RICHARD CROOKES
CONSTRUCTIONS

MONTE SCIENTIA PROJECT
1228

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN CEMP

11 February 2021

REGISTER

DATE	DESCRIPTION	BY	APPROVED BY
14.01.21	Draft for review	KB	MR
05.02.21	For Submission	IS	MR
11.02.21	Amended 1.6 Material Handling and Traffic Logistics	KB	MR

CONTENTS

1	**INTRODUCTION**	**5**
1.1	PROJECT OVERVIEW	5
1.2	SITE LOCATION	5
1.3	HOURS OF WORK	5
1.4	24 HOUR CONTACT DETAILS OF SITE MANAGER	5
1.5	ON SITE FACILITIES	6
1.6	MATERIAL HANDLING	6
1.7	CEMP OBJECTIVES	7
1.8	REPORTS RELIED UPON IN PREPARING THIS CEMP	7
2	**ROLES AND RESPONSIBILITIES**	**8**
2.1	PROJECT ORGANISATIONAL STRUCTURE	8
2.2	PARTIES AND RESPONSIBILITIES	8
3	**IMPLEMENTATION OF CEMP**	**10**
3.1	SITE INDUCTIONS AND TRAINING	10
3.2	CEMP INDUCTION	10
3.3	TOOLBOX MEETINGS	10
3.4	PERSONAL PROTECTIVE EQUIPMENT	10
3.5	RESPONSIBILITY AND REPORTING	11
4	**LEGISLATION**	**12**
5	**OCCUPATIONAL HEALTH AND SAFETY**	**15**
5.1	RESPONSIBILITIES	15
5.2	HAZARDS	15
5.3	POTENTIAL CHEMICAL HAZARDS	16
5.4	PHYSICAL HAZARDS	16
5.5	UNDERGROUND SERVICES	17
5.6	ABOVE GROUND ELECTRICAL HAZARDS	17
5.7	MANUAL HANDLING	18
5.8	NOISE	18
6	**ENVIRONMENTAL MANAGEMENT**	**19**
6.1	POTENTIAL ENVIRONMENTAL ISSUES	19
6.2	GENERAL STRUCTURE OF ENVIRONMENTAL MANAGEMENT	19
7	**MANAGEMENT OF DUST & ODOUR: AIR QUALITY**	**21**
7.1	SUMMARY OF POTENTIAL IMPACTS	21
8	**MANAGEMENT OF COMMUNITY CONSULTATION AND COMPLAINTS HANDLING**	**23**
8.1	SUMMARY	23
8.2	WAYS TO CONSULT	23
8.3	LETTERBOX DROPS AND PUBLIC NOTICES	23
8.4	COMMUNICATION PROTOCOLS	24
8.5	IDENTIFICATION OF STAKEHOLDERS	24
8.6	COMPLAINTS HANDLING	25

9	**STORMWATER CONTROL & DISCHARGE: SURFACE WATER**	**26**
9.1	SUMMARY OF POTENTIAL IMPACTS	26
9.2	PROCEDURES	26
10	**MEASURES OF SEDIMENT CONTROL**	**28**
10.1	SUMMARY OF POTENTIAL IMPACTS	28
10.2	PROCEDURES	28
11	**ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT: WASTE MANAGEMENT**	**30**
11.1	SUMMARY OF POTENTIAL IMPACTS	30
11.2	PROCEDURES	31
12	**EXTERNAL LIGHTING**	**33**
13	**MONITORING REQUIREMENTS**	**34**
13.1	AUDITING AND RECORDS	34
14	**ENVIRONMENTAL EMERGENCY**	**35**
15	**SECURITY AND PUBLIC SAFETY**	**36**
15.1	RESTRICTION TO ACCESS	36
15.2	PEDESTRIAN AND TRAFFIC CONTROL	36
16	**REPORTING**	**37**
16.1	NON-COMPLIANCE	37
16.2	ENVIRONMENTAL INCIDENT	37
16.3	REPORTING AND CORRECTIVE ACTIONS	37

Appendices

APPENDIX A - SITE LOCATION & PROPOSED DEVELOPMENT PLAN

APPENDIX B - CONSTRUCTION TRAFFIC & PEDESTRIAN MANAGEMENT SUB-PLAN

APPENDIX C – CONSTRUCTION WASTE MANAGEMENT SUB-PLAN

APPENDIX D – UNEXPECTED FINDS PROTOCOL FOR CONTAMINATION

APPENDIX E – UNEXPECTED FINDS PROTOCOL FOR ABORIGINAL & NON-ABORIGINAL HERITAGE

APPENDIX F – CONSTRUCTION SOIL AND WATER MANAGEMENT SUB-PLAN

APPENDIX G – CONSTRUCTION NOISE AND VIBRATION MANAGEMENT SUB-PLAN

1 INTRODUCTION

1.1 PROJECT OVERVIEW

This CEMP has been prepared in accordance with the preliminary Construction Management Plan prepared by Cornerstone dated 5 April 2020 submitted at SSDA stage.

The Project : Monte Scientia Building for Monte Sant Angelo Mercy College of which RCC is the principal contractor,

Development Consent: SSDA Application Number: SSD 10393

Applicant: Monte Sant' Angelo Mercy College Limited

Consent Authority: Minister for Planning and Public Spaces

The proposed works comprise the following:

- Demolition of two existing sports courts and associated under croft staff carpark. The demolition works will include demolition of all structures between the main 'circular-drive' driveway entry from Miller Street, and the McQuoin Hall/Aquatic Centre at the corner of Miller and Berry Streets.
- Construction of a new four-storey sports and science building with a basement staff carpark, partially underground dual sports court facility, three levels of new teaching spaces (innovation / science labs) and a rooftop sports court.
- Landscaping works surrounding the new sports and science building.

1.2 SITE LOCATION

The project is located at 128 Miller Street, Access to site is off Miller Street , refer to appendix A

1.3 HOURS OF WORK

As per SSD 10393 conditions of consent D6, D7, D8 and D9 the construction hours will be as follows:

- Monday to Friday - 7am to 6pm
- Saturdays – 8am to 1pm
- Sundays and Public holidays – no works are to be carried out

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- Monday to Friday
    - 9am to 12pm
    - 2pm to 5pm
- Saturdays 9am to 12pm

1.4 24 HOUR CONTACT DETAILS OF SITE MANAGER

- Project Manager: Michael Ryan– Mobile: 0424 629 557
- Site Manager – Joe Bozic – Mobile 0407 854 799

1.5 ON SITE FACILITIES

- Amenities/Ablution
- Site office/First Aid/Medical Facilities

1.6 MATERIAL HANDLING & TRAFFIC LOGISTICS

The site is located within the heart of North Sydney CBD with access to numerous public transport options and high vehicular congestion. The addition of multiple other largescale construction projects currently, or imminently expected to be in operation will need to be carefully considered throughout works. We have formulated our materials handling and traffic management plan with these considerations in mind.

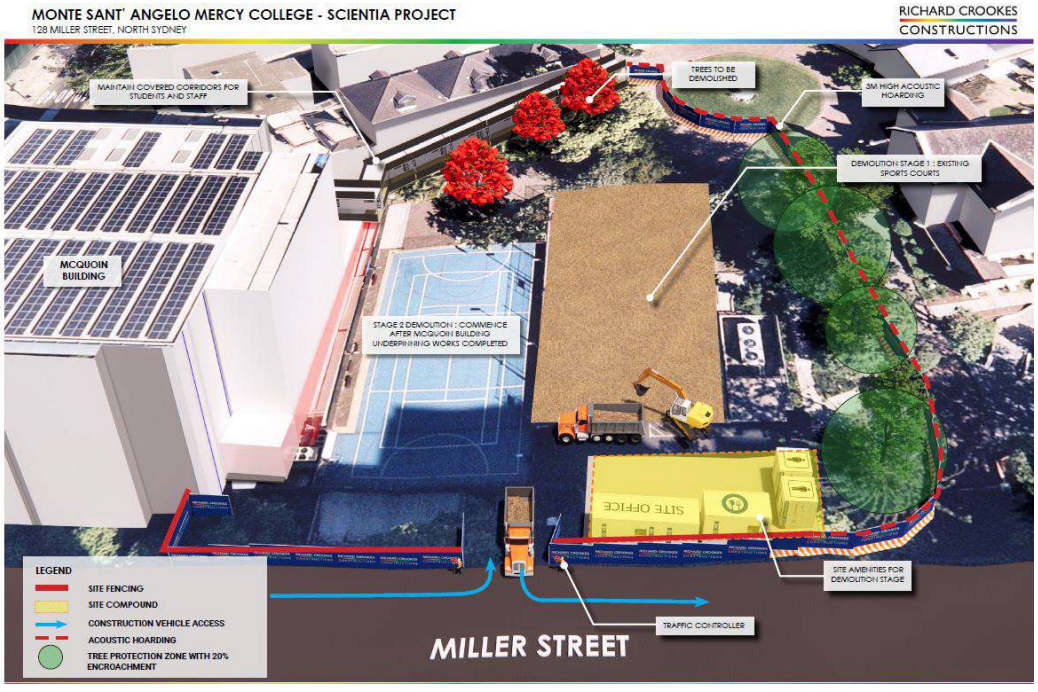
As part of our overall site establishment strategy, we will not be erecting any B-Class hoarding, we intend to utilise the 6.1m setback along Miller Street property boundary for all construction material logistics.

Our sub-contractors will be required to use public transport or to provide minibuses to transport workers to the site from their yard. There will not be any available parking for workforce onsite to prevent further congestion in the area.

During the demolition and excavation phase, vehicles will enter the site through the established driveway on Miller Street. This is the least disruptive option as it is adhering to established traffic flows.

At the conclusion of excavation phase, we will establish two new site entrance/ exit gates along Miller Street to allow for front in and front out flow of traffic as per SSDA conditions. The second phase of traffic flow allows for the establishment of a loading zone internally within the site to allow for deliveries and concrete pumping.

During the excavation and construction of the OSD tank, which will only begin after the main structure has been construction to Level 3, we can utilise the extra space provide by the ramp to conduct a 3-point turn for vehicles.



1.7 CEMP OBJECTIVES

This document is an operational CEMP which provides the framework necessary to implement the required management measures associated with the proposed excavation and construction works. Once implemented the objective of the management measures will be to ensure that the excavation of materials present at the site can be carried out without significant adverse impact on the environment or the health of the site workers and neighbouring residence. The management and monitoring aspects and Principal Contractor responsibilities covered in this CEMP include air quality, sediments, surface water, waste, site security, emergencies and the relevant sub-plans referenced within the appendices.

RCC notes that this CEMP will focus on mitigating and managing environmental and human health issues associated with the excavation works proposed at the site. The CEMP will provide task specific (i.e. operational hours, noise mitigation, traffic control, environmental management, erosion sediment control plan) measures for the proposed construction works.

The primary objective of the CEMP is to provide a management framework to mitigate potential environmental and human health risks associated with excavation and early construction works. The objectives can be summarised as follows:

- Prevent, reduce and effectively manage potential impacts to the environment resulting from excavation works, material handling and associated spoil disposal;
- Ensure that environmental management is undertaken in accordance with relevant legislative and policy requirements;
- To ensure the site is suitable for the proposed land use, in reference to contamination; and
- Promote environmental awareness amongst employees and contractors.

1.8 REPORTS RELIED UPON IN PREPARING THIS CEMP

The CEMP framework provided in this document has relied upon information provided in the following reports;

- Construction Traffic and Pedestrian Management Plan by
- Construction Waste Management Plan (RCC Construction Waste Management Plan)
- Unexpected Finds Protocol for contamination & associated communications procedure
- Unexpected Finds Protocol for Aboriginal and non-aboriginal heritage and associated communications procedure
- All reports included in the Appendices of this Management Plan

2 ROLES AND RESPONSIBILITIES

The following sections set out the organisational structure for the project:

2.1 PROJECT ORGANISATIONAL STRUCTURE

All personnel including the Consultants, Contractors, Subcontractors and all other personnel associated with undertaking excavation and construction works on the project ultimately report to the Principal Contractor.

The Principal Contractor will be responsible for implementing this CEMP. This will specifically involve monitoring the environmental performance of the works and ongoing compliance with legislative requirements, this CEMP, and all other associated environmental management documentation, development of a construction management plan (CMP), operational and post-construction monitoring and reporting.

2.2 PARTIES AND RESPONSIBILITIES

The parties involved with, and their responsibilities during, the environmental management of the works are provided in Table 1.

Table 1: Project Parties and Responsibilities

PARTY	RESPONSIBILITIES	REPORTS TO
THE PRINCIPAL CONTRACTOR **RICHARD CROOKES CONSTRUCTIONS**	• Ensure all works are implemented in accordance with the CEMP. • Promote awareness of appropriate environmental management and occupation health and safety (OHS) practices to the Project Manager. • Ensure the Project Manager is aware of the CEMP and site-specific issues. • Review risks and identify potential opportunities and issues with the project. • Monitor and inspect activities for compliance with relevant environmental requirements, including ensuring suitable management plans have been submitted and approved prior to undertaking works. • Ensure environmental incidents and non- compliances are reported promptly and investigated. • Undertake environmental audits on the project at a frequency deemed appropriate to the length of the project. • Periodically review the performance of the Principal Contractor Project Manager in meeting the objectives of the CEMP via regular audits. The audits will review the Principal Contractor Project Manager's activities to ensure that environmental hazards have the appropriate mitigation controls in place. Improvement requests and non-compliances will be monitored, and corrective action undertaken. • Maintain an environmental audit register to record & close out any actions raised.	The Client Project Manager,

PARTY	RESPONSIBILITIES	REPORTS TO
THE CLIENT PROJECT MANAGER	• The Client Project Manager is appointed by the Client • Primary contact overseeing the day to day operations at the Site. • Primary contact for all personnel in relation to site works and environmental management. • Review risks and identify potential opportunities and issues with the project. • Monitor and inspect activities for compliance with relevant environmental requirements, including ensuring suitable management plans have been submitted and approved prior to undertaking works. • Ensure environmental incidents and non- compliances are reported promptly and investigated.	The Client,
ENVIRONMENTAL SPECIALIST / ENGINEER **ENVIRONMENTAL STRATEGIES**	• Comply with this CEMP. • Provide advice where required to the Principal Contractor in relation to environmental issues associated with the works, if requested. • Responsible for implementing this CEMP and all required environmental controls. • Undertake onsite and offsite air monitoring. • Conduct environmental incident investigations, if requested by the Project Manager. • Demonstrate an understanding and management of the potential environmental impacts associated with the project. • Review risks and identify potential opportunities and issues with the project. • Ensure all Subcontractors under their control are appropriately informed of the relevant components of environmental management documentation. • Report all environmental incidents, hazards, non-compliances and near misses to the Principal Contractor Project Manager immediately. • Implement corrective action responses to environmental incidents and non-compliances in consultation with the Project Manager. • Provide a validation report at the end of the project for review of the Site Auditor.	The Principal Contractor
SUB-CONTRACTORS	• Implement and comply with relevant components of this CEMP. • Report all environmental incidents, hazards, non-compliances and near misses to the Principal Contractor immediately. • Implement corrective action responses to environmental incidents and non-compliances as required by the Principal Contractor.	The Principal Contractor

3 IMPLEMENTATION OF CEMP

3.1 SITE INDUCTIONS AND TRAINING

All personnel, including the Principal Contractor's staff and subcontractors, who will be working on the project or will require regular access to the sites will be required to undertake training and site inductions including environmental requirements as required by the Principal Contractor. All personnel should demonstrate an understanding of potential environmental issues and the measures that will be implemented to protect the environment and local community, as detailed in this document.

3.2 CEMP INDUCTION

The CEMP awareness induction will cover:

1. Outlining the objective and purpose of the works; and
2. Contents of the CEMP and their (the workers) responsibility.

All site workers will sign the induction paperwork acknowledging understanding of this CEMP discussed during inductions. All induction sessions will be recorded in the induction register.

3.3 TOOLBOX MEETINGS

The Principal Contractor will also conduct toolbox meetings with all personnel to review management procedures and identify / discuss site conditions and potential hazards. Site inductions and toolbox talks will highlight specific environmental requirements and activities being undertaken at the worksite.

A record of issues covered in toolbox meetings will be maintained for future audit.

3.4 PERSONAL PROTECTIVE EQUIPMENT

All site personnel will be provided with, utilise, and be appropriately trained in the requirements of personal protective equipment (PPE). PPE requirements will depend on the activity or situation, but may include the following:

- High visibility clothing;
- Protective clothing and footwear;
- Eye protection;
- Respirable (half-face) masks as required;
- Hard hat as required (i.e. in the vicinity of the working excavator or other overhead plant); and
- Sun protection as required (long sleeves, sunscreen, hat or hard hat fitted with wide brimmed sun protection).

Personnel will be trained in the requirements and use of PPE to an appropriate level according to responsibilities.

PPE requirements should be detailed in the Safe Work Method Statements (or similar) which will be provided to the Principal Contractor for review and endorsement. Additional PPE will be required to carry out some aspects of the construction process and the PPE outline above

should only be considered as the basic requirements. Additional PPE will be required if works are to be conducted in asbestos contaminated work environment.

3.5 RESPONSIBILITY AND REPORTING

The Principal Contractor is responsible for ensuring that all personnel under their jurisdiction have been provided with adequate training in the areas outlined in this document.

The principal contractor will complete weekly safety and environmental walks, with the critical information included in the monthly report.

The Principal Contractor will maintain records of all personnel who have undergone training in relation to the CEMP and general environmental responsibilities. Records of trained personnel will be maintained in a log to be kept on site. A record of issues covered in toolbox meetings will be maintained.

The Principal Contractor will ensure that anyone who appears to lack an understanding in the above areas undergoes adequate re-training.

4 LEGISLATION

The following is a summary of statutory requirements to be satisfied by RCC. Table 2 includes the required permits, licenses and consents under the relevant acts, regulation or policy.

Table 2: Summary of Acts, Regulations and Guidelines Applicable to Project

ACT/ REGULATION / PLANNING POLICY	KEY PROJECT REQUIREMENTS	JURISDICTION
PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 (POEO ACT) AND REGULATIONS	Undertake all activities so as to minimise harm to the environment (in particular pollution of air and water and noise emissions) and not cause an offence under the Act. Discharge to stormwater may require a license under the Act. Some transporters of waste are required to be licensed under the Act. Some waste disposal/processing facilities are required to be licensed under the Act.	State
PROTECTION OF THE ENVIRONMENT OPERATIONS (WASTE) REGULATION 2014	Requirements in relation to transportation, collection, storage or disposal of waste including asbestos waste.	State
PROTECTION OF THE ENVIRONMENT OPERATIONS (CLEAN AIR) REGULATION 2010	Requirements in relation to emission from vehicles and general obligations that the occupiers of non-residential premises do not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner.	State
PROTECTION OF THE ENVIRONMENT OPERATIONS (UNDERGROUND PETROLEUM STORAGE SYSTEMS) REGULATION 2014	Requirement for the removal / in-situ abandonment of Underground Storage Tanks.	State
ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999	Requirements in relation to protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places.	Commonwealth
WORK HEALTH AND SAFETY ACT 2011	Requirements in relation to ensure work safety that are enforceable by law.	Commonwealth
ROADS AND RAIL TRANSPORT (DANGEROUS GOODS) ACT 1997	Transport of waste classified as Dangerous Goods in accordance with Regulations	State
NSW EPA ASBESTOS AND WASTE TYRES GUIDELINES (2015).	Outlines the legal requirements that consignors, transporters, and occupiers of premises must meet in addition to their obligations under the Waste Regulation.	State
THE WASTE AVOIDANCE AND RESOURCE RECOVERY ACT 2001	Minimise the amount of waste for disposal, where possible recycle	State
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979	Compliance with Development Consent Conditions issued by Consent Authority (Cumberland Council) to manage effects on the environment.	State
SYDNEY WATER ACT (NSW) 1994	Written agreement of Sydney Water is to be obtained if discharge of certain substances to sewer is required.	State

ACT/ REGULATION / PLANNING POLICY	KEY PROJECT REQUIREMENTS	JURISDICTION
	Approval required for any works that will affect Sydney Water's sewer, water mains, stormwater and or easements.	
NSW ASMAC ACID SULFATE SOIL MANUAL (AUGUST 1998)	Outline a stepwise process for site assessment and management of proposals in areas containing acid sulfate soils	State
NSW EPA (2014) WASTE CLASSIFICATION GUIDELINES	Requirements in relation to permits required-soil/water that may need to be transported to landfill and appropriate waste classification will be required.	State
NSW HERITAGE ACT 1977.	Requirements in relation to Protection of heritage listed items	State
ENVIRONMENTALLY HAZARDOUS CHEMICALS ACT 1985	Requirements in relation to a legal framework capable of regulating priority/high-risk chemicals throughout their entire life cycles	State

All work shall be conducted, as appropriate, in accordance with (but not limited to) the following environmental codes of practice:

- Australian Standard (AS) 2436-1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- AS 2601 - 2001: Demolition of Structures;
- AS 2436- 1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- AS 2986.1-2003 Workplace air quality - Sampling and analysis of volatile organic compounds by solvent desorption;
- AS 2986.2-2003 Workplace air quality – Part 2: Diffusive sampling method;
- AS NZS ISO 19011-2003 Guidelines for quality and or environmental management systems auditing;
- AS/NZS 3012-2003: Electrical Installations- Construction and Demolition sites;
- BS6472 -1992: Evaluation and Human Exposure to Vibration in Buildings (1 to 80Hz);
- BS7385 Part 2-1993: Evaluation and measurement of Vibration in Buildings Part 2;
- DEC (now EPA), NSW (2005): Approved Methods for the Modelling and Assessment of Air Pollutants in NSW;
- DEC (now EPA), NSW (2007): Approved methods for the Sampling and Analysis of Air Pollutants in NSW;
- Department of Conservation and Land Management, CALM (1992): Urban Erosion Control and Sediment Control;
- National Environmental Protection Measure (NEPM) on Ambient Air Quality;
- National Environment Protection Council (1998): National Environment Protection NSW DEC (2007): Noise Guide for Local Government;
- NEPM (1999) Assessment of Site Contamination, as amended 2013;
- National Occupational Health and Safety Commission, 2nd Edition [NOHSC: 2002 (2005)]: Code of Practice for the Safe Removal of Asbestos;
- NSW Department of Housing (1998): Managing Urban Stormwater- Soils and Construction;

- SafeWork, NSW (1993). Code of Practice: Safe Work on Roofs, Part 1, Commercial and Industrial Buildings;
- SafeWork, NSW (1997). Code of Practice: Amenities for Construction Work;
- SafeWork, NSW (1997). Code of Practice: Cutting and Drilling of Concrete and Other Masonry Products;
- SafeWork, NSW (1992). Code of Practice: Electrical Practices for Construction Work;
- SafeWork NSW (July 2014): Code of Practice: Excavation Work;
- WorkCover NSW (March 2014): Managing asbestos in or on soil; and
- Other NSW EPA endorsed relevant guidelines.

In addition to any regulatory compliance required by the above mentioned Acts and Guidelines, the contractor will be responsible to carry out the site works with all due care to ensure that the following conditions are complied with:

- Practical minimisation of all wind-borne dust leaving the confines of the site;
- No water containing any suspended matter or contaminants is to be allowed to leave the confines of the site in such a manner that it could pollute any nearby waterway;
- Material originating from onsite is not to be tracked outside the site boundary and any material present on road surfaces must be removed immediately;
- Noise levels at the site boundary are to comply with the legislative requirements;
- Odour levels at the site boundary are to comply with the requirements as per this CEMP.

The CEMP will be explained to all contractors and a copy will be maintained on site during excavation and future construction works.

5 OCCUPATIONAL HEALTH AND SAFETY

The following Health and Safety plan contains procedures and requirements that are to be implemented as a minimum during the site works.

The objectives of the health and safety plan are:

- To apply standard procedures that reduces risks resulting from the above works;
- To ensure all employees are provided with appropriate training, equipment, and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the public. These objectives will be achieved by:
- Assignment of responsibilities.
- An evaluation of hazards.
- Establishment of personal protection standards and mandatory safety practices and procedures; and
- Provision for contingencies that may arise while operations are being conducted at the site.

This health and safety plan does not provide safety information specific to construction and other demolition or excavation activities carried out by contractors, such as the safe operation, maintenance and inspection of plant, etc. Contractors will be required to prepare their own Safe Work Method Statements for their work activities. All parties working on the site shall comply with all applicable Work Health and Safety legislation, regulations, codes and guidelines.

5.1 RESPONSIBILITIES

Principal Contractor

RCC is responsible for ensuring that the work is carried out in accordance with the health and safety plan. This will include:

- Ensuring a copy of the health and safety plan and CEMP is available at the site during the excavation/construction activities;
- Confirming individuals are competent in performing assigned tasks;
- Liaison with the contractor representatives, as appropriate, regarding safety matters; and
- Investigation and reporting of incidents and accidents.

Every individual worker is responsible for conducting their allocated tasks in a safe manner and in accordance with their training and experience. They must give due consideration to the safety of all others in their proximity and cooperate in matters of health and safety. All workers must leave their work areas in such a condition that the location will not be hazardous to others at any time.

5.2 HAZARDS

The known or potential hazards associated with the work activities described are listed below:

- Potential chemical hazards;
- Physical hazards, including;

- Work in or near excavations;
- Operating machinery;
- Heat stress and UV exposure;
- Underground or overhead services;
- Manual handling; and
- Noise.

In the event of the discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, or of any new hazard that could potentially cause serious harm to personnel or the environment, work will be suspended until the Project Manager has been notified and appropriate instructions have been provided to field personnel.

5.3 POTENTIAL CHEMICAL HAZARDS

The main potential chemical hazards associated with the excavation/construction works is petroleum hydrocarbons, PAHs, heavy metals, asbestos and soil gasses.

When working with identified contaminated materials in general, care needs to be taken to ensure that the contamination is not introduced to the worker via ingestion, inhalation or dermal contact. The personal protective equipment (PPE) and decontamination requirements outlined in Section 3.4 shall be followed to control the risks posed by chemical hazards at the site.

Potential hazards associated with working with asbestos or asbestos containing material (ACM) are addressed in detail in the Asbestos Management Plan (AMP) and should be read in conjunction to this document (refer to Appendix B).

5.4 PHYSICAL HAZARDS

Operating Machinery

Heavy plant and equipment operating in the vicinity of field personnel presents a risk of physical injury. Personnel should always be cognisant of their position in relation to operating machinery .

Never walk behind or to the side of any operating equipment without the operator's knowledge. Do not assume that the operator knows your position. Personnel should stay at least 2 m from the operational area of heavy equipment and should not stand directly below any load or piece of equipment (eg. excavators).

Working in or Near Excavations

All excavations shall be shored, sloped or otherwise constructed, so as to comply with SafeWork Authority safety regulation to minimise the potential for collapse.

Geotechnical advice, given to the slopes and treatment of batters, should be adhered to at all times.

Cuts and Abrasions

The manual work associated with the site works gives rise to the risk of cuts and abrasions to personnel working in the area. As well as the direct consequences of any cut or abrasion, such injuries can lead to the possibility of exposure to contaminants through the wound as well as diseases such as tetanus. To minimise the risk of direct or indirect injury, personnel will wear the personal protective equipment described.

Heat Stress and UV Exposure

Site personnel may experience heat stress due to a combination of elevated ambient temperatures and the concurrent use of personal protection equipment; this depends in part on the type of work and the time of year.

There are four main types of heat stress related problems:

- Heat Rash - caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreased ability to tolerate heat, as well as being a nuisance.
- Heat Cramps - caused by profuse perspiration with inadequate fluid intake and chemical replacement. Signs: muscle spasms and pain in the extremities and abdomen.
- Heat Exhaustion – is caused by increased stress on various organs as they meet the increasing demand to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness, and lassitude
- Heat Stroke - result of overworked cooling system. Heat Stroke is the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration, nausea; dizziness and confusion; strong, rapid pulse and coma. Medical help must be obtained immediately.

In addition to the above, overexposure to UV radiation in sunlight can result in sunburn to exposed skin. The use of a high protection sunscreen (SPF15 or greater) on all exposed skin is recommended. Hats (including hard hats in specified areas) will also provide additional sun protection during the peak (i.e. 10:00 am to 3:00 PM) sun period. Sunglasses may be worn (where appropriate) to protect eyes from effects of UV exposure.

5.5 UNDERGROUND SERVICES

There is the potential for underground services (electricity, natural gas lines, water, telephone, sewer, and stormwater) to be present beneath the work area. The contractor shall ensure that appropriate procedures will be taken to minimise the risk associated with excavation near services. This should include but not be limited to dial before you dig plan review, service provider notification and work clearance, service location by an approved contractor, manual excavation of test pits, adherence to safe excavation distances (for overhead and below ground services), spotting during excavation, assessment of structural considerations etc.

5.6 ABOVE GROUND ELECTRICAL HAZARDS

All electrical plant and equipment must comply with the requirements of Australian Standard AS 3000. Hand held portable tools shall comply with AS/NZS 3160 "hand-held portable electric tools" and shall be double insulated. A Residual Current Device (RCD) shall protect plug-in portable equipment, which is connected to a supply above Extra Low Voltage - 12-24 Volts (including equipment supplied from a generator or welding set). RCD protection shall be provided during the maintenance of portable electrical equipment. RCD protection shall be provided at all times, while the equipment is connected to a power supply above Extra Low Voltage, irrespective of whether power is switched ON or OFF. RCD's shall comply with AS 3190 and shall be type II units, rated to trip at or below 30 milliamps within 40 milliseconds.

No excavator may work within 2 m of overhead distribution power lines.

5.7 MANUAL HANDLING

When lifting or handling heavy objects, use correct lifting techniques, bending the knees not the back. If the item to be lifted is too heavy or awkward for one person to lift, seek assistance from other employees or use mechanical help.

5.8 NOISE

Long-term exposure to high levels of noise is unlikely. However, operating machinery may cause significant noise exposures for short periods. Earplugs, earmuffs or a combination of both shall be worn in any situation where noise levels make normal conversation difficult.

6 ENVIRONMENTAL MANAGEMENT

The remaining sections of this document set out the environmental management activities and management measures, which will be implemented during the works. The Principal Contractor will ensure that personnel responsible for undertaking the works are aware of their roles and responsibilities detailed in this CEMP.

6.1 POTENTIAL ENVIRONMENTAL ISSUES

The potential environmental issues associated with the proposed construction works include:

- Air emissions from contaminated soils and groundwater;
- Impact of noise and air emissions from plant, equipment and vehicles used in the project and associated transport of infrastructure;
- Potential impacts to terrestrial and aquatic ecology within close proximity to the work area and the surrounding areas;
- Disturbance to, and release of potentially contaminated soil and groundwater to the local environment; and
- Disruption to amenity of any residents and other land users in the vicinity of the site.

6.2 GENERAL STRUCTURE OF ENVIRONMENTAL MANAGEMENT

Individual management measures have been prepared to address the issues listed in Environmental Elements 1 to 9. The numbering order should not be considered as a ranking of priority of each element as each element will have some over laps in procedures and monitoring requirements. Each plan is comprised of a number of elements, each with an overall associated management policy, mechanisms of policy implementation, proposed monitoring programs and potential corrective actions as described in Table 3.

Table 3: Structure of CEMPs

EMP ELEMENT	DESCRIPTION OF CONTENT
ELEMENT	The environmental aspect of construction or operation requiring management consideration.
POTENTIAL IMPACTS	The potential impacts in relation to the environment.
MANAGEMENT ACTIONS	The procedures to be undertaken to avoid or minimise potential impacts
PERFORMANCE OBJECTIVES	The target or strategy to be achieved through the specific management actions.
PERFORMANCE INDICATOR	The criteria against which the implementation of the actions and the level of achievement of the performance objectives will be measured, as well as the success of the implementation of the policy.
MONITORING	The intended monitoring program and the process of measuring actual performance.
RESPONSIBILITY	The entity assigned responsibility for carrying out each action.

EMP ELEMENT	DESCRIPTION OF CONTENT
REPORTING	The process of documenting actual performance, or how well the policy has been achieved, including the format, timing and responsibility for reporting and auditing of the monitoring results.
CORRECTIVE ACTION	The action to be implemented and by whom in the case where a performance requirement is not met.

7 MANAGEMENT OF DUST & ODOUR: AIR QUALITY

7.1 SUMMARY OF POTENTIAL IMPACTS

Potential impacts to air quality resulting from the works include emissions from exposed soils, asbestos dust, groundwater, plant and equipment and dust generated during earthworks and land clearance and demolition work. Air monitoring has been implemented around site to ensure the air quality is not impacted upon.

Potential odour / vapour impacts may also occur as a result of the release of odours from impacted soils / groundwater / gases and exposure from unexpected finds, hydrocarbon hotspots and soil gas pathways within any uncontrolled fill.

Ambient Air Levels will likely vary as earth works proceed. Earth works will also be conducted up to the site boundaries in some areas and odour / soil gas will be subject to changes in wind direction and weather conditions. The application and effectiveness of odour suppressant mitigation will need to be well managed under the discretion of the Principal Contractor and the environmental consultant.

Procedures

A summary of the minimum plan requirements is provided in Table 4.

Table 4: Summary of Air Quality Management Procedures

ELEMENT	AIR QUALITY
PERFORMANCE OBJECTIVES	The objective of this management measure is not to generate any odours or gasses and to adopt the necessary management strategy and PPE if presented with the occurrence to minimise the impacts of odours and/or vapours if encountered. Avoid or minimise the potential for odour and/or vapour emissions during the handling of exposed soils. Maintain plant and equipment such that exhaust emissions are minimised. Avoid or minimise disruption to amenity of residents and other land users in the vicinity of site works.
MANAGEMENT ACTIONS	Use of surfactant spray (onsite in close proximity of the earth works and at the site boundary/fences) is required for odour suppressant during works (this is up to the discretion of the Project Manager and the environmental consultant). Heavy equipment and vehicles will be appropriately maintained to minimise exhaust emissions. Appropriate methods of dust suppression will be implemented, such as ensuring earthworks materials remain moist to ensure dust is minimised during works. Evaluate weather conditions prior to works commencing and during any change in wind direction. Cease works if dust or odour generation is excessive. Covering of any stockpiles that are to remain for greater than two days (Waste reclassification or ENM stockpiles, ACM demolition stockpiles), or if weather forecasts predict strong winds; with plastic or Hessian material. All dust/odour control measures will be kept in good operating condition and be functional at all times, with regular maintenance. All loads are to be covered and appropriately fitted with tarpaulins to contain dust and/or odour during transport.

ELEMENT	AIR QUALITY
	A complaints register will be established and maintained to receive and address complaints from the community regarding the detection of nuisance odour during the works. Residents in the vicinity of the proposed works will be informed of potential dust/odour impacts prior to the commencement of works.
PERFORMANCE INDICATOR	No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to dust quality issues. Vapour emissions (Chlorinated VOCs) are likely to occur however the number of complaints should be kept to a minimum. All complaints will be responded to within 2 business days No onsite observation of dust generation during excavation works by Project team. No visual evidence of exhaust smoke during idle of equipment. No visual evidence of tracked material on public roads. A reduction in the number of complaints received in relation to air quality each month.
MONITORING	Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering. If unexpected fines protocol detects contaminants a review of air born testing is to be undertaken.
RESPONSIBILITY	The Principal Contractor is responsible for ensuring that if a monitoring program is required to be implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
REPORTING	Maintenance of records on site of visual, PID and Asbestos monitoring undertaken if required.
CORRECTIVE ACTION (AS REQUIRED)	If required replace or repair emission control devices. Provide equipment to enable wetting of exposed soils if required. Should excessive dust be generated during works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented. The use of PPE with appropriate filters, inside the works zone will be mandatory, in the event that PID readings exceed the limits set by the environmental consultant for the Site/area. The level set by the environmental consultant is exceeded the following action shall be undertaken: • Backfill any excavation or cover with plastic sheeting; • Temporarily cease works until levels drop; and • Increase the use of suppressant near the excavation. In the event that boundary monitoring exceeds the daily works shall be stopped immediately. The earthworks shall be quickly backfilled and the situation reassessed if odour / gasses are identified and deemed excessive by the environmental consultant, the application of odour suppressants should be used / increased and then works can recommence once suitably qualified environmental consultant has assessed ambient air quality to be satisfactory.

8 MANAGEMENT OF COMMUNITY CONSULTATION AND COMPLAINTS HANDLING

8.1 SUMMARY

Community consultation can be involving, meaningful, useful and effective if the following principles are used as a starting point for making consultation work:

- **Making it timely**: participation should not be so late in the process of an issue that it is tokenistic or merely confirms decisions already made. Give people enough time to express their views.
- **Making it inclusive**: Participation should be selected in a way that is not open to manipulation and should include a cross section of the participation.
- **Making it community focused**: Ask participants not what they personally want but what is appropriate in their role as a citizen.
- **Making it interactive**: avoid reducing questions to a simplistic response. Allow consideration of the big picture so people can readily become engaged.
- **Making it effective**: Although decision making can strive for consensus, complete agreement may not be the outcome. Be clear on how the decisions will be made so participants understand the impact of their involvement. Allow enough time for participants to become familiar with the project issues.
- **Making it Matter**: it is important that a strong likelihood that any recommendations that emerge from the consultative process will be accepted. If they are not, it is important that a public explanation is provided.

8.2 WAYS TO CONSULT

Different community stakeholder groups need different consultation methods at different stages of the project. Some of the processes that may be used are listed below.

CONSULTATION METHOD	INFORM	CONSULT	INVOLVE	COLLABORATE
Tools	Fact Sheet / flyers Website Project Open days Briefings 24 hrs. contact points Media Direct personal visits Project inductions	Public submissions Focus groups Public meetings Surveys	Community liaison groups Workshops Submissions Community projects / sponsorship Local suppliers preference policy	Advisory groups Decision making Consensus building

8.3 LETTERBOX DROPS AND PUBLIC NOTICES

Letter box drops or public notices will include at least the following:

- Why the works are required;
- When they are likely to occur;

- What mitigation measures are in place to minimise any community or environmental impacts;
- Who will be doing the work and a contact phone number for further information; and
- Emergency Contact number / community complaints line.

8.4 COMMUNICATION PROTOCOLS

The protocols for establishing and continuing community consultation for this project include:

- Communicating clearly;
- Ensuring information is structured around the same messages i.e. Consistency;
- Ensuring project staff are clear about main messages, so stakeholders receive consistent messages;
- Providing information promptly;
- Establishing timelines and lines of communication: for this project noting that a 2 day response time to deal with community concerns has been determined;
- Making the information accessible to all interested parties; and
- Being open to changes that may result from listening and incorporating innovations or concerns from the community into the project activities and methodologies.

8.5 IDENTIFICATION OF STAKEHOLDERS

Key stakeholders are generally identified as people who are adversely or positively impacted by our operations, those who have an interest in / influence on what we do.

Our project sites are required to identify their key stakeholders and consider their expectations and concerns during design (where achievable) and operational activities.

These projects key stakeholders are many and varied and may include:

- Client and Client PM;
- Facility end users and invested stakeholders (i.e. donors, staff)
- Local community and organisations which represent local and indigenous communities
- Local Aboriginal Land Council and Aboriginal and Torres Strait Islander communities near project site;
- Adjacent or surrounding neighbours (property occupiers or owners) and local road users;
- Local community members and organisations which have an interest in the project;
- Local council, authorities and suppliers;
- Governments – local & state;
- The media;
- Industry associations and unions
- RCC project personnel as well as broader design and delivery team including consultants, subcontractors, and suppliers
- Within these groups, there are stakeholders that may be interested in specific issues or affected by a range of issues.

A balanced community engagement involves both a commitment from RCC and an expectation from the community, as summarised below.

	INFORM	CONSULT	INVOLVE	COLLABORATE
COMMUNITY EXPECTATION	To get balanced and objective information about aspects of the project that impact on us	To be asked our opinions and allow us to provide feedback to the company on the matters that concern us	To be involved in the decision making process and the exploration of alternatives regarding those issues that are of concern to us	To create a partnership with us whereby we have faith that our concerns and ideas are integrated into the decision making process
RCC OBLIGATION	We will keep the community well informed	We will listen and acknowledge community concerns and provide evidence that concerns are considered in decision making	We will work with the community to make sure concerns and issues are reflected in any alternatives developed. Provide feedback to the community on how their inputs has influenced outcomes	We will look to the community for advice and innovation in solving issues and concerns and incorporate their advice into the decision making process to the maximum extent possible.

8.6 COMPLAINTS HANDLING

Should any complaints occur immediate measures shall be undertaken to investigate the complaint, the cause of the issue and identify the required changes to work practices.

The effectiveness of any changes shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the issues are not repeated.

If a complaint is received, the complaint should be recorded. The complaint form should list:

- The name and address of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and its particulars (including time & date);
- The name of the individual who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation

9 STORMWATER CONTROL & DISCHARGE: SURFACE WATER

Works must comply with requirements for storm water management in accordance with Managing Urban Storm water – Soils and Construction (Landcom, 2004) to minimise direct or indirect un-authorised release of surface water during site works to minimise impacts to surface water quality of surrounding environs. A written agreement from WSC is to be obtained if discharge of certain substances to sewer is required.

In the event groundwater is intercepted during excavation works, a temporary water collection pit shall be excavated in the bottom of the excavation pit or graded surface. Water samples should be collected and tested for chemical of concern prior to discharge/disposal. The principal contractor should assess if the volume of expected groundwater requires relevant authority approval. Excavation pump out water (if any) shall be pumped from the excavation by a licensed contractor and disposed of off-site as "liquid waste" in accordance with NSW EPA (2014). The Principal Contractor will need to obtain the relevant approvals (from discharge authorities like WSC etc.) should be obtained prior to the commencement of dewatering.

9.1 SUMMARY OF POTENTIAL IMPACTS

The following potential impacts from surface water may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Increased turbidity and sediment concentrations due to accidental release;
- Increased sediment load on storm water drains and infrastructure;
- Ruts and gullies in soil surfaces;
- Unsuitable conditions for construction works;
- Safety and Health related issues; and
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

9.2 PROCEDURES

A summary of the minimum plan requirements is provided in Table 7.

Table 7: Summary of Water Quality Management Procedures

ELEMENT	WATER QUALITY
PERFORMANCE OBJECTIVES	Avoid or minimise the disturbance to, and release of potentially contaminated soil or sediment laden water to the surrounding environs. Prevent increased water flows causing erosion damage to drainage infrastructure and water ways. Prevent safety related incidents associated with wet or slippery work conditions.
MANAGEMENT ACTIONS	Assessment of weather during excavation operations and consideration of temporarily halting works until more favourable conditions are encountered.

ELEMENT	WATER QUALITY
	Install sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with Managing Urban Storm water Soils and Construction (Landcom, 2004) prior to the commencement of works. This would include strategic placement of such structures down- gradient of temporary stockpiles and slopes to minimise sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels. Control of drainage on the site by interception and redirection of clean storm water in a controlled manner. Collection of storm water on-site in trenches and sumps for appropriate management. Provide inlet protection to be provided for any potentially impacted locations. Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level. Provision of a Spill cleanup kit on all sites where bulk fuel is stored or is being transferred. Maintain a hardstand or lined and bunded area for the refueling and storage of equipment. Cease works if excessive surface water makes conditions unsuitable for construction works. Cease works if excessive surface water makes creates safety concerns.
PERFORMANCE INDICATOR	The prevention of increased storm water runoff is the best approach. Site contractors will be required to observe any increases in sediment loads and volumes in storm water drains when working close to surface drains and report any discharges beyond the site boundaries. Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level. Zero records of near miss or injury in relation to wet conditions
MONITORING	Regular observations will be made by the Site Contractors and the Project Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted. Monitoring requirements from a pump-out-permit or other required license shall be adhered to at all times.
RESPONSIBILITY	The Project Manager is responsible for ensuring that each of the monitoring programs is implemented by appropriately trained/qualified staff. These programs may be sub-contracted out to a specialist sub- consultant as required.
REPORTING	Records of all corrective actions and known sediment releases will be kept. Records of Near Miss and Injuries will be kept. The Project Manager will immediately report to the Contract Administrator any incidents of water discharging off site.

10 MEASURES OF SEDIMENT CONTROL

10.1 SUMMARY OF POTENTIAL IMPACTS

Potential impacts from sediments resulting from the works include dust emissions (Refer to Element 1: Air Quality) and storm water (Refer to Element 3: Surface Water) generated during earthworks/land clearance and construction.

The following potential impacts from sediments may occur as part of the works program:

- Complaints from residents;
- Breaches in Regulatory requirements;
- Increased turbidity and sediment concentrations due to accidental release;
- Increased sediment load on storm water drains and infrastructure;
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes but may have longer term impacts to local ecological communities.

10.2 PROCEDURES

A summary of the minimum plan requirements is provide in Table 6.

Table 6: Summary of Sediment Management Procedures

ELEMENT	SEDIMENTS
PERFORMANCE OBJECTIVES	The objective will be to avoid an impact on water quality in surface water and drains which eventually discharge offsite by implementing prevention measures to control any sediment that is generated. Avoid or minimise soil migration and loss to surface waters and drains. Avoid or minimise pollution of creeks and waterways. Avoid or minimise increased sediment load on storm water drains and infrastructure.
MANAGEMENT ACTIONS	Prior to the start of the works a stormwater and sediment control plan should be prepared by the Principal Contractor. This Plan should be in accordance with Councils regulations. Site contractors will be required to observe any increases in sediment load in storm water drains when excavations are close to surface drains or waterways. Sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with the Stormwater and Sediment Control Plan prior to the commencement of works. Evaluate weather conditions prior to works commencing and during any change in wind direction. Cease works if dust generation is excessive (by visual assessment). Covering of any stockpiles that are to remain for greater than two days, or if weather forecasts predict strong winds; with plastic or Hessian material. All sediment control measures will be kept in good operating condition and functional at all times, with regular maintenance.

ELEMENT	SEDIMENTS
	Strategic placement of such structures down-gradient of stockpiles and slopes to minimise sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels. If a significant rain event occurs, fieldwork will cease. There will be sediment control measures available for placement down gradient of the work area; and Works will also be conducted in a manner to minimise the potential for sediment and soil migration, whereby excavated material will be hauled offsite as soon as practicable and/or reinstated and compacted.
PERFORMANCE INDICATOR	The prevention of sediment runoff is the best approach. Site contractors will be required to observe any increases in sediment load in storm water drains when excavating close to surface drains and site boundaries. No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to sediment issues. No onsite observation of dust generation during excavation works by Project team. No visual evidence of tracked material on public roads.
MONITORING	Regular observations will be made by the Site Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted. Records of all corrective actions and known sediment releases will be kept. Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.
RESPONSIBILITY	The Project Manager is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff.
REPORTING	Maintenance of records on site of visual monitoring undertaken
CORRECTIVE ACTION (AS REQUIRED)	Clean-up of sediment. Installation of sediment and erosion controls. Additional storm water control measures. Altered excavation works. Cease works if a major storm event is likely to occur. Replace or repair sediment and erosion control devices. Should excessive dust be generated excavation works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented.

11 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT: WASTE MANAGEMENT

Excess soils requiring offsite disposal will require additional assessment and should be stockpiled onsite prior to sampling and any additional assessment by a suitably qualified environmental consultant.

All excavated material removed from site will need to have appropriate Waste Tracking Certificates and no material is permitted to leave site prior to receiving a waste classification letter. Each truckload should be filled before leaving the site. A transportation form shall accompany each truckload and should be handed back to the Environmental Specialist upon return to the site. The waste docket should be attached to this transportation form.

Storm water and/or groundwater collected on-site in trenches and sumps will be subject to waste management if offsite disposal is to take place. Disposal via the storm water system may be undertaken subject to relevant authorities discharge license conditions.

Should excavations require dewatering, water samples will be collected by the Environmental Specialist and analysed prior to pump-out and offsite disposal. Waste liquid disposal dockets should be maintained onsite for inspection.

If during any site earthworks or excavation, asbestos, evidence of gross contamination or unknown type of material not previously detected is observed (Unexpected Finds), site works are to cease until the Project Manager has been notified and appropriate instructions have been provided to field personnel. Further works in such a location should be conducted under the supervision of a suitably qualified environmental consultant after a formal notification to the Site Auditor. All additional work would be documented and detailed in a validation report prepared by the Environmental Specialist and reviewed by the Site Auditor.

Other waste, excluding soils and groundwater, generated during the redevelopment works may include:

1. Domestic waste generated by site workers;
2. Asbestos contaminated waste to follow recommendations of UFP;
3. Concrete Slab;
4. Liquid waste; and
5. Inert building materials

Asbestos waste and decontamination disposal waste should be conducted as per consultant's advice and site auditors requirements.

Each outbound truck should be logged as clean prior to dispatch along with information pertaining to the amounts of loads and number of trucks leaving the site in addition to copies of all waste classifications certificates, waste tracking certificates, weigh bridge dockets, and any council approvals should be maintained onsite for inspection.

11.1 SUMMARY OF POTENTIAL IMPACTS

The following potential impacts from waste management may occur as part of the works program:

- Complaints from local residents;
- Breaches in Legislative/Regulatory requirements; and

- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

11.2 PROCEDURES

A summary of the minimum plan requirements is provided in Table 8.

Table 8: Summary of Waste Management and Minimisation Procedures

ELEMENT	WASTE MANAGEMENT AND MINIMISATION QUALITY
PERFORMANCE OBJECTIVES	The objective will be to minimise and control any wastes and waste categories that are generated, and ensure that they will be appropriately disposed of. Avoid or minimise environmental impacts related to waste management and handling of potentially contaminated soils. Avoid or minimise impacts due to unexpected finds. Avoid or minimise health risks associated with potentially contaminated soil exposure and dust generation.
MANAGEMENT ACTIONS	Provision of a Spill cleanup kit on all sites where bulk fuel is stored or is being transferred. Maintain a hardstand or lined and bunded area for the refueling and storage of equipment. Visual assessment of excavated material by the Environmental Specialist. The Environmental Specialist shall direct the Excavator Operator if the soil has to re-assessed onsite or disposed off-based on the in-situ waste classification. Trucks to be used for transport of soil are to be fitted with cover tarpaulins to contain the load. Each truck prior to exiting site, shall be inspected prior to dispatch and either logged out as clean (wheels and chassis), or hosed down within a wheel wash down bay. Provide waste receptacles for all waste types and ensure that personnel use these correctly. All trucks leaving the site should be accompanied with a waste transportation form (Appendix B). Cease site works until the Project Manager has been notified of any unexpected finds and appropriate instructions have been provided to field personnel to address the issue. Project Manager to inform the Contract Administrator of any unexpected finds.
MONITORING	Regular observations will be made by the Project Manager and measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted. Records of all corrective actions and known sediment releases will be kept. An up to date record of waste tracking shall be kept by the Environmental Specialist.
RESPONSIBILITY	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant (the Environmental Specialist) as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
REPORTING	Maintenance of records on site of equipment inspections undertaken and landfill disposal/waste tracking and weigh bridge dockets, and any council approvals should be maintained onsite for inspection.

ELEMENT	WASTE MANAGEMENT AND MINIMISATION QUALITY
CORRECTIVE ACTION (AS REQUIRED	Revision of the works strategy including relocation and alteration to the operating procedure if waste is shown to be entering the surrounding environment.

12 EXTERNAL LIGHTING

As per SDD10393 Conditions, external lighting to the proposed Monte Scientia project complies with the AS4282-1997 – Control of the obtrusive effects of outdoor lighting.

External Lighting must comply with AS4282: 1997 Control of the Obtrusive Effects of Outdoor Lighting. Upon installation of lighting, but before it is finally commissioned, the Applicant must submit to the consent authority evidence from an independent qualified practitioner demonstrating compliance in accordance with this condition. Certification of Compliance by Designer to be submitted.

4.11.10 CREDIT 27.0 : LIGHT POLLUTION - LIGHT POLLUTION TO NEIGHBORING BODIES

It is a minimum requirement that all outdoor lighting of the building complies with *AS 4282:1997 Control of the Obtrusive Effects of Outdoor Lighting*. The conditions shall be applied to all inhabited boundaries, apart from boundaries with roads.

The following lightings are excluded:

- Signage related to emergency exits and external emergency lighting that only illuminates in the event of an emergency/power failure are excluded from the requirements of this credit. Lighting related to other safety requirements are also excluded, for example, the lighting of ATMs.
- External emergency lighting that is integrated into the general external lighting scheme must comply with the requirements of the credit. For example, lights that act as general lighting but have a battery pack to ensure that they also stay on in the event of a power failure must comply.

4.11.11 CREDIT 27.1 : LIGHT POLLUTION - LIGHT POLLUTION TO NIGHT SKY

The Contractor is to ensure that the direct illuminance from external luminaires does not exceed the initial point illuminance value of 0.5 Lux and 0.1 Lux to 4.5 metres beyond the site into the night sky (when modelled using a calculation plane set at the highest point of the building. All calculations should be in accordance with AS 4282:1997.

13 MONITORING REQUIREMENTS

13.1 AUDITING AND RECORDS

The Client Project Manager will conduct regular audits of the Principal Contractors implementation of the CEMP. Audits will involve a review of all environmental documents, records and reports to ensure compliance with the requirements of the CEMP. If non-compliance is detected, the Principal Contractor will initiate to the satisfaction of the Client Project Manager the appropriate corrective action.

Key environmental and procedural issues to be covered by the audit will include, but may not be limited to:

- Environmental management measures presented in the AMP;
- Adherence to reporting procedures;
- Complaint and incident management; and
- Legislative requirements.

Records of auditing and reporting will be maintained to demonstrate compliance with environmental requirements.

Environmental and construction records will include, but may not be limited to:

- Complaint records.
- Incident, non-conformance and corrective action reporting.
- Communications with stakeholders.
- Monthly waste management reporting.
- Daily asbestos monitoring if required; and
- CEMP audit documentation.

14 ENVIRONMENTAL EMERGENCY

Specific and immediate responses to emergencies and environmental incidents will be determined by the Principal Contractor.

Table 13: Environmental Emergency Contacts

Pollution type or source	Organisation responsible	Telephone
Transport of dangerous goods	EPA	131 555
Chemical spills	Fire Brigade (HAZMAT) & EPA	000 or 131 555
Contaminated sites	EPA	131 555
Fertilisers, pesticides, herbicides	EPA	131 555
Radiation	EPA	131 555
Oil spillage in ports		
Garie Beach to the Victoria border	Port Kembla Port Corporation	02 4274 4571
Oil spillage in estuaries and inland waters	Fire Brigade	02 9319 7000 (Sydney) or 1800 422 281 (outside Sydney)
Other pollution of beaches, estuaries, tidal lakes, rivers, creeks, streams and lakes	Local councils EPA	See local phone book 131 555
Drinking water catchments		
Sydney and Wollongong	Sydney Water	132 090 (24 hours)
Elsewhere in NSW	Local councils	See local phone book
Other water pollution		
Storm water channels	Local councils Sydney Water EPA	See local phone book 132 090 (24 hours) 131 555
Sewer overflows	Sydney Water	132 090 (24 hours)
Fish kills	EPA	131 555

15 SECURITY AND PUBLIC SAFETY

15.1 RESTRICTION TO ACCESS

Perimeter fencing and/ barricades that restrict access to the proposed work zone and stockpile area will be installed. Only authorised persons wearing the appropriated PPE will be able to enter the excavation/construction and stockpile/staging areas during works.

Whilst excavations remain open, the site is unattended and works are not active, high visibility fencing will be placed around the boundary of the excavation to alert any people on site to the presence of the excavation.

15.2 PEDESTRIAN AND TRAFFIC CONTROL

Relevant signage will be in place during the demolition , excavation and construction works to warn and protect pedestrians and other traffic of the potential exposures in the vicinity of the work area.

Signage shall also be erected to inform the public who to contact in case of any complains

16 REPORTING

Environmental Elements 1 to 8 of the Project include Performance Objectives to be applied to specific aspects of the works and Corrective Actions that may be adopted should non-conformances or environmental incidents occur.

16.1 NON-COMPLIANCE

A non-conformance is defined as a failure to fulfil a requirement of this CEMP or other associated environmental document. All non-compliances must immediately be reported to the Contract Administrator, and the appropriate details of the non-compliance should be submitted (in writing via email) within 24 hours of the occurrence of the non-compliance.

The Project Manager or Subcontractors may identify and report a non-conformance.

16.2 ENVIRONMENTAL INCIDENT

An environmental incident is defined as an unplanned event that occurs that impacts, or has the potential to impact, on the environment (including natural or built). In the event of an environmental incident, the Contract Administrator should be notified immediately. The details of the environmental incident will be supplied to the Project Manager on reporting of any incident.

16.3 REPORTING AND CORRECTIVE ACTIONS

When reporting a non-compliance or environmental incident, all immediate corrective actions which have been taken to rectify the situation will be documented. Further corrective action should be recommended if required at the time of reporting. Relevant agencies which require notification should also be identified.

The Principal Contractor will maintain a register of all non-compliances and environmental incidents, along with the corrective and preventative actions which have been implemented to mitigate and/or prevent further recurrences. The Principal Contractor must ensure and verify that corrective actions to control environmental impacts and avoid future non-compliances have been undertaken by the appropriate personnel.

Table 14 details the general procedures to be undertaken when non-compliances and environmental incidents occur.

Table 14: Corrective and Preventative Action Procedures

ELEMENT	MANAGEMENT
OBJECTIVE	To implement a system to identify, document, analyse and implement corrective and preventative actions for environmental non-conformance issues
MANAGEMENT ACTIONS	When a non-conformance or environmental incident occurs the Principal Contractor is to ensure corrective and preventive actions are implemented by: • Assigning personnel to undertake investigation as per 'Environmental Incident Investigation Report' Form or 'Non- Compliance Report' Form and designate lead investigator. • Maintain documentation of Investigation Report Forms and their corrective/preventive actions on site;

ELEMENT	MANAGEMENT
	• Report environmental non-conformances identified that cause or have the potential to cause a significant environmental impact immediately to the Principal Contractor's Project Manager. • Provide a summary of environmental non-conformances with the corrective and preventative actions which have been implemented to mitigate and/or prevent further recurrences. • Outstanding corrective actions to the Principal Contractor's Project Manager as requested. • Utilise corrective/preventative actions to revise and update CEMP and/or CEMP objectives, operational controls, and other aspects as required. • Review outstanding corrective action status.
RESPONSIBILITY	All Staff and Subcontractors are: • Responsible for informing their immediate manager of environmental non-conformances. • Responsible for undertaking corrective/preventative actions and • effectiveness determinations as assigned.
REPORTING	Maintenance of records of '*Environmental Incident Investigation Report'* Forms and '*Non-Compliance Report*' Forms completed for the duration of the project.

APPENDIX A - SITE LOCATION & PROPOSED DEVELOPMENT PLAN



APPENDIX B - CONSTRUCTION TRAFFIC & PEDESTRIAN MANAGEMENT SUB-PLAN

M^CLAREN TRAFFIC ENGINEERING

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499

Telephone: +61 2 8355 2440
Fax: +61 2 9521 7199
Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

2nd February 2021 Reference: 200777.01FA

Bloompark
Suite 2.04/41 McLaren Street, North Sydney NSW 2060

CONSTRUCTION TRAFFIC AND PEDESTRIAN MANAGEMENT PLAN FOR THE SPORTS AND SCIENCE BUILDING AT MONTE SANT' ANGELO MERCY COLLEGE AT 128 MILLER STREET, NORTH SYDNEY

Dear Mitch,

Reference is made to your request to prepare a Construction Traffic and Pedestrian Management Plan (CTPMP) for the site establishment and demolition of existing structures within Monte Sant' Angelo Mercy College at 128 Miller Street, North Sydney. This CTPMP does not cover excavation, or the construction or fitout of the sports and science building. This CTPMP is to partially address NSW Government's consent conditions C18, C19 and C20 for the preparation of a *Construction Traffic and Pedestrian Management Plan*, as summarised in **Table 1**.

TABLE 1: DEVELOPMENT CONSENT CONDITIONS – SSD 10393

Condition Number	Condition Requirement	Comment
C18	Construction Traffic and Pedestrian Management Plan	This CTPMP is for the Site Establishment and Demolition stages ONLY. The Excavation, Construction and Fitout Stages are to be completed at a later date
a)	A description of the development	The CTPMP covers demolition of two existing sports courts and associated under-croft staff carpark The construction of a new Sports and Science building is to be completed at a later date
b)	Location of the proposed construction work zone	A 19m length works zone is required along the western edge of Miller Street, immediately to the north of the existing driveway to Gate 2. This works zone can be shortened to 11m once access into and out of the site is achievable for construction vehicles. These works zones are shown in **Annexure B** and described in **Section 6**.
c)	Details of crane arrangements including location of any	No cranes are required for the Site Establishment and Demolition stages.

	crane(s) and crane movement plan	
d)	Construction traffic haulage routes	The route to the site will be via Pacific Highway, Berry Street, Miller Street, Falcon Street and the Warringah Freeway. This is shown in **Annexure D** and **Section 9**.
e)	Details of predicted number of construction vehicle movements, construction vehicle types, heavy vehicle routes, access and parking arrangements	The number and quantity of construction vehicles are provided in **Section 8**. Haulage routes are provided in **Annexure D** and **Section 9**. Parking arrangements for construction vehicles (including staff) are discussed in **Section 8**.
f)	Construction program, methodology and any construction staging	The relevant information is provided in **Table 2**
g)	Details of proposed hoardings or scaffoldings	If necessary, hoarding must be installed along the site's boundary to Miller Street. This is to be installed and maintained throughout all construction stages as deemed necessary by the Site Manager.
h)	Measures to avoid construction works vehicle movements within the surrounding area	As discussed in **Section 8**, construction vehicle traffic is generally offset from the peak commuter hours. Liaison strategies with other construction projects within the area are provided in **Section 12**
i)	Consultation strategy for liaison with the surrounding stakeholders including any adjoining developments under construction and Sydney Metro City and Southwest	**Section 12** states that the Site Managers of the surrounding construction projects shall be in contact throughout the project durations to mitigate the impact on the surrounding road network. Teachers, students and parents of the subject school shall be notified of the construction process, including dates, works zone locations, footpath closures and construction schedule. Stakeholders shall be notified via school newsletters and bulletin board posts.
j)	Location of proposed construction zones and proposed management measures within these zones	The demolition plan in **Annexure A** summarises the construction zone location. All spoil shall be stored and then transported out of the site in accordance with the swept paths shown in **Annexure B** and described in **Section 5**.
k)	Detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists, pedestrians and bus services	These items are satisfied by the Traffic Control Plans described in **Section 11** and provided in **Annexure C**.
C19	Preparation by a suitably qualified and experienced person. Endorsement from Sydney Coordination Office of TfNSW	Preparation by Daniel Fonken, Traffic Engineer and Accredited Traffic Management Plan Designer (Cert no. 004 910 0455) Endorsement from TfNSW is currently outstanding
C20	Provision of builder's direction contact number to the Transport Management Centre for TfNSW	Builder TBD

1 Site Location

The site is bounded by Miller Street, Berry Street, McLaren Street and Angelo Street in North Sydney, Putney as shown in **Figure 1** and **Figure 2**. The site is surrounded by low density residential dwellings.

Miller Street has the following characteristics within close proximity to the site:

- TfNSW Classified REGIONAL Road (No 2111);
- Local road with a 12m wide carriageway, facilitating two traffic flow lanes in each direction;
- Clearway restrictions in place on the eastern side of the road between 6-10AM and the western side of the road between 3-7PM (Monday through Friday). Metered parking along both sides of the road during other times.
- 40km/h high pedestrian activity speed limit in effect in both directions in close proximity to the site;

Berry Street has the following characteristics within close proximity to the site:

- Part of the Pacific Highway, TfNSW Classified STATE Road (No 10);
- One-way road with a 13m wide carriageway, facilitating four traffic flow lanes in each direction;
- Clearway restrictions in place on both sides of the road between 6-10AM and 3-7PM (Monday through Friday). Metered parking and loading zones along both sides of the road during other times;
- 40km/h speed limit.



Site Location

FIGURE 1: SITE LOCATION – AERIAL IMAGE



Site Location

FIGURE 2: SITE LOCATION -STREET MAP

2 Proposed Development

The construction is for a multi-storey gymnasium and classroom building associated with Monte Sant' Angelo Mercy College. The proposed works will be split up into the following stages:

- Demolition and Site Establishment
- Excavation
- Construction (including structure, services)
- Fit out and finishes (including landscaping, testing and clean up)

Works within the public verge, including restoration of the kerb and gutter and construction of a new driveway crossing, are subject to a separate application to be approved by Council.

It is reiterated that this CTPMP outlines the Site Establishment / Demolition stage only. The other stages are to be detailed at a further stage.

3 Duration of Construction

Construction is expected to occur over a total duration of approximately 19 months, subject to variations to the construction schedule.

The expected duration of each stage is provided in **Table 2**.

TABLE 2: CONSTRUCTION ACTIVITIES

Activity	Duration
Demolition	10 weeks
Excavation	12 weeks
Construction (including Fitout and Finishes)	14 months

This timeframe and expected task durations are indicative only and can possibly change due to delays, weather and construction certification details.

4 Construction Hours of Work

The work associated with the construction of the development is expected to be carried out between the general hours of construction as provided by Council as part of their DA consent conditions. The typical hours of operation are as per the following:

- Monday to Friday 7:00am to 6:00pm;
- Saturday 8:00am to 1:00pm;
- Sunday / public holidays – no work permitted.

The hours stated above are general hours and will be confirmed upon issue of the Conditions of Consent.

The enforcement of these hours of work is the responsibility of the site contractor and any other delegated authority. All sub-contractors and associated workers are to follow the hours of work as instructed by Council. Any works outside of these hours must be approved by Council prior to carrying out the work.

Truck movements to and from the site will be restricted during the morning and afternoon school hours (8-9:30am and 2:30-4pm) in order to promote safe pedestrian movement to and from the school by children and parents/guardian.

5 Construction Site Access

A site management plan has been provided in **Annexure A** for reference. Vehicular access to the site during the Site Establishment and Demolition stage will be via the existing driveway along Miller Street. All vehicular access to the temporary / proposed driveway will be restricted to rigid vehicles up to and including a 12.5m length Heavy Rigid Vehicle (HRV).

It is important to note that there is a 2.1m headroom restriction immediately within the site boundary (as shown in **Figure 1**). This prohibits construction vehicles from entering the driveway. Therefore, this headroom restriction must be demolished to allow vehicles to enter the site.

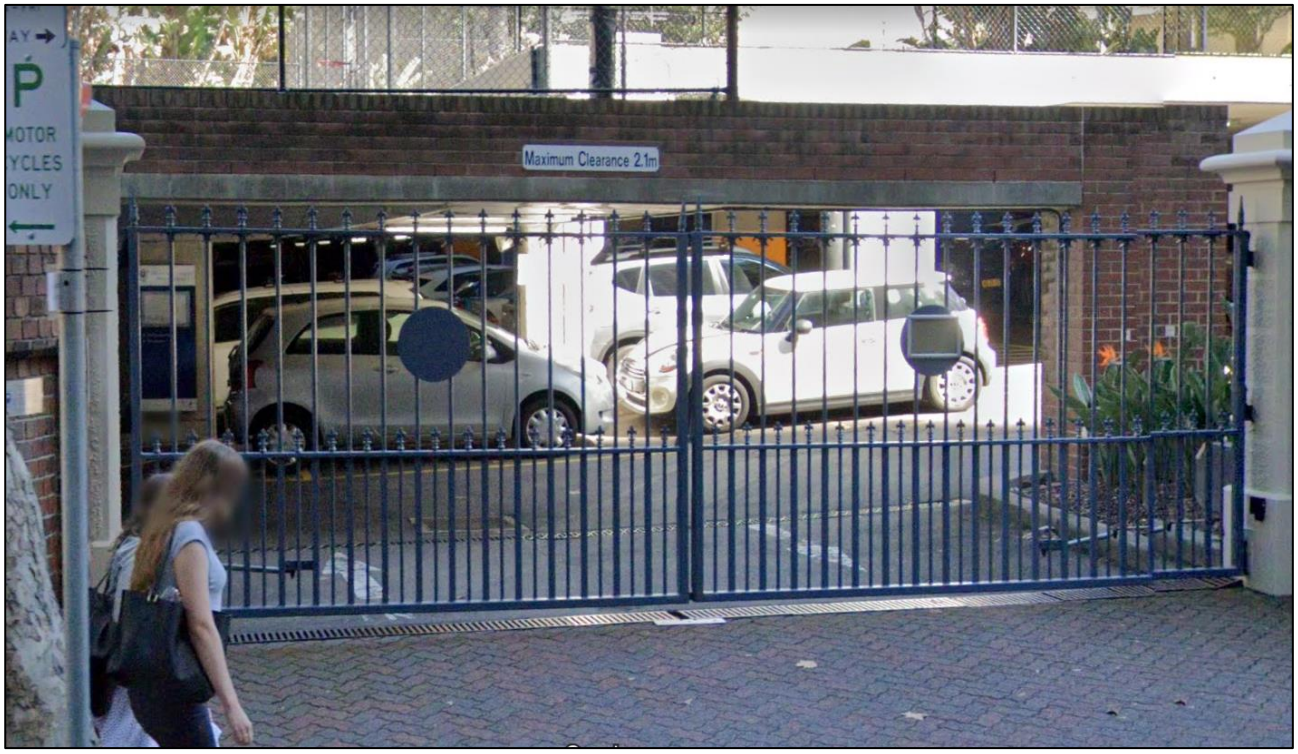


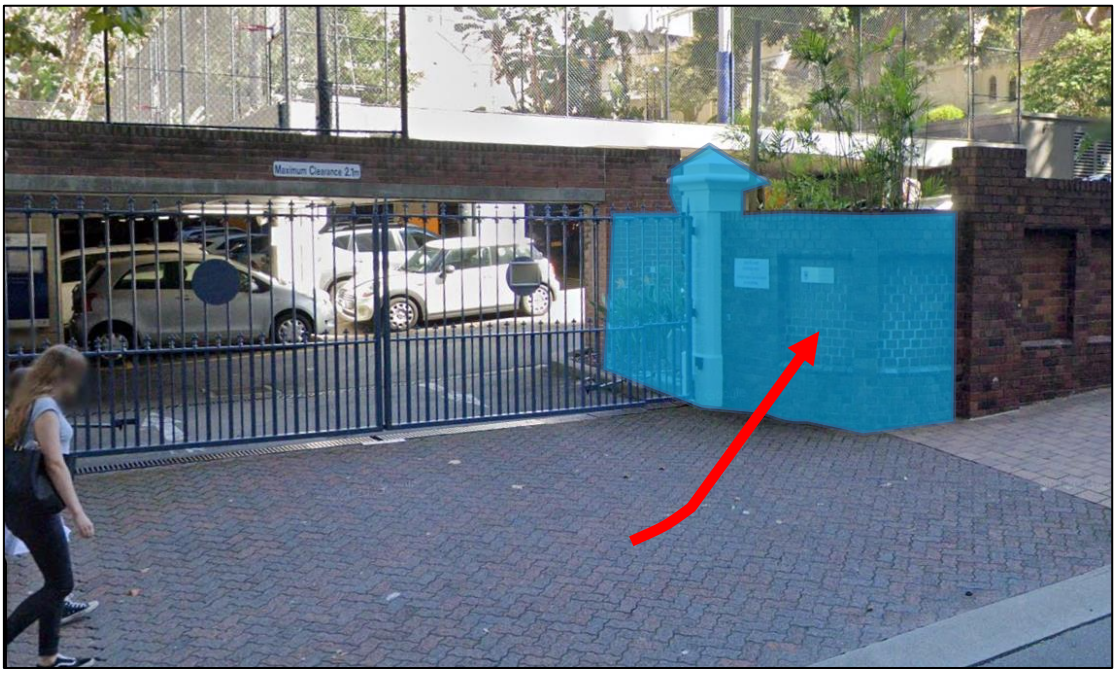
FIGURE 3: HEADROOM CLEARANCE AT SITE DRIVEWAY

5.1 Headroom Obstruction Demolition

Given the geometric constraints of the site driveway, excavators must be unloaded on Miller Street within a Works Zone and transported onto the site around this headroom obstruction. This will occur over one (1) day where 1-2 excavators will be unloaded onto the Council verge in front of the site driveway. The excavators will be transported onto site via a portion of the wall will be demolished (as shown in **Figure 1**). Once the headroom obstruction is demolished, manoeuvring space will be cleared to allow an 8.8m length MRV to enter and exit the site in a forward direction. These swept paths are shown in **Annexure B**.

The western side of the Miller Street footpath shall be closed temporarily whilst the verge is being utilised for the unloading of excavators. The operation of the Works Zone for one (1) day shall be monitored by an RMS Accredited Traffic Controller, who will direct pedestrians to cross Miller Street at either the Berry Street or McLaren Street intersection. The

northbound traffic flow lane on Miller Street shall be maintained under the Traffic Control Plan provided in **Annexure C** and described in **Section 11**.



Wall to be Demolished **Excavator Path**

FIGURE 4: EXCAVATOR PATH ENTRANCE – WORKS ZONE USE

5.2 On-site Demolition

Once enough area has been cleared to allow MRVs (bogey trucks) and HRVs, removal of spoil from within the site can commence. Whilst construction vehicle access to the site is achievable, the egress from the site will require an 11m length temporary "*No Stopping Zone*" to allow construction vehicles to stay within the northbound lane. Additionally, there is a motorbike parking area directly to the south of the existing driveway. This area will need to be made a temporary "No Stopping Zone" whilst construction vehicles enter / exit the site. If the council wishes to maintain motorbike parking, the car space immediately to the south can be made into motorbike parking.

It is noted that the swept paths in **Annexure B** show that the truck (both MRVs and HRVs) can utilise the existing crossover along the southern driveway edge to enter the site and therefore will not impact the speed zone sign or the street tree within the verge. The parking signpost nearest to the driveway crossover should be temporarily removed and the remaining signposting should be adjusted to reflect the updated parking conditions.

It is noted that the 11m no stopping zone is suitable for MRVs. If an HRV is required to enter and exit the site in a forward direction, the temporary no stopping zone must be extended to 16.5 metres. The northern end of the driveway crossover should be extended temporarily to accommodate the required construction vehicle egress movements. The extent of the temporary driveway widening is 1.79m for MRV access and 4.0m for HRV access and will required the temporary relocation of the parking restriction sign currently located at the northern edge of the driveway crossover. This is shown in **Annexure B** and is reproduced in **Figure 5** and **Figure 6**.

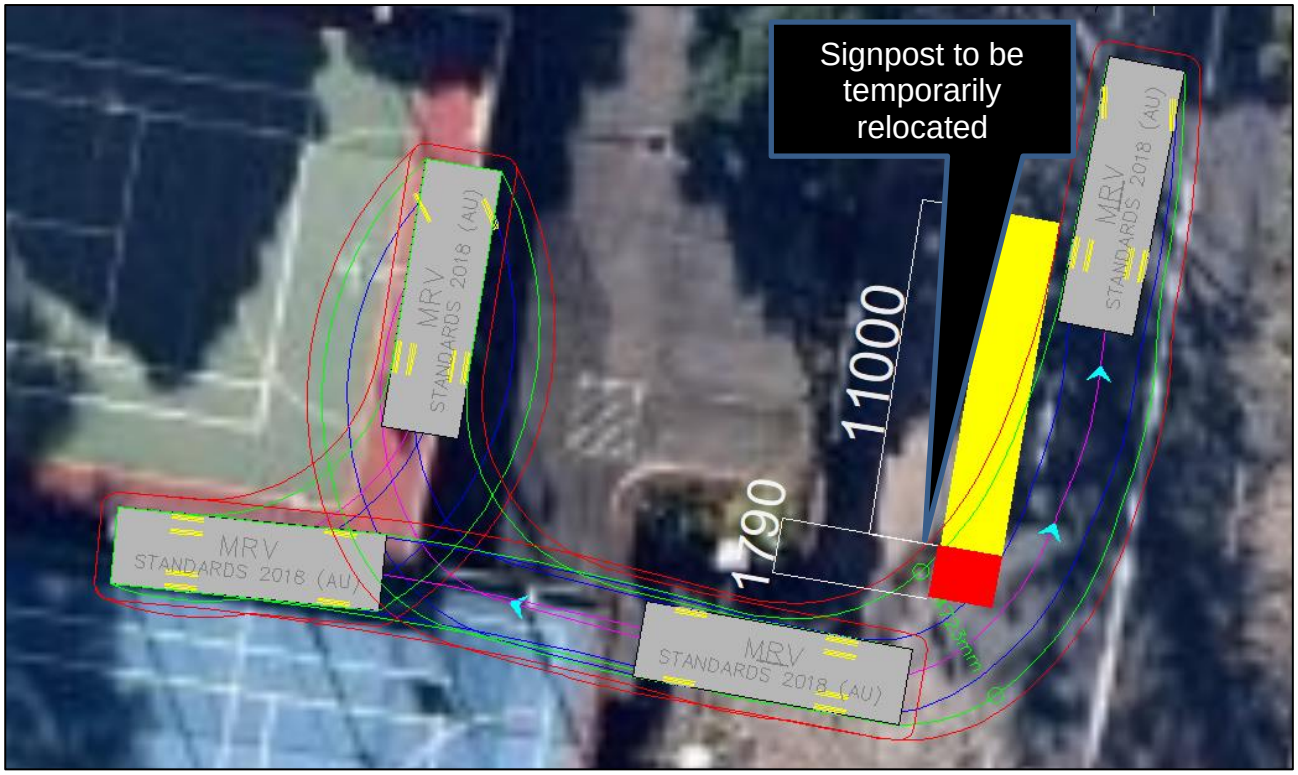


FIGURE 5: MRV EGRESS - DRIVEWAY AND NO STOPPING WIDENING AREA

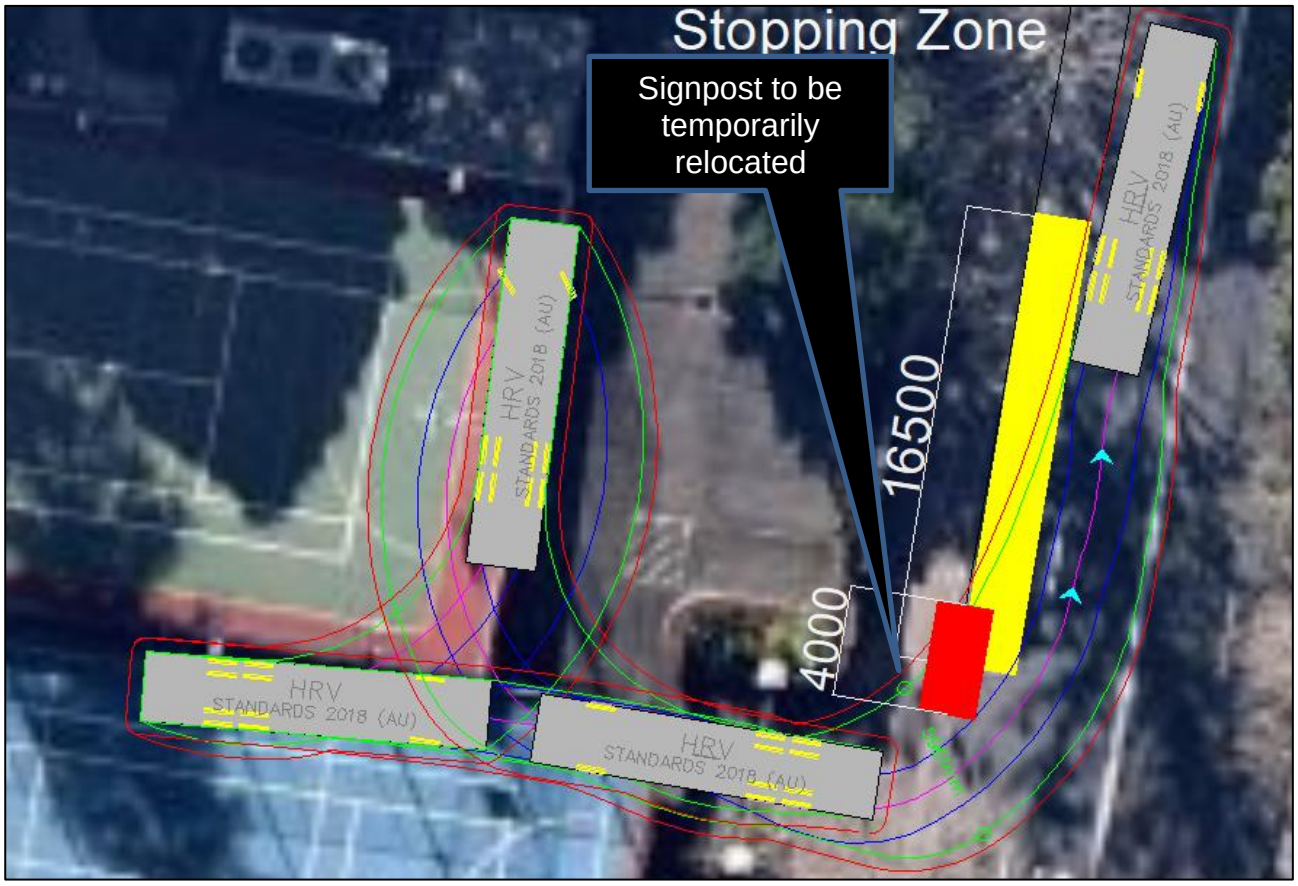


FIGURE 6: HRV EGRESS - DRIVEWAY AND NO STOPPING WIDENING AREA

Temporary No Stopping Zone
Temporary Driveway Widening

Once again, an RMS Accredited Traffic Controller shall be positioned at the site driveway to monitor both truck and pedestrian movements within the area.

6 Work Zones

As discussed previously, the headroom constraint at the site driveway prohibits construction vehicles from entering the site. Therefore, the site will require the use of a Works Zone on Miller Street for one (1) day whilst excavators are unloaded, in order to demolish the headroom obstruction. The works zone will be approximately 19m in length and will accommodate a 12.5m length Heavy Rigid Vehicle. This is due to the amount of space required for the 12.5m length HRV to enter and exit the works zone presuming vehicles are parked at either end of the works zone. Swept paths are provided in **Annexure B** showing an HRV successfully entering and exiting the Work Zone. A minimum of 3m of northbound traffic flow lane on Miller Street shall be maintained. The TCP in **Annexure C** and **Section 11** shall be implemented throughout the duration of the Works Zone use, which is not expected to be more than one (1) day.

It is expected that all loading / unloading of deliveries / materials / concrete pours whilst access to the site is achievable will occur onsite within the site boundaries. An 11m length temporary “No Stopping Zone” will be required under this scenario for MRVs (16.5m length for HRVs) to allow the successful egress of construction vehicles during demolition. A Works Zone will be required later in the project scope including both the Construction and Fitout stages.

Truck movements to and from the site will be restricted during the morning and afternoon school hours (8-9:30am and 2:30-4pm) in order to promote safe pedestrian movement to and from the school by children and parents/guardian. This restriction will also apply to the use of a works zone.

All materials and equipment / machinery will be stored on-site with all deliveries to be coordinated by the Site Manager. The internal arrangement of concrete trucks and pumpers is to be controlled by the site contractor and any traffic controllers, if and when required, to ensure all vehicles arrive and depart the site safely.

7 Construction Staff & Parking Requirements

It is expected that a peak of 20 construction staff will be on-site at any one time during construction. The contractor shall encourage carpooling amongst construction staff as well as the use of public transport where possible to minimise private vehicle use. It is noted that the site is located within very close proximity to North Sydney Train Station. The use of public transport and utilisation of carpooling is considered reasonable and should be utilised by all construction staff who do not require the explicit use of their own vehicle. (public transport package will be provided to all staff).

8 Construction Traffic

The estimated construction traffic generated by the works is summarised in Table 3 below.

TABLE 3: CONSTRUCTION VEHICLE MOVEMENTS

Stage	Trucks	Truck Type	Duration
Site Establishment / Demolition	10 construction vehicles per day	12.5m length Heavy Rigid Vehicle (HRV) for works zone and site access	10 weeks

The largest vehicle to access the Works Zone during construction will be a 12.5m length Heavy Rigid Vehicle (HRV). Once access to the site is achievable, the largest vehicle to access the site will be a 12.5m length Heavy Rigid Vehicle (HRV). The size of vehicle depends on the extent of on-site demolition which has taken place at that time. The trucks will enter and exit the site in a forward direction via the widened temporary driveway crossover.

Staff peak traffic generation will generally occur early in the morning (7:00am) and in the afternoon from 3:00pm to 5:00pm.

The level of private vehicle traffic in conjunction with the heavy vehicle traffic specified in **Table 3** above, is relatively low and is not expected to have a detrimental impact on the surrounding road network. Construction traffic will be easily managed by the site contractor who will coordinate all deliveries. The anticipated truck movements should not give rise to a noticeable increase in delays within the existing road network, although minor delays may occur within Miller Street when vehicles are entering the site requiring following vehicles to slow down, which is the typical operation of any driveway.

The TCPs described in **Section 11** and shown in **Annexure C** shall be implemented for the entire duration of demolition to control both vehicle and pedestrian movements across the driveway. An RMS Accredited Traffic Controller is to be positioned at the driveway to monitor truck movements into and out of the site and to ensure the safety of passing pedestrians.

9 Construction Vehicle Haulage

As mentioned in **Section 5**, vehicular access into the site will be made via the driveway on Miller Street. Refer to **Annexure D** for a map of the haulage routes.

The largest vehicle to access the Works Zone or on site during the demolition stage is a 12.5m length HRV. It is noted that a 12.5m length HRV can enter and exit the site, but it needs a larger no stopping zone to do so safely (16.5m opposed to 11m for MRV access). This is due to the turning circle of a 12.5m length HRV being larger than an MRV.

Vehicles travelling to the site driveway will approach from the north along Pacific Highway, turning left onto Berry Street, and left onto Miller Street before arriving at the site. All

departing vehicles will travel north along Miller Street, turn right onto Falcon Street before arriving to the arterial road network at the Warringah Freeway.

Swept paths have been undertaken to illustrate the above construction routes and are reproduced in **Annexure B** for reference.

10 Pedestrian Management

The verge and footpath along the site's frontage to Miller Street and beyond any construction fencing is to kept free of any waste, construction material or trip hazards associated with the development. Only authorised personnel are permitted on-site and must be inducted by the site manager/OH&S officer. Site fencing along the frontage should also be regularly inspected for potential trip hazards or encroachment onto the verge where pedestrians will walk.

The existing footpath along the site's frontage to Miller Street is to be temporarily closed whilst excavators are unloaded from the Works Zone. This will be for approximately 1 hour per excavator over a single day. The RMS Accredited Traffic Controller will direct pedestrians to the eastern side of Miller Street whilst the works zone is in use.

Once onsite manoeuvring is achievable, the pedestrian footpath is to remain open to all pedestrians at all times during construction. If necessary, during construction, the site manager must install appropriate type A or type B hoarding to allow free access to pedestrians at all times.

The Miller Street roadway must be kept in a serviceable state at all times. At the direction of Council staff, the applicant / site manager is to undertake remedial treatments, such as patching. This is to be undertaken at no cost to Council.

An RMS Accredited Traffic Controller will be used during the implementation of the Traffic Control Plan (TCP) detailed in **Section 11** and is to monitor pedestrian and construction vehicle traffic within the area.

11 Traffic Control Plans

Traffic Control Plans (TCPs) have been prepared and reproduced in **Annexure C**, and are to be implemented and erected by a suitably qualified contractor during truck movements into and out of the site proposed / temporary driveway on Morrison Road. The TCP is based on Roads & Maritime Services (RMS) *Traffic Control at Worksites* and AS1742.3:2009.

All construction movements into and out of the proposed / temporary driveway shall be undertaken under the supervision of an RMS Accredited Traffic Controller (as detailed in **Annexure C**), who will also be required to monitor pedestrian movements along the western side of Miller Street as outlined in **Section 10** above.

12 Liaison with Stakeholders

The site is located within close proximity to the Metro North and South sites. Liaison shall be undertaken with the Site Manager for these sites to ensure that construction deliveries are offset as much as possible. Additionally, liaison shall be undertaken with the Monte Sant' Angelo Mercy College teachers and parents via school newsletters and bulletin board posts.

Staff parking will be limited on site for teachers and staff, though additional parking spaces have been provided elsewhere on the site. The staff shall manage the available on-site parking each morning and evening to ensure the maximum amount of parking is maintained on site. Public transportation will be encouraged for parents, students and staff.

13 Traffic Management Plan Checklist

Reference is made to the RMS (previously RTA) *Procedures for Use in the Preparation of a Traffic Management Plan*, version 2.0 December 2001. The following list addresses the required TMP details.

A) Description or detailed plan of proposed measures
Is the detailed plan of the proposed measures necessary?
Yes

B) Identification and assessment of impact of proposed measures
Is a detailed assessment required?
Yes – An assessment of the proposed works regarding traffic and parking impacts is prepared within this CTPMP.

C) Measures to ameliorate the impact of re-assigned traffic
Is an assessment required?
No – The expected generated construction traffic is not expected to measurably increase expected delays or impacts on the surrounding network performance. All trucks associated with construction will travel on the surrounding road network as per the haulage routes detailed in **Annexure D**. These routes have been proposed to maximise the use of existing arterial and collector roads and are deemed appropriate. The routes also limit the distance travelled on local roads by using the most direct routes from the surrounding arterial roads.

D) Assessment of public transport services affected
Is an assessment required?
No – No existing bus stops will be impacted by the works.

The required staff levels are also not expected to add loading above what the surrounding public transport network can cater for with its current services and frequency and as such, public transport will not be affected.

E) Details of provision made for emergency vehicles, heavy vehicles, cyclists and pedestrians

Are these details required?

No – The proposed works will not adversely impact current on-street conditions for emergency or heavy vehicles travelling on Miller Street. Access around the site for pedestrians will also be maintained.

F) Assessment of effect on existing and future developments with transport implications in the vicinity of the proposed measures

Is an assessment required?

No – Refer to Point D.

G) Assessment of effect of proposed measures on traffic movements in adjoining Council areas

Is an assessment required?

No – Refer to Point C.

H) Public consultation process

Is a public consultation process required?

No – Construction vehicle traffic is minimal such that no impacts to residential traffic amenity will occur during construction. The TCP provided in **Annexure C**, requires vehicles to stop during construction vehicle access into / out of the site. It is recommended that local residents be advised of the changed traffic conditions around the site via post.

Hence, Council can assess this construction traffic management plan accordingly without referral to the public.

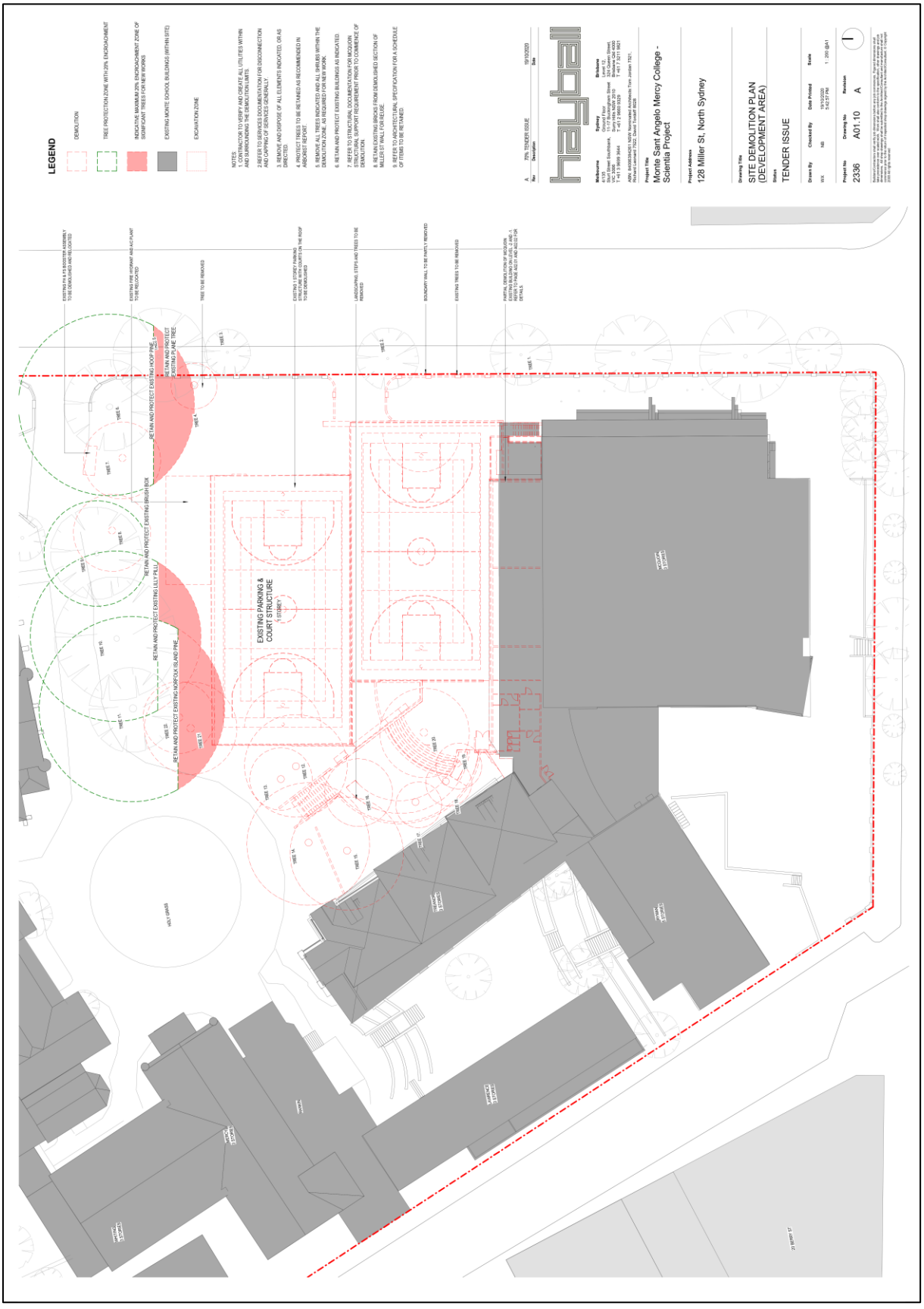
Please contact the undersigned on 8355 2443 or the undersigned should you require further information or assistance.

Yours faithfully
McLaren Traffic Engineering



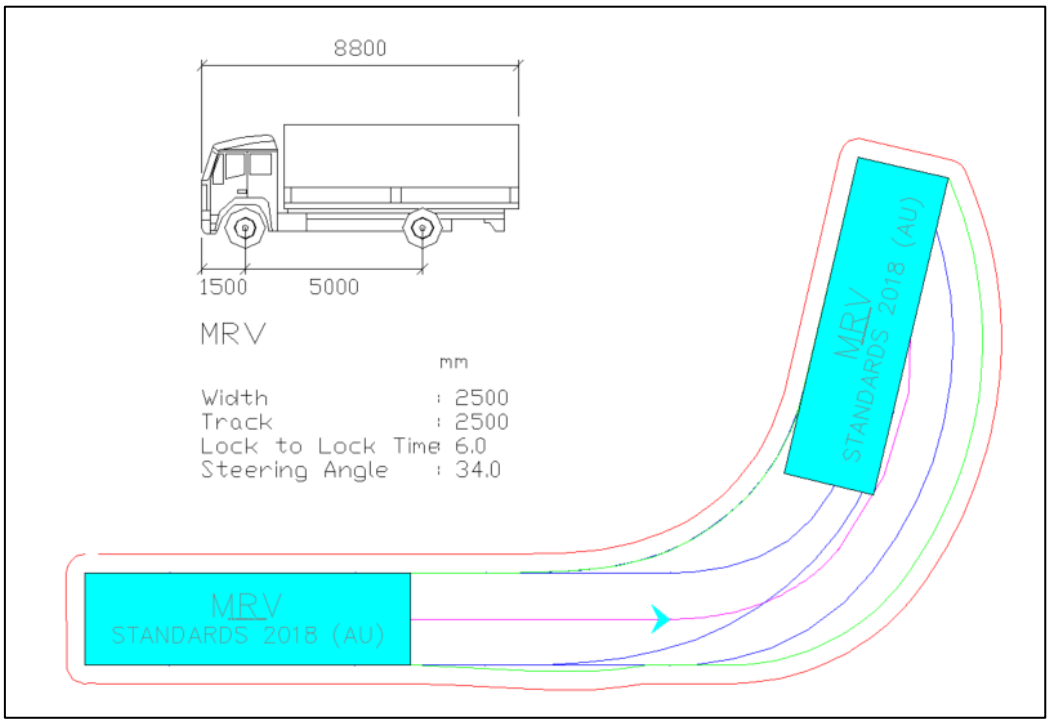
Daniel Fonken
Supervising Traffic Engineer
Bachelor of Science Civil Engineering
RMS Accredited Traffic Management Plan Designer (Cert No. 004 910 0455)

ANNEXURE A: CONSTRUCTION PLANS
(Sheet 1 of 1)

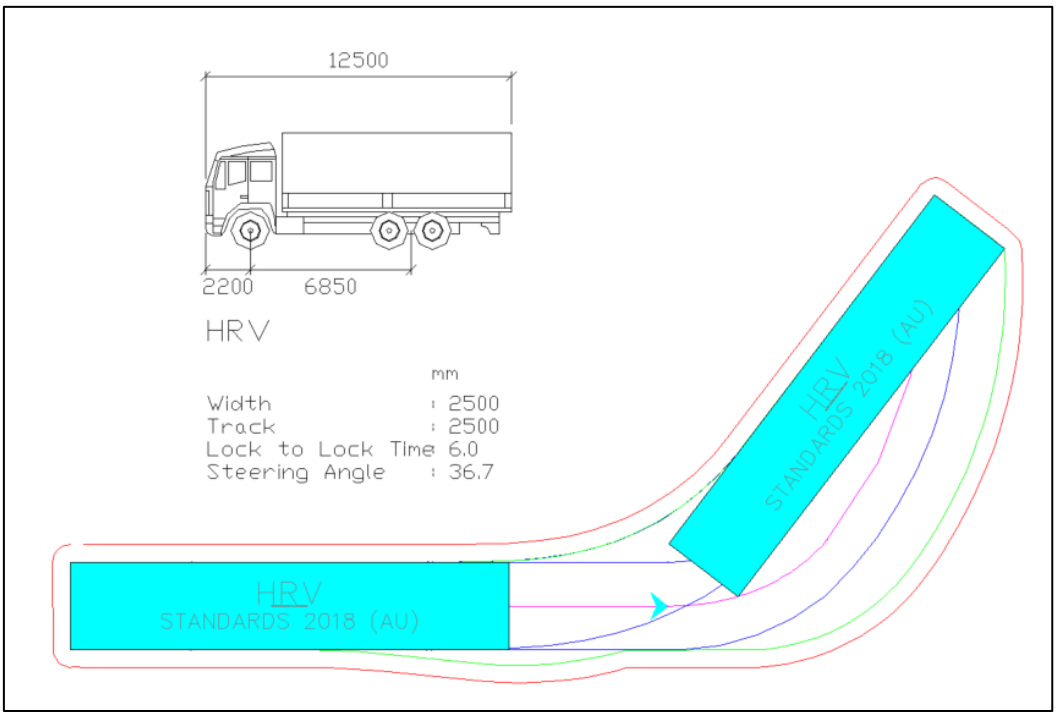


DEMOLITION PLAN

ANNEXURE B: SWEPT PATH TESTING
(SHEET 1 OF 10)

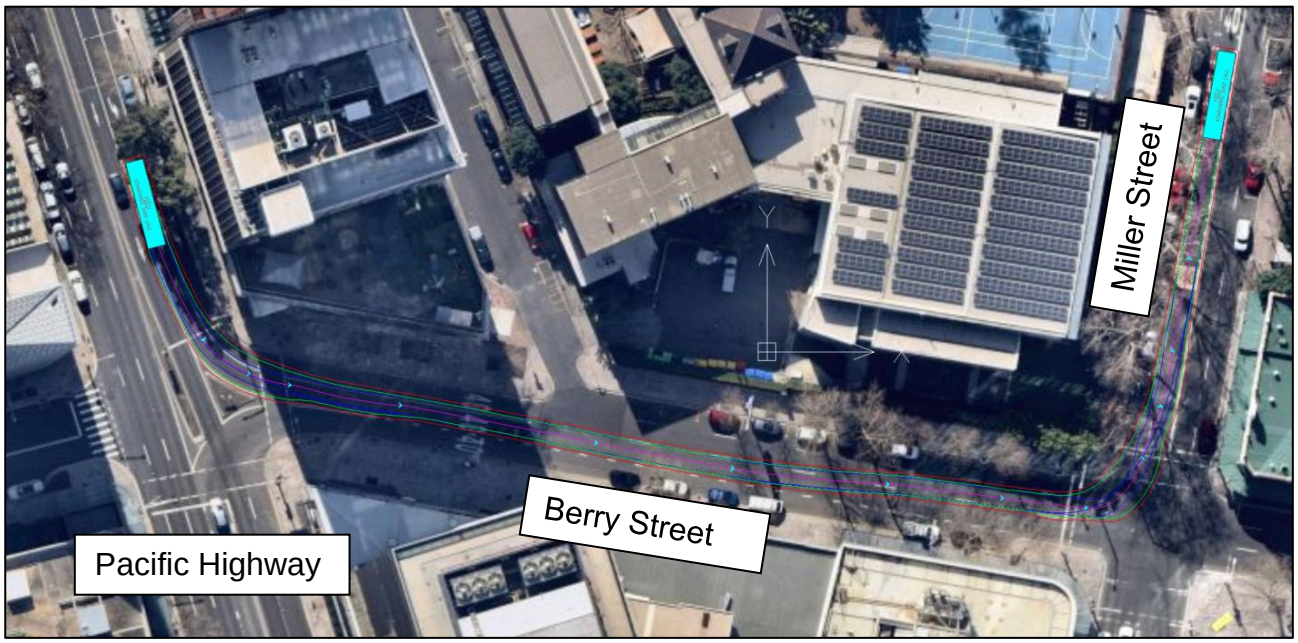


AUSTRALIAN STANDARD MEDIUM RIGID VEHICLE (MRV)



AUSTRALIAN STANDARD HEAVY RIGID VEHICLE (HRV)

Blue – Tyre Path
Green – Vehicle Body
Red – 500mm Clearance

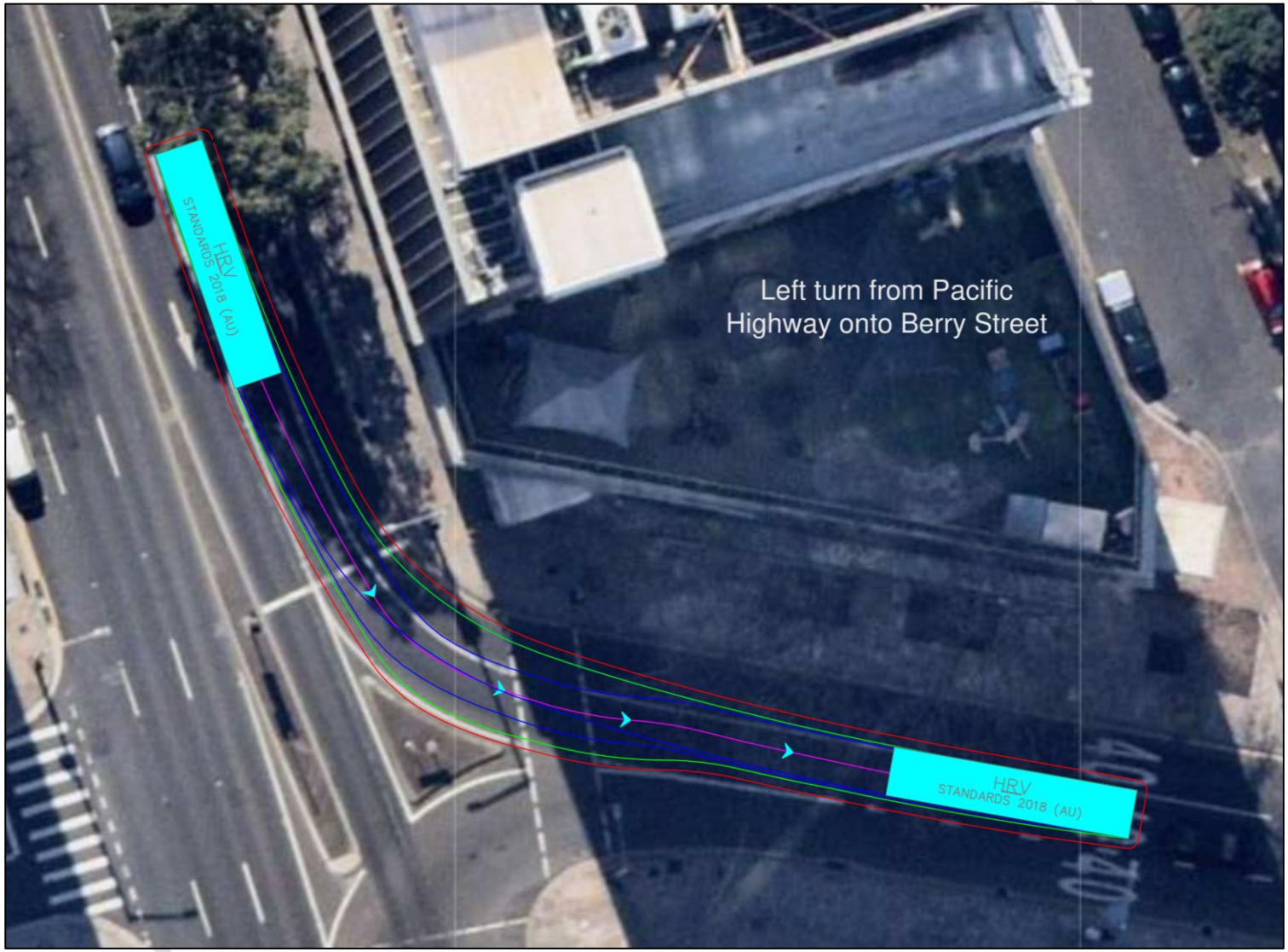




12.5m length Heavy Rigid Vehicle (HRV) path – Pacific Highway, Berry Street, Miller Street, Falcon Street

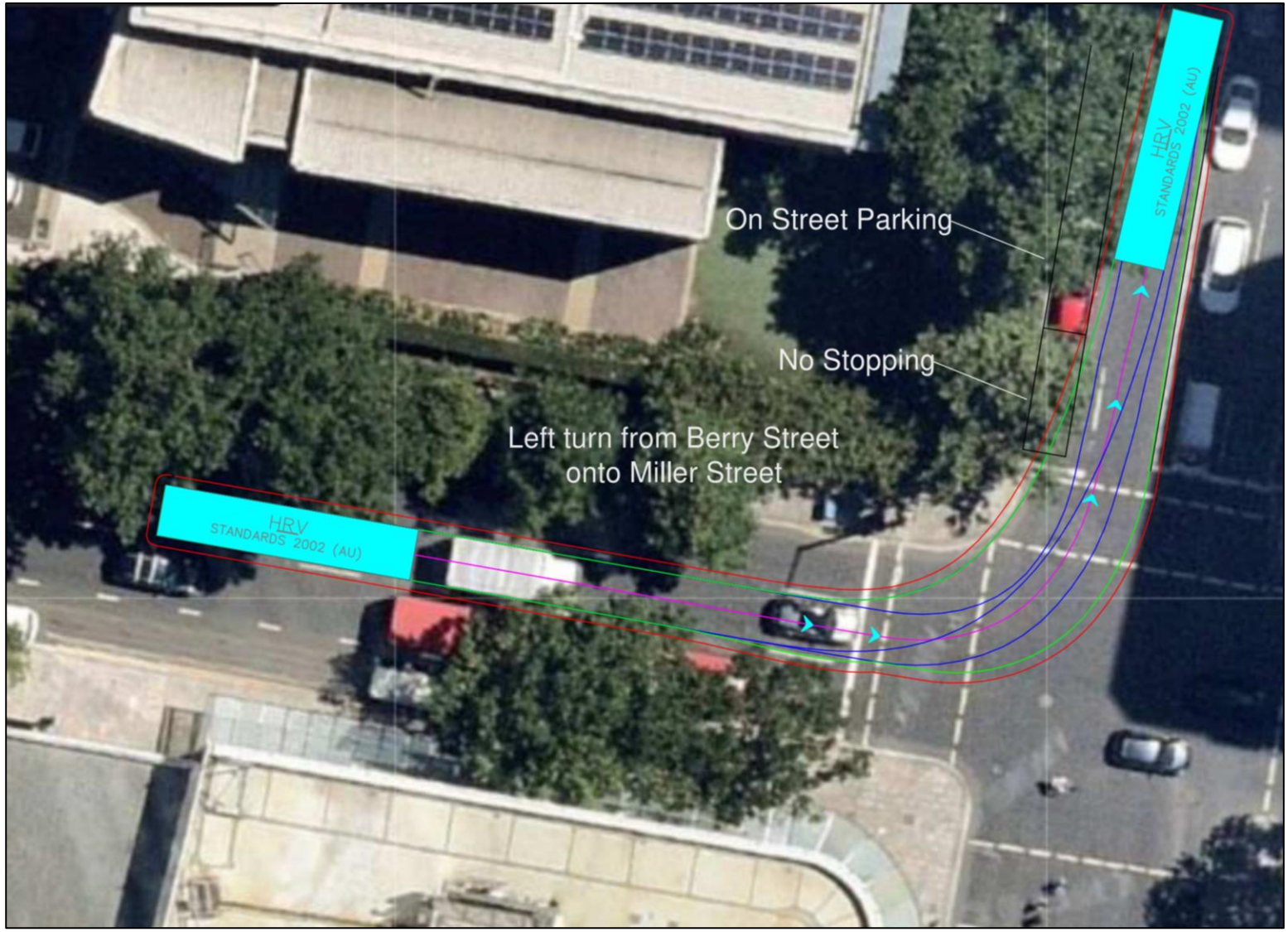
Successful – More detailed results shown later in this Annexure

ANNEXURE B: SWEPT PATH TESTING
(SHEET 3 OF 10)



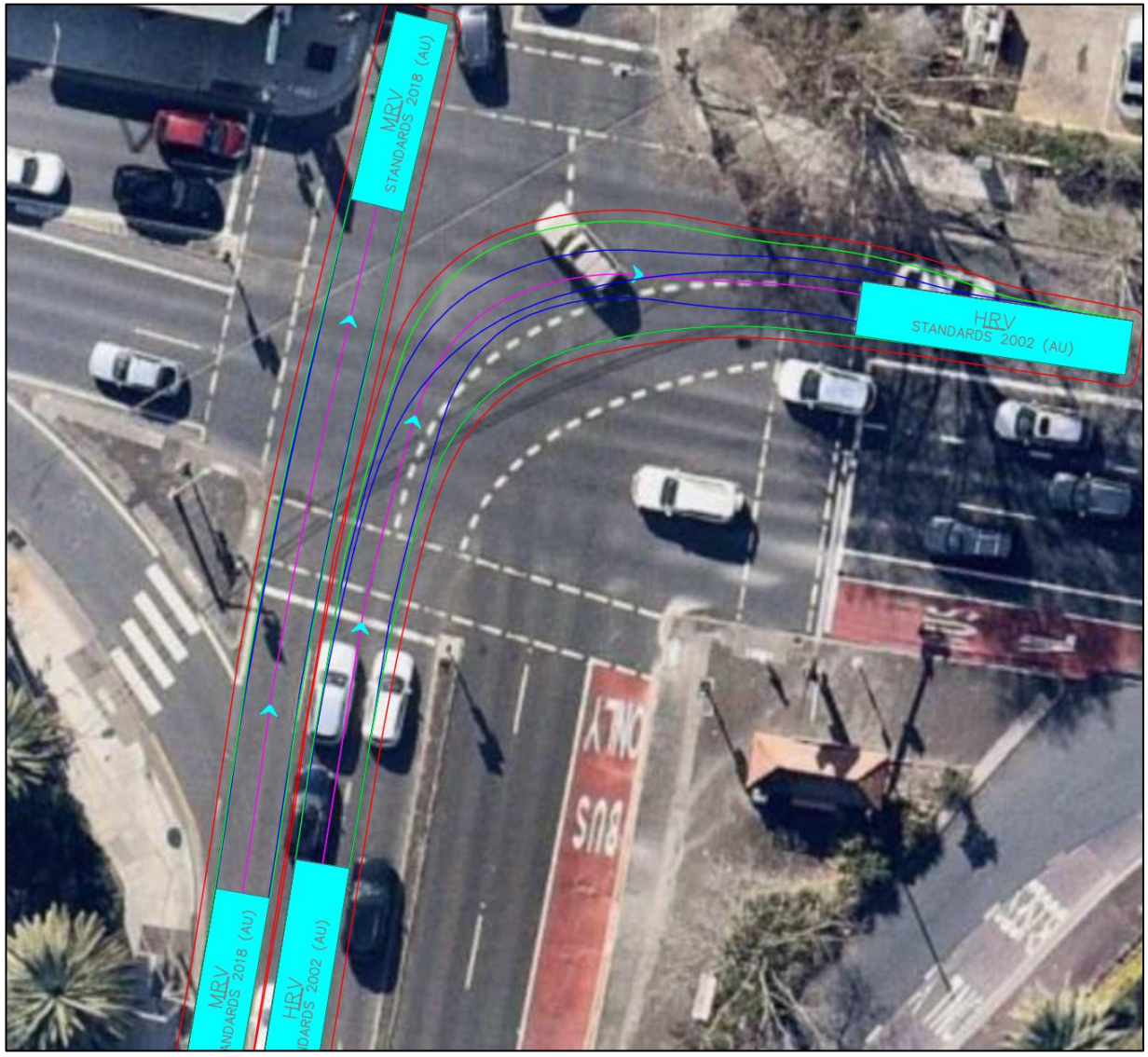
HRV LEFT TURN FROM PACIFIC HIGHWAY ONTO BERRY STREET - SUCCESSFUL

ANNEXURE B: SWEPT PATH TESTING
(SHEET 4 OF 10)



HRV LEFT TURN FROM BERRY STREET ONTO MILLER STREET - SUCCESSFUL

ANNEXURE B: SWEPT PATH TESTING
(SHEET 5 OF 10)



HRV RIGHT TURN FROM MILLER STREET ONTO FALCON STREET - SUCCESSFUL

ANNEXURE B: SWEPT PATH TESTING
(SHEET 6 OF 10)



12.5M LENGTH HEAVY RIGID VEHICLE (HRV) FORWARD ENTRY / FORWARD EGRESS FROM WORKS ZONE

Successful

ANNEXURE B: SWEPT PATH TESTING
(SHEET 7 OF 10)



MRV FORWARD ENTRY TO THE SITE

Note: This movement must be completed at low speed and with care and guidance of an RMS Accredited Traffic Controller

ANNEXURE B: SWEPT PATH TESTING
(SHEET 8 OF 10)

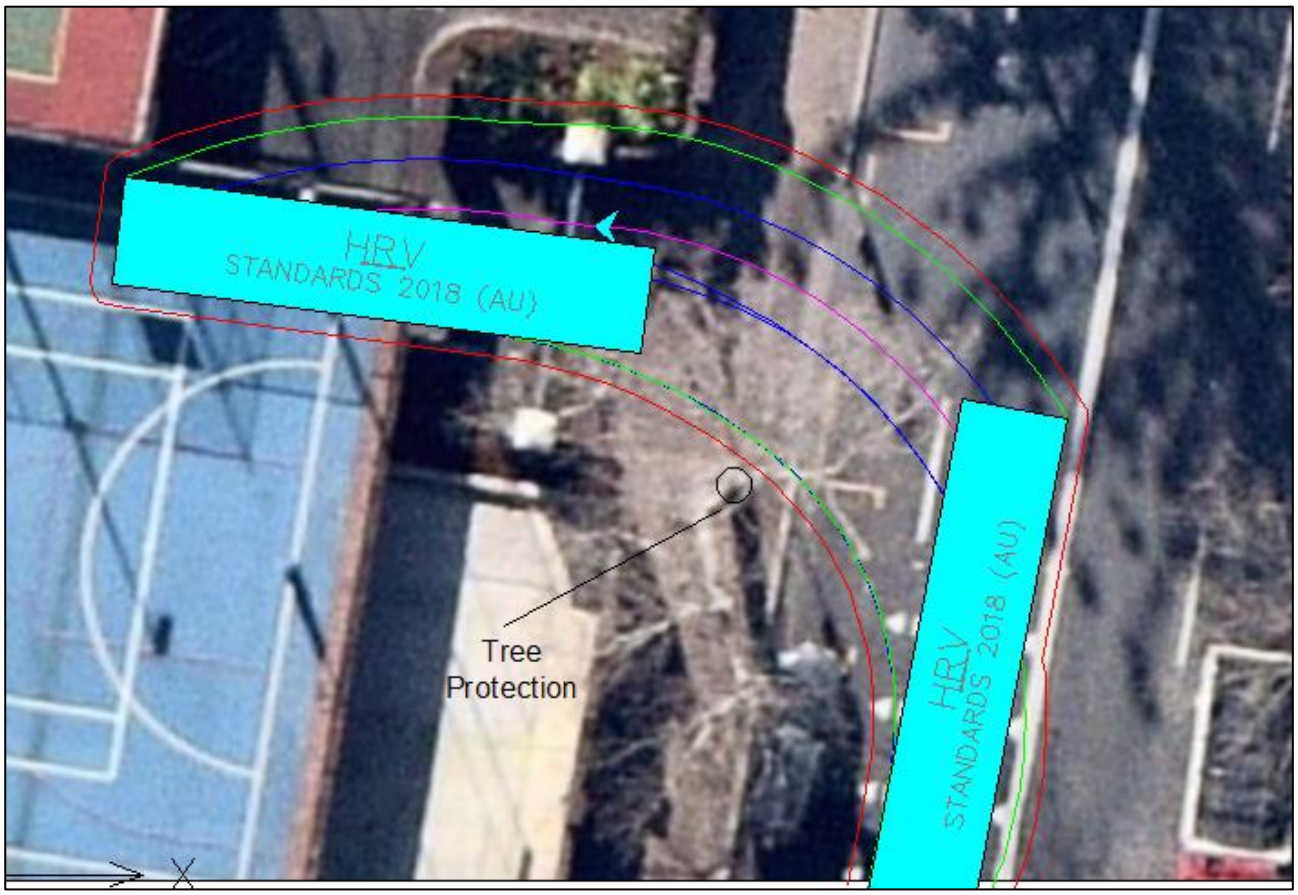


MRV FORWARD EXIT FROM THE SITE

Note: This movement must be completed at low speed and with care and guidance of an RMS Accredited Traffic Controller

Note: The MRV requires a minimum temporary driveway widening of 1.79 metres and a 11m length temporary “No Stopping” zone in order to accommodate the egress swept path.

ANNEXURE B: SWEPT PATH TESTING
(SHEET 9 OF 10)



HRV FORWARD ENTRY TO THE SITE

Note: This movement must be completed at low speed and with care and guidance of an RMS Accredited Traffic Controller

ANNEXURE B: SWEPT PATH TESTING
(SHEET 10 OF 10)



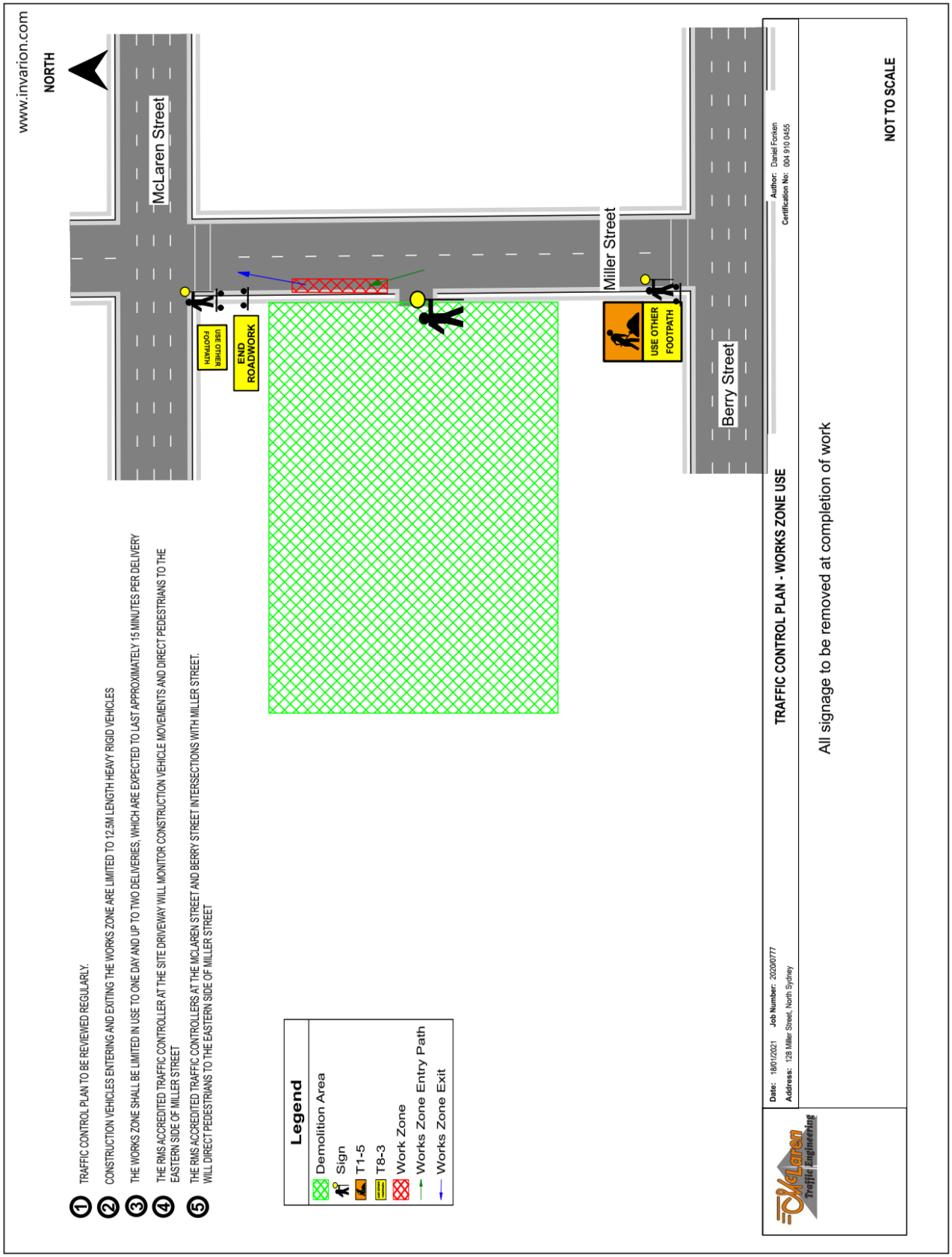
HRV FORWARD EXIT FROM THE SITE

Note: This movement must be completed at low speed and with care and guidance of an RMS Accredited Traffic Controller

Note: The HRV requires a minimum temporary driveway widening of 4 metres and a 16.5m length temporary “No Stopping” zone in order to accommodate the egress swept path.

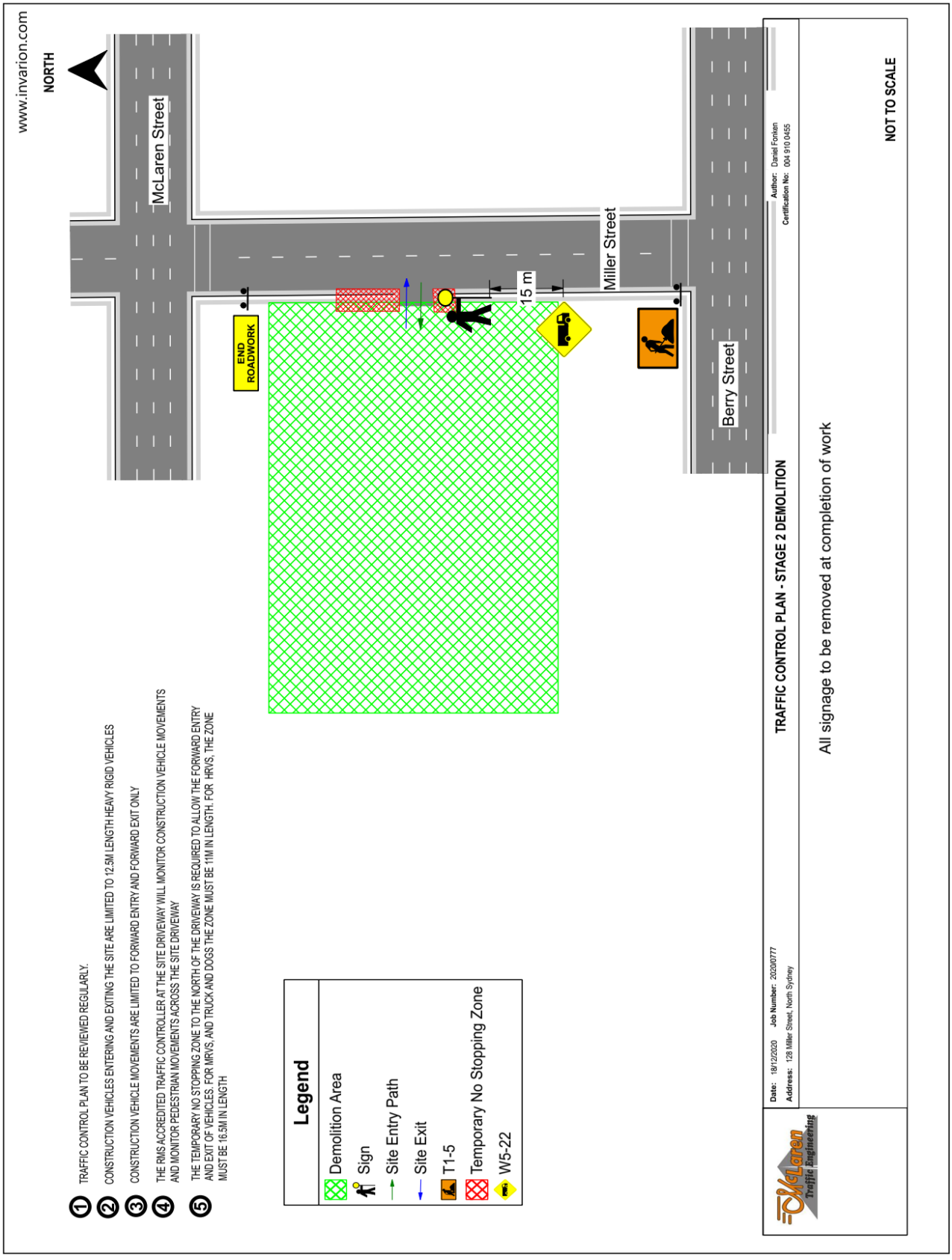
ANNEXURE C: TRAFFIC CONTROL PLAN

Demolition Stage 1



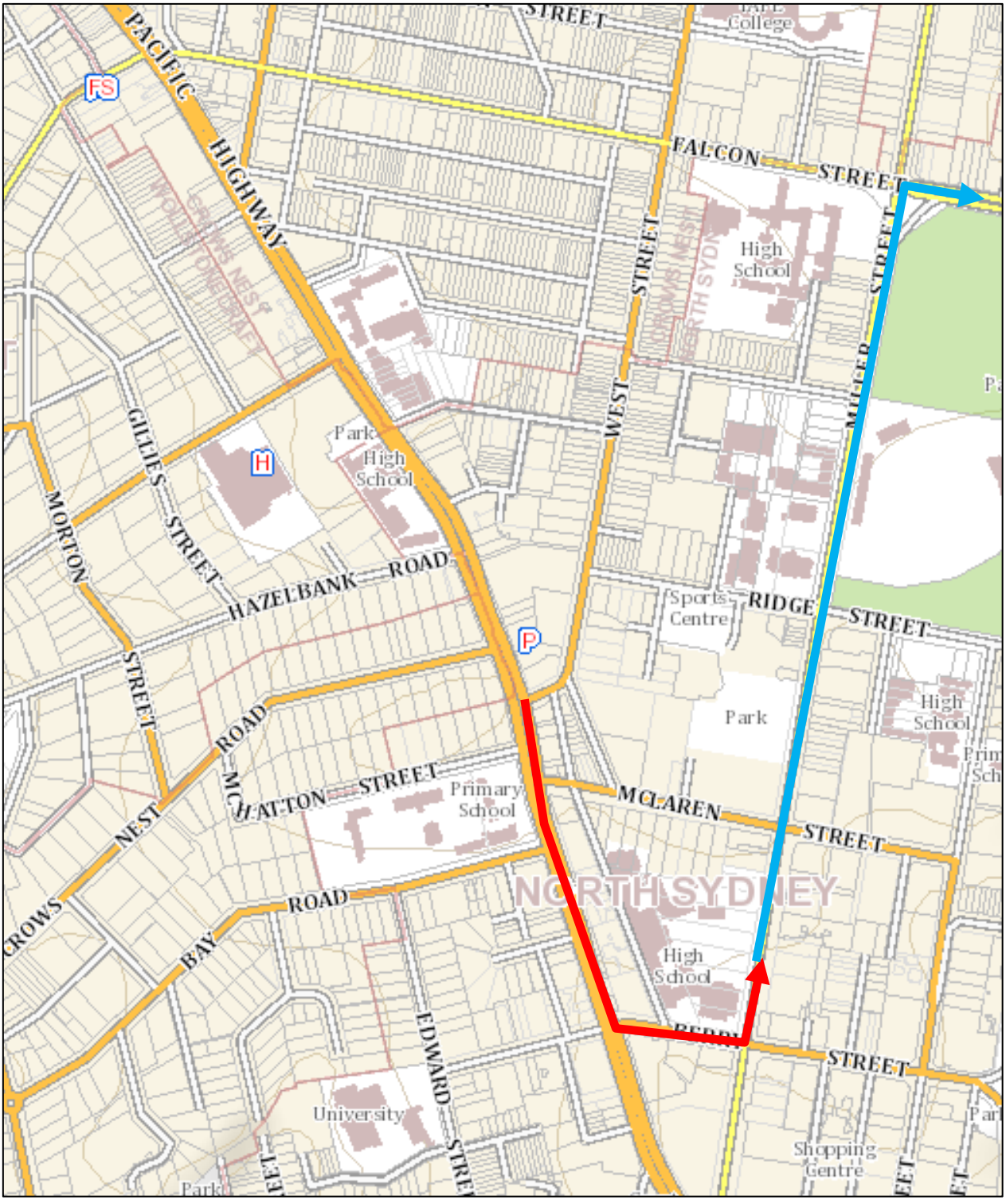
ANNEXURE C: TRAFFIC CONTROL PLAN

Demolition Stage 2



ANNEXURE D: CONSTRUCTION VEHICLE HAULAGE ROUTES

(Sheet 1 of 1)



Entry Path Exit Path

HAULAGE ROUTE

APPENDIX C- CONSTRUCTION WASTE MANAGEMENT SUB-PLAN

RICHARD CROOKES
CONSTRUCTIONS

MONTE SCIENTIA PROJECT
1228

CONSTRUCTION WASTE MANAGEMENT PLAN

15 January 2021

REGISTER

DATE	DESCRIPTION	BY	APPROVED BY
14.01.21	Draft for review	KB	MR
08.02.21	For submission	IS	MR

CONTENTS

1 INTRODUCTION 4

1.1 PURPOSE OF THE PLAN 4

2 RCC OBJECTIVES AND TARGETS 5

3 REPORTING 8

3.1 GREENSTAR: 8

3.2 GENERAL WASTE REPORTING: 8

4 APPENDICIES 9

4.1 APPENDIX A PREFERRED WASTE MANAEMENT SUBCONTRACTOR'S WASTE MANAGEMENT PLAN 9

1 INTRODUCTION

1.1 PURPOSE OF THE PLAN

Richard Crookes Constructions (RCC) recognises the importance of promoting building design and construction techniques which minimise waste and provides an efficient recycle procedure for all waste material.

The Waste Management Plan has been done in accordance with ***North Sydney Development Control Plan 2013 Waste Minimisation and Management***

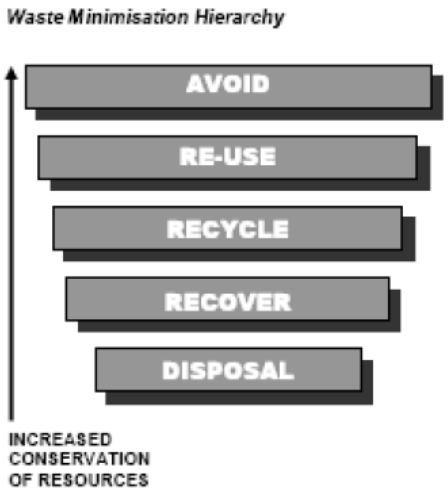
The purpose of this plan is to outline processes for:

- Objectives and Targets;
- Operational Controls;
- Recording, Monitoring Corrective Action; and,
- Reporting.

Refer to Annexure A for Bingo Operational Waste Management Plan

2 RCC OBJECTIVES AND TARGETS

RCC's overall objective is to achieve a minimum of (80%) for recycled waste (by weight) generated by the Project.

Operational Controls		Method of Recording
General	Identify any hazardous and toxic materials (e.g. asbestos) and comply with WorkCover requirements. Develop project Waste Management Plan Try not to over-order on materials (initial waste avoidance). Communicate housekeeping & litter reduction rules with subcontractors during contract letting and site inductions.	Hazardous substance survey Waste Records Inductions
Implement the waste hierarchy – avoid, reuse, recycle and lastly disposal to landfill.		
		
Demolition Plan	Demolition disposal for concrete, bricks, plasterboard, timber, tiles, PVC, metal, paper & cardboard, glass, appliance, carpet, vegetation, soil – to Recycled Facility Asbestos ACM to be removed by a licenced contractor (up to 30 June 2007 >200m2, 1 July 2007 > 50m3, from 1 Jan 2008 > 10m2 of bonded asbestos) & managed in accordance	Monthly Waste Report Disposal dockets

Operational Controls		Method of Recording
	with WHS Act & Regulation 2012 and EPA requirements. Lead paints & dusts will be removed using we sanding and vacuum techniques (cleaners which comply with AS/NZS 3544 Industrial vacuum cleaners for particulates hazardous to health). Waste will be contained within sealed plastic bags for disposal. Clean up with a wet mop.	
Consider recycling reprocessing	Where practicable: Timber for reuse or mulching Aluminium wall frames – reprocess Plasterboard – recycled or use as soil improvers Steel – reprocess Toughened Glass – reprocess Carpet & underlay – reprocess & mulch mats	Monthly Waste Report
Product Stewardship	Investigate returning waste to the supplier? (e.g. plasterboard, packaging)	Contract/ Supply agreem'ts
Putrescibles Waste	Putrescible waste is to be contained in bins and collected by licenced contractor for disposal	Invoices
Contaminated Soils	Contaminated soils will be excavated and classified in accordance with EPA guidelines "Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-Liquid Wastes" (June 2004) – www.environment.nsw.gov.au/waste/envguidlns/index.htm.	RAP Reports Test Reports Waste Records Disposal Dockets
Virgin Excavated Natural Materials (VEMN)	VENM excavated from site with suitable compaction qualities will be beneficially re-used on other construction sites whenever possible. Disposal to landfill will be the last option. No fill will be received on site that does not comply with EPA guidelines i.e. Contamination limits appropriate to the development.	Test Reports Waste Records Disposal Dockets
Acid Sulphate Soils (ASS)	Potential for acid sulphate soils ASS will be assessed based on the sites proximity to low-lying coastal areas e.g. coastal plains, wetlands and mangroves where the surface elevation is less than five metres above mean sea level. If suspected, consultant to prepare Acid Sulphate Soil Management Plan (ASSMP). Excavation and neutralisation to be supervised by consultants as per ASSMP.	ASSMP Test Reports Product delivery (lime) dockets Site Plans
Monitoring	Bin(s) with heavy lids shall be provided for putrescibles waste Daily inspections shall be carried out to ensure the worksite is litter free.	Env. Inspection Checklist

Operational Controls		Method of Recording
Reporting	Waste reports/management plans indicate estimated waste min (80%) of accumulated totals for the project.	Monthly Reports
Non-Compliance	Generation of water pollution and/or air pollution from onsite waste storage Inappropriate/illegal off-site disposal of waste materials Asbestos & CCA treated timber contamination of recoverable waste stream thereby requiring landfill disposal.	Env. Inspection Checklist Incident Report, NCRS
Emergency Response	No specific requirements associated with waste management Scenarios such as spill, fires, explosions covered by the project emergency response plans.	Incident Report

3 REPORTING

3.1 GREENSTAR:

The Project Green Star Administrator will be responsible for collecting monthly waste reports (Form 18.1) or utilising the waste subcontractor reporting format and issuing them to the Project Manager and Client Representative.

These reports will measure the weight of waste generated of material by classification, total weight of waste, percentage by weight recycled and percentage by weight to landfill.

3.2 GENERAL WASTE REPORTING:

Nominated member of the project team will be responsible for collecting monthly waste reports and issuing them to the Project Manager and Client Representative.

These reports will measure the weight of waste generated of material by classification, total weight of waste, percentage by weight recycled and percentage by weight to landfill.

4 APPENDICIES

4.1 APPENDIX A PREFERRED WASTE MANAEMENT SUBCONTRACTOR'S WASTE MANAGEMENT PLAN

PO Box 7, Enfield NSW 2136
PO Box 5351, Clayton South VIC 3168
T: 1300 424 646 F: 02 9737 0351
enquiries@bingoindustries.com.au
www.bingoindustries.com.au

CONFIDENTIAL

Waste Management & Recycling Plan (NSW)

Bingo Industries offers a complete, comprehensive solution to the management and recycling of wastes to assure compliance with clients' waste management policy.

Bingo Recycling Centre's combine bin storage, waste collection, waste recycling and waste transfer to service the building and construction industry and domestic waste management needs in New South Wales. Wastes collected by Bingo Bins are taken directly to one of these facilities where approximately 90% of wastes are converted to recovered resources.

Bingo (Genesis) Recycling Centre Alexandria	EPL No. 4679
Bingo Recycling Centre Artarmon	EPL No. 20763
Bingo Recycling Centre Auburn	EPL No. 10935
Bingo Recycling Centre Banksmeadow	EPL No. 12857
Bingo (Genesis) Recycling Centre Eastern Creek	EPL No. 20121
Bingo Recycling Centre Greenacre	EPL No. 20847
Bingo Recycling Centre Kembla Grange	EPL No. 20601
Bingo Recycling Centre Mortdale	EPL No. 20622
Bingo Recycling Centre Revesby	EPL No. 20607
Bingo Recycling Centre St Marys	EPL No. 20621
Bingo Recycling Centre Tomago	EPL No. 20585

As can be expected waste materials inwards vary considerably and are delivered to the Recycling Centres in tipping and non-tipping vehicles or in skip bins. Of the wastes inwards approximately 90% is recovered and recycled as materials outwards and the balance 10% to landfill. Waste materials inwards are processed to achieve the maximum recovery of resources and the minimum of un-recoverable material for offsite disposal.

Typical Composition of Bingo's Wastes Inwards

Wastes Inwards	Percentage (approx.)
Heavy Recyclable Materials	45%
Light Recyclable Materials	35%
Metals	10%
Non-Recyclable Materials	10%
Total	100%

Heavy Recyclable Materials:

- Soil
- Dirt
- Sand
- Rubble
- Brick
- Concrete
- Tiles
- Stone
- Asphalt

PO Box 7, Enfield NSW 2136
PO Box 5351, Clayton South VIC 3168
T: 1300 424 646 F: 02 9737 0351
enquiries@bingoindustries.com.au
www.bingoindustries.com.au

Light Recyclable Materials:

- Timber
- Green Waste
- Cardboard/ Paper
- Plastic
- Plasterboard

Metals:

- Ferrous (steel, black iron)
- Non-Ferrous (copper, wire, aluminium, stainless)

At the Resource Recovery Facility a simple and effective waste processing procedure is applied. See Materials Flow Diagram (below). Wastes inwards unloaded onto the sorting area where the waste is raked with a hydraulic excavator to expose the contents and where recyclable materials are hand and machine sorted. The raking process separates the waste into four streams for further processing.

Stream #1 Non-recyclable materials. These wastes pass to a holding area for off-site disposal.

Stream #2 Metals and light recyclable materials are removed and stored for off-site recycling.

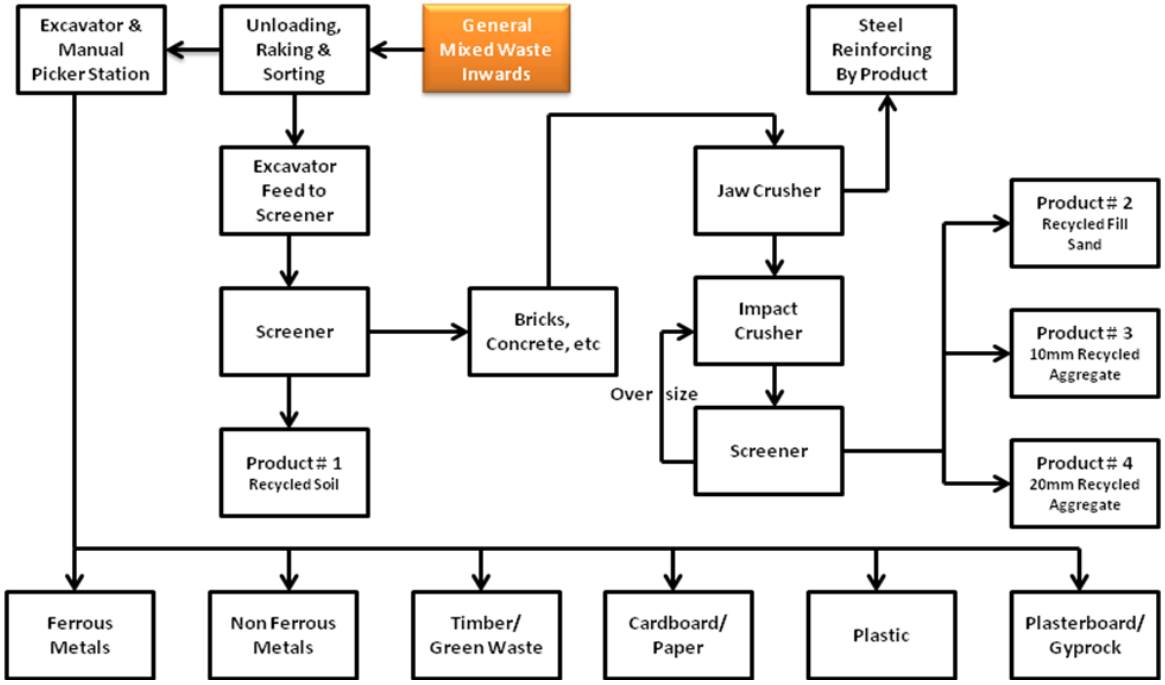
Stream #3 Large sized heavy weight brick, concrete and rubble pieces. These wastes pass to the crushers where they are crushed and re-enforcing fabric removed. The output from the crushers passes to the screener where products of different size are separated and stored in stockpiles. Re-enforcing fabric is collected and stored in the general steel bin for off-site recycling.

Stream #4 Small sized heavy weight soil, sand, brick, concrete and rubble. These wastes pass to the screener where the soil is separated form the brick, concrete and rubble. The brick, concrete and rubble then pass through Stream #3.

Stream #1 wastes are currently not recyclable and are removed from the land for off-site disposal. Stream #2 wastes, recovered metals and light recyclable materials are recycled off-site. Stream #3 and Stream #4 wastes are processed on site by crushing and screening to form saleable products such as soil, sand, and aggregates. These products are retained on site until sold.

PO Box 7, Enfield NSW 2136
PO Box 5351, Clayton South VIC 3168
T: 1300 424 646 F: 02 9737 0351
enquiries@bingoindustries.com.au
www.bingoindustries.com.au

Bingo Recycling Centre
Waste Transfer & Materials Recovery Facility
Flow Diagram



In summary, Bingo Bins take all their mixed waste skip bins directly to EPA Licensed Recycling Centres. From there the waste is sorted and separated into the following material classes for processing and recycling.

Type of Material	Where Processed/ Recycled	How Processed/ Recycled
Heavy Recyclable Materials (soil, dirt, sand, rubble, concrete, brick, tiles, asphalt, stone)	Bingo Recycling Centres	Re-processed into recycled products (such as recycled soil, fill sand, aggregates, roadbase) by crushing and screening.
Timber/ Green Waste	ANL/ Genesis	Re-processed into woodchip and mulch by shredding.
Metal/ Steel	Sell & Parker/ CMI	Re-processed into new metal and steel products by shearing, baling and re-smeltering.
Brick/ Concrete	Boral/ Genesis	Re-processed into recycled products (such as fill sand, aggregates, roadbase) by crushing and screening.
Cardboard/ Paper/ Plastic	Polytrade Recycling/ J.J. Richards/ Orora	Re-processed into new cardboard, paper and plastic products by breaking down the material into a form for re-use.
Plasterboard	ReGyp	Re-processed into gypsum products by shredding and screening.
General Waste	SUEZ Landfill/ Horsley Park Landfill/ Genesis Landfill	n/a

PO Box 7, Enfield NSW 2136
PO Box 5351, Clayton South VIC 3168
T: 1300 424 646 F: 02 9737 0351
enquiries@bingoindustries.com.au
www.bingoindustries.com.au

- **Bingo & Genesis Recycling Centres**
  76-82 Burrows Road, Alexandria NSW 2015
  10 Mclachlan Ave, Artarmon NSW 2064
  3-5 Duck Street, Auburn NSW 2144
  38 McPherson Street, Banksmeadow NSW 2019
  Honeycomb Drive, Eastern Creek NSW 2766
  35 Wentworth St, Greenacre NSW 2190
  50 Wyllie Road, Kembla Grange NSW 2526
  20 Hearne Street, Mortdale NSW 2223
  37-51 Violet Street, Revesby NSW 2212
  25 Dunheved Circuit, St Marys NSW 2760
  29 Laverick Avenue, Tomago NSW 2322
- **ANL**
  210 Martin Road, Badgerys Creek NSW 2555
- **Sell & Parker**
  45 Tattersall Road, Blacktown NSW 2148
- **CMI**
  38 York Road, Ingleburn NSW 2565
- **Boral**
  6-10 Burrows Road South, St Peters NSW 2044
- **Polytrade Recycling**
  32 South St, Rydalmere NSW 2116
  40 Madeline St, South Strathfield NSW 2136
- **J.J. Richards**
  12 Heald Rd, Ingleburn NSW 1890
  8 Kommer Pl, St Marys NSW 2760
- **Orora**
  1891 Botany Rd, Matraville NSW 2036
- **ReGyp**
  330 Captain Cook Drive, Kurnell NSW 2231
- **SUEZ Landfill**
  Elizabeth Drive, Kemps Creek NSW 2178
- **Horsley Park Landfill**
  Wallgrove Road, Horsley Park NSW 2164
- **Genesis Landfill**
  Honeycomb Drive, Eastern Creek NSW 2766



SYDNEY

LEVEL 3, 4 BROADCAST WAY
ARTARMON NSW 2064

PO BOX 1024
CROWS NEST NSW 1585

PHONE: +61 2 9902 4700
FAX: +61 2 9439 1114

NEWCASTLE

LEVEL 1, 118A BELFORD ST
BROADMEADOW NSW 2292

PO BOX 835
HAMILTON NSW 2303

PHONE: +61 2 9902 4700
FAX: +61 2 6766 3022

TAMWORTH

SUITE 1, 493 PEEL ST
TAMWORTH NSW 2340

PO BOX 576
TAMWORTH NSW 2340

PHONE: +61 2 6766 5225
FAX: +61 2 6766 3022

ACT

UNIT 1, 155 NEWCASTLE ST
FYSHWICK ACT 2609

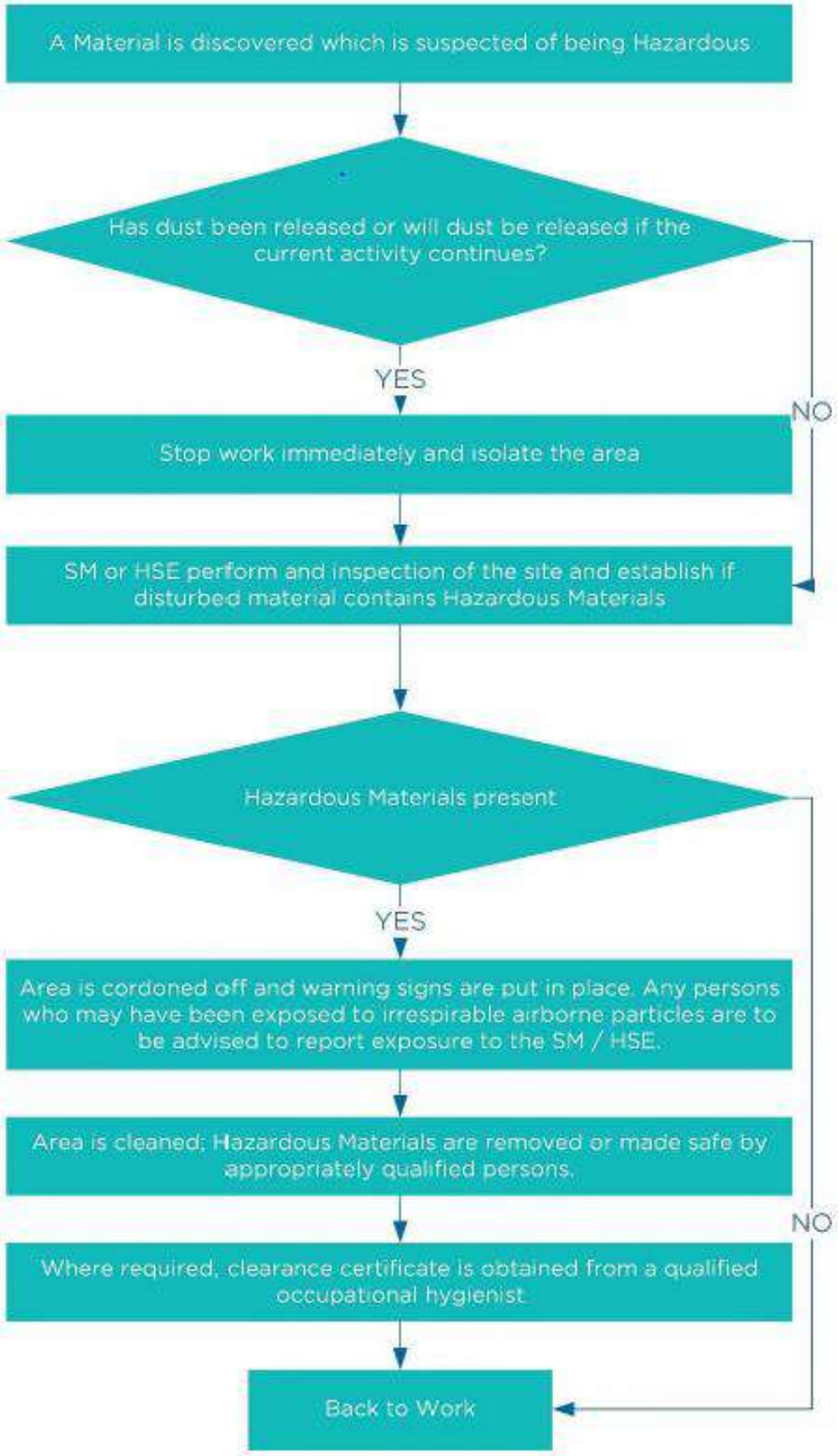
PO BOX 771
FYSHWICK ACT 2609

PHONE: +61 2 6143 2900
FAX: +61 2 6280 8774

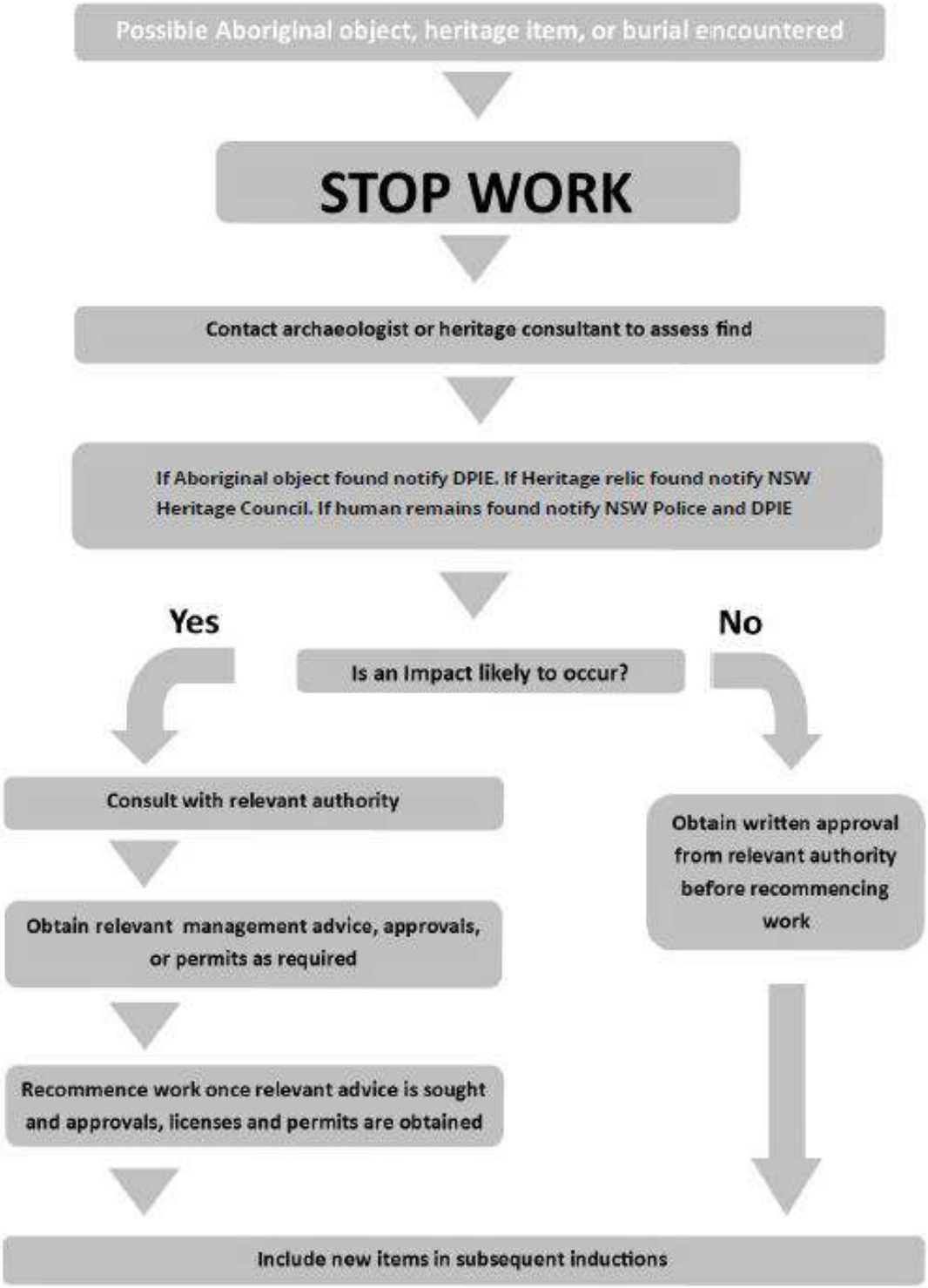
richardcrookes.com.au

Delivering Certainty

APPENDIX D – UNEXPECTED FINDS PROTOCOL FOR CONTAMINATION



APPENDIX E – UNEXPECTED FINDS PROTOCOL FOR ABORIGINAL & NON-ABORIGINAL HERITAGE



APPENDIX F – CONSTRUCTION SOIL AND WATER MANAGEMENT SUB-PLAN

Stormwater Management Plan

PROPOSED NEW SPORTS AND SCIENCE BUILDING AT MONTE SANT ANGELO MERCY COLLEGE



Issue: Version H

Prepared for: Monte Sant Angelo Mercy College

Project No.: WD19133

21 January 2021

Table of Contents

1.0 INTRODUCTION 1

2.0 DESCRIPTION OF SITE 3

3.0 MONTE AND THE SURROUNDING CONTEXT 4

4.0 PROJECT DESCRIPTION 5

5.0 RELEVANT CODES AND STANDARDS 6

6.0 THE SITE 6

7.0 EXISTING SITE CONDITION 6

7.1 Lawful point of discharge 6
7.2 Overland Flow Path 7

8.0 FLOOD ASSESSMENT 7

8.1 Council Flood Study 8

9.0 STORMWATER ASSESSMENT 9

9.1 Pre-Development Hydrology 9
9.2 Post Development Hydrology 9
9.3 On-Site Detention (OSD) 10

10.0 CONSTRUCTION 10

10.1 Site Access 10
10.2 Earthworks 10
10.3 Erosion and Sediment Control 10

11.0 Water Quality Strategy 11

10.1 Water Quality Model 11
10.2 Water Quality Results 12

12.0 GLOSSARY 13

13.0 APPENDICES 14

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in accordance with the agreement between the Client and Webber Design Pty Ltd. Webber Design Pty Ltd accepts no liability or responsibility whatsoever for any use of or reliance upon this report by any third party. Any copying of this report to external parties requires the permission of the Client and Webber Design Pty Ltd.

1.0 INTRODUCTION

Webber Design has been commissioned by Monte Sant Angelo Mercy College (the **Applicant**) to prepare this report in accordance with the technical requirements, in particular stormwater, of the Secretary's Environmental Assessment Requirements (**SEARs**), and in support of the SSD-10393 for the development of a new Sports and Science Building at Monte Sant Angelo Mercy College, North Sydney (**Monte**).

This repot addresses the following SEARs:

Table 1: Secretary's Environmental Assessment Requirement

Key Issue	Performance Outcomes
Utilities (SEAR No. 14): - Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of portable and non-portable water, and water sensitive urban design **Drainage (SEAR No. 16):** - Detail measures to minimise operational water quality impacts on surface waters and groundwater. - Stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties **Flooding (SEAR No. 17):** - Identify flood risk on-site (detailing the most recent flood studies for the project area) and consideration of any relevant provisions of the NSW Floodplain Development Manual (DIPNR, 2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity. If there is a material flood risk, include design solutions for mitigation - Risks include: o Increase rainfall intensity due to climate change	**Utilities (SEAR No. 14):** - Use of rainwater tank (**RWT**) for re-use such as irrigation and toilet flushing collected from non-trafficable roof. **Drainage (SEAR No. 16):** - Use of Model for Urban Stormwater Improvement Conceptualisation (**MUSIC**) analysis software to analyse water pollutant of the surface water and water treatment device such as litter basket and filtration pods to treat surface to designated pollution targets for Water Sensitive Urban Design (**WSUD**). - Stormwater pipes to control surface water and On-Site Detention Tank (**OSD**) to hold and discharge stormwater slowly to existing council stormwater pipe. **Flooding (SEAR No. 17):** - Manual analysis using survey contour to understand existing overland flow path and it is found that flow direction is towards Miller and Berry Street. - Review of North Sydney Council (**LGA**) flood study and its locality site condition. 1% AEP flood map shows that no flooding issue within the site, however minimal flooding at Miller Street and Berry Street - Proposed development shows open area to accommodate overland flow path to direct flow towards Miller Street and Berry street

○ Increase impervious area which cause increase on discharge rate to downstream.	similar to pre-existing conditions. In addition, On-Site Detention tank is designed to accommodate up to 1:100 year ARI flow to minimise additional discharge downstream.
Risk to OEH Land: The discharge of stormwater to OEH land poses a threat to the values of the land and downstream environment by: - Dispersing litter and pest species (especially weed) - Altering nutrient composition and pollutant levels, which can damage native vegetation and aquatic ecosystem, reduce water recreation safety and promote weed growth - Causing potential erosion and sedimentation in watercourses, particularly where new developments have led to an increased volume and concentration flow - Impacting on Arboriginal sites, which frequently located close to watercourses and historic heritage	**Approach of OEH Solution:** - Development proposal for areas adjacent to OEH land should incorporated stormwater detention and water quality systems (with appropriately managed buffer areas) within the development site. ○ This is demonstrated by having **OSD tank** to maintain and hold increased of volume and concentration flow. The OSD tank is design to maintain 1:5 year ARI flow and detain up to 1:100 year ARI flow. Refer to civil computations. ○ Water quality system is analyse using the MUSIC software and appropriate treatment devices are included in the stormwater system to minimise the dispersing litter, pest species and nutrient levels. - Stormwater should be diverted to council stormwater system or to infiltration and subsurface discharge system within the development site. ○ This is demonstrated by the discharge point is to the existing stormwater pipe at Miller Street. - The discharge of stormwater to OEH land, where the quantity and quality of stormwater differ from natural levels, must be avoided. ○ The additional runoff from the proposed development is captured via internal stormwater pipe, controlled, retained, filtered and discharge to appropriate location to avoid the quantity and quality differences to its natural condition.

2.0 DESCRIPTION OF SITE

The Monte campus is approximately 2.52 hectares comprises 18 allotments, which are described in Table 2 below and shown in Figure 1. It is noted that the new Sports and Science Building and the proposed works are located on Lots 3, 4 and 5 in DP 262534 (**The Site**).

Table 2: Monte Campus Allotments

Address	**Legal Description**
128 Miller Street	Lot 8 in DP 262534 Lots 1, 2, 3, 4, 5, 6 and 7 in DP 262534 Lot 4 in DP 5030 Lot 1 in DP 780403
5 McLaren Street	Lot 1 in DP 104072
9 McLaren Street	Lot A in DP 3393358
11 McLaren Street	Lot 11 in DP 5030
21-23 McLaren Street	Lot 10 in DP 5030
27 and 27A McLaren Street*	Lot 7 and 8 in DP 5030
29 Mclaren Street *	Lot 6 in DP 5030
31 Mclaren Street	Lot 5 in DP 5030

*Sisters of Mercy land is not used by the College.



Figure 1: Monte Sant Angelo Mercy College landholdings



Figure 2: The Site: Location of proposed Sports and Science Building.

The key school elements within and surrounding the Site include:

• The main vehicle entry to the School, the 'Circular-Drive' driveway is located to the north of the Site.

• The 'Holy Grass' lawn is located to the north-west of the Site and is surrounded by several original School buildings including the Chapel, Masalou Building, and Mercy Hall.

• Two existing sports courts centrally located within the site

• The McQuoin Hall / Aquatic Centre is located to the south of the Site.

• To the west of the Site is the Treanor Building, which comprises arts and textile teaching rooms.

• To the north of the 'Holy Grass' is the School Chapel and the O'Regan Arts and Cultural Common Building completed in 2014.

3.0 MONTE AND THE SURROUNDING CONTEXT

Monte is located in the North Sydney Council local government area (**LGA**). It is directly to the north of the

North Sydney CBD, which is the major commercial centre of North Sydney. Monte is located approximately 3.5km north of the Sydney CBD, 500 metres north of North Sydney Railway Station. Victoria Cross Metro Station is currently under construction diagonally opposite the school at the south-eastern corner of Miller Street and Berry Street, as well as an entrance to the north-east on the corner of McLaren Street. Miller Street runs along the eastern boundary of the Site which provides a major bus corridor to the North Shore and Northern Beaches.

The key land use characteristics surrounding the School campus are:

- **South**: North Sydney CBD commercial core, primarily characterised by high-rise commercial buildings and support services including hotels, retail uses, and Shore Grammar School.
- **North**: mixed precinct including:
  - Low-density residential area within a heritage conservation area;
  - Community buildings including the North Sydney Council Chambers
  - Schools including St Mary's Primary, Wenona School, Marist College and North Sydney Boys High School.
  - St Leonards Park
- **East**: The extension of the North Sydney CBD Commercial Core, generally characterised by high density residential and commercial buildings.
- **West**: Medium density residential and high-rise commercial buildings along the Pacific Highway. Further west is a low-density residential area which is identified as a heritage conservation area, and the Australian Catholic University.

Immediately surrounding the Monte campus is best described as:

- South (Berry Street): - Commercial buildings and the Victoria Cross Metro Station currently under construction.
- North (McLaren Street): McLaren Street is a heritage conservation area under the North Sydney LEP. Monte own most of the buildings on the southern side of McLaren Street which are generally single and two storey buildings originally built for residential purposes. The site at the south-western corner of Miller Street and McLaren Street is an Italian restaurant and a four-storey commercial building with basement parking. The northern side of McLaren Street is primarily used for community facilities including a preschool, Council Chambers, community hall, and public plaza/park used for a weekend fresh produce market.
- East (Miller Street): Mix of commercial, residential and hotel towers, as well as the Rag and Famish Hotel at the corner of Miller and Berry Streets. A northern pedestrian portal to the Victoria Cross Metro Station is proposed on the north-eastern corner of Miller Street and McLaren Street intersection.
- West (Angelo Lane): mix of commercial and high-density residential buildings up to 16-storeys with basement parking.

4.0 PROJECT DESCRIPTION

The proposed works comprise the following:

- Demolition of two existing sports courts and associated under croft staff carpark. The demolition works will include demolition of all structures between the main 'circular-drive' driveway entry from Miller Street, and the McQuoin Hall/Aquatic Centre at the corner of Miller and Berry Streets.

- Construction of a new four-storey sports and science building with a basement staff carpark, partially underground dual sports court facility, three levels of new teaching spaces (innovation / science labs) and a rooftop sports court.
- Landscaping works surrounding the new sports and science building.

5.0 RELEVANT CODES AND STANDARDS

National Construction Code - 2019

AS3500.3:2018 – Plumbing and drainage – Part 3: Stormwater drainage

North Sydney Development Control Plan (**DCP**) – Stormwater Management

North Sydney Stormwater Management and Disposal Design Plan – Construction Issue Detail

6.0 THE SITE

The site details of the property for the proposed development are as itemized within Table 3 below.

Table 3: The Site Details

Street Address	128 Miller Street: Lots 3, 4, 5 in DP 262534
Building Footprint	4050m^2 (Approximate)

7.0 EXISTING SITE CONDITION

The existing site is currently made up of two existing sports courts, fire pump room and associated under croft staff carpark, approximately 90% site coverage, with the remainder of the site pavement for pedestrian walk zone and trees zone.

The site is approximately 90% impervious and predominantly covered by the sport courts, vehicle parking and paved surface.

For the existing site survey refer to survey documentation prepared by TSS Total Surveying Solutions.

7.1 Lawful point of discharge

The pre-development site currently utilizes several points of discharge which connect to the council storm water infrastructure via what appears to be kerb and channel discharge connection within Miller Street, in addition the overland flow from the sports courts and vehicle to be directed towards Miller Street. The council in ground drainage infrastructure maps for the site also indicates a single pipe network at Miller Street.

Refer site survey detailed within, Appendix A, and council in ground storm water drainage infrastructure map, also within Appendix A.

It is proposed that the new development will add new connection to the existing in ground storm water connection at Miller Street.

As such, it is proposed the site will be drained to a single connection point to the existing council pipe, via a new internal stormwater system, on-site detention tank and flow control pit. Refer to civil drawings, Appendix C.

The proposed drainage connection will allow for the capture, treat the rainwater, temporary store the stormwater, and controlled discharge of stormwater to the in-ground council stormwater pipe at Miller Street.

7.2 Overland Flow Path

The suspended Level 0 structure supporting “The Wild Flower Garden” towards the centre of the site including the surrounding walkway path and garden area leading to the existing McQuoin building will be constructed in post-tensioned concrete.

In the event of a major storm, these areas will be designed to ensure that an overland flow path for the surface water from any landscaping surrounding the site is diverted towards the eastern side of the property towards Miller Street. Refer to overland flow path drawings.

8.0 FLOOD ASSESSMENT

The current condition of the site is falling from the north west to the south east towards the corner of Miller Street and Berry Street. Survey taken by TSS Total Surveying Solutions shows that the site falls significantly. The site is not expected to have any flooding issues. This is confirmed by land data taken from NSW ePlanning Spatial Viewer map below.



Figure 3: NSW ePlanning Spatial Viewer Map

As mentioned on *Section 7.2 – Overland Flow Path*, the proposed site will have open space at Level 0 for the new pedestrian walkway path. This creates a path to divert water from the existing landscaping features up north to the south east towards Miller Street and Berry Street. This should not create any flood issue for the new sports building. Refer to overland flow path drawings.

8.1 Council Flood Study

North Sydney LGA council has done a flood study to investigate local overland flooding and mainstream flooding to determine the nature and extent of the flood hazard. It includes an area of Council's 10.9 km² LGA. The objective is to define design flood behaviour for the 20% (1:5 year ARI), 10% (1:10 year ARI), 5% (1:20 year ARI), and 1% (1:100 year ARI). Based on a report and map of the flood study, the development area is not affected by flood. However, there is minor flood risk (0.15m-0.3m depth) during the 1% or Peak Flow within Miller Street and Berry Street. Refer to North Sydney LGA Flood Study prepared by WMA Water, reference number 114035, dated February 2017.

The above council flood study shows that flooding occurs at Miller and Berry Street during 1% or 1:100 year ARI. The proposed stormwater system includes OSD tank which can hold up to 1% or 1:100 year ARI storm events therefore additional flow impacted by the proposed building will not affect the current flood condition downstream on the street.



Figure 4: 1% AEP Peak Flood Depth

9.0 STORMWATER ASSESSMENT

9.1 Pre-Development Hydrology

The pre-development hydrology has been assessed by assuming the site condition is at natural state or “undeveloped site”. This means that the site is assumed 100% pervious with coefficient of discharge 0.35. Based on this value the peak discharge rate at existing condition is calculated of 61 L/s as detailed on the On-Site Stormwater Detention System Designer for Windows (**OSD4W**) software computation, Appendix D.

9.2 Post Development Hydrology

The post-development hydrology catchment plan has been based on the preliminary architectural plans for the proposed new development.

As outlined within the review of the post-development catchment plan the site has been nominated as 73% impervious area and 27% pervious area.

9.3 On-Site Detention (OSD)

On-Site Detention is required to limit post-development outflow to the undeveloped condition which occur during 1 in 5 year storm or 1:5 year Average Recurrence Interval (**ARI**) and to store all post development stormwater run-off from the site up to 1:100 year ARI. Council guide, North Sydney Stormwater Management and Disposal Design Plan – Construction Issue Detail on section C2, outlined that it is required to store up to 1:20 year ARI storm event however to minimise the downstream effect as outline in Section 8 additional storage has been added up to 1:100 year ARI.

Based on statement above and OSD4W software, the total volume of the OSD will be 97,000 L. The location of the OSD tank will be on the eastern side, adjacent to the new sports building at Level -1.

Refer to Appendix D for the on-site detention tank volume computations using OSD4W software.

10.0 CONSTRUCTION

10.1 Site Access

While it is expected that a detailed site access management plan will be developed as part of the detailed design, our preliminary review of the site access options are as follows.

It is proposed to access the site during construction from Miller Street as detailed on the proposed Sediment and Erosion plan on Appendix C.

10.2 Earthworks

The earthworks for the subject site will consist of excavation of two-level basements which will extend over the majority of the development site. The structure will be built with a structural engineer designed retention system to allow a vertical site.

10.3 Erosion and Sediment Control

It is expected that all sediment and erosion controls will be finalized in the detail design phase, and a construction management plan will address management of erosion and sediment control during construction and transportation.

However, preliminary sedimentation and erosion control measure have been identified within the sediment and erosion control plans.

11.0 Water Quality Strategy

The aim of the water quality strategy is to treat the stormwater to a certain reduced pollution target before discharging to the council drain. As advised by Harry Konsti from North Sydney Council, council expectation of WSUD specific quality targets are specified as shown below.

Table 4: North Sydney WSUD Stormwater Quality Targets

Water Quality Parameters	**% Reduction**
Total Suspended Solids (TSS)	80
Total Phosphorus (TP)	45
Total Nitrogen (TN)	45
Gross Pollutants (Litter)	70

For the proposed catchment area, the non-trafficable roof area of 105m^2 (0.011 ha) drains into rainwater tank at Level -1. Refer to hydraulic engineering drawings for suspended pipe network and details.

The water in the rainwater tank will be harvested for either internal or external use including irrigation of gardens/landscape areas.

Once the rainwater tank is full, it will overflow to the OSD tank. The water is stored, filtered via OceanProtect 6 x 460 PSORB filtration pods and discharged slowly to surcharge pit. This filtered water is then discharge to council stormwater pipe.

The remaining area such as the suspended ground floor landscaping, ground floor open space and roof sport courts will discharge to OceanProtect litter basket inside the OSD tank. It is then combined with overflow from rainwater tank and filters through filtration pods.

The water quality model for the site is established using MUSIC (Version 6.3). The rainwater tank, litter basket and filtration pods characteristics which are used in MUSIC are provided in Appendix E and shown below.

10.1 Water Quality Model

The proposed site is divided into a number of sub-catchments shown in table below.

Table 5: Impervious Area for Catchment

Sub-Catchment	**Description**	**Treatment Node**	**Area (Ha)**	**Impervious Fraction (%)**
01	Non-trafficable Roof	RWT, OSD Tank, Filtration Pods	0.011	100
02	Trafficable Areas	Litter Basket, OSD Tank, Filtration Pods	0.285	90

03	Landscaping	Litter Basket, OSD Tank, Filtration Pods	0.114	30

10.2 Water Quality Results

The MUSIC model results show that the pollutant removal rate achieves the reduction targets provided. The results from the MUSIC model are tabulated below.

Table 6: Treatment Train Result (MUSIC Modelling Result)

Items	**Mean Annual Pollutant Loads (kg/yr)**		**Pollutant Reduction / Removal Rate (%)**	**Target Pollutant Removal Rate (%)**
	Existing	**Proposed With Treatment Train**		
Total Suspended Solids	676	98.5	85.4	80
Total Phosphorus	1.17	0.401	65.7	45
Total Nitrogen	8.8	4.52	48.7	45
Gross Pollutant	102	0	100	70

12.0 GLOSSARY

Glossary

Term	Definition
The Site	128 Miller Street: Lots 3, 4, 5 in DP 262534
The Project	Demolition and the construction of a new Sports and Science Building and associated landscape works.
Australian Standards	AS/NZS 3500.3:2018 – Plumbing and drainage – part 3: stormwater drainage
Council guidelines	North Sydney DCP 2013 – Part B: Section 17 & 18
Building Code	National Construction Code 2019

Abbreviations

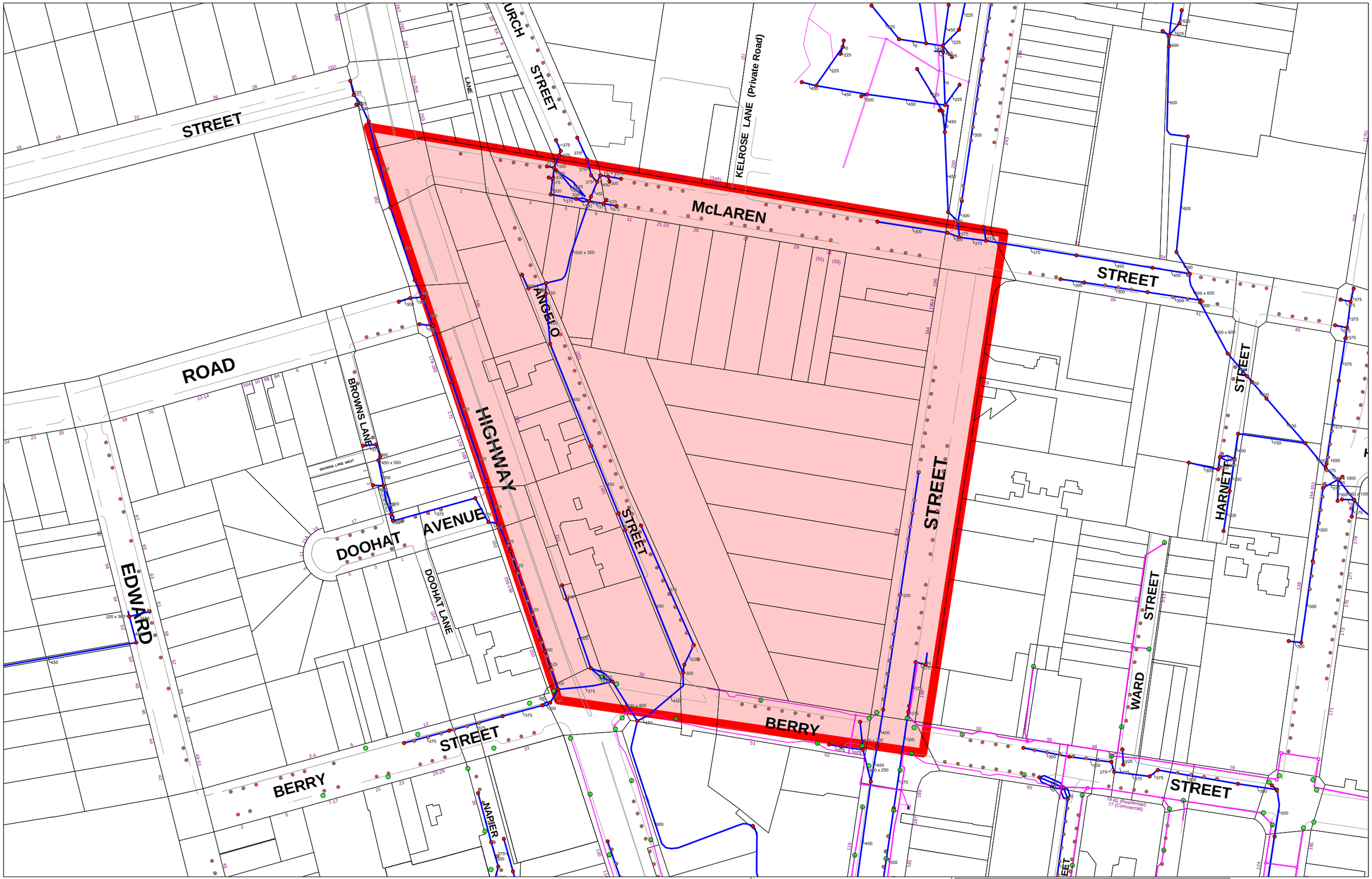
Abbreviations	Meaning
ARI	Average Recurrence Interval
AS	Australian Standard
BCA	Building Code of Australia
Council	North Sydney Council
DCP	North Sydney Development Control Plan
LGA	North Sydney Council Local Government Area
Monte	Monte Sant Angelo Mercy College
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NCC	National Construction Code
OSD	On-Site Detention
OSD4W	On-Site Stormwater Detention System Designer for Windows
RWT	Rainwater Tank
SEARs	Secretary Environmental Assessment Requirements
The Site	The new Sports and Science Building Site
WSUD	Water Sensitive Urban Design

Links

- https://www.northsydney.nsw.gov.au/Building_Development/Other_Planning_Documents/North_Sydney_LGA_Wide_Flood_Study
- https://www.northsydney.nsw.gov.au/Building_Development/LEP_DCP/Development_Control_Plan

13.0 APPENDICES

APPENDIX A – SITE SURVEY, FLOOD STUDY MAP AND SECTION TO METRO TUNNEL



North Sydney Council

Copyright:
Copyright © North Sydney Council - No part of this map may be reproduced without permission. Commercial decisions should not be made based on information contained in this map. Locations and measurements shown are indicative only and must be confirmed on-site.

Further details can be obtained by calling (02) 9936 8100 or e-mail dbyd@northsydney.nsw.gov.au.

NORTH SYDNEY COUNCIL STORMWATER DRAINAGE/ UNDERGROUND POWER AND LIGHTPOLE FOOTINGS/ PARKING METER SENSORS

LEGEND

- Drainage Pipe
- Drainage Pit
- Conduit / Cable
- Parking Meter Sensors
- Gross Pollutant Trap
- Litter Basket
- Distribution Board
- NSC Multi-Purpose Pole (Footing / Pole)

Job Number:	18577996
Seq Number:	92173718
Recipient:	gracio@webberdesign.com
Date: 15:11:19	Scale At A3: 1:1550

N W E S

Copyright:
All 2D, 3D and ortho-photograph layers © Copyright North Sydney Council 2000. No part of this map may be reproduced without prior written permission. All Rights Reserved.

Disclaimer:

This material has been compiled from 2D and 3D digital data. Although every effort has been made to ensure its accuracy, North Sydney Council and/or contributors accept no responsibility for any inaccuracies or omissions. Persons using this material do so entirely at their own discretion and accept sole responsibility for any consequences arising directly or indirectly therefrom.

Planning Scheme:

North Sydney Local Environmental Plan was gazetted 3 November 1988 and as amended by amendments gazetted up to the date specified on this map. The only maps that should be relied upon for compliance/advice purposes are those that are certified by the General Manager under the copies certified under Section 65E of The Environmental Planning and Assessment Act.

Note:

This map has been prepared from 2D, 3D and ortho-photographic digital data. Where 3D data is shown, it is based on aerial photography flown for the above purposes by Lands Data Office and validated against the Council Registry of Survey Marks. Ortho-photographs were flown in March 2000 and 1997 by PSN Surveying. Ortho-photographs were developed from eleven part aerial photographs. DEM 1997 by PSN Surveying.

Accuracy:
All horizontal layers (x, y) - ± 0.5metres.
All vertical layers (z, z, z) - ± 1m but are provided by PSN Surveying.

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM35782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7-8:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (AI913416)
LOT 7:
POSITIVE COVENANT (AI913416)
LOT 8:
LEASE TO AUSGRID (9448391)

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.



LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	LP
POWER POLE	P
FIRE HYDRANT	FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	SMH
STOP VALVE	SV
WATER METER	M
PIT	PIT

SERVICES LEGEND

SERVICE	LINE TYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

EC - EDGE OF CONCRETE
TK - TOP OF KERB
TW - TOP OF WINDOW
BW - BOTTOM OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
PL - POWER LINES
BAL - BALCONY
AWN - AWNING
PPT - PARAPET
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

BAR SCALE
0 5 10 15 20 40m
PLOTTED SCALE 1:400 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT: MONTE SANT ANGELO COLLEGE
PROJECT: NORTH SYDNEY
ADDRESS: 128 MILLER STREET, NORTH SYDNEY

JOB No.: 192082	LGA: NORTH SYDNEY
PLAN No.: 192082_A	DATUM: AHD
DATE: 9/09/2019	SCALE: 1:400 @ A0
DRAWN: RB/ZD	CONT. INTERVAL: 0.25m
CHK: GS	SHEET 1 OF 6

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATORS(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM35782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7-8:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (AI913416)
LOT 7:
POSITIVE COVENANT (AI913416)
LOT 8:
LEASE TO AUSGRID (9448391)

LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	LP
POWER POLE	P
FIRE HYDRANT	FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	S SMH
STOP VALVE	SV
WATER METER	
PIT	PIT

SERVICES LEGEND

SERVICE	LINETYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

MCLAREN STREET

ANGELO LANE

TWO STOREY BRICK RESIDENCE No.5 METAL ROOF
LOT 1 DP 104072 496.5m²

SINGLE STOREY BRICK RESIDENCE No.3 TILE ROOF
LOT 1 DP 780400

SINGLE STOREY BRICK RESIDENCE No.7 TILE ROOF
LOT A DP 339358 853.5m²

SINGLE STOREY BRICK RESIDENCE No.9 TILE ROOF
LOT 11 DP 5030 935.4m²

TWO STOREY BRICK RESIDENCE No.21-23 TILE ROOF
LOT 10 DP 5030 938.3m²

TWO STOREY RENDERED RESIDENCE No.25 TILE ROOF
LOT 9 DP 5030

LOT B DP 339358 45.0m²

BENCHMARK TEXTA ON WALL RL 81.70 AHD

ANY OPPER WINDOWS NOT VISIBLE

EC - EDGE OF CONCRETE	FL - FLOOR LEVEL
TK - TOP OF KERB	PL - POWER LINES
TW - TOP OF WINDOW	BAL - BALCONY
BW - BOTTOM OF WINDOW	AWN - AWNING
TG - TOP OF GUTTER	PPT - PARAPET
RR - ROOF RIDGE	Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

BAR SCALE
0 1 2 3 4 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT:	MONTE SANT ANGELO COLLEGE
PROJECT:	NORTH SYDNEY
ADDRESS:	128 MILLER STREET, NORTH SYDNEY

JOB No.:	192082	LGA:	NORTH SYDNEY
PLAN No.:	192082_A	DATUM:	AHD
DATE:	9/09/2019	SCALE:	1:400 @ A0
DRAWN:	RB/ZD	CONT. INTERVAL:	0.25m
CHK:	GS	SHEET 2 OF 6	

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM35782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7-8:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (AI913416)
LOT 7:
POSITIVE COVENANT (AI913416)
LOT 8:
LEASE TO AUSGRID (9448391)

LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	✧ LP
POWER POLE	Ⓟ
FIRE HYDRANT	FH FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	Ⓢ SMH
STOP VALVE	SV
WATER METER	M
PIT	PIT

SERVICES LEGEND

SERVICE	LINETYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

MCLAREN STREET

MILLER STREET

BENCHMARK DRW IN KERB RL 83.50 AHD

BENCHMARK NAIL IN CONC. RL 83.31 AHD

VOID OF SLAB BENEATH ACCURATE READINGS NOT POSSIBLE

TWO STOREY BRICK RESIDENCE No.27 TILE ROOF
LOT 8 DP 5030 933.7m²

LOT 7 DP 5030 930.7m²

SINGLE STOREY BRICK RESIDENCE No.29 TILE ROOF
LOT 6 DP 5030 927.7m²

TWO STOREY BRICK RESIDENCE No.31 TILE ROOF
LOT 5 DP 5030 924.8m²

MULTI STOREY BRICK RESIDENCE No.196 TILE ROOF
LOT 2 DP 734946

MULTI STOREY BRICK RESIDENCE No.194 TILE ROOF
LOT 1 DP 781576

LOT 1 DP 780403 329.1m²

TWO STOREY RENDERED BUILDING No.126 TILE ROOF
LOT 4 DP 5030 630.5m²

LOT 7 DP 262534 2391.4m²

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

EC - EDGE OF CONCRETE
TK - TOP OF KERB
TW - TOP OF WINDOW
BW - BOTTOM OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
PL - POWER LINES
BAL - BALCONY
AWN - AWNING
PPT - PARAPET
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

BAR SCALE
0 1 2 3 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT: MONTE SANT ANGELO COLLEGE
PROJECT: NORTH SYDNEY
ADDRESS: 128 MILLER STREET, NORTH SYDNEY

JOB No.: 192082	LGA: NORTH SYDNEY
PLAN No.: 192082_A	DATUM: AHD
DATE: 9/09/2019	SCALE: 1:100 @ A0
DRAWN: RB/ZD	CONT. INTERVAL: 0.25m
CHK: GS	SHEET 3 OF 6

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

LOT 7
DP 262534
2391.4m²

LOT 6
DP 262534
2187.2m²

LOT 5
DP 262534
1929.7m²

LOT 4
DP 262534
1672.2m²

SINGLE STOREY RENDERED CHURCH No.128 TILE ROOF

SINGLE STOREY BRICK BUILDING No.128 TILE ROOF

TWO STOREY BRICK BUILDING No.128 METAL ROOF

BENCHMARK NAIL IN CONC. RL 80.14 AHD

BENCHMARK NAIL IN KERB RL 74.15 AHD

DISTURBED GROUND ACCURATE SERVICE LOCATIONS NOT POSSIBLE

MILLER STREET

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM35782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7,8:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (AI913416)
LOT 7:
POSITIVE COVENANT (AI913416)
LOT 8:
LEASE TO AUSGRID (9448391)

LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	LP
POWER POLE	P
FIRE HYDRANT	FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	SMH
STOP VALVE	SV
WATER METER	
PIT	PIT

SERVICES LEGEND

SERVICE	LINETYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

EC - EDGE OF CONCRETE
TK - TOP OF KERB
TW - TOP OF WINDOW
BW - BOTTOM OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
PL - POWER LINES
BAL - BALCONY
AWN - AWNING
PPT - PARAPET
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

BAR SCALE
0 1 2 3 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT: MONTE SANT ANGELO COLLEGE
PROJECT: NORTH SYDNEY
ADDRESS: 128 MILLER STREET, NORTH SYDNEY

JOB No.: 192082	LGA: NORTH SYDNEY
PLAN No.: 192082_A	DATUM: AHD
DATE: 9/09/2019	SCALE: 1:100 @ A0
DRAWN: RB/ZD	CONT. INTERVAL: 0.25m
CHK: GS	SHEET 4 OF 6

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

LOT 3
DP 262534
1414.7m²

LOT 2
DP 262534
1157.2m²

LOT 8
DP 262534
4821.5m²

LOT 1
DP 262534
898.7m²

TWO STOREY
BRICK & CLAD BUILDING
No.128
FLAT ROOF

SINGLE STOREY
BRICK RESIDENCE
No.128
METAL ROOF

BENCHMARK
NAIL IN CONC.
RL 75.30 AHD

BENCHMARK
NAIL IN KERB
RL 69.52 AHD

BENCHMARK
NAIL IN PATH
RL 67.66 AHD

ANGELO LANE

MILLER STREET

BERRY STREET

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM3782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7-8:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (AI913416)
LOT 7:
POSITIVE COVENANT (AI913416)
LOT 8:
LEASE TO AUSGRID (9448391)

LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	LP
POWER POLE	P
FIRE HYDRANT	FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	SMH
STOP VALVE	SV
WATER METER	M
PIT	PIT

SERVICES LEGEND

SERVICE	LINETYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

EC - EDGE OF CONCRETE
TK - TOP OF KERB
TW - TOP OF WINDOW
BW - BOTTOM OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
PL - POWER LINES
BAL - BALCONY
AWN - AWNING
PPT - PARAPET
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

BAR SCALE
0 1 2 3 4 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT: MONTE SANT ANGELO COLLEGE
PROJECT: NORTH SYDNEY
ADDRESS: 128 MILLER STREET, NORTH SYDNEY

JOB No.: 192082	LGA: NORTH SYDNEY
PLAN No.: 192082_A	DATUM: AHD
DATE: 9/09/2019	SCALE: 1:100 @ A0
DRAWN: RB/ZD	CONT. INTERVAL: 0.25m
CHK: GS	SHEET 5 OF 6

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

ANGELO LANE

LOT 8
DP 262534
4821.5m²

LOT 4
DP 262534
1672.2m²

LOT 5
DP 262534
1929.7m²

LOT 6
DP 262534
2187.2m²

MULTI STOREY APARTMENT BUILDING FLAT ROOF

TWO STOREY BRICK BUILDING METAL ROOF

TWO STOREY BRICK BUILDING No. 128 TILE ROOF

NOTE:

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACED TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM35782 WITH RL 91.661 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LOT 5:
(X) - RIGHT OF DRAINAGE (479542 & 484873)
LOT 7-9:
(X)- RIGHT OF DRAINAGE (478444)
LOT 10:
(X) - RIGHT OF DRAINAGE (478840)
LOT 11:
(X) - RIGHT OF DRAINAGE (473927)
LOT 6:
(Y) - EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.38 WIDE (DP1201328)
(Z) - RIGHT OF CARRIAGEWAY 4, 10.285 & VARIABLE WIDE (DP1201328)
POSITIVE COVENANT (A913416)
LOT 7:
POSITIVE COVENANT (A913416)
LOT 8:
LEASE TO AUSGRID (9448391)

LEGEND

BENCH MARK	▲
ELECTRIC LIGHT POLE	◇ LP
POWER POLE	Ⓟ
FIRE HYDRANT	FH FH
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER MANHOLE	Ⓢ SMH
STOP VALVE	SV
WATER METER	M
PIT	PIT

SERVICES LEGEND

SERVICE	LINETYPE
UNDER ELECTRICITY	UE
WATER	W
FIRE SERVICE	WR
SEWER	S
COMMUNICATIONS	C
OPTICAL FIBRE	OF
STORM WATER LINE	SW

Building/Structure

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

NOTE:
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF TOTAL SURVEYING SOLUTIONS. THE USE OR DUPLICATION WITHOUT THE WRITTEN CONSENT OF TOTAL SURVEYING SOLUTIONS CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

REVISION No.	REVISION DATE:	COMMENT:

EC - EDGE OF CONCRETE
TK - TOP OF KERB
TW - TOP OF WINDOW
BW - BOTTOM OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE

FL - FLOOR LEVEL
PL - POWER LINES
BAL - BALCONY
AWN - AWNING
PPT - PARAPET
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT

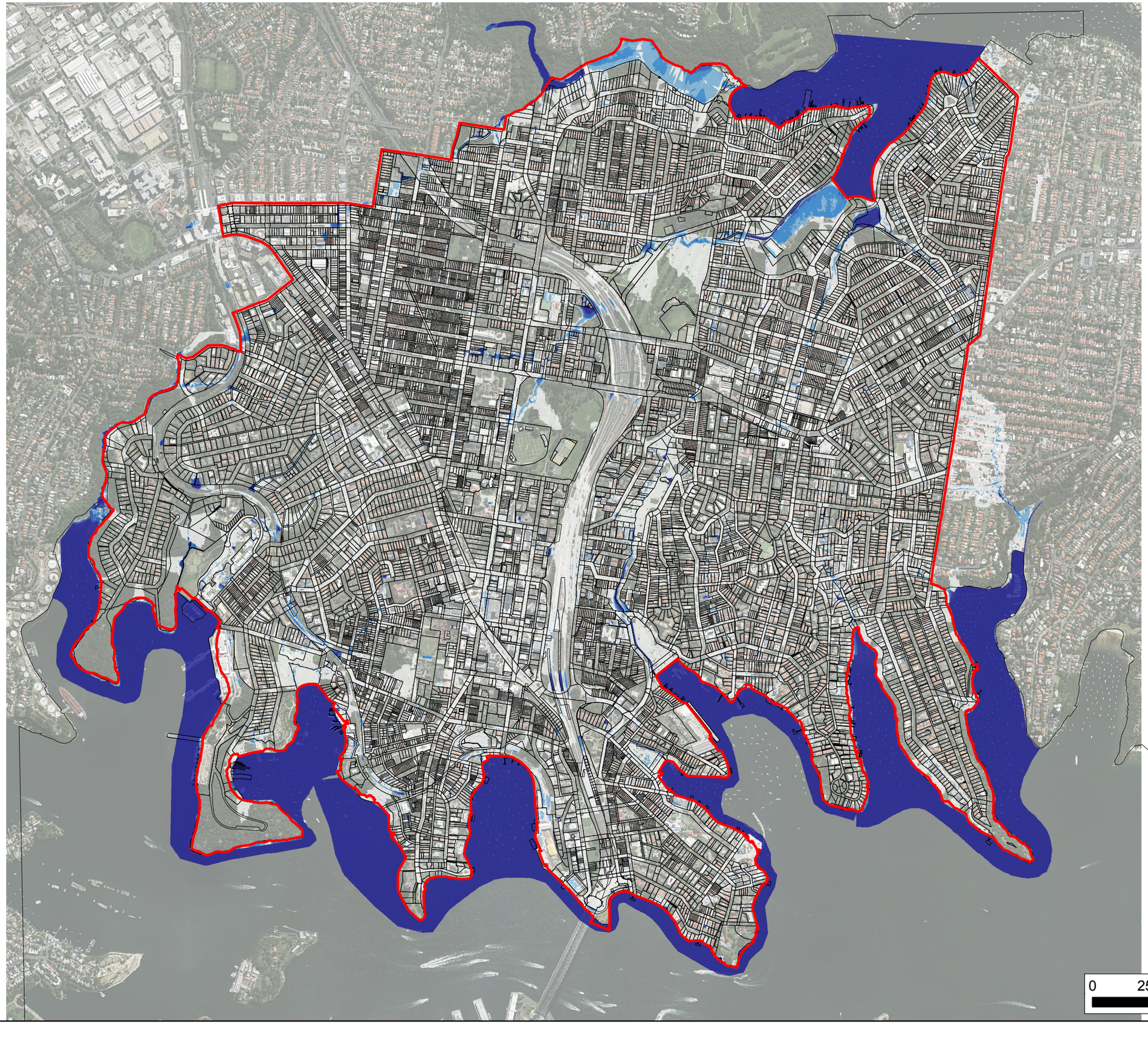
BAR SCALE
0 1 2 3 4 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 1 DP104072, LOT A & B DP339358, LOT 4-9 & LOT 11 DP 5030 & LOT1-8 DP262534

CLIENT: MONTE SANT ANGELO COLLEGE	
PROJECT: NORTH SYDNEY	
ADDRESS: 128 MILLER STREET, NORTH SYDNEY	

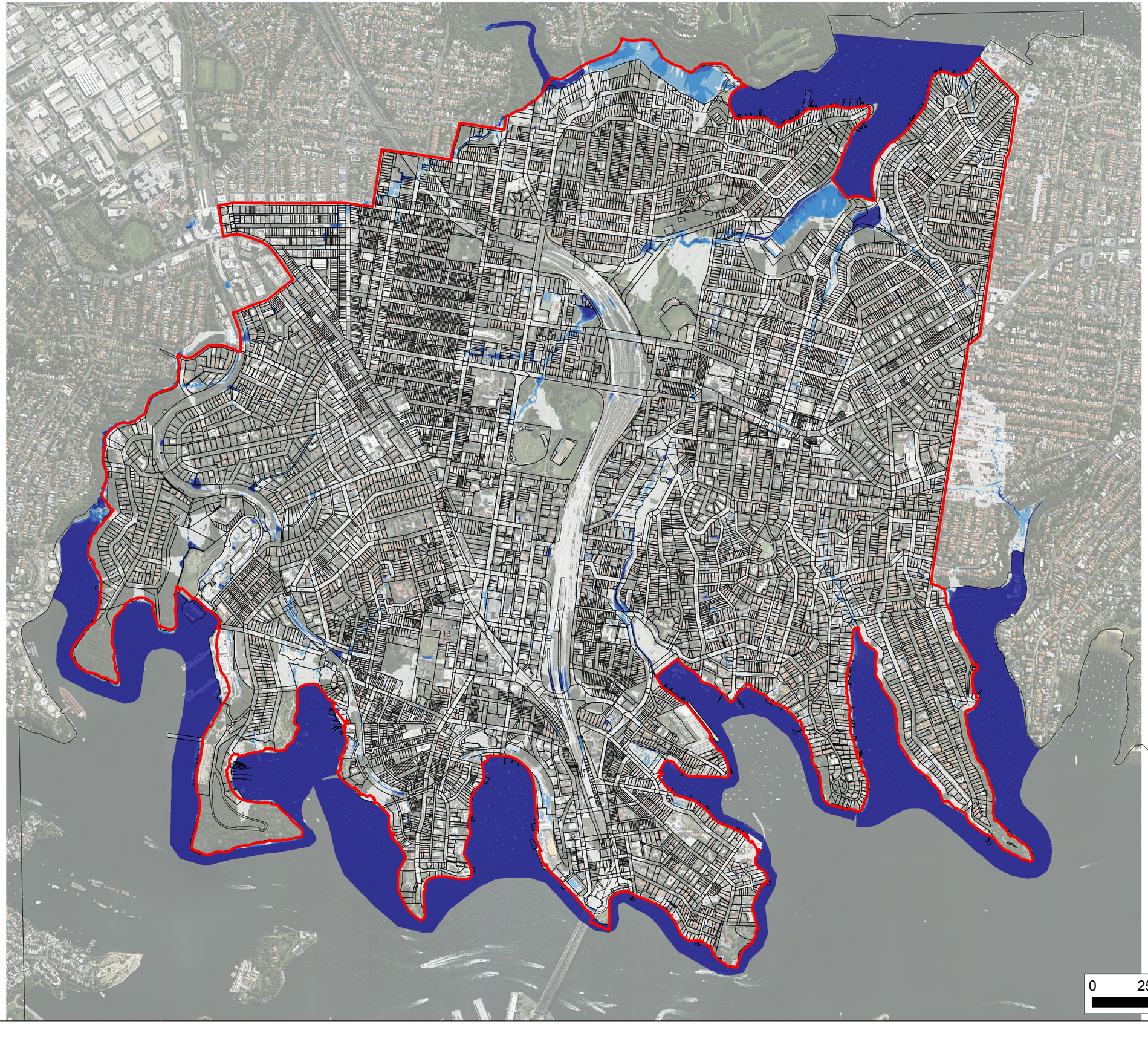
JOB No.: 192082	LGA: NORTH SYDNEY
PLAN No.: 192082_A	DATUM: AHD
DATE: 9/09/2019	SCALE: 1:100 @ A0
DRAWN: RB/ZD	CONT. INTERVAL: 0.25m
CHK: GS	SHEET 6 OF 6

FIGURE 18
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS 20% AEP



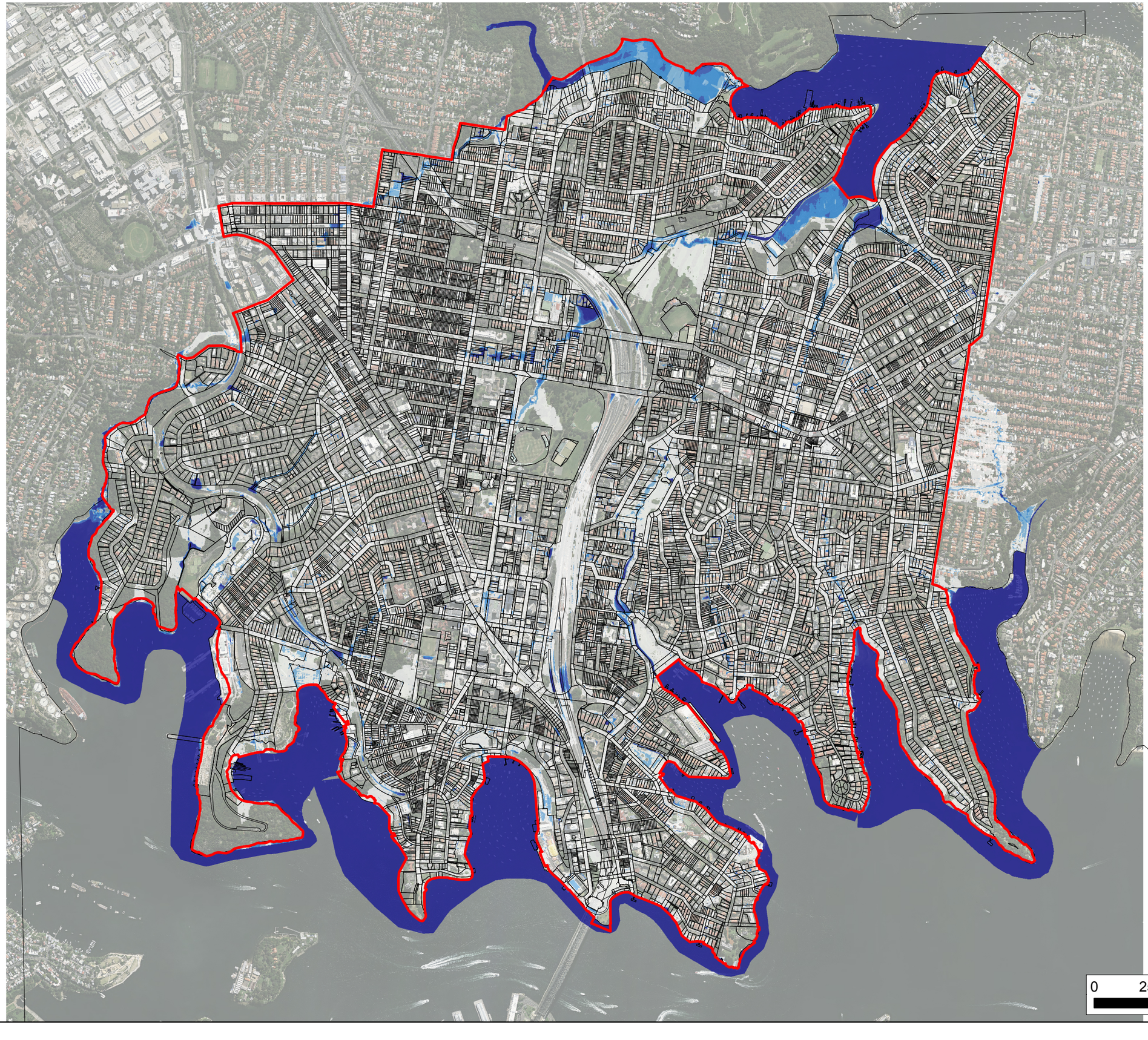
J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_18_Depth_005yARI.mxd

FIGURE 19
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS 10% AEP



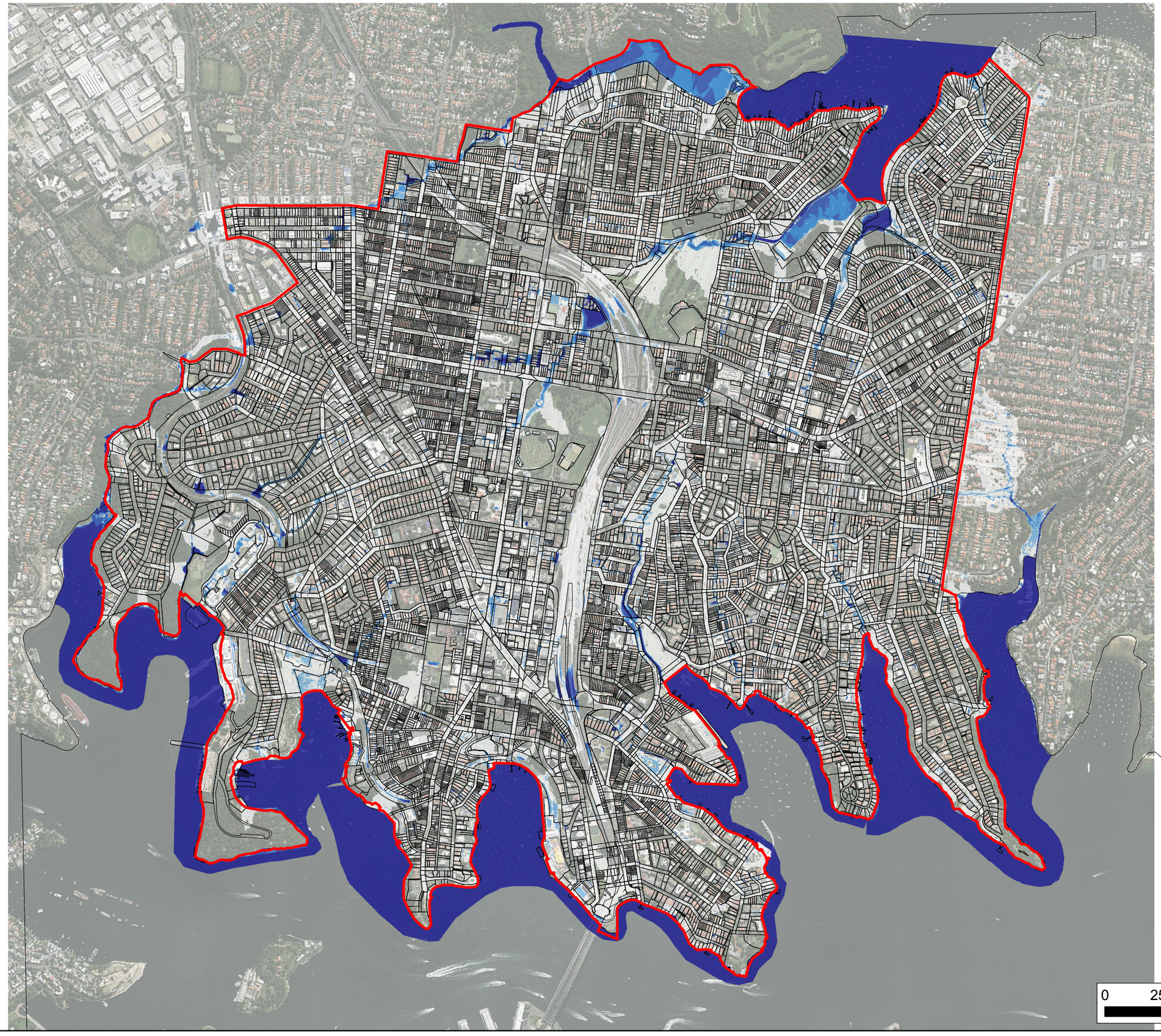
J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_19_Depth_010yARI.mxd

FIGURE 20
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS 5% AEP



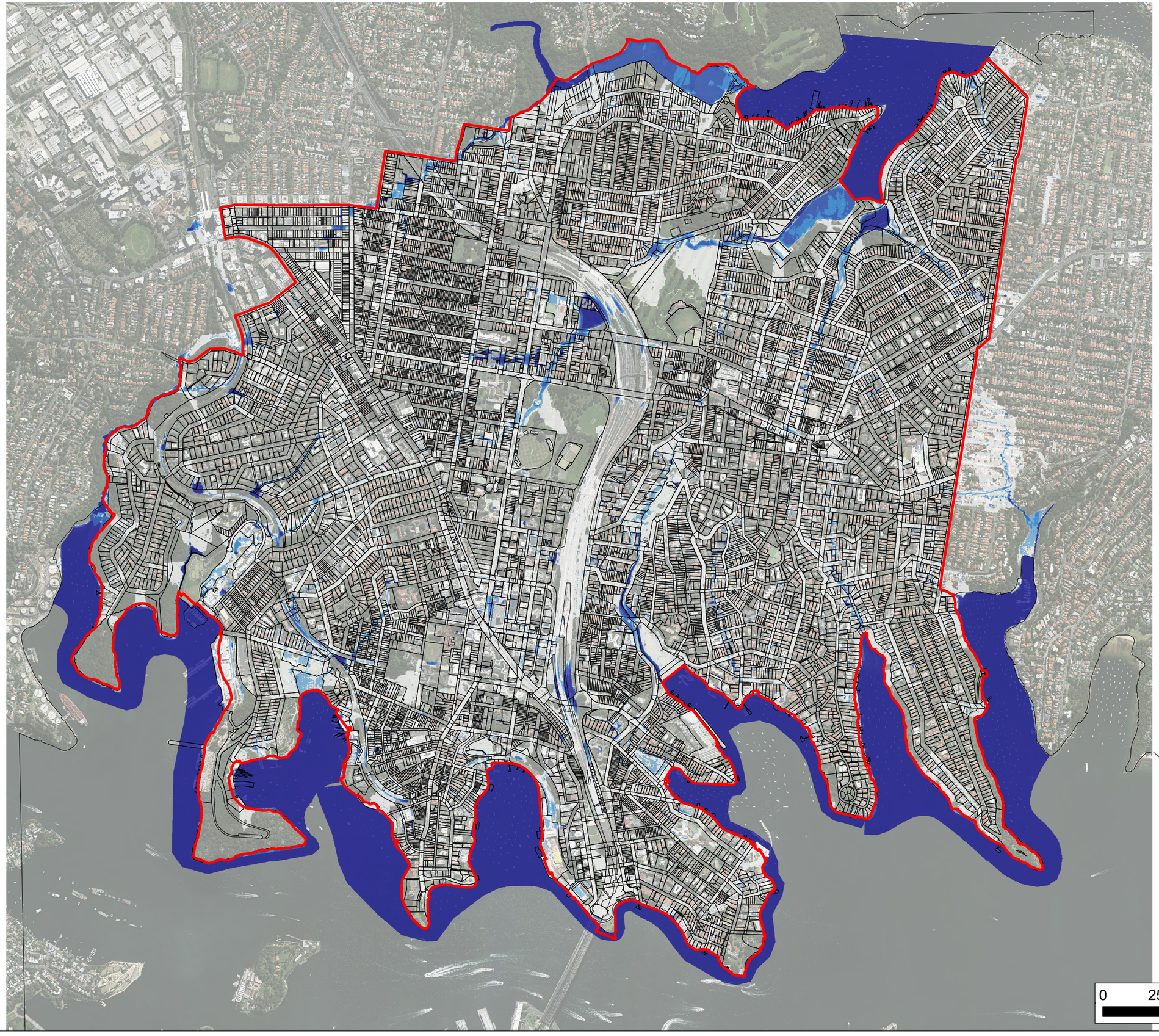
J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_20_Depth_020yARI.mxd

FIGURE 21
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS 2% AEP



J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_21_Depth_050yARI.mxd

FIGURE 22
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS 1% AEP



J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_22_Depth_100yARI.mxd

FIGURE 23
PEAK FLOOD DEPTH AND FLOOD LEVEL CONTOURS PMF

N

Study Area

Peak Flood Depth (m)

0.00 to 0.15

0.15 to 0.30

0.30 to 0.50

0.50 to 1.00

> 1.00

0 250 500 1,000 1,500 m

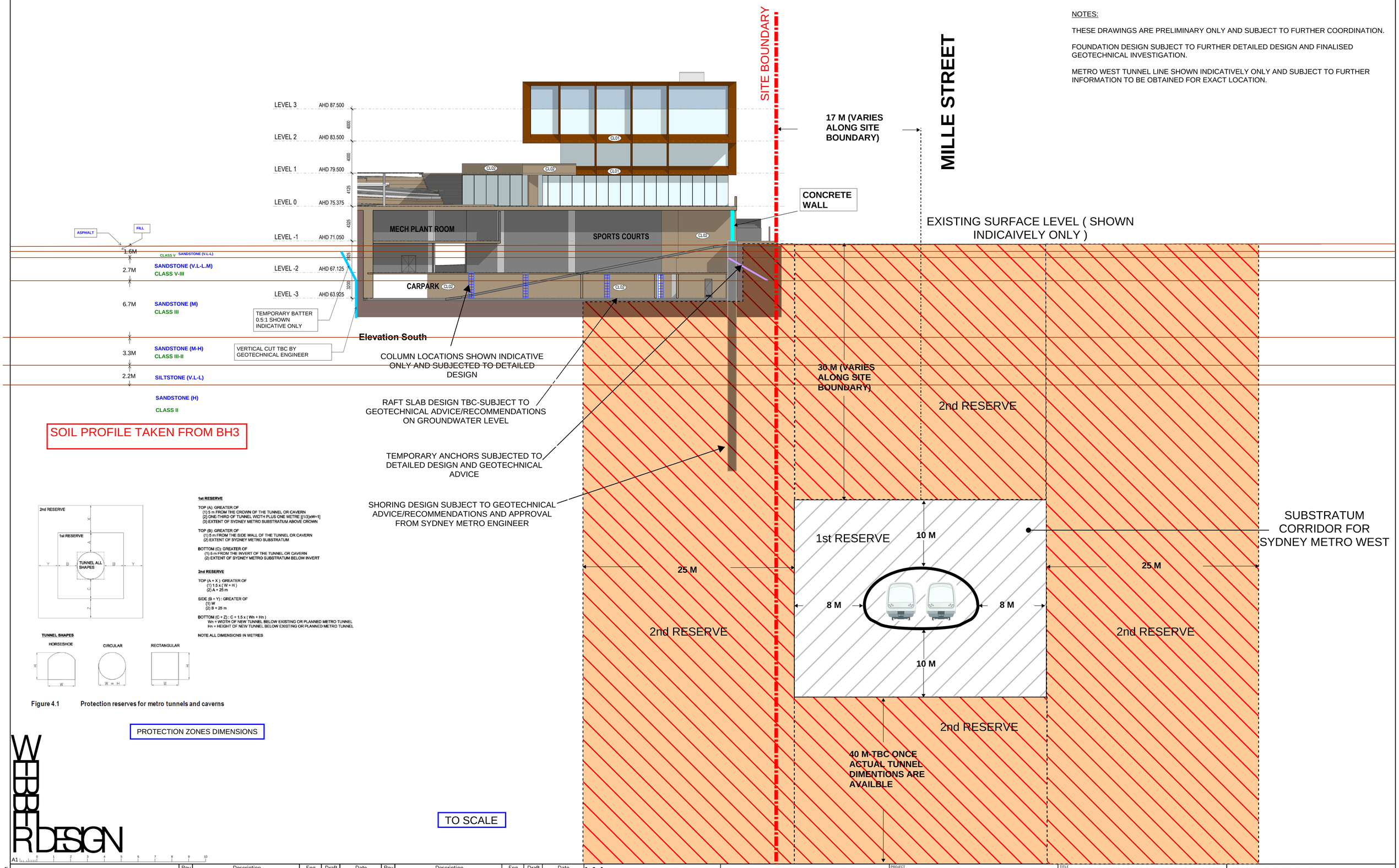
J:\Jobs\114035\ArcGIS\ArcMaps\Report\DraftReport\Figure_23_Depth_PMF.mxd

NOTES:

THESE DRAWINGS ARE PRELIMINARY ONLY AND SUBJECT TO FURTHER COORDINATION.

FOUNDATION DESIGN SUBJECT TO FURTHER DETAILED DESIGN AND FINALISED GEOTECHNICAL INVESTIGATION.

METRO WEST TUNNEL LINE SHOWN INDICATIVELY ONLY AND SUBJECT TO FURTHER INFORMATION TO BE OBTAINED FOR EXACT LOCATION.



SOIL PROFILE TAKEN FROM BH3

1st RESERVE

TOP (A): GREATER OF
(1) 5 m FROM THE CROWN OF THE TUNNEL OR CAVERN
(2) ONE-THIRD OF TUNNEL WIDTH PLUS ONE METRE [(1/3)xW+1]
(3) EXTENT OF SYDNEY METRO SUBSTRATUM ABOVE CROWN

TOP (B): GREATER OF
(1) 5 m FROM THE SIDE WALL OF THE TUNNEL OR CAVERN
(2) EXTENT OF SYDNEY METRO SUBSTRATUM

BOTTOM (C): GREATER OF
(1) 5 m FROM THE INVERT OF THE TUNNEL OR CAVERN
(2) EXTENT OF SYDNEY METRO SUBSTRATUM BELOW INVERT

2nd RESERVE

TOP (A + X): GREATER OF
(1) 1.5 x (W + H)
(2) A + 25 m

SIDE (B + Y) : GREATER OF
(1) W
(2) B + 25 m

BOTTOM (C + Z) : C + 1.5 x (Wn + Hn)
Wn = WIDTH OF NEW TUNNEL BELOW EXISTING OR PLANNED METRO TUNNEL
Hn = HEIGHT OF NEW TUNNEL BELOW EXISTING OR PLANNED METRO TUNNEL

NOTE ALL DIMENSIONS IN METRES

Figure 4.1 Protection reserves for metro tunnels and caverns

PROTECTION ZONES DIMENSIONS

TO SCALE

A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

PRINT TIME: 1/10/2020 9:11:48:31 AM

Rev	Description	Eng.	Draft	Date	Rev	Description	Eng.	Draft	Date
0	FOR INFORMATION ONLY			17/10/2019					

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 303, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

FOR INFORMATION ONLY

CLIENT

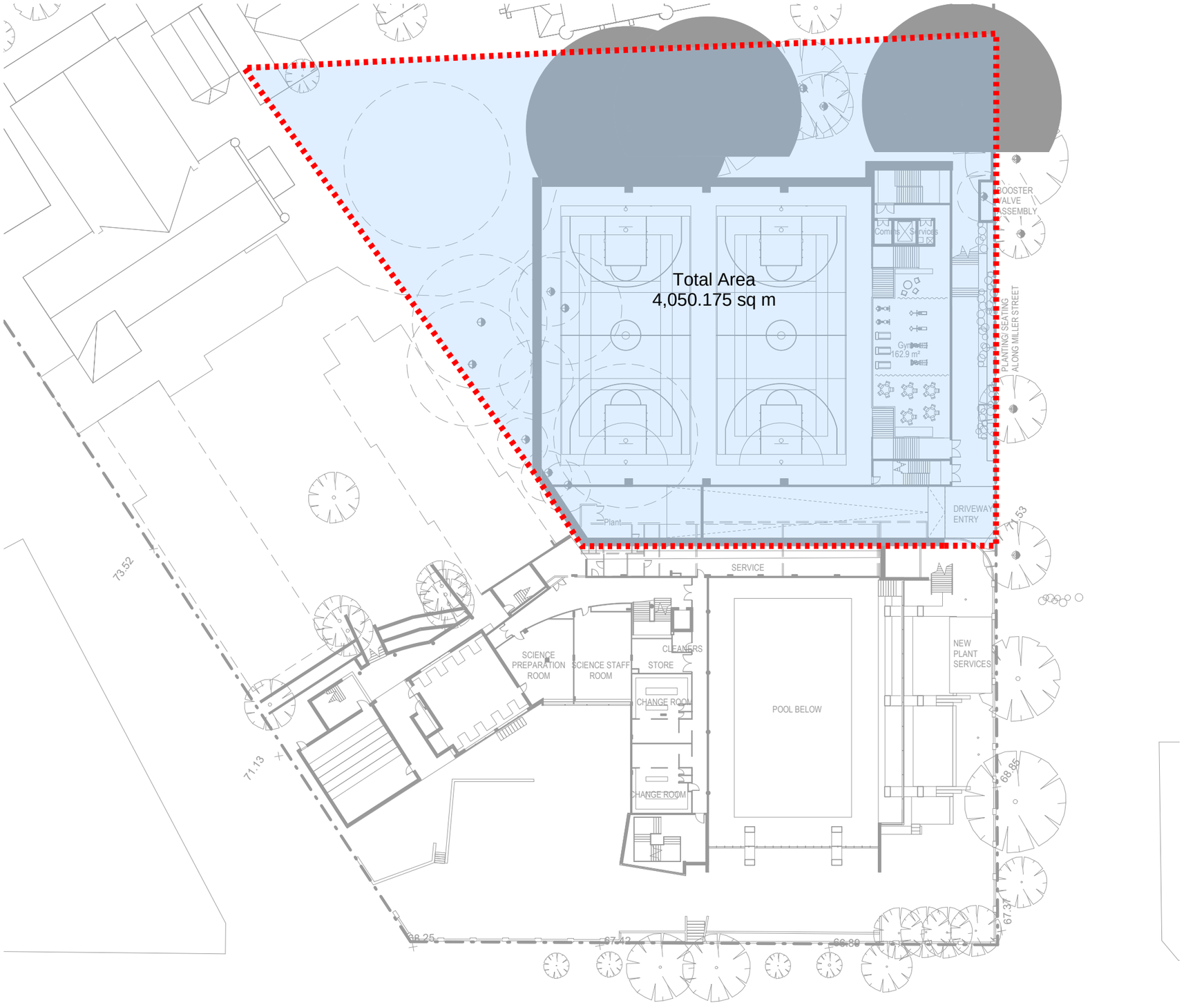
PROJECT: MONTE SANT ANGELO MERCY COLLEGE

TITLE: SECTION - SYDNEY METRO WEST PROXIMITY

STRUCTURAL DRAWING

DATE	DESIGNED BY	CHECKED BY
10/03/2020		
SCALES AT A1	DRAWN BY	APPROVED BY
	RA	
JOB No.	DRAWING No.	REV.
WD19133	SK 001	0

APPENDIX B – POST DEVELOPMENT CATCHMENT AREAS



Tree Protection Zone with 20% Encroachment

Tree Canopy Zone

Disclaimer
The information presented herein was produced prior to the completion of construction. Floor areas, dimensions, fittings, finishes, tile patterns and setouts, and the like, and the specifications thereof, are indicative only, are not to scale and are subject to change without notice. Warranty that the information presented herein is a representation ofthe final product is not given either expressly or implied. Prospective purchasers must rely on their own enquiries. All areas, numbers are rounded to the nearest whole number.
All dimensions are approximate.
All internal / external furniture and whitegoods are not included.

Project Title	Drawing Title	Project No	Drawing No	Revision	Date Printed	14/01/2020 12:58:50 PM
Monte Sant Angelo Mercy College 128 Miller St, North Sydney	PROPOSED LEVEL -1 PLAN	2336	A02.02		Scale	As indicated @A3

Rev	Date	Description

Melbourne : 4/135 Sturt Street Southbank,VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street,Surry Hills, NSW 2010T +61 2 9660 9329
Brisbane : Level 12,324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
ABN: 84006394261 NSW Nominated Architects:Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028

hayball

Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant and manufacture shall not commence prior to the return of inspected shop drawings signed by the Architect/Consultant. © Copyright 2008 All rights reserved



Area Breakdown Schedule

Description	Quantity	Unit	Label
Landscape	1,147.0000	sq m	CP = 0.3
Roof to RWT	105.2739	sq m	CP = 1.0
Trafficable Area	2,853.7800	sq m	CP = 0.9

Tree Protection Zone with 20% Encroachment

Tree Canopy Zone

Disclaimer
The information presented herein was produced prior to the completion of construction. Floor areas, dimensions, fittings, finishes, tile patterns and setouts, and the like, and the specifications thereof, are indicative only, are not to scale and are subject to change without notice. Warranty that the information presented herein is a representation ofthe final product is not given either expressly or implied. Prospective purchasers must rely on their own enquiries.
All areas, numbers are rounded to the nearest whole number.
All dimensions are approximate.
All internal / external furniture and whitegoods are not included.

Project Title
Monte Sant Angelo Mercy College
128 Miller St, North Sydney

Drawing Title
PROPOSED LEVEL 0 PLAN

Project No 2336
Drawing No A02.03
Revision

Date Printed 14/01/2020 12:59:06 PM
Scale As indicated @A3

Rev	Date	Description

Melbourne : 4/135 Sturt Street Southbank,VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street,Surry Hills, NSW 2010T +61 2 9660 9329
Brisbane : Level 12,324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
ABN: 84006394261 NSW Nominated Architects:Tom Jordan 7521,
Richard Leonard 7522, David Tordoff 8028

hayball

Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant and manufacture shall not commence prior to the return of inspected shop drawings signed by the Architect/Consultant. © Copyright 2008 All rights reserved

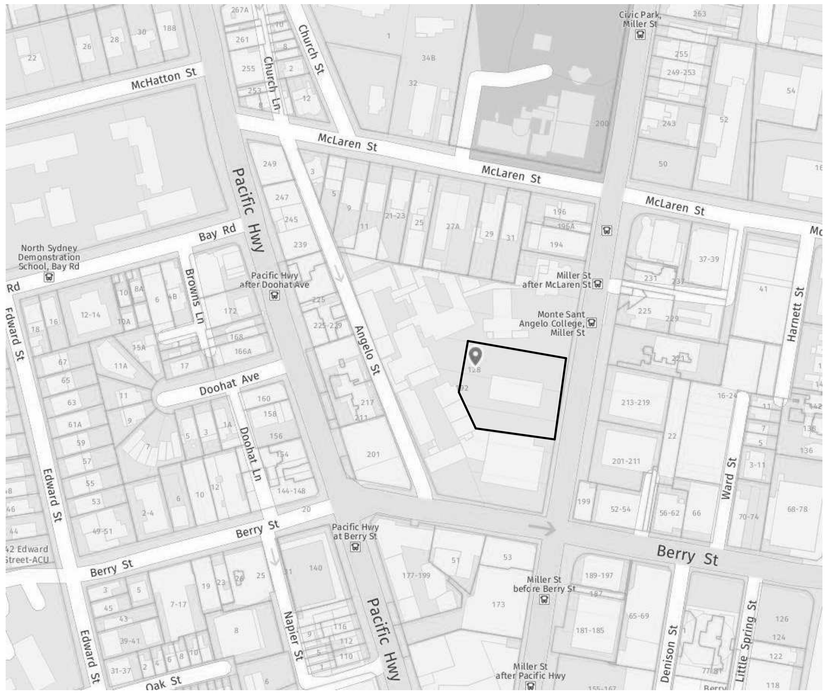
APPENDIX C – POST DEVELOPMENT HYDROLOGY PLANS AND SEDIMENT AND EROSION CONTROL PLANS

MONTE SANT ANGELO MERCY COLLEGE

128 MILLER ST, N. SYDNEY

19133 - CIVIL DOCUMENTATION

DRG No.	DRAWING TITLE
C000	COVER SHEET
C001	CIVIL NOTES
C050	SITE PLAN
C055	CUT AND FILL PLAN
C060	SEDIMENT AND EROSION CONTROL PLAN
C065	SEDIMENT AND EROSION CONTROL TYPICAL DETAILS
C070	LEVEL 0 - DRAINAGE PLAN
C080	LEVEL 1 - DRAINAGE PLAN
C090	LEVEL 2 - DRAINAGE PLAN
C100	LEVEL 3 - DRAINAGE PLAN
C200	EXISTING SITE DRAINAGE & DIVERSION PLAN
C250	MCQUOIN DRAINAGE DIVERSION PLAN
C260	SUBSTATION DRAINAGE DIVERSION PLAN
C300	LEVEL 2 - OVERLAND FLOW PATH PLAN
C310	LEVEL 3 - OVERLAND FLOW PATH PLAN
C320	LEVEL 4 - OVERLAND FLOW PATH PLAN
C400	CATCHMENT AREA PLAN
C500	TYPICAL CIVIL DETAILS - SHEET 1
C510	TYPICAL CIVIL DETAILS - SHEET 2
C600	TYPICAL PAVEMENT DETAILS
C700	CIVIL SECTIONS - SHEET 1
C701	CIVIL SECTIONS - SHEET 2
C702	CIVIL SECTIONS - SHEET 3



CIVIL GA - LOCALITY MAP

WEBBER DESIGN
STRUCTURAL ENGINEERING

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev	Description	Eng	Draft	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

Status: ISSUED FOR CERTIFICATION

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT: Monte Scientia Project

PROJECT: MONTE SANT ANGELO MERCY COLLEGE 128 MILLER ST, N. SYDNEY

TITLE: COVER SHEET

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1 : 100	GP	PW

JOB No.	DRAWING No.	REV.
19133	C000	T2

PRINT TIME: 21/01/2021 1:34:04 PM C:\Users\gracio\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gracioXUCBU.rvt

A1

GENERAL NOTES:

1. THESE DRAWINGS, SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION, & ALL OTHER ASSOCIATED DISCIPLINE DRAWINGS SHOULD THERE BE ANY 'DISCREPANCY', POTENTIAL CONFLICT/CLASH ETC., NOTIFY THE SUPERINTENDENT IMMEDIATELY FOR RESOLUTION.

2. THE CONTRACTOR SHALL ARRANGE & PAY FOR ALL INSPECTIONS REQUIRED BY THE COUNCIL & ALL OTHER RELEVANT STATUTORY AUTHORITIES. ANY DRAINAGE OR OTHER LEVY FEES TO BE PAID BY OTHERS.

3. ALL SUB-GRADES/SUB-BASES/BASE COURSES & DRAINS, PRIOR TO CONCEALMENT, ARE TO BE INSPECTED BY THE SUPERINTENDENT & ALSO TESTS WITNESSED AND/OR VERIFIED BY AN AGREED PROCEDURE. AT LEAST TWO (2) DAYS' NOTICE (IN WRITING) TO BE GIVEN. IT SHOULD BE NOTED THAT THESE INSPECTIONS/FINDINGS ARE NOT TO BE TAKEN AS HAVING RECEIVED APPROVAL FOR THE COMPLIANCE OF THE INSTALLATION/CONSTRUCTION ETC. COMPLIANCE WILL BE ISSUED SUBJECT TO 'SATISFACTORY' EVIDENCE THAT THE WORKS COMPLY WITH THE CONTRACT DOCUMENTS & AUTHORITIES/SERVICE COMPANIES' REQUIREMENTS.

4. EXISTING SURFACE LEVELS/FEATURES SHOWN HAVE BEEN USED IN THE DESIGN PROCESS. THESE ARE SHOWN AS A GUIDE ONLY & MAY BE USED BY THE CONTRACTOR ON THE BASIS THAT THERE WILL BE NO CONTRACTUAL VARIATION APPROVED FOR ANY DISCREPANCIES IN THE EXISTING LEVELS/FEATURES CAUSING VARIATIONS IN THE QUANTITIES.

5. ALL CONNECTING ('TYING INTO); SURFACE LEVELS, INVERT LEVELS, FEATURES SHALL BE CHECKED BY CONTRACTOR PRIOR TO CONSTRUCTION OF ANY WORKS. REPORT ALL FINDINGS TO THE SUPERINTENDENT PRIOR TO PROCEEDING WITH THE WORK.

6. ANY SERVICE THAT IS DISUSED/REDUNDANT/TO BE ABOLISHED SHALL BE ABOLISHED & REMOVED. CUT/PLUG/SEAL & REMOVE ABOLISHED PORTIONS ENSURING RETAINED PORTIONS ARE SECURELY SEALED/PLUGGED. ALL TERMINATIONS SHALL BE IN ACCORDANCE WITH THE AUTHORITIES/SERVICE COMPANIES' REQUIREMENTS. ANY SERVICES TO BE RELOCATED SHALL BE CARRIED OUT IN ACCORDANCE WITH THE DRAWINGS & THE REQUIREMENTS OF THE AUTHORITIES/ SERVICE COMPANIES BACKFILL RESULTANT EXCAVATIONS. ALLOW TO SAW-CUT PAVEMENTS PRIOR TO EXCAVATION & REINSTATE TO NEAREST JOINT.

7. ALL TRENCHES/EXCAVATIONS UNDERNEATH PAVED/NON-SPANNING SLABS/KREBS/CHANNELS AND WITHIN 500mm OF THESE SHALL BE BACKFILLED WITH CLASS 2 20mm CRUSHED ROCK PLACED & COMPACTED IN LAYERS TO A DENSITY OF 98% OF THE STANDARD MAXIMUM DRY DENSITY (S.M.D.D.) A.S.1289. TRENCHES/EXCAVATIONS ELSEWHERE SHALL BE BACKFILLED WITH APPROVED SELECT MATERIAL, FREE OF DEBRIS, RUBBLE, CLAY LUMPS & CAPABLE OF BEING COMPACTED IN LAYERS TO AT LEAST 95% OF THE S.M.D.D, OR OTHER METHOD OF COMPACTION AS INSTRUCTED BY THE SUPERINTENDENT. (ALLOW TO IMPORT IF INSUFFICIENT SELECT MATERIAL ON SITE)

8. ANY TRENCH/LOCAL EXCAVATION EXCEEDING 1.5m DEPTH, AND LESSER DEPTHS WHERE THE SIDES ARE NOT SELF-SUPPORTING, SHALL BE STABILES/SHORED TO COMPLY WITH THE RELEVANT CONSTRUCTION SAFETY ACTS.

9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADEQUATELY DRAIN THE SITE AT ALL TIMES.

10. ANY PAVEMENT, FEATURE OR SURFACE THAT IS DISUSED/REDUNDANT/TO BE ABOLISHED SHALL BE ABOLISHED & REMOVED, ALLOW TO SAW-CUT OUT PAVEMENTS, FENCES & OTHER STRUCTURE FEATURES & SURFACES PRIOR TO THE REMOVAL. TO ENSURE NEAT EDGE FOR ABUTTAL, ALLOW TO SAW-CUT PAVEMENTS PRIOR TO EXCAVATION & REINSTATE TO NEAREST JOINT

11. NOT ALL EXISTING SERVICES/MAINS ARE NECESSARILY SHOWN. POSITIONS SHOWN ARE ASSUMED LOCATIONS ONLY. SPACE SITE VERIFICATION, INVOLVING PROBING, INVESTIGATIVE EXCAVATIONS & CHECKING RECORDS AT AUTHORITIES/ COMPANIES IS TO BE CARRIED OUT PRIOR TO COMMENCEMENT OF WORK & BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

12. DIMENSIONS REFER TO OUTER WALL OF BUILDING CENTERLINE OF SERVICE BACK OF KERB THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH SITE CONDITIONS & REFER ANY DISCREPANCIES TO THE SUPERINTENDENT PRIOR TO COMMENCING WORK.

13. DRAWINGS SHALL NOT BE SCALED.

14. ON COMPLETION OF THESE WORKS THE CONTRACTOR SHALL CLEAN UP THE SITE TO THE SATISFACTION OF THE SUPERINTENDENT AND REMOVE ALL DEBRIS, RUBBLE & SURPLUS MATERIAL OFF SITE.

15. ALL ANOMALIES SHALL BE REFERRED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PUTTING WORK IN HAND.

16. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE NECESSARY VEHICLE CROSSING PERMIT IS OBTAINED FROM COUNCIL THE VEHICLE CROSSING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE COUNCIL REQUIREMENTS.

17. ALL HEIGHTS ARE TO AHD (REFER LAND SURVEYOR).

18. EXCAVATED MATERIAL & TOPSOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT AND REUSED ON SITE AS MUCH AS POSSIBLE. NO MATERIAL TO BE MOVED OFF SITE UNLESS APPROVED BY THE SUPERINTENDENT

19. FOR LINE MARKING STANDARDS AND REQUIREMENTS REFER TO THE ARCHITECTS SPECIFICATIONS.

20. PRIOR TO COMMENCING ANY WORKS OR TRANSPORTATION OF SOIL OFF SITE REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE SOIL CONTAMINATION ASSESSMENT REPORT.

21. FOR PREPARATION OF AVAILABLE SUB BASE TO PAVEMENTS, FOOTINGS FOR RETAINING WALLS, SCREENS, FENCES AND CONCRETE SEATING, REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE AVAILABLE GEOTECHNICAL REPORT.

EXCAVATION, FILLING, COMPACTION TOPSOIL:

1. USEABLE TOPSOIL OBTAINED FROM EXCAVATIONS SHALL BE STOCKPILED SEPARATELY ON SITE FOR USE IN LANDSCAPING AREAS

2. FILLING.
   FILL MATERIAL SHALL BE FREE OF TOPSOIL, DELETERIOUS AND/OR PERISHABLE MATTER & WHICH AFTER COMPACTION HAS A MAXIMUM PARTICLE DIMENSION OF NOT MORE THAN 150mm WITHIN 400mm OF THE SUBGRADE, OR 400mm AT DEPTHS GREATER THAN 400mm BELOW SUBGRADE. MATERIAL CLASSIFIED AS SILT, EITHER BEFORE OR AFTER COMPACTION, IS NOT ACCEPTABLE AS FILL UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.

   THE MATERIAL IMMEDIATELY BELOW THE FILL AREA SHALL BE SCARIFIED TO A DEPTH OF 150mm, & COMPACTED TO MEET THE SPECIFIED REQUIREMENTS.

   FILL SHALL BE PLACED & SPREAD IN UNIFORM LAYERS & SHALL BE COMPACTED TO MEET THE SPECIFIED REQUIREMENTS. DURING THE PLACEMENT OF FILL THE SURFACE OF EACH LAYER SHALL BE KEPT GENERALLY PARALLEL TO THE SURFACE OF THE SUBGRADE. ANY ROCKY MATERIAL PRESENT IN THE FILL FOR ANY LAYER SHALL BE UNIFORMLY DISTRIBUTED WITHIN THE LAYER & THE WHOLE SHALL BE COMPACTED AS SPECIFIED.

   THE CONTRACTOR SHALL ENSURE THAT AN ADEQUATE BOND WILL DEVELOP BETWEEN EACH LAYER OF FILL. FILLING SHALL BE CARRIED UP IN HORIZONTAL LAYERS, EXTENDING THE FULL WIDTH OF THE WORKS, NOT EXCEEDING 200mm. EACH LAYER SHALL BE COMPACTED IN ACCORDANCE WITH A.S. 1289 BY APPROVED COMPACTION EQUIPMENT, CAREFULLY ROUTED & DIVERTED TO ENSURE AN EVEN COMPACTION OVER THE FULL AREA OF EACH LAYER.

3. COMPACTION:
   COMPACTION REQUIREMENTS FOR EXCAVATION

   REPLACE UNSUITABLE MATERIAL IN CUTTINGS OTHER THAN SUB-GRADE - DENSITY OF SURROUNDING UNDISTURBED SOIL
   SUBGRADE PREPARATION, CUT OR FILL - COMPACTED TO NOT LESS THAW 98% STANDARD MAXIMUM DRY DENSITY FOR PAVEMENTS, 95% STANDARD MAXIMUM DRY DENSITY ELSEWHERE, AS 1289.

   REPLACE UNSUITABLE SUBGRADE MATERIAL -COMPACTED TO NOT LESS THAN 98% STANDARD MAXIMUM DRY DENSITY FOR PAVEMENTS, 95% STANDARD MAXIMUM DRY DENSITY ELSEWHERE, AS 1289.

4. SOIL REPORT
   REFER TO RECOMMENDATION CONTAINED WITHIN THE GEOTECHNICAL REPORT FOR ALL SITE EXCAVATION FILLING AND COMPACTION REQUIREMENTS.

STORMWATER DRAINAGE:

1. UNLESS NOTED OTHERWISE (U.N.O), ALL STORMWATER DRAINS GREATER THAN 150 DIAMETER SHALL BE CLASS 2 RCP RRJ PIPES.

2. ALLOW FOR ALL NECESSARY FITTINGS, SHORT PIPES ETC, WHETHER OR NOT DETAILED ON DRAWING. ALL CONNECTIONS ON GRADE TO DRAINS (WHERE NOT AT PIT) TO BE 45°. ALL FITTINGS TO BE MANUFACTURED.

3. AG DRAINS TO BE 100mm DIAMETER CORRUGATED PERFORATED PLASTIC PIPE (1000 KN/m STRENGTH), UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT TRENCH TO BE A MINIMUM OF 300mm WIDTH PIPES TO BE WRAPPED IN GEOTEXTILE FABRIC, & BACKFILLED WITH 7 N S SCREENINGS MINIMUM GRADE 1 IN 100 WHERE REQUIRED, FOR MAINTENANCE TERMINATE HEAD OF AG DRAIN AT SURFACE LEVEL WITH PVC SCREWED CAP.

4. COVER LEVELS OF PITS IN GRASSED OR GARDEN AREAS ARE GIVEN AS A GUIDE ONLY. COVER LEVELS SHALL BE ADJUSTED IF REQUIRED UPON COMPLETION OF THESE AREAS.

5. PITS TO BE CONSTRUCTED IN ACCORDANCE WITH DRAWINGS & ALSO AUTHORITY STANDARD DRAWINGS, WITH ALL INTERNAL SURFACES & EXPOSED SURFACES FINISHED SMOOTH & TRUE THE FORMWORK SHALL BE STRAIGHT, SMOOTH & COATED. ALL BREAK-INS FOR PIPE ENTRIES ARE TO BE MADE NEAT & FINISHED SMOOTH WITHOUT GAPS/CAVITIES. GRATES/SURROUNDS ARE TO BE HOT DIPPED GALVANISED

PAVEMENTS:

1. CONCRETE FOOTPATH.

   I) CONCRETE TO BE 25 MPa AT 28 DAYS.

   II) EXPANSION JOINTS SHALL BE ZIPPED POLYETHYLENE FOAM WITH AN APPROVED JOINT SEALER (SUCH AS SIKA-FLEX). THESE JOINTS ARE TO BE LOCATED WHERE PAVEMENT ABUTS STRUCTURAL COMPONENT, I E. BUILDINGS, PITS ETC., & AT INTERVALS OF NOT MORE THAN 12 METRES.

   III) CONTRACTION JOINTS SHALL BE PROVIDED AT EVEN SPACINGS, BUT NOT MORE THAN 2m C-C IN PATHS. FOR BROAD AREAS, SPACING TO BE EVEN, BUT NOT MORE THAN 3M C-C. CONSTRUCTION JOINTS SHALL COINCIDE WITH EXPANSION/CONTRACTION JOINTS

   IV) NO CONCRETE POUR TO EXCEED 15 METRES.

   V) CONCRETE PAVING TO HAVE NON-SKID FLOAT FINISH.

2. ASPHALT & BITUMINOUS SURFACE TREATMENT BITUMEN, BITUMINOUS MIX & AGGREGATE MATERIAL FOR ASPHALT AND SURFACE TREATMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEC. 407 OF THE VICROADS SPEC., EXCEPT THE MAXIMUM VERTICAL IRREGULARITY AS MEASURED WITH A 3m STRAIGHT EDGE BETWEEN TWO POINTS SHALL NOT EXCEED 3mm THE FINISHED SURFACE SHALL BE FREE FROM DEPRESSIONS, RIDGES, JOINT OR OTHER IRREGULARITIES AND BE OF UNIFORM DENSITY & TEXTURE CONSISTENCY WITH NO FATTY OR BONEY AREAS (SEGREGATION)

3. CRUSHED ROCK. THE GRADING & PROPERTIES OF CRUSHED ROCK SHALL BE THE SAME CLASSIFICATION AS USED BY VICROADS.

4. PAVEMENT COMPACTION. SUB-BASE & BASECOURSE TO BE COMPACTED TO NOT LESS THAN 98% OF THE MAXIMUM STANDARD DRY DENSITY, AS1289.

5. SOFT AREAS. ANY CLAYEY SILT AND SOFT SOILS SHALL BE REMOVED AND REPLACED UNDER THE DIRECTION OF THE CONTRACTORS GEOTECHNICAL ENGINEER WITH APPROVED FILL MATERIAL (NON-SILTY, NON-ORGANIC) WITH A CBR GREATER THAN 5

SERVICES:

1. THE CONTRACTOR SHALL COORDINATE LAYING OF SERVICES TO AVOID CLASHES. REFER CLASHES/CONFLICTS TO SUPERINTENDENT FOR RESOLUTION PRIOR TO PROCEEDING. (WHERE APPLICABLE)

LANDSCAPE DEVELOPMENT:

1. RESPREAD USEABLE TOPSOIL OBTAINED FROM SITE STRIP IMPORT AS REQUIRED IF SHORTFALL.

2. ALL SURFACES ARE TO BE FLUSH WITH ABUTTING PAVING, KERBS, CHANNELS & TO FINISHED SURFACE LEVEL INDICATED & BE GRADED UNIFORMLY.

ROOF AND SUSPENDED FLOOR DRAINAGE:

1. ROOF AND SURFACE DRANAGE (INCLUSIVE OF BALCONIES, TERRACES AND GROUND FLOOR) IS TO BE INDEPENDENTLY DRAINED AND DOCUMENTED BY THE HYDRAULIC ENGINEER.

2. THE CONTRACTOR SHALL COORDINATE THE NECESSARY INTERFACE BETWEEN HYDROLICS AND CIVIL WORKS.

PRESERVATION OF EXISTING TREES MAINTENANCE REQUIREMENTS DURING CONSTRUCTION:

1. **OPEN TRENCHING:** IN THE PROXIMITY OF THE COUNCIL TREES OPEN TRENCHES ARE TO BE IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS.

2. **FINES:** CARE MUST BE TAKEN TO AVOID DAMAGE TO TREES DURING WORKS. UNDER COUNCIL BY LAWS FINES ARE APPLICABLE FOR ANY DAMAGE, INCLUDING BARK LOSS AND BROKEN BRANCHES

3. **REINSTATEMENT:** NATURE STRIP REINSTATEMENT MUST OCCUR IMMEDIATELY AFTER WORKS ARE COMPLETED. SPOILS ARE TO BE CLEAN, FERTILE AND WEED FREE. THE CONTRACTOR IS RESPONSIBLE FOR ANY SUBSIDENCE WHICH MAY OCCUR WITHIN THE FOLLOWING TWELVE (12) MONTHS. A DRY CLIMATE LAWN SEED IS TOO BE LIBERALLY APPLIED AND RAKED IN TO ALLOW GOOD GERMINATION AFTER RAIN OR WATERING

4. **NATIVE VEGETATION REMOVAL:** FOR WORKS REQUIRING THE REMOVAL OF NATIVE VEGETATION, APPROPRIATE INDIGENOUS SPECIES ARE TO NE REPLACED

5. **COMPENSATION:** IF ANY SIGNIFICANT TREES ARE DAMAGED OR SUFFER ILL EFFECTS DUE TO NON COMPLIANCE WITH THE COUNCILS REQUIREMENTS, COUNCIL MAY SEEK COMPENSATION

ABOLISHMENT:

1. ABOLISH AND REMOVE ALL DISUSED ITEMS, EXISTING ASPHALT PAVEMENT, DISUSED PITS, DRAINS, DISUSED ELECTRICAL, LIGHTING AND OTHER ITEMS TO BE ABOLISHED.

2. ALL TREES THAT ARE TO BE ABOLISHED ARE TO HAVE THEIR ROOTS GRUBBED OUT TO 300mm BELOW FORMATION LEVEL.

3. ANY ITEMS THAT CAN BE SALVAGED/RE-USED SHALL BE DISMANTLED/ABOLISHED CAREFULLY AND OFFERED TO THE PRINCIPAL FIRSTLY FOR RE-USE. SHOULD THE PRINCIPAL NOT REQUIRE THESE ITEMS, THEY SHALL BE CONNECT THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM SITE.

4. ALL TERMINATIONS ARE TO BE MADE IN ACCORDANCE WITH AUTHORITIES, SERVICES, REQUIREMENTS. RESULTANT EXCAVATIONS TO BE BACKFILLED WITH CRUSHED ROCK WHERE LOCATED BENEATH PAVEMENTS, KERB AND CHANNEL AND WITH IN 500mm OF THESE, ELSEWHERE BACKFILLED WITH SELECTED MATERIAL.

SITE PREPERATION:

1. STRIP WHOLE SITE OF VEGETATION, TOPSOIL AND OTHER DELETERIOUS MATTER. EXCAVATE TO APPROVED SUBGRADE. THE DEPTH OF EXCAVATION SHALL BE AT LEAST 300mm BELOW EXISTING VEGETATED SURFACE LEVELS OR FORMATION LEVEL WHICHEVER IS GREATER. PROOF ROLL AND COMPACT THE SUBGRADE IN THE PRESENCE OF THE SUPERINTENDENT. ANY SOFT OR UNSTABLE AREAS DETECTED SHALL BE EXCAVATED OUT AND REPLACED WITH BACKFILL MATERIAL SPECIFIED IN PAVEMENT NOTE FOR FILLING AND COMPACTION REFER TO EXCAVATION, FILLING, COMPACTION TOPSOIL NOTE.

KERBS:

1. REFER TO ARCHITECT AND LANDSCAPE ARCHITECT FOR FINISH TO ALL CONCRETE KERBING.
2. THE FINAL COLOUR IS TO BE APPROVED BY THE CLIENT VIA SAMPLE PROCESS THROUGH THE PROJECT MANAGER.

SUBGRADE PREPARATION NOTES AND PAVEMENT CONSTRUCTION SEQUENCE:

1. EXCAVATE IN AREA NEEDED TO A LEVEL REQUIRED TO CONSTRUCT NEW PAVEMENT AND FOR MINIMUM REMOVAL OF ALL TOP SOIL AND/OR REMOVAL OF ALL SILTY SAND. SILTY CLAY OR MATERIAL NOT DEEMED SUITABLE FOR REUSE.

2. COMPACT SUB-GRADE TO 95% MODIFIED MAXIMUM DRY DENSITY WITH MIN. 4 PASSES EACH WAY OF A VIBRATING SMOOTH WHEELED ROLLER OF NOT LESS 10 TONNE/M.

3. REMOVE ANY SOFT SPOTS DETECTED AND REPLACE WITH CLASS 4, 40mm FCR COMPACTED TO 95% MODIFIED RELATIVE COMPACTION.

4. PLACE SOUTHERN GEOSYNTHETICS DUX W155 GEOTEXTILE ON SUBGRADE IN ACCORDANCE WITH THE DISTRIBUTORS RECOMMENDATIONS AND DETAILS.

5. SPREAD NOMINAL 150mm THICKNESS OF CRUSHED ROCK AS DETAILED AS CAPPING LAYER AND PAVEMENT SUBBASE WITH SPREADING EQUIPMENT NOT ACCESSING THE GEOTEXTILE.

6. COMPACTED SUBBASE MATERIAL AS DETAILED AND PRECEED WITH NEXT PAVEMENT LAYER.

7. OBTAIN COMPACTION TESTS OF SUBGRADE AND EACH BASE LAYER PLACED FROM NATA REGISTERED LABORATORY. MINIMUM NUMBER OF TESTS No. 1 PER 50m² OR No. 3 PER LAYER (WHICHEVER IS GREATER). PROVIDE RESULTS FOR EACH TEST LAYER TO SUPERINTENDENT AND ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF THE NEXT PAVEMENT LAYER.

DRAINAGE NOTES:

1. REFER EXISTING CONDITIONS, ARCHITECTS AND OTHER CONSULTANTS DRAWINGS, GEOTECHNICAL REPORT AND SPECIFICATION FOR ADDITIONAL NOTES AND DETAILS.& REINSTATE TO NEAREST JOINT

2. REFER TO SITE PLAN AND ARCHITECTS DRAWINGS FOR SURVEY LEVELS. CONTRUCTOR TO VERIFY LEVELS PRIOR TO COMMENCEMENT OF WORKS.

3. ALL STORMWATER PIPES TO BE UPVC CLASS 'SEH' SOLVENT WELDED U.N.O.

4. MINIMUM PIPE GRADE ARE AS FOLLOWS U.N.O.

	UPVC	RC
100 DIA.	1:100 MIN.	1:60 MIN.
150 DIA.	1:150 MIN.	1:80 MIN.
225 DIA.	1:250 MIN.	1:150 MIN.
300 DIA.	1:325 MIN.	1:200 MIN.

5. MINIMUM COVER (CONTRUCTOR TO VERIFY ON SITE)

	UPVC	UPVC (CLASS 12)	RC
GENERAL	300mm	150mm	150mm
UNDER PAVEMENT (LIGHT VEHICLE TRAFFIC)	450mm	300mm	300mm
UNDER PAVEMENT (MEDIUM VEHICLE TRAFFIC)	N/A	N/A	800mm
UNDER BUILDING SLAB	50mm	50mm	50mm

6. THE LOCATION, LEVELS AND GRADES OF ALL PROPOSED AND EXISTING SERVICES SHALL BE CHECKED BY CONTRACTOR PRIOR OR COMMENCING ANY WORKS.

7. THE DISCHARGE FROM THE SITE IS TO BE VERIFIED BY THE BUILDING PERMIT AUTHORITY PRIOR TO COMMENCEMENT OF WORKS.

8. CONNECT PIPES TO STREET SERVICES TO LOCAL AUTHORITY REQUIREMENTS. PIPES TO BE UPVC CLASS 12 IN ROAD RESERVE.

9. WHERE DOWNPIPES ARE EXPOSED TO EXTERNAL DAMAGE, SUITABLE PROTECTION IS TO BE PROVIDED AS PER ARCHITECTURAL REQUIREMENTS.

10. CARE MUST BE TAKEN WHEN BREAKING INTO EXISTING SERVICES. MAKE GOOD ALL DAMAGED WORKS INCLUDING PAVEMENTS AND SURFACE WORKS TO AUTHORITIES REQUIREMENTS.

11. IF PAVEMENT IS TO BE CONSTRUCTED PRIOR TO THE INSTALLATION OF SERVICES THEN CONDUITS ARE TO BE INSTALLED WHERE NECESSARY AND SYSTEM TO BE FULLY TESTED PRIOR TO PAVEMENT INSTALLATION.

12. TRENCHES TO BE FILLED WITH CLASS 2 F.C.R. OR OTHER APPROVED MATERIAL COMPACTED IN 150mm MAXIMUM THICK LAYERS TO A MINIMUM 96% DENSITY.

13. STORMWATER SYSTEM TO BE FULLY SEALED AND TESTED PRIOR TO FINAL COMPLETION. (CONTRACTOR TO ISSUE VERIFICATION TO ARCHITECT)

14. ANY AMENDMENTS TO PROPOSED SYSTEM ARE TO BE APPROVED BY THE ENGINEERS PRIOR TO COMMENCEMENT OF WORKS.

15. PITS AND SERVICES TO BE SUITABLY LOCATED SO THAT ADJACENT FOOTING STRUCTURE DOES NOT INDUCE LOADS ON SERVICES OR FOOTING.

16. PROVIDE INSPECTION OUTLETS AT BASE OF ALL DOWN PIPES AND AT CHANGE IN DIRECTIONS TO PIPEWORK.

17. STEP IRONS TO BE INSTALLED IN PITS GREATER THEN 900mm IN DEPTH TO VIC ROADS REQUIREMENTS AS A MINIMUM.

18. CONTRACTOR TO CO-ORDINATE WITH EXISTING AND NEW SERVICES AND ENSURE NO CLASHES OCCUR.

19. CONTRACTOR TO INSTALL ADDITIONAL CLEAN FILL TO SUIT COVER AND FALL REQUIREMENTS.

20. ALL PITS AND I.O.'S ARE TO BE FITTED WITH SECURITY MEASURES TO ARCHITECTURAL DETAILS.

21. ALL PIPEWORK CONNECTION DOWNPIPES ARE BY OTHERS AND CONNECTED TO MAIN DRAINAGE SYSTEM AT MINIMUM GRADE AS NOTED. REFER TO ARCHITECT FOR LOCATIONS OF DOWNPIPES.

22. ALL WORKS ARE TO BE IN ACCORDANCE WITH AUTHORITY REQUIREMENTS. CONTRACTOR TO CO-ORDINATE WITH AUTHORITY AND INCLUDE ALL REQUREMENTS INTO WORKS.

23. CONTRACTOR TO PROVIDE SUITABLE TEMPORARY DRAINAGE SYSTEM DURING WORKS. SUBMISSION OF PROPOSAL TO BE ISSUED TO ARCHITECT PRIOR TO COMMENCEMENT OF WORKS.

24. PIT MINIMUM SIZE AS PER FOLLOWS;

< 600mm	= 450 x 450
> 600mm < 900mm	= 600 x 600
< 900mm > 1200mm	= 600 x 900
>1200mm	= 900 x 900

25. ALL EXCAVATIONS FOR DRAINAGE SYSTEM ARE TO BE INSTALLED IN ACCORDANCE WITH REGULATORY AUTHORITIES REQUIREMENTS, INCLUSIVE OF 'THE CODE OF PRACTICE FOR SAFETY REGULATIONS IN TRENCHING OPERATIONS'.

STORMWATER PIT SCHEDULE

MARK	SIZE	COVER TYPE	COVER CLASS	COVER LEVEL	REMARKS
P1	2200 DIA.	GRATED	AS PER AS3996, HEEL GUARD	63.53	PUMP PIT WITH DUAL PUMP AND BATTERY BACK UP SYSTEM
P2	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P3	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P4	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P5	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P6	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P7	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P8	1500 x 900	GRATED	AS PER AS3996, HEEL GUARD	70.75	SURCHARGE PIT
P9	900 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH EXISTING LEVEL	
P10	1300 x 900	GATIC	SOLID COVER AS PER AS3996	72.05	
P11	1300 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P12	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P13	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P14	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P15	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P16	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P19	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P20	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

CIVIL NOTES

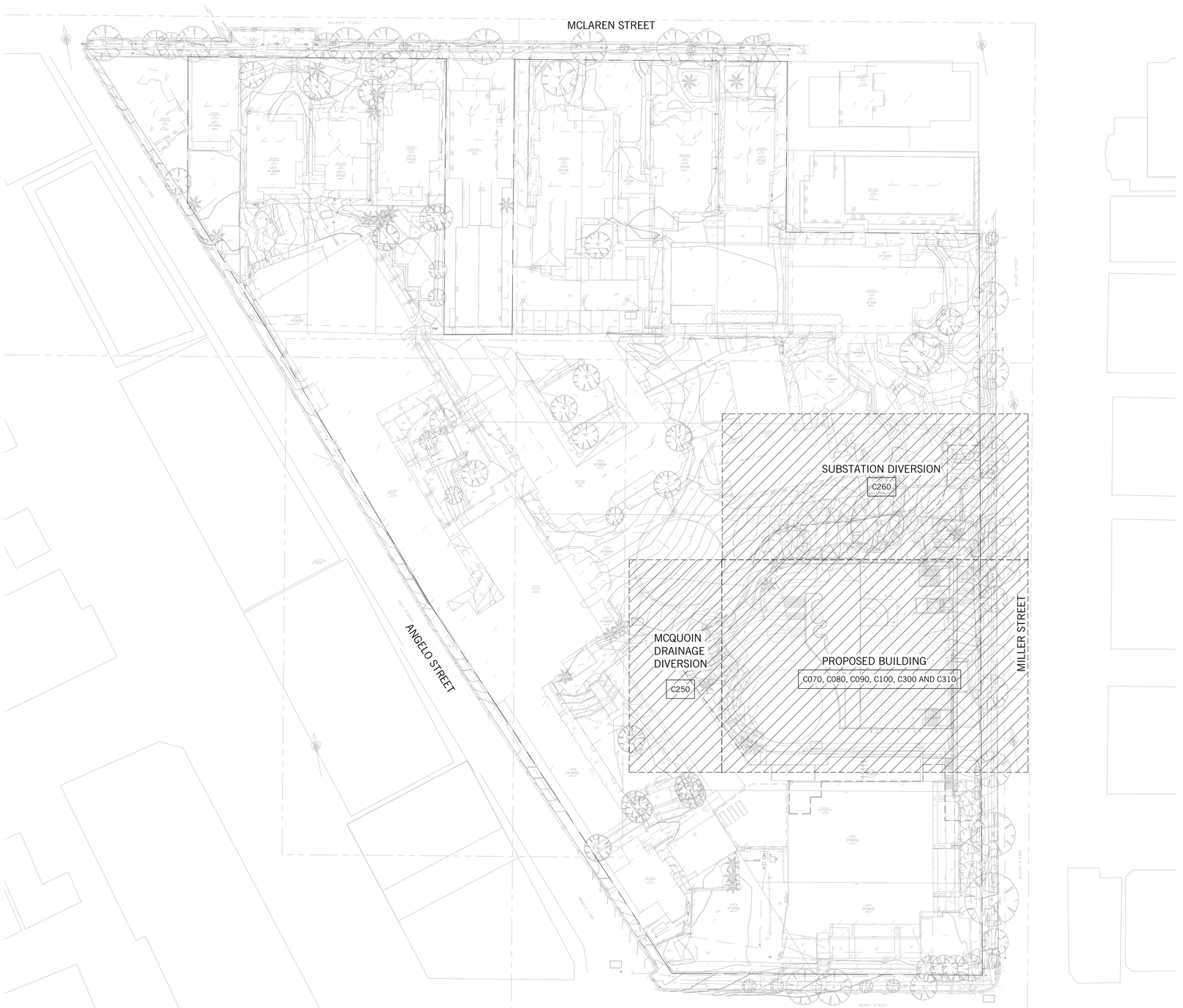
DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW

JOB No.	DRAWING No.	REV.
19133	C001	T2

PRINT TIME: 21/01/2021 1:34:06 PM C:\Users\gregm\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gregmUSBU.rvt

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10



SITE PLAN
SCALE: 1 : 500

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9680 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

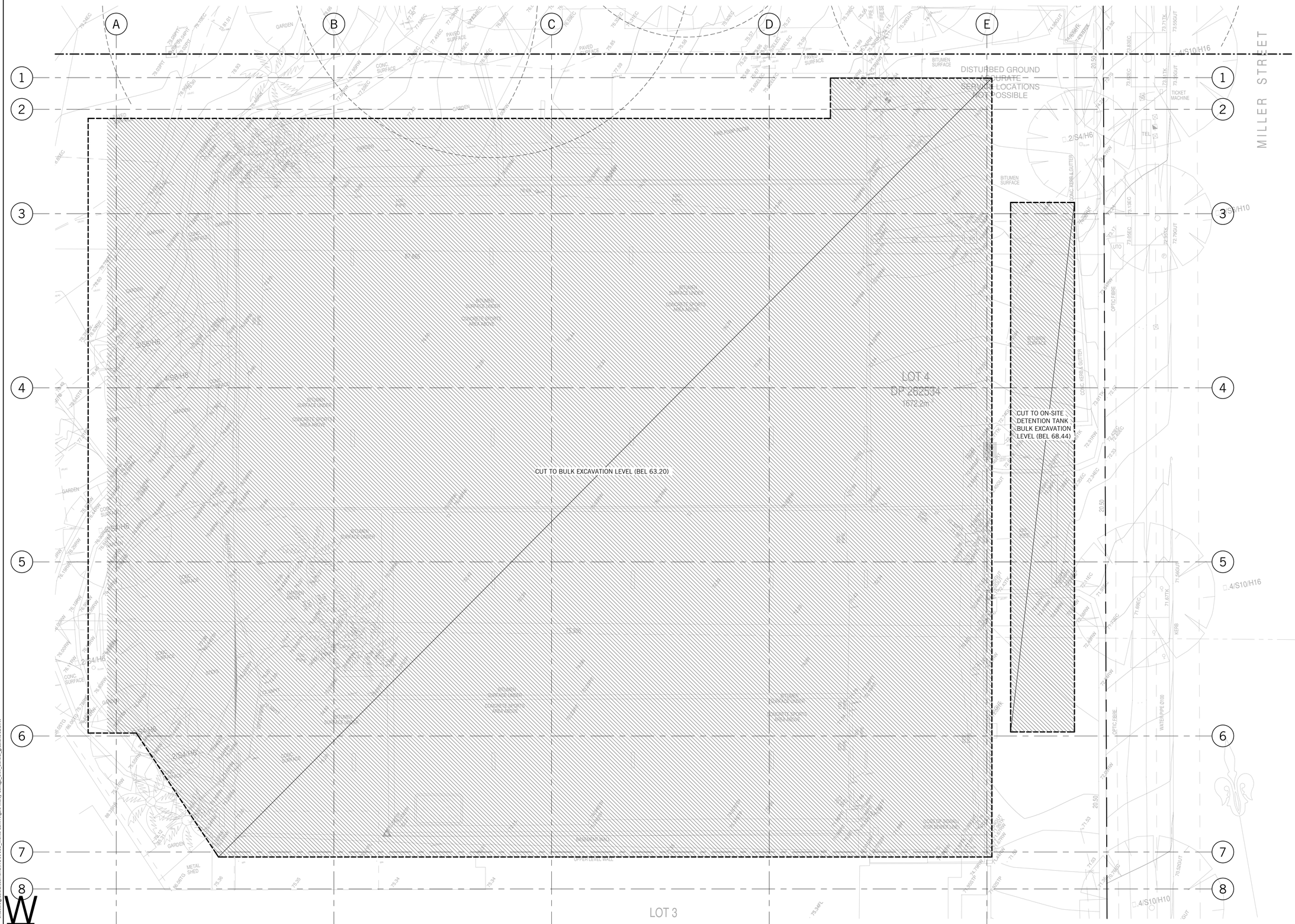
SITE PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:500	GP	PW
JOB No.	DRAWING No.	REV.
19133	C050	T2

DIAL BEFORE YOU DIG
www.1100.com.au

PRINT TIME: 21/01/2021 1:34:12 PM C:\Users\gpcast\Documents\WD19133_Monte Sant Angelo, Mercy College_Civil_Central_gpcastUCBU.rvt

WEBBER DESIGN
A1 0 1 2 3 4 5 6 7 8 9 10



CUT AND FILL PLAN

SCALE: 1 : 100

NOTES:

1. THIS DRAWING ONLY DETAILS BULK EARTHWORKS ASSOCIATED WITH THE BUILDING ENVELOPE (IGNORING STRUCTURAL FOOTING, BEAMS, COLUMNS AND EXCAVATION OF IN GROUND DRAINAGE NETWORK).
2. APPROXIMATELY 200mm ZONE BELOW FINISHED SURFACE LEVELS HAS BEEN ALLOWED FOR BASEMENT STRUCTURAL SLAB.
3. ALL LEVELS APPROXIMATE BASED FROM HARRISON TOTAL SURVEYING SOLUTIONS REF : 192082 DATED : 09/09/2019 AND MUST BE CONFIRMED ON SITE.
4. BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.

DIAL BEFORE YOU DIG ®
www.1100.com.au

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

- CUT TO ACHIEVE BULK EXCAVATION LEVEL
- FILL TO ACHIEVE FINISH LEVEL
- TREE PROTECTION ZONE

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

CUT AND FILL PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C055	T2

PRINT TIME: 21/01/2021 1:34:13 PM C:\Users\gracia\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gracia\XUCBU.rvt

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

INSTALL TEMPORARY SEDIMENT FENCE & HOARDING AROUND SITE TYPICAL PRIOR TO DEMOLITION AND EARTHWORKS (TYP.)

OUTLINE OF EXCAVATION

EXISTING SERVICES SHOWN INDICATIVELY. BUILDER TO CONFIRM PRIOR COMMENCEMENT OF ANY WORKS. RELOCATE AS PER AUTHORITY REQUIREMENTS (BY OTHERS)

EXISTING STORMWATER PIPE TO BE DIVERTED. REFER TO DIVERSION PLAN AND CONSTRUCTION SEQUENCE WORKS

SEDIMENT FENCE

STOCKPILE AREA

EXISTING SERVICES SHOWN INDICATIVELY. BUILDER TO CONFIRM PRIOR COMMENCEMENT OF ANY WORKS. RELOCATE AS PER AUTHORITY REQUIREMENTS (BY OTHERS)

BASEMENT EXCAVATION ENGINEERED STABLISED RETENTION SYSTEM

ALL WATER PUMPED OR OTHERWISE REMOVED FROM EXCAVATIONS OR BASEMENT AREAS IS TO BE FILTERED TO ACHIEVE SUSPENDED SOLID/NON FILTERABLE RESIDUE LEVELS COMPLYING WITH THE AUSTRALIAN WATER QUALITY GUIDELINES FOR FRESH AND MARINE WATERS.

GEOTEXTILE FILTER ON EXISTING INLET PITS ON SITE TO BE PROVIDED AND MAINTAINED DURING CONSTRUCTION

T2

TEMPORARY BASEMENT SUMP & SEDIMENT DIESEL PUMP TO CONTRACTOR'S DETAIL. CONNECT PUMP LINE TO AUTHORITY REQUIREMENT.

TEMPORARY VEHICLE CROSSING, REINSTATE TO COUNCIL'S REQUIREMENTS ON PROJECT COMPLETION

TEMPORARY SEDIMENT PUMP. CONNECT PUMP LINE TO AUTHORITY REQUIREMENT

PROVIDE STABILISED ZONE AT ENTRY / EXIT (COMPACTED ROCK) EXACT LOCATION TO BE DETERMINED ON SITE BY THE SUPERINTENDENT

EXISTING 375Ø HDPE STORMWATER PIPE

TEMPORARY SITE ACCESS RAMP

STEEL GRATE DRIVEWAY (SHAKER)

IN/OUT

DISTURBED GROUND
ACCURATE SERVICE LOCATIONS NOT POSSIBLE

LOT 4
DP 262534
1672.2m²

LOT 3

MILLER STREET

LEGEND

- SITE BOUNDARY
- SEDIMENT FENCE
- FENCE / HOARDING
- STABILISED SITE ENTRY / EXIT TRUCK WASH / RUMBLE STRIPS (REFER TO DRG. C065 FOR DETAILS.)
- STOCKPILE AREA
- MESH & GRAVEL INLET FILTER REFER TO DRG. C065 FOR DETAILS
- CATCH DRAIN
- TEMPORARY SUMP & SEDIMENT PUMP

SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1 : 100

GENERAL NOTES:

1. EROSION AND SEDIMENT CONTROLS TO BE MONITORED ON A DAILY BASIS AND MAINTAINED
2. ROAD AND FOOTPATH TO BE SWEEP DAILY AND PUT SOIL SPILL BEHIND THE SEDIMENT CONTROLS.
3. ESCP DEVICES ARE TO REMAIN IN PLACE UNTIL 70% OF THE SITE HAS BEEN REVEGETATED.

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

DIAL BEFORE YOU DIG www.1100.com.au

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC. AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW. AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

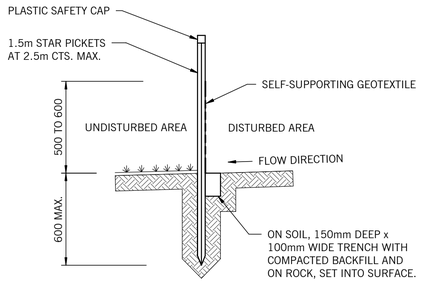
MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

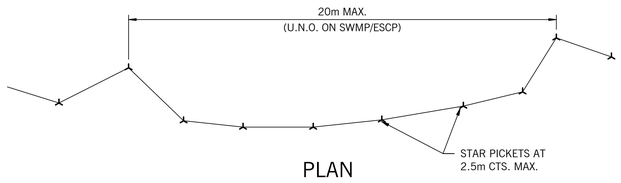
SEDIMENT AND EROSION CONTROL PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C060	T2

PRINT TIME: 21/01/2021 1:34:15 PM
C:\Users\gpaul\Documents\W0191133_Monte Sant Angelo Mercy College_Civil_Central_gpaulAUCBU.rvt
A1 0 1 2 3 4 5 6 7 8 9 10



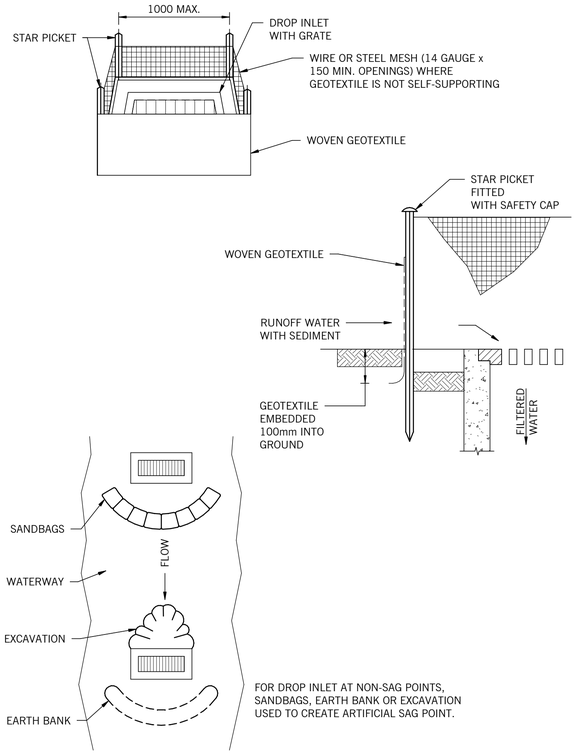
SECTION DETAIL



PLAN

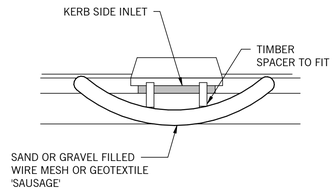
SEDIMENT FENCE NOTES:

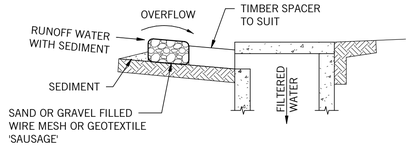
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNES AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECONG IN DESIGN STORM EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.5m INTERVALS MAX. AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURE IT GOES TO THE BASE OF TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTION OF FABRIC AT THE SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER BASE OF THE FABRIC AND COMPACT IT THROUGHLY OVER THE GEOTEXTILE.



GEOTEXTILE INLET FILTER NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC, REDUCE THE PICKET SPACING TO 1m CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINT CAN BE CREATED WITH SANDBAGS OR EARTH AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

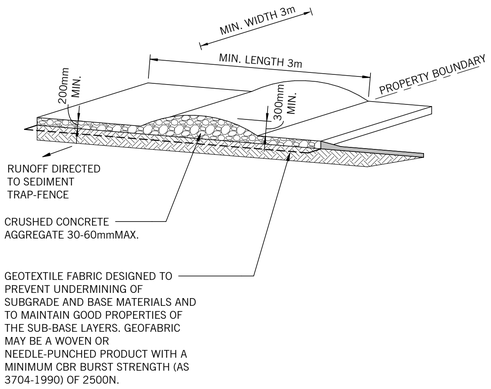




NOTE:
THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

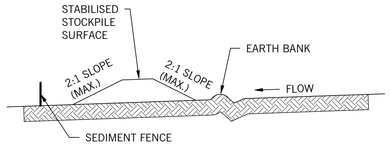
MESH AND GRAVEL INLET FILTER SEDIMENT SOCK) NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND HALF FILL IT WITH 25mm TO 50mm GRAVEL OR CLEAN SAND.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED FIRMLY ABUTTING EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.



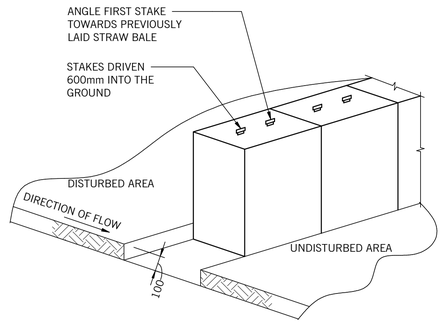
STABILISED SITE ACCESS NOTES:

1. STRIP AT LEAST 150mm OF TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING CRUSHED CONCRETE AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 3m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCES.



STOCKPILES NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCTION ON THE CONTOURS AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THEN 2m HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THEN 10 DAYS, STABILISED FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (REFER SEDIMENT FENCE NOTE) 1 TO 2 METRES DOWNSLOPE.



STRAW BALE SEDIMENT FILTER NOTES:

1. STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD.
2. RETURN STRAW BALES EVERY 20 METRES.
3. MINIMUM NUMBER OF BALES TO BE USED AT ALL TIMES IS 4.

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

SEDIMENT AND EROSION CONTROL TYPICAL DETAILS

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	GP	PW
JOB No.	DRAWING No.	REV.
19133	C065	T2

PRINT TIME: 21/01/2021 1:34:15 PM C:\Users\gpaoli\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpaoliUCBU.rvt

A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY. LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

- Pxx — PIT NUMBER
- GRATED PIT
- JUNCTION PIT
- EXISTING SIDE ENTRY PIT
- I.O. — INSPECTION OPENING
- G.I. — GRATED INLET
- FALL DIRECTION
- STRIP DRAIN
- STORMWATER PIPE
- 100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
- PUMP OUT FLOW DRAIN LINE
- RISING MAIN LINE
- SPOON DRAIN
- NEW PAVEMENT
- NEW LANDSCAPING
- NSL 34.01× — NATURAL SURFACE LEVEL
- Ex K&CH — EXISTING KERB & CHANNEL
- K&CH — NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

RELIEF PIPE SYSTEM IN THE EVENT OF GROUNDWATER RECHARGE. PENDING GEOTECHNICAL ADVICE (TYP.)

CC RELIEF PIPE SYSTEM IN THE EVENT OF GROUNDWATER RECHARGE. PENDING GEOTECHNICAL ADVICE (TYP.)

LIFT PIT TO BE FULLY TANKED. REFER TO WATERPROOFING CONSULTANT FOR DETAILS.

PUMP WELL PIT ALL PURPOSE PUMP STATION PUMP WELL : 2200Ø x 2500D. 2 HEAVY DUTY SUBMERSIBLE PUMPS CAPABLE OF PUMPING 10L/s AT 15m HEAD REFER TO PUMP SUPPLIER FOR INSTALLATION REQUIREMENTS. REFER TO SERVICES CONSULTANT FOR ELECTRICAL REQUIREMENTS & BATTERY BACK UP SYSTEM.

PUMP LINE TO OSD TANK AT GROUND LEVEL WITH NON-RETURN VALVE

EXISTING SEWER LINE SHOWN INDICATIVELY AS PER MCQUOIN HYDRAULIC AS BUILT CONDITION. BUILDER TO CONFIRM LOCATION PRIOR COMMENCEMENT OF WORKS. RELOCATION BY OTHERS

REFER TO HYD DRAWINGS

NOTES:

1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY **NORTH SYDNEY COUNCIL'S JAYANTA SAHA** DATED **20/11/2019** , REFERENCE **JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU** AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM **TOTAL SURVEYING SOLUTIONS** REF : **192082** DATED : **09/09/2019**)
3. **THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT. REF: 73019.03; DATED: FEBRUAR 2020.**
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

LEVEL 0 - DRAINAGE PLAN

SCALE: 1 : 100

REFER TO SHEET C001 FOR PIT SCHEDULE

DIAL BEFORE YOU DIG www.1100.com.au®

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 0 - DRAINAGE PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C070	T2

PRINT TIME: 21/01/2021 1:34:20 PM
C:\Users\gpicard\Documents\WO19133_Monte Sant Angelo Mercy College_Civil_Central_gpicard.rvt
A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

PROVIDE AGI DRAIN AND FREE DRAINAGE LAYER BEHIND WALL AS PER TYPICAL DETAIL. CONNECT TO BASEMENT DRAINAGE SYSTEM. PROVIDE WATERPROOFING MATERIAL AGAINST WALL (BY OTHERS) TYP.

ALL SUSPENDED DRAINAGE BY HYDRAULIC CONSULTANT TO BE DIRECTED TO ONSITE DETENTION TANK FOR DISCHARGE UNDER GRAVITY FLOW. PROVIDE HIGH FLOW DIVERTOR AS REQUIRED

EXISTING SEWER LINE SHOWN INDICATIVELY AS PER MCQUOIN HYDRAULIC AS BUILT CONDITION. BUILDER TO CONFIRM LOCATION PRIOR COMMENCEMENT OF WORKS. RELOCATION BY OTHERS

TITLE BOUNDARY

RL. 66.73

RL. 69.15

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

NOTES:

1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY **NORTH SYDNEY COUNCIL'S JAYANTA SAHA** DATED **20/11/2019** , REFERENCE **JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU** AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM **TOTAL SURVEYING SOLUTIONS**, REF.: **192082** DATED : **09/09/2019**)
3. **THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT, REF: 73019.03; DATED: FEBRUAR 2020** T2
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

LEGEND

Pxx	PIT NUMBER
	GRATED PIT
	JUNCTION PIT
	EXISTING SIDE ENTRY PIT
I.O.	INSPECTION OPENING
G.I.	GRATED INLET
	FALL DIRECTION
	STRIP DRAIN
	STORMWATER PIPE
	100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
	PUMP OUT FLOW DRAIN LINE
	RISING MAIN LINE
	SPOON DRAIN
	NEW PAVEMENT
	NEW LANDSCAPING
NSL 34.01×	NATURAL SURFACE LEVEL
Ex K&CH	EXISTING KERB & CHANNEL
K&CH	NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

LEVEL 1 - DRAINAGE PLAN

SCALE: 1 : 100

REFER TO SHEET C001 FOR PIT SCHEDULE

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 1 - DRAINAGE PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C080	T2

DIAL BEFORE YOU DIG
www.1100.com.au

PRINT TIME: 21/01/2021 1:34:26 PM
C:\Users\gpesic\Documents\W019133_Monte Sant Angelo Mercy College_Civil_Central_gpesicMJCBU.rvt
A1

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

REFER TO DRG C100 FOR CONTINUATION

OUTLINE OF FLOOR BELOW

LANDSCAPE RETENTION AS PER STRUCTURAL DETAILS. ALLOW AGI DRAIN BEHIND THE LANDSCAPE RETENTION WALL AND CONNECT TO OSD TANK

CONNECT AGI DRAIN TO OSD TANK

10,000 L RAINWATER TANK FOR RE-USE SUCH AS IRRIGATION AND TOILET FLUSHING. ALL NON-TRAFFICABLE ROOF AREA SUSPENDED DRAINAGE BY HYDRAULIC CONSULTANT TO BE DIRECTED TO RAINWATER TANK FOR DISCHARGE UNDER GRAVITY FLOW.

HYDRAULIC TAP CONNECTION FOR ALL SUSPENDED NON-ROOF TRAFFICABLE AREAS. REFER TO HYDRAULIC DRAWINGS.

225Ø uPVC PIPE MIN. 1:100 FALL

100Ø uPVC PIPE MIN. 1:100 FALL TO OSD TANK

158,000 L ON-SITE DETENTION TANK IN GROUND. ALL TRAFFICABLE SUSPENDED DRAINAGE BY HYDRAULIC CONSULTANT TO BE DIRECTED TO ON-SITE DETENTION TANK FOR DISCHARGE UNDER GRAVITY FLOW. PROVIDE HIGH FLOW DIVERTOR AS REQUIRED

LANDSCAPE RETENTION AS PER STRUCTURAL DETAILS. ALLOW AGI DRAIN BEHIND THE LANDSCAPE RETENTION WALL AND CONNECT TO OSD TANK

900 x 900 GATIC COVER CLASS B, HEEL GUARD ACCESS

ALLOW TO REINSTATE ALL KERBS CHANNELS & FOOTPATHS AND LANDSCAPING TO ARCHITECT, LANDSCAPE ARCHITECT & COUNCIL DETAILS

HYDRAULIC TAP CONNECTION FOR ALL SUSPENDED TRAFFICABLE AREAS. REFER TO HYDRAULIC DRAWINGS.

ALL SUSPENDED DRAINAGE BY HYDRAULIC CONSULTANT TO BE DIRECTED TO ONSITE DETENTION TANK FOR DISCHARGE UNDER GRAVITY FLOW. PROVIDE HIGH FLOW DIVERTOR AS REQUIRED

EXISTING SEWER LINE SHOWN INDICATIVELY AS PER MCQUOIN HYDRAULIC AS BUILT CONDITION. BUILDER TO CONFIRM LOCATION PRIOR COMMENCEMENT OF WORKS. RELOCATION BY OTHERS

900 x 900 GRATED COVER CLASS B, HEEL GUARD ACCESS

EXISTING CROSSOVER TO BE REMOVED. REINSTATE ALL KERBS CHANNELS & FOOTPATHS AND LANDSCAPING TO ARCHITECT, LANDSCAPE ARCHITECT & COUNCIL DETAILS

1000 uPVC PIPE MIN. 1:100 FALL TO OSD TANK

6 x 490 OCEAN PROTECT PSORB FILTRATION PODS

PUMP LINE FROM BASEMENT PUMP WITH NON-RETUFN VALVE. REFER TO PUMP MANUFACTURER'S SPEC

SOLID COVER CLASS B FOR MAINTENANCE OF THE FILTRATION PODS. REFER TO MANUFACTUER'S SPECIFICATIONS

LEGAL POINT OF DISCHARGE:
LEGAL POINT OF DISCHARGE TO EXISTING COUNCIL DRAIN. CONSTRUCT NEW GUTTER PIT AS PER COUNCIL STANDARD DRAWING.
CL = 70.67 (ASSUMED)
IL = 70.15 (ASSUMED)
BUILDER TO CONFIRM LOCATION, SIZE AND DEPTH OF EXISTING COUNCIL PIPE PRIOR COMMENCMENT OF ANY WORKS.

PROVIDE 2 HEAVY DUTY SUBMERSIBLE PUMPS CAPABLE OF PUMPING 25L/s AT 15m HEAD REFER TO PUMP SUPPLIER FOR INSTALLATION REQUIREMENTS. REFER TO SERVICES CONSULTANT FOR ELECTRICAL REQUIREMENTS & BATTERY BACK UP SYSTEM. TO BE CONFIRM EXACT LOCATION, DEPTH AND SIZE OF THE EXISTING SERVICES WITHIN THE FOOTPATH AND MILLER STREET.

3000 uPVC PIPE MIN. 1:100 FALL

EXISTING COUNCIL DRAIN

TITLE BOUNDARY

300Ø uPVC OVERFLOW PIPE MIN. 1:100 FALL

PUMP LINE TO SURCHARGE PIT WITH NON-RETURN VALVE

CONSTRUCT NEW VEHICLE CROSSOVER AS PER NORTH SYDNEY COUNCIL DETAIL

225Ø uPVC PIPE MIN. 1:100 FALL

CONSULT ARBORIST FOR TRENCHING AROUND TREE PROTECTION ZONE. PENDING COUNCIL APPROVAL

DEMOLISH SECTION OF EXISTING 375Ø PIPE. BUILDER TO CONFIRM EXISTING PIPE LOCATION, DEPTH AND SIZE PRIOR COMMENCEMENT OF ANY WORKS

EXISTING 375Ø HDPE STORMWATER PIPE

4 x 225Ø PIPE TO ALLOW HEADROOM CLEARANCE BELOW

REFER TO DRG C250 FOR CONTINUATION

DEMOLISH EXISTING PIT AND CONSTRUCT NEW PIT TO ACCOMODATE NEW 4 x 225Ø DIVERSION PIPE

ALL DOWNPIPE FROM MCQUOIN BUILDING TO BE INVESTIGATED PRIOR COMMENCEMENT OF ANY WORKS. ANY EXISTING DOWN PIPE CONNECTED TO EXISTING 375Ø HDPE PIPE AT THE PROPOSED SITE MUST BE CONNECTED TO THE NEW DIVERSION 375Ø PIPE

EXISTING DISCHARGE PIPES FROM EXISTING 375Ø PIPE. CONNECT NEW DIVERSION LINE TO EXISTING DISCHARGE PIPES. BUILDER TO CONFIRM EXACT LOCATION, SIZE AND DEPTH PRIOR COMMENCEMENT OF ANY WORKS

DEMOLISH PORTION OF EXISTING PIPE AND UPSTREAM PIT AND CONSTRUCT NEW DIVERSION PIPE

PROVIDE 150mm APEX FREEBOARD ABOVE EXISTING TOP OF KERB LEVEL

PROVIDE INSPECTION OPENING IN EXISTING STORE

EX. RL 72.05 (SLAB THICKNESS 300mm T.B.C.)

4 x 225Ø HDPE MIN. 1:100 FALL

EXISTING STORMWATER PIT BURRIED UNDER EXISTING BATHROOM AS PER ONE SEARCH LOCATOR PTY LTD, REPORT DATED 19/06/20

NEW DIVERSION 375Ø HDPE DIVERSION PIPE TO BE CONSTRUCTED. MATCH EXISTING PIPE GRADIENT

NEW PIT JUNCTION PIT TO BE CONSTRUCTED FOR PROPOSED DIVERSION PIPE

LEGEND

Pxx	PIT NUMBER
	GRATED PIT
	JUNCTION PIT
	EXISTING SIDE ENTRY PIT
I.O.	INSPECTION OPENING
G.I.	GRATED INLET
	FALL DIRECTION
	STRIP DRAIN
	STORMWATER PIPE
	100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
	PUMP OUT FLOW DRAIN LINE
	RISING MAIN LINE
	SPOON DRAIN
	NEW PAVEMENT
	NEW LANDSCAPING
NSL 34.01×	NATURAL SURFACE LEVEL
Ex K&CH	EXISTING KERB & CHANNEL
K&CH	NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 2 - DRAINAGE PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C090	T2

LEVEL 2 - DRAINAGE PLAN

SCALE: 1 : 100

EXISTING SERVICES NOTES:

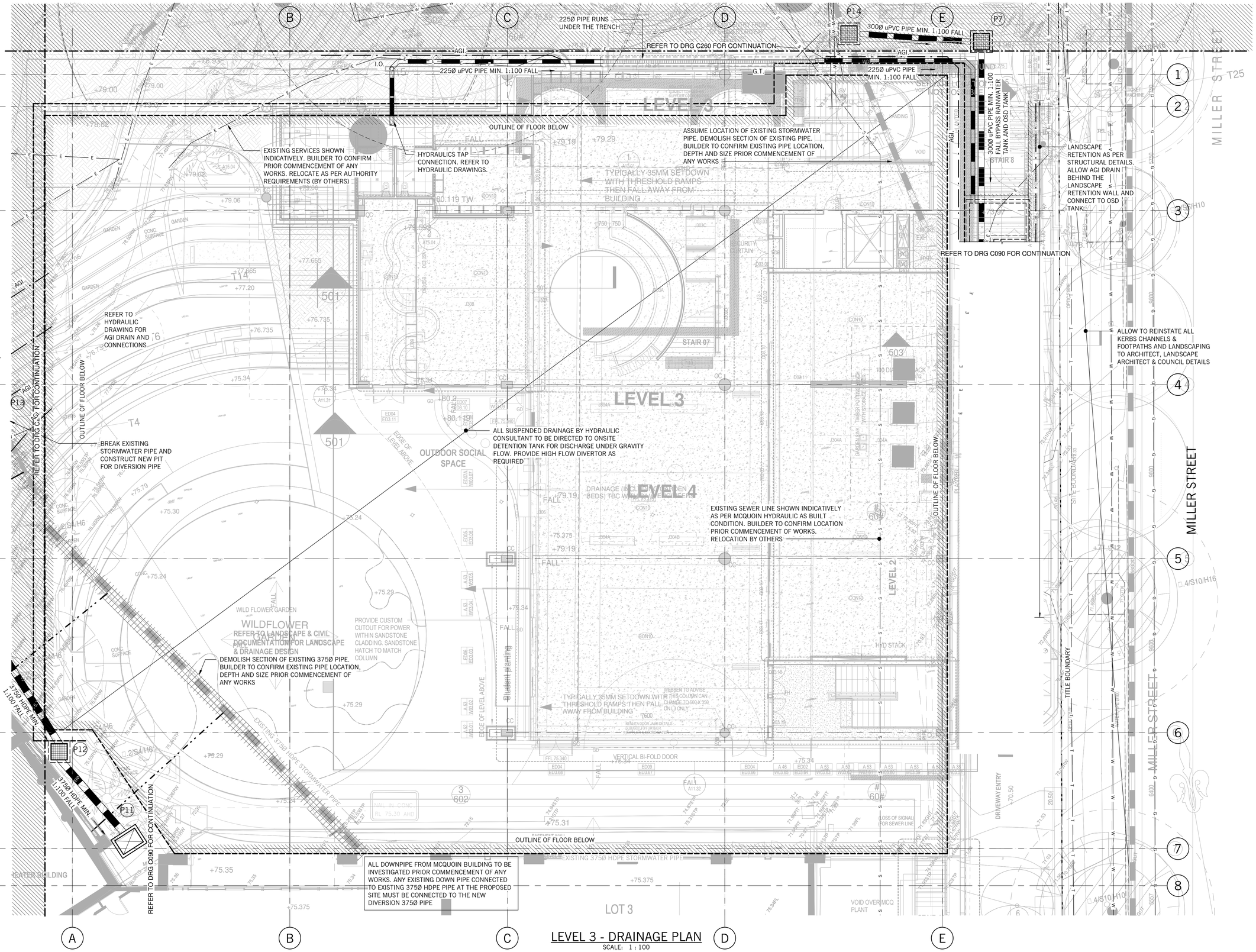
- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

REFER TO SHEET C001 FOR PIT SCHEDULE

REFER TO SHEET C250 FOR GENERAL AND DESIGN NOTES

DIAL BEFORE YOU DIG www.1100.com.au

C:\Users\gpnet\Documents\W\19133_Monte Sant Angelo Mercy College_Civil_Centre_gpnet.rvt\C001.rvt
2/10/2021 1:34:30 PM
PRINT TIME:
A1



LEVEL 3 - DRAINAGE PLAN

SCALE: 1 : 100

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

REFER TO SHEET C001 FOR PIT SCHEDULE

REFER TO SHEET C250 FOR GENERAL AND DESIGN NOTES

DIAL BEFORE YOU DIG www.1100.com.au

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

Pxx	PIT NUMBER
	GRATED PIT
	JUNCTION PIT
	EXISTING SIDE ENTRY PIT
I.O.	INSPECTION OPENING
G.I.	GRATED INLET
	FALL DIRECTION
	STRIP DRAIN
	STORMWATER PIPE
	100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
	PUMP OUT FLOW DRAIN LINE
	RISING MAIN LINE
	SPOON DRAIN
	NEW PAVEMENT
	NEW LANDSCAPING
NSL 34.01×	NATURAL SURFACE LEVEL
Ex K&CH	EXISTING KERB & CHANNEL
K&CH	NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN

STRUCTURAL ENGINEERING

MELBOURNE OFFICE: LEVEL 2, 31 QUEEN STREET MELBOURNE, VIC, AUSTRALIA 3000 T: +61 3 9614 7155

SYDNEY OFFICE: SUITE 301, LEVEL 3, 19A BOUNDARY STREET RUSHCUTTERS BAY, NSW, AUSTRALIA 2011 T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

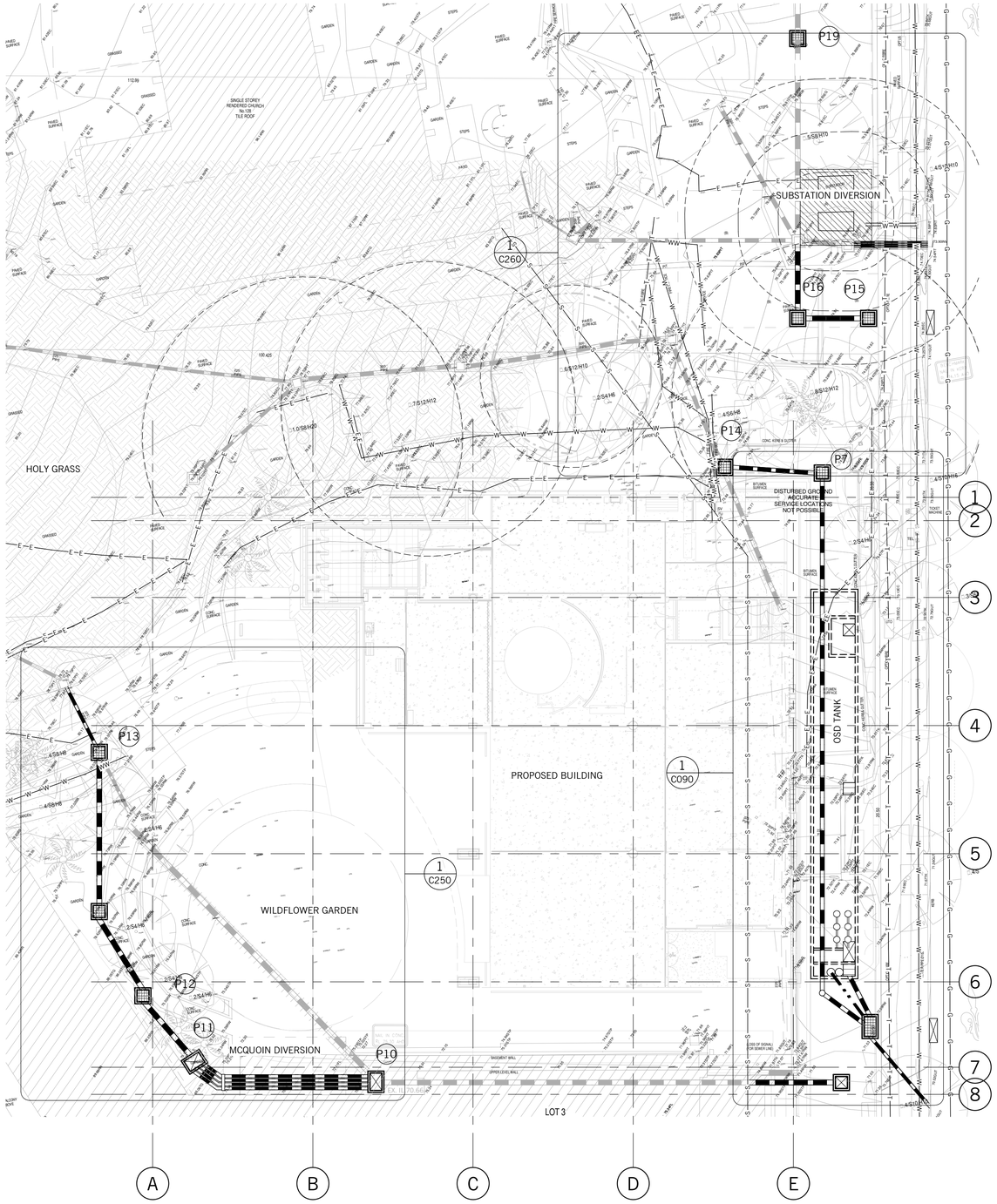
MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 3 - DRAINAGE PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C100	T2

PRINT TIME: 21/01/2021 1:34:37 PM C:\Users\gracio\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gracioXUCBU.rvt



EXISTING SITE DRAINAGE & DIVERSION PLAN

SCALE: 1 : 200

STORMWATER PIT SCHEDULE

MARK	SIZE	COVER TYPE	COVER CLASS	COVER LEVEL	REMARKS
P1	2200 DIA.	GRATED	AS PER AS3996, HEEL GUARD	63.53	PUMP PIT WITH DUAL PUMP AND BATTERY BACK UP SYSTEM
P2	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P3	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P4	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P5	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P6	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P7	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P8	1500 x 900	GRATED	AS PER AS3996, HEEL GUARD	70.75	SURCHARGE PIT
P9	900 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH EXISTING LEVEL	
P10	1300 x 900	GATIC	SOLID COVER AS PER AS3996	72.05	
P11	1300 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P12	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P13	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P14	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P15	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P16	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P19	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P20	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	

NOTES:

1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY **NORTH SYDNEY COUNCIL'S JAYANTA SAHA** DATED **20/11/2019** , REFERENCE **JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU** AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM **TOTAL SURVEYING SOLUTIONS** , REF , **192082** , DATED , **09/09/2019**)
3. T2 **THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT, REF: 73019.03; DATED: FEBRUAR 2020** .
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

DESIGN ALLOWANCE NOTES:

1. ALL EXISTING IN GROUND STORMWATER TO BE VERIFIED ON SITE BY THE BUILDER AND FLOW TESTED.
2. ALLOW TO REPLACE ANY DAMAGED SERVICES IDENTIFIED.
3. ALLOW TO UPGRADE EXISTING DOWN PIPES WHERE NEW CONNECTION ARE SPECIFIED.
4. ALLOW TO REINSTATE EXISTING PIT AS REQUIRED.

CONSTRUCTION/DEMOLITION SEQUENCE:

1. INVESTIGATE AND TEST EXISTING DRAINAGE PIPE.
2. RECONSTRUCT TEMPORARY STRUCTURAL PROPPING AS PER STRUCTURE CONSTRUCTION SEQUENCE.
3. DEMOLISH PORTION OF EXISTING BUILDING.
4. CONSTRUCT TEMPORARY DRAINAGE SYSTEM AS REQUIRED.
5. CONSTRUCT PROPOSED DIVERSION PIPE.
6. DEMOLISH PORTION OF DRAINAGE PIPE.
7. DECOMISSION TEMPORARY DRAINAGE SYSTEM.

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

- Pxx — PIT NUMBER
- GRATED PIT
- JUNCTION PIT
- EXISTING SIDE ENTRY PIT
- I.O. — INSPECTION OPENING
- G.I. — GRATED INLET
- FALL DIRECTION
- STRIP DRAIN
- STORMWATER PIPE
- 100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
- PUMP OUT FLOW DRAIN LINE
- RISING MAIN LINE
- SPOON DRAIN
- NEW PAVEMENT
- NEW LANDSCAPING
- NSL 34.01× — NATURAL SURFACE LEVEL
- Ex K&CH — EXISTING KERB & CHANNEL
- K&CH — NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

EXISTING SITE DRAINAGE & DIVERSION PLAN

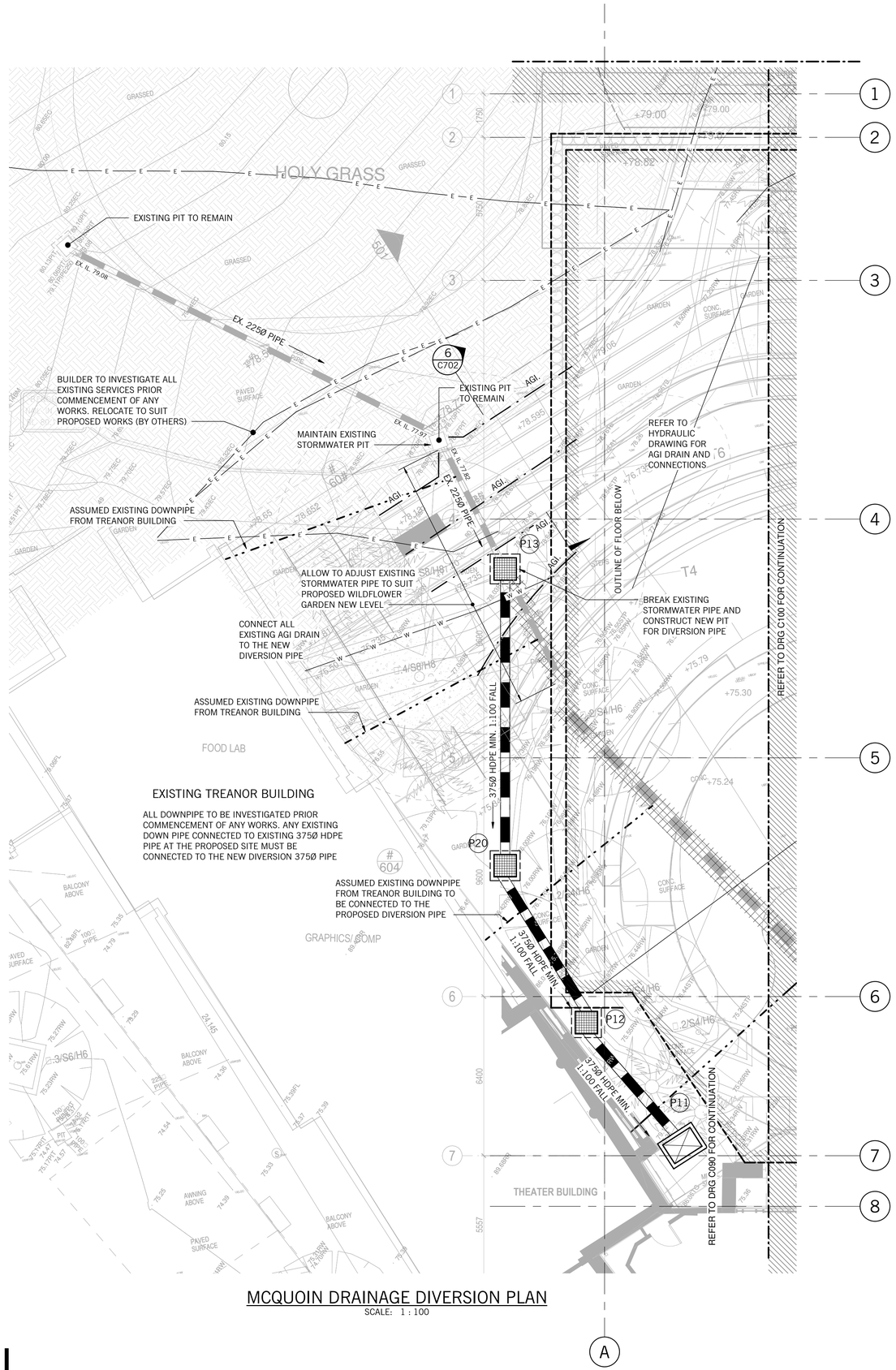
DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:200	GP	PW
JOB No.	DRAWING No.	REV.
19133	C200	T2

DIAL BEFORE YOU DIG www.1100.com.au

PRINT TIME: 21/01/2021 1:34:43 PM C:\Users\gpeasley\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpeasley\CIVIL.rvt

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10



MCQUOIN DRAINAGE DIVERSION PLAN
SCALE: 1 : 100

STORMWATER PIT SCHEDULE					
MARK	SIZE	COVER TYPE	COVER CLASS	COVER LEVEL	REMARKS
P1	2200 DIA.	GRATED	AS PER AS3996, HEEL GUARD	63.53	PUMP PIT WITH DUAL PUMP AND BATTERY BACK UP SYSTEM
P2	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P3	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P4	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P5	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P6	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P7	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P8	1500 x 900	GRATED	AS PER AS3996, HEEL GUARD	70.75	SURCHARGE PIT
P9	900 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH EXISTING LEVEL	
P10	1300 x 900	GATIC	SOLID COVER AS PER AS3996	72.05	
P11	1300 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P12	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P13	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P14	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P15	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P16	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P19	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P20	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	

NOTES:
1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY **NORTH SYDNEY COUNCIL'S JAYANTA SAHA** DATED **20/11/2019** , REFERENCE **JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU** AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM **TOTAL SURVEYING SOLUTIONS** ~~REF.: 192082 DATED.: 09/09/2019~~)
3. T2 **THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT. REF: 73019.03; DATED: FEBRUAR 2020.**
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

EXISTING SERVICES NOTES:
- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

DESIGN ALLOWANCE NOTES:
1. ALL EXISTING IN GROUND STORMWATER TO BE VERIFIED ON SITE BY THE BUILDER AND FLOW TESTED.
2. ALLOW TO REPLACE ANY DAMAGED SERVICES IDENTIFIED.
3. ALLOW TO UPGRADE EXISTING DOWN PIPES WHERE NEW CONNECTION ARE SPECIFIED.
4. ALLOW TO REINSTATE EXISTING PIT AS REQUIRED.

CONSTRUCTION/DEMOLITION SEQUENCE:
1. INVESTIGATE AND TEST EXISTING DRAINAGE PIPE.
2. RECONSTRUCT TEMPORARY STRUCTURAL PROPPING AS PER STRUCTURE CONSTRUCTION SEQUENCE.
3. DEMOLISH PORTION OF EXISTING BUILDING.
4. CONSTRUCT TEMPORARY DRAINAGE SYSTEM AS REQUIRED.
5. CONSTRUCT PROPOSED DIVERSION PIPE.
6. DEMOLISH PORTION OF DRAINAGE PIPE.
7. DECOMISSION TEMPORARY DRAINAGE SYSTEM.

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND
- Pxx — PIT NUMBER
- GRATED PIT
- JUNCTION PIT
- EXISTING SIDE ENTRY PIT
- I.O. — INSPECTION OPENING
- G.I. — GRATED INLET
- FALL DIRECTION
- STRIP DRAIN
- STORMWATER PIPE
- 100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
- PUMP OUT FLOW DRAIN LINE
- RISING MAIN LINE
- SPOON DRAIN
- NEW PAVEMENT
- NEW LANDSCAPING
- NSL 34.01× — NATURAL SURFACE LEVEL
- Ex K&CH — EXISTING KERB & CHANNEL
- K&CH — NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

MCQUOIN DRAINAGE DIVERSION PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C250	T2

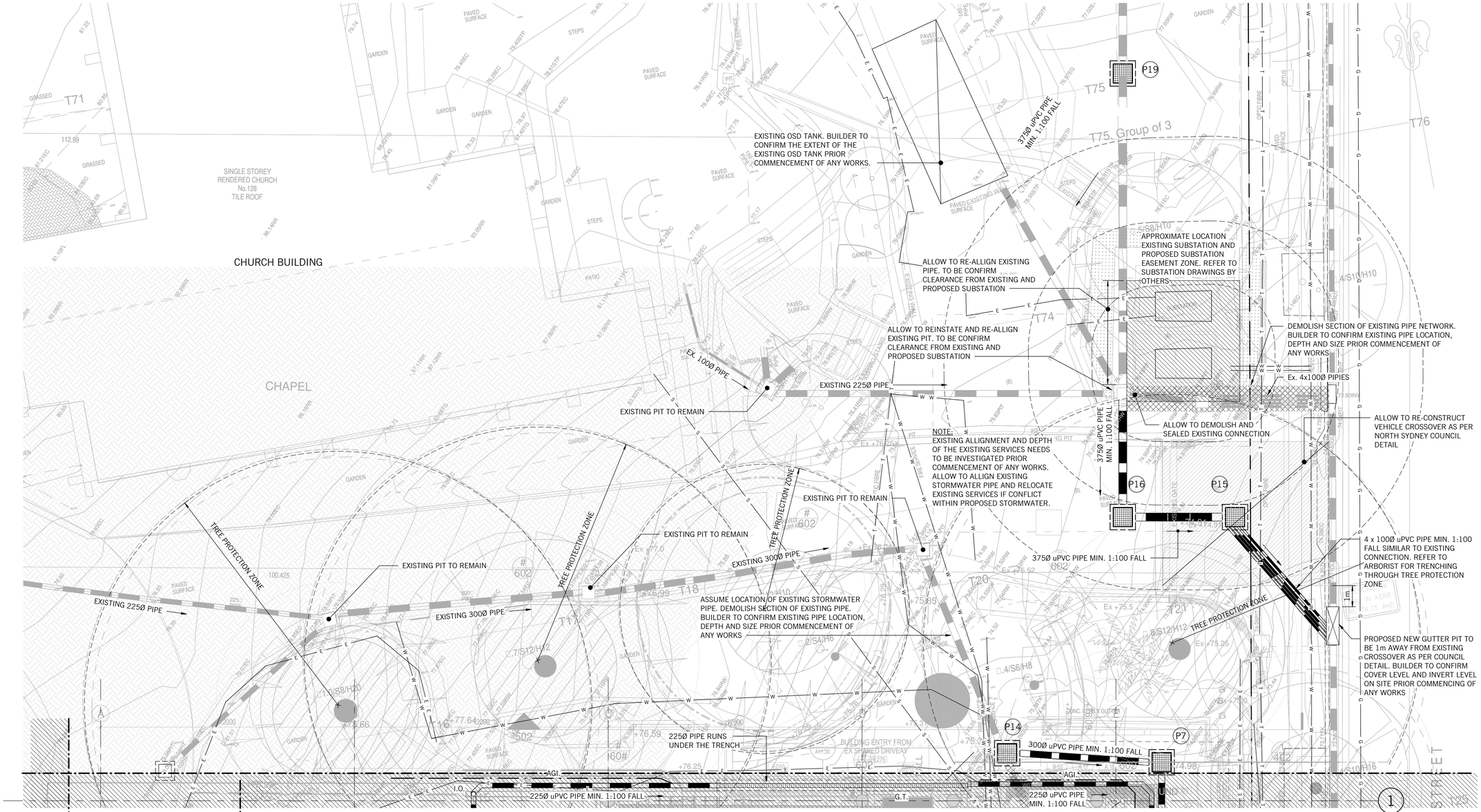
DIAL BEFORE YOU DIG www.1100.com.au

PRINT TIME: 21/01/2021 1:34:47 PM C:\Users\gpasia\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpasia.rvt\CBU.rvt
A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21



SUBSTATION DRAINAGE DIVERSION PLAN

SCALE: 1 : 100

STORMWATER PIT SCHEDULE

MARK	SIZE	COVER TYPE	COVER CLASS	COVER LEVEL	REMARKS
P1	2200 DIA.	GRATED	AS PER AS3996, HEEL GUARD	63.53	PUMP PIT WITH DUAL PUMP AND BATTERY BACK UP SYSTEM
P2	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P3	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P4	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P5	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P6	600 x 600	GRATED	AS PER AS3996, HEEL GUARD	63.53	
P7	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P8	1500 x 900	GRATED	AS PER AS3996, HEEL GUARD	70.75	SURCHARGE PIT
P9	900 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH EXISTING LEVEL	
P10	1300 x 900	GATIC	SOLID COVER AS PER AS3996	72.05	
P11	1300 x 900	GATIC	SOLID COVER AS PER AS3996	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P12	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P13	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH PROPOSED WILDFLOWER GARDEN LEVEL	
P14	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	75.34	
P15	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P16	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P19	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	
P20	900 x 900	GRATED	AS PER AS3996, HEEL GUARD	MATCH EXISTING LEVEL	

NOTES:

1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY NORTH SYDNEY COUNCIL'S JAYANTA SAHA DATED 20/11/2019 , REFERENCE JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM TOTAL SURVEYING SOLUTIONS, REF.- 192082 DATED - 09/09/2019)
3. THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT, REF: 73019.03; DATED: FEBRUAR 2020. T2
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

DESIGN ALLOWANCE NOTES:

1. ALL EXISTING IN GROUND STORMWATER TO BE VERIFIED ON SITE BY THE BUILDER AND FLOW TESTED.
2. ALLOW TO REPLACE ANY DAMAGED SERVICES IDENTIFIED.
3. ALLOW TO UPGRADE EXISTING DOWN PIPES WHERE NEW CONNECTION ARE SPECIFIED.
4. ALLOW TO REINSTATE EXISTING PIT AS REQUIRED.

DIAL BEFORE YOU DIG www.1100.com.au

LEGEND

Pxx	PIT NUMBER
	GRATED PIT
	JUNCTION PIT
	EXISTING SIDE ENTRY PIT
I.O.	INSPECTION OPENING
G.I.	GRATED INLET
	FALL DIRECTION
	STRIP DRAIN
	STORMWATER PIPE
	100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
	PUMP OUT FLOW DRAIN LINE
	RISING MAIN LINE
	SPOON DRAIN
	NEW PAVEMENT
	NEW LANDSCAPING
NSL 34.01×	NATURAL SURFACE LEVEL
Ex K&CH	EXISTING KERB & CHANNEL
K&CH	NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

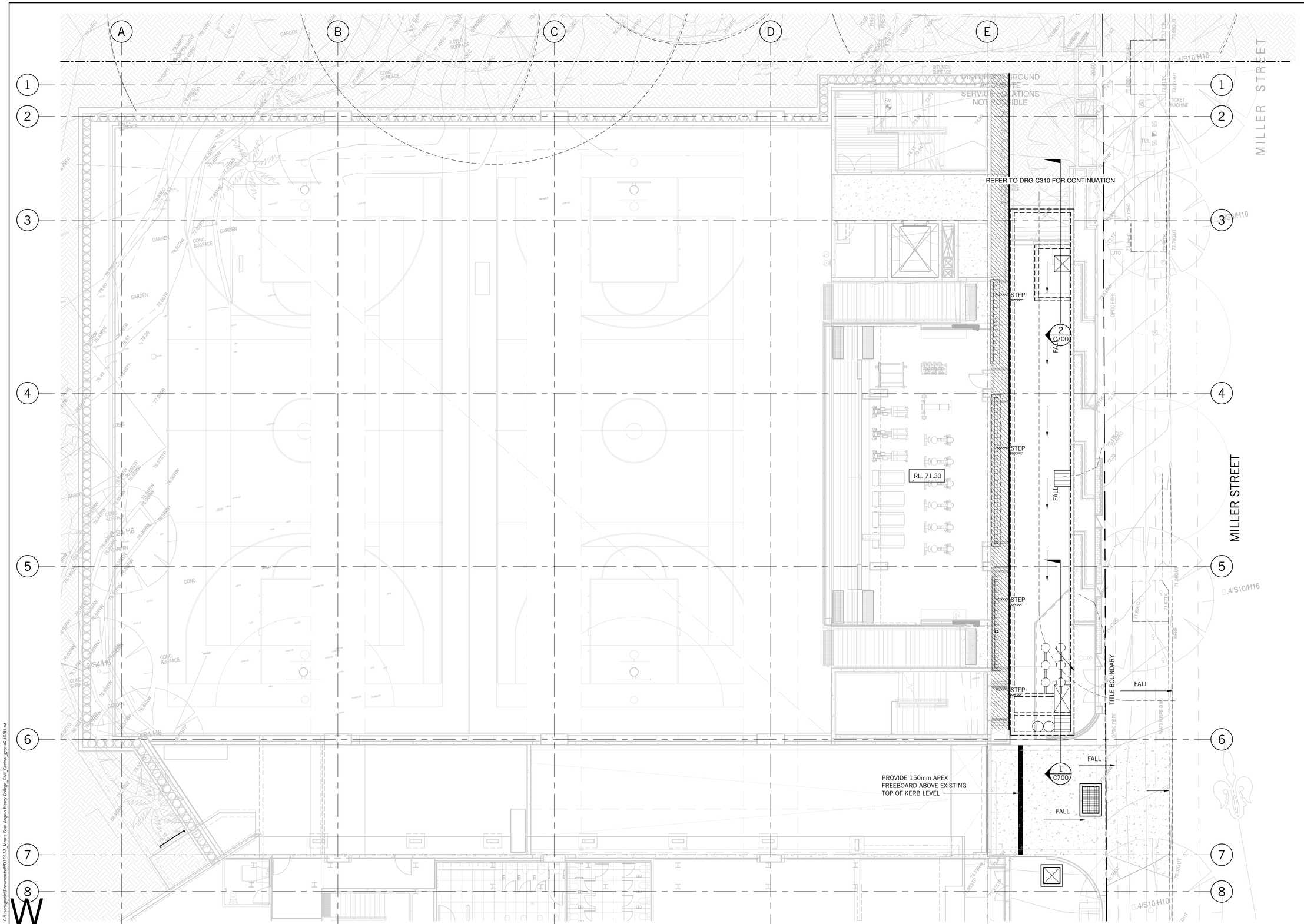
SUBSTATION DRAINAGE DIVERSION PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C260	T2

PRINT TIME: 21/01/2021 1:34:52 PM C:\Users\gpaci\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpaciUCBU.rvt

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10



LEVEL 2 - OVERLAND FLOW PATH
SCALE: 1 : 100

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

FALL	OVERLAND FLOW PATH
+EX. 71.00	EXISTING SURFACE LEVEL
+71.00	PROPOSED SURFACE LEVEL
RL 71.00	BUILDING LEVEL / FINISH LEVEL
STEP	STRUCTURAL STEP
	INTERNAL TO EXTERNAL OUTLINE
	PROPOSED HOB

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9680 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 2 - OVERLAND FLOW PATH PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C300	T2

DIAL BEFORE YOU DIG
www.1100.com.au

PRINT TIME: 21/01/2021 1:34:58 PM C:\Users\gpcad\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpcadUCBU.rvt

A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

- FALL — OVERLAND FLOW PATH
- +EX. 71.00 — EXISTING SURFACE LEVEL
- +71.00 — PROPOSED SURFACE LEVEL
- RL 71.00 — BUILDING LEVEL / FINISH LEVEL
- STEP — STRUCTURAL STEP
- INTERNAL TO EXTERNAL OUTLINE
- PROPOSED HOB

PROVIDE 100mm STRUCTURAL FREEBOARD OR HOB TO EXTERNAL AREAS MINIMUM

TYPICALLY 35MM SETDOWN WITH THRESHOLD RAMPS THEN FALL AWAY FROM BUILDING

REFER TO DRG C300 FOR CONTINUATION

LEVEL 3

LEVEL 4

LEVEL 2

DRAINAGE (IN PLANTING BEDS) TBC WITH LANDSCAPE ENGINEERS

RL 75.375

1:200 FALL

1:40 FALL

LEVELS UNDER REVIEW

WILDFLOWER GARDEN

GARDEN SINK TIMBER POTTING BENCH WITH STORAGE UNDER

MILLER STREET

TITLE BOUNDARY

DRIVEWAY ENTRY

1-Backhousia citriodora

2-Tristaniopsis laurina

2T- Acmena smithii 'Minor'

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 3 - OVERLAND FLOW PATH PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C310	T2

LEVEL 3 - OVERLAND FLOW PATH
SCALE: 1 : 100

DIAL BEFORE YOU DIG www.1100.com.au

PRINT TIME: 21/01/2021 1:35:02 PM C:\Users\gpreid\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpreid.rvt

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	11.09.20
P2	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

LEGEND

FALL →	OVERLAND FLOW PATH
+EX. 71.00	EXISTING SURFACE LEVEL
+71.00	PROPOSED SURFACE LEVEL
RL 71.00	BUILDING LEVEL / FINISH LEVEL
STEP	STRUCTURAL STEP
	INTERNAL TO EXTERNAL OUTLINE
	PROPOSED HOB

LEVEL 3

LEVEL 3

LEVEL 4

LEVEL 2

TYPICALLY 35MM SETDOWN WITH THRESHOLD RAMPS THEN FALL AWAY FROM BUILDING

STEP

PROVIDE 100mm FREEBOARD OR HOB TO EXTERNAL AREAS MINIMUM

RL. 79.23

DRAINAGE (INCLUDING GARDEN BEDS) TBC WITH CIVIL ENGINEERS

ALLOW WEEP HOLES AROUND PLANTER FOR OVERLAND FLOW. REFER TO HYDRAULIC DRAWINGS FOR LOCATION

WILDFLOWER GARDEN

Student planting

TYPICALLY 35MM SETDOWN WITH THRESHOLD RAMPS THEN FALL AWAY FROM BUILDING

GARDEN SINK

TIMBER POTTING BENCH WITH STORAGE UNDER

DRIVEWAY ENTRY

MILLER STREET

1-Backhousia citriodora

2-Tristaniopsis laurina

2-? Acmena smithii 'Minor'

rsa 'June Snow'

T4 T6 T14 T15 T16 T25

501 502 503

602

+80.119 TW

+80.2 FAIR

+80.119

+79.592

+79.29

+79.19

+79.07

+79.00

+78.82

+78.66

+78.93

+77.665

+77.20

+76.735

+75.79

+75.375

+75.34

+75.31

+75.30

+75.29

+75.24

+75.35

+74.98

+73.97

+73.17

+72.56

+72.52

+71.942

+71.265

+71.225

+71.31

+71.50

+70.50

FALL

LEVEL 4 - OVERLAND FLOW PATH
SCALE: 1 : 100

DIAL BEFORE YOU DIG
www.1100.com.au

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9680 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

LEVEL 4 - OVERLAND FLOW PATH PLAN

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C320	T2

PRINT TIME: 21/01/2021 1:35:09 PM C:\Users\gpsoli\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpsoli.rvt

A1 0 1 2 3 4 5 6 7 8 9 10

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

NON-TRAFFICABLE ROOF AREA TO BE DISCHARGE TO RAINWATER TANK

ROOFTOP COURT TO BE DISCHARGE TO OSD TANK

NON-TRAFFICABLE ROOF AREA TO BE DISCHARGE TO RAINWATER TANK

TITLE BOUNDARY

NOTES:

1. THIS DRAINAGE DESIGN IS BASED ON LPD ADVICE BY **NORTH SYDNEY COUNCIL'S JAYANTA SAHA** DATED **20/11/2019** , REFERENCE **JAYANTHA.SAHA@NORTHSYDNEY.NSW.GOV.AU** AND IS SUBJECT TO AUTHORITY REVIEW AND APPROVAL. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEM REQUIRED.
2. FOOTPATH RL SUBJECT TO ARCHITECTURAL AND COUNCIL REVIEW. BUILDER TO MAKE NECESSARY ALLOWANCE WHERE DEEMED REQUIRED. (ALL LEVELS APPROXIMATE BASED FROM **TOTAL SURVEYING SOLUTIONS** REF : **192082** DATED : **09/09/2019**)
3. **THE DESIGN ASSUMES THAT GROUND WATER IS ENCOUNTERED WITHIN THE BASEMENT EXCAVATION UNDER LEVEL 0 SLAB AS PER DOUGLAS PARTNERS GEOTECH REPORT, REF: 73019.03; DATED: FEBRUAR 2020**.
4. SUBJECT TO VERIFICATION OF THE GROUNDWATER DEPTH ON SITE.
5. SUBJECT TO REVIEW BY TRAFFIC ENGINEER.
6. SUBJECT TO RECEIPT AND REVIEW OF HYDRAULICS AND FIRE SERVICE CONSTRUCTION ISSUED DRAWINGS FOR COORDINATION.
7. SUBJECT TO RECEIVED UP TO DATE FEATURE LEVEL SURVEY AND IN GROUND SERVICES SURVEY.

EXISTING SERVICES NOTES:

- BUILDER TO CONFIRM EXACT LOCATION, DEPTH AND SIZE OF EXISTING SERVICES PRIOR COMMENCEMENT OFANY WORKS.
- IF ANY PROPOSED DRAINAGE SYSTEM INTERSECT WITH EXISTING SERVICES, CONTACT WEBBER DESIGN OFFICE FOR FURTHER ASSESSMENT.

DESIGN ALLOWANCE NOTES:

1. ALL EXISTING IN GROUND STORMWATER TO BE VERIFIED ON SITE BY THE BUILDER AND FLOW TESTED.
2. ALLOW TO REPLACE ANY DAMAGED SERVICES IDENTIFIED.
3. ALLOW TO UPGRADE EXISTING DOWN PIPES WHERE NEW CONNECTION ARE SPECIFIED.
4. ALLOW TO REINSTATE EXISTING PIT AS REQUIRED.

CATCHMENT AREA

SCALE: 1 : 100

LEGEND

Pxx	PIT NUMBER
	GRATED PIT
	JUNCTION PIT
	EXISTING SIDE ENTRY PIT
I.O.	INSPECTION OPENING
G.I.	GRATED INLET
	FALL DIRECTION
	STRIP DRAIN
	STORMWATER PIPE
	100 DIA. AGRICULTURAL DRAIN LAID TO 1:100 FALL
	PUMP OUT FLOW DRAIN LINE
	RISING MAIN LINE
	SPOON DRAIN
	NEW PAVEMENT
	NEW LANDSCAPING
NSL 34.01×	NATURAL SURFACE LEVEL
Ex K&CH	EXISTING KERB & CHANNEL
K&CH	NEW KERB & CHANNEL TO COUNCIL REQUIREMENTS

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC. AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW. AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

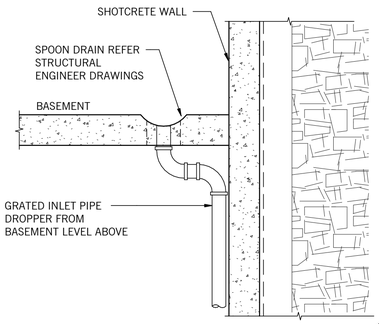
CATCHMENT AREA PLAN

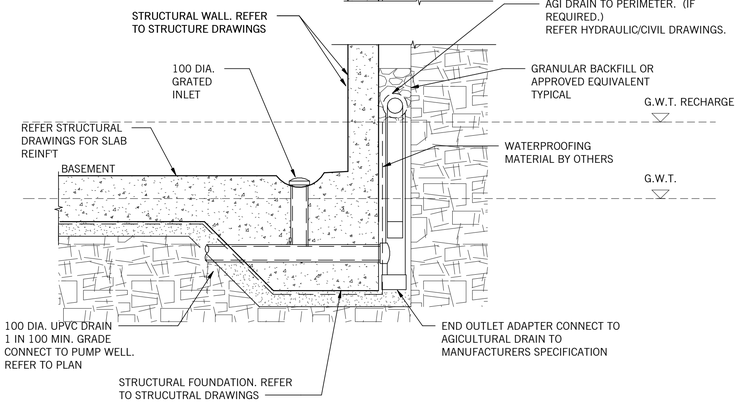
DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C400	T2

DIAL BEFORE YOU DIG www.1100.com.au

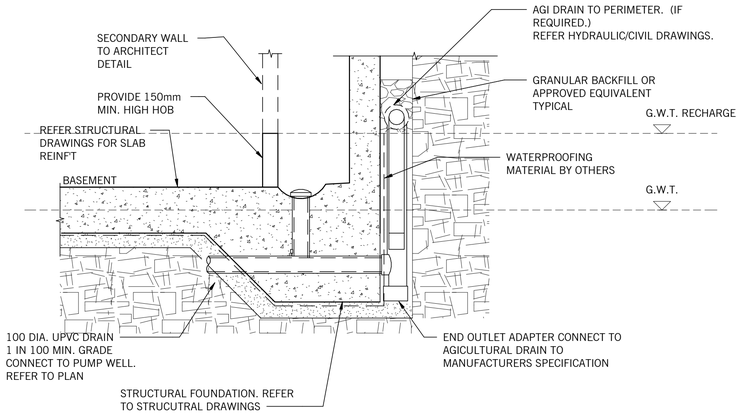
PRINT TIME: 21/01/2022 1:35:10 PM C:\Users\gpnot\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpnotdu1CB3.rvt

A1 0 1 2 3 4 5 6 7 8 9 10

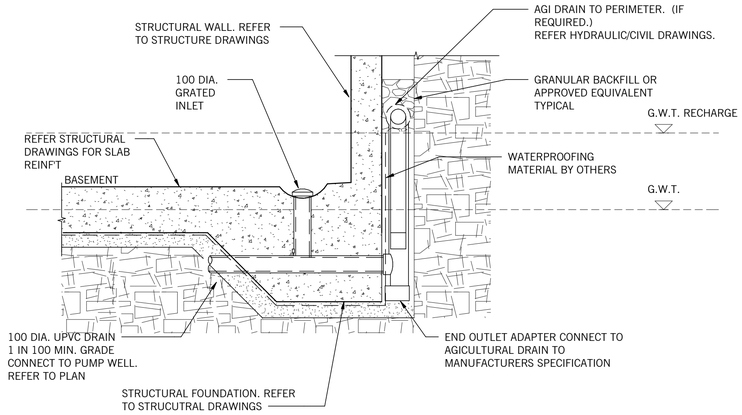




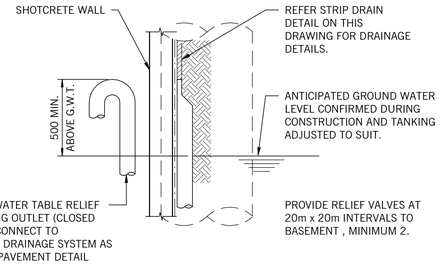
DRAINAGE DETAIL WITHIN VERTICAL CUT ROCK (MULTIPLE BASEMENT)
NTS



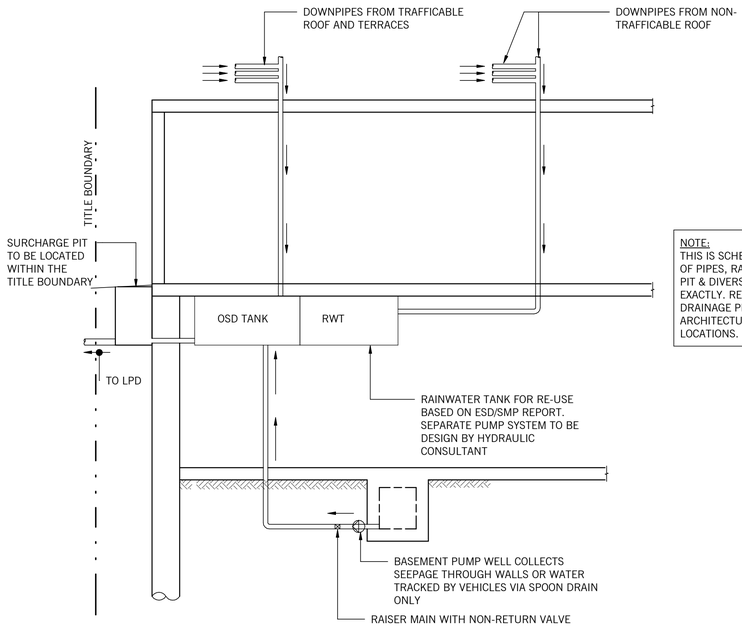
DRAIN ADJACENT HABITABLE SPACE WITHIN VERTICAL CUT ROCK
NTS



DRAINAGE DETAIL WITHIN VERTICAL CUT ROCK
NTS

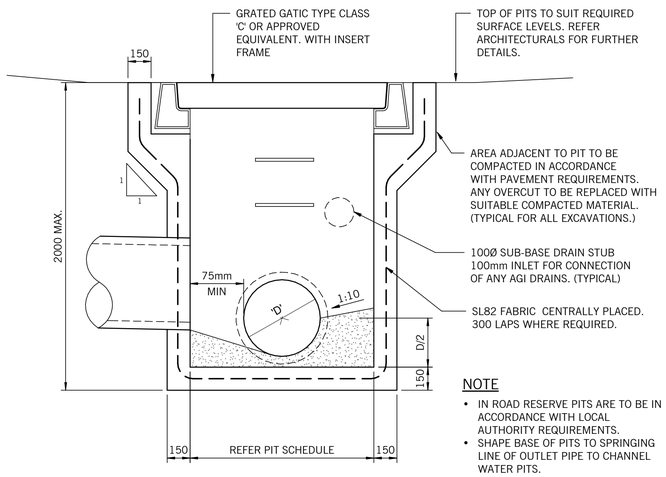


TYPICAL RELIEF VALVE FOR HYDROSTATIC SLABS
NTS



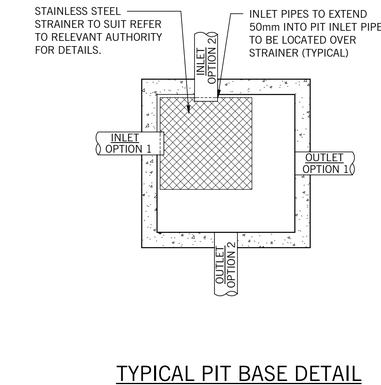
NOTE:
THIS IS SCHEMATIC ONLY. ALL LOCATION OF PIPES, RAINWATER TANKS, PUMP WELL, PIT & DIVERSION VALVE ARE NOT SHOWN EXACTLY. REFER TO STORMWATER DRAINAGE PLANS, HYDRAULICS PLANS & ARCHITECTURAL PLANS FOR EXACT LOCATIONS.

STORMWATER DISCHARGE SCHEMATIC
NTS



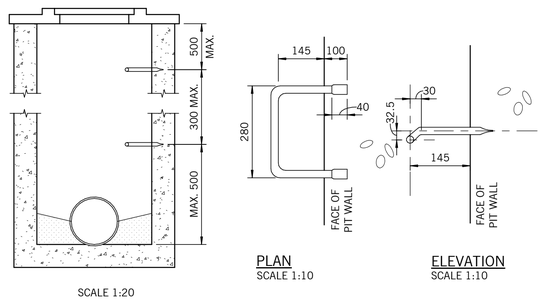
NOTE
- IN ROAD RESERVE PITS ARE TO BE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
- SHAPE BASE OF PITS TO SPRINGING LINE OF OUTLET PIPE TO CHANNEL WATER PITS.

TYPICAL PIT DETAIL
SCALE 1:20



TYPICAL PIT BASE DETAIL
SCALE 1:10

REFER TO RELEVANT AUTHORITY FOR FURTHER REQUIREMENTS AND LOCATIONS.



SCALE 1:20

PLAN
SCALE 1:10

ELEVATION
SCALE 1:10

TYPICAL STEP IRON DETAIL

NOTES:
1. STEP IRONS TO BE GALVANISED AND USED IN PITS EXCEEDING 900mm IN DEPTH
2. COMMENCE STEP IRONS 500mm FROM BOTTOM OF PIT WITH MAXIMUM 300mm SPACING TO WITHIN 500mm OF THE TOP.
3. STEP IRONS TO BE PLACED CENTRAL TO PIT COVER OPENINGS.
4. STEP IRONS INSTALLED IN COUNCIL PITS MUST COMPLY WITH STANDARDS AS3679 PART 1 AND AS/NZS 4680.
5. FOR PRECAST PITS, STEP IRONS MUST BE LOAD TESTED TO AS4198/1994

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9680 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

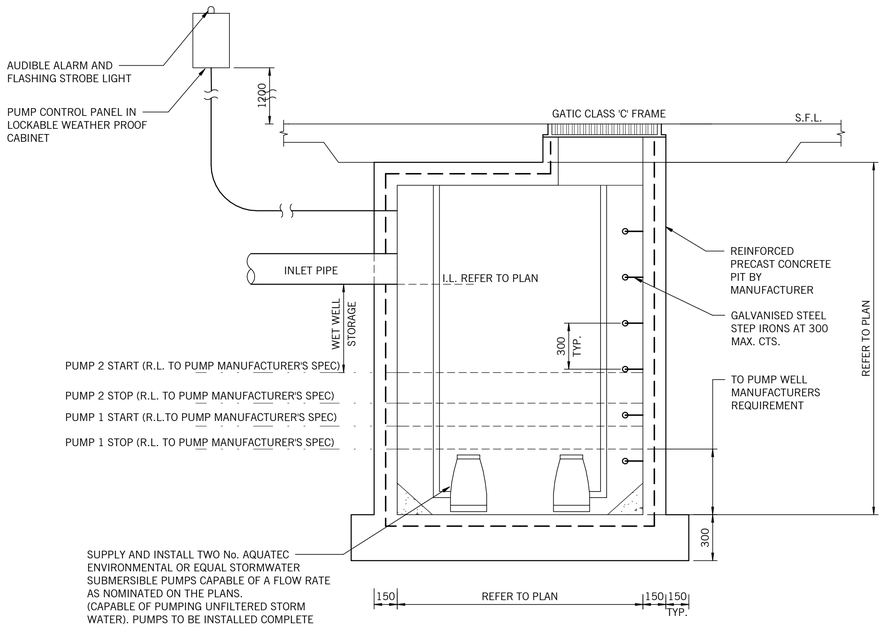
TYPICAL CIVIL DETAILS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:10, 1:20, 1:50	GP	PW
JOB No.	DRAWING No.	REV.
19133	C500	T2

PRINT TIME: 2/02/2021 1:35:12 PM C:\Users\gp\acad\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gp\acadWDBU.rvt

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

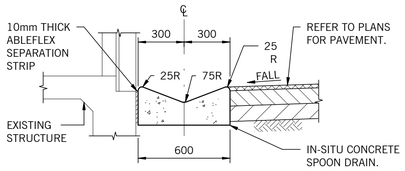


PUMP WELL PIT DETAIL

SCALE: N.T.S.

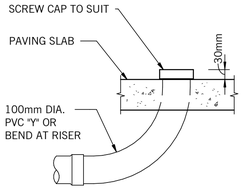
NOTE
DESIGN OF PIT WALLS TO TAKE INTO ACCOUNT HYDROSTATIC PRESSURE FROM GROUND WATER FOR FULL DEPTH OF PIT

NOTE
SIZE AND SPECIFICATION OF PUMPWELL AND PUMPS T.B.C. PENDING REVIEW OF HYDRAULIC DRAWINGS



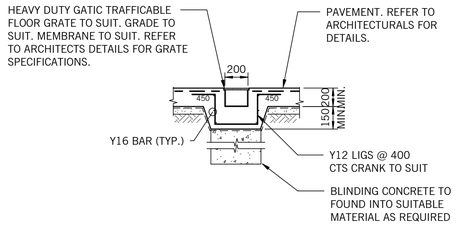
TYPICAL SPOON DRAIN ADJACENT STRUCTURE DETAIL

SCALE 1:20



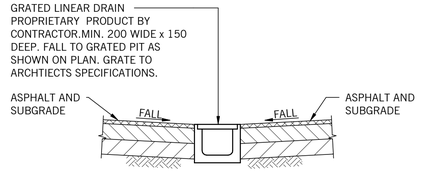
INSPECTION OPENING (I.O.)

(TO BE INSTALLED AT HIGH POINTS, 30m INTERVALS AND AS NOMINATED ON DRAWINGS AS A MINIMUM)



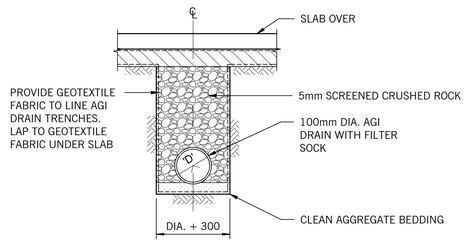
GRATED TRENCH DETAIL

SCALE 1:20



NOTE:
REFER TO PROPRIETARY PRODUCT SPECIFICATIONS FOR INSTALLATION DETAIL.

GRATED LINEAR DRAIN DETAIL

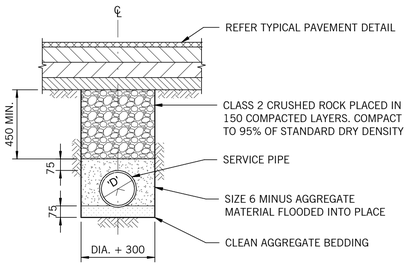


AGI DRAIN LAYING DETAIL

SCALE: 1:20

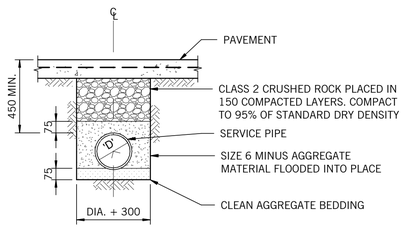
NOTE:
INVERT LEVEL OF AGI DRAIN SHALL BE AS REQUIRED BY ADJOINING CONSTRUCTION, BUT NOT LESS THAN THE 500mm BELOW FINISHED SURFACE LEVEL AND/OR 300mm BELOW THE FORMATION LEVEL OF ADJACENT CHANNELLING PAVEMENT SYSTEMS

NOTE:
ALL KERBS, RETAINING WALLS, PAVEMENT EDGES, ETC ARE TO BE AGI DRAINS TO BE CONNECTED TO MAIN IN GROUND DRAINAGE SYSTEM TO SUIT. AGI DRAINS NOT SHOWN ON DRAWINGS FOR CLARITY. REFER DETAILS.



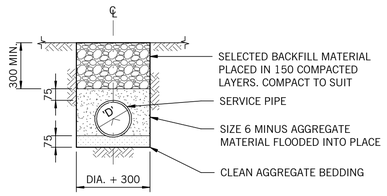
PIPE LAYING DETAIL UNDER ASPHALT PAVEMENT

SCALE: 1:20



PIPE LAYING DETAIL UNDER CONCRETE PAVEMENT

SCALE: 1:20



PIPE LAYING DETAIL - OPEN SPACE

SCALE: 1:20

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9680 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

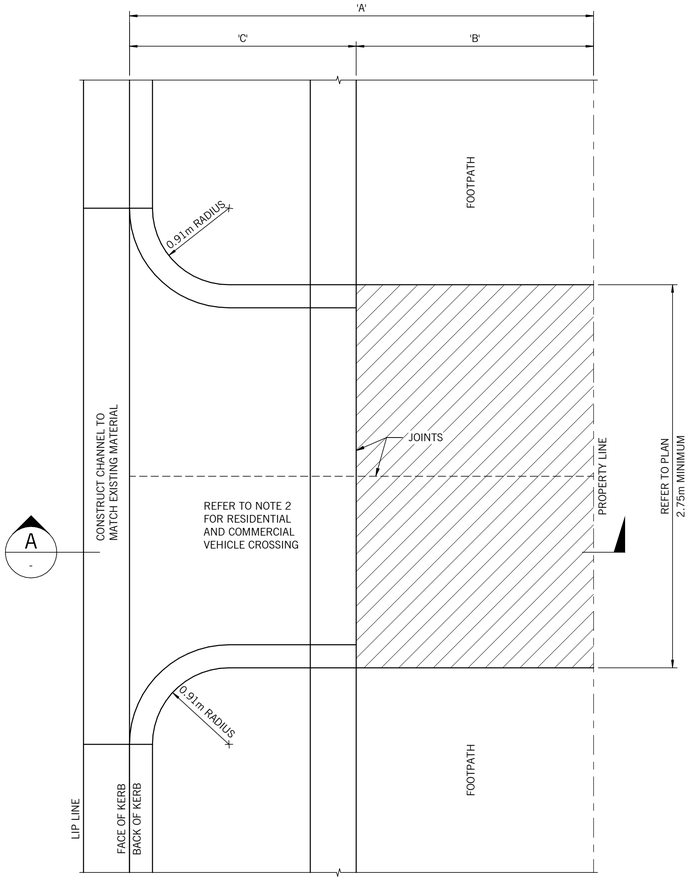
TYPICAL CIVIL DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:10, 1:20	GP	PW
JOB No.	DRAWING No.	REV.
19133	C510	T2

PRINT TIME: 21/01/2021 1:35:13 PM C:\Users\gpcad\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpcadUSBU.rvt

WEBBER DESIGN

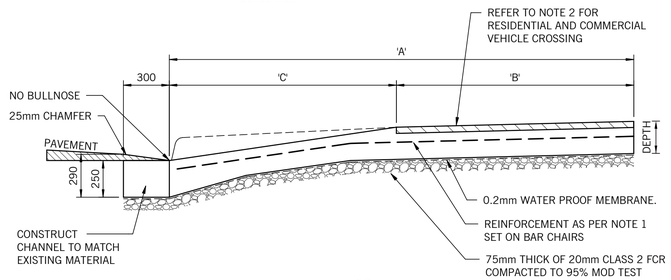
A1 0 1 2 3 4 5 6 7 8 9 10



ALSO REFER TO NORTH SYDNEY VEHICULAR CROSSING DETAILS

CROSSOVER PLAN

SCALE 1:20



SECTION A

SCALE 1:20

EACH OF THE RELATIVE GRADE CHANGE BETWEEN THE ROAD, SECTION C, SECTION B AND INSIDE THE PROPERTY LINE SHALL NOT EXCEED 12%

NOTES:

1. CONCRETE DETAIL

TYPE	REINFORCEMENT	DEPTH OF SLAB
COMMERCIAL	SL82	150mm
CONCRETE STRENGTH: 32MPa AT 28 DAYS. PLACE REINFORCEMENT 50mm ABOVE CRUSHED ROCK BASE ON BAR CHAIRS.		
SURFACE FINISH: TROWELLED AND GROOVED AT CHANGES OF GRADE.		

2. COMMERCIAL VEHICLE CROSSING

FOOTPATH RESERVE WITH NATURE STRIP		
A	B*	C
EXISTING FOOTPATH RESERVE WIDTH	DIMENSION **B** AND **C** ARE GOVERNED BY THE EXISTING FOOTPATH AND NATURE STRIP WIDTHS.	
	MATERIAL: CONCRETE TO MATCH FOOTPATH MATERIAL.	MATERIAL: CONCRETE TO MATCH COLOUR OF KERB AND CHANNEL.

3. COMMERCIAL VEHICLE CROSSING CONTINUED

FOOTPATH RESERVE WITHOUT NATURE STRIP		
A	B*	C
LESS THAN 1.75m	MATERIAL: CONSTRUCT ENTIRE VEHICLE CROSSING IN CONCRETE TO MATCH COLOUR OF FOOTPATH.	
BETWEEN 1.75m AND 2.25m	VARIES	0.75m
BETWEEN 2.25m AND 5.00m	1.50m	VARIES
GREATER THAN 5.00m	VARIES	3.50m
	MATERIAL: CONCRETE TO MATCH FOOTPATH MATERIAL.	MATERIAL: CONCRETE TO MATCH COLOUR OF KERB AND CHANNEL

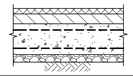
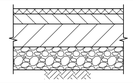
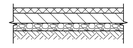
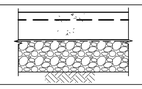
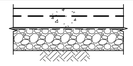
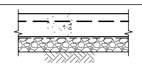
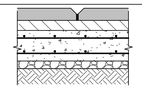
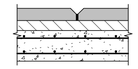
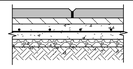
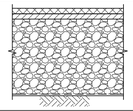
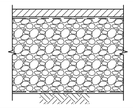
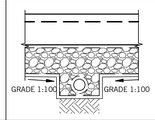
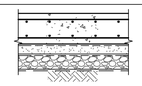
B* IF SECTION B OF THE CROSSING IS TO BE CONSTRUCTED IN ASPHALT, THEN REBATE CONCRETE BY 35mm (MIN.) TO ALLOW FOR ASPHALT WEARING COURSE. FOR COMMERCIAL: USE SIZE 10mm NOMINAL SIZE ASPHALT, TYPE 'N' ASPHALT

3. GENERAL

- THE COLOUR OF CONCRETE TO BE USED IS EITHER PLAIN OR CHARCOAL COLOURED DEPENDING ON THE COLOUR OF MATERIAL REQUIRED TO BE MATCHED.
- FOR CHARCOAL COLOURED CONCRETE USE HANSON 'EBONY' COLOUR OR 15kg 'BLACK OXIDE' BAYER 318 PER CUBIC METER CONCRETE OR APPROVED EQUIVALENT.
- ALL CROSSING SHALL HAVE A MINIMUM RISE OF 150mm FROM THE CHANNEL INVERT TO THE PROPERTY LINE.
- REFER TO AS/NZS 2890.1 FOR WIDER CROSSING, MINIMUM 5.5m

NOTE:
ALL EXTERNAL PAVEMENT, KERB & CHANNEL AND VEHICLE CROSSINGS REQUIRE COUNCIL APPROVAL (PENDING) OR ADOPT COUNCIL DETAILS

PAVEMENT TYPES

TYPE	PROFILE COMPOSITION	SPECIFICATIONS
ASPHALT ROAD PAVEMENT CONCRETE BASE		35mm DEPTH OF 10mm HMA, TYPE N 65mm DEPTH OF 14mm HMA, TYPE N 200mm CONCRETE BASE WITH F82 REINFORCEMENT TOP AND BTM. 50mm MIN. COVER, F'c=50 MPa 50mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK
ASPHALT ROAD PAVEMENT CRUSHED ROCK BASE		35mm DEPTH OF 10mm HMA, TYPE N 65mm DEPTH OF 14mm HMA, TYPE N 150mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK 150mm DEPTH OF CLASS 3 COMPACTED CRUSHED ROCK
ASPHALT FOOTPATH		35mm THICKNESS OF SIZE 7mm HMA, TYPE N 65mm THICKNESS OF 14mm HMA, TYPE N 50mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK
CONCETE PAVEMENT HEAVY DUTY		180mm R.C. SLAB, SL92 MESH TOP, F'c=32 MPa MIN. 200mm COMPACTED DEPTH OF CLASS 2 FINE CRUSHED ROCK
CONCETE PAVEMENT LIGHT DUTY		125mm R.C. SLAB, SL72 MESH TOP, F'c=32 MPa. 150mm DEPTH OF CLASS 3 COMPACTED CRUSHED ROCK
CONCETE FOOTPATH		100mm N25 CONCRETE WITH SL82 CENTAL 50mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK
BLUESTONE ROAD PAVEMENT		80mm THICK BLUE STONE PAVERS BEDING (MIN. THICKNESS 50mm) 200mm R.C SLAB WITH SL82 MESH TOP AND BOTTOM, F'c=32 MPa 50mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK
BLUESTONE ROAD ON SUSPENDED SLAB		80mm THICK BLUE STONE PAVERS BEDING (MIN. THICKNESS 50mm) SUSPENDED SLAB REFER TO STRUCTURAL DRAWINGS FOR SPECIFICATIONS
BLUESTONE FOOTPATH PAVEMENT		40mm THICK BLUE STONE PAVERS BEDING (MIN. THICKNESS 25mm) 100mm R.C. SLAB WITH SL72 MESH CENTRAL, F'c=32 MPa 50mm DEPTH OF CLASS 2 COMPACTED CRUSHED ROCK
POROUS ASPHALT PAVEMENT		30mm THICK LAYER OF OPEN GRADED POROUS ASPHALT PAVEMENT 20% VOIDS. 30mm LAYER OF 10mm Ø SINGLE SIZE AGGREGATE, CEMENT STABILISED. 500mm MIN. LAYER OF LARGE SINGLE SIZE AGGREGATE 40% VOID, CEMENT STABILISED GEOTEXTILE FILTER FABRIC
POROUS PAVER PAVEMENT		POROUS PAVER AND BEDDING MATERIAL TO LANDSCAPE ARCHITECT DETAILS AND REQUIREMENTS. GEOTEXTILE FILTER FABRIC 500mm MIN. LAYER OF LARGE SINGLE SIZE AGGREGATE 40% VOID, CEMENT STABILISED GEOTEXTILE FILTER FABRIC
DRAINED SLAB DETAIL		RC SLAB, AS SPECIFIED ON PLAN 2 LAYERS OF 0.02mm MOISTURE BARRIER 150mm MIN. LAYER OF FREE DRAINING ROCK, SINGLE SIZE AGGREGATE WITH 100mm Ø AG DRAINAGE LINES, INSTALLED AT 4m MAX. CTS. (IN GEOTEXTILE SOCK) GEOTEXTILE FILTER FABRIC
HYDROSTATIC SLAB DETAIL		HYDROSTATIC SLAB TO STRUCTURAL ENGINEERS DETAIL WATERPROOFING MEMBRANE TO SPECIALIST CONTRACTORS DETAILS 50mm MIN. LAYER OF BLINDING CONCRETE 2 LAYERS OF 0.02mm MOISTURE BARRIER 150mm MIN. LAYER OF FREE DRAINING ROCK SINGLE SIZE AGGREGATE WITH 90mm Ø AG DRAINAGE LINES INSTALLED AT 6m MAX. CTS. (IN GEOTEXTILE SOCK) GEOTEXTILE FILTER FABRIC PROVIDE RELIEF POINTS AS DETAILED

NOTE:
- SUB BASE TO BE PREPARED TO MINIMUM CBR OF 2.5.
- ALL CRUSHED ROCK LAYERS SPECIFIED TO BE COMPACTED TO 98% SMDD.
- PROVIDE SHRINKAGE CONTROL JOINTS TO ALL CONCRETE PAVEMENTS, CONFIRM WITH ENGINEER.
- PROVIDE OVERFLOW PIPE CONNECTED TO ADJACENT STORMWATER SYSTEM FOR POROUS PAVEMENTS.

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION

Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

Monte Scientia Project

PROJECT

MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE

TYPICAL PAVEMENT DETAILS

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	GP	PW
JOB No.	DRAWING No.	REV.
19133	C600	T2

PRINT TIME: 21/01/2021 1:35:15 PM C:\Users\gpcad\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gpcadVUCBU.rvt

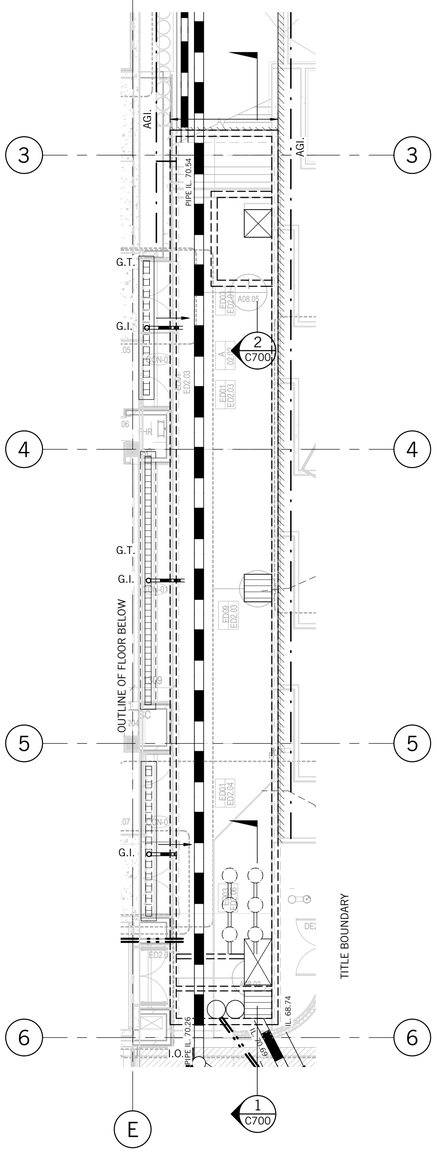
WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

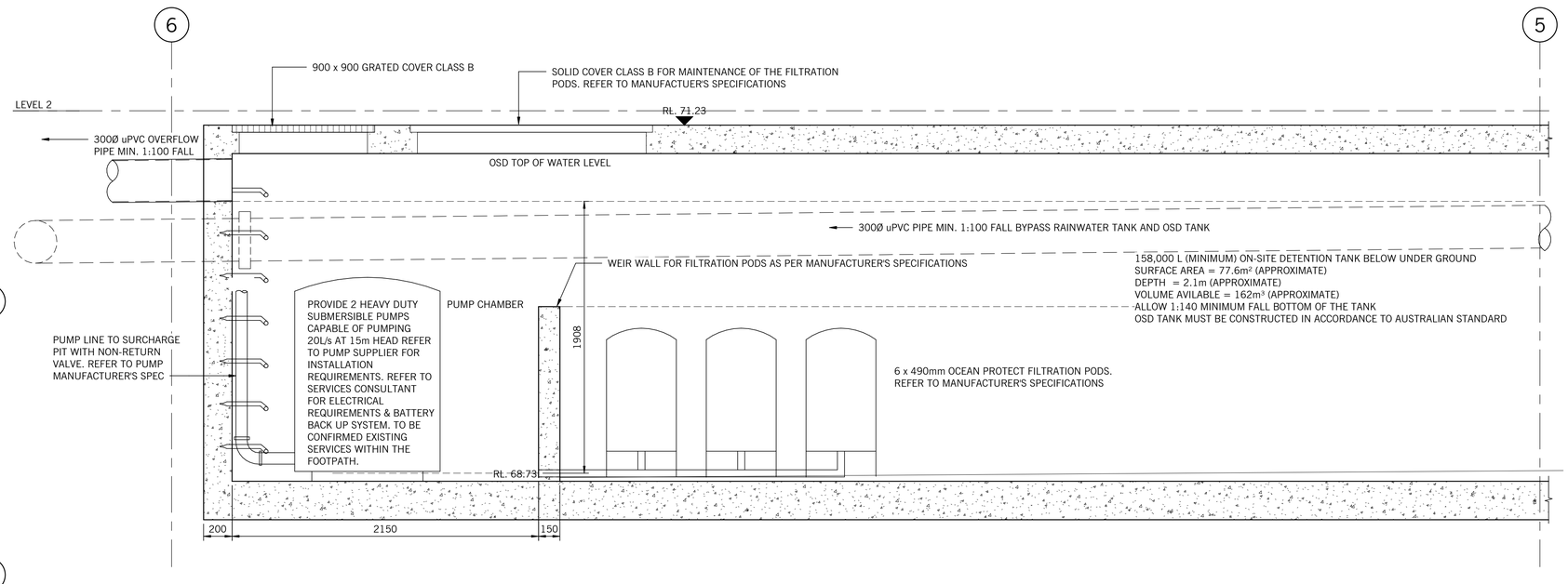
ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

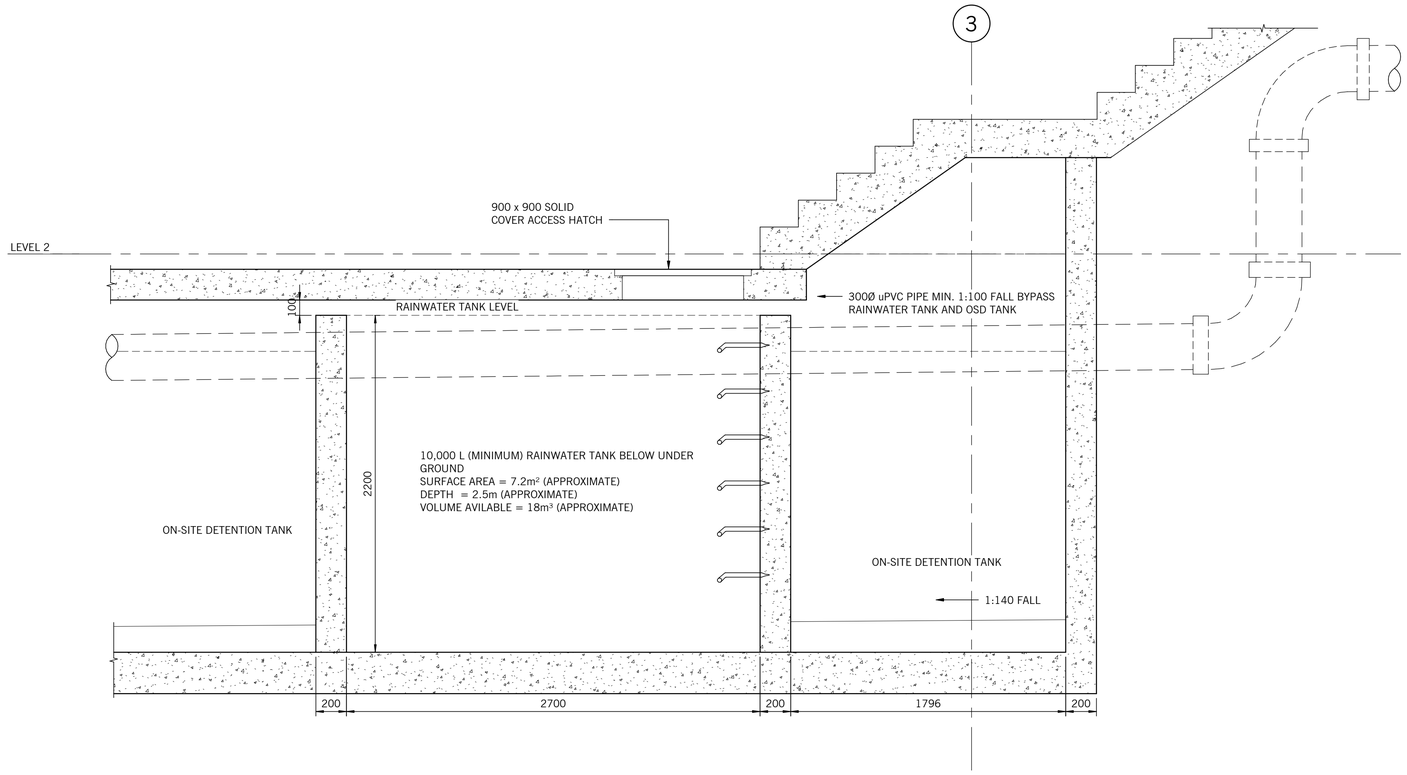
Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21



OSD TANK
SCALE: 1 : 100



SECTION 1
SCALE: 1 : 20 C090



SECTION 2
SCALE: 1 : 20 C090

ISSUED FOR CERTIFICATION
Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT
Monte Scientia Project

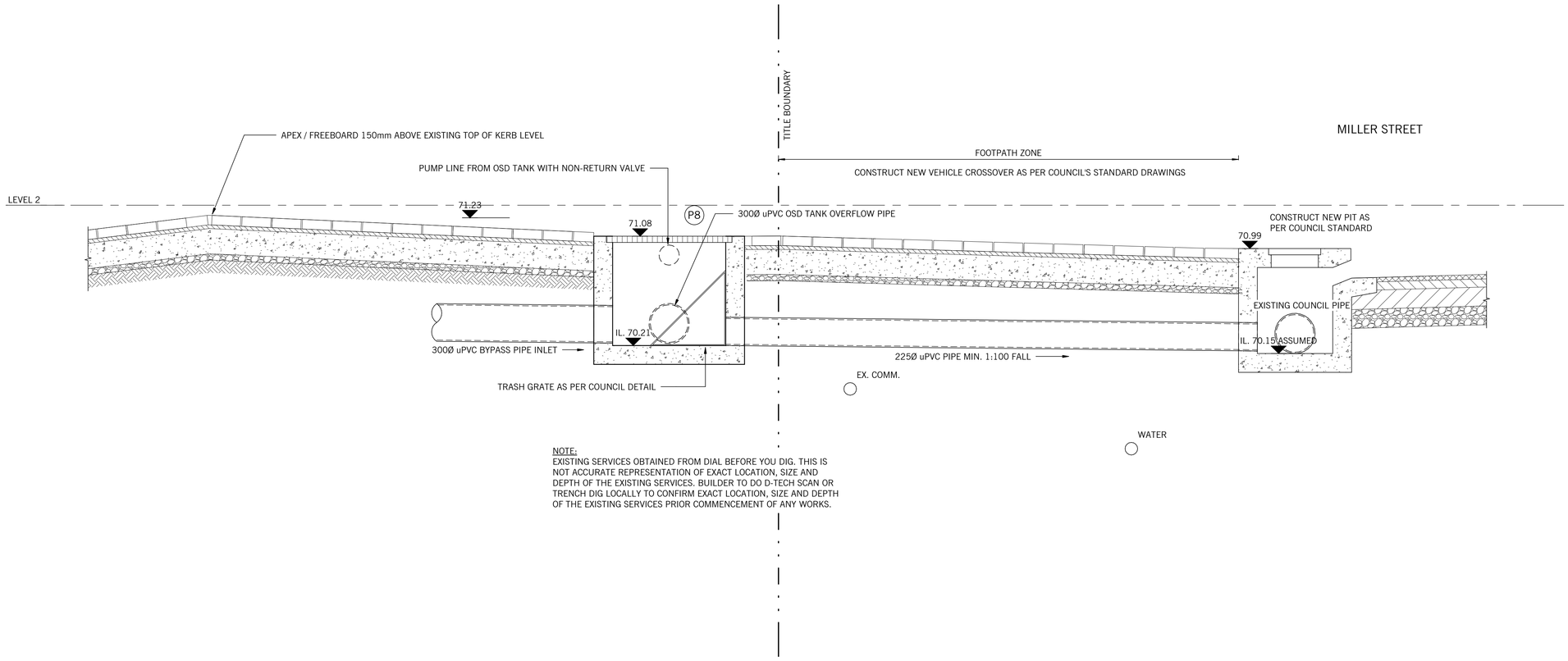
PROJECT
MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE
CIVIL SECTIONS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	GP	PW
JOB No.	DRAWING No.	REV.
19133	C700	T2

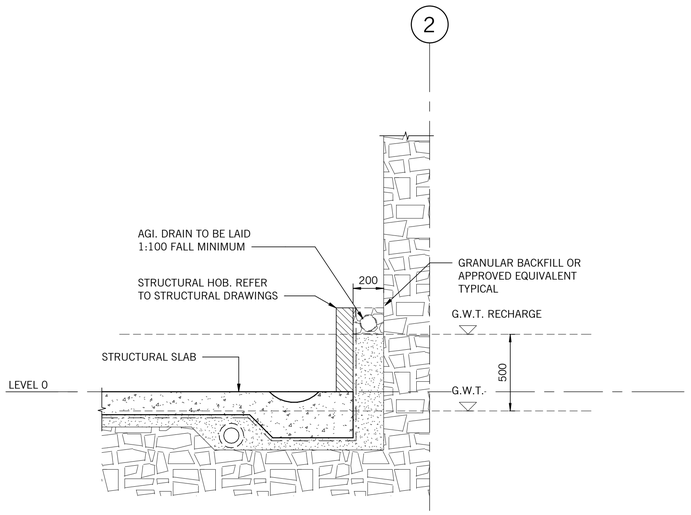
PRINT TIME: 21/01/2021 1:35:17 PM C:\Users\gpnash\Documents\W\19133_Monte Sant Angelo Mercy College_Civil_Centre_gpnashUCB01.rvt

WEBBER DESIGN
A1 0 1 2 3 4 5 6 7 8 9 10

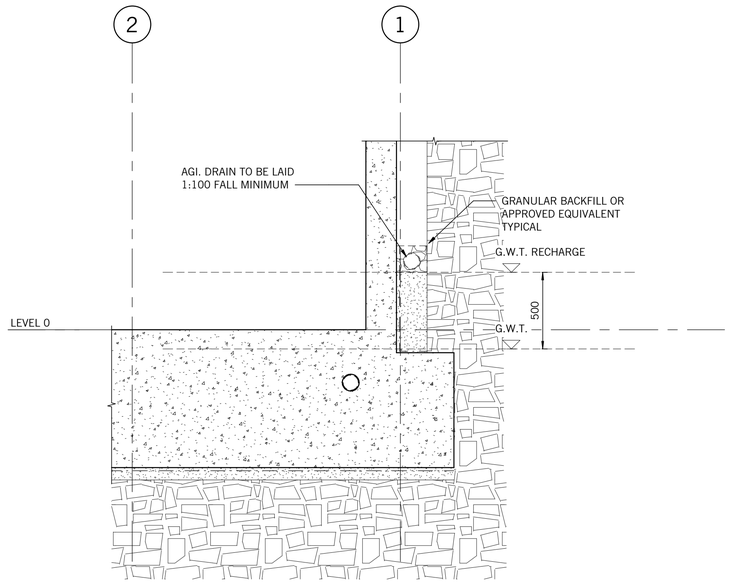


NOTE:
EXISTING SERVICES OBTAINED FROM DIAL BEFORE YOU DIG. THIS IS NOT ACCURATE REPRESENTATION OF EXACT LOCATION, SIZE AND DEPTH OF THE EXISTING SERVICES. BUILDER TO DO D-TECH SCAN OR TRENCH DIG LOCALLY TO CONFIRM EXACT LOCATION, SIZE AND DEPTH OF THE EXISTING SERVICES PRIOR COMMENCEMENT OF ANY WORKS.

SECTION 3 C090
SCALE: 1 : 20



SECTION 4 C070
SCALE: 1 : 20



SECTION 5 C070
SCALE: 1 : 20

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	FOR COORDINATION	GP	GP	28.08.20
P2	FOR COORDINATION	GP	GP	11.09.20
P3	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION
Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT
Monte Scientia Project

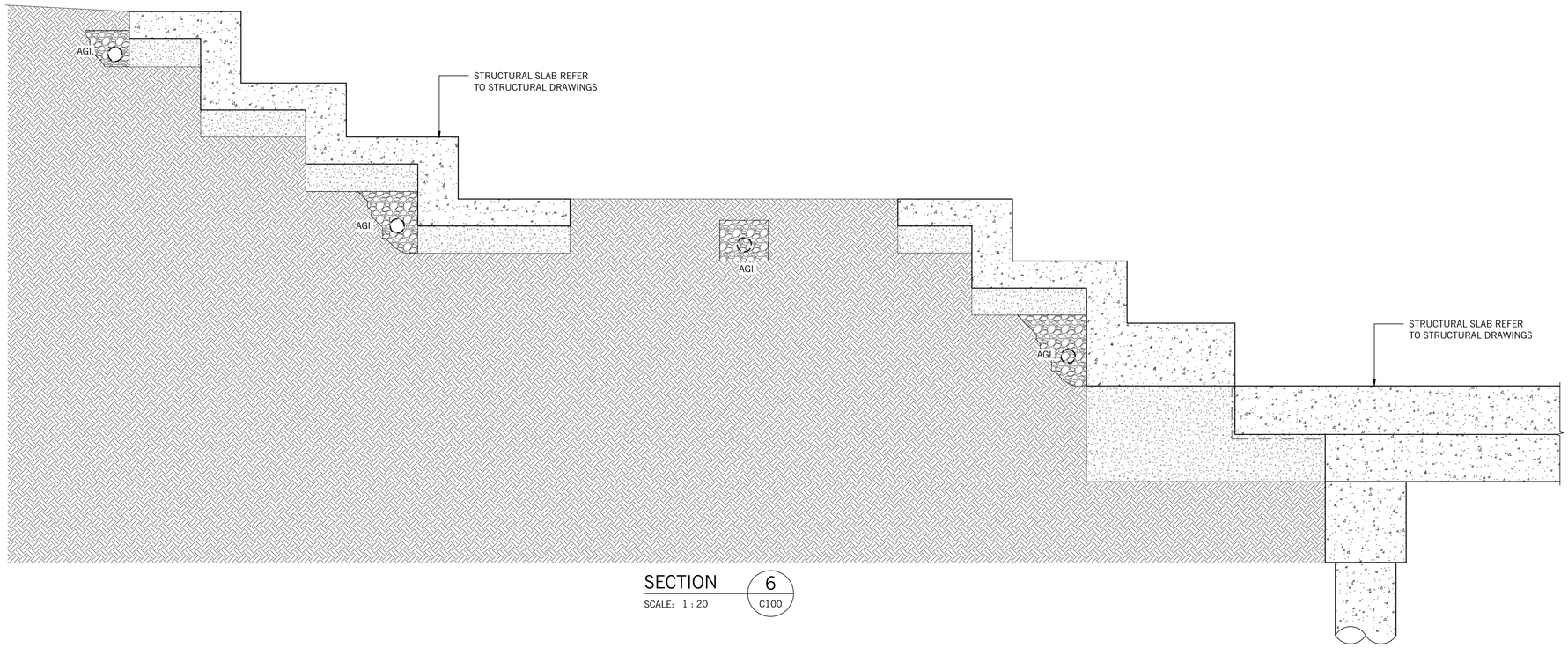
PROJECT
MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE
CIVIL SECTIONS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	GP	PW

JOB No.	DRAWING No.	REV.
19133	C701	T2

PRINT TIME: 21/01/2021 1:35:18 PM C:\Users\gracio\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gracioXUCBU.rvt



SECTION 6
SCALE: 1 : 20
C100

ALL RIGHT RESERVED. THIS WORK IS COPYRIGHT AND REMAINS THE PROPERTY OF WEBBER DESIGN PTY LTD. NO PART OF THIS WORK SHALL BE REPRODUCED OR COPIED IN ANY FORM OR BY MEANS (GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING OR INFORMATION RETRIEVAL SYSTEMS) WITHOUT THE PERMISSION OF WEBBER DESIGN PTY LTD.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
P1	ISSUED FOR PRICING	GP	GP	16.09.20
T1	ISSUED FOR PRICING	GP	GP	16.10.20
T2	ISSUED FOR CERTIFICATION	GP	GP	21.10.21

ISSUED FOR CERTIFICATION
Status

CIVIL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT
Monte Scientia Project

PROJECT
MONTE SANT ANGELO
MERCY COLLEGE
128 MILLER ST, N. SYDNEY

TITLE
CIVIL SECTIONS - SHEET 3

DATE	DESIGNED BY	CHECKED BY
AUGUST 20	GP	GP
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	GP	PW

JOB No.	DRAWING No.	REV.
19133	C702	T2

PRINT TIME: 21/01/2021 1:35:19 PM C:\Users\gracio\Documents\WD19133_Monte Sant Angelo Mercy College_Civil_Central_gracioXUCBU.rvt

WEBBER DESIGN
A1 0 1 2 3 4 5 6 7 8 9 10

APPENDIX D – ON-SITE DETENTION CALCULATIONS

CIVIL COMPUTATIONS

PROPOSED NEW SPORTS AND SCIENCE BUILDING AT MONTE SANT ANGELO MERCY COLLEGE

STORMWATER DRAINAGE COMPUTATIONS

Monte Scientia Project
KNOWLEDGE. ENTERPRISE. INNOVATION.

Job No: 19133
Council Ref: NORTH SYDNEY COUNCIL, NSW

FEBRUARY 2020
Version B

Level 2, 31 Queen Street, Melbourne VIC 3000
Suite 301, Level 3, 19A Boundary Street, Rushcutters Bay, NSW, 2011
Ph: 03 96147155 Fax: 03 96147166

Table of Contents

1.0 COUNCIL LEGAL POINT OF DISCHARGE LETTER 1
2.0 PRE-EXISTING CONDITIONS 2
3.0 OSD4W COMPUTATION 3
4.0 ORIFICE COMPUTATION 4

Level 2, 31 Queen Street, Melbourne VIC 3000
Suite 301, Level 3, 19A Boundary Street, Rushcutters Bay, NSW, 2011
Ph: 03 96147155 Fax: 03 96147166

1.0 COUNCIL LEGAL POINT OF DISCHARGE LETTER

Gracio Permata

From: Harry Konsti <Harry.Konsti@northsydney.nsw.gov.au>
Sent: Wednesday, 22 January 2020 2:58 PM
To: Gracio Permata
Subject: RE: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Gracio,

I have received some advice and hopefully this is helpful.

North Sydney Council doesn't (unfortunately) have MUSIC inputs. The City of Sydney inputs would be very similar to North Sydney. So there would be no harm in using the Sydney City Council MUSIC link.

As MUSIC is the software most commonly used to model WSUD treatment targets, I can advise that Council has an expectation for the targets below.

80% retention of the typical urban annual load for Total Suspended Solids (TSS)
45% retention of the typical urban annual load for Total Phosphorus (TP)
45% retention of the typical urban annual load for Total Nitrogen (TN)
70% retention of the typical urban annual load for gross pollutants (litter).

Should you have any further queries regarding this matter, I can be contacted on 9936 8367 or by return email.

Regards

Harry Konsti
Development Engineer

P 9936 8100
E council@northsydney.nsw.gov.au

www.northsydney.nsw.gov.au

From: Gracio Permata <gracio@webberdesign.com>
Sent: Wednesday, 22 January 2020 11:53 AM
To: Harry Konsti <Harry.Konsti@northsydney.nsw.gov.au>
Cc: Andrew Chan <AndrewC@webberdesign.com>; Jayanta Saha <Jayanta.Saha@northsydney.nsw.gov.au>; Rohan Games <Rohan@webberdesign.com>
Subject: RE: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Harry,

Thank you for speaking with me on the phone today.

As discussed, we are using MUSIC modelling to analyse stormwater quality treatment as for the WSUD component. Do you have MUSIC input parameters (rainfall station, duration, monthly evapotranspiration, etc.) guidelines? Or perhaps MUSIC link?

If not, could we use Sydney City Council MUSIC link?

Thank you,
Regards,
Gracio Permata

WEBBER DESIGN Film Presentation

Gracio Permata | **Webber Design Pty Ltd**
Civil Engineer

M +61 434 374 259
D 61 (0) 3 8657 5636

T 61 (0) 3 9614 7155
T 61 (0) 2 9690 2488

Level 2, 31 Queen Street, Melbourne VIC 3000
Suite 301, Level 3, 19A Boundary Street, Rushcutters Bay, NSW, 2011
Level 6, 1 Nash Street, Perth WA 6000

gracio@webberdesign.com
www.webberdesign.com

The information contained in this email and any attached files ("Email") is strictly private and confidential. This Email should be read by the intended recipient only. If you are not the intended recipient of this Email or if you believe this is an unsolicited email, please immediately notify the sender by replying to this email or contact a representative from Webber Design Pty Ltd on +613 96147155 and promptly destroy this Email and any copies of this Email.

Only the intended recipient of this Email may use, reproduce, disclose or distribute the information contained in this Email with Webber Design's permission. If you are not the intended recipient, you are strictly prohibited from using, reproducing, disclosing or distributing the information contained in this Email.

Webber Design does not represent, warrant or guarantee that the integrity of this Email has been maintained or that the communication is free of errors, virus or interference. Webber Design advises that this Email should be scanned to detect viruses. Webber Design accepts no liability for loss or damage (whether caused by negligence or not) resulting from the use of this Email.

From: Jayanta Saha <Jayanta.Saha@northsydney.nsw.gov.au>
Sent: Tuesday, 26 November 2019 12:08 PM
To: Gracio Permata <gracio@webberdesign.com>
Cc: Andrew Chan <AndrewC@webberdesign.com>
Subject: RE: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Gracio,

Please find the attached Council's Standard Stormwater conditions. Generally, Council will imposed these conditions based on your proposal. I hope these conditions will help you to design the stormwater management plan.

NOTE: You are required lodge an application for Development Approval (DA) including Architectural and stormwater plans for Council's approval. Please lodge it through customer service.

Regards,

Jayanta Saha
Graduate Development Engineer

P 9936 8100
E council@northsydney.nsw.gov.au

www.northsydney.nsw.gov.au

From: Gracio Permata <gracio@webberdesign.com>
Sent: Thursday, 21 November 2019 4:42 PM
To: Jayanta Saha <Jayanta.Saha@northsydney.nsw.gov.au>
Cc: Andrew Chan <AndrewC@webberdesign.com>
Subject: RE: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Jayanta,

Thank you for the information. We will pass it on to client/builder. We will also chase them up for existing stormwater drainage connection points since it is big title there should be masterplan drainage internally.

Could we have your design guidelines for the onsite detention tank? Such as pre-development & post development year ARI?

We will send you our plans once it is completed for your approval.

Thank you,
Regards,
Gracio Permata

WEBBER DESIGN Film Presentation

Gracio Permata | **Webber Design Pty Ltd**
Civil Engineer

M +61 434 374 259
T 61 (0) 3 9614 7155
T 61 (0) 2 9690 2488

Level 2, 31 Queen Street, Melbourne VIC 3000
Suite 301, Level 3, 19A Boundary Street, Rushcutters Bay, NSW, 2011
Level 6, 1 Nash Street, Perth WA 6000

gracio@webberdesign.com
www.webberdesign.com

The information contained in this email and any attached files ("Email") is strictly private and confidential. This Email should be read by the intended recipient only. If you are not the intended recipient of this Email or if you believe this is an unsolicited email, please immediately notify the sender by replying to this email or contact a representative from Webber Design Pty Ltd on +613 96147155 and promptly destroy this Email and any copies of this Email.

Only the intended recipient of this Email may use, reproduce, disclose or distribute the information contained in this Email with Webber Design's permission. If you are not the intended recipient, you are strictly prohibited from using, reproducing, disclosing or distributing the information contained in this Email.

Webber Design does not represent, warrant or guarantee that the integrity of this Email has been maintained or that the communication is free of errors, virus or interference. Webber Design advises that this Email should be scanned to detect viruses. Webber Design accepts no liability for loss or damage (whether caused by negligence or not) resulting from the use of this Email.

From: Jayanta Saha <Jayanta.Saha@northsydney.nsw.gov.au>
Sent: Wednesday, 20 November 2019 12:31 PM
To: Gracio Permata <gracio@webberdesign.com>
Cc: Andrew Chan <AndrewC@webberdesign.com>
Subject: RE: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Gracio,

It is necessary to have an OSD tank (preferable rainwater retention tank as well) to ensure appropriate provision is made for the disposal and management of stormwater generated by the development, and to ensure that public infrastructure in Council's care and control is not overloaded.

However, I do not have any information about the numbers of outlets are functioning/discharging from this property.

Regards,

Jayanta Saha
Graduate Development Engineer

P 9936 8100
E council@northsydney.nsw.gov.au

www.northsydney.nsw.gov.au

From: Gracio Permata <gracio@webberdesign.com>
Sent: Monday, 18 November 2019 3:45 PM
To: Jayanta Saha <Jayanta.Saha@northsydney.nsw.gov.au>
Cc: Andrew Chan <AndrewC@webberdesign.com>
Subject: 128 Miller Street, North Sydney - Monte Sant Angelo College - Stormwater Drainage

Hi Jayanta,

Thank you for returning my call today.

As discussed on the phone, we are looking at the proposed redevelopment of Monte Sant Angelo College especially the stormwater drainage. I have attached the architectural plans for the current building we are looking at the moment.

On the second page of the PDF, this shows the entire existing college precinct and the highlighted part is the area that we are looking at. In this locations, there will be new chemistry building with two level of basement including carpark and basketball court as shown on the PDF.

We believe that there is an existing drainage network (master plan of the stormwater) within the property which we are currently trying to get our hands on. This existing master plan drainage will have an existing connection to the council. Due to the change of impervious area and pervious area of pre-existing conditions and post conditions, do we need to have an OSD tank prior connection to the existing master plan? Do you have any information that could help us whether this college title have multiple connection or single connection outlet?

Thank you,
Regards,
Gracio Permata

WEBBER DESIGN Film Presentation

Gracio Permata | **Webber Design Pty Ltd**
Civil Engineer

M +61 434 374 259

T 61 (0) 3 9614 7155
T 61 (0) 2 9690 2488

Level 2, 31 Queen Street, Melbourne VIC 3000
Suite 301, Level 3, 19A Boundary Street, Rushcutters Bay, NSW, 2011
Level 6, 1 Nash Street, Perth WA 6000

gracio@webberdesign.com
www.webberdesign.com



The information contained in this email and any attached files ("Email") is strictly private and confidential. This Email should be read by the intended recipient only. If you are not the intended recipient of this Email or if you believe this is an unsolicited email, please immediately notify the sender by replying to this email or contact a representative from Webber Design Pty Ltd on +613 96147155 and promptly destroy this Email and any copies of this Email.

Only the intended recipient of this Email may use, reproduce, disclose or distribute the information contained in this Email with Webber Design's permission. If you are not the intended recipient, you are strictly prohibited from using, reproducing, disclosing or distributing the information contained in this Email.

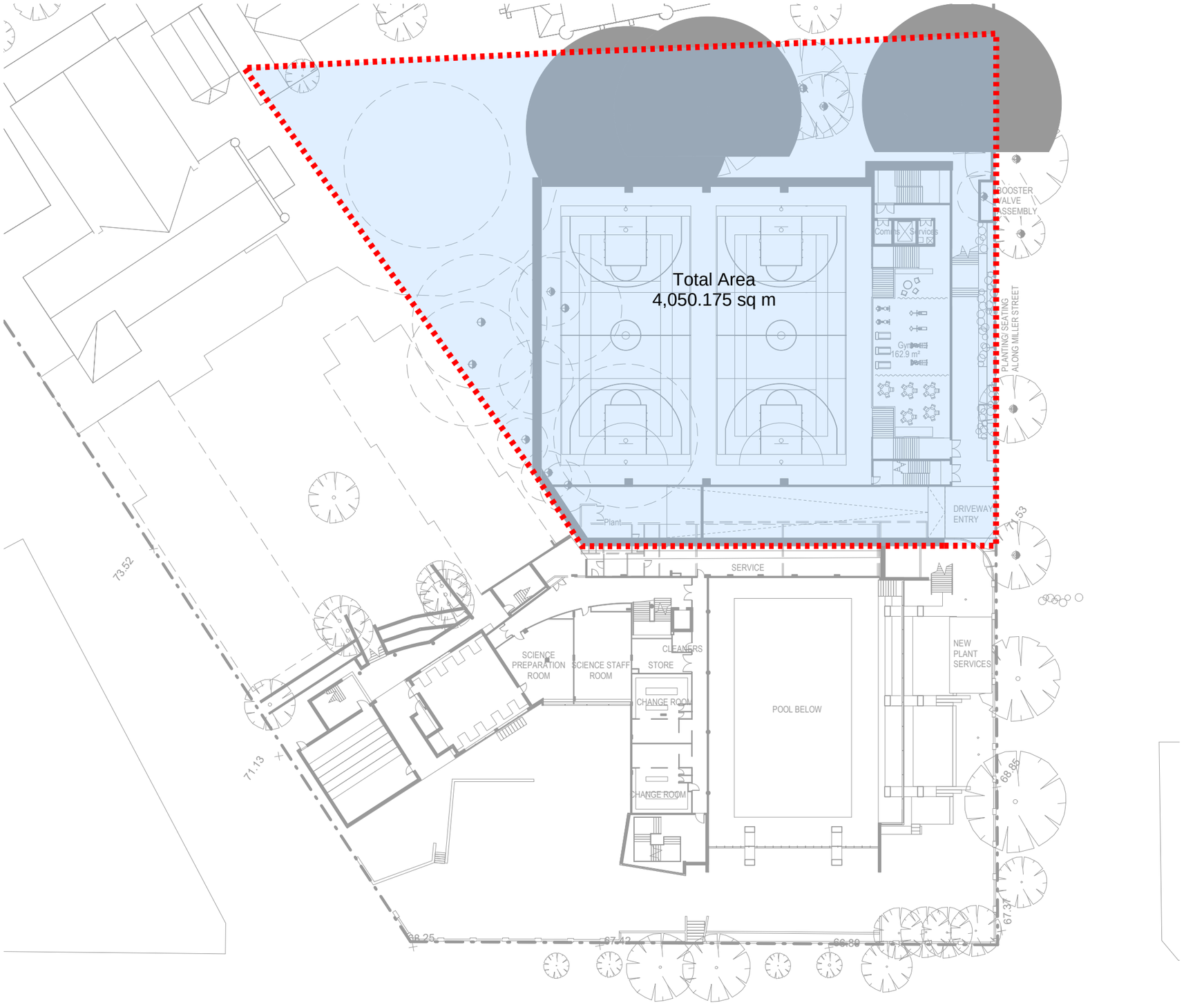
Webber Design does not represent, warrant or guarantee that the integrity of this Email has been maintained or that the communication is free of errors, virus or interference. Webber Design advises that this Email should be scanned to detect viruses. Webber Design accepts no liability for loss or damage (whether caused by negligence or not) resulting from the use of this Email.

********** This email message is for the named persons' use only and may contain confidential and/or legally privileged information. No confidentiality or privilege is waived or lost by any mis-transmission. If you are not the intended recipient please notify the sender by reply email and immediately delete this email. Use, disclosure or reproduction of this email by anyone other than the intended recipient(s) is strictly prohibited. No representation is made that this email or any attachments are free of viruses. Virus scanning is recommended and is the responsibility of the recipient.
****
********** This email message is for the named persons' use only and may contain confidential and/or legally privileged information. No confidentiality or privilege is waived or lost by any mis-transmission. If you are not the intended recipient please notify the sender by reply email and immediately delete this email. Use, disclosure or reproduction of this email by anyone other than the intended recipient(s) is strictly prohibited. No representation is made that this email or any attachments are free of viruses. Virus scanning is recommended and is the responsibility of the recipient.
****
********** This email message is for the named persons' use only and may contain confidential and/or legally privileged information. No confidentiality or privilege is waived or lost by any mis-transmission. If you are not the intended recipient please notify the sender by reply email and immediately delete this email. Use, disclosure or reproduction of this email by anyone other than the intended recipient(s) is strictly prohibited. No representation is made that this email or any attachments are free of viruses. Virus scanning is recommended and is the responsibility of the recipient.
****

2.0 PRE-EXISTING CONDITIONS



3.0 OSD4W COMPUTATION



Tree Protection Zone with 20% Encroachment

Tree Canopy Zone

Disclaimer
The information presented herein was produced prior to the completion of construction. Floor areas, dimensions, fittings, finishes, tile patterns and setouts, and the like, and the specifications thereof, are indicative only, are not to scale and are subject to change without notice. Warranty that the information presented herein is a representation ofthe final product is not given either expressly or implied. Prospective purchasers must rely on their own enquiries. All areas, numbers are rounded to the nearest whole number.
All dimensions are approximate.
All internal / external furniture and whitegoods are not included.

Project Title	Drawing Title	Project No	Drawing No	Revision	Date Printed	14/01/2020 12:58:50 PM
Monte Sant Angelo Mercy College 128 Miller St, North Sydney	PROPOSED LEVEL -1 PLAN	2336	A02.02		Scale	As indicated @A3

Rev	Date	Description

Melbourne : 4/135 Sturt Street Southbank,VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street,Surry Hills, NSW 2010T +61 2 9660 9329
Brisbane : Level 12,324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
ABN: 84006394261 NSW Nominated Architects:Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028

hayball

Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant and manufacture shall not commence prior to the return of inspected shop drawings signed by the Architect/Consultant. © Copyright 2008 All rights reserved

*** SUMMARY OSD DESIGN REPORT ***

Printed from *OSD4W* version 1.08.4 S/N # W4-01201
Licensed to : Webber Design
Prepared by : Gracio Permata

---

1. CLIENT DETAILS

Name	:	Monte Sant Angelo Mercy College
Address line 1	:	128 Miller Street
Address line 2	:	North Sydney
Address line 3	:	NSW 2060

2. JOB NAME AND REFERENCE

Job Reference	:	WD19133-OSD4
Job Name	:	Monte Sant Angelo Mercy College - On-Site Detention
Job Detail 1	:	JobAddress1.....
Job Detail 2	:	North Sydney
Job Detail 3	:	NSW 2060

3. AREAS (sq.m.) & RUN-OFF COEFFICIENTS

Total Site area	:	4050

4. EXISTING SITE DETAILS

Aes1	:	4050	Ces1	:	0.35
Aes2	:	0	Ces2	:	0.30
Aes3	:	0	Ces3	:	0.15
Aes4	:	0	Ces4	:	0.12
Weighted C - site			Cew	:	0.35

5. PROPOSED SITE DETAILS

Aps1	:	1147	Cps1	:	0.30
Aps2	:	105	Cps2	:	1.00
Aps3	:	2798	Cps3	:	0.90
Aps4	:	0	Cps4	:	0.12
Weighted C - site			Cpw	:	0.73
Uncontrolled portion(s)			UPfrac	:	0.00

6. CATCHMENT TIMES (minutes)

Time of concentration	:	7.00
Travel time from discharge point to catchment outlet	:	3.00

7. OSD DESIGN

Flow Control Device		:	Orifice
Storage type		:	Tank
Rainfall zone		:	SYDNEY(NSW)
ARI for OUTFLOW	(years)	:	5
ARI for STORAGE	(years)	:	100
Qptot	(L/s)	:	57.01
Qu	(L/s)	:	0.00
Qp	(L/s)	:	0.00

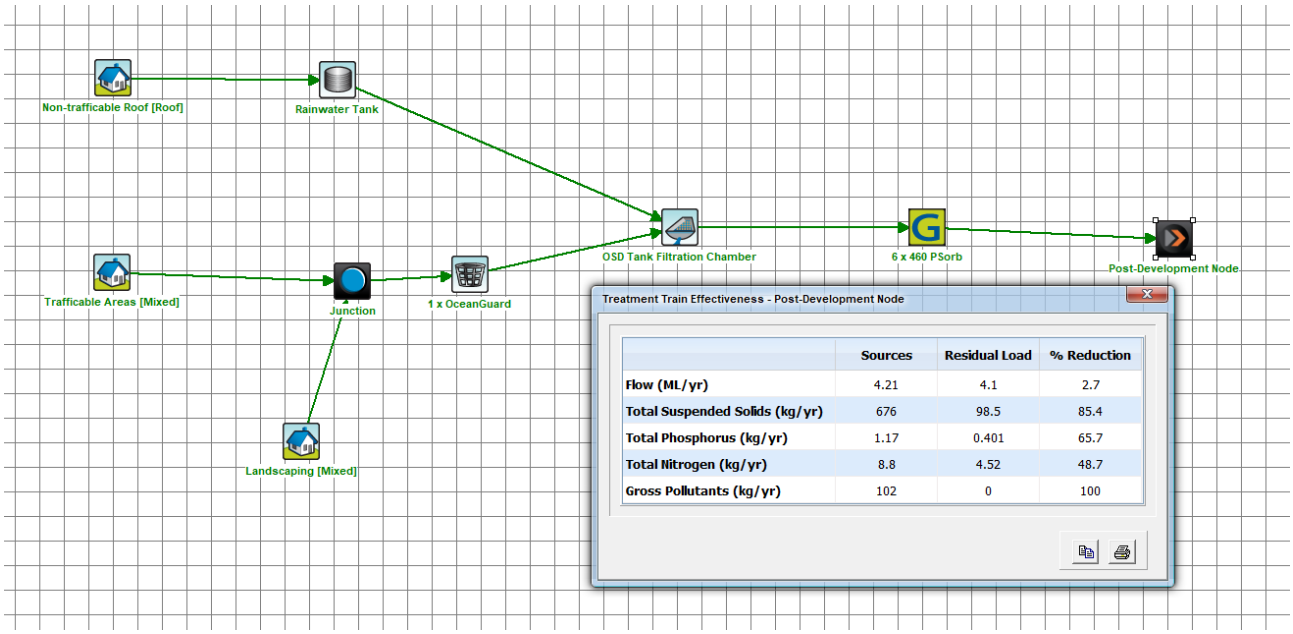
Calculated PSD (L/s) : 61.96
Nominated PSD (L/s) : -----
Adopted PSD (L/s) : 61.96

8. STORAGE DETAILS
Volume (cub.m.) : 157.19
Time to fill storage (mins) : 43.9
Time to empty storage (mins) : 133.1
Critical storm duration (mins) : 59.8

9. STORM DURATIONS & RAINFALL INTENSITIES
PSD ..... Duration : 7.0 min. Intensity : 144.8 mm/hr
MAX. STORAGE ..... Duration : 59.8 min. Intensity : 94.8 mm/hr

==========
==========
Generated at : 18/02/2020 6:30:18 PM

APPENDIX E – MUSIC MODELLING



	Sources	Residual Load	% Reduction
Flow (ML/yr)	4.21	4.1	2.7
Total Suspended Solids (kg/yr)	676	98.5	85.4
Total Phosphorus (kg/yr)	1.17	0.401	65.7
Total Nitrogen (kg/yr)	8.8	4.52	48.7
Gross Pollutants (kg/yr)	102	0	100

Figure 5: MUSIC Overall Treatment Train

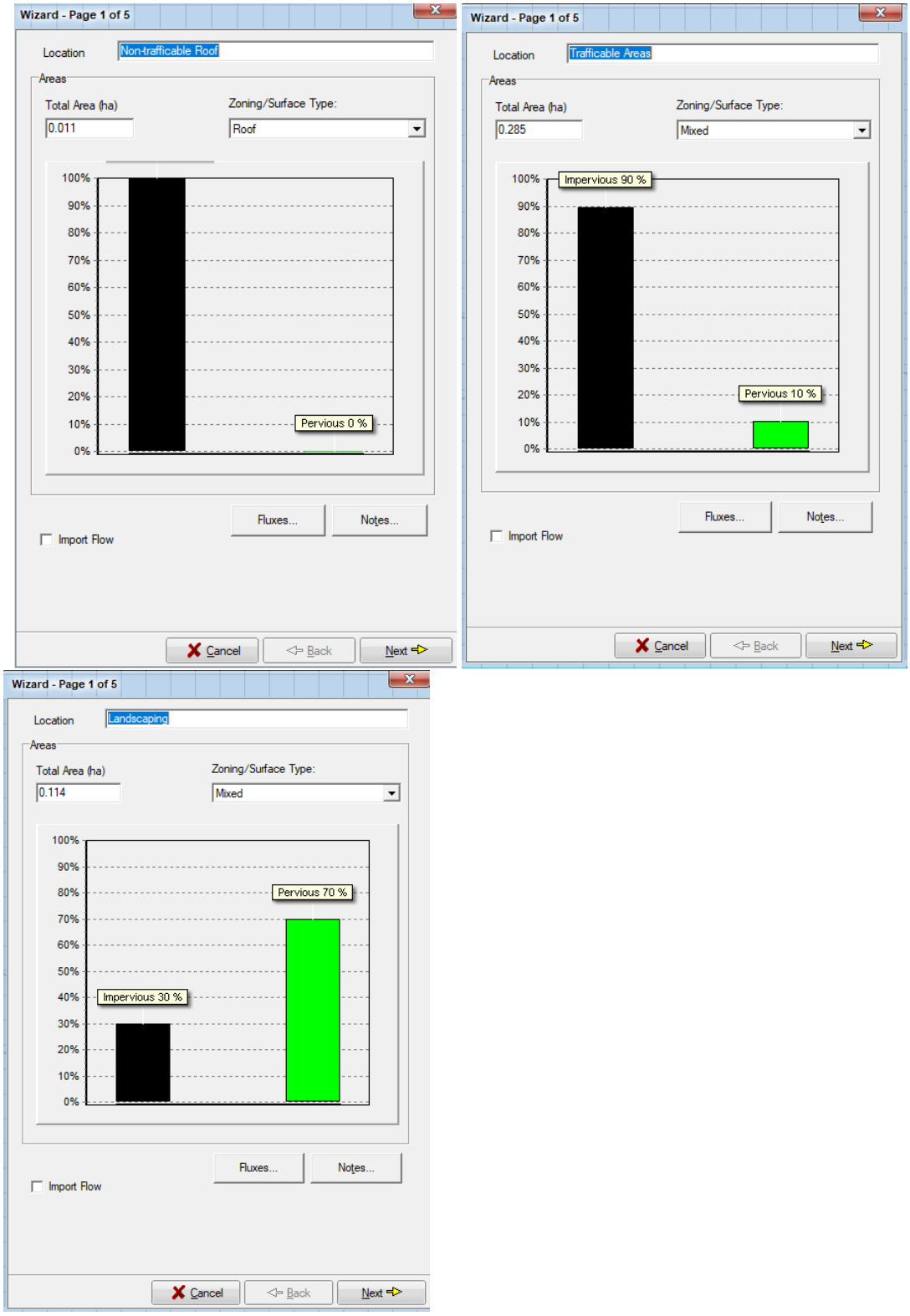


Figure 6: Area MUSIC Input Nodes

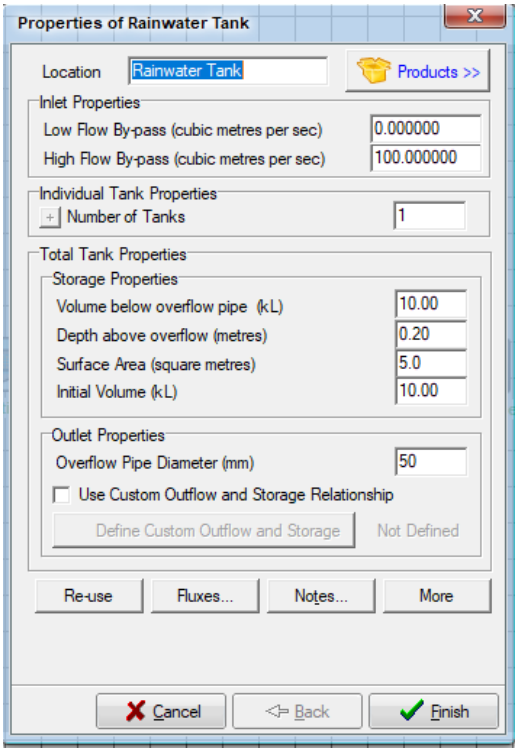


Figure 7: Rainwater Tank MUSIC Node

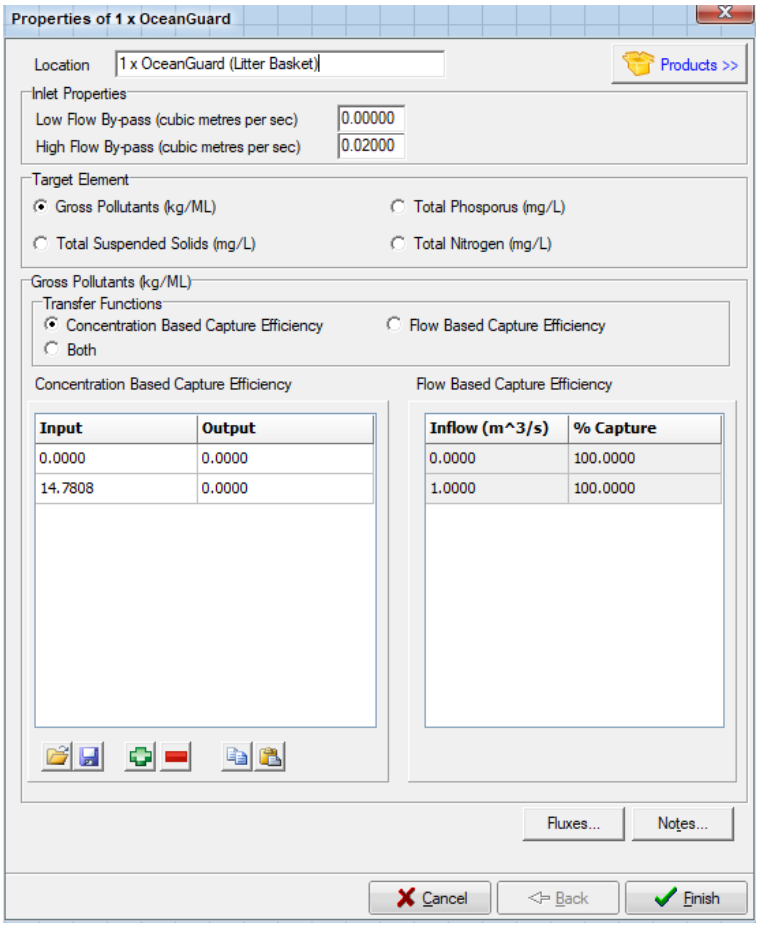


Figure 8: Litter Basket MUSIC Node

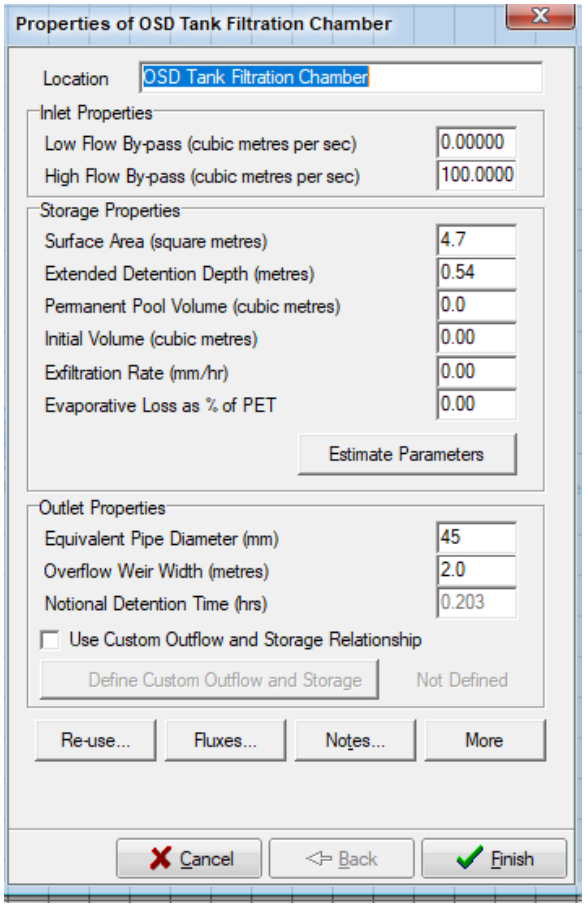


Figure 9: OSD Tank Filtration Chamber MUSIC Node

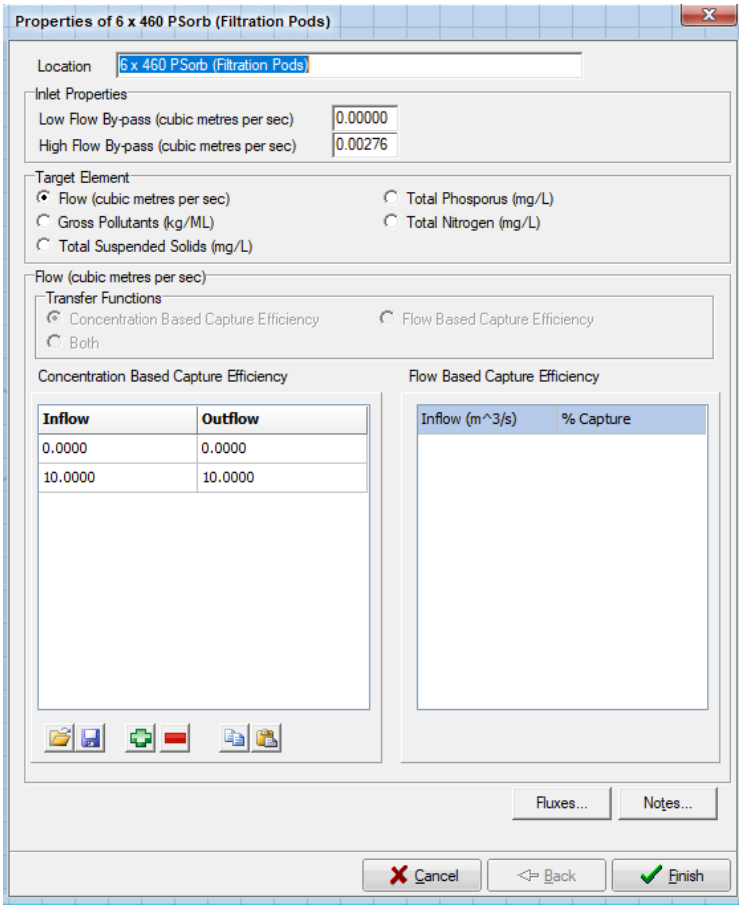


Figure 10: Filtration Pods MUSIC Node



Webber Design Pty Ltd
Suite 301, Level 3
19A Boundary Street
Rushcutters Bay NSW 2011

T +61 2 9690 2488

www.webberdesign.com

APPENDIX G – CONSTRUCTION NOISE AND VIBRATION MANAGEMENT SUB-PLAN

FINAL REPORT

SCIENTIA PROJECT, MONTE SANT ANGELO MERCY COLLEGE

128 MILLER ST, NORTH SYDNEY

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN
RWDI # 2190049
January 11, 2021

SUBMITTED TO
Katherine Barrionuevo
Richard Crookes Constructions
Level 3,
4 Broadcast Way,
Artarmon NSW 2064
barrionuevok@richardcrookes.com.au

SUBMITTED BY
Remi Larmandieu
Acoustical Consultant
remi.larmandieu@rwdi.com

John Wassermann
Technical Director
John Wassermann@rwdi.com

RWDI Australia Pty Ltd (RWDI)
272 Pacific Highway – Level 4
Crows Nest, NSW, Australia, 2065
T: +61.2.9437.4611
E-mail: solutions@rwdi.com
ABN: 86 641 303 871

BEST MANAGED COMPANIES Platinum member

This document is intended for the sole use of the party to whom it is addressed and may contain information that is privileged and/or confidential. If you have received this in error, please notify us immediately. Accessible document formats provided upon request.
® RWDI name and logo are registered trademarks in Canada and the United States of America

DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
A	Final	13 January 2021	Remi Larmandieu	John Wassermann

NOTE

All materials specified by RWDI Australia Pty Ltd (RWDI) have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose.

The information contained in this document produced by RWDI is solely for the use of the client identified on the front page of this report. Our client becomes the owner of this document upon full payment of our **Tax Invoice** for its provision. This document must not be used for any purposes other than those of the document's owner. RWDI undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.

WILKINSON MURRAY

In October 2020, Wilkinson Murray Pty Limited merged with RWDI Group, a leading international consulting firm. Wilkinson Murrays core practice areas of noise, acoustics, vibration and air quality consulting built since 1962 servicing Australia and Asia-Pacific region will complement RWDI practice areas. Combined, RWDI+Wilkinson Murray is one of the largest teams globally specialising in the area of noise, acoustics, vibration and air quality.

RWDI

RWDI is a team of highly-specialised consulting engineers and scientists working to improve the built environment through three core areas of practice: building performance, climate engineering and environmental engineering. More information is available at www.rwdi.com.

QUALITY ASSURANCE

RWDI Australia Pty Ltd is committed to and implemented AS/NZS ISO 9001:2015 "Quality Management Systems – Requirements".

Certified System
Quality
ISO 9001
SAI GLOBAL

Glossary of Acoustic Terms

Acoustical Environment - The acoustical characteristics of a space or room influenced by the amount of acoustical absorption, or lack of it, in the space.

Ambient Noise - All noise level present in a given environment, usually being a composite of sounds from many sources near and far. Traffic, HVAC, masking sound, or even low-level background music can contribute to ambient level of noise or sound.

A-weighting - A measure of sound pressure level designed to reflect the response of the human ear, which does not respond equally to all frequencies. To describe sound in a manner representative of the human ear's response it is necessary to reduce the effects of the low and high frequencies with respect to medium frequencies. The resultant sound level is said to be A-weighted, and the units are in decibels (dBA). The A-weighted sound level is also called the noise level.

A-weighted sound level - The sound level measured with a sound level meter using A-weighting, which alters the sensitivity of the sound level meter with respect to frequency so that the sound level meter is less sensitive at frequencies where the ear is less sensitive; usually used in specifying permissible sound levels in buildings.

Baffle - An acoustical sound absorbing unit. Normally suspended vertically in a variety of patterns to introduce absorption into a space to reduce reverberation and noise levels.

Decibel - A logarithmic unit used to express the difference or magnitude of the level or power of sound intensity. It is equal to ten times the common logarithm of the ratio of the two levels. A whisper is about 20 dB, typical conversation is between 60-70 dB, and the threshold of pain for the human ear is around 120 dB. Decibels are not directly related to human ear sensitivity and double dB does not equate to a doubling in perceived loudness since it works as a curve. 10 dB is a typical doubling or halving of perceived volume. Note that being logarithmic values, they cannot be arithmetically added.

Diffusion - The scattering or random reflection of a sound wave from a surface. The direction of reflected sound is changed so that the listeners may have the sensation of sound coming from all directions at equal levels. Most rooms are not diffused, and reverberation times can be different in different parts of the room due to the room's modes. The amount of diffusion can be measured by taking reverb measurements in many different locations in the room and then taking the average of the differences in decay times.

Echo - A reflected sound producing a distinct repetition of the original sound that reaches the listener when the delay is >0.01 seconds after the direct sound. The reflecting object must be at an average of about 15 metres in order for an echo to be heard.

Frequency - The number of cycles per second of a given tone. Acoustical frequency is normally measured in units called Hertz (Hz). One Hz is 1 cycle per second, two Hz is 2 cycles per second, and so on.

Hertz - The unit of frequency, equal to one cycle per second.

Noise Rating (NR) - NR is determined by NR Curves which are a series of curves of octave-band spectra, used to provide a single number rating of the noisiness of an indoor space. The room's octave-band spectrum is compared with this set of curves to determine the NR level of the room and illustrates the extent to which unwanted noise such as mechanical or HVAC noise interferes with speech intelligibility.

Noise Reduction Coefficient (NRC) - An arithmetic average of an acoustic material to the nearest multiple of 0.05 of four sound absorption coefficients at frequencies of 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz. An NRC of 0 = perfect reflection and an NRC of 1 = perfect absorption. NRC is based on human speech frequencies therefore providing a simple scale of how well a surface material will absorb the human voice.

Reverberation - The perpetuation of sound wave energy in an enclosed space after the original sound source has stopped. After this original sound source has stopped, the sound wave energy will continue to be reflected and absorbed until it loses enough energy to die out. More reverberation can be good for music, but poor for speech intelligibility.

Reverberation Time - The time it takes in seconds for a sound to decay 60 dB or one-millionth of its original sound level after the source has stopped in an enclosed space. Commonly referred to as RT60.

Sound Absorption - The property of materials such as air, walls, or acoustic panels that changes sound wave energy into heat energy. When a sound wave hits a surface, that which is not reflected is absorbed.

Speech Privacy - The extent that speech becomes unintelligible between rooms or spaces like offices and conference rooms usually found in an open office plan. The three ratings used are: Confidential (Very Good Privacy), Normal (Fair to Good Privacy), and Minimal (Poor Privacy).

Sound Transmission Class (STC) - A method for a single number ranking of walls, doors, windows, noise barriers, partitions, and other acoustic products measured over 16 frequencies ranging from 125 Hz to 4000 Hz, assuming that the noise source is generally even across the frequency spectrum. STC involves measuring transmission loss (TL) at various frequency bands of a generated sound source from one room to another separated by the median that is being tested.

Weighted Sound Reduction Index (R_w) - This is a single number value in decibels given to an individual element or path through a construction, providing guidance on its sound insulation performance across the spectrum of audible frequencies. Different building elements may have different R_w values, and a single R_w value may be used to represent the overall 'composite' value. Consider for example a brick wall (R_w 45 dB) with a lightweight door inset (R_w 20 dB) and a gap underneath (R_w ~0 dB). The R_w value representing the overall wall, door and gap will depend on the relative size of each component and real examples typically range from 10 dB to 30 dB.

TABLE OF CONTENTS

1 INTRODUCTION 1

2 PROJECT OVERVIEW 2

2.1 Monte and the Surrounding Context 5

2.2 Project Description 6

2.3 Construction Staging 6

2.4 Construction Hours 7

3 EXISTING NOISE ENVIRONMENT 8

3.1 Ambient Noise Levels at the Site 8

4 CONSTRUCTION NOISE & VIBRATION CRITERIA 10

4.1 Construction Noise Criteria 10
4.1.1 Construction Noise Management Levels 10

4.2 Vibration Criteria 12
4.2.1 Building Damage 13

5 CONSTRUCTION NOISE ASSESSMENT 15

5.1 Construction Equipment & Noise Source Levels 15

5.2 Construction Noise Predictions 16

5.3 Discussion of Results 17

6 CONSTRUCTION VIBRATION ASSESSMENT 18

7 SYDNEY METRO EASEMENT 19

7.1 BACKGROUND 19

7.2 NOISE CRITERIA 19

7.3 Calculations of Ground borne Rail Noise within the School 23

7.4 Construction Vibration Assessment 24

7.5 Discussion 25

8 MANAGEMENT OF CONSTRUCTION NOISE & VIBRATION TO THE SCHOOL 26

9 NOISE & VIBRATION CONTROL METHODS 27

9.1 Noise & Vibration Control 27
9.1.1 Construction Noise & Vibration Mitigation Measures 27
9.1.2 Selection of Alternate Activity or Process 27
9.1.3 Acoustic Barrier 27
9.1.4 Silencing Devices 28
9.1.5 Material Handling 28
9.1.6 Treatment of Specific Equipment 28
9.1.7 Noise and Vibration Monitoring 28

10 CONSTRUCTION MANAGEMENT PROCESSES 29

10.1 Community Consultation 29

10.2 Response to Complaints 29

10.3 Environmental Inductions 30

10.4 Monitoring 30
10.4.1 Construction Noise Monitoring 30
10.4.2 Construction Vibration Monitoring 31

11 SUMMARY OF MITIGATION MEASURES 32

11.1 Noise Control Measures 32

12 CONCLUSION 34

LIST OF TABLES

Table 2-1 Monte Campus Allotments 2
Table 2-2 Construction Stages 6
Table 3-1 Surrounding receivers 8
Table 3-2 Long-term noise monitoring locations 9
Table 3-3 Summary of measured ambient noise levels 9
Table 4-1 Construction Noise Management Levels at Residences using Quantitative Assessment 10
Table 4-2 Site-specific construction noise management levels 12
Table 4-3 Criteria for Exposure to Continuous Vibration 12
Table 4-4 Acceptable Vibration Dose Values for Intermittent Vibration ($m/s^{1.75}$) 13
Table 4-5 Transient Vibration Guide Values – Minimal Risk of Cosmetic Damage 13
Table 4-6 DIN 4150 recommended Peak Particle Velocity (PPV) vibration levels for heritage buildings 14
Table 5-1 Typical construction plant sound levels – dBA 15

Table 5-2 Construction scenarios for construction works 16
Table 5-3 Predicted construction noise levels at residences – $L_{Aeq(15\ min)}$ – dBA 17
Table 6-1 Recommended safe working distances for vibration intensive plant 18
Table 7-1 Typical Ground Vibration Generated by Construction Plant 24
Table 11-1 Noise and Vibration Mitigation Measures 32

LIST OF FIGURES

Figure 2-1 Monte Sant Angelo Mercy College landholdings 3
Figure 2-2 The Site: Location of proposed Sports and Science Building (coloured) 4
Figure 3-1 Aerial showing noise monitoring locations 8
Figure 4-1 Graph of transient vibration guide values for cosmetic damage 14
Figure 7-1 Site and Sydney Metro Tunnel Locations 20
Figure 7-2 Cross Section 1 – Northern 21
Figure 7-3 Cross Section 2 - Southern 22

LIST OF APPENDICES

Appendix A: Unattended Monitoring Results

1 INTRODUCTION

RWDI has been commissioned to prepare a Construction Noise and Vibration Management Plan (CNVMP) for the construction of a new Sports and Science Building at Monte Sant Angelo Mercy College, North Sydney (Monte) in order to address SSD 10393 condition C15.

A Noise Impact Assessment was prepared by Wilkinson Murray Pty Limited (WMPL) in April 2020 (Report 19363 – Ver E) as part of a State Significant Development (SSD) application, which included both operational and construction aspects.

Items C15 of the development consent state the following:

C15 The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced noise expert;

(b) be prepared in consultation with Sydney Metro;

(c) be consistent with the recommended measures within DA Acoustic Report Revision E dated April 2020 and addendum dated 23 July 2020 prepared by Wilkinson Murray in relation to construction noise and vibration management;

(d) describe procedures for achieving and complying with the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

(e) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

(f) include strategies that have been developed with the community for managing high noise generating works;

(g) describe the community consultation undertaken to develop the strategies in condition C15(f);

(h) describe details of noise mitigation measures installed to ensure that the students and users of the school are not impacted by the construction noise;

(i) include a complaints management system that would be implemented for the duration of the construction; and

(j) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with Condition C15(f). "

This CNVMP has been carried out with reference to the following documents:

- *Interim Construction Noise Guideline* (DECC, 2009) – *ICNG*
- *Assessing Vibration: A Technical Guideline* (DEC, 2006) – *AVTG*
- BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*"

2 PROJECT OVERVIEW

The Monte campus is approximately 2.52 hectares comprises 18 allotments, which are described in Table 2-1 below and shown in Figure 2-1. It is noted that the new Sports and Science Building and the proposed works are located on Lots 3, 4 and 5 in DP 262534 (the Site) (refer to Figure 2-2).

Table 2-1 Monte Campus Allotments

Address	Legal Description
128 Miller Street	Lot 8 in DP 262534
	Lots 1, 2, 3, 4, 5, 6 and 7 in DP 262534
	Lot 4 in DP 5030
	Lot 1 in DP 780403
5 McLaren Street	Lot 1 in DP 104072
9 McLaren Street	Lot A in DP 339358
11 McLaren Street	Lot 11 in DP 5030
21-23 McLaren Street	Lot 10 in DP 5030
27 and 27A McLaren Street*	Lots 7 and 8 in DP 5030
29 McLaren Street*	Lot 6 in DP 5030
31 McLaren Street	Lot 5 in DP 5030

*Sisters of Mercy land is not used by the College.

Figure 2-1 Monte Sant Angelo Mercy College landholdings



Source: Six Maps

Figure 2-2 The Site: Location of proposed Sports and Science Building (coloured)



Source: Hayball Architect

The key school elements within and surrounding the Site include:

- The main vehicle entry to the School, the 'Circular-Drive' driveway is located to the north of the Site.
- The 'Holy Grass' lawn is located to the north-west of the Site and is surrounded by several original School buildings including the Chapel, Masalou Building, and Mercy Hall.
- Two existing sports courts centrally located within the Site.
- The McQuoin Hall / Aquatic Centre is located to the south of the Site.
- To the west of the Site is the Treanor Building, which comprises arts and textile teaching rooms.
- To the north of the 'Holy Grass' is the School Chapel and the O'Regan Arts and Cultural Common Building completed in 2014.

2.1 Monte and the Surrounding Context

Monte is located in the North Sydney Council local government area (LGA). It is directly to the north of the North Sydney CBD, which is the major commercial centre of North Sydney.

Monte is located approximately 3.5km north of the Sydney CBD, 500 metres north of North Sydney Railway Station. Victoria Cross Metro Station is currently under construction diagonally opposite the school at the south-eastern corner of Miller Street and Berry Street, as well as an entrance to the north-east on the corner of McLaren Street. Miller Street runs along the eastern boundary of the Site which provides a major bus corridor to the North Shore and Northern Beaches.

The key land use characteristics surrounding the School campus are:

- **South:** North Sydney CBD commercial core, primarily characterised by high-rise commercial buildings and support services including hotels, retail uses, and Shore Grammar School.
- **North:** mixed precinct including:
    - Low-density residential area within a heritage conservation area
    - Community buildings including the North Sydney Council Chambers
    - Schools including St Mary's Primary, Wenona School, Marist College and North Sydney Boys High School
    - St Leonards Park
- **East:** The extension of the North Sydney CBD Commercial Core, generally characterised by high density residential and commercial buildings.
- **West:** Medium density residential and high-rise commercial buildings along the Pacific Highway. Further west is a low-density residential area which is identified as a heritage conservation area, and the Australian Catholic University.

Immediately surrounding the Monte campus is best described as:

- **South** (Berry Street): Commercial buildings and the Victoria Cross Metro Station currently under construction.
- **North** (McLaren Street): McLaren Street is a heritage conservation area under the North Sydney LEP. Monte own most of the buildings on the southern side of McLaren Street which are generally single, and two storey buildings originally built for residential purposes. The site at the south-western corner of Miller Street and McLaren Street is an Italian restaurant and a four-storey commercial building with basement parking. The northern side of McLaren Street is primarily used for community facilities including a preschool, Council Chambers, community hall, and public plaza/park used for a weekend fresh produce market.
- **East** (Miller Street): Mix of commercial, residential and hotel towers, as well as the Rag and Famish Hotel at the corner of Miller and Berry Streets. A northern pedestrian portal to the Victoria Cross Metro Station is proposed on the north-eastern corner of Miller Street and McLaren Street intersection.
- **West** (Angelo Lane): mix of commercial and high-density residential buildings up to 16-storeys with basement parking.

2.2 Project Description

The proposed works comprise the following:

- Demolition of two existing sports courts and associated undercroft staff carpark. The demolition works will include demolition of all structures between the main 'circular-drive' driveway entry from Miller Street, and the McQuoin Hall/Aquatic Centre at the corner of Miller and Berry Streets.
- Construction of a new four-storey sports and science building with a basement staff carpark, partially underground dual sports court facility, three levels of new teaching spaces (innovation / science labs) and a rooftop sports court.
- Landscaping works surrounding the new sports and science building.

2.3 Construction Staging

Table 2-2 presents the proposed program of the construction works.

Table 2-2 Construction Stages

Scenario	Description	Works
A	Demolition	Removal of existing structure using excavators fitted with jaw crushers and hammers. Truck movements – loaded into trucks sent off site.
B	Excavation	Removal of soil and rock using excavators and rock saws. Truck movements – loaded into trucks sent off site.
C	Building Construction	This scenario includes concreting and lifting. 1 concrete pump, 2 forklifts, 1 compressor, 1 crane, a boom truck and tower crane are assumed to operate in 15 minutes. Also, concrete trucks and normal delivery trucks assumed to be two movements in 15 minutes.
D	Façade / Fitout	In the event that the construction of the facade occurs in isolation. Forklift, truck, tower crane and power tools assumed. Two truck movements in 15 minutes assumed.

2.4 Construction Hours

SSD 10393 conditions of consent D6, D7, D8 and D9 state the following regarding construction hours:

"D6. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

(a) between 7am and 6pm, Mondays to Fridays inclusive; and

(b) between 8am and 1pm, Saturdays.

No work may be carried out on Sundays or public holidays.

D7. Construction activities may be undertaken outside of the hours in condition D6 if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers;

(d) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works; or

(e) that are subject to the approval of an 'Out of Hours' permit by Council.

D8. Notification of such construction activities as referenced in condition D7 must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

D9. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9am to 12pm, Monday to Friday;

(b) 2pm to 5pm Monday to Friday; and

(c) 9am to 12pm, Saturday."

3 EXISTING NOISE ENVIRONMENT

3.1 Ambient Noise Levels at the Site

Residential receivers surrounding the site that may be affected by construction noise have been identified and other nearby land holdings are occupied for commercial use. These are detailed in Table 3-1 and shown in Figure 3-1.

Figure 3-1 Aerial showing noise monitoring locations

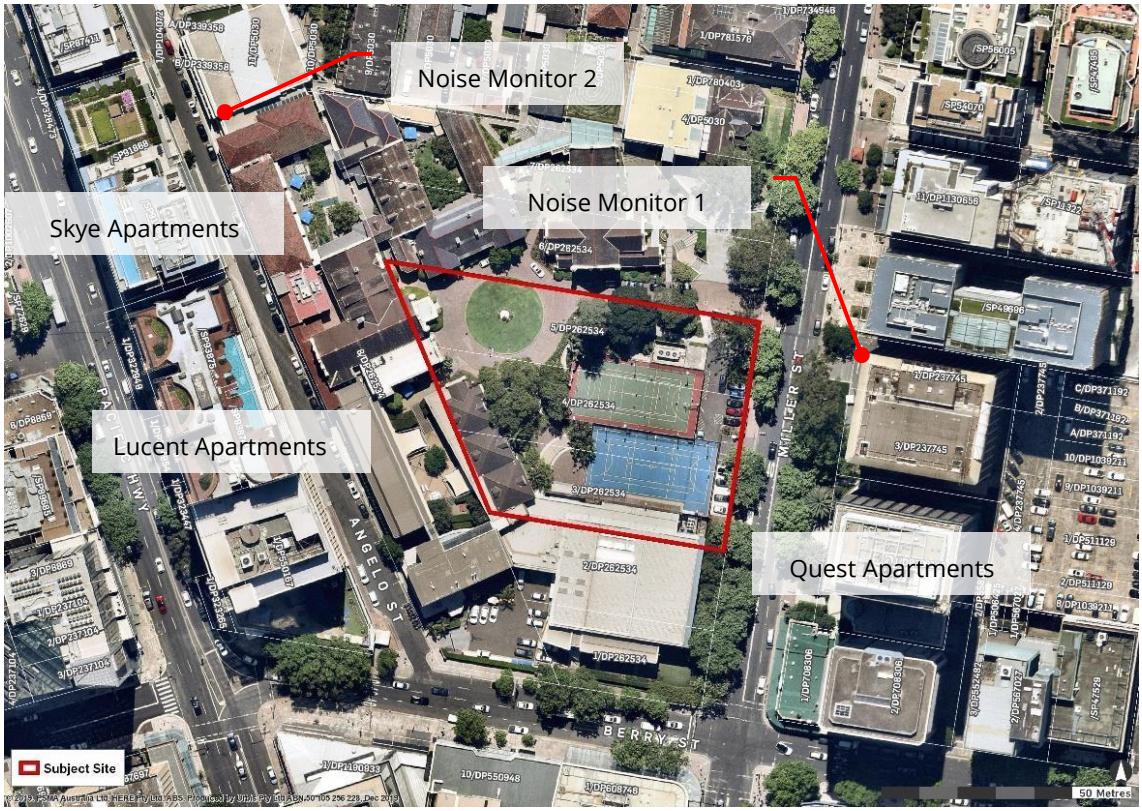


Table 3-1 Surrounding receivers

Receivers	Address
A – Quest Apartments North Sydney	223 Miller Street, North Sydney
B – Skye & Lucent Apartment Buildings	Pacific Highway, North Sydney

In order to quantify the existing noise environment, long-term ambient noise levels were monitored at two (2) locations surrounding the site, selected to cover the range of environments in the potentially affected areas.

Long-term noise monitoring locations are presented in Table 3-2 and shown in Figure 3-1.

Table 3-2 Long-term noise monitoring locations

Logger	Location	Monitoring Period
1	Quest Apartments	8 – 18 November 2019
2	School Roof Angelo Lane	23 – 27 November 2019

The noise monitoring equipment used for the measurements consisted of ARL Type EL-215 environmental noise loggers set to A-weighted, fast response, continuously monitoring over 15-minute sampling periods. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration was checked before and after the survey and no significant drift was noted.

The logger determines L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels of the ambient noise. L_{A1}, L_{A10} and L_{A90} are the levels exceeded for 1%, 10% and 90% of the sample time respectively (see Glossary for definitions). The L_{A1} is indicative of maximum noise levels due to individual noise events such as the occasional pass-by of a heavy vehicle. The L_{A90} level is normally taken as the background noise level during the relevant period.

Detailed results for each monitoring location are shown in graphical form in Appendix A. The graphs show measured values of L_{Aeq}, L_{A90}, L_{A10} and L_{A1} for each 15-minute monitoring period.

Table 3-3 summarises the noise results, for daytime, evening and night time periods as defined in the EPA's *Interim Construction Noise Guidelines (ICNG)* and the NSW *Noise Policy for Industry (NPfI)*.

Table 3-3 Summary of measured ambient noise levels

Noise Logging Site	RBL (dBA)[1]				$L_{Aeq,period}$ (dBA)[2]			
	Daytime 7am-6pm	Evening 6-10pm	Night Time 10pm-7am	Saturday 8am-1pm	Daytime 7am-6pm	Evening 6-10pm	Night Time 10pm-7am	Saturday 8am-1pm
1	54	48	42	50	65	59	54	57
2	53	52	50	51	57	55	54	55

Note 1: The RBL noise level is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

Note 2: The L_{Aeq} is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

Background noise levels at all locations were free of the influence of extraneous noise sources, such as plant or construction activities. Noise data measured during inclement weather was excluded in accordance with EPA procedures.

Results of noise monitoring are presented in Appendix A.

4 CONSTRUCTION NOISE & VIBRATION CRITERIA

4.1 Construction Noise Criteria

The following sections detail the applicable site-specific noise and vibration criteria based on the EPA's *Interim Construction Noise Guideline*, *British Standard 6472-1992* and *Assessing Vibration: A Technical Guideline*.

4.1.1 Construction Noise Management Levels

The EPA released the Interim Construction Noise Guideline in July 2009. The guideline provides noise goals that assist in assessing the impact of construction noise.

For residences, the basic daytime construction noise goal is that the $L_{Aeq,15min}$ noise management level (NML) should not exceed the background noise by more than 10dBA. This applies to construction works conducted during standard hours which are defined as Monday to Friday 7.00am-6.00pm, and Saturday 8.00am-1.00pm. Outside the standard hours, where construction is justified, the noise management level applicable is background + 5dBA. Table 4-1 details the *ICNG* noise management levels.

Table 4-1 Construction Noise Management Levels at Residences using Quantitative Assessment

Time of Day	Management Level $L_{Aeq,(15min)}$	How to Apply
Recommended Standard Hours: **Monday to Friday** **7am to 6pm** **Saturday** **8am to 1pm** **No work on Sundays or Public Holidays**	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq,(15min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

Time of Day	Management Level $L_{Aeq,(15min)}$	How to Apply
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours	Noise affected RBL + 5dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2 of the guideline.

In addition, the following NMLs ($L_{Aeq,15min}$) are recommended for other receivers and areas:

- Active recreation areas (such as parks): external $L_{Aeq,15min}$ 65dBA
- Industrial premises: external $L_{Aeq,15min}$ 75dBA

- Offices, retail outlets: external $L_{Aeq,15min}$ 70dBA
- Classrooms at schools and other educational institutions: internal $L_{Aeq,15min}$ 45dBA

Based on the above, Table 4-2 presents the applicable NMLs for construction activities at surrounding receivers that have been adopted for all applications.

Table 4-2 Site-specific construction noise management levels

Area	NML (L_{Aeq} – dBA)				Highly noise affected noise level, L_{Aeq} dBA
	Day	Evening	Night	Saturday	
A – Quest Apartments North Sydney	64	53	47	60	75
B – Skye & Lucent Apartment Buildings	63	57	55	61	75

4.2 Vibration Criteria

Criteria for assessment of the effects of vibration on human comfort are set out in British Standard 6472-1992. Methods and criteria in that Standard are used to set "preferred" and "maximum" vibration levels in the document "*Assessing Vibration: A Technical Guideline*" (2006) produced by the NSW DECCW.

Acceptable values of human exposure to continuous vibration, such as that associated with drilling, are dependent on the time of day and the activity taking place in the occupied space (e.g. workshop, office, residence or a vibration-critical area). Guidance on preferred values for continuous vibration is set out in Table 4-3.

Table 4-3 Criteria for Exposure to Continuous Vibration

Place	Time	Peak Particle Velocity (mm/s)	
		Preferred	Maximum
Critical working areas (e.g. hospital operating theatres precision laboratories)	Day or night time	0.14	0.28
Residences	Daytime	0.28	0.56
	Night time	0.20	0.40
Offices	Day or night time	0.56	1.1
Workshops	Day or night time	1.1	2.2

In the case of intermittent vibration, which is caused by plant such as rock breakers, the criteria are expressed as a Vibration Dose Value (VDV) and are presented in Table 4-4.

Table 4-4 Acceptable Vibration Dose Values for Intermittent Vibration ($m/s^{1.75}$)

Location	Daytime		Night Time	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Critical areas	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Calculation of VDV requires knowledge of the number of events and their duration in the relevant time period.

4.2.1 Building Damage

In terms of the most recent relevant vibration damage objectives, Australian Standard AS 2187: Part 2-2006 "*Explosives – Storage and Use – Part 2: Use of Explosives*" recommends the frequency dependent guideline values and assessment methods given in BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*", as they "*are applicable to Australian conditions*".

The British Standard sets guide values for building vibration based on the lowest vibration levels above which damage has been credibly demonstrated. These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk for a named effect is usually taken as a 95% probability of no effect.

The recommended limits (guide values) from BS7385 for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented numerically in Table 4-5.

Table 4-5 Transient Vibration Guide Values – Minimal Risk of Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and Above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4 Hz and above	N/A
Un-reinforced or light framed structures Residential or light commercial type buildings	15mm/s at 4 Hz increasing to 20mm/s at 15 Hz	20mm/s at 15 Hz increasing to 50mm/s at 40 Hz and above

The Standard states that the guide values in Table 4-5 relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings.

Note that rock breaking / hammering, and sheet piling activities are considered to have the potential to cause dynamic loading in some structures (e.g. residences) and it may therefore be appropriate to reduce the transient values by 50%.

The British Standard goes on to state that "*Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity*". In addition, a building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.

In addition to the British Standard, for the case of nearby heritage buildings, guidance for structural damage is derived from the German Standard DIN 4150 -3 *Structural Vibration Part 3 – Effects of Vibration on Structures*. Table 4-6 details these recommendations for heritage buildings.

Figure 4-1 Graph of transient vibration guide values for cosmetic damage

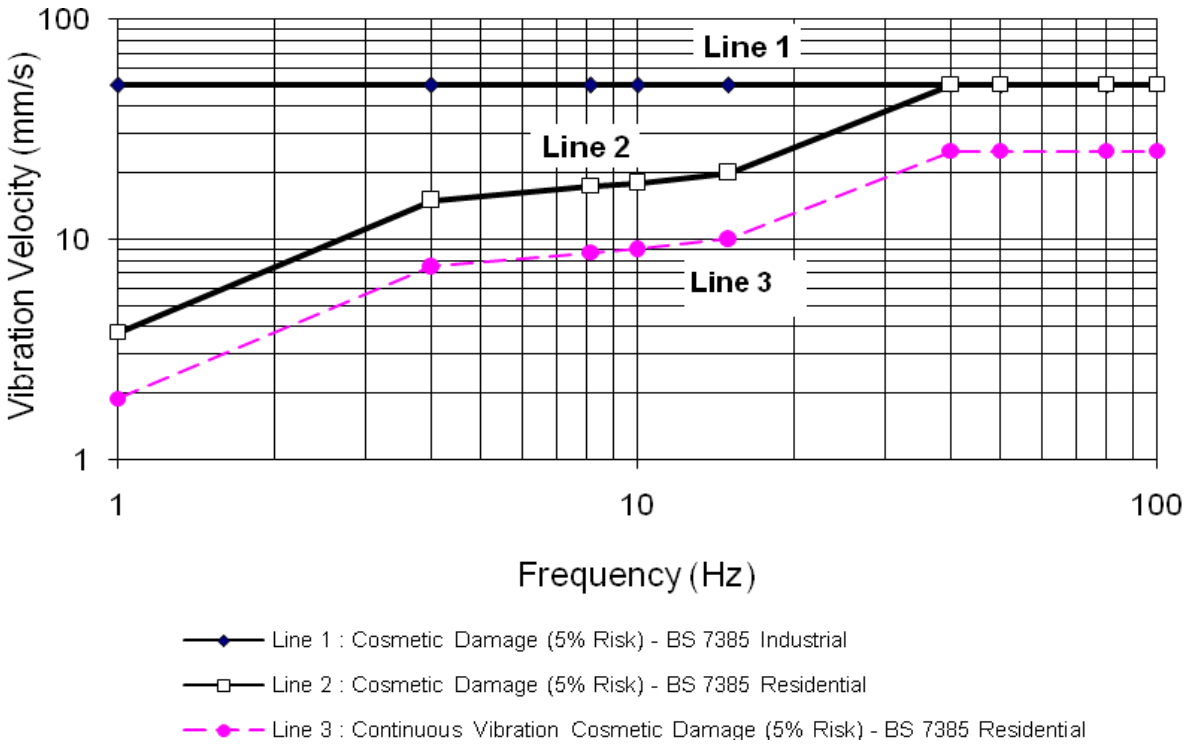


Table 4-6 DIN 4150 recommended Peak Particle Velocity (PPV) vibration levels for heritage buildings

Guideline values for PPV – mm/s		
1-10 Hz	**10 to 15 Hz**	**40 to 50 Hz**
3	3 to 8	8-10

5 CONSTRUCTION NOISE ASSESSMENT

This section of the assessment relates to typical construction activities expected to occur during works on the site, and their impact on residential receivers.

5.1 Construction Equipment & Noise Source Levels

Sound Power Levels (SWLs) for typical construction plant are identified in Table 5-1. These SWLs have been measured at other similar construction sites. The table gives both Sound Power Level and Sound Pressure Levels (SPL) at 7m for the equipment. Sound Power Level is independent of measurement position.

Table 5-1 Typical construction plant sound levels – dBA

Plant	Sound Power Level	Sound Pressure Level at 7m
Concrete Truck	109	84
Angle Grinder	109	84
Concrete Pump – 120mm diameter / 50 bar	112	87
Concrete Saw	116	91
Mobile Crane	98	73
Dump Truck	108	83
Compressor	100	75
Bobcat	103	78
Hand Tools	90	65
Excavator	108	83
Crawler Cranes	98	73
Tower Crane	104	79
Front End Loader	112	87
Excavator	107	82
Hammer Hydraulic	122	97
Bored Pile Rig	112	87

5.2 Construction Noise Predictions

Assessment of likely construction noise at surrounding receivers has been undertaken for the proposed construction works. Assessment has been based on the construction of a new school building on the site.

Site-related noise emissions were modeled with the "CadnaA" noise prediction program, using the ISO 9613 noise prediction algorithms. Factors that are addressed in the noise modeling are:

- Equipment sound level emissions and location
- Screening effects from buildings
- Receiver locations
- Ground topography
- Noise attenuation due to geometric spreading
- Ground absorption
- Atmospheric absorption.

Modelling has been conducted for a number of construction scenarios. The four works scenarios considered are summarised in Table 5-2.

Table 5-2 Construction scenarios for construction works

Scenario	Description	Works
A	Demolition	Removal of existing structure using excavators fitted with jaw crushers and hammers. Truck movements – loaded into trucks sent off site.
B	Excavation	Removal of soil and rock using excavators and rock saws. Truck movements – loaded into trucks sent off site.
C	Building Construction	This scenario includes concreting and lifting. 1 concrete pump, 2 forklifts, 1 compressor, 1 crane, a boom truck and tower crane are assumed to operate in 15 minutes. Also, concrete trucks and normal delivery trucks assumed to be two movements in 15 minutes.
D	Facade / Fitout	In the event that the construction of the facade occurs in isolation. Forklift, truck, tower crane and power tools assumed. Two truck movements in 15 minutes assumed.

Noise modelling has been conducted for each of the above scenarios, with plant located across the construction site.

The modelling assumes a "typical worst-case" scenario whereby all plant, is running continuously. As such, the modelling represents likely noise levels that would occur during intensive periods of construction. Therefore, the presented noise levels can be considered in the upper range of noise levels that can be expected at surrounding receivers when the various construction scenarios occur.

Once noise sources have been applied to the model, the resultant noise levels at identified surrounding receivers are predicted. These results are then compared with established site-specific noise criteria. Table 5-3 details results of construction noise modelling for each scenario.

Table 5-3 Predicted construction noise levels at residences – $L_{Aeq(15\ min)}$ – dBA

Residential Receiver	Predicted Noise Level (dBA)	NML (Weekday/ Saturday)	Exceedance (Weekday/ Saturday)
Scenario A – Demolition			
A – Quest Apartments North Sydney	72	64 / 60	8 / 12
B – Skye & Lucent Apartment Buildings	67	63 / 61	4 / 6
Scenario B – Excavation			
A – Quest Apartments North Sydney	62	64 / 60	0 / 2
B – Skye & Lucent Apartment Buildings	57	63 / 61	0 /1
Scenario C – Building Construction			
A – Quest Apartments North Sydney	62	64 / 60	0 / 2
B – Skye & Lucent Apartment Buildings	61	63 / 61	0 /0
Scenario D – Façade / Fitout			
A – Quest Apartments North Sydney	61	64 / 60	0 / 1
B – Skye & Lucent Apartment Buildings	54	63 / 61	0 / 0

A review of results of construction noise predictions indicates that these may be, at times, well above construction noise management levels at nearby residences particularly during the demolition stage; however, no predictions exceed the highly noise affected management level of 75dBA.

5.3 Discussion of Results

Exceedances of noise management levels of up to 8 dBA (Weekdays) and 12 dBA (Saturdays) at residences to the east of the site may be expected during demolition 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 and fitout stages, the magnitude of exceedance will reduce due to the nature of construction activities.

Based on these findings, the adoption of reasonable and feasible noise management and mitigation will be required.

6 CONSTRUCTION VIBRATION ASSESSMENT

Operation of rock breakers and the like generate ground vibration that has the potential to transmit to nearby buildings.

Table 6-1 sets out the typical ground vibration levels at various distances for safe working distances.

Table 6-1 Recommended safe working distances for vibration intensive plant

Item	Description	Safe working distance	
		Cosmetic damage	Human response
Small Hydraulic Hammer	(300kg – 5 to 12t Excavator)	2m	7m
Medium Hydraulic Hammer	(900kg – 12 to 18t Excavator)	7m	23m
Large Hydraulic Hammer	(1600kg – 18 to 34t Excavator)	22m	73m
Vibratory Pile Driver	Sheet piles	2m to 20m	20m
Pile Boring	≤ 800mm	2m (nominal)	N/A
Jackhammer	Handheld	1m (nominal)	Avoid contact with structure

Source: *Construction Noise and Vibration Strategy*, 2018.

The highest vibration levels will occur when construction equipment is located on the eastern side of the site near residences on the eastern boundary.

A review of the site plant and surrounding receivers indicates that the minimum distance between the vibration generating activities and surrounding buildings will be in the order of 40 metres. Therefore, the use of medium to large rock breakers in the ground should not cause any impact on the structural damage to nearby buildings.

It is noted that the use of rock breakers in the excavation of the site is proposed and will be limited as it is proposed to use rock saws, which generate much lower vibration levels and as a result will not adversely impact on surrounding residential receivers.

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 Miller Street.

Therefore, the use 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.

7 SYDNEY METRO EASEMENT

7.1 BACKGROUND

Sydney Metro is currently being constructed between Chatswood to Sydenham. New stations will be delivered at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo along with new underground platforms at Central Station.

Monte is located in the North Sydney Council local government area (LGA). It is directly to the north of the North Sydney CBD, which is the major commercial centre of North Sydney.

Monte is located approximately 3.5km north of the Sydney CBD, 500 metres north of North Sydney Railway Station. Victoria Cross Metro Station is currently under construction diagonally opposite the school at the south-eastern corner of Miller Street and Berry Street, as well as an entrance to the north-east on the corner of McLaren Street.

A plan of the new Sports and Science Building at Monte with respect to the rail alignment is shown in Figure 7-1. Victoria Cross Station is adjacent to the site. Figure 7-2 and Figure 7-3 show cross sections of the tunnel and the proposed building. It can be seen from these figures that the proposed building intrudes into the 2nd Reserve of the Metro tunnel reserve, but not the 1st Reserve.

It should be noted that the distance from the track to the closest point of the school is approximately 34 metres and the distance from the tunnel to the closest point of the school construction is approximately 21 metres.

7.2 NOISE CRITERIA

In the case of existing rail corridors, the Infrastructure SEPP refers to the Development near rail corridors and busy roads – interim guideline which must be taken into account where development is proposed in, or adjacent to, specific railway corridors.

The guideline relates to SEPP rail clauses 85, 86 and 87.

Clause 87 of the Infrastructure SEPP applies to dwelling house, church, hospital, school or childcare centre on land that is in or immediately adjacent to a rail corridor that the consent authority considers is likely to be adversely affected by rail noise and vibration.

Development Near Rail Corridors and Busy Roads – Interim Guideline (DoP, 2008) supports specific rail and road provisions of the State Environmental Planning Policy (Infrastructure). The guideline recommends where buildings are constructed over or adjacent to land over tunnels, ground-borne noise may be present. In such cases, schools should be designed so that the 95th percentile of train pass-bys complies with a ground-borne L_{Amax} noise limit of 40dBA (daytime) measured using the "slow" response time setting on a sound level meter.

Additionally, the guideline recommends that vibration levels such as those from the intermittent vibration emitted by trains should comply with the criteria in *Assessing Vibration: a technical guideline* (DECC 2006).

For schools, the recommended level is 0.4 as an acceptable vibration dose values for intermittent vibration ($m/s^{1.75}$).-

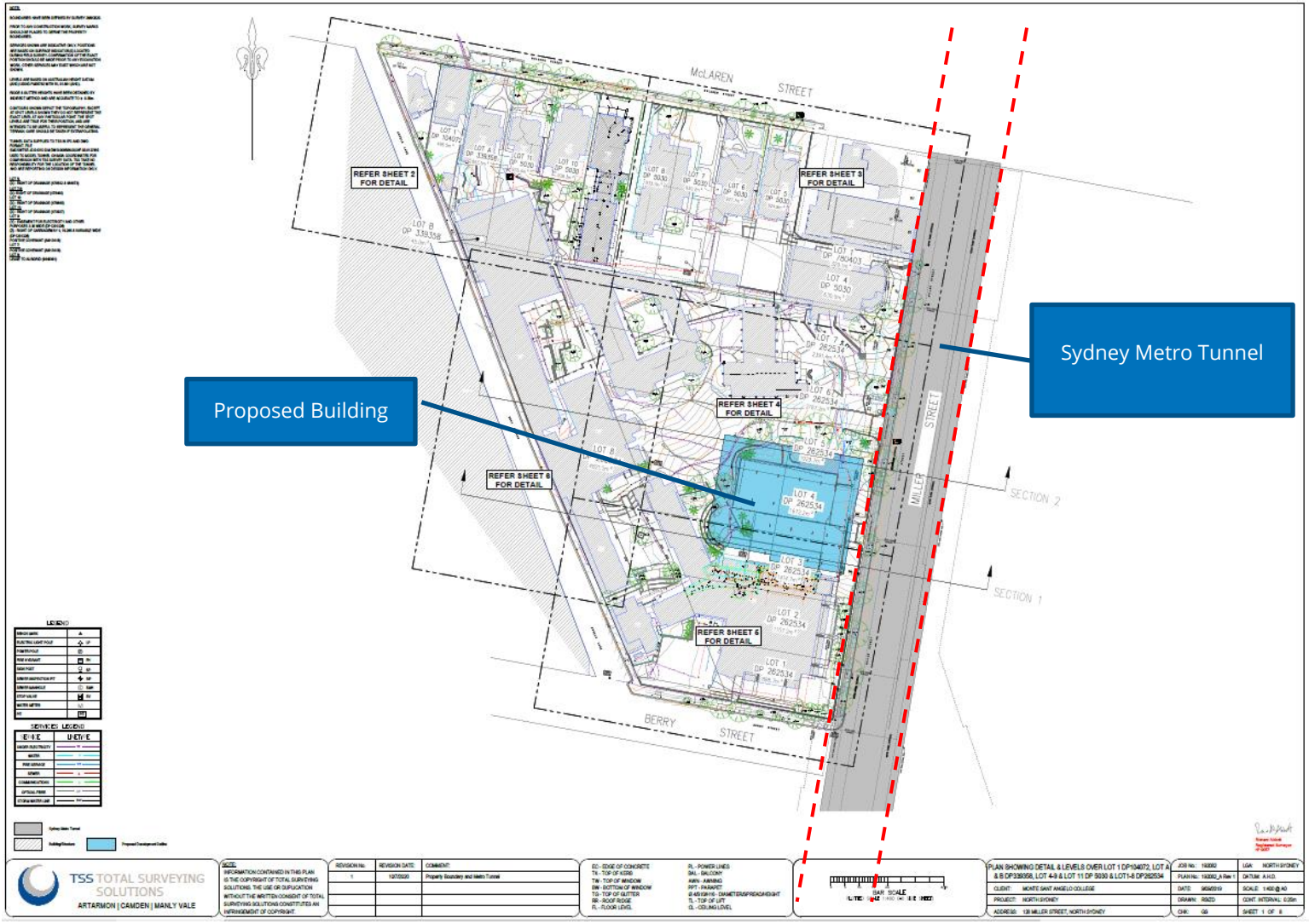


Figure 7-1 Site and Sydney Metro Tunnel Locations

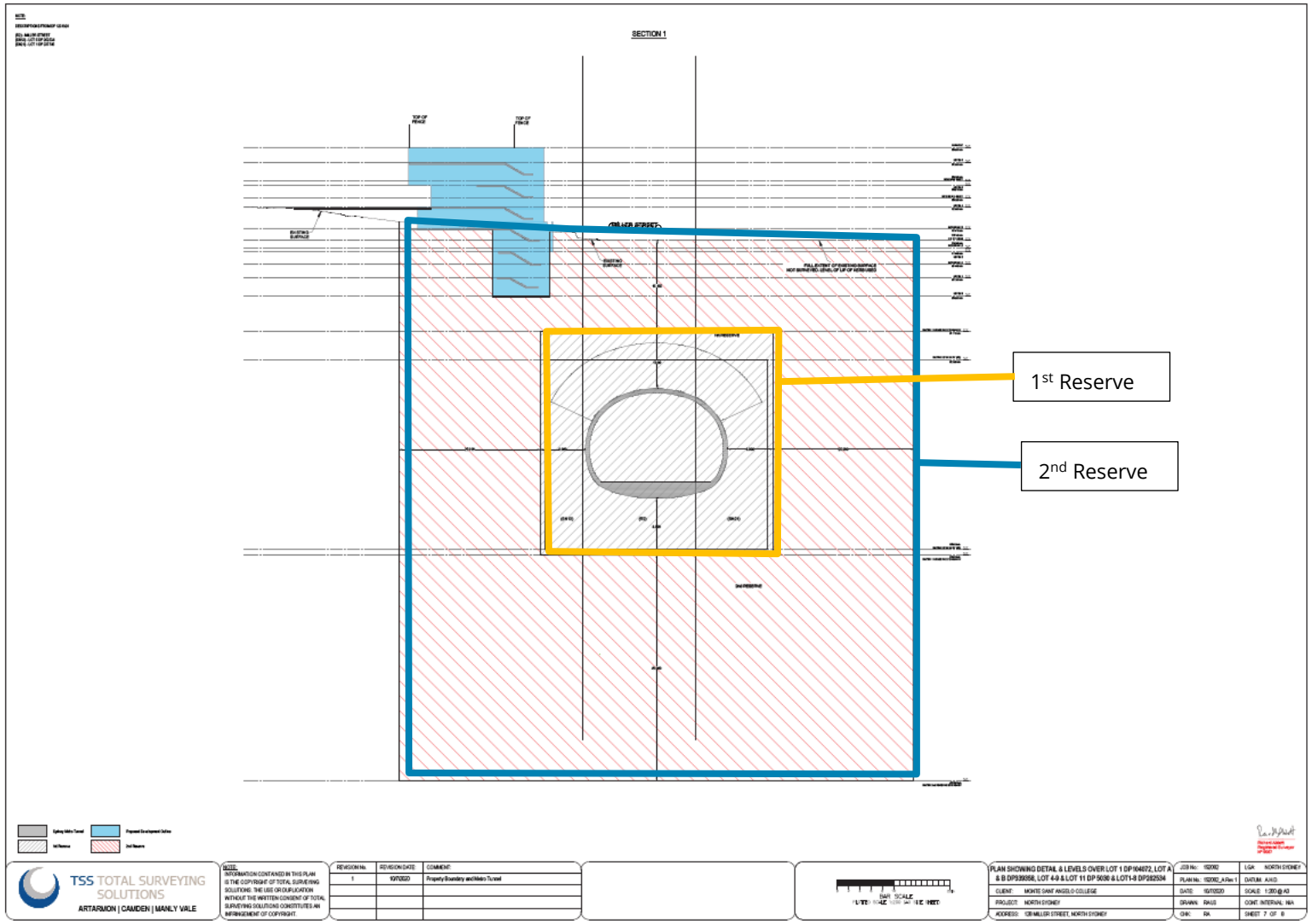


Figure 7-2 Cross Section 1 – Northern

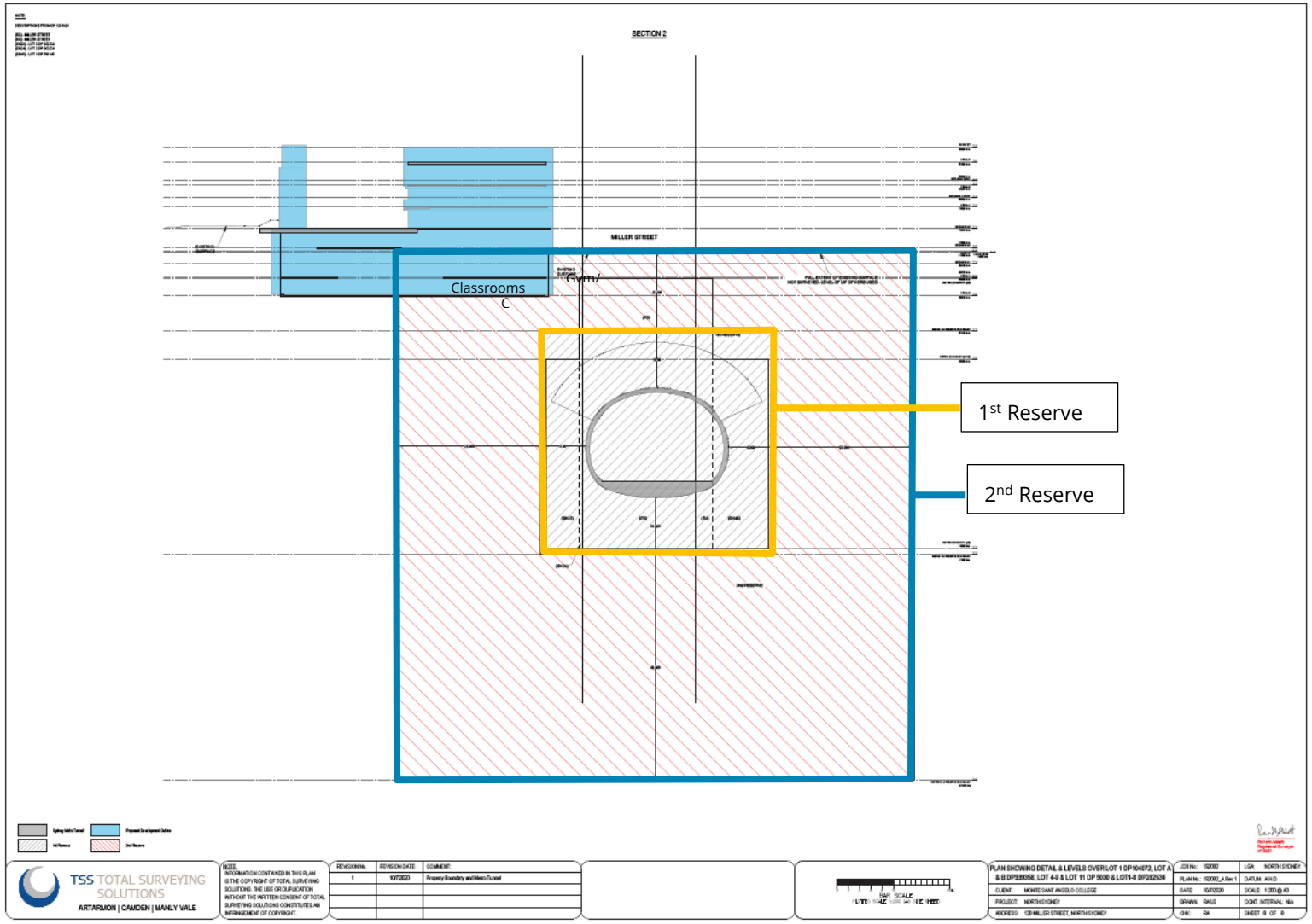


Figure 7-3 Cross Section 2 - Southern

The effects of noise and vibration on existing Metro infrastructure must be considered as part of the design and construction of developments. The construction of the development must be carried out such that the effects of noise and vibration on nearby metro structures and facilities are minimised. Sydney Metro – Technical Services Sydney Metro Underground Corridor Protection Technical Guidelines (Document No: NWRLSRT-PBA-SRT-TU-REP-000008) provide performance criteria for maximum peak particle velocity (PPV), namely:

- 15 mm/s for tunnel and cavern cast insitu concrete linings that are in good condition.
- 20 mm/s at the running tunnels supported using a precast concrete segment lining.

Sydney Metro recommend that if the vibration levels exceed tolerable limits, then the developer must modify the construction methodology in such a way that the vibration limits are satisfied.

7.3 Calculations of Ground borne Rail Noise within the School

A computer model of the alignment was used to predict the vibration and regenerated noise levels for the proposed school building near the rail alignment.

Modelling inputs included:

- Floating slab track (FST) will be installed in the station near the school;
- 34m slant distance from the track to the building;
- Train length 60m at 5 minute headway;
- The train speed will not exceed 30km/h in the station in the vicinity of the school;
- Train force density levels (FDL) taken from typical metro train SP1900;
- The tunnel coupling loss is taken as zero in rock;
- The building coupling loss is taken as zero in rock;
- Local ground properties.

With the modelling inputs listed above, it is expected that the regenerated rail noise in the ground floor classrooms would be less than 15dBA, significantly below the 40dBA criterion and is likely not going to be audible.

The vibration levels were calculated to be 0.02 vibration dose values ($m/s^{1.75}$) in the ground floor classrooms, significantly below the 0.4 VDV criterion and is likely not to be perceptible.

Noise from train passbys from the Metro rail line are well below the criteria from the Development Near Rail Corridors and Busy Roads – Interim Guideline (DoP, 2008) for both groundborne noise and vibration. As such, no additional noise mitigation is required to be incorporated in the school design.

7.4 Construction Vibration Assessment

The highest potential vibration levels from construction on the Metro tunnel will occur when construction equipment is located on the eastern side of the site near the eastern boundary on Miller Street.

Operation of rock hydraulic hammers, rock saws, rippers, etc generate ground vibration that has the potential to be transmitted to the nearby Metro tunnel. Table 7-1 sets out the typical ground vibration levels at various distances for different equipment.

Table 7-1 Typical Ground Vibration Generated by Construction Plant

Plant	PPV Vibration Level (mms^{-1}) at Distance (1)					
	5m	10m	20m	30m	40m	50m
Heavy Hydraulic Hammer (1500kg hammer on 30t exc)	4.5	2.5	0.5	0.2	0.12	<0.1
Light Hydraulic Hammer (300kg on 5t exc)	1.5	0.3	0.1	<0.1	-	-
Air trac drill (Ingersoll/Rand CM350)	4.4	1.4	-	0.6	-	<0.1
Jack Hammer	0.2	0.1	<0.1	-	-	-
Rock Sawing	1.2	0.5	0.3	<0.1	-	-
Ripping (measured in Sydney sandstone)	0.7	0.15	<0.1	-	-	-

A review of the site plan and the Sydney Metro tunnel indicates that the minimum distance between the vibration generating activities and the tunnel will be in the order of 21 metres.

It is likely that rock hammers will be used in the excavation of the site, including the use of rock saws and ripping. Reviewing the data in Table 7-1 indicates that the Sydney Metro criterion of 15mm/s will not be exceeded at the tunnel from all plant including the largest hydraulic hammers.

If required by Metro, the contractor may need to install vibration monitors and conduct trial testing of

equipment such as rock hammers.

7.5 Discussion

The investigation indicates that:

- Noise from train passbys from the Metro rail line are well below the criteria from the Development Near Rail Corridors and Busy Roads – Interim Guideline (DoP, 2008) for both groundborne noise and vibration. As such, no additional noise mitigation is required to be incorporated in the school design.
- It is likely that rock hammers will be used for the excavation of the site, including the use of rock saws and ripping. Reviewing the data in Table 7-1 indicates that the Sydney Metro criterion of 15mm/s will not be exceeded at the tunnel from all plant including the largest hydraulic hammers.

8 MANAGEMENT OF CONSTRUCTION NOISE & VIBRATION TO THE SCHOOL

Noise and vibration levels from construction are likely to be similar to the levels predicted for receivers immediately surrounding the site. The Construction Noise Management Plan would adopt procedures to manage construction noise within the school.

Measures that can be adopted to manage noise and vibration impacts at the school will be managed between the school and the successful contractor and could include:

- Closing of classroom windows and installation of secondary windows were deemed necessary;
- Relocating classes during busy construction periods; and
- Scheduling works during school holidays.

The management of construction noise and vibration between the site and school areas will be managed internally by the school itself.

9 NOISE & VIBRATION CONTROL METHODS

9.1 Noise & Vibration Control

The determination of appropriate noise control measures will be dependent on the particular activities and construction appliances. This section provides an outline of available methods.

9.1.1 Construction Noise & Vibration Mitigation Measures

Without mitigation, noise levels from construction activities have been predicted to exceed the noise management levels nominated in the guidelines at some surrounding receivers. Therefore, noise control measures are recommended to ensure that noise is reduced where feasible.

The following project specific mitigation measures are recommended:

- *Operator Instruction* – Operators should be trained in order to raise their awareness of potential noise problems and to increase their use of techniques to minimise noise emission.
- *Equipment Selection* – All fixed plant at the work sites should be appropriately selected, and where necessary, fitted with silencers, acoustical enclosures, and other noise attenuation measures in order to ensure that the total noise emission from each work site complies with EPA guidelines.
- *Site Noise Planning* – Where practical, the layout and positioning of noise-producing plant and activities on each work site should be optimised to minimise noise emission levels.

The adoption of the above measures is aimed at working towards achieving the noise management levels established at surrounding receivers.

9.1.2 Selection of Alternate Activity or Process

Where a particular activity or construction appliance is found to generate excessive noise levels, it may be possible to select an alternative approach or appliance. For example, the use of a hydraulic hammer on certain areas of the site may potentially generate high levels of noise. By carrying out this activity by use of pneumatic hammers, lower levels of noise will result.

9.1.3 Acoustic Barrier

Additional barriers or screens can be an effective means of reducing noise. Barriers can be located either at the source or receiver. The placement of barriers at the source is generally only effective for static plant. Mobile equipment cannot be effectively attenuated by placing barriers at the source.

The degree of noise reduction provided by barriers is dependent on the amount by which line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15dBA can be affected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8dBA may be achieved. As barriers are used to provide shielding and do not act as an enclosure, the material they are constructed from should have a noise reduction performance that is approximately 10dBA greater than the maximum reduction

provided by the barrier. In this case the use of a material such as 10mm or 15mm thick plywood would be acceptable for such barriers.

9.1.4 Silencing Devices

Where construction activities or plant are noisy, the use of silencing devices may be possible. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

9.1.5 Material Handling

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dBA.

9.1.6 Treatment of Specific Equipment

In certain cases, it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

9.1.7 Noise and Vibration Monitoring

Where required, noise and vibration monitoring will be undertaken to determine the effectiveness of any control measures implemented. The results of monitoring can be used to devise further control measures.

10 CONSTRUCTION MANAGEMENT PROCESSES

10.1 Community Consultation

Consultation with and the provision of information to the surrounding community is regarded as a major factor in controlling the negative reaction to the inevitable impacts associated with a construction site.

In order for any construction noise management programme to work effectively, continuous communication is required between all parties, which may be potentially impacted upon including the builder, school and surrounding residential receivers. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation process is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to the Complaints Register which will be used to address any construction noise related problems should they arise.

To ensure that this process is effective, regular information regarding the proposed works and period when they will be required to be conducted should be provide to neighbouring receivers.

10.2 Response to Complaints

Should ongoing complaints of excessive noise and vibration impacts occur measures can be undertaken to investigate the complaint, the cause of the complaint identified and changes to work practices implemented. In the case of exceedances of the vibration limits, all work potentially producing vibration shall cease until the exceedance is investigated.

The effectiveness of any changes shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the exceedances are not repeated.

If a noise and vibration complaint is received the complaint shall be recorded. The complaint form shall list:

- The name and location of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and the time and date it occurred;
- The name of the employee who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation;
- Required remedial action, if required;
- Validation of the remedial action by a consultant or as detailed in this report; and

- Summary of feedback to the complainant.

A permanent register of complaints shall be held. All complaints received shall be fully investigated and reported to management. The complainant shall also be notified of the results and actions arising from the investigation.

The investigation of a complaint shall involve where applicable;

- measurements at the affected receiver;
- an investigation of the activities occurring at the time of the incident;
- inspection of the activity; and
- whether work practices were being carried out either within established guidelines or outside these guidelines.

10.3 Environmental Inductions

It is important that an induction is provided to all site personnel, contractors and sub-contractors with an emphasis on understanding and managing impacts. This shall include the location of sensitive receivers, specific mitigation measures, site hours and complaints procedure.

10.4 Monitoring

10.4.1 Construction Noise Monitoring

Where determined necessary, noise monitoring should generally be undertaken on an attended basis (minimum of 15 minutes at each location), in order to differentiate between construction noise sources and other sources, such as road traffic noise, and in order to observe and identify any abnormally noisy construction equipment or operations.

During the attended monitoring, typical maximum noise levels associated with particular plant items should be noted as well as the L_{Aeq} descriptor. Where possible, extraneous noise events such as road traffic noise should be excluded from the results or highlighted in accompanying notes.

Noise monitoring of construction noise during normal construction hours will be conducted by a qualified acoustic consultant at the beginning stages of demolition at locations representative of nearby receivers.

The results of measurements will be documented along with any recommendations for mitigation. Any mitigation will be determined in consultation with the site Project Manager.

Noise monitoring will be conducted in response to complaints from nearby identified receivers.

The results of all noise monitoring will be compared with established noise management level to determine appropriate actions.

Monitoring must be conducted with equipment (Class 1) that holds current NATA calibration. The time of day, duration and weather shall be noted as well as the contribution from construction activities.

10.4.2 Construction Vibration Monitoring

Attended vibration monitoring will be undertaken if vibration sensitive activities are undertaken within 20 m of any building. As a minimum, typical peak and rms vibration velocity levels associated with particular plant items / processes should be measured in all 3 orthogonal directions. Where possible, extraneous events should be excluded from the results, or highlighted in accompanying notes. This can be conducted using vibration loggers which would practically be located as close to the foundation of the building as possible, facing the vibration source. In addition, attended measurements are to be undertaken to confirm the event being measured and to conduct specific VDV / rms / peak velocity measurements to confirm a transfer function from outside to inside. These measurements are to confirm that the VDV goals are being achieved and as such need to be conducted in the middle of the floor within the typically worst impacted receiver. Given the difficulty in obtaining such approval for such measurements and inconvenience to the occupants, up to 1hr for these attended measurements would be sufficient.

In all cases, monitoring must be conducted with equipment that holds current calibration certificates and that can simultaneously measure in all three orthogonal directions and measure the dominant frequency. The time of day, duration and weather shall be noted as well as the contribution from construction activities.

Vibration monitoring of vibration intensive construction activities will be conducted by a qualified acoustic consultant at the beginning stages of demolition at locations representative of nearby receivers.

The results of measurements will be documented along with comparison with goals, any recommendations for mitigation or remodelling.

In the event of appreciable vibration levels arising, measures would be put in place to reduce vibration to within acceptable levels. Such measures may include reducing hammer size, changing operational settings, using other plant in lieu of the hydraulic hammer or a combination of these.

11 SUMMARY OF MITIGATION MEASURES

11.1 Noise Control Measures

The noise and vibration mitigation measures to be implemented by the building contractor are summarised in Table 11-1.

Table 11-1 Noise and Vibration Mitigation Measures

Item	Description
Construction Hours	Works will be carried out within the approved construction hours.
Deliveries	Deliveries will be carried out within the approved construction hours.
Site Layout	Where possible, plant and equipment will be located and orientated to direct noise away from sensitive receivers.
Quietest Suitable Equipment	Plant and equipment will be selected to minimise noise emission, where possible, whilst maintaining efficiency of function. Residential grade silencers may be fitted, and all noise control equipment will be maintained in good order.
Respite	Provide respite from intensive construction work (i.e. use of hydraulic hammer). Respite should also be considered for the school and in particular during specific school events/exams etc.
Reversing Alarms	Mobile plant and trucks operating on site for a significant portion of the project will have reversing alarm noise emissions minimised, where possible, recognising the need to maintain occupational safety standards. Alternatives to standard reversing alarms are to be considered.
PA System	No public address system will be used at this site.
Vibration Buffer Zones	General safe working distances for vibration intensive activities are described in section 6. Monitoring is recommended to confirm these buffer zones at locations where buildings are closest.
Vibration Monitoring	Vibration monitoring will be carried out where any vibration intensive activities are required to be carried out within the established buffer zones, or

Item	Description
	where there is considered to be a risk that vibration levels may exceed the relevant structural damage criteria.
Truck Noise (off site)	All trucks regularly used for the project are to have mufflers and all noise control equipment will be maintained in good working order. Trucking routes will use main roads, where feasible.
Community Liaison	A programme of community liaison and complaint response will be implemented.
Training	Site induction training will include a noise awareness component.

12 CONCLUSION

This CNVMP outlines the assessment of the potential for noise and vibration impacts that may result to surrounding residences from the construction of a new Sports and Science Building at Monte Sant Angelo Mercy College, North Sydney (Monte) in order to address SSD 10393 condition C15.

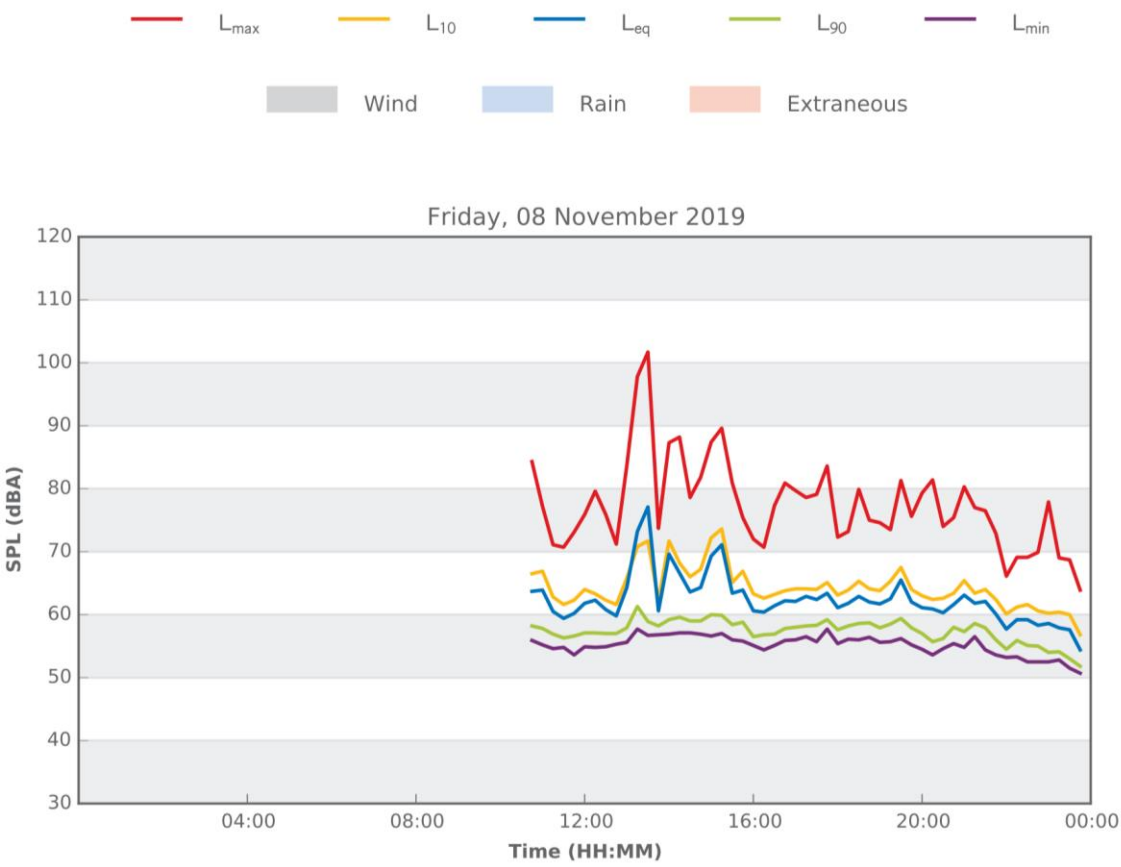
The potential for impacts from the proposed works has been assessed against SSD 10393 condition C15 and the relevant standards and guidelines detailed in Section 4.

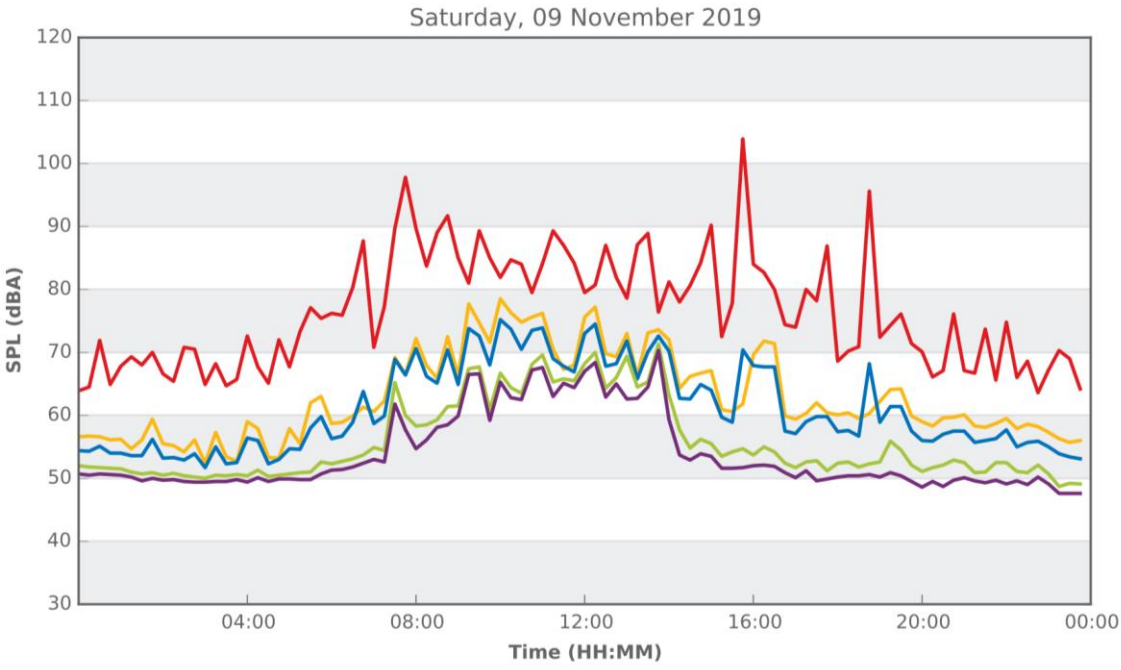
Sections 8, 9, 10 and 11 of this report specifically outline measures to mitigate and manage noise and vibration impacts during construction.

APPENDIX A: UNATTENDED MONITORING RESULTS

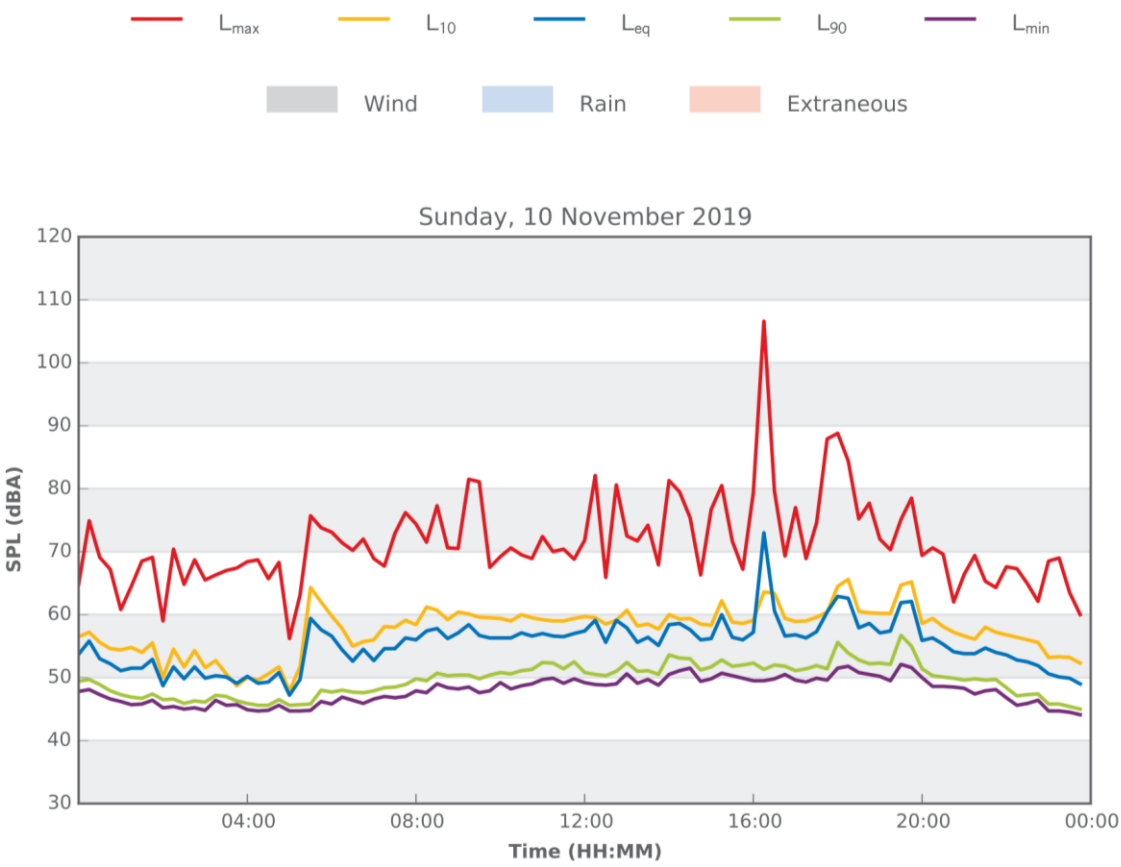
Logger location 1: 128 Miller Street, North Sydney

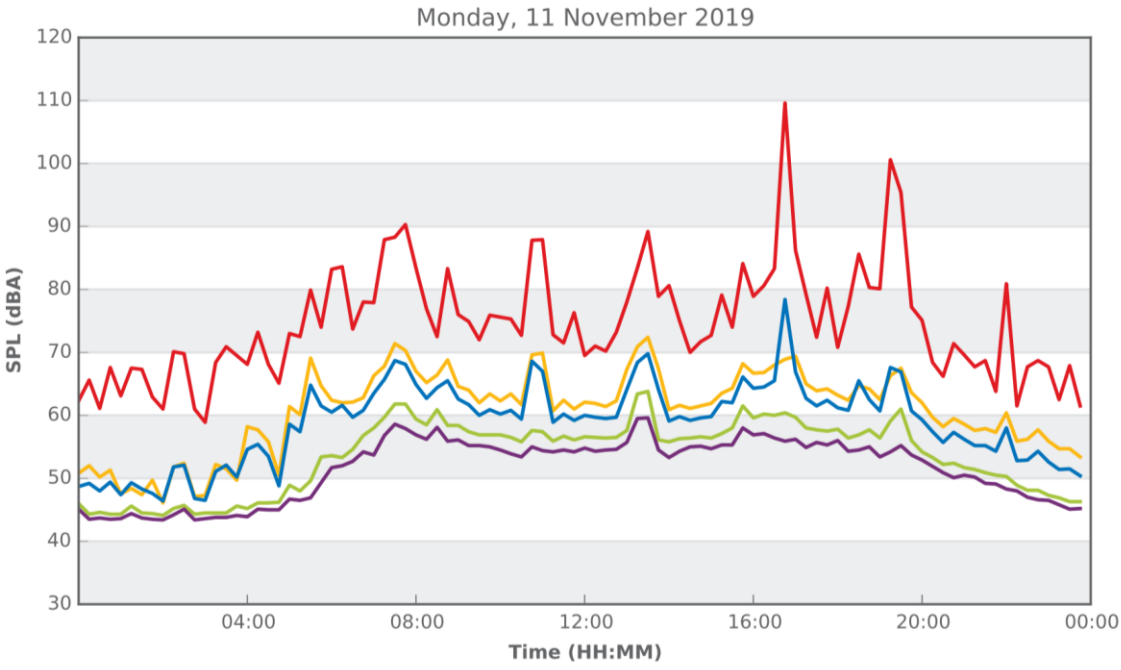
128 Miller St, North Sydney Nsw 2060

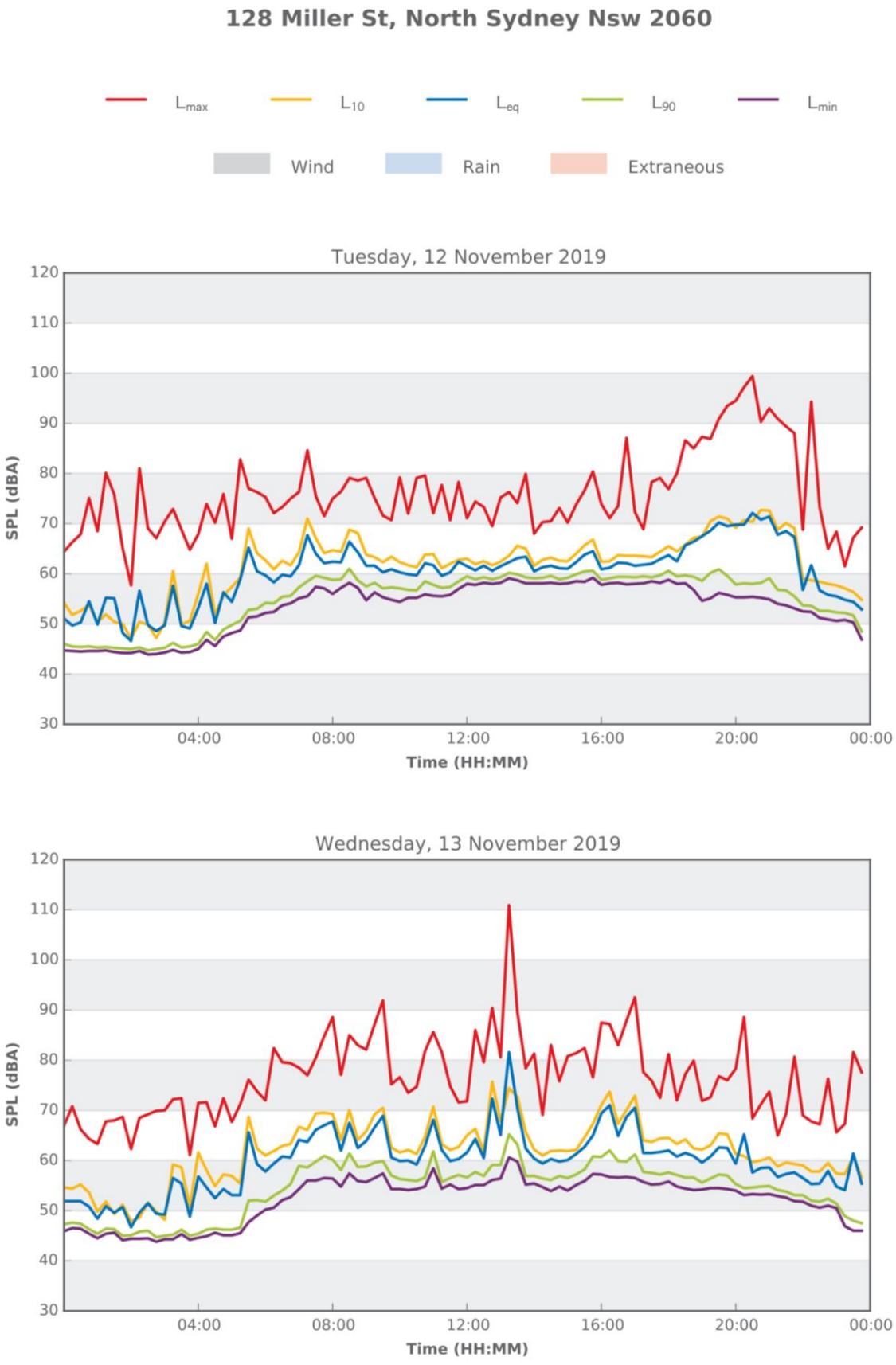




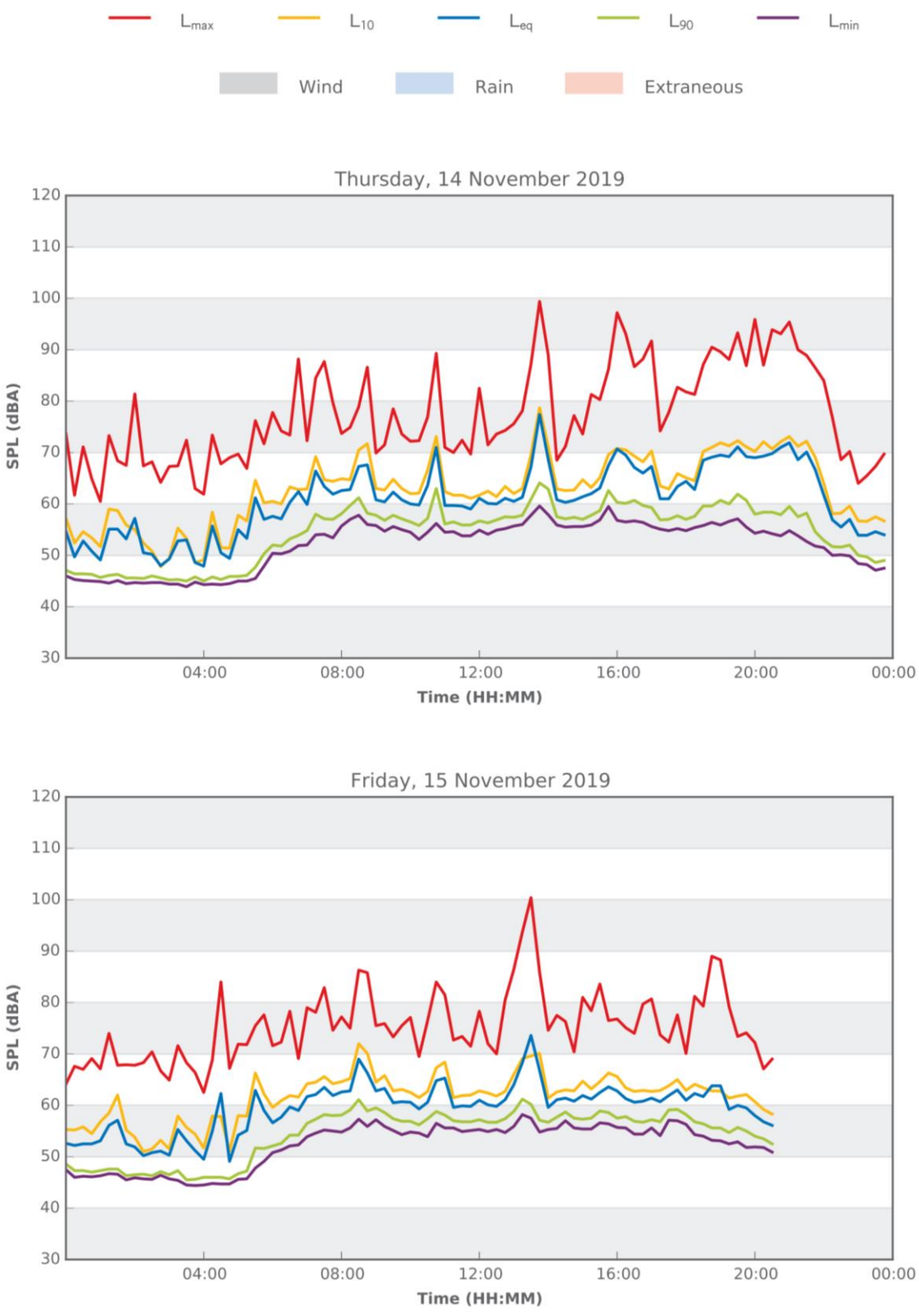
128 Miller St, North Sydney Nsw 2060





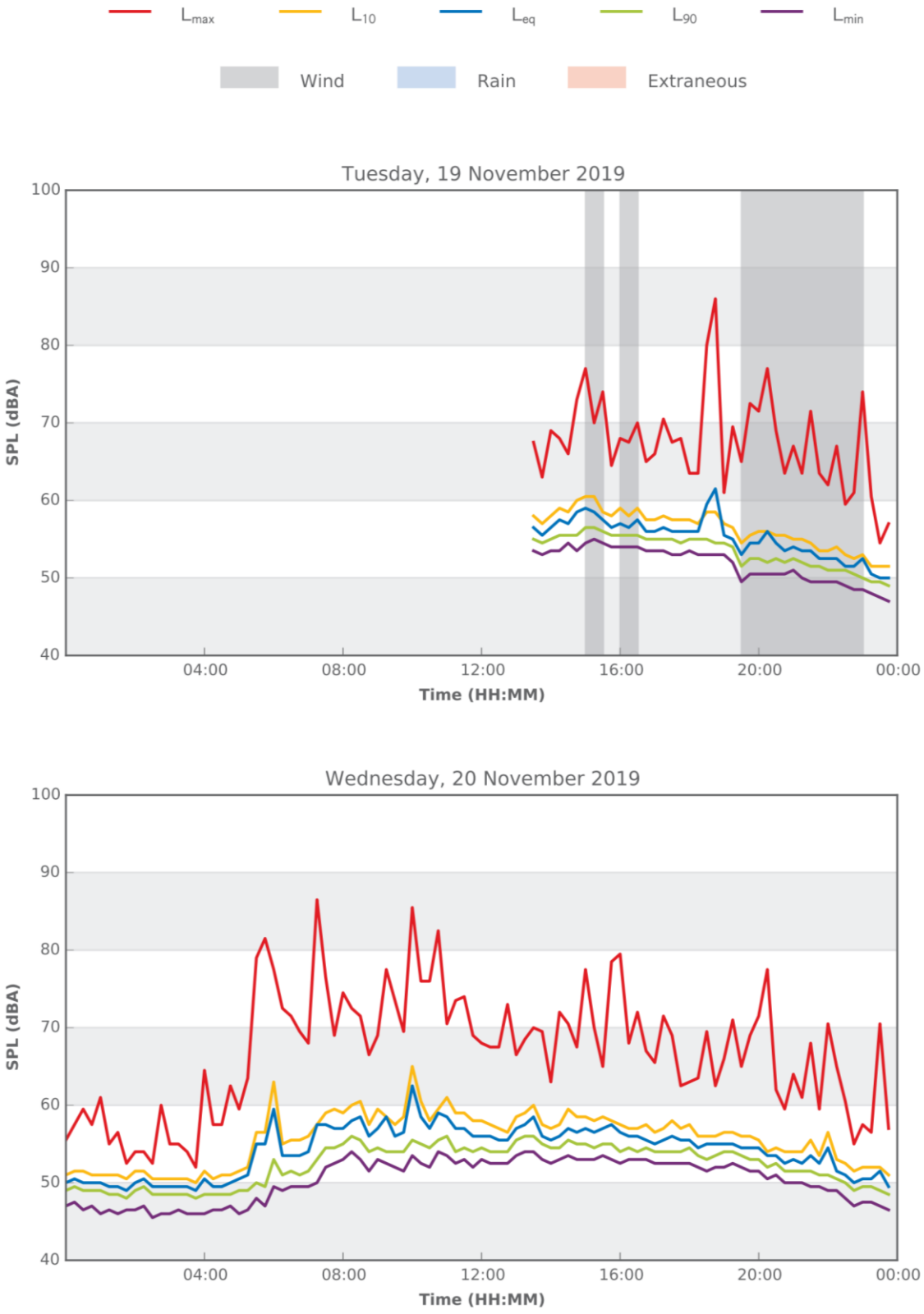

128 Miller St, North Sydney Nsw 2060
Lmax
L10
Leq
L90
Lmin
Wind
Rain
Extraneous
Tuesday, 12 November 2019
SPL (dBA)
120
110
100
90
80
70
60
50
40
30
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)
Wednesday, 13 November 2019
SPL (dBA)
120
110
100
90
80
70
60
50
40
30
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)

128 Miller St, North Sydney Nsw 2060

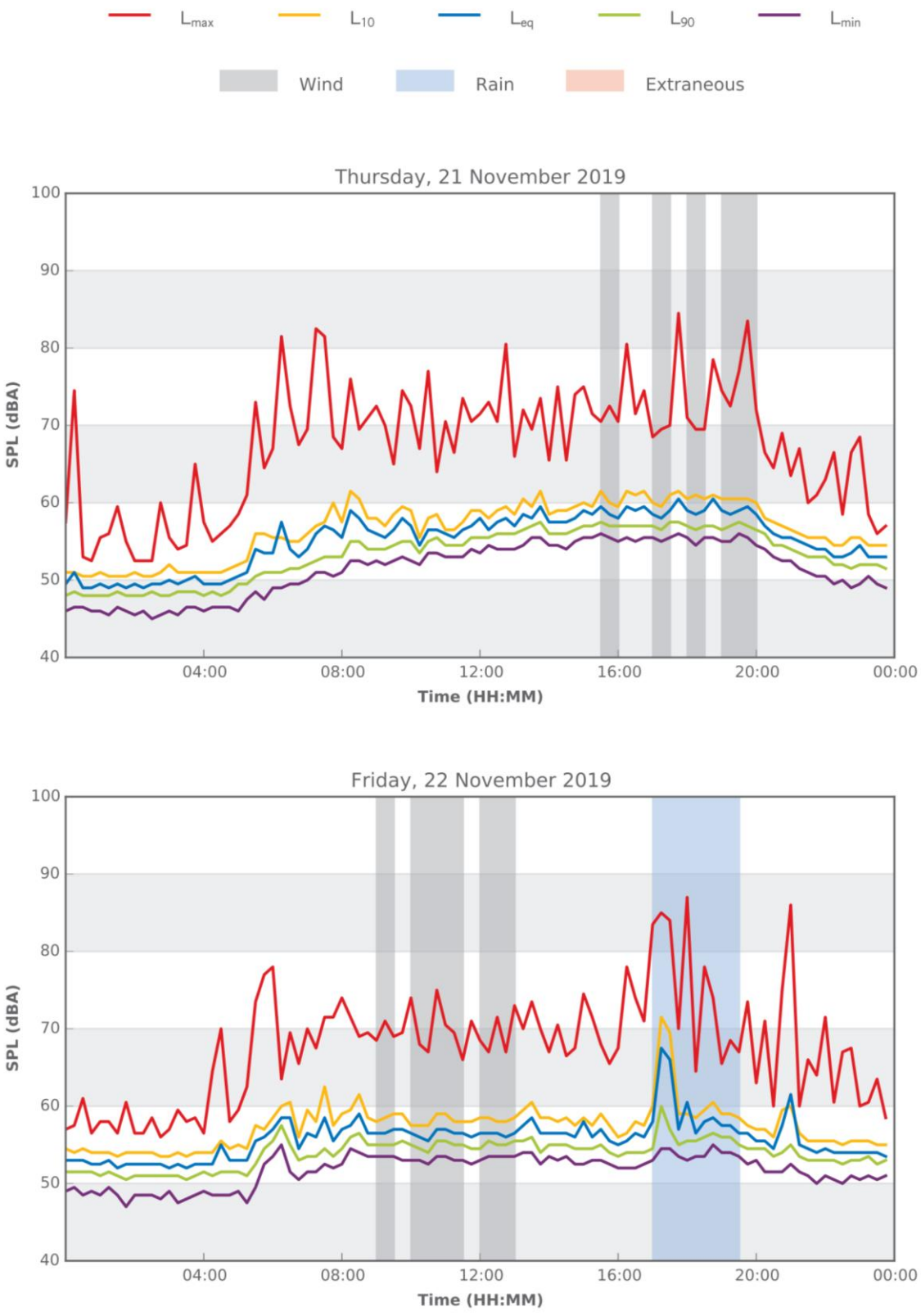


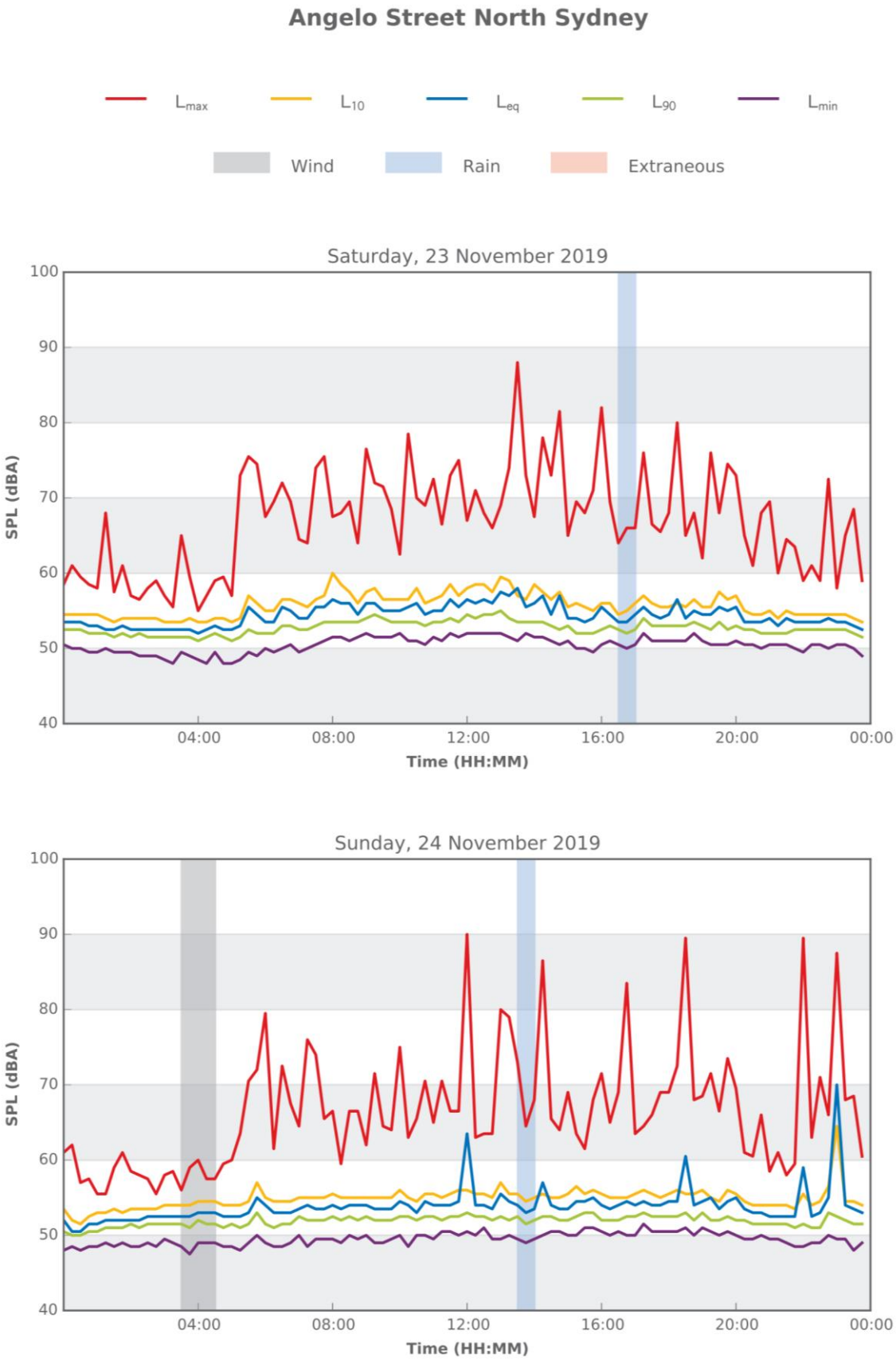
Logger location 2: Angelo Street, North Sydney

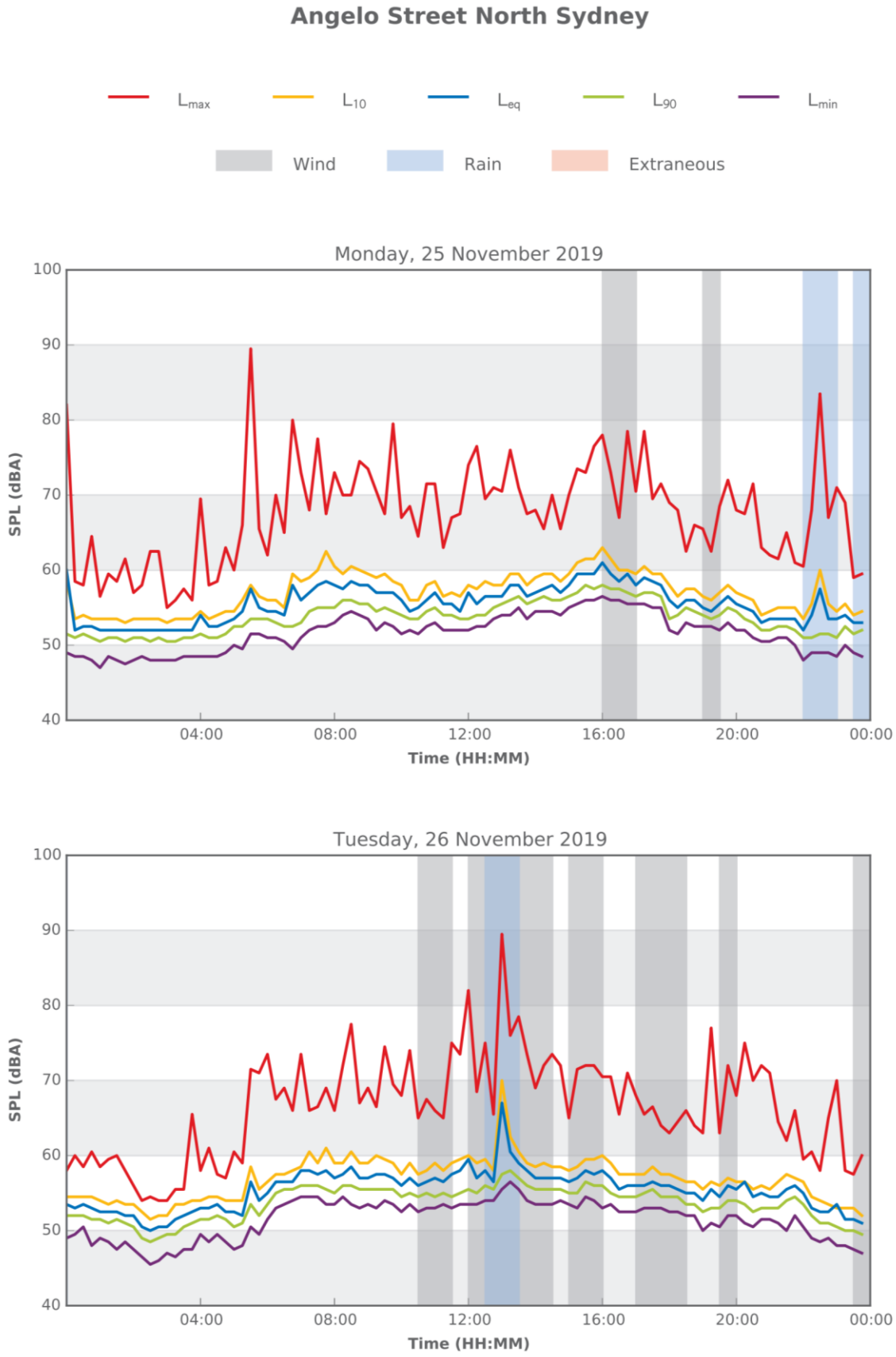
Angelo Street North Sydney

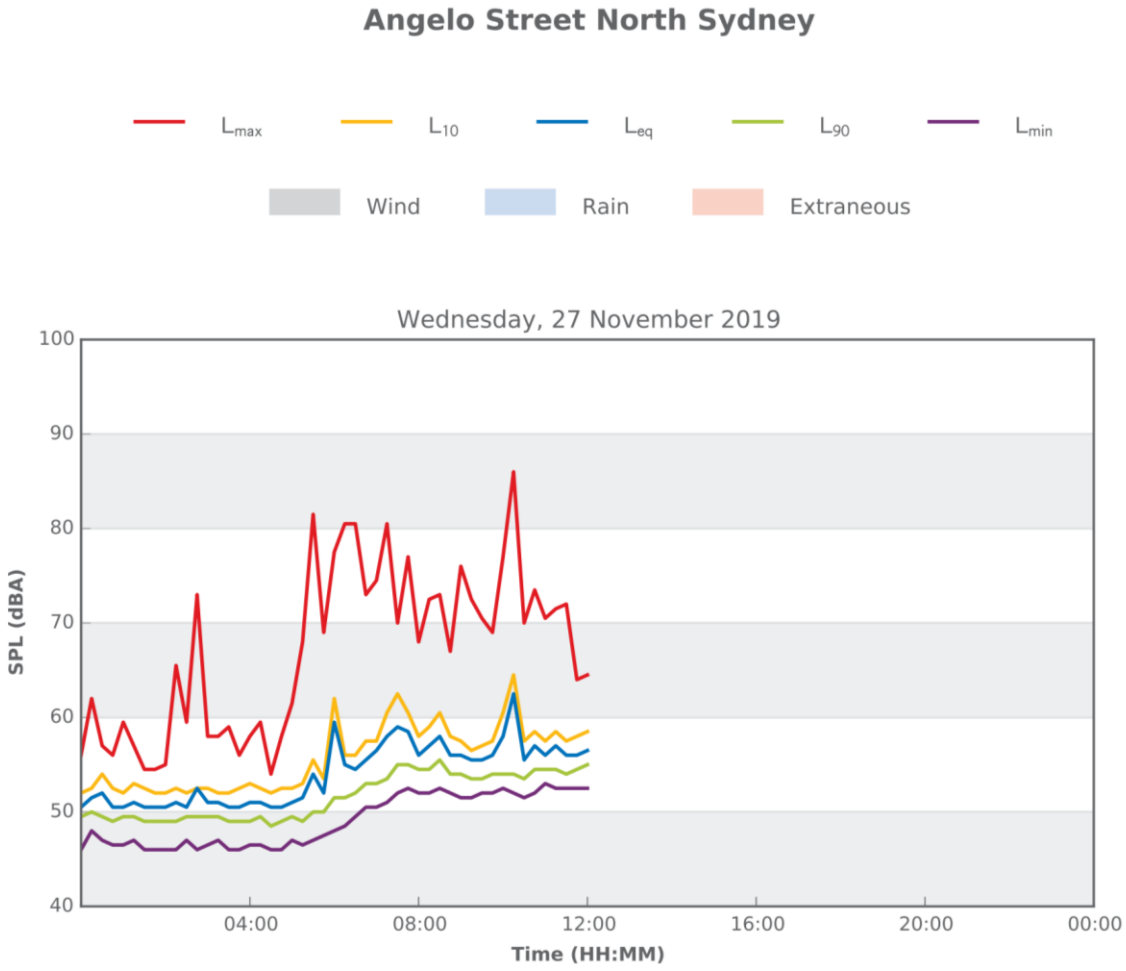


Angelo Street North Sydney




Angelo Street North Sydney
Lmax
L10
Leq
L90
Lmin
Wind
Rain
Extraneous
Saturday, 23 November 2019
SPL (dBA)
100
90
80
70
60
50
40
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)
Sunday, 24 November 2019
SPL (dBA)
100
90
80
70
60
50
40
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)


Angelo Street North Sydney
L_{max}
L_{10}
L_{eq}
L_{90}
L_{min}
Wind
Rain
Extraneous
Monday, 25 November 2019
SPL (dBA)
100
90
80
70
60
50
40
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)
Tuesday, 26 November 2019
SPL (dBA)
100
90
80
70
60
50
40
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)


Angelo Street North Sydney
Lmax
L10
Leq
L90
Lmin
Wind
Rain
Extraneous
Wednesday, 27 November 2019
100
90
80
70
60
50
40
SPL (dBA)
04:00
08:00
12:00
16:00
20:00
00:00
Time (HH:MM)



SYDNEY

LEVEL 3, 4 BROADCAST WAY
ARTARMON NSW 2064

PO BOX 1024
CROWS NEST NSW 1585

PHONE: +61 2 9902 4700
FAX: +61 2 9439 1114

NEWCASTLE

LEVEL 1, 118A BELFORD ST
BROADMEADOW NSW 2292

PO BOX 835
HAMILTON NSW 2303

PHONE: +61 2 9902 4700
FAX: +61 2 6766 3022

TAMWORTH

SUITE 1, 493 PEEL ST
TAMWORTH NSW 2340

PO BOX 576
TAMWORTH NSW 2340

PHONE: +61 2 6766 5225
FAX: +61 2 6766 3022

ACT

UNIT 1, 155 NEWCASTLE ST
FYSHWICK ACT 2609

PO BOX 771
FYSHWICK ACT 2609

PHONE: +61 2 6143 2900
FAX: +61 2 6280 8774

richardcrookes.com.au

Delivering Certainty