DN DOWNPIPE  
EXT EXISTING  
FC-1 FIBRE CEMENT FLOORING  
FG FIXED GLASS  
FR FRODO  
FW FLOOR WASTE

FBG GLAZED FACE BRICK  
FBGS GLAZED FACE BRICK SCREEN  
JU JOINERY UNIT  
LO-1 EXTERNAL LOUVRES - RETRACTABLE  
LO-2 EXTERNAL LOUVRES - FIXED, HORIZONTAL  
MAT ENTRY MAT  
MC METAL CLADDING  
MR METAL ROOFING  
PMT PERFORATED METAL  
RF RUBBER FLOORING  
RWO RAINWATER OUTLET  
SC STEEL COLUMN  
TD TIMBER DOOR JOINERY  
TW TIMBER WINDOW JOINERY

LEGEND

EXISTING ELEMENTS TO BE RETAINED  
EXISTING ELEMENTS TO BE DEMOLISHED  
PROPOSED NEW WORKS  
ADMINISTRATION/STAFF  
STUDENT LEARNING  
STUDENT SERVICES  
EXTERNAL + CIRCULATION

ISSUE DATE REVISION

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The Pittwater House Schools  
70 South Creek Rd, Collaroy NSW 2097

NEESON MURCUTT + NEILLE

NEESON MURCUTT ARCHITECTS PTY LTD  
L1 9 ROSLYN ST POTTS POINT 2011 T: 8203 1870  
NOMINATED ARCHITECT: RACHEL NEESON No. 6692

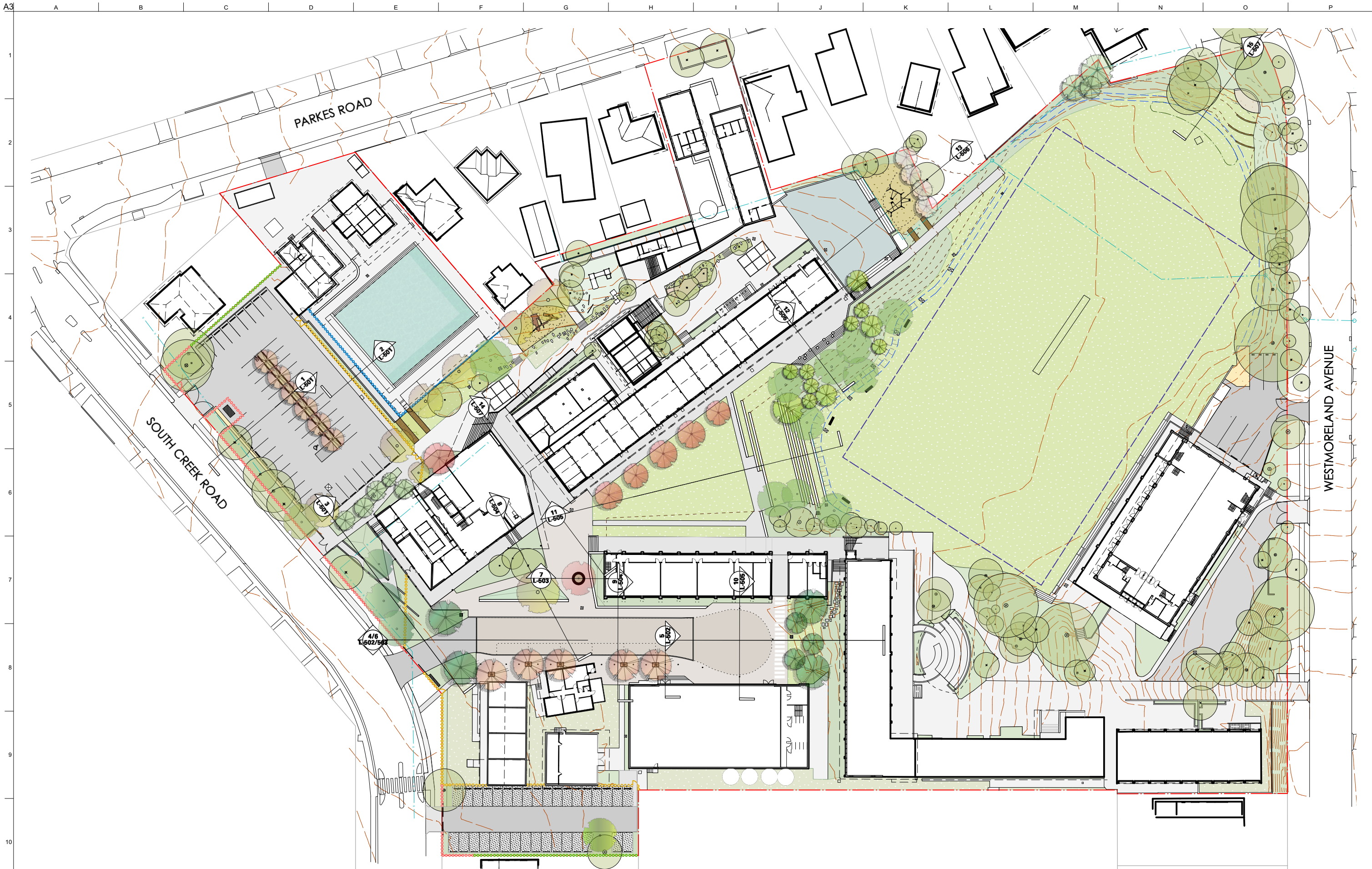
FOR The Pittwater House Schools

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1801		SOUTH + WEST WING UNIVERSAL CORE PLANS	DRAFT DA	1:200 @A1	23/10/19

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**jila**

CLIENT

Neeson Murcutt Architects PTY LTD

PROJECT TITLE

Pittwater House Schools - Stage 1

70 South Creek Road, Collaroy NSW 2097

DRAWING TITLE

Section Location Plan

Scale @ A3

1:800

Job No

190601

Drawing Status

Development Application

Drawing No

L-DA-500

Issue

A







Area Schedule - Demolished		
Related Zone Number	Room Name	Measured Area
D BLOCK, Administration / Staff		
	STAFF LOUNGE	85.05
		<b>85.05 m²</b>
D BLOCK, Student Learning		
	ICT	63.93
	TAS	151.00
		<b>214.93 m²</b>
D BLOCK, Student Services		
	WC	20.49
		<b>20.49 m²</b>
DEMOUNTABLES, Services		
	SCHOOL SHOP	75.23
	SHED	23.49
		<b>98.72 m²</b>
M BLOCK, Administration / Staff		
	ADMIN	31.47
	ASSISTANT JUNIOR HEADS	28.27
	JUNIOR HEAD	18.49
	KITCHENETTE	2.57
	PRINT ROOM	15.48
	RECEPTION	27.87
	REGISTRAR	15.22
		<b>139.37 m²</b>
M BLOCK, Student Learning		
	JUNIOR CLASSROOM	43.96
	JUNIOR CLASSROOM	44.08
	JUNIOR CLASSROOM	46.53
	JUNIOR CLASSROOM	47.38
	JUNIOR CLASSROOM	66.33
	JUNIOR CLASSROOM	76.24
		<b>324.52 m²</b>
SOUTH WING, Services		
	CIRCULATION	8.05
		<b>8.05 m²</b>
SOUTH WING, Student Learning		
	SENIOR CLASSROOM	30.71
		<b>30.71 m²</b>
		<b>921.84 m²</b>

Room Schedule - Proposed		
Building / Category	Room Name	Measured Area
M BLOCK, Administration / Staff		
	ASSISTANT JUNIOR HEADS	25.46
	JUNIOR HEAD	13.76
		<b>39.22 m²</b>
M BLOCK, Services		
	LOBBY	43.79
	STORE	3.40
	STORE	3.40
		<b>50.59 m²</b>
M BLOCK, Student Learning		
	BREAKOUT	62.59
	BREAKOUT	66.22
	BREAKOUT (STUDENT ENRICHMENT)	43.59
	JUNIOR CLASSROOM	57.99
	JUNIOR CLASSROOM	58.34
	JUNIOR CLASSROOM	58.39
	JUNIOR CLASSROOM	58.61
		<b>405.73 m²</b>
NEW BUILDING, Administration / Staff		
	ACCOUNTS	15.04
	ADMIN WORKROOM	87.94
	ASSISTANT	6.31
	BOARD ROOM	39.96
	BUSINESS MANAGER	11.94
	CIRCULATION	22.17
	DEPUTY	16.37
	DIR. TEACH	9.11
	FACULTY	190.26
	HR	9.30
	IT WORKSPACE	49.98
	LOBBY	17.27
	MARKETING	30.40
	MEET 1	10.23
	MEET 2	7.68
	MEET 3	9.19
	MEET 4	8.07
	PAYROLL	9.04
	PRINCIPAL	22.46
	REC.	12.36
	REGISTRAR	11.98
	STAFF ROOM	66.36
	TIME TABLING	5.94
		<b>669.36 m²</b>
NEW BUILDING, External Areas		
	BRIDGE	17.68
	DECK	7.40
	VERANDAH	328.54
		<b>353.62 m²</b>
NEW BUILDING, Services		
	CLEANER	3.92
	LOBBY	55.66
	STAFF TOILETS	10.63
	STORE	9.08
	TEA	1.41
	WC	1.26
	WC	1.95
	WC	5.18
	WC	5.54
	WC	5.67
		<b>100.30 m²</b>

Room Schedule - Proposed		
Building / Category	Room Name	Measured Area
NEW BUILDING, Student Learning		
	JUNIOR LIBRARY	222.11
	LIBRARY STAFF	18.91
	MAKER	18.89
	MEET 1	10.81
	MEET 2	10.53
	SENIOR LIBRARY	240.36
		<b>521.61 m²</b>
NEW BUILDING, Student Services		
	COUNSELLOR	10.46
	COUNSELLOR	10.46
	HEALTH CENTRE	27.44
	HEALTH WAITING	9.43
	PUBLIC WAITING	16.33
	STUDENT WAITING	14.66
		<b>88.78 m²</b>
		<b>2,229.21 m²</b>

- COMPLY WITH RELEVANT AUTHORITIES REQUIREMENTS
- COMPLY WITH THE BUILDING CODE OF AUSTRALIA
- COMPLY WITH ALL RELEVANT AUSTRALIAN STANDARDS
- DIMENSIONS IN MILLIMETRES
- USE FIGURES DIMENSIONS ONLY
- DO NOT SCALE
- IF DISCREPANCY EXISTS NOTIFY ARCHITECT
- COS - CONFIRM ON SITE
- IF IN DOUBT ASK

LEGEND

<b>BG</b>	BOX GUTTER	<b>SC</b>	STEEL COLUMN
<b>BK</b>	BRICK	<b>SK</b>	SINK
<b>BW</b>	BLOCKWORK	<b>ST</b>	STONE
<b>EX-FL</b>	EXISTING FLOORING	<b>TC</b>	TERRACOTTA TILE
<b>CONC</b>	CONCRETE	<b>TDK</b>	TIMBER DECK
<b>CPT</b>	CARPET	<b>TF</b>	TIMBER FLOOR
<b>CPT</b>	COOKTOP	<b>TLE</b>	CERAMIC TILE
<b>DP</b>	DOWNPIPE		
<b>FR</b>	FRIDGE		
<b>FW</b>	FLOOR WASTE		
<b>JU</b>	JOINERY UNIT		
<b>PV</b>	PHOTOVOLTAIC PANEL		
<b>RWO</b>	RAINWATER OUTLET		

LEGEND

	EXISTING ELEMENTS TO BE RETAINED
	EXISTING ELEMENTS TO BE DEMOLISHED

PROPOSED NEW WORKS INDICATED IN COLOUR AS PER COUNCIL REQUIREMENTS

	TIMBER STRUCTURE / TIMBER WINDOW + DOOR FRAMES
	PLASTERBOARD
	RENDERED MANSIONRY / CONCRETE
	METAL ROOFING + CLADDING / STEEL PLATE / ALUMINIUM + DOOR FRAMES
	GLAZING
	STONE TILING / PAVING
	CERAMIC TILE

CAD File: 1801\_PITT\_STAGE 01

ISSUE      DATE      REVISION

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FOR <b>Pittwater House School</b>					
NO	REV	TITLE	PHASE	SCALE	DATE
DA 07.1		AREA SCHEDULES	SKETCH	1:1 @A3	27/8/19
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