CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

PROJECT	**Greystanes Public School**
ADDRESS	**781 Merrylands Road, Merrylands NSW 2165**
REVISION	**2**
ISSUE DATE	**03 March 2020**

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1. REGISTER OF DOCUMENT REVIEW

REVISION	DATE	SECTION	DESCRIPTION OF AMENDMENTS	AMENDED BY
1	10/02/20	All	All – Review for Submission to Superintendent	NG, DO
2	03/03/20	All	All – Document comments made by SINSW	NG, DO

This plan has been developed using the below Master Template revision.

Environmental Management Plan Rev 1	**Date: 6/12/18**

A copy of each superseded plan is to be retained.

2. REVIEW AND APPROVAL

Revision 1 of this plan must be approved by the Construction Manager, Project Manager and the Site Manager.

This plan must be reviewed by all Icon project personnel on this project. The Document Review and Sign On will be used for this purpose.

Refer: 076 Document Review & Sign On

4. ABBREVIATIONS AND DEFINITIONS

CA	Contract Administrator
CM	Construction Manager
Competent Person	A person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the required task.
Critical Incident	A critical incident is any incident in the work place that results in death; major structural damage, serious/permanent disability or injury or major impact on a client's operations
DIR	Directors
Env.MP	Environmental Management Plan
EMP	Emergency Management Plan
EPA	Environment Protection Authority or relevant state based environmental regulatory body
FAI	First Aid Injury
GM	General Manager
Icon	Icon Co (Aust) Pty Ltd, Icon Co (NSW) Pty Ltd, Icon Co (QLD) Pty Ltd, Icon SI (Aust) Pty Ltd, Cockram Construction Ltd, Cockram Construction QLD Pty Ltd
KPI	Key Performance Indicator
MFB	Metropolitan Fire and Emergency Services Board
NZ	New Zealand Operations
OM	Operations Manager
HIRAC	Hazard Identification, Risk Assessment & Controls
HSEM	Health, Safety and Environment Manager
HSEC	Work Health and Safety Coordinator or equivalent (site based safety personnel)
HSR	Health & Safety Representative
PPE	Personal Protection Equipment
PM	Project Manager
Precast Panel	Includes concrete precast panels and tilt up concrete panels
SDS	Safety Data Sheet
SSC	Site Safety Committee
SM	Site Manager
SWMS/JSEA	Safe Work Method Statement or JSEA in New Zealand (also sometimes referred to as a TA – Task Analysis)
TWA	Trade Waste Agreement

5. SYSTEM UPDATES

Any system updates are to be filed behind this page. Such updates will supersede the relevant content in the plan.

6. PLAN REVIEW AND UPDATE

This plan will be updated specifically for this project. This plan details the minimum Icon requirements across the project. Unless specifically requested by the client information within this plan will be retained as it provides valuable guidance material to our project teams.

7. PURPOSE & OBJECTIVES

A site specific Environmental Management Plan is developed for every Icon project prior to works commencing and is maintained for the duration of each project.

This Environmental Management Plan sets out the framework for environmental planning on this project consistent with company Policies and Procedures. This plan shall apply to all activities undertaken by Icon on this project. This includes all activities of subcontractors, suppliers and consultants.

The site management team will be inducted into this plan and all workers are made aware of its location during the site induction should they wish to refer to it at any time. Revisions of the plan are notified to relevant personnel. The Plan is authorised by the Construction Manager, or their delegated representative.

7.1 PURPOSE

The purpose of the Site Environmental Management Plan is to outline management measures to minimise potential impact to the environment of the site and surrounding area during construction activities that are proposed to be undertaken at the site by Icon for the duration of the works. Relevant parties include all people on site during the construction works which may include but not be limited to Icon employees and sub-contractors engaged as part of the works.

Management measures outlined within this document will be implemented to avoid potential impacts to the environment at the site in line with the requirements of ISO 14001 Environmental Management Systems. Where impacts are unavoidable, measures to reduce and control impacts will be implemented as per this plan.

The Site Environmental Management Plan provides a clear statement of auditable actions, environmental performance indicators and management systems consistent with achieving the above objective

7.2 OBJECTIVE

The principle objectives are to:

- Ensure that the construction works are carried out in accordance with the appropriate environmental statutory requirements;
- Ensure that the works are carried out in such a way as to minimise potential environmental degradation by the implementation of best environmental practice;
- Ensure that personnel engaged in the works comply with the terms and conditions of this Environmental Management Plan.
- Respond to changes in environmental conditions during the proposed works through review and monitoring and control programs in consultation with the Icon Project Manager or their nominated representative(s); and
- Ensure that corrective actions where necessary, are implemented in a timely manner.
- Minimise material consumption;
- Maximise material re-use;
- Use of renewable or recyclable materials;
- Protection of the natural environment (through materials sourcing, manufacture and installation);
- Create a healthy non-toxic construction and work environment;
- Use of energy efficient equipment;
- Management of residual materials (waste);
- Encourage the adoption of a positive attitude toward the protection of the environment by staff and contractors with an objective of achieving stated environmental goals;

- Ensuring where possible that tender and contract requirements reflect the project's environmental concerns (including subcontractor requirements);
- Minimise or recycle product packaging, etc., during the construction period.

7.2.1 PROJECT ENVIRONMENTAL AND SUSTAINABILITY TARGETS

The project environmental targets include the following;

- Comply with environmental management requirements as defined in the Project Contract;
- Comply with all environmental law that applies to the site and the associated construction works;
- Ensure non-compliance and complaints are dealt with according to Icon System procedures and reported to the Client immediately; and
- Meet all environmental and sustainability objectives set within the project program/timeframe.

7.3 INTERGRATED MANAGEMENT SYSTEM

This Plan has been developed in conjunction with relevant project specifications, drawings, Head and Subcontract conditions for all activities to be undertaken on the project; and has been developed to comply with the requirements of:

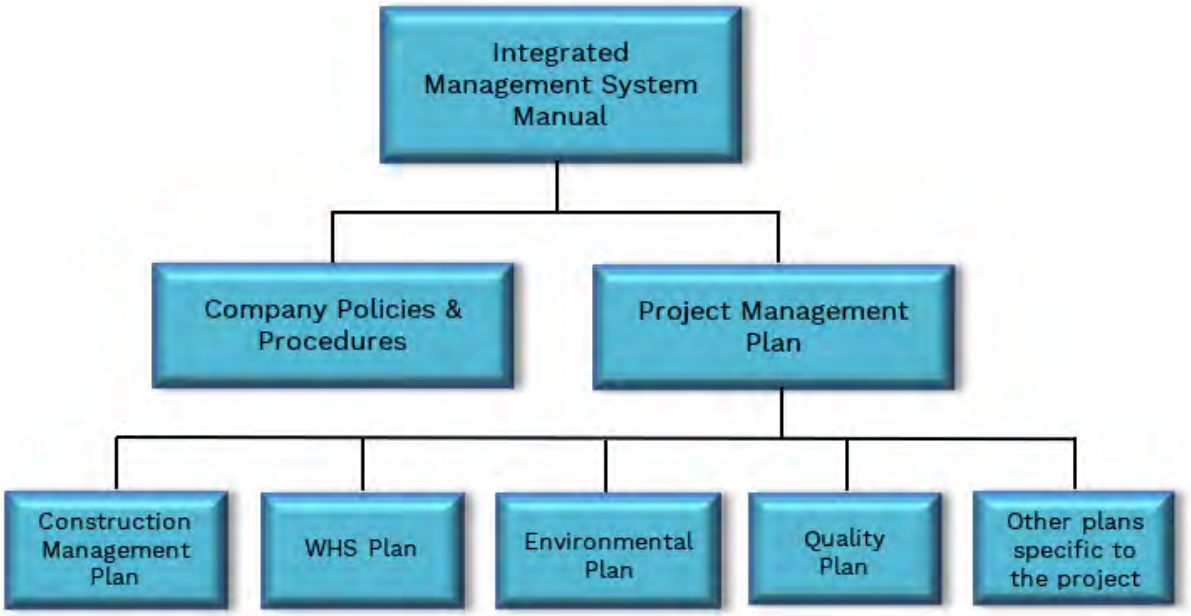
- AS/NZS 4801:2001 - Safety Management Systems
- ISO 14001:2015 – Environmental Management Systems
- ISO 9001:2015 - Quality Management Systems
- Icon Policies and Procedures
- Additional requirements as specified by the client

This plan shall be reviewed for suitability and effectiveness on a six monthly basis as a minimum, or when there are significant changes to the environmental aspects and impacts at the project site.

7.4HAMMERTECH SOFTWARE SYSTEM

Icon use the HammerTech software system where possible on projects to assist manage day to day HSEQ operations. All forms referred to in this document are duplicated within the HammerTech environment and are interchangeable.

7.5 SYSTEM OVERVIEW



8. ENVIRONMENTAL POLICY

A copy of the Icon Environmental Policy shall be displayed on the notice board in the site office / amenities area and will be communicated to workers on site during the Site Induction program.

ENVIRONMENTAL POLICY

Icon is committed to the protection of the environment, prevention of pollution and effective environmental management in all related activities.

Icon will ensure, as far as practicable, that it will:

- Implement an ISO 14001:2015 accredited environmental management system to ensure all contractual and statutory obligations are met;
- Ensure specific Project Environmental Management Plans are developed and implemented for each individual project;
- Communicate this policy to all workers and other interested parties, as appropriate, to ensure they are aware of and agree to comply with their obligations with respect to company operations;
- Identify any activities carried out by or on the behalf of the company that might have an impact on the environment;
- Identify and address both positive and negative environmental aspects and impacts (risk) associated with our operations through the environmental assessment process;
- Implement appropriate control measures that will mitigate negative effects to the environment;
- Provide management, workers and service providers with appropriate information, instruction and training to ensure that they are aware of any potential issues in the workplace that may impact on the environment;
- Continually monitor and assess the needs of stakeholders and other interested parties;
- Monitor and audit our environmental processes and systems with a view to continuous improvement;
- Establish measurable objectives and targets to improve our environmental performance;
- Comply with legal, regulatory and other guidelines for environmental management and protection;
- Ensure our Environmental Policy and management systems are regularly reviewed to ensure they remain relevant to the purpose and context of the organisation, including the nature and scale of its activities, products and services;
- Ensure that employees and/or subcontractors are aware of their environmental responsibilities.

This commitment will be achieved by the combined efforts of our employees and workers at Icon workplaces.

Nick Brown
Managing Director
Date: 1/11/2018

9. PROJECT SPECIFIC REQUIREMENTS

9.1 REFERENCED CLIENT DOCUMENTS

The project client documents include the following:

- Environmental Site Management Plans – ESM 1 & 2
- Project Preliminaries
- Asbestos Management Plan 2015
- Greystanes Asbestos Register
- Greystanes Arborist Report

9.2 CLIENT SPECIFIC REQUIREMENTS

As outlines in the documents listed in Section 9.1

9.3 LOCAL AUTHORITY REQUIREMENTS

Refer Fairfield Council & Cumberland Council for requirements

9.4 CLIENT INCIDENT REPORTING PROTOCOL

Name:	Daniel Smith
Position:	Senior Project Manager
Types of incidents to be reported:	All incidents
Timeframe for reporting incidents:	In accordance with the contract
Incident report format:	HammerTech Incident Report
Summary incident reporting requirements:	Monthly reports

9.5 KNOWN INDIGENOUS/HERITAGE SITES

There are no known Indigenous or other heritage sites at this project location. This has been checked against Office of Environment and Heritage

In the case of unexpected finds, please see below procedure.

1. Stop Work
    a. Notification to be provided to all other workers in the area to restrict further disturbance.
2. Notification to Site Management
3. Protection
    a. Exclusion zone to be erected to prevent further work from taking place and further disturbance occurring
4. Notification to Archaeologist by Main Contractor
5. Assessment of the find
    a. Archaeologist to investigate to determine the nature, extent and location of the find.
6. Record and salvage the find
7. Return to work
    a. Subject to approval, works may recommence under the agreed terms once a full assessment has been completed and salvaged appropriately.

9.6 COMMUNICATION

Communication regarding environmental issues will be in accordance, but not limited to, the table below.

WHO	WHEN	HOW/WHO
Client	Unexpected finds that may impact works Incidents	PM/SM as per client requirements
Local Council	Permitting requirements Compliance issues Complaints Road cleaning	PM/SM as required
EPA	Incident reporting Asking for Advice Response to notices	PM/SM as required
Neighbours/Interested stakeholders	Site conditions that may impact neighbouring operations i.e. noisy works	Site team as required Letter drops Door Knocks
Heritage Authority	Unexpected finds during construction activities	PM/SM as required
Indigenous Authority	Any issue related to the indigenous community	PM/SM as required

10. SITE CONTACT DETAILS

10.1 ICON CONTACT DETAILS

ICON HEAD OFFICE: Level 2, 179 New South Head Road,
Edgecliff,
NSW, 2027
02 8456 6500

NAME	POSITION	EMAIL	PHONE
Peter Parathyras	Operations Manager	Peter.Parathyras@icon.co	0423 029 088
Angus Falstein	HSE Manager	Angus.falstein@icon.co	0428 318 000
Damian O'Leary	Project Manager	Damian.Oleary@icon.co	0418 730 420
Wayne Goodwin	Site Manager	Wayne.Goodwin@icon.co	0411 477 866

10.2 24 HOUR EMERGENCY CONTACT DETAILS

NAME	POSITION	EMAIL	PHONE
Damian O'Leary	Project Manager	Damian.Oleary@icon.co	0418 730 420
Wayne Goodwin	Site Manager	Wayne.Goodwin@icon.co	0411 477 866

11. GENERAL SITE MANAGEMENT

Icon shall ensure there is minimal impact to the environment from general activities at the site and provides all practical resources for the implementation of relevant State Environment Protection Policies (SEPPs).

11.1KEY ENVIRONMENTAL ASPECTS

The following environmental aspects have been identified as relevant to this project. Aspects and impacts are covered in detail in the Project Risk Assessment.

ASPECT	RELEVANT ✓
1. Ground contamination	✓
2. Hazardous Substances	✓
3. Dust	✓
4. Excavation work	✓
5. Stockpiles	✓
6. Noise/Vibration	✓
8. Waste Management	✓
9. Other: (List below)	

11.2 SUSTAINABILITY

To the maximum extent reasonably practicable and consistent with a value-engineering approach, works shall include practical and effective sustainability measures (active and passive) which are then fully implemented in the construction phase.

Environmentally Sustainable Design (ESD) principles shall be incorporated into the design, construction and operation of the Project where practicable and where supported by the client. Particular emphasis shall be placed on the quality of the indoor environment (daylight, air quality, and thermal comfort), energy efficiency (reducing greenhouse gas emissions and peak electrical loads), water conservation and waste minimisation (during construction and operation). All new equipment and appliances provided under the Project shall aim to have high efficiency ratings and low energy consumption where possible.

11.3 INSPECTION AND MONITORING

The following processes are used to identify, control, monitor and evaluate effectiveness of control implemented on site:

PROCESS	FREQUENCY	BY WHO	COMPLIANCE & EFFECTIVENESS MONITORED BY
Site Establishment Checklist	Start of project	PM/SM	HSEM
Pre Start Meeting	Prior to commencement of HRCW activity (Not required daily)	Subcontractor Led (attended by SM and Foreman as relevant)	SM
Site Safety & Environmental Walk and Hazard Identification*	Weekly	SM/HSR/HSEC PM = Quarterly	HSEM
Australia: SWMS Review for HRCW ~~NZ: JSEA Review for all tasks~~	All subcontractors	SM	HSEM
Task Interactions*	1 per week	Project Team	Internal Audits
Incident Investigations	Ongoing	CM/PM/SM/HSEM	Director

PROCESS	FREQUENCY	BY WHO	COMPLIANCE & EFFECTIVENESS MONITORED BY
Project Risk Assess. (Includes Enviro)	Prior to commencement Reviewed Monthly	PM/SM	HSEM/Internal audits
Design Risk Assessment	Design Phase when D&D	Design Mgr/PM/SM/ Consultants	HSEM/Internal audits
Safety Committee Meeting*	As per Local legislated requirement	Safety Committee	SM/HSR/HSEM/HSEC
Site HSE Audit	Within 3 months of start Then 6 monthly	HSEM/Consultant	Ops Mgr/General Mgr/Director
Compliance Audit 14001	Annual	External Certifying Body	Corp Systems Mgr
Management Review	Yearly	Directors/Senior Mgt/HSEM	Internal audit/Compliance Audit

*Frequency is dependent on construction phase and number of workers on site

12. PERFORMANCE INDICATORS

ITEM	PERFORMANCE INDICATOR
1. Lighting	No community complaints regarding security lighting.
2. Hours of work	No work conducted outside approved working hours
3. Site Housekeeping	Site remains tidy. No complaints from local community or relevant regulatory authorities received.
4. Illegal Dumping	No occurrence of illegal dumping of waste at site or in general site waste bins.
5. Public Roads	Adjacent public roads not affected by soil, sand, clay or stones originating from the construction activities on site.
6. Asbestos	Removal of asbestos conducted in accordance with relevant guidelines and regulations where encountered.
7. Remediation	Works conducted in accordance with plan where required.
8. Non-conformance	Non-conformances reported and rectified where possible and as soon as is practical.
9. Authority Notices	Nil notices received from relevant Authorities relating to environmental issues.

13. RESPONSIBILITIES

The following key Company personnel have authority and responsibility for environmental management on the project as defined. Site based personnel will sign in to the plan to signify that they:

- Have read the plan;
- Understand their role and responsibilities in the effective and environmentally responsible management of the project, as defined in this section of the plan;
- Will effectively fulfil their role as defined in this plan and its appendices.

Activities related to the implementation of this plan are detailed within various sections of this document.

Note: Roles are applicable to all Icon operations across Australia and New Zealand.

Refer: 071 Document Review & Sign On

13.1 DIRECTORS/STATE MANAGER

The Company Directors in consultation with State Directors and the Corporate HSEQ Systems Manager will establish the policy, objectives and targets and provide framework to enable the full implementation of this system and demonstrate ownership through the management review process and communication to staff, contractors, suppliers, clients and public alike.

13.2 CORPORATE HSEQ SYSTEMS MANAGER

The Corporate HSEQ Systems Manager ensures that the EMS is established, implemented and maintained to meet the requirements of ISO 14001:2015.

The Corporate HSEQ Systems Manager is responsible for administering the EMS and shall ensure that legal and other compliance obligations are identified, assessed and that the systems are set in place to identify aspects and impacts relative to the construction activity. An environmental system audit regime is to be developed and implemented to ensure company wide compliance to statutory and other compliance obligations.

13.3 HSE MANAGER (ENVIRONMENTAL MANAGEMENT REPRESENTATIVE)

The HSE Manager acts in the capacity of Environmental Management Representative for each project. The Environmental Management Representative's responsibilities include:

- Assist the Corporate HSEQ System Manager in ensuring EMS is established, implemented and maintained to meet the requirements of ISO14001:2015, as well as legal and other compliance obligations;
- Ensure an Environmental Management Plan is developed for each project;
- Ensure that environmental issues are covered in the site induction process;
- To liaise with the Sub-contractor(s), authorities and local community as necessary;
- Put in place an inspection and audit regime to ensure compliance to this plan;
- Collate data required for management review and potential improvements;
- Ensure training is undertaken as required.

13.4 CONSTRUCTION MANAGER/OPERATIONS MANAGER/GENERAL MANAGER

The Construction Manager has the following responsibilities:

- Ensure that this plan is implemented in accordance with relevant legislation, codes of practice and Australian and New Zealand Standards;
- Ensure appropriate resources have been allowed;
- Ensure that the agreed project audit schedule is implemented, and that the results of those audits are made available to the senior management;
- The Construction Manager will assign or delegate responsibility for the implementation of project procedures.

13.5 PROJECT MANAGER

The environmental responsibilities of the Project Manager include:

- Customisation of this plan specific to project and client requirements;
- The implementation of this plan to ensure the project meets the environmental needs, expectations and compliance obligations of the project's stakeholders;
- Allocating resources to ensure that appropriate actions are taken to identify and manage project environmental aspects and impacts;
- The site operation of this plan;
- Ensuring that this plan is adhered to by direct employees;

- Ensuring that the project audit schedule is implemented, and the results of those audits are made available to relevant parties.

13.6 SITE MANAGER

The Site Manager will report to the Project Manager and is responsible for:

- To ensure that relevant licenses, clearances, permits and approvals are in place in the appropriate manner;
- Manage employees/contractors and construction activities on a daily basis to ensure the appropriate environmental controls are implemented and maintained in accordance with the requirements of the Site Environmental Management Plan;
- Ensure all staff are inducted into the site;
- Undertake site inspections of environmental controls and maintain records of environmental actions;
- Report any environmental management concerns or incidents to the Project Manager;
- Report all environmental incidents as per legislative and company requirements;
- Respond to all enquiries from the EPA as required during the duration of the project
- Recommend improvements to the Project Manager; and
- Implement corrective actions issued as a result of any site inspections, audits or meeting.

13.7 SUBCONTRACTORS

- Ensure their employees are aware of and comply with the requirements of Icon's Environmental Management Plan;
- Comply with the requirements of relevant Acts, Regulations and Codes of Practice and ensure their employees observe them at all times;
- Ensure supervision is suitable and employees receive adequate, appropriate training to carry out their tasks; and
- Provide suitable WHS documentation (including task specific SWMS/JSEA's).

14. TENDERING

During the contract tendering phase the project environmental requirements will be addressed and noted within the Tender Interview document which forms part of the Purchase Order engaging the Subcontractor. This includes, as appropriate, information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of products and services.
The contract documentation issued to the Tenderer will include all relevant parts of the Project Contract Documents, including relevant sections of Preliminaries and General Requirements.

15. KEY ENVIRONMENTAL ASPECTS

The following sections describe some of the key management measures and controls to mitigate potential risks associated with construction on identified key environmental aspects for the Project. This list is not exhaustive, and the management measures detailed below will be incorporated into specific environmental procedures upon Project award. These will be monitored and reviewed on an ongoing basis and may change.

15.1 CONTAMINATED WASTE MANAGEMENT

All materials generated on site during either demolition or excavations are to be fully evaluated for potential contamination. This process is to be scheduled with the Project Manager and/or Site Manager on an as needs basis.

Should contaminated wastes be evident (e.g. asbestos, hydrocarbons, etc.), the client will be advised so that arrangements can be made for the engagement of appropriately qualified specialists in hazardous materials handling.

A waste classification (for materials to be removed) and waste validation (for materials to remain) will be undertaken to confirm the contamination status of the construction areas of site.

Any contaminated waste will be managed in accordance with the Site WHS Plan requirements.

Australian Operations - Disposal of prescribed waste/contaminated materials, including contaminated spoil shall be under the following controls:

- Use of licensed prescribed waste contractors and vehicles;
- Advising waste contractors of waste composition and any special hazards associated with the waste;
- Retention of waste transport certificates.

15.1.1 ASBESTOS

If asbestos is identified on this site a qualified hygienist may be engaged to provide advice on the management procedures required to effectively manage asbestos onsite. The client will be asked to provide a report showing all known locations for existing asbestos within the site boundary. The following controls will be implemented:

- Areas already identified as containing asbestos will be identifiable on site via appropriate signage. All employees working on site will be briefed of the presence of asbestos in these areas via a toolbox meeting and/or in the site induction.
- Where required an Asbestos Management Plan may be developed as a subsidiary document to this Environmental Management Plan.
- Any grey fibrous cement materials observed on site, and not previously identified as an asbestos contaminated area, must be treated as asbestos-cement materials, or sampled for asbestos fibres.
- Any pipe or other lagging or insulation identified on site that cannot be positively identified as synthetic mineral fibre (SMF) material, polystyrene foam or brown hessian organic fabric should be treated as asbestos lagging.
- If asbestos is suspected of being found during construction activities, works in the immediate vicinity are to cease immediately. Works are not to recommence in that area until confirmation by the way of a hygienist report that has confirmed the type of material.

Refer: Site Specific Asbestos Management Plan as relevant

15.2 HAZARDOUS MATERIALS (FUELS AND CHEMICALS) TRANSPORT, STORAGE & HANDLING

- The storage and handling of fuels and chemicals will comply with all relevant legislation
- SDS's will be obtained when purchasing chemicals and will be available to all personal on-site for all chemicals stored and handled.
- Contaminated soils that are Prescribed Industrial Wastes (PIW) must be transported by appropriately permitted trucks with a relevant Waste Transport Certificate**, or local authority equivalent**, completed for each load, and disposed of at a suitably licensed site in accordance with the local Environmental Regulatory Authority.
- Minimal volumes of fuels and chemicals will be stored onsite. If required to be stored in the work area, liquid chemicals will be bunded to 110% of the total volume stored.
- Batteries are to be located in clearly defined areas. Batteries are to be sealed units to prevent acid spills (where possible). Batteries are to be charged in well ventilated areas.

- Spill response equipment will be located at various locations around the site during the construction and must be carried in all fuel transport vehicles/trailers.
- Inspection of fuel and chemical storage areas are to be undertaken daily.
- Drivers of fuel and chemical transport vehicles to the sites will be trained in the procedures for emergency response for spills.
- Persons handling chemicals will be provided with appropriate training and personal protective equipment. The operator must be present during re-fuelling operation.
- Vehicles carrying fuel for the purpose of refuelling other vehicles shall be clearly identifiable, have the fuel stored in approved containers and have a hydrocarbon spill kit on board.
- Re-fuelling areas will not be within 100m of any natural drainage line and will be within bunded areas (where possible).
- Products to be stored in designated areas only such that soil/water is not contaminated (e.g. cement products to be stored in weather proof area).
- Flammables are to be stored in approved storage areas and placarded appropriately.
- All drums/containers for use must be adequately labelled and made of appropriate material.
- Fire extinguishers to be available at storage areas where flammables are stored.
- In the event of a spill, a spill kit will be used to clean up immediately. If this is not possible the relevant authorities will be contacted.

15.3 WATER AND SOIL POLLUTION CONTROL

- Fuelling, maintenance and cleaning of vehicles and construction plant will not be carried out in areas from which fuel or oil may be discharged to street gutters or storm water drainage systems. The location of such activities needs to be fully considered so as to minimise the potential for spillage into sensitive receptors.
- Storage of fuel, oils, chemicals on site will be held to an absolute minimum. No such materials shall be stored on site without the permission of the Site Manager. The location of these shall be well clear of trafficable areas in case of collision. A spill kit will be kept in close proximity.
- Where practical impervious bunds (or a similar retention system) may be constructed around all fuel or oil storage areas to ensure retention of not less the 110 per cent of the capacity of the largest tank in each bund. Drums and tanks containing oil or other pollutants will be stored within impervious bunds. Suitable barriers shall be erected along bund walls to prevent elevated storage tanks and drums stored more than 2 drum heights, from falling outside of bunded areas. Adequate absorption materials shall be readily available to collect and recover any liquid spillages.
- Dry methods of spillage clean-up will be used wherever possible. Bunded fuel areas will not be fitted with valves or drains but shall be graded to pump out sump. Oil contaminated storm water and/or soil will be disposed of to a licensed disposal site where relevant.
- Fuelling construction plant will not be carried out without an operator or driver being in attendance at all times. Road going vehicles will not be fuelled on site.
- All spillage on to sealed areas will be cleaned up as quickly as practical and placed into suitable receptacles for reclamation or disposal in a manner that does not cause pollution of the environment.

15.4 CONCRETE AGITATOR WASH DOWN

Concrete agitator chutes, where possible, will be washed down off site. Where this is not possible they will be washed down in a designated area. Sediment will be contained and disposed of with waste materials in the designated waste bins and removed by waste recycling contractor. Alternatively, chutes will be washed into sealable container or drum located on the concrete truck. The concrete residue is then treated or re-cycled back into the concrete plant.

15.5 DEWATERING

Dewatering activities must be done properly to avoid eroding the soil on site. It is also important to choose the best location for discharge. When choosing discharge areas from a dewatering process the following must be considered:

- Water should not be pumped directly onto slopes;
- Dewatering activities should be directed to a wooded buffer, if available;
- It is important to pay special attention and discontinue dewatering if the area shows signs of instability or erosion;
- Channels used for dewatering must be stable and better if they have been protected with grass or vegetation;
- You should avoid dewatering under heavy rains because the infiltration rate is at a minimum and water will move slower or just the dewatering process will not function;
- Never discharge water that has been contaminated with oil, grease, chemical products directly. In such instances, an oil/water separator may be necessary;
- Additional permits and requirements might be needed from the local, or federal agencies;
- It is important to understand the water table conditions in the area, perhaps the underground water is always near the surface, so your plan might not work;
- Sump pumps are the most common dewatering technique but it can handle only a small volume of water.

15.5.1 DEWATERING METHODS

Construction dewatering from open excavation or trenches can be done by numerous methods. The following methods will be considered and the most effective and practical will be used:

- Water pumping;
- Siphoning;
- Earth channels;
- Sediment tank. The purpose of a portable sediment tank is to trap and retain sediment and treat turbid water prior to pumping the water to the sewer system.

Ensure relevant authority permits are obtained in all cases.

15.6 DUST/AIR QUALITY & NOISE MANAGEMENT

- Dust control measures will be implemented on all unsealed trafficable areas considered to generate significant wind-blown or traffic generated dust emissions. Subject to availability recycled water will be used as preference to potable water. Recycled water will come from sources that meet relevant EPA requirements.
- Roadways and work areas will be watered using approved recycled water or approved privately sourced water, to minimized dust levels outside of working hours, as necessary.
- Movements on and offsite will be reduced as far as possible during wet weather. Mud on roads will be removed by sweeping or using shovels.
- In extreme wind conditions, construction activities may need to cease until conditions improve.
- No burning off is permitted on site.
- Where appropriate, vehicle engines not in use for a period exceeding 20 minutes will be turned off to reduce greenhouse gas emissions and unnecessary noise.
- All fumes to be exhausted to open air will be released through a mobile ventilation system.
- All items of plant and equipment to be in good working order and regularly serviced to reduce exhaust emissions.

- All field personnel will be made aware of potential noise sources from their operations, the noise limits are to be observed inclusive of adaptation of mitigation measures.
- Construction operations will be conducted during approved hours, and within the requirements of all local noise regulations. All personal will be advised of regulatory requirements regarding air and noise in work pre briefs.
- Where possible, limit excessive noise generating activities to daylight hours.
- All equipment to have manufacturers noise control equipment (exhaust/mufflers/sound proofing) in sound working condition - daily plant maintenance checks to be carried out.
- For activities that may generate abnormal noise levels, local residents will be informed prior to commencement.
- Any plant, equipment or vehicles fitted with acoustic canopies shall be used with the canopy closed at all times whist operational.
- If the event of a noise complaint the Project Manager must be informed. Noise monitoring may be conducted to confirm actual construction noise levels.

15.7 ROAD MANAGEMENT

- Road cleaners will be engaged to clean roads as required;
- Cattle grates may be installed where required and where space allows;
- Wheel wash facilities may also be implemented where required.

15.8 VIBRATION MANAGEMENT

If significant vibration occurs as a result of construction works, vibration monitoring may be undertaken. A vibration management plan may be developed.

15.9 EQUIPMENT EMISSIONS

Construction equipment will be properly maintained to ensure exhaust emissions are minimised. If visible smoke can be seen from any equipment (while working on a construction site) for longer than 10 seconds duration, the equipment will be taken out of service and adequately repaired or tuned so the smoke is no longer visible for periods longer than 10 seconds.

15.10 FLORA MANAGEMENT

15.10.1 SITE SET UP AND VEHICLE MOVEMENT

- Plans and construction procedures shall clearly outline limit of works and flora/fauna exclusion areas.
- All work areas shall be located within the area of contract.
  Movement of vehicles and plant shall be restricted to designated access corridors and work areas.

15.10.2 VEGETATION/TREES

- Avoid all unnecessary destruction of vegetation;
- Permission is to be obtained for tree removal and/or pruning as relevant to local requirements.

15.10.3 TREE DRIP LINES

- Stockpiles shall not be located, and equipment shall not be stored, against trees, under drip lines of trees, or on native grasses, shrubs and groundcover plants.
- No fill shall be placed under drip lines of trees unless indicated in the design drawings.

- Excavation shall not take place within drip lines of trees unless indicated in the design drawings. Any exposed roots during excavation shall be trimmed with a clean saw in accordance with AS 4373.
- It is not anticipated that this will be an issue on this project.

15.10.4 REHABILITATION

- Upon completion of site work, stockpile sites and access roads shall be restored to conditions similar to their original conditions.

15.11 FAUNA MANAGEMENT

15.11.1 SITE MONITORING

- All permanent and/or temporary fencing shall be checked daily. If and when required, site personnel shall rectify (or notify appropriate personnel) if any fencing is compromised.

15.11.2 INTERACTION WITH FAUNA

- Employees are not permitted to feed native or pest fauna.
- No hunting, disturbing, capturing or destroying native animals, birds or fish is permitted within the project area.
- No domestic pets shall be allowed within the project area.
- In the event of detection of an animal within the project area, no employee or sub-contractor shall approach the animal. If relocation is required, the Site Supervisor (or delegate) shall be contacted to arrange removal/relocation by a suitably qualified and permitted specialist.
- Ensure fauna ramps are placed into any open trench at the end of each day (if required by prior ecological assessment);
- Remove fauna ramps and inspect all open trench for animals prior to start of each day (if required by prior ecological assessment);
- Where potentially dangerous animals are encountered (e.g. snakes), contact the Icon Site Manager for advice; do not interfere or attempt to move the animals along; and
- Sick or injured animals must be reported to Icon Site Manager; Only authorised personnel may act to relocate such animals.
- If the animal species is injured, it shall be taken to an appropriate veterinary clinic or wildlife shelter.

15.11.3 PEST MANAGEMENT

- All compound, storage and laydown areas shall be maintained such that they are in a clean and tidy state at all times.
- Domestic and construction waste bins with secure lids shall be provided to avoid attracting vermin and other scavengers.
- No trapping of animals shall occur (e.g. within amenities etc.). If nuisance animals are present, the Site Supervisor (or delegate) shall be consulted.

15.12 HERITAGE MANAGEMENT AND CULTURAL RESOURCES

If a cultural or heritage object is discovered during construction activities, works should cease in the subject area and Icon should notify the relevant local authority immediately for further advice.

To ensure the adequate protection of above ground and sub-surface heritage items on the site a Heritage Consultant will be engaged to provide a detailed report as to the site processes to be engaged. Controls could be but not limited to the following dependent on the specific project requirements.

- All construction personnel will attend a site induction that includes identification of heritage issues and requirements prior to the commencement of construction works (and / or the commencement of individual contracts);
- Inspection of heritage buildings will be undertaken prior to any site works being carried out to identify the sensitivities of the heritage buildings with regards to the works and completion of restoration works should any be required;
- Protective barriers are to be installed around all heritage buildings located on the site to ensure protection during the works;
- Construction works will be staged so as to provide efficient and practical access to the site and its infrastructure as required throughout the construction program. Construction works will also be staged so as to allow for works required to mitigate potential heritage impacts throughout the construction program, including stabilisation of built elements to be retained, and archaeological investigation and recording of areas of archaeological potential that may be disturbed during demolition works;
- No undermining of heritage building foundations will take place as part of the site works;
- Temporary stabilising elements may need to be introduced to ensure structural stability of retained built elements during and after construction works. Work method statements should be prepared to guide all stabilising elements that will be installed during the construction program. Any direct physical impacts to heritage fabric (e.g. fixing points) should be clearly detailed so that they can be considered in relation to the overall benefit of stabilising and protecting these significant elements;
- Inspection of heritage buildings during and post works to ensure the structures remain in a sound state; and
- Any proposed ground disturbance in areas identified as having archaeological potential should be undertaken in conjunction with or preceded by appropriate archaeological investigation and recording by a suitably qualified archaeologist.

15.13 NOXIOUS WEEDS

- Mitigation measures will be implemented to prevent the spread of listed noxious weeds both on and off site.
- Vehicles and plant will be isolated from heavily affected areas if the area is not within the construction footprint in the form of fencing/barricading that will be affixed with signage.
- Fencing/barricading and signage will be inspected as part of the environmental Inspection to ensure appropriate segregation is maintained.
- Vehicles/plant to stick to designated crushed rock haul roads.
- Topsoil on site will not be transported offsite without being treated first.
- Plant/machinery will be inspected prior to entering and exiting site to ensure weed seeds are not being transported on or off site.

15.14 SEDIMENT AND EROSION CONTROL

Water has the potential to enter the site from two sources:

- Rainfall.
- Ingress from subterranean or surface sources.

The ingress of subterranean or surface water, together with rainfall into the area of the excavation, will be removed from the excavation by a system of de-watering pumps placed around the perimeter of the excavation. Water removed from the excavation is to be tested and treated, if necessary, before discharge to the stormwater system.

15.14.1 TEMPORARY EROSION CONTROL MEASURES

Temporary erosion control measures that will be used include, as appropriate:

- Using non-woven, needle punched geotextile or plastic to provide temporary surface protection in temporary creek diversions, temporary creek crossings, on batter drains and along creek banks or beds that have been disturbed;
- Maintaining the existing vegetation in flow lines for as long as possible and only clearing directly prior to the installation of culverts;
- Constructing temporary compacted earth windrows, with a minimum depth of 400 millimetres along the top of fill batters, to direct runoff to temporary lined batter drains or sediment traps at cut/fill lines;
- Revegetating topsoil stockpiles and temporary drainage structures with a cover crop if the stockpile is to remain in place longer than 28 days, except where the risk of rainfall is extremely low. The surface of topsoil stockpiles should be left rough to assist with seed germination;
- Temporary geotextile or plastic-lined batter drains on fill batters. The geotextile or plastic should be keyed in at least 300 millimetres deep at the top of the batter drain and staked to the batter at regular intervals either side of the drain. The drain should be slightly dish-shaped so runoff stays on the geotextile or plastic. A sediment filter, such as a sediment fence, sediment trap or drain taking the runoff from the batter drain to a sediment trap, should be installed at the toe of the fill.

15.14.2 SEDIMENT BARRIERS, TRAPS AND BASINS

Sediment barriers, traps and basins that will be used include, as appropriate:

Timber windrows, which should:
- be constructed from cleared vegetation
- be placed at the toe of fill batters
- be to a maximum height of 1.5 metres
- have little or no soil mixed in with the vegetation, to assist in fire management
- be spread back onto adjacent batters with other cleared vegetation to provide surface protection and a native seed source once topsoil has been respread

Excavated sediment traps or sumps which should:
- be used where narrow easements prevent the installation of sediment basins
- be appropriately sized
- be located at low points or below cut/ fill lines
- have temporary drains directing runoff into them
- have geotextile-lined spillways
- be maintained regularly after rain
- have water tested and treated, if necessary, before discharge to the stormwater system.

15.14.3 MAINTENANCE

During construction, the inspection of temporary erosion and sediment control measures should be undertaken regularly and following rain events, with any necessary maintenance to controls being undertaken promptly (1–5 days after rain ceases).

15.15 SITE FACILITIES MANAGEMENT

- Sediment control will be implemented in temporary laydown areas as required.
- All areas of the site are to be left neat and tidy, uncluttered with debris, random construction materials, plant and equipment etc.
- Vehicle, plant, and equipment laydown areas are to be established within designated areas only.
- Office, workshop and storage areas are to be maintained at regular intervals.
- Dust suppression by water sprays to be undertaken in site facility areas (as required). Where possible dewatering water or recycled water will be utilised as dust suppression.
- Fuel and chemical storage areas managed and maintained.

- Products to be stored such that soil / water are not contaminated (e.g. fuel and chemical storage and cement products to be protected from weather).
- No trapping of animals is to occur.

15.16 SOIL MANAGEMENT

15.16.1 EXCAVATION

During excavation works the following controls will be implemented:

- Excavated spoil will be stockpiled in 2m high mounds and covered or grass seeded to minimised dust generation.
- Stockpiles will be located away from hazards such as areas of concentrated flow, waterways, channels, gutters, drains, and steep slopes. Spoil will not be placed where it is likely to fall or wash into roads, gutters or drains.
- Topsoil will be stockpiled separately from general excavated material so that it may be used when rehabilitating the site.
- Any soil to be excavated and disposed offsite, that is known to be contaminated, will be done so in accordance with relevant Environmental Authority Guidelines.
- Contaminated soils must be transported by appropriately permitted trucks where relevant, with a Waste Transport Certificate (Australia only) completed for each load, and disposed of at a suitably licensed site in accordance with the relevant Environmental legislation.
- The number and size of soil stockpiles will be minimised.
- Soil stockpiles will not impede natural or constructed surface drainage channels or access tracks and will be confined to designated areas within the construction corridor and will be appropriately separated based on soil layers and contamination status.
- Soil stockpiles to be monitored and environmental controls installed as appropriate;
- Every attempt will be made to re-establish vegetation as soon as practicable after reinstatement earthworks to stabilise exposed soils. Erosion and sediment control structures will be retained during reinstatement until vegetation is established.
- Excavation within identified acid sulphate soil areas will be avoided in the first instance. If avoidance is not possible or an unexpected encounter occurs work will be temporarily postponed in the area until management measures can be implemented.
- Any soil to be disposed off-site (regardless of whether it is contaminated or otherwise) will be classified according to Environmental Regulator Guidelines and consigned to the appropriately licensed facility.
- If asbestos fragments are identified within excavated soil a qualified removalist will be engaged to remove the asbestos or the soil will be transported offsite.

15.17 STORMWATER RETENTION AND SILT CONTROL

Assessment will be made of the site area ground water catchments. Temporary dish drains may be established to direct water runoff. The drains will have straw bales and gravel to retain silt at intermittent points.

At any discharge point to the site stormwater system the pit lids are to be covered with shade cloth, filter fabric or silt socks.

The downhill sides of the site fence may have shade cloth filter fabric to a height of 300mm if the directional flow of water travels through the fence enclosure.

The new stormwater system will be installed and commissioned as early as possible to minimise the period of uncontrolled roof and road water. The fence and drainage controls will be maintained on a regular basis to ensure effectiveness.

15.18 TRAFFIC AND SITE ACCESS MANAGEMENT

- Compliance to traffic management plan at all times.
- All vehicles/plant entering and leaving the site will comply with standard vehicle noise requirements as set by relevant government authorities and will be adequately maintained by regular scheduled servicing.
- All vehicles/plant will utilize designated access routes and designated parking areas.
- Heavy vehicles will drive in such a manner that exhaust brakes will only be used as per standard road regulations in the vicinity of residences, except in an emergency.
- All vehicles and trucks carrying loads of soil, rock, concrete, or vegetation will be loaded no higher than the tray, and where applicable appropriately covered such that spillage and dust during travel is minimised.
- In the event of inclement weather, vehicles and plant leaving the site will be prior inspected and, if necessary, wheels will be washed to ensure that debris is not deposited on surrounding roads.
- Surrounding local public roads will be swept clean as required if dirt build up is apparent.

15.19 WASTE MANAGEMENT

Icon is committed to reducing the amount of waste generated onsite and uses the EPA wastes hierarchy to achieve this aim. The wastes hierarchy is an order of preference and states that waste should be managed in accordance with the hierarchy, with avoidance being the most preferred option and disposal being the least.

- No littering of the Project Site will be tolerated.
- Brief all employees on waste minimization, management, and disposal prior to works proceeding as part of the Site Induction.
- Brief all suppliers on waste minimization, management, and disposal of packaging. Where possible suppliers to provide products free of packaging.
- Provide appropriate waste storage containers with secure lids to prevent fauna access.
- Construction waste such as concrete, steel, brick rubble and wood is to be separated for recycling.
- Putrescible waste to be regularly disposed of to landfill.
- Cigarette butts are to be disposed of in bins appropriately.
- Residues and containers to be stored in designated areas protected from stormwater drains.
- Chemical residues, packaging, and used containers are to be disposed of in accordance with the relevant SDS.
- Portable toilets are to be emptied regularly and waste disposed off site by a licensed Contractor in accordance with local Council and EPA requirements.
- Contaminated materials (e.g. soil contaminated with oils) to be appropriately stored and contained on site and disposed or relocated at the direction of the Environmental Delegate. NB: such material may require laboratory testing prior to determining where it can be disposed.
- Spent absorbent materials will be bagged and stored in a suitable storage container labelled accordingly. Full containers will be removed by a licensed contractor to a licensed landfill.
- Stormwater collected in bunds is to be visually inspected for contamination (i.e. a sheen) prior to release onto a hardstand area away from stormwater pits.
- No on-site dumping and burning is permitted.
- All vehicles carrying loads of dry soil, rock, concrete or vegetation will be loaded to a level and then appropriately covered such that spillage and dust dispersal during travel is minimised.
- Upon removal of site facilities, areas are to be left clean and tidy.
- Debris & sediment collected behind sediment controls is to be re-used where possible (e.g. rehabilitation works) or disposed of to a designated spoil site.

16. ENVIRONMENT MANAGEMENT FRAMEWORK

The following section outlines the framework that will be used by Icon to manage, document, and report on environmental issues at the site.

16.1 SUBCONTRACTOR MANAGEMENT

Sub-contractors are required to comply with the provisions of the Environmental Management Plan at all times. This will be documented by each sub-contractor or the nominated site representative for each organisation by the Site Induction Form which forms part of the HSE compliance system. Sub-contractor's environmental performance obligations shall be incorporated into sub-contractor's contract for works to be undertaken at the site.

16.2 MONITORING AND INSPECTIONS

Monitoring and inspection of the site will be carried out by means of weekly site meetings and site safety and environmental walk. These measures will be used to identify areas of non-conformance and / or opportunities for improvement. Monitoring and / or inspections required on a more frequent basis by the Environmental Management Plan will be conducted as required and reviewed in the weekly site meeting.

16.3 NONCONFORMANCES

Non-conformance to the environmental procedures identified at the site must be addressed as soon as is practical. The member of staff and/or sub-contractor responsible for the non-conformance must be notified immediately and provided with guidance on the method of rectification of the problem, where practicable.

The non-conformance must be documented as outlined in the relevant company procedure.

Refer: 002 Corrective Action and Control of Nonconformances.

16.4 ENVIRONMENTAL MEASURING AND TEST EQUIPMENT

Measuring and test equipment used on site to monitor the environment is to be appropriately identified, calibrated, maintained and stored. Such equipment includes, but is not limited to:

- Air monitoring equipment;
- Noise monitoring equipment;

Records of current calibration for such equipment are to be provided by the service provider prior to use on site. Equipment found to be out of calibration will be removed from service until recalibrated.

Items used for indicative purposes only (e.g. applications on smartphones) will not be calibrated. These items may be used to identify the need for formal monitoring or the introduction of specific controls.

Workers using measuring and test equipment used for monitoring the environment will be trained in its use.

16.5 ENVIRONMENTAL AUTHORITY NOTIFICATION & SITE VISITS

Contact with the Environmental Authority should be conducted via the Site Manager and/or HSE Manager. Depending on the significance of the issue, the Project Manager will determine whether the notification of Icon Legal Counsel or other Icon senior management is required.

Communication from the Environmental Authority must be documented (as a minimum) in the site diary. It is recognized that depending on the nature of the communication, other supporting documentation may need to be compiled.

In the event that a representative of the Environmental Authority representative arrives on site, the following procedure should be followed:

1. The Officer should be taken to the Site Office to meet the Site Manager or his representative. Before any site inspection, the purpose of the EPA visit should be determined.
2. Particular care must be taken to ensure that visitors are signed in and inducted to an appropriate standard depending on the nature of their visit.
3. Under legislation, Officers have the right to enter any site for the purposes of evaluating the nature and extent of potential pollution.

AN ENVIRONMENTAL AUTHORITY OFFICER CANNOT BE REFUSED ENTRY TO THE CONSTRUCTION SITE.

4. The Officer should be escorted around the site under the full-time supervision of the Site Manager or a suitable Icon representative.
5. Before the Officer leaves the site, the Site Manager should obtain a debriefing from the Officer to identify the findings of the inspection.

16.6 COMMUNITY RELATIONS

Where complaints are made by the community or other third parties directly to Icon or sub-contractors directly under its control, these will be forwarded to the Project Manager, Site Manager and/or HSE Manager. The complaint will be recorded on HammerTech.

Refer: HT - Issues

16.7 TRAINING

All personnel working on the site during the construction activities will receive a site induction to explain the relevant environmental and safety hazards, environmental and safety protocols, sensitivities and emergency procedures for the site. The content of the induction program will be specific to the project and endorsed by the Icon Site Manager responsible for the site and will be presented by the Site Manager or a delegated representative.

16.8 SITE ENVIRONMENTAL EMERGENCY MANAGEMENT

An environmental incident may include a spillage or major leak, failure of a pollution control device such as a bund, major settlement, collapse of a bank or embankment, impact to water quality, fire and/or impact to soil quality.

In an emergency all works will cease and the approved Emergency Response Plan will be activated.

Authority	Emergency Contact Number
EPA – VIC	1300 372 842
EPA – NSW	131 555 if you are in NSW. (02) 9995 5555 if you are outside NSW
EPA – A.C.T.	13 22 81
Department of Environment and Heritage Protection – QLD	Pollution Hotline 1300 130 372
Department of Environment Regulation – WA	1300 762 982 (9am to 5pm Monday to Friday. If calling outside these hours, please contact Pollution Watch Hotline) Pollution Watch Hotline 1300 784 782

EPA – SA	(08) 8204 2004
EPA – NT	Pollution Hotline 1800 064 567
EPA – TAS	Pollution Incidents and Complaints Hotline 1800 005 171
EPA - NZ	04 916 2426 (Wellington)

Refer: Emergency Management Plan

17. ACCESS TO LEGAL AND OTHER REQUIREMENTS

Activities at the site must conform with relevant Environment Protection Policies (SEPPs) and environmental regulations promulgated under relevant legislation.

Legal obligations have been reviewed and compiled to accord with the environmental aspects identified in section 6 - Environmental Aspects and Controls of this document.

Further information on legal and other obligations is available on the Environmental Essentials Pty Ltd website accessed via the company website.

17.1 FEDERAL ENVIRONMENTAL LEGISLATION

Environment Protection and Biodiversity Conservation Act 1999
Aboriginal and Torres Strait Islander Heritage Protection Act 1984
Australian Heritage Council Act 2003
National Environment Protection Council Act 1994
National Environment Protection Measures (Implementation) Act 1998
Natural Heritage Trust of Australia Act 1997

17.2 NEW SOUTH WALES

General Environmental Legislation	Protection of the Environment Operations Act 1997
Waste Minimisation / Material Recycling	Protection of the Environment Operations Act 1997, s 47-48, 142A-E, s 143 Crown Lands Act 1989, s 155 Management of Waters and Waterside Lands Regulations – NSW, cl 13 Protection of the Environment Operations (Waste) Regulation 2005, cl 42, 48, 49, 22, 24
Contaminated Waste Management	Protection of the Environment Operations Act 1997, s 47-48, 142A-E, 143 Crown Lands Act 1989, s 155 Management of Waters and Waterside Lands Regulations – NSW, cl 13 Protection of the Environment Operations (Waste) Regulation 2005, cl 49, 42, 43, 44-46, 48, 22, 24, 32-37 Contaminated Land - Guidance Hazardous Waste - Guidance
Storm water Retention and Silt Control	Protection of the Environment Operations Act 1997
Air Quality and Dust Control	Protection of the Environment Operations Act 1997, s 124-125, 126 Protection of the Environment Operations (Clean air) Regulations 2010 NTC Brochure: Load Restraint Guide 2004 Smoke-Free Environment Act 2000, s 6-10 Smoke-Free Environment Regulation 2007, 4-7 Public Health Act 1991, s 46 Air - Guidance

Noise and Vibration Control	Protection of the Environment Operations Act 1997, s 139, 140 Protection of the Environment Operations (Noise Control) Regulation 2008 Noise - Guidance
Hazardous and Flammable Material Management	Work Health and Safety Regulation 2011 Dangerous Goods - Guidance
Equipment Emissions	Protection of the Environment Operations Act 1997, cl 155, 124 -125

Useful links
Environment Protection Authority: http://www.epa.nsw.gov.au
Office of Environment and Heritage: http://www.environment.nsw.gov.au/

18. SSD CONDITIONS

18.1 SECTION B11

This plan must be made available onsite to all employee and subcontractors. All employees who engage in work on this site must be made aware of and will be instructed to comply with the conditions of this consent, relevant to activities they carry out in respect of the development.

A copy of this plan will be available in the Project Site Office and Icons Head Office.

18.2 SECTION B15 (A) DETAILS:

(i) Hours of Work
Construction may only be carried out between the following hours:
- Monday to Friday inclusive: Between 7am and 6pm
- Saturdays: Between 8am and 1pm

(ii) Site Manager Contract Details (24 Hour Contact)
Greystanes – Wayne Goodwin: 0411 477 866

(iii) Management of Dust & Odour
Refer to above sections:
- 15.6 – Dust/Air Quality & Noise Management
- 15.15 – Site Facilities Management
- 15.18 – Traffic & Access Management

(iv) Stormwater Control & Discharge
Refer to above sections:
- 15.14 – Sediment & Erosion Control
- 15.17 – Stormwater Retention and Silt Control

Also refer to the “Greystanes Public School ESM Plans 1-2”

(v) Measures to Ensure that sediment/materials are not tracked onto the roadway by vehicles leaving site
Refer to above sections:
- 15.7 – Road Management
- 15.18 – Traffic & Access Management

(vi) Groundwater Management Plan including Measures to Prevent Groundwater Contamination
Refer to above sections:
- 15.2 – Hazardous Materials
- 15.3 – Water & Soil Pollution Control
- 15.5 – Dewatering
- 15.14 – Sediment & Erosion Control
- 15.15 – Site Facilities Management
- 15.17 – Stormwater Retention and Silt Control

Also Refer to the “Greystanes Public School ESM Plans 1-2”

(vii) External Lighting in Compliance with AS4282-1997
Refer to attached Design Statement from JN Consultants

(vii) Community Consultation and Complaints Handling
Refer to Icon Communications Management Pla

18.3 CONSTRUCTION TRAFFIC & PEDESTRIAN MANAGEMENT SUB-PLAN (CTPMSP) CONDITION B17

Refer to B17 Folder CTPMSP

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. RPEQ:19457

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

6th February 2020 Reference: 200074.01FA

ICON
Level 2, 179 New South Head Road
Edgecliff, NSW, 2027
Attention: Damian O'Leary

CONSTRUCTION TRAFFIC MANAGEMENT PLAN OF GREYSTANES PUBLIC SCHOOL AT 781 MERRYLANDS ROAD, GREYSTANES Dear Damian,

Reference is made to your request to prepare a Construction Traffic Management Plan (CTMP) for the proposed construction for the upgrade of Greystanes Public School at 781 Merrylands Road, Greystanes.

1.1 Site Location

The site is located at 781 Merrylands Road as shown in **Figure 1** and is currently occupied by the existing Greystanes Public School with all vehicular access provided via two separate two-way driveways from Merrylands Road. The site has one frontage to Merrylands Road and is generally surrounded by low density residential dwellings in all directions, and Greystanes Sports Ground to the southwest of the site. The relevant characteristics of the surrounding road network servicing the site are provided below.

Cumberland Highway (A28) has the following existing characteristics within close proximity to the site:

- RMS Classified STATE Road (No. 13);
- Approximately 23m wide carriageway facilitating three traffic flow lanes in each direction separated by a 3.8m width median strip;
- Sign-posted 70km/h speed limit;
- Clearway zone applies between the hours of 6am-7pm on weekdays and 8am-8pm on weekends, "No Parking" at all other times.

Merrylands Road has the following existing characteristics within close proximity to the site:

- Unclassified LOCAL Road;
- Approximately 12m wide carriageway facilitating one traffic flow lane in each direction facilitating kerbside parking on both sides of the road;
- Sign-posted 60km/h speed limit, with speed restrictions to 40km/h during peak school periods;
- Provision for kerbside parking along both sides of the carriageway, with the exception of a bus zone and a no stopping zone along the majority of the frontage to Greystanes Public School.

Taylor Street has the following existing characteristics within close proximity to the site:

- Unclassified LOCAL Road;
- Approximately 10m wide carriageway facilitating one traffic flow lane in each direction with parallel kerbside parking bays on both sides of the road;
- Sign-posted 50km/h speed limit, with speed restrictions to 40km/h during peak school periods;
- Unrestricted kerbside parallel parking along both sides of the road.

Site Location

FIGURE 1: SITE LOCATION

1.2 Proposed Development

The proposed construction works will include the demolition of two (2) existing school buildings (including the existing staff car park), refurbishment of one (1) school building, removal of trees at

Greystanes Public School and construction of new school buildings on the eastern and western sides of the school ground. The eastern and western site locations are shown in **Figure 2** below.

Site Location

Western Site (Zone A and Zone C) **Eastern Site (Zone B)**

FIGURE 2: CONSTRUCTION STAGE LOCATIONS

It should be noted that the existing school will continue to operate during all construction stages. Throughout construction, vehicular access to the existing cola at the back of the site will be maintained at the western site driveway for disabled parking and after-school programs. There will be no access to the existing staff carpark throughout construction. The western site driveway to the staff carpark will be used by both construction vehicles and for disabled parking during construction hours, and for access to the public for after-school programs after construction hours. A traffic controller will be placed at the driveway entrance to help direct both construction and school vehicles throughout the day. Vehicular access for construction vehicles into and out of the eastern construction will be provided via the existing site driveway near the eastern boundary and a proposed "No Stopping" zone along the northern side of Merrylands Road.

1.3 Duration of Construction

Construction is expected to occur over a total duration of approximately 14 months. The expected approximate durations of each task are as shown in **Table 1**.

TABLE 1: CONSTRUCTION PROGRAM

Stage	Duration
Zone B Excavation	1 month
Zone B Structure	4 months
Zone B Fitout and Finishes	5 months
Zone A Structure	2 months
Zone A and Zone C Fitout and Finishes	2 months
Total	**14 months**

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

1.4 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 shown below:

- Monday to Friday between the hours of 7:00am to 6:00pm;
- Saturday between the hours of 8:00am to 1:00pm;
- No work is to be carried out on Sundays or Public Holidays;
- No deliveries to either the eastern or western construction site shall be undertaken during the school's peak drop-off / pick-up hours, namely 8:00-9:30am and 2:304:00pm on school days.

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 the site contractor. Any works outside of the approved hours of work must be approved by Council prior to carrying out the work.

1.5 Construction Site Access

The indicative site layout plan for both construction stages is shown in **Annexure A**. No deliveries to either the eastern or western construction site shall be undertaken during the school's peak dropoff / pick-up hours, namely 8:00-9:30am and 2:30-4:00pm on school days. Construction vehicle access for each stage is discussed in the following subsections.

1.5.1 Eastern Site (Zone B)

All vehicular access into the site will be made Merrylands Road, either via a reverse manoeuvre for vehicles approaching from the west or a right turn for vehicles approaching from the east. Additionally, there is a proposed Works Zone along the frontage to Merrylands Road which is further discussed in **Section 1.6** of this CTMP. The reverse manoeuvre will be for construction vehicles up to a 19m length Articulated Vehicle (AV) approaching the site from the west along Merrylands Road and will be required to be performed under the supervision of an RMS Accredited Traffic Controller. A "No Stopping" zone approximately 28m in length would need to be implemented to allow access to the site via a reverse manoeuvre. However, the existing driveway is approximately 5m in length, which is included in the 28m length "No Stopping" zone along the northern side of Merrylands Road. The "No Stopping" zone and reinstatement of the kerb would result in the loss of approximately four (4) unrestricted kerbside parking spaces.

19m length AVs and 18.7m length Truck and Dog combinations approaching the site from the east along Merrylands Road can access the site in a forward direction via a right turn. A "No Stopping" zone approximately 28m in length would need to be implemented to allow access via a right turn manoeuvre from Merrylands Road, resulting in the loss of approximately four (4) unrestricted parking spaces.

Deliveries to the site are prohibited during peak school drop-off / pick-up hours (8:00-9:30am and 2:30-4:00pm on school days). Therefore, the "No Stopping" Zone area should be signposted during the construction delivery hours (7-8am, 9am-2pm, and 3:30-5pm on school days, and 8am-1pm on Saturdays). During peak school drop-off / pick-up hours, the subject kerbside parking area area should be signposted as 10-minute parking to ensure that no vehicle parked during school drop-off / pick-up times remain within the "No Stopping" Zone during construction delivery hours.

A separate application to Council's Traffic Committee must be made for the proposed "No Stopping" Zone. Approval for the "No Stopping" zone must be granted prior to the occupation of the eastern site.

Swept paths have been undertaken (with results reproduced in **Annexure B** for reference) showing a 19m length Articulated Vehicle (AV) entering the site via a right turn from the east approach, entering the site via a reverse manoeuvre from the west approach and exiting the site in a forward direction. The extent and location of the required "No Stopping" zone for each access path is also shown **Annexure B**.

It is relevant to note that the area used for onsite manoeuvring within the eastern site is the minimum available onsite manoeuvring area throughout the construction period and are therefore a worstcase scenario.

1.5.2 Western Site (Zone A and Zone C)

All vehicular access into the site will approach from the east along Merrylands Road. Vehicular access into the site will be limited to an 8.8m length Medium Rigid Vehicle (MRV) during the demolition phase, and a 12.5m length Heavy Rigid Vehicle (HRV) during the excavation, structural and fitout phases.

A Works Zone is proposed on Merrylands Road along the frontage to the western construction site. The proposed Works Zone will be limited to vehicles up to a 19m length AV approaching from the west along Merrylands Road. It is relevant to note that construction vehicles larger than 15m in length within the proposed Works Zone will restrict access to the western site driveway, whilst the presence of any vehicle within the proposed Works Zone will restrict egress from the western access driveway. Therefore, the Works Zone should be vacant when construction vehicle access to / egress from within the site is required. The specific location and operation of the proposed Works Zone is discussed further in **Section 1.6** of this CTMP.

As stated previously, private vehicle access via the western site driveway is required for disabled students/staff to park on site. A compliant disabled parking area shall be provided at the rear of the site near the existing cola and the accessway thereto is required to be free of waste or obstructions. Drivers of such vehicles should be given special notification prior to the occupation of site, as well as the contact number for the site manager and/or traffic controllers, so that they may ensure that no construction vehicles are blocking access/egress from the western site driveway when required for disabled parking. The traffic controller at the site entrance is responsible for directing both construction vehicles and private vehicles into and out of the western site driveway.

It is also noted that the existing cola area near the rear of the site shall be used for parking for afterschool events when construction activities are not taking place.

Swept paths have been undertaken and are reproduced in **Annexure B** for reference, showing a 19m length Articulated Vehicle (AV) entering and exiting the proposed Works Zone from the Merrylands Road west approach, as well as a 12.5m length HRV and an 8.8m length MRV entering and exiting the site in a forward direction. All vehicular access into and out of the western site will be restricted to forward entry / forward exit.

It should be noted that any reverse manoeuvres required by construction vehicles to enter and exit the site will be required to be undertaken with the assistance of a traffic controller. The preferred

operation, which will be undertaken whenever possible, will be that vehicles enter and exit the site in a forward direction.

All construction vehicle movements are to be undertaken under the implementation of the Traffic Control Plan shown in **Annexure C**. Any damage to the existing kerbside or road due to construction movements into and out of the site will be repaired as a part of the dilapidation survey and bond. An appropriate "cattle grid shaker" or wash system is to be installed at the access driveways within the construction site fencing / hoarding to prevent spoil material being tracked off the site onto surrounding roadways.

1.6 Work Zones

Works Zones are proposed for both the western and eastern sites. Their locations, operations and other relevant details are provided in the following subsections.

1.6.1 Eastern Site (Zone B)

A Works Zone is required as a part of the eastern construction site activities. The Works Zone will primarily be used for the placement of a mobile crane which will load oversize items onto site. This type of loading will require an RMS Accredited Traffic Controller to stop traffic traveling on Merrylands Road until an unloading procedure is complete approximately two (2) minutes. It is important to note that this type of loading will only occur 1-2 times per week for about one (1) hour, and only occur outside the school's peak drop-off / pick-up hours, namely 8:00-9:30am and 2:30-4:00pm on school days. The eastern Works Zone will be located immediately to the east of the required "No Stopping" Zone, such that access into the site is not restricted by the presence of a vehicle within the proposed Works Zone.

When loading of oversize materials from the mobile crane is not taking place, the Works Zone may be used for other deliveries and two-way flows on Merrylands Road will be maintained. However, it is important to note that the use of the Works Zone is prohibited during the school's peak drop-off / pick-up hours.

1.6.2 Western Site (Zone A and Zone C)

A Works Zone is required as a part of the western construction site activities to the west of the zebra pedestrian crossing along the northern side of Merrylands Road. *AS1742.10* requires that a "No Stopping" zone of 20m must be provided upon the approach to a zebra pedestrian crossing. Therefore, the proposed western Works Zone is 23m in length, stretching from the western edge of the existing driveway to 20m away from the zebra pedestrian crossing. The western Works Zone is therefore limited to vehicles up to a 19m length Articulated Vehicle (AV). It is important to note that vehicles longer than 15m in length (including AVs and Truck & Dog Combinations) will block access into the site driveway, whilst the presence of any vehicle within the proposed western Works Zone will restrict construction vehicle egress from the site driveway. The western Works Zone should be managed such that no access or egress to the site is required whilst the site driveway is blocked by the vehicles within the proposed western Works Zone.

As discussed in **Section 1.5**, the western site driveway will be used by students/staff which require disabled parking. The drivers of such vehicles shall be given the contact details of the site manager to ensure that there are no vehicles in the western Works Zone that will restrict access/egress along this driveway when required for disabled student/staff parking.

The existing public verge on the northern side of Merrylands Road is to remain open to all pedestrians at all time during construction. If necessary during construction, the site manager must install appropriate type B hoarding to allow free access to pedestrians at all times.

There is existing diplomat fencing along the kerb on the northern side of Merrylands Road which overlaps with the eastern end of the proposed western Works Zone for approximately 4m. If this 4m of fencing is to be demolished, it must be temporarily replaced with water barriers and permanently replaced at practical completion of construction.

When the western Works Zone is in use, the eastbound lane of Merrylands Road must be temporarily closed. Vehicles will be diverted to the westbound lane of Merrylands Road under the supervision of RMS Accredited Traffic Controllers. Eastbound vehicles will travel in the westbound lane until they pass both the western Works Zone and the pedestrian crossing, where they will re-join the eastbound lane. This operation is described in detail in **Section 1.11** and **Annexure C**.

Traffic on Merrylands Road shall may only be stopped due to the use of a single works zone. Therefore, the mobile crane loading within the eastern Works Zone must not take place whilst the western Works Zone is in use.

A separate application to Council's Traffic Committee must be made for the proposed Works Zone. Approval for both Works Zones must be granted prior to the occupation of either Works Zone.

All materials and equipment / machinery will be stored on-site or within both proposed Works Zones 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 controller, if and when required, to ensure all vehicles arrive and depart the site safety.

1.7 Construction Staff & Parking Requirements

It is expected that a peak of 10 construction staff will be on-site at any one time during construction, this will typically be during the fit outs and finishes stage, with a reduced number of staff during construction, demolition and excavation (approximately 6). The contractor shall encourage and facilitate carpooling amongst construction staff as well as encouraging the use of public transport where possible to minimise private vehicle use. The site is in very close proximity to an existing bus stop located along the sites frontage providing access to Bus Routes 809 and 810 provided by Transport NSW. The Bus Routes provide access from Parramatta Train Station to Merrylands Train Station via Pemulwuy. It is expected that a proportion of staff will travel to and from the site using public transport.

Further, staff parking on-site for construction workers will be made available wholly within the construction fencing or within the existing staff carpark reducing any impact upon the surrounding on-street parking supply.

1.8 Construction Traffic

An estimate of the construction traffic generated by the works is summarised in **Table 2** below.

TABLE 2: CONSTRUCTION VEHICLE MOVEMENTS

Stage	Trucks	Truck Type
Demolition	20 x construction vehicles per day	19m length AV
Excavation	20 x Construction vehicle per day	18.7m length Truck and Dog Combination
Structure	3 x construction vehicle per day 1 x waste collection vehicles per day;	19m length AV

Fit outs and Finishes	4 x construction vehicle per day 2 x waste collection vehicle per day;	HRV
Concrete Pours	Peak of 6 x concrete truck per hour per pour; A total of 2 concrete pours.	MRV - HRV

The largest vehicle to access the site during construction will be a 19m length AV which will utilise the proposed construction gate access along Merrylands Road for the eastern site, and within the proposed Works Zone for both the eastern and western sites. The largest vehicle to enter /exit the western site is an 8.8m length MRV during the western site demolition, and a 12.5m length HRV during all other western site construction phases. Any vehicles larger than a 19m length AV will be prohibited from travelling to the site. Based upon a 10-hour operating day and the peak of 20 delivery vehicles per day during excavation to and from the site, four (4) construction vehicle movements (2 in, 2 out) within any one peak hour.

Staff peak traffic generation will generally occur early in the morning (7:00am) and finish 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 2** above is not expected to have a significant or lasting adverse impact on the surrounding road network. Construction traffic will be easily managed by the site contractor who will coordinate all deliveries including concrete trucks. The anticipated truck movements should not give rise to an increase in delays within the existing road network, although minor delays may occur within Merrylands Road when vehicles are entering / exiting the site, requiring following vehicles to slow, which is a typical operation of any driveway.

The TCP described in **Section 1.11** and shown in **Annexure C** shall be implemented for the entire duration of construction to control both vehicle and pedestrian movements across the construction site access.

1.9 Construction Vehicle Haulage

As mentioned in **Section 1.5**, vehicular access information (including route and maximum vehicle size) to the eastern site, western site and the proposed Works Zones is shown in **Table 3** below:

TABLE 3: VEHICULAR ACCESS

Access Point	Maximum Vehicle Size	Route
Eastern Site (On-site)	19m length AV	RT from Merrylands Road (east approach) via Cumberland Highway -or- Reverse manoeuvre from Merrylands Road (west approach) under traffic control
Eastern Site (Works Zone)	19m length AV	From Merrylands Road (west approach) via Gipps Rd, Hassall St, Victoria St, and Cumberland Highway
Western Site (On-site)	12.5m length HRV	RT from Merrylands Road (east approach) via Cumberland Highway

Western Site (Works Zone)	19m length AV(1)	From Merrylands Road (west approach) via Gipps Rd, Hassall St, Victoria St, and Cumberland Highway

Notes: (1) Vehicles larger than a 15m in length will block access to the western site entrance, and the presence of any vehicle will block egress from the site driveway.

Refer to **Annexure D** for a map of the haulage routes.

It is expected that construction vehicles up to 19m length Articulated Vehicles (AV) will travel to the eastern site along the Cumberland Highway from the north / south, turn left / right into Merrylands Road and then turn right into the eastern site driveway.

Alternative site access to the eastern site for vehicles up to a 19m length AV is provided via a reverse manoeuvre from Merrylands Road (western approach). AV's performing this manoeuvre are expected to approach the site along the Cumberland Highway from the north / south, turn left / right onto Victoria Street, turn right on Hassall Street, turn right on Gipps Road, turn right on Merrylands Road, and enter the eastern site via a reverse manoeuvre.

It is expected that construction vehicles up to 12.5m length HRVs will travel into the western site along the Cumberland Highway from the north / south, turn left / right into Merrylands Road and then turn right into the western site driveway.

Construction vehicles up to 19m length AVs will travel to the western and eastern site Works Zone along the Cumberland Highway from the north / south, turn left / right onto Victoria Street, turn right on Hassall Street, turn right on Gipps Road, turn right on Merrylands Road, and enter the Works Zone in a forward direction.

It is envisaged that all construction vehicles leaving either site will forward out of the site, turning left onto Merrylands Road and turn left / right onto the Cumberland Highway. All construction vehicles leaving both proposed Works Zones will continue east on Merrylands Road and turn left / right on Cumberland Highway.

These routes allow vehicles up to a 19m length AV access / egress to both eastern and western sites, and the proposed eastern and western Works Zones to complete all loading / unloading of deliveries / material / concrete pours.

The relevant swept paths of the above construction routes are reproduced in **Annexure B** for reference.

1.10 Pedestrian Management

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

An RMS Accredited Traffic Controller will be utilised during the implementation of the TCP detailed in **Section 1.11** and is to monitor pedestrian traffic along the northern side of Merrylands Road during the entry / egress of construction vehicles from both the eastern and western sites.

The existing public verge on the northern side of Merrylands Road is to remain open to all pedestrians at all time during construction. If necessary during construction, the site manager must install appropriate type B hoarding to allow free access to pedestrians at all times.

The main pedestrian entrance to the existing school from Merrylands Road (across from Taylor Street) will be maintained at all times throughout construction for students and staff.

1.11 Traffic Control Plans

A Traffic Control Plan (TCP) has been prepared in **Annexure C** and is to be implemented and erected by a suitably qualified contractor during truck movements into and out of both construction site accesses. The TCP is based on *Roads & Maritime Services (RMS) Traffic Control at Worksites* and AS1742.3:2009.

All truck movements at the eastern and western site accesses shall be undertaken under the supervision of an RMS Accredited Traffic Controller when required, who will also be required to monitor pedestrian movements along the northern side of Merrylands Road. The following are relevant to note with respect to the TCP:

- An RMS Accredited Traffic Controller is required at the eastern and western site driveways to monitor pedestrian access along the northern side of Merrylands Road as well as assist truck movements into and out of the site;
- During the use of the western Works Zone, the eastbound lane of Merrylands Road is required to be closed, with eastbound traffic being diverted to the westbound lane under traffic control;
- During the use of the eastern Works Zone two-way traffic along Merrylands Road shall be maintained with a reduced 40 km/h speed, unless loading is occurring from the mobile crane;

- During mobile crane loading within the eastern Works Zone, a traffic controller will stop all vehicles on Merrylands Road for approximately two (2) minutes until the loading is complete;
- All deliveries to the eastern site, western site and both Works Zones are prohibited between the school peak drop-off / pick-up hours, namely 8:00-9:30am and 2:30-4:00pm on school days. All construction vehicles are required to perform deliveries entirely within the site during the school peak drop-off / pick-up hours;
- The existing school ground outside of construction areas is to remain operational at all times.
- Vehicular access to the disabled parking area at the rear of the site shall always be open to disabled staff/students. The traffic controller at the western site driveway is required to monitor disabled student/staff vehicle movements to ensure safety from the construction site area.
- Traffic on Merrylands Road shall may only be stopped due to the use of a single works zone. Therefore, the mobile crane loading within the eastern Works Zone must not take place whilst the western Works Zone is in use.

1.12 Resident/Parent/Staff Consultation Process

Parents and staff of the school are required to be notified of the construction prior to the occupation of the site. Staff shall be notified of the displacement of staff parking spaces and provided with a map of alternative on-street parking locations within the surrounding local road network. Consultation should be provided using the following methods:

- Publications on the school's website;
- Posts on the school's noticeboard;
- Email newsletter.

Note – There will be no disruptions to traffic routes and direct notification of residents is not required.

1.13 Driver Code of Conduct

As requested by the client, a Driver Code of Conduct (DCC) has been prepared by *M^CLaren Traffic Engineering* (MTE). It is noted that all construction vehicle drivers are to read and sign the DCC prior to conducting site deliveries or servicing.

All staff of the Greystanes Public School construction project and any employees contracted to it, whether directly or indirectly, who engage in the movement of delivery trucks or motor vehicles on the site shall abide by the following code of conduct. All drivers of vehicles including employee and contractor truck drivers will be required to sign a register of inducted drivers confirming that they agree to the obligations, requirements and directions in regard to Driver's Code of Conduct. The signed drivers code of conduct register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.

In the event that a statutory requirement overlaps the scope of this plan then the statutory requirements will take precedence. If there is a real or perceived difference between the statutory regulations and this document, then the contractor or staff member must first seek clarification from the proponent on the implementation of that action for which the difference is identified.

a) Drivers to be appropriately licenced by RMS or another Australian state for the vehicle size and combination.

b) Drivers will abide by the (NSW) Road Rules 2014 as amended at all times when travelling on public roads and within the site.

c) It is prohibited to be under the influence of alcohol while operating a motor vehicle in accordance with the NSW Road Rules or as specified in contractual agreements for all employees. This specifically includes consumption by any worker who will operate machinery or a vehicle during their work period.

d) It is prohibited to be under the influence of drugs, other than alcohol, while operating a motor vehicle in accordance with NSW Road Rules or as specified in contractual agreements for all employees. This includes illicit drugs and those which may directly or indirectly have an effect such as those accompanied by the warning of *"This medicine may cause drowsiness and may increase the effect of alcohol. If affected do not drive a motor vehicle or operate machinery"*.

e) Contractors will specifically be required to abide by this code of conduct at all times while engaged in performing their duties during their work period. Failure of a contractor to comply with this code of conduct (without due cause) may result in reprimand or severance of employment by the land owner/proprietor in accordance with relevant government policies and contractual agreements for all employees. Failure of compliance will be recorded by construction staff.

f) Drivers should adjust their driving speeds and turning movements during times of poor weather including rain, fog and wind. Drivers should also turn on headlights / fog lights during fog weather conditions.

g) Drivers will comply with the direction of authorised staff when within the site.

h) Drivers will follow the nominated vehicle movement routes referred to in this Construction Traffic Management Plan (CTMP) by *M^{C}Laren Traffic Engineering,* including movements limited by, prevailing traffic conditions, vehicle size and vehicle mass. Drivers are to obey temporary changes in travel routes as directed by regulatory signage or under the direction of Police or traffic controller at work sites and drive their vehicles in a compliant manner appropriate to the size of the vehicle and road conditions.

i) When construction works are to be undertaken on school days, all vehicular movements associated with the works shall be undertaken outside of the school zone hours (8am – 9:30am and 2:30pm – 4pm).

1.13.1 Program to Manage Effectiveness of DCC

- The DCC should be routinely reviewed by the site manager. If any updates / changes are to be made this should be redistributed to all parties involved.
- The site manager's phone number should be provided to school officials to report any noncompliances with the DCC.
- All drivers of vehicles including employee and contractor truck drivers will be required to sign a register of inducted drivers confirming that they agree to the obligations, requirements and directions in regard to Driver's Code of Conduct. The signed drivers code of conduct register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.
- Failures of compliance with the DCC shall be record and made known to the site manager.
- The site manager is to routinely inspect vehicle entry to / exit from site to ensure that no construction vehicle queueing is occurring on-street.

1.14 Traffic Control Plans

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?*
No – The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surrounding network performance.

C. Measures to ameliorate the impact of re-assigned traffic
Is an assessment required?
No – The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surrounding network performance.

D. Assessment of public transport services affected *Is an assessment required?*
No – There are no existing bus stops which will be affected by the proposed works. The bus stop along the site's frontage to Merrylands Road will be unaffected by the proposed measures. 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 – All emergency vehicle, heavy vehicle, cyclist and pedestrian movements will operate under existing conditions throughout construction.

F. Assessment of effect on existing and future developments with transport implications in the vicinity of the proposed measures *Is an assessment required?*
No – There are no existing bus stops which will be affected by the proposed 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.

G. Assessment of effect of proposed measures on traffic movements in adjoining Council areas *Is an assessment required?*
No – The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surrounding network performance.

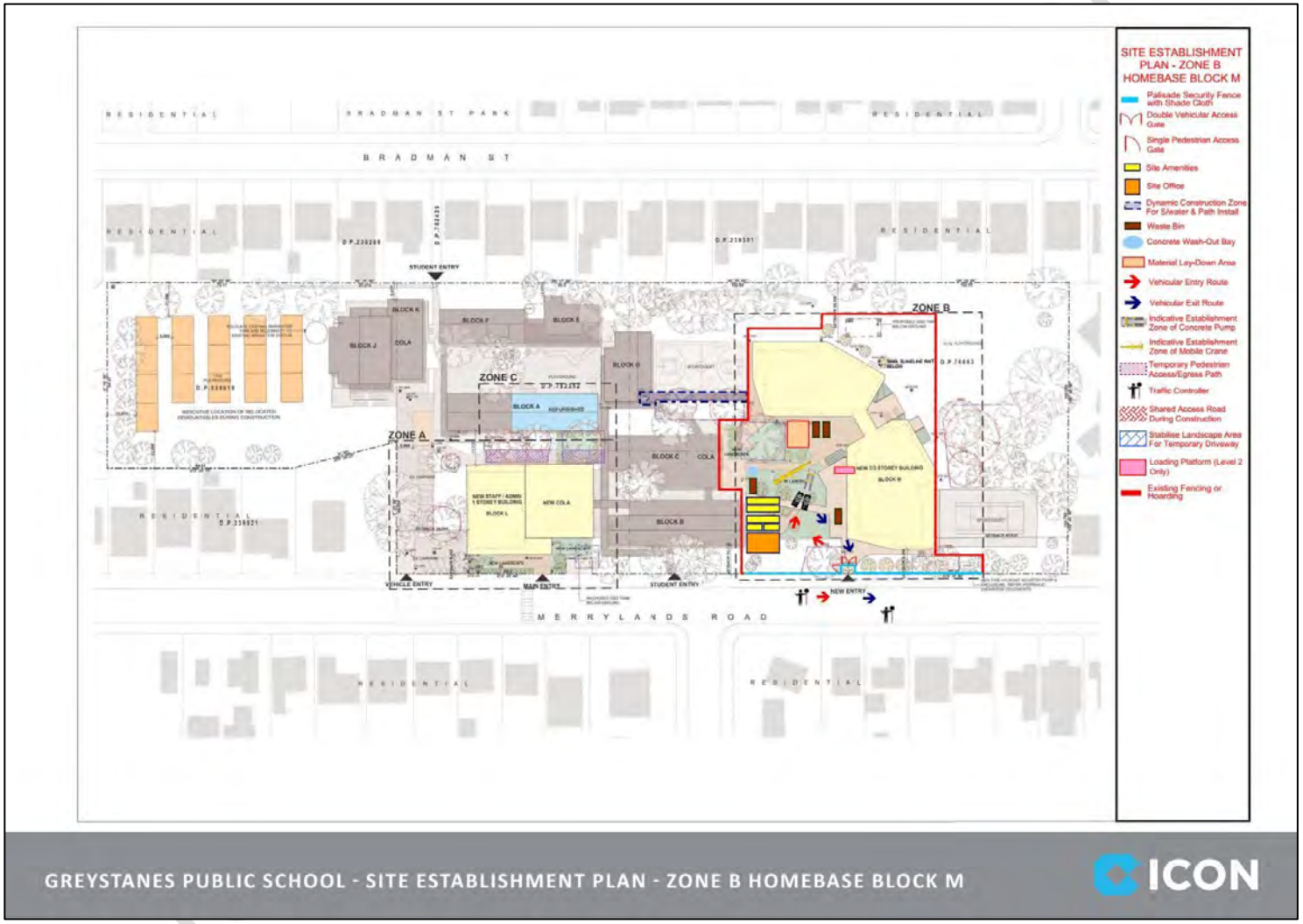
H. Public consultation process
Is a public consultation process required?
No – the current traffic flow conditions will remain unaltered and therefore there is no impact on existing traffic flows along local and arterial roads.

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

Yours faithfully
McLaren Traffic Engineering

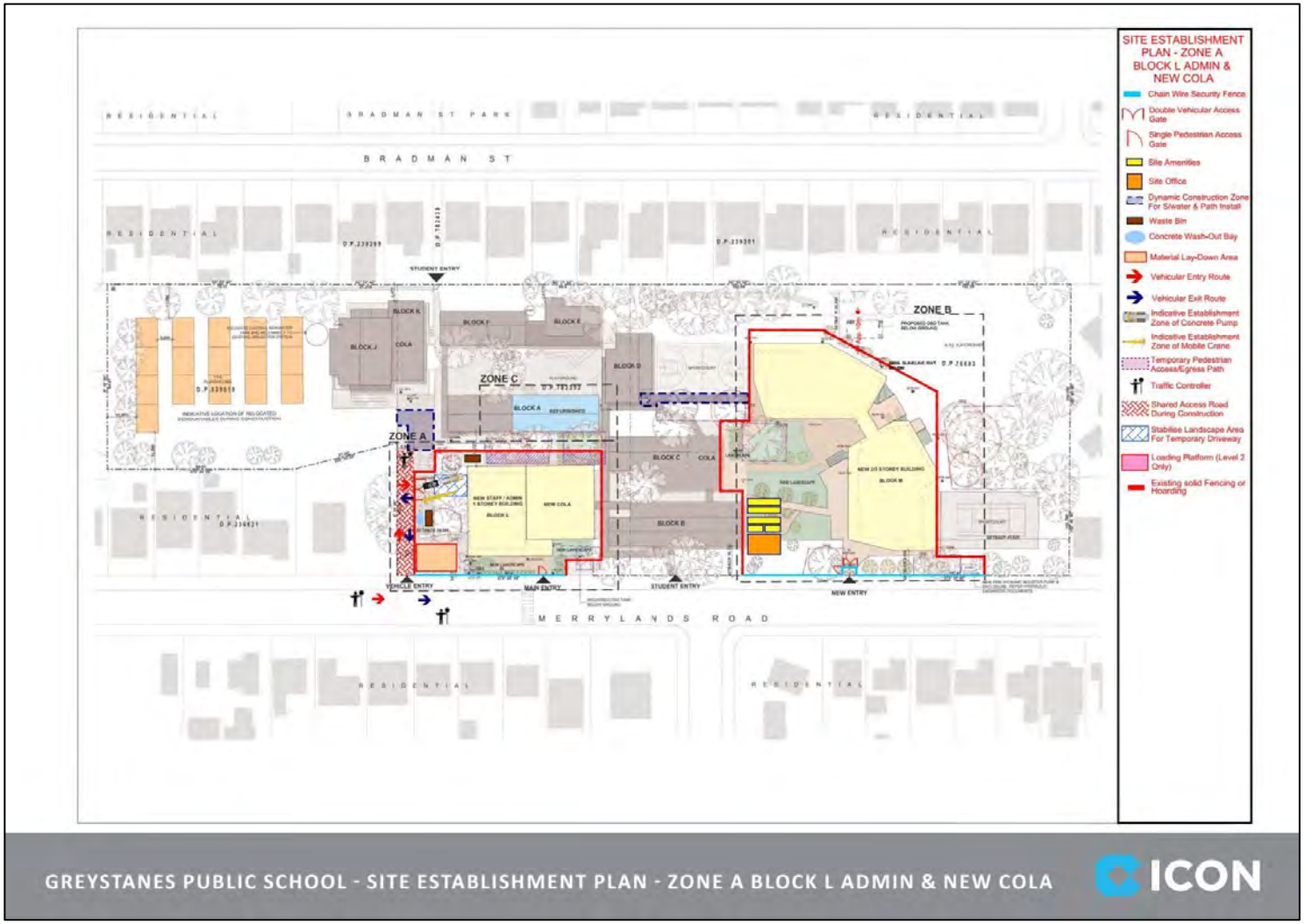
Craig McLaren
Director
BE Civil, Grad Dip (Transport Engineering), MAITPM, MITE
RPEQ 19457
RMS Accredited Level 3 Road Safety Auditor [1998] RMS Accredited Traffic Management Plan Designer [2018]

ANNEXURE A: SITE LAYOUT PLAN
(Sheet 1 of 3)



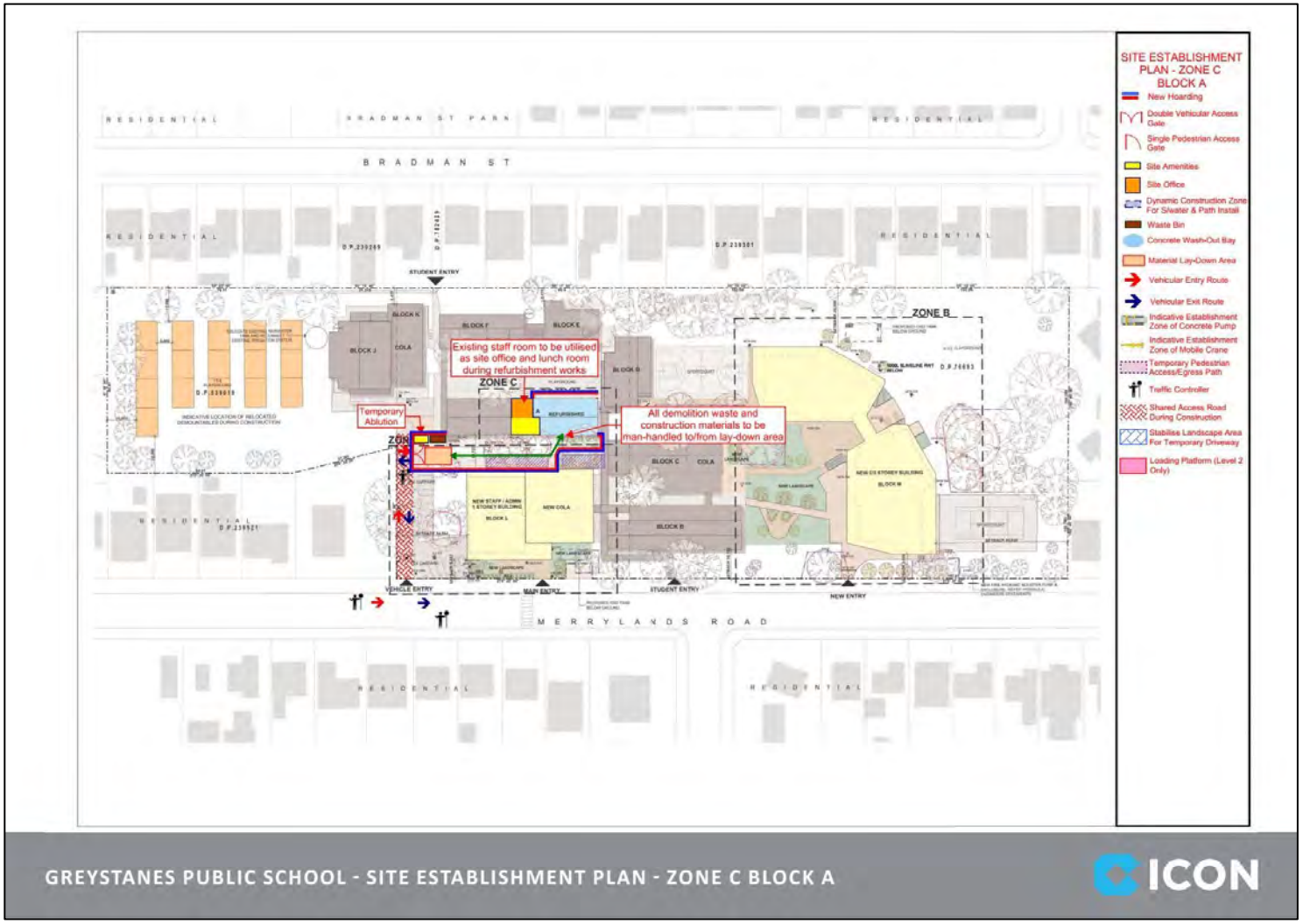
EASTERN SITE – ZONE B – SITE ESTABLISHMENT PLAN

ANNEXURE A: SITE LAYOUT PLAN



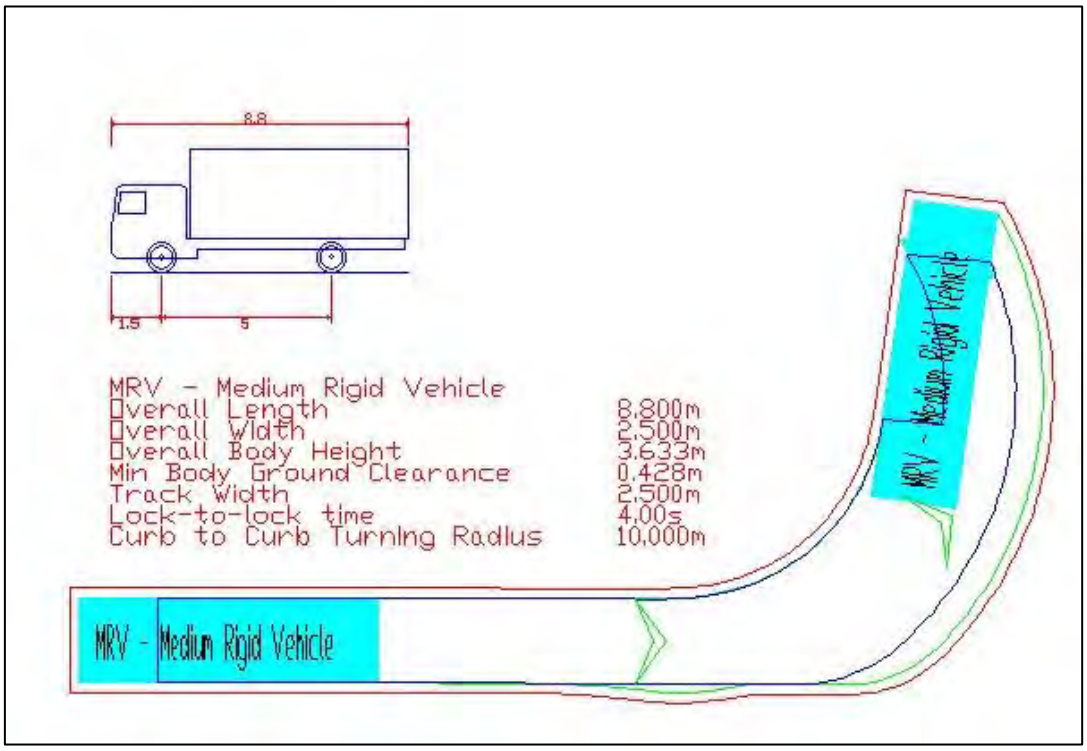
WESTERN SITE _ ZONE A _ SITE ESTABLISHMENT PLAN

ANNEXURE A: SITE LAYOUT PLAN
(Sheet 3 of 3)

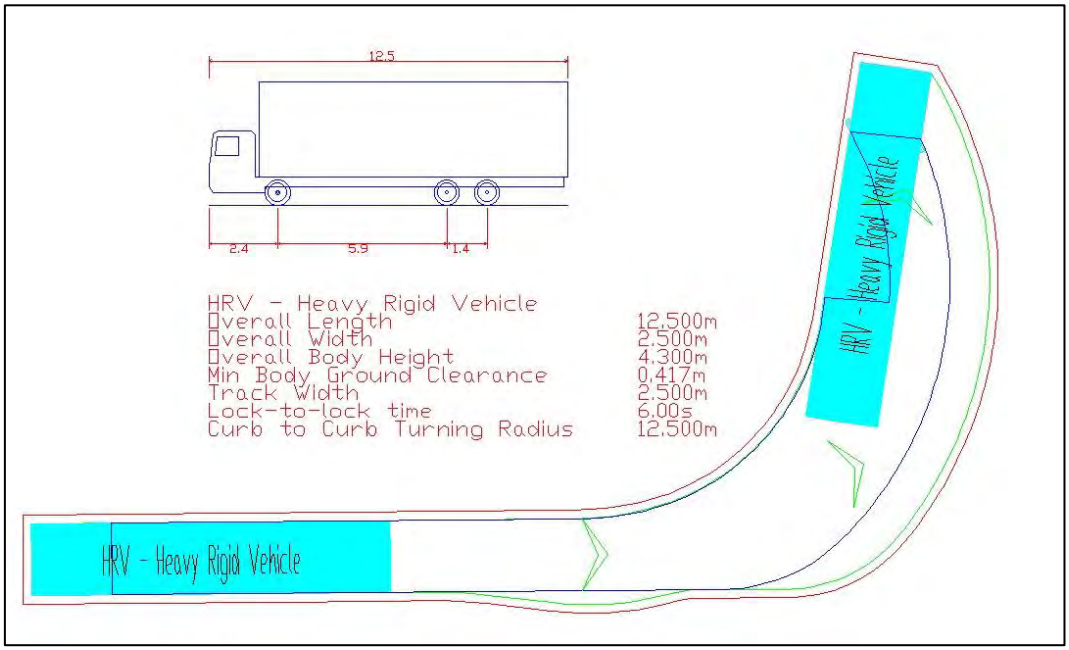


WESTERN SITE - ZONE C – SITE ESTABLISHMENT PLAN

ANNEXURE B: SWEPT PATH ANALYSIS
(SHEET 1 OF 13)



AUSTRALIAN STANDARD MEDIUM RIGID VEHICLE (MRV)



AUSTRALIAN STANDARD HEAVY RIGID VEHICLE (HRV)

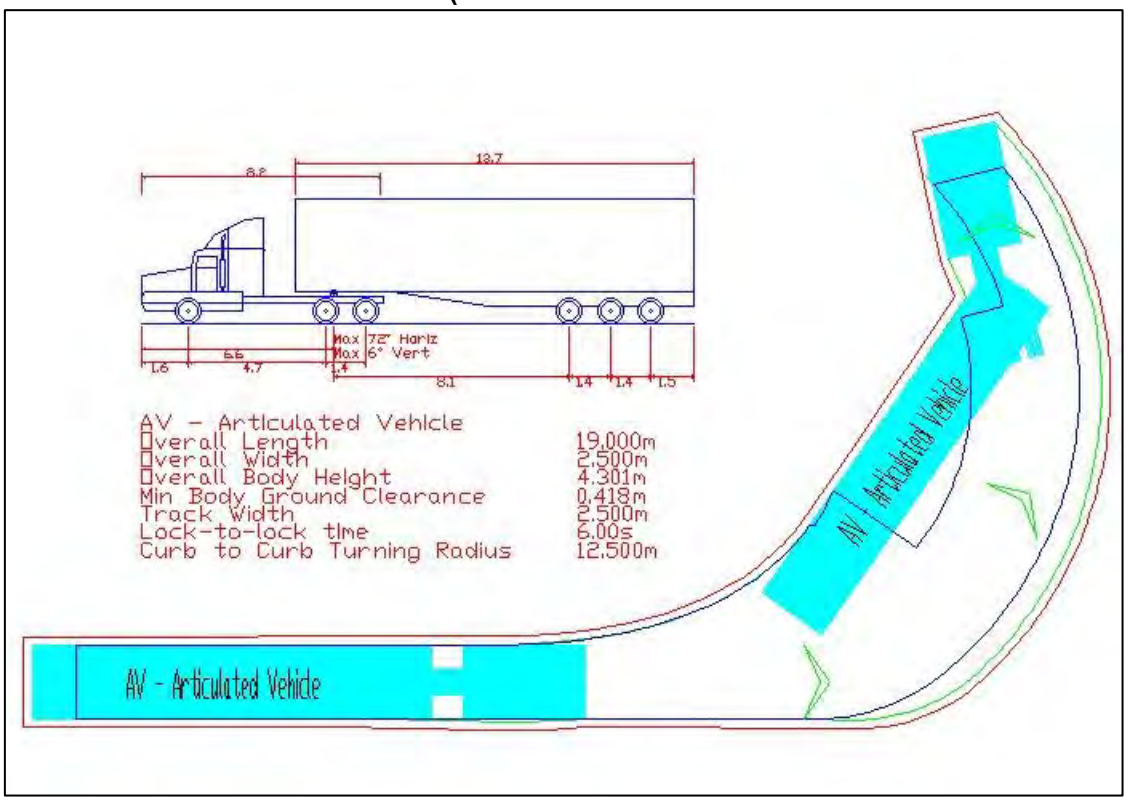
Blue – Tyre Path
Green – Vehicle Body

ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 13)

Red – 500mm Clearance

All tests performed at 5 km/h forwards and 2.5km/h reverse

(SHEET 2 OF



AUSTRALIAN STANDARD ARTICULATED VEHICLE (AV)

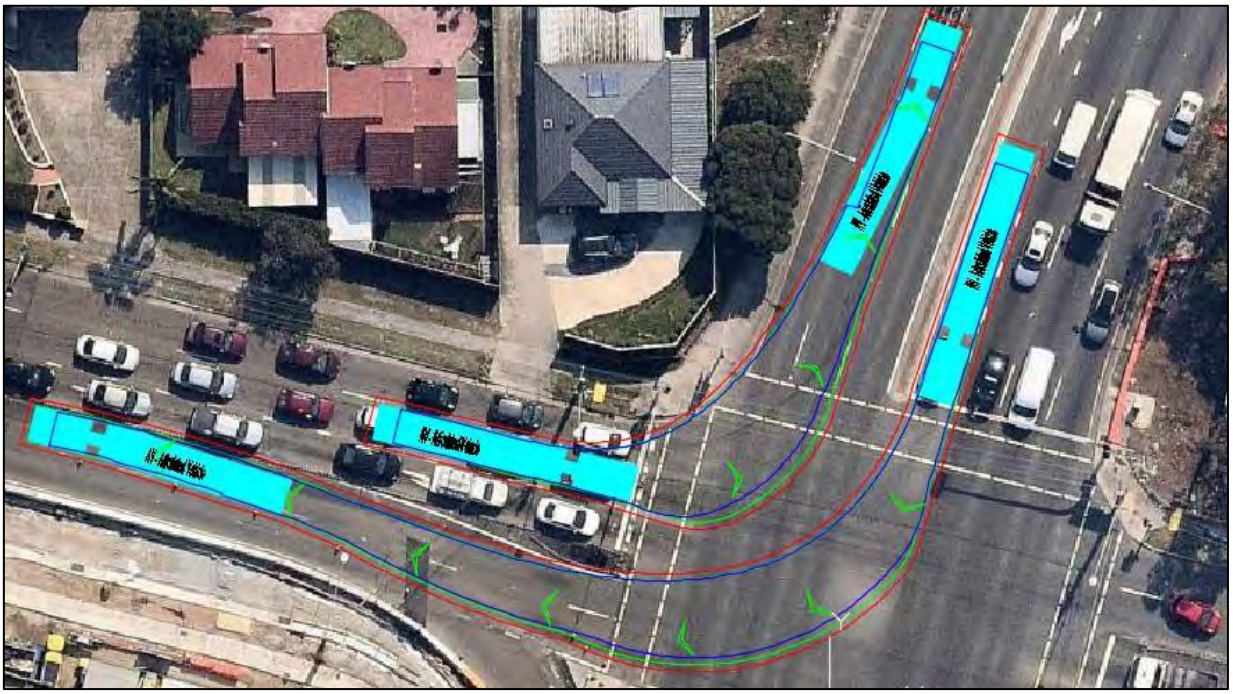
All tests performed at 5 km/h forwards and 2.5km/h reverse

ANNEXURE B: SWEPT PATH ANALYSIS

13)

3 OF

AV ENTRY / EXIT TO MERRYLANDS ROAD FROM THE SOUTH ALONG CUMBERLAND HIGHWAY



AV ENTRY / EXIT TO MERRYLANDS ROAD FROM THE NORTH ALONG CUMBERLAND HIGHWAY

Successful Entry and Exit

ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 13)

Note: These movements are required for eastern and western site access and egress. The western site access and egress is limited to an 8.8m length MRV for demolition and a 12.5m length HRV for all other phases

ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 13)
5 OF

EASTERN AV SITE ENTRY / EXIT FROM MERRYLANDS ROAD (EAST APPROACH) IN A FORWARD DIRECTION, WHILST A 19M LENGTH AV IS LOCATED WITHIN THE WORKS ZONE

Successful

Note: The site plan represents the minimum available manoeuvring area throughout construction. This path therefore is a worst-case scenario.

ANNEXURE B: SWEPT PATH ANALYSIS
(SHEET 6 OF 13)

EASTERN AV SITE ENTRY FROM MERRYLANDS ROAD (WEST APPROACH) IN A REVERSE DIRECTION

EASTERN SITE AV EXIT FROM SITE IN A FORWARD DIRECTION

Successful

Note: The reverse entry manoeuvre must be conducted under the supervision of two (2) RMS Accredited Traffic controllers on Merrylands Road (one per traffic flow lane)

Note: The site plan represents the minimum available manoeuvring area throughout construction. These paths therefore are a worst-case scenario.

ANNEXURE B: SWEPT PATH ANALYSIS
(SHEET 7 OF 13)

WESTERN SITE MRV ENTRANCE / EXIT

Successful

Note: This path is required during the Demolition phase of the western site.
If turning around on-site is not possible than construction vehicles will be required to reverse out of the site onto Merrylands Road under the supervision of an RMS accredited

ANNEXURE B: SWEPT PATH ANALYSIS
(SHEET
traffic controller.
8 OF 13)

WESTERN HRV SITE ENTRANCE / EXIT

Successful

Note: This path is required during the Excavation, Structural and Fitout phases of the western site.

If turning around on-site is not possible than construction vehicles will be required to reverse out of the site onto Merrylands Road under the supervision of an RMS accredited traffic controller.

ANNEXURE B: SWEPT PATH ANALYSIS
(SHEET 9 OF 13)

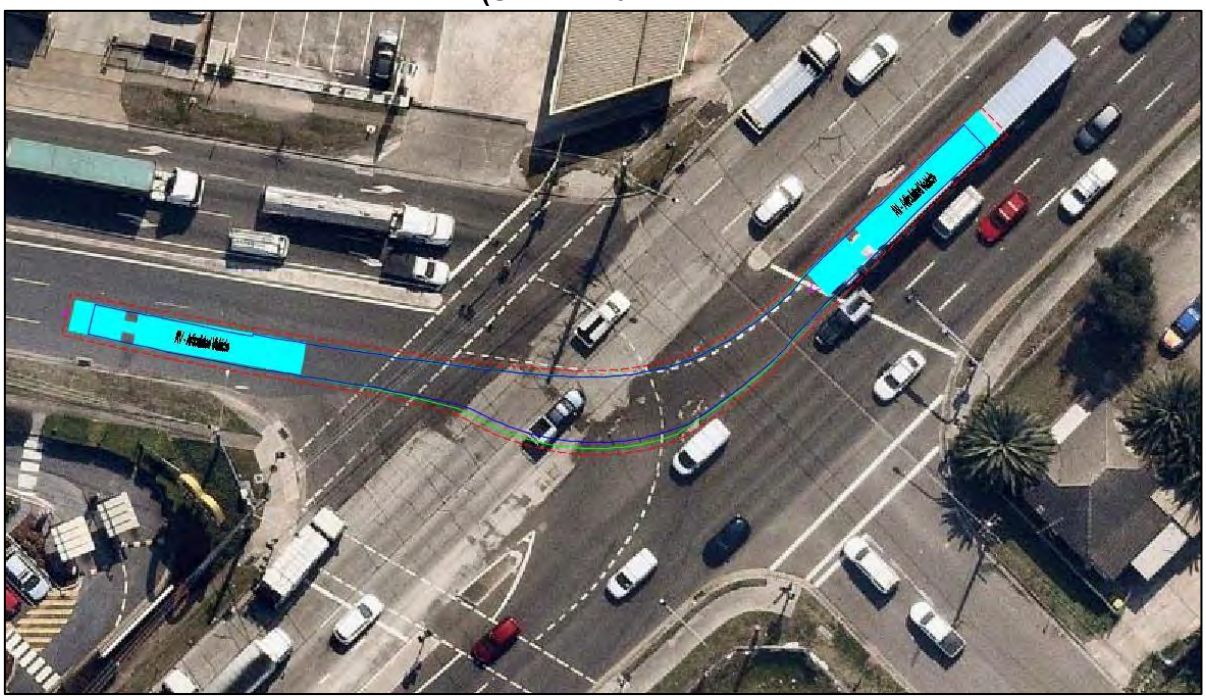
AV ACCESS INTO THE PROPOSED WESTERN SITE WORKS ZONE

AV EGRESS FROM THE WESTERN SITE WORKS ZONE

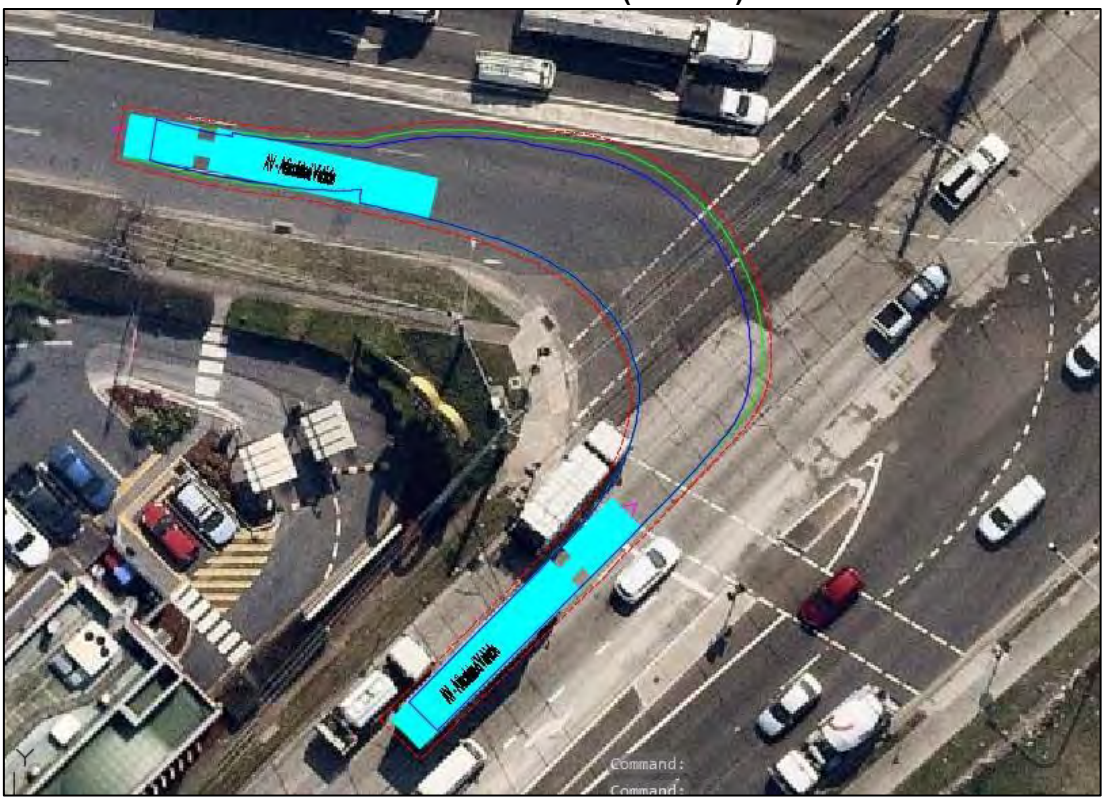
Successful

Note: Access and Egress from the Western Site Driveway will be limited whilst the proposed Works Zone is in use. When the Works Zone is in use, the eastbound lane of Merrylands Road must be closed. Vehicles will be diverted to the westbound lane of Merrylands Road under the supervision of RMS Accredited Traffic Controllers. Eastbound vehicles will travel in the westbound lane until they pass both the Works Zone and the pedestrian crossing, where they will re-join the eastbound lane. This operation is described in detail in **Section 1.11** and **Annexure C**.

ANNEXURE B: SWEPT PATH ANALYSIS
OF 13)
(SHEET 10



AV RIGHT TURN FROM CUMBERLAND HWY (NORTH) ONTO VICTORIA STREET



AV LEFT TURN FROM CUMBERLAND HWY (SOUTH) ONTO VICTORIA STREET

Successful

ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 1 OF 13)

Note: This path is only required for construction vehicles approaching the site from the west along Merrylands Road

1

AV RIGHT TURN FROM VICTORIA STREET ONTO HASSALL STREET

ANNEXURE B: SWEPT PATH ANALYSIS
OF 13)
HRV RIGHT TURN FROM HASSALL STREET ONTO GIPPS ROAD

Successful

Note: This path is only required for construction vehicles approaching the site from the west along Merrylands Road

ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 1 OF 13)
2

AV CONTINUING STRAIGHT THROUGH THE GIPPS RD / TARLINGTON PL ROUNDABOUT

Successful

Note: This path is only required for construction vehicles approaching the site from the west along Merrylands Road

3

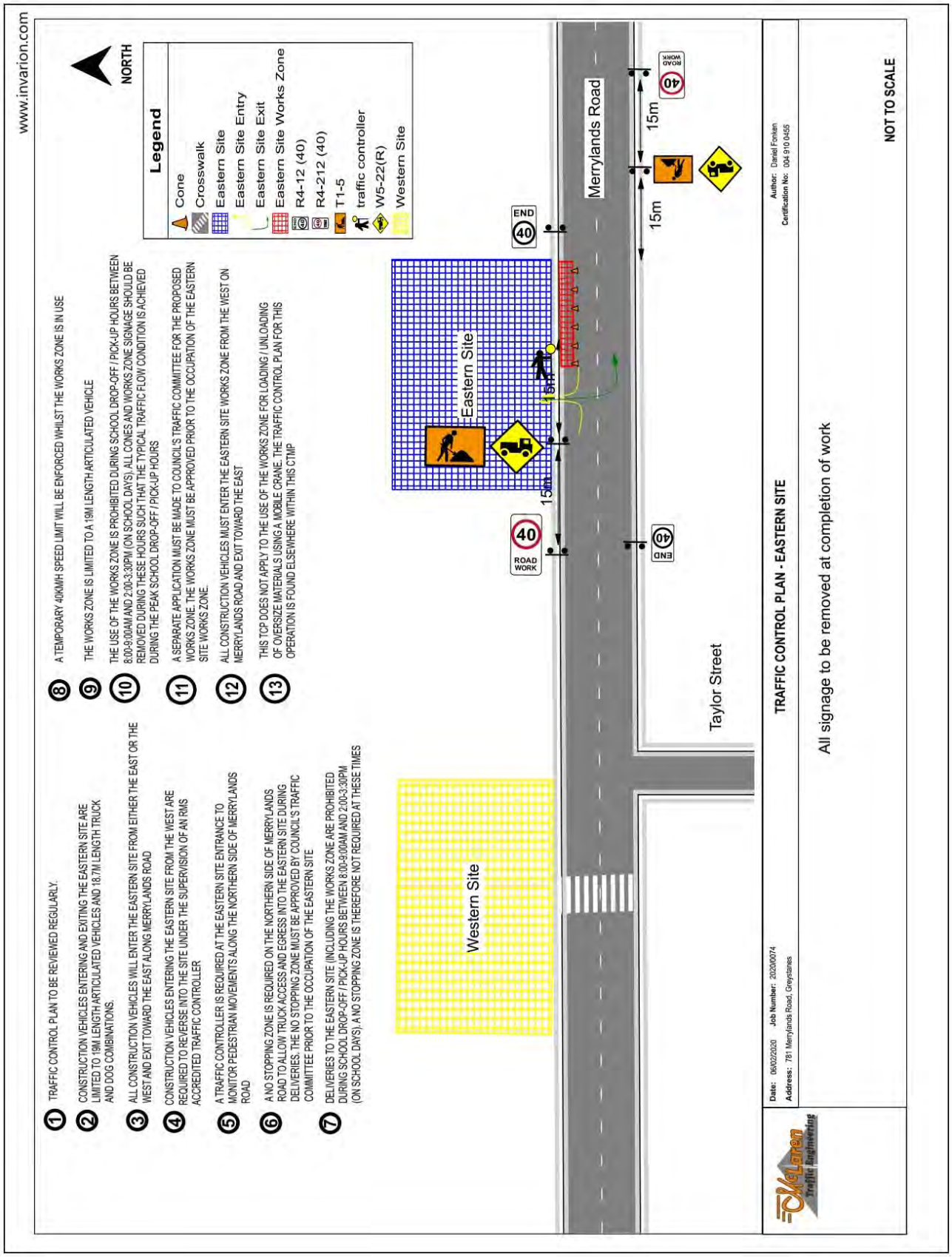
AV RIGHT TURN FROM GIPPS ROAD ONTO MERRYLANDS ROAD

Successful

Note: This path is only required for construction vehicles approaching the site from the west along Merrylands Road

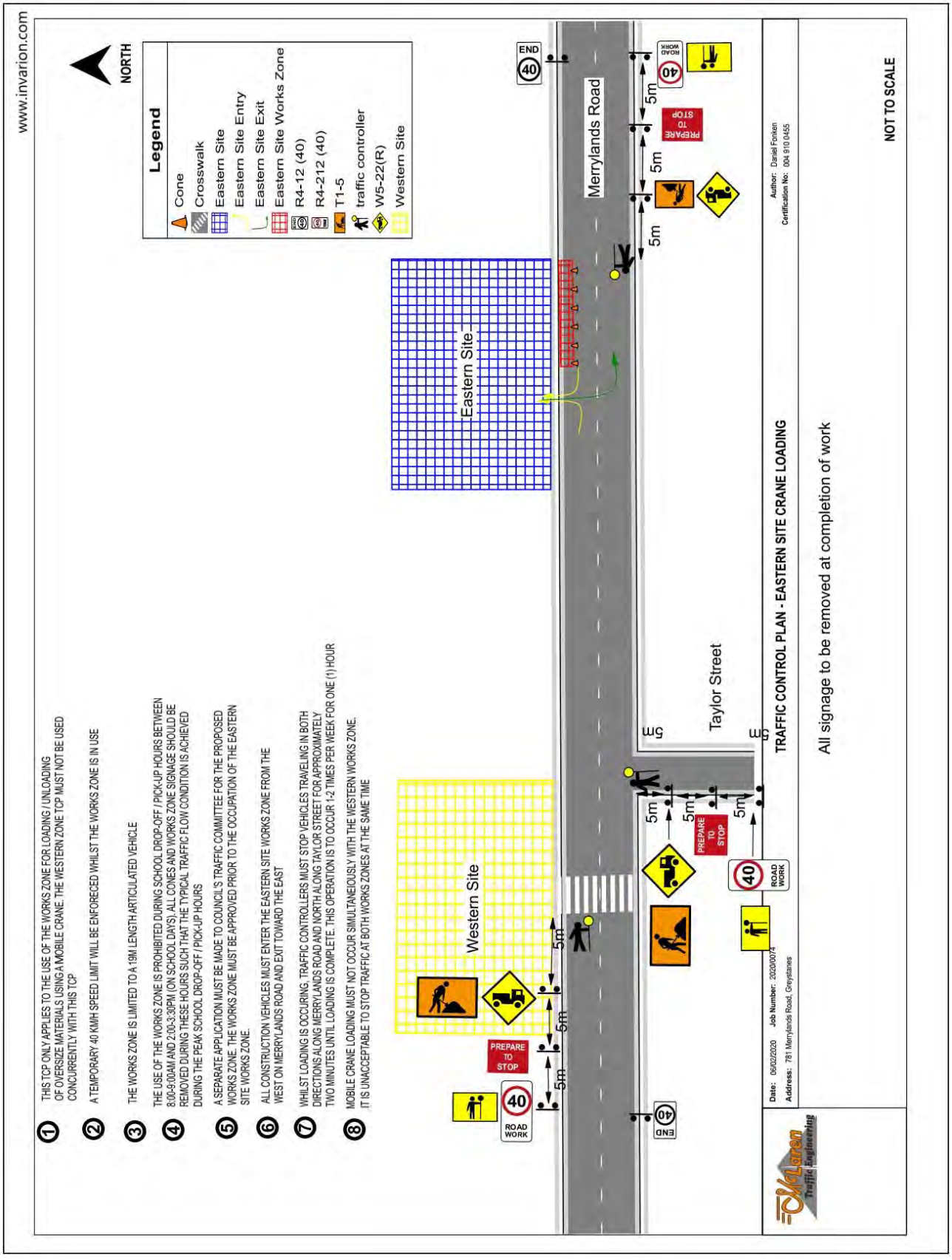
ANNEXURE B: SWEPT PATH ANALYSIS (SHEET 1 OF 13)

ANNEXURE C: TRAFFIC CONTROL PLAN (SHEET 1 OF 4)

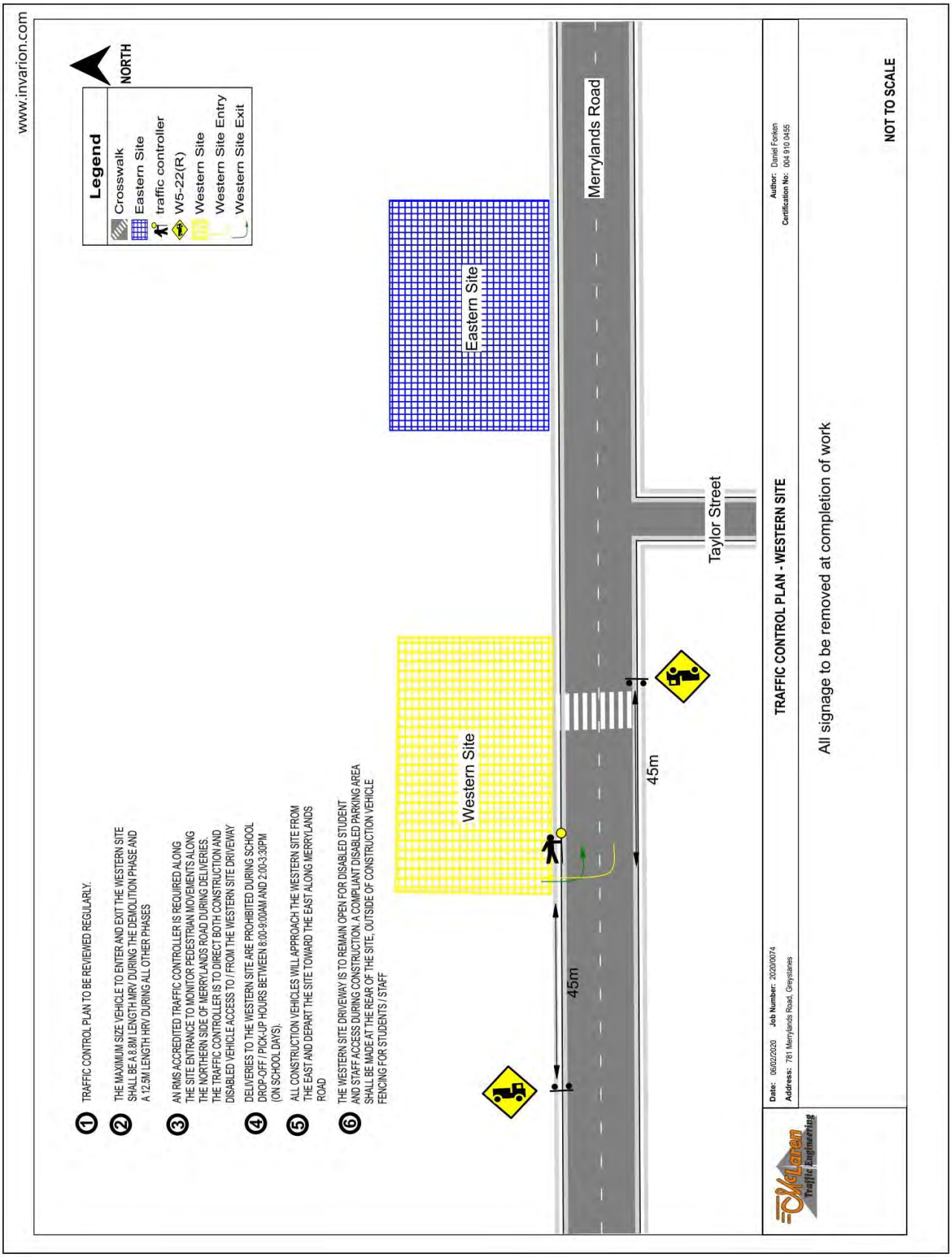


EASTERN SITE TRAFFIC CONTROL PLAN

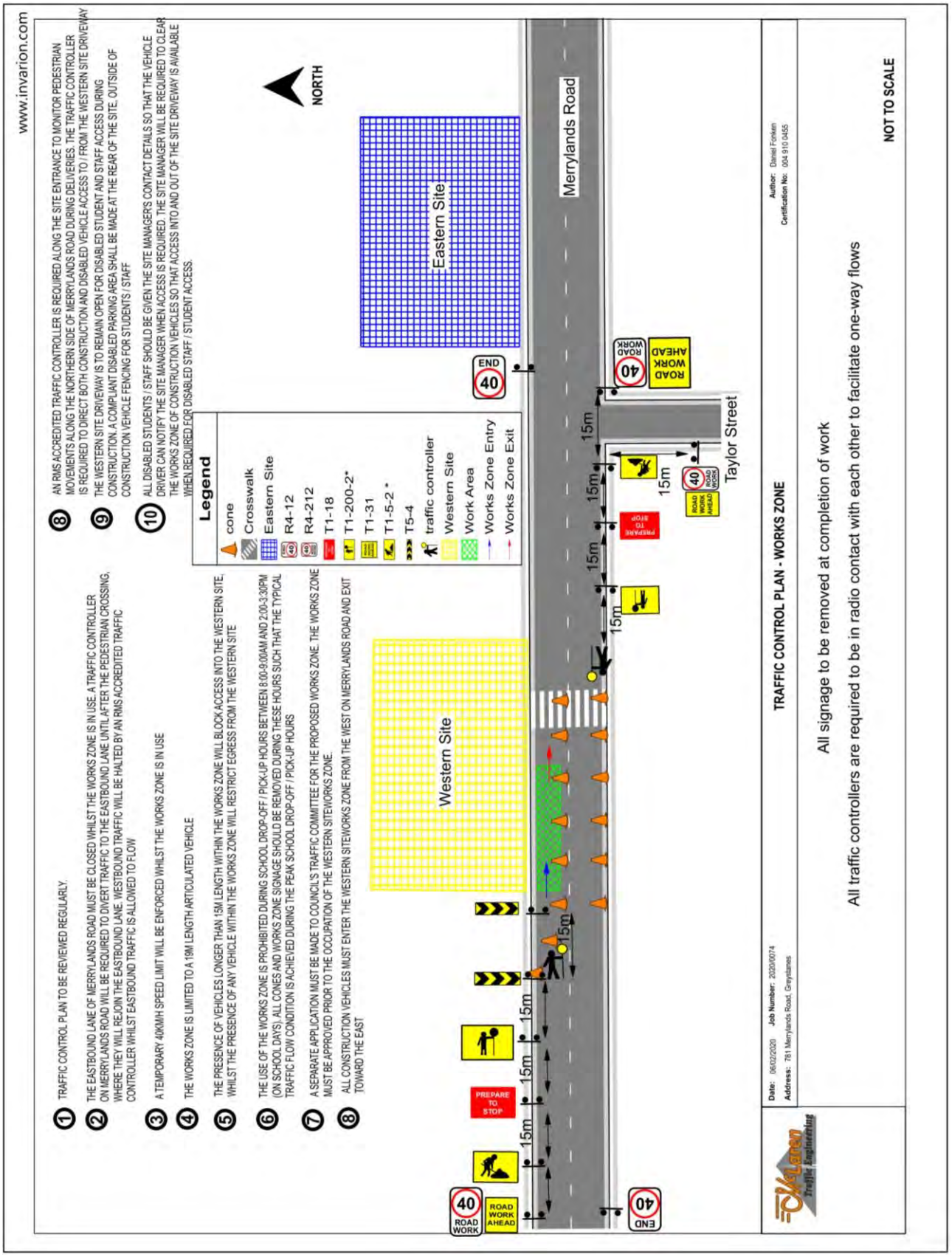
ANNEXURE C: TRAFFIC CONTROL PLAN (SHEET 2 OF 4)



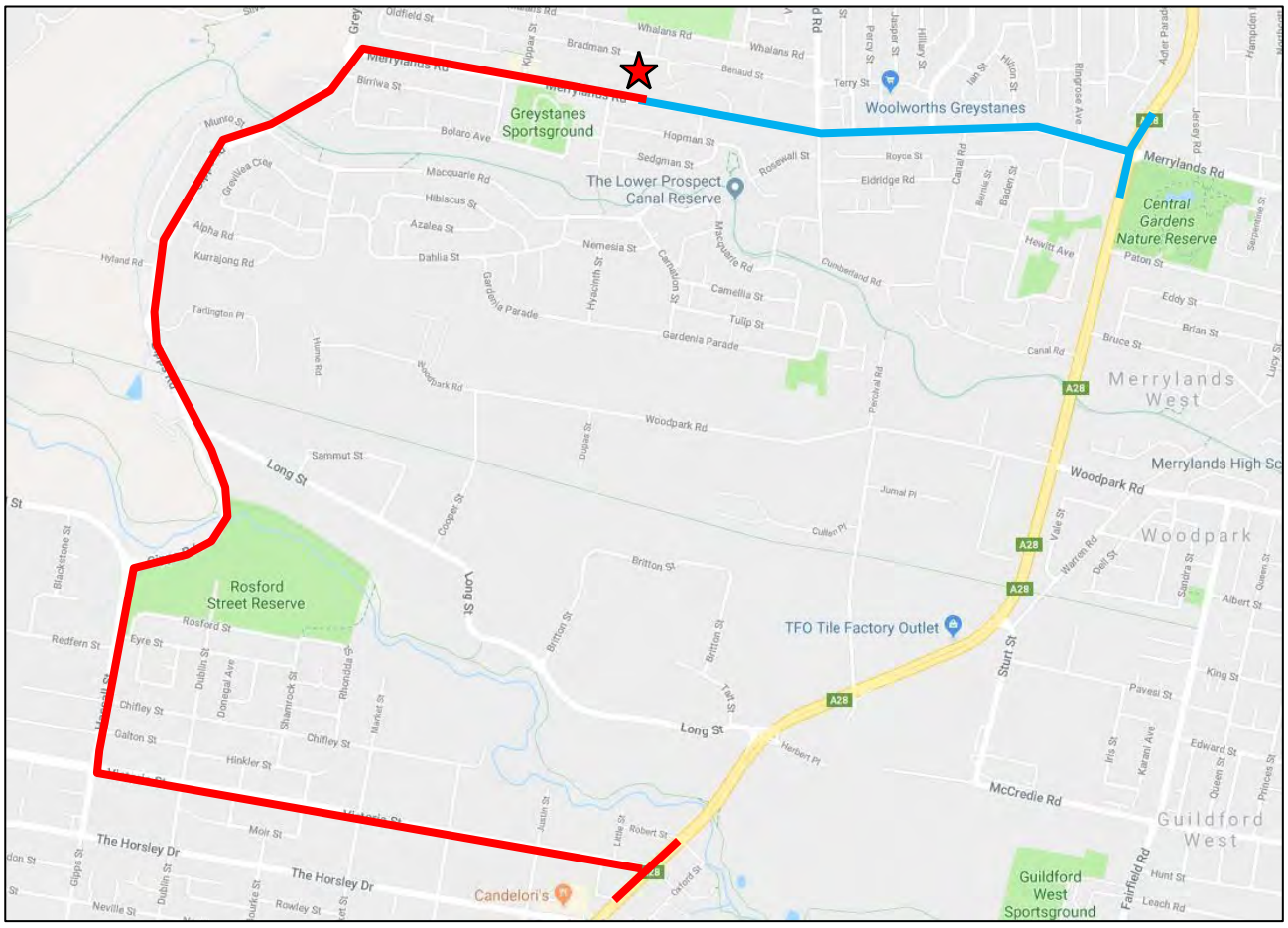
EASTERN SITE MOBILE CRANE LOADING TRAFFIC CONTROL PLAN ANNEXURE C: TRAFFIC CONTROL PLAN (SHEET 3 OF 4)



TRAFFIC CONTROL PLAN (SHEET 4 OF 4)



WORKS ZONE TRAFFIC CONTROL PLAN ANNEXURE D: HEAVY VEHICLE HAULAGE ROUTE (SHEET 1 OF 2)



Site Location

Construction Vehicles up to 19m length AV forward entry into Works Zone or reverse manoeuvre into the eastern site

Construction Vehicles up to 19m length AV forward entry/exit for the eastern site, 12.5m length HRV entry/exit into the western site (8.8m length MRV for western site Demolition), and 19m length AV exit from Works Zone

It is expected that construction vehicles up to 19m length Articulated Vehicles (AV) will travel to the eastern site along the Cumberland Highway from the north / south, turn left / right into Merrylands Road and then turn right into the eastern site driveway.

Alternative site access to the eastern site for vehicles up to a 19m length AV is provided via a reverse manoeuvre from Merrylands Road (western approach). AV's performing this manoeuvre are expected to approach the site along the Cumberland Highway from the north / south, turn left / right onto Victoria Street, turn right on Hassall Street, turn right on Gipps Road, turn right on Merrylands Road, and enter the eastern site via a reverse manoeuvre.

It is expected that construction vehicles up to 12.5m length HRVs will travel into the western site along the Cumberland Highway from the north / south, turn left / right into Merrylands Road and then turn right into the western site driveway.

ANNEXURE D: HEAVY VEHICLE HAULAGE ROUTE (SHEET 2 OF 2)

Construction vehicles up to 19m length AVs will travel to the western and eastern site Works Zone along the Cumberland Highway from the north / south, turn left / right onto Victoria Street, turn right on Hassall Street, turn right on Gipps Road, turn right on Merrylands Road, and enter the Works Zone in a forward direction.

It is envisaged that all construction vehicles leaving either site will forward out of the site, turning left onto Merrylands Road and turn left / right onto the Cumberland Highway. All construction vehicles leaving both proposed Works Zones will continue east on Merrylands Road and turn left / right on Cumberland Highway.

These routes allow vehicles up to a 19m length AV access / egress to both eastern and western sites, and the proposed eastern and western Works Zones to complete all loading / unloading of deliveries / material / concrete pours.

ANNEXURE E: SITE PHOTOS
(SHEET 1 OF 2)

DRIVEWAY ENTRANCE

This is separated from the construction area.

ANNEXURE E: SITE PHOTOS
(SHEET 2 OF 2)

PROPOSED DISABLED PARKING AREA AT REAR OF THE SITE.

The area under the existing cola is to be accessed via the western site driveway for disabled staff / student parking throughout construction as discussed within this CTMP. This area can also be used for onsite parking outside of construction hours for after-school activities.

Nicholas Gannon

From: Thang Tran <thang.tran@cumberland.nsw.gov.au> on behalf of Traffic <traffic@cumberland.nsw.gov.au>
Sent: Tuesday, 17 March 2020 9:13 AM
To: Nicholas Gannon
Cc: Damian O'Leary
Subject: RE: Greystanes Public School - Construction Traffic & Pedestrian Management Plan

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Nicholas,

The submitted Construction Traffic Management Plan (CTMP) for the proposed development at Greystanes Public School, Greystanes has been assessed and advise that Council has no objection with respect to the implementation of the CTMP subject to the following conditions:

1. That all heavy vehicles must follow the truck route as indicate in the submitted CTMP.
2. That there will not be any temporary partial road / footway closures during the construction period at the subject location. In the event a temporary partial road / footway closure is required, then prior to undertaking any closure, the applicant shall submit the Temporary Roadside Closure Application Form and attach support documents to Council for approval.
3. That all deliveries such as steel, concrete pump, etc. shall be undertaken on site and not on the road or footway.
4. That all trucks shall enter / exit safely with adequate sight distance. Any traffic controllers / lane closures will require a separate application and shall be submitted to Council for approval. It is advised that any such application be received with adequate notice to allow for Council processing times.
5. That if the site requires a Works Zone then a separate application will be required and subject to approval from the Cumberland Traffic Committee.
6. That a minimum advance 13 weeks Work Zone fees is required to be paid to Council before approval is granted.
7. That safe pedestrian access is maintained at all times.
8. That any traffic or public issues that arise during the undertaking of the works shall be immediately notified to the Police and Council.
9. That any damage to road pavement or footpath caused by construction activities shall be repaired by the applicant in no later than four weeks after the damage.
10. That the contractor shall not bag or block any traffic signs in this area without Council or Police approval.
11. That there shall be no queuing on public roads by trucks deliveries to the construction site, unless otherwise approved by Council.

If you have any further enquiry regarding the above issues please do not hesitate to contact me on 8757 9534.

Regards

CUMBERLAND CITY COUNCIL

THANG TRAN

TECHNICAL SERVICES ENGINEER

16 Memorial Avenue, PO Box 42 Merrylands NSW 2160
T +61 2 8757 9534
E thang.tran@cumberland.nsw.gov.au
W www.cumberland.nsw.gov.au

From: Nicholas Gannon [mailto:Nicholas.Gannon@icon.co]
Sent: Wednesday, 4 March 2020 9:33 AM
To: Traffic
Cc: Damian O'Leary
Subject: Greystanes Public School - Construction Traffic & Pedestrian Management Plan

Attention: Soma,

As discussed with one of your colleagues this morning,

As part of the Development Consent for Application number SSD 8778, a traffic and pedestrian management plan needs to be prepared in consultation with Council.

Please see attached CTMP and also extract from the development consent addressing the conditions in relation to the above,

If possible, can you please provide a time to discuss or arrange a meeting to review.

Kind Regards,

Nicholas Gannon
Project Coordinator

Level 2, 179 New South Head Rd
Edgecliff, NSW, 2027

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W icon.co

18.4 CONSTRUCITON NOISE & VIBRATION MANAGEMENT SUB-PLAN (CNVMSP) CONDITION B18

Refer to B18 Folder CNVMSP (51 pages)

The CNVMP was developed post the completion of the Johnstaff Consultation and Engagement Report with the local community. During this consultation period, no issues or strategies were identified and could not be elaborated on. Therefore, refer to the following sections for measures and strategies will be implemented:

1. Section 7.0 Recommended mitigation measures and work practices of Cundall CNVMSP
2. Section 15.6 of Construction Environmental Management Plan p19.

In conjunction with the implementation of the strategies listed above, ICON have a community complaint handling procedure which is highlighted below and in section 16.6 of the Construction Environmental Management Plan.

Complaints:

All relevant authorities, residents, businesses and others affected by project works will be informed of the project activity and timeframes.

In the event of interference with resident accesses, shop access, pedestrian thoroughfares or other matters, the project manager shall ensure that affected members of the public are so advised through, door knocks and/or letterbox drops or media announcements as appropriate.

Enquiries about the works from external parties are recorded on the Communications and Complaints Register.

Any complaints concerning any aspect of the project are registered, investigated and recorded detailing the nature of the complaint, the complainant and actions taken as a result of the compliant. It cross references any Nonconformance reports or other relevant documentation.

The Project Manager ensures that any complaint received is investigated promptly and that appropriate action is taken.

Greystanes Public School

Construction Noise and Vibration Management Sub-Plan

Job No:	1020706
Doc Ref:	1020706-AS-RPT-02 Greystanes CNVMP
Revision:	A
Revision Date:	31 May 2019

Project title	Greystanes Public School	**Job Number**
Report title	Construction Noise and Vibration Management Sub-Plan	1020706

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
DRAFT	30 April 2019	Draft issue for comments
—	01 May 2019	Finalised for submission
A	31 May 2019	Incorporate comments from certifier

Document Validation (latest issue)

31/05/2019

X

Principal author

Signed by: Saralertsophon, Monica

B.Mus (Comp)
M.DesSc (Audio & acoustics)
Member of Australian Acoustical Society (AAS)

31/05/2019

X

Checked by

Signed by: Saralertsophon, Monica

B.App.Sc. (Physics)
Member Institute of Acoustics (IOA)
Member Victorian Planning and Environmental Law Association (VPELA)

31/05/2019

X

Verified by

Signed by: Saralertsophon, Monica

Contents

Appendices

1.0 Introduction

1.0 Introduction

Cundall has been engaged by Icon Co toprepare a Construction Noise and Vibration Management Sub-Plan (CNVMSP, the Plan) for the proposed development at Greystanes Public School, Greystanes NSW.

This CNVMSP forms part of the Construction Environmental Management Plan to address the requirements in relation to construction noise and vibration management (Conditions B15(c) and B18.) requested by the NSW Department of Planning and Environment prior to issue of the Construction Certificate.

An explanation of common acoustic terminology used in this report is provided in Appendix A.

1.1 CNVMSP Objectives

The objectives of this CNVMSP are as follows:

- Meet the requirements of the project approval (Development Consent Application No. SSD 8778)
- Manage all construction related activities to minimise the noise and vibration impact to an acceptable level.
- Limit and reduce noise or vibration impacts at sensitive receivers or affect building integrity.
- Work to a target of not receiving any noise complaints.
- Ensure all noise mitigation infrastructure is maintained and effective.

2.0

Description of the existing environment

2.0 Description of the existing environment

2.1 Project site and surrounds

Greystanes Public School has been located on the current site since 1902. The immediate vicinity is residential in nature, with dwellings located immediately to the north, east and west of the site and across Merrylands Road to the south.

The eastern section of the site slopes significantly from street level at Merrylands Road down to the rear of properties on Bradman Street. The figure below indicates the site and the immediate surrounds.

Figure 1 Site location and surrounds

2.2 Measured background noise levels

Detail of the noise monitoring procedures and processes are outlined within *Acoustic Report for DA submission 1015560-RPT-AS001 Acoustics DA Report RevF*, prepared by Cundall dated 22 October 2018. The logger locations were considered appropriate to represent the noise climate at adjacent noise sensitive properties

A brief description of the three noise monitoring locations is presented in Table 1.

Table 1 Description of noise monitoring location

Monitoring location	Description
NM01 (west)	Set back from Merrylands Road on the west side of the site, representing the background noise of the residences around that vicinity (either side of Merrylands Road)
NM02 (east)	Set back north of Merrylands Road close to the façade of the nearest eastern resident

The average measured background noise levels are summarised in Table 2.

Table 2 Measured background noise levels (Cundall Acoustic DA report, 2017)

Monitoring location	Average measured background noise level (dB, L_{A90})		
	Daytime (0700 – 1800 hrs)	Evening (1800-2200 hrs)	Night-time (2200 – 0700 hrs)
NM01	44	41	36
NM02	45	42	38

2.3 Sensitive receivers

Residences surround the site in all direction with fields east and west of the school. For assessment purposes, the Project area has been divided into four Noise Catchment Areas (NCAs). The NCAs have been used to represent the different noise environments in area of the Project.

A summary of the identified sensitive receivers is presented in Table 3.

Table 3 Identified sensitive receivers

NCA	Noise logger reference	Receiver Type	Address / Description	Approximate Horizontal Distance from nearest construction footprint (m)[1,2]	
				Zone A	Zone B
NCA01	NM01	Residential	Residential receivers on the western surroundings of the school	26	48
NCA02	NM01	Residential	Residential receivers along Merrylands Road west of school and Taylor Street	27	43
NCA03	NM02	Residential	Residential receivers on the eastern surroundings of the school	66	20
NCA04	NM02	Residential	Residential receivers along Merrylands Road east of school and Taylor Street	61	12
NCA05	-	Existing school buildings	Greystanes Public School	<1	<1

Note 1: Approximate minimum horizontal distance to nearest receiver boundary (receiver of any type), where the horizontal distance is measured from the boundary to the near point of the Project footprint.

Note 2: Approximate minimum horizontal distance are provided for new builds within Zone A and Zone B. Zone C area is proposed for interior works only. (refer Figure 3)

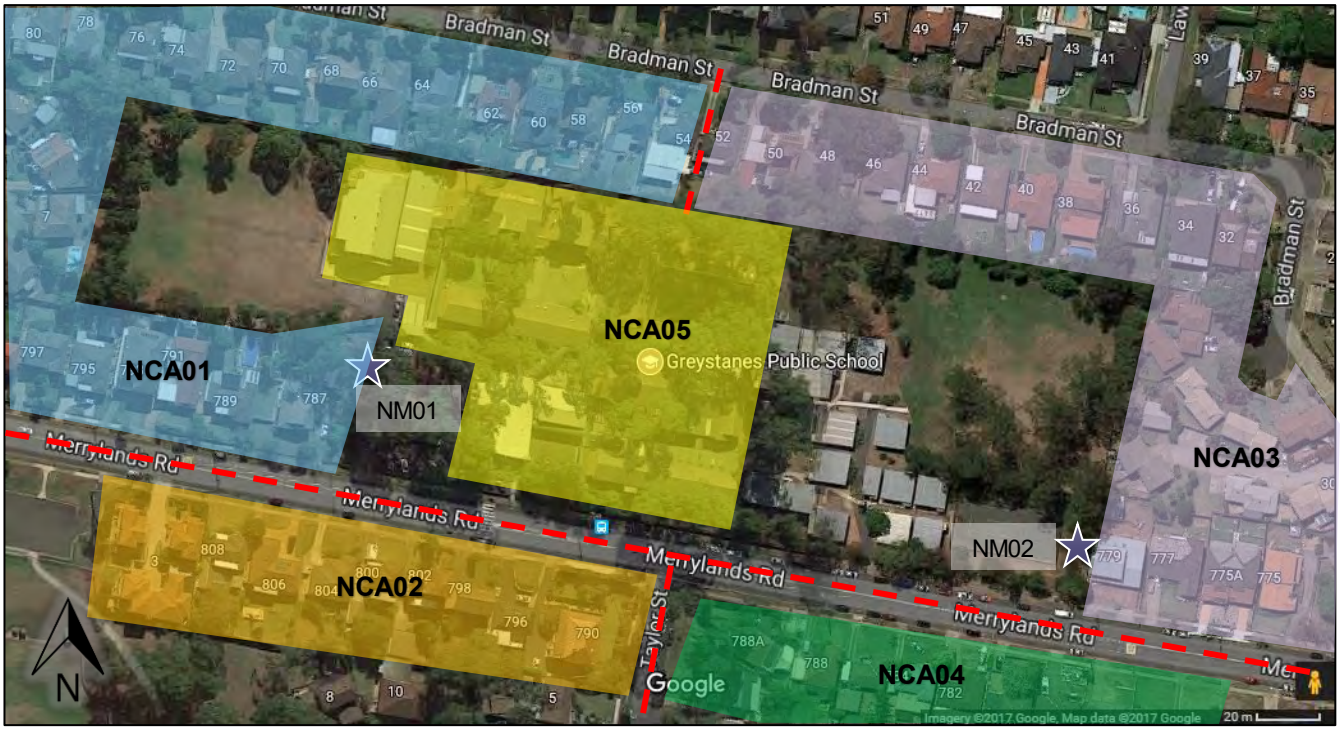

Figure 2 Sensitive receiver and Noise Catchment Area

Typical operating periods corresponding to the identified sensitive receivers above have been assumed at this stage of the Plan and are outlined in Table 4. The actual operating time are to be confirmed with the receivers prior to construction and the Plan to be updated correspondingly.

Table 4 Sensitive Receivers – Assumed typical operating hours

Receiver Type	Operating time
Residential	24 hours
Education Institutions	7:00 am to 4:00 pm [1]
Active recreational area (school grounds)	7:00 am to 6:00 pm [1]

Note 1: Assumed operating hours. To be confirmed with the relevant operator prior to construction.

3.0

Proposed construction activities

3.0 Proposed construction activities

The two main construction footprints within the site have been proposed. The new two storey building is to be located in the eastern site (Zone C) along with the refurbished administration building. The new one storey building is to be located in the western site (Zone A and Zone C). Temporary demountables are to be located and managed through a separate approval process.

The development plan and layouts are presented in Figure 3.

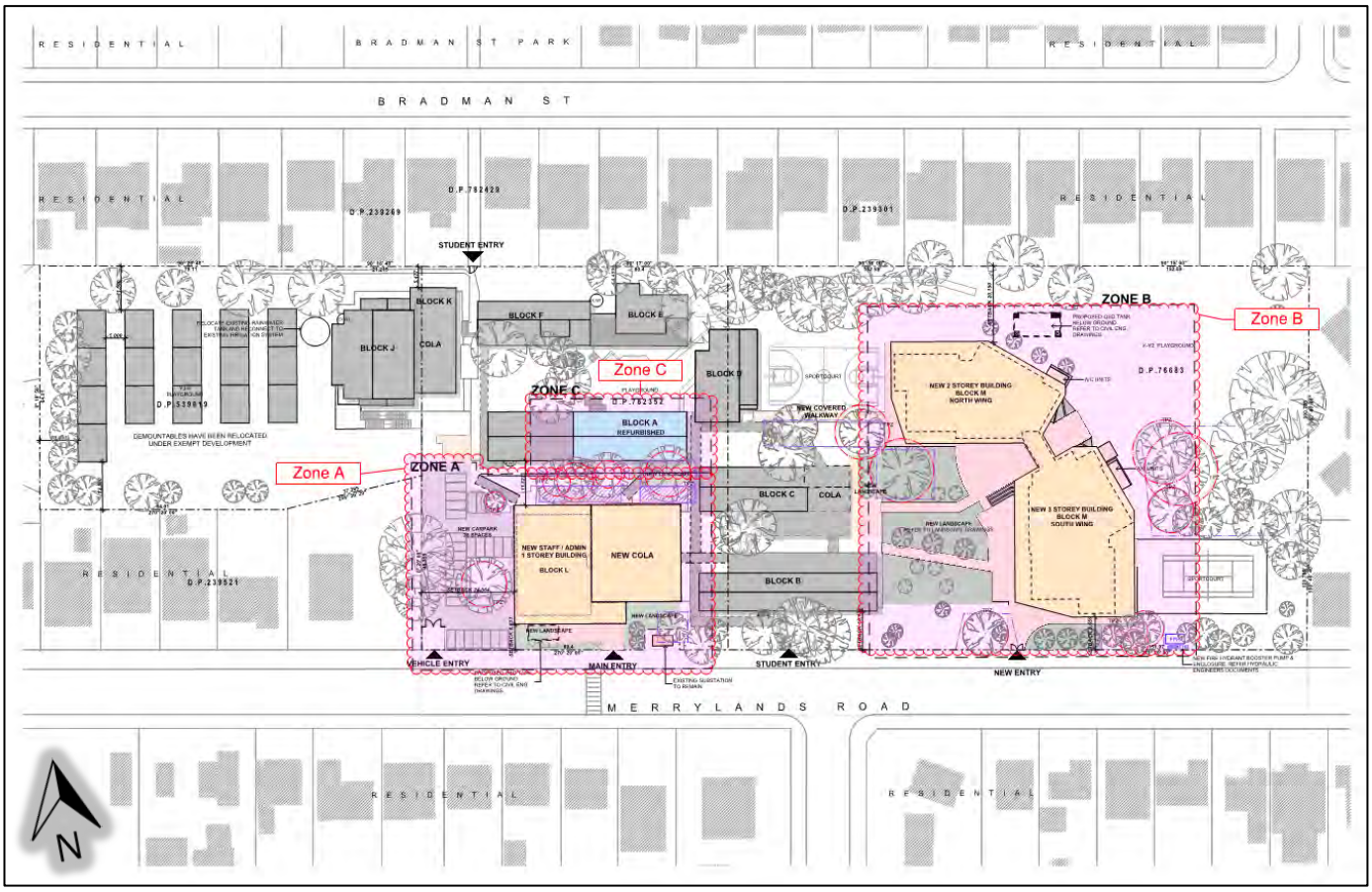

Figure 3 Proposed site plan (JDH Architects, drawing number A-005 Rev 7, dated 4 April 2019)

3.1 Construction methodology

It is understood that construction works for all stages will be carried out simultaneously. Indicative construction methodology has been provided by Icon are summarised in Table 5. Construction is expected to occur over a total duration of approximately 14 months.

Table 5 Proposed construction works

Scenario ID	Proposed works	Work zone			Assumed plant equipment[1]
		Zone A	Zone C	Zone B	
SC01	Demolition	1 month	-	1 month	Dump truck
SC02	Excavation	1 month	-	1 month	Excavator (tracked) 20t Excavator (tracked) + hydraulic hammer 20t Front end loader 23t

Scenario ID	Proposed works	Work zone			Assumed plant equipment[1]
		Zone A	Zone C	Zone B	
					Hand tools/ Power tools Truck – road truck Roller 5t Skid steer
SC03	Structure works	1 month	-	4 months	Bulldozer D9 Concrete agitator Concrete truck Excavator (tracked) 20t Front end loader 23t Hand tools/Power tools Tower crane 22t Pile driver (auger)
SC04	Fitout and finishes	1 month	1 month	5 months	Forklift Hand tools/Power tools Hiab trucks Truck – road truck

Note 1: Construction equipment adopted from similar construction activates provided within Table F1 of Roads and Maritime Services Construction Noise and Vibration Guideline (2016).

3.2 Construction Traffic

Additional road traffic generated on existing roads due to construction phase of the proposal has the potential to cause adverse road noise impacts at receivers. The additional road traffic generated by vehicles accessing the construction site locations are to be assessed in accordance with the NSW EPA Road Noise Policy (RNP).

The Traffic Report prepared by McLaren Traffic Engineering (18642.01FC, dated 5th February 2019) has been provided by Icon for the review. The additional traffic generated from the proposed construction works are provided in Table 6.

Table 6 Construction traffic volume

Work activity	Traffic volume	
	Heavy vehicle	Light vehicle
Demolition	20 per day	6 peak period[1]
Excavation	20 per day	6 peak period[1]
Structure	4 per day	6 peak period[1]
Fitouts and finishes	6 per day	10 peak period[1]
Concrete pours	12 per day (6 per hour at peak)	-

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

The construction traffic movement is proposed to utilise the following public roads for site access:

- Cumberland Highway (State road, 70 hm/h, approximately 41,826 Annual Average Daily Traffic flow (AADT), 8% heavy vehicles[1]) for all stages.
- Merrylands Road (local road, 60 km/h) for all stages

[1] Traffic volume data based on the nearest traffic counter station, Station ID 100001, Cambridge Street – 80 m North of Carre Avenue, Canley Heights, data accessed on 26 April 2019 (Ref: http://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/index.html)

4.0

Construction noise and vibration requirements

4.0 Construction noise and vibration requirements

4.1 Legislative and Other requirements

4.1.1 Relevant Legislation and Guidelines

In preparation of this report, the review of construction noise and vibration impacts has been carried out with in accordance with the following guideline:

- Development Consent document number SSD 8778 dated 17 December 2018 (NSW Department of Planning and Environment)
- NSW Interim Construction Noise Guideline (ICNG) (EPA, 2009)
- NSW Road Noise Policy (RNP) (EPA, 2011)

Guidelines and standards relating to the management of noise and vibration during construction include:

- Australian / New Zealand Standard AS/NZS 2107:2016 *Recommended Design Sound Levels and Reverberation Times for Building Interiors* (Standards Australia, 2016)
- Australian Standard AS 1055.1-1997 Acoustics - *Description and Measurement of Environmental Noise - General Procedures* (Standards Australia, 1997)
- German Standard DIN 4150: Part 3 - 1999 *Structural Vibration - Effects of Vibration on Structures* (German Institute of Standardisation, 1999)
- British Standard BS 7385 Part 2. *Evaluation and measurement for vibration in buildings Part 2* (British Standards Institution, 1993)
- Environmental Noise Management - *Assessing Vibration: a technical guideline* (EPA, 2006)
- Australian Standard AS2436 *Guide to noise and vibration control on construction, demolition and maintenance sites*
- UK's Department of Environment, Food and Rural Affairs *Noise Database for Prediction of Noise on Construction and Open Sites* (DEFRA, 2006)
- Transport for NSW *Construction Noise Strategy* (CNS) (TfNSW 2012),
- Roads and Maritime's guidelines Guideline (CNVG) (Roads and Maritime, 2016)
- British Standard BS 5228-2:2009 *Code of practice for noise and vibration control on construction and open sites*

4.2 Licence and Permit Requirements

4.2.1 Development consent SSD 8778

The management of potential construction noise and vibration impact from the proposed development is govern by the Development Consent document number SSD 8778 dated 17 December 2018 issued by NSW Department of Planning and Environment. The relevant conditions relating to construction noise and vibration are outlined in Appendix B for reference.

5.0

Construction noise and vibration

5.0 Construction noise and vibration criteria

5.1 Construction hours

Based upon the Development consent (Conditions C5, C6 and C7), the approved construction hours are outlined within Table 7.

Table 7 Approved construction hours

Day	Approved construction hours	
	Standard construction	High noise and vibration activities[1]
Monday to Friday	7:00 am to 6:00 pm	9:00 am to 12:00 pm 2:00 pm to 5:00 pm
Saturday	8:00 am to 1:00 pm[2]	9:00 am to 12:00 pm
Sunday and public holidays	No construction	No construction

Note 1: Rock breaking, rock hammering, sheet piling, plie driving and similar activities

Note 2: Extended hours have been proposed and is pending as per Letter from NSW Department of Education dated 2 April 2019, contract number SINSW-17-416

Based on the proposed program (Section 3.1), it is noted that the construction works may be required during the school exams. Coordination with the school to manage potential disruptions caused by noise and vibration from construction activities.

Out of hours works are possible with appropriate permit for works requiring special condition, such as oversized trucks and/or cranes that are restricted by Roads and Maritime Services from travelling during daylight hours, or emergency works.

Application for out of hours works permit requires approval by the Department. Surrounding residents nearby the project site are to be notified in advance of the out of hours works.

5.2 Construction noise and vibration criteria

In accordance with the requirements of Condition C14 - C17 (noise) and C18 – C20 (vibration) of the Development Consent, the establishment of construction noise and vibration are outlined in Section 5.2.1 and Section 5.2.2.

5.2.1 Construction Noise Management Levels

Noise levels arising from a construction project, measured within an area of sensitive receiver premises (i.e. at boundary or within 30 m of the residence, whichever is the lesser), should not exceed the established Noise Management Levels (NMLs) in line with the ICNG. The established NMLs in accordance with the ICNG are indicated in Table 8.

Table 8 Construction Noise Management Levels

	Time of day	Hours	Construction Noise Management Levels, dB, $L_{Aeq(15minute)}$					
			ICNG	NCA01	NCA02	NCA03	NCA04	NCA05
Residences affected by construction works	Recommended Standard Hours / Approved construction hours	Monday to Friday 7:00 am to 6:00 pm Saturday 8:00 am to 1:00 pm	Noise affected[1] RBL[2] + 10 dBA	55	55	54	54	-
			Highly Noise affected[3] 75 dBA	75	75	75	75	-
	Outside Recommended Standard Hours		Noise affected[1] RBL + 5 dBA					
	Daytime (out of hours)	Saturday 1:00 pm to 6:00 pm Sunday 8:00 am to 6:00 pm		50	50	49	49	-
	Evening	6:00 pm to 10:00 pm		47	47	46	46	-
	Night-time[3]	10:00 pm to 7:00 am		43	43	41	41	-
Noise at Sensitive Land Uses (other than residences)	Classrooms at schools and other educational institutions	7:00 pm to 4:00 pm[4]		-	-	-	-	55[5]
	Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	7:00 pm to 6:00 pm[4]		-	-	-	-	65

Note 1: The noise affected level represents the point above which there may be some community reaction to noise.

Note 2: dB, L_{A90} - The "background noise level" or "Rating Background Level" (RBL) in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The dB, $L_{Aeq(15minute)}$ construction noise management levels are based on the RBLs.

Note 3: Additional assessment of sleep disturbance is to be completed should the Project requires to undertake construction works during the night-time period.

Note 4: Assumed operating hours. To be confirmed with the relevant operator prior to construction.

Note 5: Based on assumed partially open window reduction of 10 dB and to the internal Construction Noise Management Level of 45 dB, $L_{Aeq(15minute)}$

In the event construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices are investigated to minimise noise emissions.

5.2.2 Construction vibration criteria – Surface structure

Most commonly specified "*safe*" structural vibration limits are designed to minimise the risk of threshold or cosmetic surface cracks and are set well below the levels that have potential to cause damage to the main structure. Example of these vibration level limits are nominated within the BBS7385: Part 2.

As per the Development Consent C18 the vibration criteria specified within the DIN 4150: Part 3 has been recommended for structures surrounding the Project. The criteria specified within DIN 4150 are design for controls of continuous long-term vibration or repetitive vibration with the potential to cause fatigue effects to structure.

The following Peak Particle Velocity (PPV) values are specified within DIN 4150 as safe limits, below which even superficial cosmetic damage is not to be expected:

- 10 mm/s for commercial buildings and buildings of similar design.
- 5 mm/s for dwellings and buildings or similar design.
- 2.5 mm/s for buildings of great intrinsic value (e.g. heritage listed buildings).

For short-term vibration events (i.e. those unlikely to cause resonance or fatigue), DIN 4150 offers the criteria shown in Table 9. These are maximum levels measured in any direction at the foundation or in the horizontal axes in the plane of the uppermost floor.

Table 9 DIN 4150 Structural Damage - Safe Limits for Short-term Building Vibration

Group	Type of Structure	Peak Particle Velocity, (mm/s)[1]		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz[2]
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 at 10 Hz increasing to 40 at 50 Hz	40 at 50 Hz increasing to 50 at 100 Hz
2	Dwellings and buildings of similar design and/or use	5	5 at 10 Hz increasing to 15 at 50 Hz	15 at 50 Hz increasing to 20 at 100 Hz
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (eg buildings that are under a preservation order	3	3 at 10 Hz increasing to 8 at 50 Hz	8 at 50 Hz increasing to 10 at 100 Hz

Note 1: Unless specified, vibration levels are measured at foundation of the structure
Note 2: For frequencies above 100 Hz the upper value in this column should be used

The "*safe limits*" given in DIN 4150 are the levels up to which no damage due to vibration effects has been observed for the particular class of building. The definition of "d*amage*" is described by DIN 4150 to include even minor non-structural effects such as superficial cracking in cement render, the enlargement of cracks already present, and the separation of partitions or intermediate walls from load bearing walls.

5.2.3 Construction vibration criteria – Human comfort

For most construction activities that generate perceptible vibration by occupants in nearby buildings (e.g. earth works and excavation works), the character of the vibration emissions is considered to be intermittent in nature. As a guide, the BS5228-2:2009 provide effects of perceived vibration level in terms of peak particle velocity (PPV, mm/s).

Table 10 Guidance on effects of vibration levels (BS 5228-2: 2009)

Vibration level (mm/s)	Effect
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments.
1.0	It is likely that vibration of this level in residential environment will cause complaint, but can be tolerated if prior warning and explaining has been given to residents.
10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Table 10 suggests that people will be able to detect vibration at levels of about 0.15 mm/s and that the motion becomes "noticeable" at a level of approximately 1 mm/s.

The EPA *Assessing Vibration: a technical guideline* nominates preferred and maximum vibration goals for critical areas, residences and other sensitive receivers (related to the Project) are shown in Table 11 for intermittent vibration and

Table 12 for continuous vibration. The guideline advises a low probability of adverse comment or disturbance to building occupants would be expected at or below the preferred values.

The applicable human comfort vibration goal for intermittent vibration source is defined in terms of Vibration Dose Values (VDVs) where the permissible vibration level corresponding to the VDV varies according to the duration of exposure.

Table 11 Preferred and Maximum Vibration Dose Values for Intermittent Vibration (EPA, 2006)

Building Type	Preferred Vibration Dose Value ($m/s^{1.75}$)	Maximum Vibration Dose Value ($m/s^{1.75}$)
Residential Daytime	0.20	0.40
Residential Night-time	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80

Note: Daytime is 7:00 am to 10:00 pm and Night-time is 10:00 pm to 7:00 am

Table 12 Preferred and Maximum Vibration Dose Values for Continuous Vibration (EPA, 2006)

Building Type	Preferred Vibration Dose Value ($m/s^{1.75}$)	Maximum Vibration Dose Value ($m/s^{1.75}$)
Residential Daytime	0.20	0.40
Residential Night-time	0.14	0.28
Offices, schools, educational institutions and places of worship	0.40	0.80

Note: Daytime is 7:00 am to 10:00 pm and Night-time is 10:00 pm to 7:00 am

In applying the preferred and maximum VDV the guidelines states that:

> *'Situations exist where vibration above the preferred values can be acceptable, particularly for temporary disturbances and infrequent events of short term duration. An example is a construction or excavation Project.'*

The guideline also advises that:

> *'Where all feasible and reasonable measures have been applied to control potential ground vibration levels the maximum values may be used. For values above the maximum value the proponent should negotiate directly with the affected community.'*

When short-term works such as piling, demolition or compaction give rise to impulsive vibrations, it should be noted that undue restriction on vibration levels can significantly prolong the construction process and may result in greater annoyance overall.

5.3 Nominated site control vibration targets

Based on the vibration criteria detailed above, the site-specific controls to reduce risk of cosmetic damage as per DIN 4150 are outlined below in Table 13.

Table 13 Nominated site control vibration targets (warning and stop levels)

Structure	Site Control vibration Criteria[1] (Peak Particle Velocity, PPV) in any Orthogonal Direction	
	Warning Level	Stop Level
Residential buildings	4 mm/s	5 mm/s
Commercial Buildings (school building)	10 mm/s	20 mm/s

Note 1: Vibration levels measured at the base of the building

5.4 Construction related traffic noise

As stated in the RNP application notes, the consideration of mitigation would only be required where additional traffic on existing roads creates an increase of more than 2 dB $L_{Aeq\ (Daytime,\ Night\text{-}time)}$ at existing sensitive receivers. This typically corresponds to a traffic volume increase of minimum 60 percent, provided the mix of light and heavy vehicle traffic is comparable.

6.0

Consideration of construction noise and vibration

6.0 Consideration of construction noise and vibration

6.1 Construction Noise

The project-specific construction airborne noise management levels (NMLs) for approved daytime hours are outlined in Table 8. Where NMLs cannot be achieved, the construction contractor will use all reasonable and feasible noise mitigation and management measures to reduce noise generation and impacts.

6.2 Typical plant sound power level

The recommended noise levels for construction plant in Table 14 are referenced from various sources as a guide for the Project.

All plant and equipment used for construction must have operating Sound Power or Sound Pressure Levels below or equal to the allowable noise levels in or if not listed below, shall achieve compliance to the most applicable equipment listed in the following document:

- Transport for NSW *Construction Noise and Vibration Strategy* (CNVS, 2018)*;* or
- Australian Standard AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites; or
- UK's Department of Environment, Food and Rural Affairs Noise Database for Prediction of Noise on Construction and Open Sites (DEFRA, 2006); or
- British Standard BS 5228-1 *Code of practice for noise and vibration control on construction and open sites.*

Table 14 Maximum allowable noise levels for construction equipment

Plant item	Reference	Individual Item SWL
Bulldozer D9	RMS CNVG	116
Concrete agitator	RMS CNVG	113
Concrete truck	RMS CNVG	109
Dump truck	TfNSW CNVS (2018)	110
Excavator (tracked) 20t	TfNSW CNVS (2018)	105
Excavator (tracked) 20t + Hydraulic hammer [1]	TfNSW CNVS (2018)	122
Forklift	AS 2436	106
Front end loader 23t	RMS CNVG	112
Hand tools/ Power tools	AS 2436	102
Hiab trucks	TfNSW CNVS (2018)	108
Pile driver (auger)	RMS CNVG	112
Roller 5t	RMS CNVG	109
Skid steer	TfNSW CNVS (2005)	110
Tower crane 22t	DEFRA	104
Truck – road truck	RMS CNVG	108

Note 1: Equipment with special audible characteristics.

6.3 Vibration compliance

The construction contractor will, if required, ensure compliance with the nominated site control vibration targets as outlined in Table 13.

Details of monitoring requirements are outline within Section 7.2.

Vibration monitoring is required as per Condition C19 to confirm compliance with the nominated vibration criteria of the proposed plant equipment used within 30 m of identified sensitive structure.

6.4 Vibration damage

Disturbance to building occupants can potentially occur at much lower vibration levels than the safe limits relating to cosmetic or structural damage of the building.

The risk of exceeding the recommended building damage criteria should be managed by carrying out vibration measurements during piling, excavation, demolition and compaction works in order to establish satisfactory buffer zones.

Details of monitoring requirements are outline within Section 7.3.

6.5 Recommended minimum working distances for vibration intensive plant

The propagation of vibration emitted from a source is site-specific. The level of vibration potentially experienced at a by the occupant of a building structure is dependent upon the vibration energy generated by the source, the frequency content of vibration, the localised geotechnical conditions and the interaction of structures and features which can dampen or enhanced vibration.

The recommended minimum working distances for construction plant in Table 15 are referenced from the Transport for NSW *Construction Noise and Vibration Strategy, April 2018* as a guide for the Project.

The nominated distances outlined below assumed propagation on particular ground condition and the recommendations are for the practical management of potential vibration to minimise disturbance or annoyance to surrounding receivers. The human comfort minimum working distances are conservative, developed with reference to the more stringent objectives for continuous vibration for typical residential building constructions.

Table 15 Recommended safe working distances for vibration intensive plant (TfNSW CNVS, 2018)

Plant Item	Approx. Size/ Weight/ Model	Minimum Distance – Human Response (EPA Vibration Guideline)
Vibratory Roller	1-2 tonne	15 m to 20 m
	2-4 tonne	20 m
	4-6 tonne	40 m
	7-13 tonne	100 m
	13-18 tonne	100 m
	> 18 tonne	100 m
Small Hydraulic Hammer	300 kg (5 to 12t excavator)	7 m
Medium Hydraulic Hammer	900 kg (12 to 18t excavator)	23 m
Large Hydraulic Hammer	1600 kg (18 to 34t excavator)	73 m
Pile Driver – Vibratory	Sheet piles	20 m
Piling Rig – Bored	≤ 800 mm	N/A
Piling Rig – Hammer	12 t down force	50 m

Plant Item	Approx. Size/ Weight/ Model	Minimum Distance – Human Response (EPA Vibration Guideline)
Jackhammer	Hand held	Avoid contact with structure

A vibration trial to assess the ground vibration from ground compacting equipment (e.g. vibratory roller) which may potentially impact the adjacent school buildings is recommended. The vibration trial is to be conducted to develop a site-specific vibration propagation characteristic and determining safe operational distances for plant equipment on the Project site.

Continuous vibration monitoring is to be carried out throughout the activity when vibration intensive plant equipment's are in use. Continuous vibration monitoring will also be carried out during all works with potential to generate vibration.

6.6 Construction generated road traffic noise

The additional traffic generated due to construction travelling along Cumberland Highway is considered to be negligible. The existing traffic volumes on the local roads are not available at the time of assessment however, it is likely to comprise predominately of light vehicles. The noise from additional construction traffic utilising the local roads would likely to be noticeable due to increase in heavy vehicle volumes.

Recommendations for control of construction vehicles and traffic are provided within Section 7.1.

7.0

Recommended mitigation measures and work practices

7.0 Recommended mitigation measures and work practices

7.1 General noise and vibration mitigation measures

As the details of the construction and operational methodology to carry out the Project has not been confirmed, specific mitigation measure, such as noise barrier, have not been specified.

The general mitigation measures provided in the Plan and the commitments made by Icon Constructions(Construction Contractor) should be referenced and revised to ensure applicability once the construction and operational methodology is finalised. Typical noise management procedures are as follows:

General

- Where feasible and reasonable, construction should be carried out during the approved standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
- Where high activities identified by the Development consent as generating high noise and vibration are expected, scheduling of respite period as per the approved hours outlined in Table 7 is required;
- Avoiding the coincidence of noisy plant working simultaneously close together and adjacent to sensitive receivers (both noise and vibration generating activity).
- The contractor will take all reasonable and feasible measures to mitigate noise effects;
- The contractor will take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers;
- Minimise plant and vehicles idling when not in use;
- All plant and equipment should be maintained in a proper and efficient manner to minimise noise emissions, including the replacement of engine covers, repair of defective silencing equipment, tightening of rattling components and the repair of leakages in air lines;
- Notification of occupant's adjacent to the site of when these activities occur; and
- Implementing an effective community consultation and complaints management.

Noise

- Provision of localised treatment such as temporary barriers, shrouds and the like around fixed plant such as pumps, generators and groundwater extraction plant during use and by "stepping down" the plant settings out of construction hours or turned off completely where able. The detailed design of acoustic treatments will be undertaken during the detailed design phase; and
- Maximising the offset distance between noisy plant items and nearby noise sensitive receivers;
- Where practicable, provision of additional respite from noise producing activities during extended hours operations;
- Use of broadband alarm in place of tonal alarm where practicable;
- Selection and maintenance of "quiet" type equipment where practicable;
- Minimise consecutive works in the same locality (if applicable);
- Minimising consecutive works in the same locality;
- Silenced air compressors, fitted with noise labels indicating a maximum (L_{Amax}) sound pressure level of not more than 75 dBA at 7 m is to be used on site. The sound pressure level of noise emitted from a compressor used is to comply with noise label requirements;
- Orienting equipment away from noise sensitive areas; and
- Carrying out loading and unloading away from noise sensitive areas.

Vibration

- Selection and maintenance of low vibration equipment where practicable;

- Use only dampened rockbreakers and/or “city” rockbreakers to minimise the impacts associated with rockbreaking works;
- Trial testing of vibration levels is to be conducted where equipment identified as having the potential to exceed the human comfort criteria or where the vibration intensive plant or equipment is required to operate in close proximity (30 m or less) to sensitive structure exceeding the nominated minimum working distances;
- Trial vibration monitoring to determine appropriate work distances of proposed vibration intensive activities; and
- Utilise the smallest practicable size of plant equipment when in close proximity to the sensitive structure (e.g. small vibratory roller).

Construction traffic

- Where practicable, site should be arranged to provide one-way traffic movement minimise reversing of vehicles onsite;
- Utilising main road networks to access site and where practicable;
- Provide instructions for heavy vehicles operators regarding minimising noise when entering and leaving the construction sites;
- Delivery truck should be scheduled to arrive on site within the approved construction hours;
- Queuing of trucks are to be minimise as far as practicable and located away from residences and operating school buildings in order to reduce noise impacts due to trucks idling; and
- Where practicable, heavy vehicles should be switched off while queuing or not in use.

7.2 Noise monitoring

As part of site management for noise emissions, Construction Contractor would undertake a daily log of construction activities kept onsite by the site manager.

In addition, where required, noise monitoring would be conducted at the nearest residential receiver to the construction works being undertaken for:

- The beginning of the proposed construction activity (refer to Table 5);
- Whenever an item of “noise intensive” plant or equipment is brought onto site for the first time. For the purpose of internal noise audits, any item of plant or equipment with Sound Power Level (SWL) greater than or equal to 110 dBA as presented in Table 3.3 would be considered to be potentially “noise intensive”; and
- In response to complaints, once differentiation between site related construction noise sources and other sources has been established.

7.2.1 Noise auditing

The results of all noise audits and monitoring would be submitted to an environmental representative of Construction Contractor who would compile progressive impact assessments as work progresses. Submission of the internal noise auditing report to relevant authorities and/ or stakeholders may be applicable on an as per requested basis.

Site noise emissions requiring monitoring (e.g. following a compliant) would be undertaken in accordance with procedures outlined within the Construction Environmental Management Plan and would be carried out on the property of an affected receiver or at the boundary of the receiver (whichever is most affected).

The noise audits reporting would include the following information as a minimum during construction works:

Noise auditing reporting items

- Work activity.
- Name of auditor and site manager.
- Details of the instrument used for the measurement including make, model, serial number and last calibration date.
- Date and time of test.

- Weather condition during test, including air temperature, wind speed, wind direction and details of rain/wet conditions if applicable.
- Plant and equipment operating at the time of measurement.
- Noise measurement recorded for each activity as follows:
- Concurrent construction occurring (not associated with Ex-Situ works) and other background noise sources.

General noise auditing requirement:

- Measured 15 minute noise level at both the site boundary and nearest affected receiver, including A weighted, fast time-weighting L_{min}, L_{90}, L_{10}, L_1, L_{max} and L_{eq} statistical parameters.
- Provide comparison of the measured noise levels with the predicted noise levels from the proposed activity.

Plant and equipment noise auditing requirement:

- A weighted, fast time-weighted L_{eq} and L_{max} noise level measured at a distance of 7 metres from the item of plant or equipment during normal operation.
- Provide comparison of the measured noise levels with the predicted noise levels from the proposed plant equipment.

Noise auditing in response to complaints:

- The name and contact details of the person making the complaint.
- Time of the complaint.
- Any other specific details relating to the complaint.
- GPS location of the measurement location
- Distance from the source activity to the measurement location.
- Measured 15 minute noise level at the boundary of the affected receiver A weighted, fast time-weighting L_{min}, L_{90}, L_{10}, L_1, L_{max} and L_{eq} statistical parameters.
- Levels and description of other noise sources observed during the measurement period.

7.3 Vibration monitoring

As part of site management for vibration emissions, Construction Contractor would undertake a daily log of construction activities that would be kept onsite by the site manager. In addition, informal vibration audits would be conducted at the nearest affected receiver or relevant structure for:

- Prevention of structural damage; and
- In response to complaints.

7.3.1 Vibration auditing

The results of all vibration audits and monitoring would be submitted to an environmental representative of Construction Contractor who would compile progressive impact assessments as work progresses. Submission of the internal noise auditing report to relevant authorities and/ or stakeholders may be applicable on an as per requested basis.

Site vibration emissions requiring monitoring (e.g. following a compliant) would be undertaken in accordance with procedures outlined within the Construction Environmental Management Plan and would be carried out at the structure of the receiver building.

The mounting location of the vibration monitors must be on a stiff part of the structure either rigidly attached to or representative of the structure (at the foundations) on the side of the structures adjacent to the subject excavation works, in accordance with BS 7385 Part 2: 1993. The transducer must be positioned with the indicator arrow on top of the transducers pointing in the direction of the vibration source.

The vibration audits reporting would include the following information as a minimum during construction works:

Vibration auditing reporting items

- Work activity.
- Name of auditor and site manager.
- Details of the instrument used for the measurement including make, model, serial number and last calibration date.
- Date and time of test.
- Photograph of transducer and description of mounting location.
- Plant and equipment operating at the time of measurement.
- Description of other vibration source(s) (non-site related) and level if measurable.

Vibration auditing for building cosmetic damage prevention

Where it has been determined that continuous vibration monitoring is required to prevent risk of cosmetic damage to the structure, the vibration measurements are to be carried out with reference to the following standards:

- BS 7385-1; and
- DIN 4150-3.

The frequency of reporting will be as agreed with relevant authorities in consultation with the Construction Contractor.

The vibration logger(s) will be set up to record time histogram during the proposed work hours and days. The loggers will include a real time monitoring and provide alerts for whenever the vibration levels reached the warning or stop levels as outlined in Table 13.

All units may also be set up to provide email or SMS alerts distributed to the nominated recipients when an event is triggered.

In the case of the vibration level exceeding the nominated Warning Level, construction activity does not need to cease immediately, but rather alerts the Site Manager to proceed with caution at reduced force or load.

In the case of the vibration level exceeding the nominated Stop Level, the equipment operator would be required to stop work immediately. Following the Stop Level exceedance, Project Manager is required to implement an alternative construction technique pending further analysis of the vibration frequency content in order to determine any potential exceedance of the criteria presented in Table 9. This include either:

- Reduce the number of vibration-generating plant/equipment items; or
- Cease operation, pending further analysis of the potential for building damage. A specialist acceptable to the construction contractor must endorse the conclusions of such an investigation.

Work must not resume until an alternative construction technique can be adopted. If it is not considered feasible or reasonable to adopt alternative construction methods, an operator-attended vibration monitoring would be conducted by a suitable qualified acoustic consultant for real-time assessment and works may proceed with caution under their strict instruction.

Documentation outlining the causation of the exceedance and control measures adopted is to be prepared and kept on site.

Vibration auditing in response to complaints (exceedance of human comfort criteria):

A vibration monitoring to address complaints may be carried out as a per request basis by Lendlease in the event where source of complaints have been identified as relating to the proposed works. Any engagement with the stakeholders should be carried out in accordance with Lendlease's stakeholder engagement procedures. The operator attended vibration survey would include the following items:

- The name and contact details of the person making the complaint.
- Time of the complaint and work associated with the complaint.
- Any other specific details relating to the complaint.
- Distance to the activity under assessment

- Measurements are to be conducted at the location inside the property of the complainant as advised by the complainant to have felt the vibration the most.
- Measured and recorded vibration level and frequency (PPV, mm/s and Hz) of the activity.
- Determine and confirm that source of vibration is related to the project activity.
- Conduct assessment of vibration emissions against the nominated human comfort criteria and provide a revised safety distances for the works.

Site noise and vibration management measures described in Section 7.1, in particular the scheduling of works and placement of plant and equipment would also provide benefits with reference to human response to vibration.

7.4 Community consultation

Community consultation will, if required, be undertaken via the construction contractor, including:

- Advising the community of work to be undertaken.
- Recording and managing any complaints.

These and other elements of the community consultation will be addressed under the relevant procedures for the subject works.

7.5 Complaints handling

This protocol is intended to provide framework relating to complaint as a result of the proposed work, and application of appropriate corrective action is identified and implemented as necessary:

- All complaints (verbal, telephone or in writing) are to be recorded and forwarded to the Project Manager, together with details of the circumstance leading to the complaint, work activity at relating to the complaint and all subsequent actions taken.
- The Project Manager shall investigate the complaint in order to determine whether work practices have been carried out with reasonable and feasible to minimise noise.
- Where excessive noise has been caused and identified as related to the work corrective action will be planned and implemented by the construction contractor
- Project Manager shall inform the complainants regarding their complaints including:
  – Outcome of the investigation; and
  – Corrective action taken (if applicable).
- Follow up monitoring or other investigations will be carried out by the Project Manager and the construction contractor to confirm the effectiveness of the corrective action.

All stakeholders must be provided with a complaint response form, with the following details:

- Name and mobile phone number of a nominated contact for the Contractor, available during all construction operations;
- Details of the relevant Council Authority for noise complaint;
- Facility to record time, source, and duration of disturbance;
- A postal address for issuing written complaint.

An example Noise Compaint Form, to be provided to residents, is provided in Appendix C.

In the event of a complaint, the Contractor must:

- Investigate the complaint immediately;
- Take any necessary remedial action;
- Report to the Council on the results of that investigation.

It is also recommended that the Contractor maintain a complaint register to allow for an assessment of the overall performance of the Plan. This register should include a record of the above actions. An example Noise Complaint Register form is provided in Appendix D.

Appendices

Appendix A Acoustic terminology

ASSESSMENT BACKGROUND LEVEL (ABL)

A single-number figure used to characterise the background noise levels from a single day of a noise survey. ABL is derived from the measured noise levels for the day, evening or night time period of a single day of background measurements. The ABL is calculated to be the tenth percentile of the background LA90 noise levels – i.e. the measured background noise is above the ABL 90% of the time.

'A'-WEIGHTED SOUND LEVEL dBA

The unit generally used for measuring environmental, traffic or industrial noise is the A-weighted sound pressure level in decibels, denoted dBA. An A-weighting network can be built into a sound level measuring instrument such that sound levels in dBA can be read directly from a meter. The weighting is based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. An increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise. A change of 2 to 3 dB is subjectively barely perceptible.

DECIBEL

The ratio of sound pressures which we can hear is a ratio of 10^6:1 (one million : one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound level' (L) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply.

Some typical noise levels are given below:

Noise Level dBA	Example
130	Threshold of pain
120	Jet aircraft take-off at 100 m
110	Chain saw at 1 m
100	Inside disco
90	Heavy trucks at 5 m
80	Kerbside of busy street
70	Loud radio (in typical domestic room)
60	Office or restaurant
50	Domestic fan heater at 1m
40	Living room
30	Theatre
20	Remote countryside on still night
10	Sound insulated test chamber
0	Threshold of hearing

EQUIVALENT CONTINUOUS SOUND LEVEL (L_{Aeq})

Another index for assessment for overall noise exposure is the equivalent continuous sound level, Leq. This is a notional steady level, which would, over a given period of time, deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating levels can be described in terms of a single figure level.

FREQUENCY

The rate of repetition of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to cycles per second. A thousand hertz is often denoted kilohertz (kHz), e.g. 2 kHz = 2000 Hz. Human hearing ranges from approximately 20 Hz to 20 kHz. The most commonly used frequency bands are octave bands, in which the mid frequency of each band is twice that of the band below it. For design purposes, the octave bands between 63 Hz to 8 kHz are generally used. For more detailed analysis, each octave band may be split into three one-third octave bands or, in some cases, narrow frequency bands.

RATING BACKGROUND LEVEL (RBL)

A single-number figure used to characterise the background noise levels from a complete noise survey. The RBL for a day, evening or night time period for the overall survey is calculated from the individual Assessment Background Levels (ABL) for each day of the measurement period, and is numerically equal to the median (middle value) of the ABL values for the days in the noise survey.

SOUND POWER AND SOUND PRESSURE

The sound power level (L_w) of a source is a measure of the total acoustic power radiated by a source. The sound pressure level (L_p) varies as a function of distance from a source. However, the sound power level is an intrinsic characteristic of a source (analogous to its mass), which is not affected by the environment within which the source is located.

STATISTICAL NOISE LEVELS

For levels of noise that vary widely with time, for example road traffic noise, it is necessary to employ an index that allows for this variation. 'A'-weighted statistical noise levels are denoted L_{A10}, dBL_{A90} etc. The reference time period (T) is normally included, eg. dBL_{A10}, 5min or $dBL_{A90, 8hr}$.

L_{A90} (T)

Refers to the sound pressure level measured in dBA, exceeded for 90% of the time interval (T) –i.e. measured noise levels were greater than this value for 90% of the time interval. This is also often referred to the background noise level.

L_{A10} (T)

Refers to the sound pressure level measured in dBA, exceeded for 10% of the time interval (T). This is often referred to as the average maximum noise level and is frequently used to describe traffic noise.

L_{A1} (T)

Refers to the sound pressure level measured in dBA, exceeded for 1% of the time interval (T). This is often used to represent the maximum noise level from a period of measurement.

L_{Amax}

The maximum measured noise level measured in dBA.

VIBRATION

Vibration may be expressed in terms of displacement, velocity and acceleration. Velocity and acceleration are most commonly used when assessing structure borne noise or human comfort issues respectively. Vibration amplitude may be quantified as a peak value, or as a root mean squared (rms) value.

Vibration amplitude can be expressed as an engineering unit value e.g. $1mms^{-1}$ or as a ratio on a logarithmic scale in decibels:

Vibration velocity level, L_V (dB) = 20 log (V/V_{ref}),

(where the preferred reference level, V_{ref}, for vibration velocity = 10^{-9} m/s).

The decibel approach has advantages for manipulation and comparison of data.

Appendix B Development consent SSD 8678

Monitoring and Environmental Audits

A18. Any conditions of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 or Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance reporting and independent auditing.

Note: For the purpose of this condition, as set out in the EPA&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development

Part B Prior to commencement of Construction

Construction Environmental Management Plan

*B15. Prior to commencement of construction, the Applicant must prepare a **Construction Environmental Management Pan (CEMP)** and it must include, but not be limited to, the following:*

(c) Construction Noise and Vibration Management Sub-Plan (see Condition B18).

*B18. The **Construction Noise and Vibration Management Sub-Plan (CNVMSP)** must address but not be limited to the, the following:*

(a) Be prepared by a suitably qualified an experienced noise expert;
(b) Describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);
(c) Describe the measures to be implemented to management high noise generating works such as piling, in close proximity to sensitive receivers (wherever applicable);
(d) Include strategies that have been developed with the community for management high noise generating works;
(e) Describe the community consultation undertaken to develop the strategies in condition B18(d); and
(f) Include a complaints management system that would be implemented for the duration of the construction.

Compliance Reporting

B33. No later than two weeks before the date notified for the commencement of construction a Compliance Monitoring and Reporting Program prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2018) must be submitted to the Department and the Certifying Authority.

Compliance Reports of the project must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).

The Applicant must make each Compliance Report publicly available 60 days after submitting it to the Department and notify the Department and the Certifying Authority in writing at least seven days before this is done.

Part C During construction

Operation of Plant Equipment

C3. All plant and equipment used on site, or to monitor the performance of the development must be:

(a) Maintained in a proper and efficient condition; and
(b) Operated in a proper and efficient manner.

Construction Hours

C5. Construction, including the delivery of materials to an 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.

C6. Activities may be undertaken outside of these hours if required:

(a) By the Police or public authority for the delivery of vehicles, plant or materials; or
(b) In an emergency to avoid the loss of life. Damage to property of to prevent environmental harm; or
(c) Works are inaudible at the nearest sensitive receivers; or
(d) Where a variation is approved in advance in writing by the Secretary or her nominee if appropriate justification is provided for the works.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

C7. Rock breaking, rock hammering, sheet piling, plie driving and similar activities may only be carried out between the following hours:

(a) 9am to 12 pm Monday to Friday;
(b) 2pm to 5pm Monday to Friday;
(c) 9am to 12 pm Saturday.

Construction Noise Limits

C14. The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.

C15. The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under Condition C5.

C16 The applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use audible movement alarms of a type that would minimise noise impacts on surrounding noise sensitive receivers.

C17. Any noise generated during construction of the development must not be offensive noise within the meaning of the Protection of the Environment Operation Act 1997 or exceed approved noise limits for the site.

Vibration criteria

C18. Vibration caused by construction at any residence or structure outside the site must be limited to:

(a) For structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration – Effects of vibration on structures (German Institute of Standardisation, 1999); and
(b) For human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration; a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).

C19. Vibratory compactors must not be used closer than 30m from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C18.

C20. The limits in conditions C18 and C19 apply unless otherwise outlined in a construction Noise and Vibration Management Plan, approved as part of the CEMP required by Conditions B13 of this consent.

Appendix C Noise Complaint form

Noise Complaint Form

If you have any queries regarding excessive noise or wish to make a complaint, please contact:

Builder Contact:

Address:

Mobile Phone:

Council contact number: (8.30 am to 5.00 pm)

If, for any reason, you are not able to raise the above person, please make a note of the time and type of noise in the space provided below and send to the address detailed above.

Your name: **Date:**

Location:

Start time	Type of noise (please be as specific as possible)	Duration of noise

Other Comments

Appendix D Noise incident register

Date	Time	Cause of complaint	Remedial action taken

Consultation and Engagement

Greystanes Public School
Alterations and Additions

17/02/2020

SSD 8778

JOHNSTAFF

Document Control

Document Title:	**Greystanes PS – Consultation and Engagement**
Prepared By:	Daniel Smith
Reviewed By:	Daniel Smith
Revision:	1.0
Date of Issue:	17/02/2020

Revision Status

Version	Date	Amended by	Endorsed By	Notes
0.0	17/02/2020	Daniel Smith	Daniel Smith	Final
1.0				
2.0				
3.0				
4.0				
5.0				

Contents

1. Executive Summary

The Department of Education (DoE) is committed to providing a clear, open and informative transfer of information between the community, relevant stakeholders and the design team, not only to date but for the entire project lifecycle. The purpose of this report is to describe the consultation and engagement process undertaken since June 2017 for the Greystanes Public School redevelopment and feedback received to date from the community, the school, neighbours, businesses and stakeholders. The report also details responses to any suggestions or issues raised and how these have been incorporated into the final design submitted for State Significant Development (SSD).

It is noted that consultation on this project is an ongoing process and will be maintained until project completion. To support this SSD application, the information presented in this report includes that undertaken and collected to date and that scheduled until the end of the year.

2. Consultation & Engagement Activities

Throughout the project stages, a variety of communication strategies have been (and will be) utilised for the purpose of stakeholder and community consultation and engagement. These are outlined below:

- Online communication opportunities – the DoE project website;
- Printed communication – community notices, school newsletters and letter box drops;
- Information booths – community and parent information booths;
- Facilitated workshops – on site community, teacher and parent workshops comprising Q and A sessions with a variety of display posts and opportunities to provide feedback;
- Consultation methods – meetings targeted for maximum stakeholder engagement; and
- Authority and Regulatory consultation – with Council, local member, TfNSW, etc.

The purpose of this community consultation and engagement was to gain feedback aimed at informing the project on the following as well as develop strategies with the community for managing:

- Design elements such as locations for buildings, heights and sizes of structure, 3D impressions, colour and material schemes;
- Community impacts such as operations of the school, the facilities being provided, community uses etc.; and
- Construction elements, such as traffic impacts, high noise generating work, noise and vibration, odour, sediment and erosion and remediation.

Details and results of the above are elaborated on below.

2.1. Online Communication

2.1.1. Department of Education Project Website

A project internet site was developed and launched on 30th June 2017 and gets updated monthly with current project information. The project internet sites have provided links from existing school internet pages and allowed users to easily access information about the engagement process and opportunities to participate, as well as get updates on the progress of the Greystanes Public School redevelopment. Additionally, a project email was created to collect enquiries about the project to the Project Manager.

- Project Website: https://www.schoolinfrastructure.nsw.gov.au/projects/g/greystanes-public-school.html
- Project email: Greystanes@johnstaff.com.au

2.2. Printed Communication

2.2.1. Community Notices

Notifications of various community engagement events are listed in the local newspaper in order to inform the surrounding community of scheduled information booths and details of online surveys. These engagement events are publicised by placing advertisements with at least more than a week's notice to maximise attendance.

2.2.2. Project Newsletter

Greystanes Public School has regularly issued school newsletters and handouts to students that have gone home to parents and caregivers. The Project Manager can use these to provide updates on the progress of the design and alert school communities to upcoming consultation.

Since funding was approved in June 2017, the Project Manager issued Greystanes Public School with an update for the Capital Works project, which was included in the newsletter for that month. Details of this notification is outlined below:

- Greystanes Public School Newsletter Update No.01 – 22nd June 2017
  Outlined the Greystanes Public School redevelopment and project website entailing additional project information.
- Greystanes Public School Newsletter Update No.02 – 27th July 2017
  Illustrated the progress of the Greystanes Public School redevelopment and invitation to provide feedback at the Parent Information Booth scheduled for 2nd August 2017 8:45am - 9:45am at Greystanes Public School.
- Greystanes Public School Newsletter Update No.03 – 12th October 2017
  Provided an update to the progress of the design of Greystanes Public School redevelopment.

2.2.3. Letter Box Drops

Letter box drops are used to make contact with neighbours and the local community, providing them with project updates, notification of any upcoming information booths and any details of online surveys. The first letter box drop was conducted on Monday 24th July 2017, where letters were issued to surrounding neighbours providing them with information on the project website and dates of upcoming information booths.

From the letter box drop 2 people attended the information booth and other residents raised general questions about the project and construction traffic.

2.3. Information Booths

The information booths follow a two-stream approach, with separate information booths for the school community and the local community as a whole. The information booths have feedback

sheets available for anyone to leave comments, which in turn inform the project team and Project Reference Group, and where appropriate, influence the design or are addressed in the FAQ section of the project website. All information booths are managed by the Project Manager.

2.3.1. Community Information Booths

Community Information Booths have occurred (and will continue to occur) on a monthly basis at Greystanes Branch Library. A summary of the details and results of these information booths is outlined below:

- Community Engagement Information Booth No.01 – 27th July 2017 (6:00pm – 7:00pm)
  A summary of community contribution received during this session is included below:

I am interested in the Greystanes Public School Redevelopment Project because:
- Student's parent (son will benefit from the upgrade as he is a current student) - Neighbors
I think the redevelopment of Greystanes Public School should embrace:
- Future generations - N/A
I believe it is imperative that Greystanes Public School has / maintains:
- Amenities (eg. Toilets) - Mitigate congestion with construction traffic and relocation of demountables
What do you believe is the greatest challenge to the redevelopment of Greystanes Public School?
- Relocation of current students - Traffic congestion at school pick-up / drop-off times

- Community Engagement Information Booth No.02 – 8th August 2017 (1:00pm – 2:00pm)
  No community contribution to report from this occurrence.
- Community Engagement Information Booth No.03 – 15th September 2017 (12:00pm – 1:00pm)
  A summary of community contribution received during this session is included below:

I am interested in the Greystanes Public School Redevelopment Project because:
- I am responsible for the operation of Greystanes PS OOSH care centre operated by Greystanes Uniting Church and very interested in our accommodation and future.
I think the redevelopment of Greystanes Public School should embrace:
- Adequate space and accommodation for all parties including consideration of regulatory requirements for OOSH such as food preparation and floor space ratio for the children's welfare.
I believe it is imperative that Greystanes Public School has / maintains:
- Adequate amenities and space for OOSH
What do you believe is the greatest challenge to the redevelopment of Greystanes Public School?

- Adequate amenities and space for OOSH

- Community Engagement Information Booth No.04 – 18th October 2017 (4:00pm – 5:00pm)
  No community contribution to report from this occurrence.
- Community Engagement Information Booth No.05 – 17th November 2017 (9:30am – 10:30am).
  A summary of community contribution received during this session is included below:

I am interested in the Greystanes Public School Redevelopment Project because:
- Manager of Greystanes PS OOSH care centre operated by Greystanes Uniting Church.
I think the redevelopment of Greystanes Public School should embrace:
- Accommodation for all parties including consideration of regulatory requirements for OOSH with increased student numbers.
I believe it is imperative that Greystanes Public School has / maintains:
- Adequate accommodation for OOSH.
What do you believe is the greatest challenge to the redevelopment of Greystanes Public School?
- Adequate accommodation for OOSH.

  Additionally, a discussion on 12th December 2017, between the Project Manager, OOSH manager and Greystanes PS's Principal was held to discuss the OOSH and school redevelopment in further detail.
- Community Engagement Information Booth No.06 – 14th December 2017 (2:00pm – 3:00pm)
  No community contribution to report from this occurrence.
- Community Engagement Information Booth No.07 – 7th February 2018 (3:00pm – 4:00pm)
  To be held.

2.3.2. Parent Information Booths

Parent information booths have occurred (and will continue to occur) at times that accommodate the schedules of parents and caregivers (usually 8:30am to 9:30am and 3:00pm to 4:30pm). A summary of the details and results of these parent information booths is outlined below:

- Parent Information Booth No.01 – 2nd August 2017 (8:45am - 9:45am)
  No community contribution to report from this occurrence.

Additionally, the P&C was presented to and informed about the project on the 28th June 2017. They questioned the timing of the project and the mitigation of traffic during the construction period. They were positive about the design and facilities.

The P&C is updated regularly in the progress of the project through the parent representative who is a member of and attends the Project reference group meetings.

A parent information meeting will be held before construction is to commence to ensure the parents and students are aware of safety at the school during construction. This includes a safety talk with the school students.

2.4. Facilitated Workshops

Throughout the design phases there have been a number of workshops held, targeting different stakeholders, to inform the design and ensure that the design submitted for SSD is suitable from a community and user group perspective. Workshops were managed and facilitated by the Project Managers and Head Design Consultant (HDC). The stakeholder workshops undertaken to date are summarised in the following sections.

2.4.1. Teacher's Consultation Workshops

Consultation through a design workshop and presentation with Greystanes Public School teachers was held on 20th June 2017 in order to discuss the design of the Staff / Administration and Homebases. Staff reviewed updated Schematic Design plans, elevations and 3D perspectives for the Staff / Administration and Homebases and were afforded the opportunity to provide their input and ideas. 3D perspective images were shown in order for the teachers to understand and visualise the scope of the redevelopment in contrast to the existing school building fabric.

Their operational requirements and comments regarding the spaces and furniture have been included in the design. In parallel with the educational specialist workshop on 20th September 2017, the HDC discussed the design of the Staff / Administration and Homebases with the staff. 3D perspective images were also shown in order for the teachers to understand and visualise the scope of the redevelopment in contrast to the existing school fabric.

2.4.2. Educational Specialist Design Workshops

The Educational specialist has been working in collaboration with the Project Manager, HDC and Greystanes Public School to progress the design of the learning spaces and the development of an educational model. Details on the workshops undertaken and scheduled are summarised below:

- Educational Design Workshop No.01 – 28th June 2017
  Introduction for briefing presentation and discussion about teaching delivery methods, the process of defining the vision and strategy to assist in the design of the new spaces.
- Educational Design Workshop No.02 – 9th August 2017
  Review of design concepts with entire Greystanes staff and discussion of how these have been integrated into the architectural plans.
- Educational Design Workshop No.03 – 20th September 2017
  Workshop discussing the updated plans and presented FFE typology to a select group of staff.
- Educational Design Workshop No.04 – 11th October 2017
  Final workshop to review the plans, design solutions and design recommendations for the Staff / Administration and Homebases with endorsement of schematic design.
  Project Meetings

Consultation meetings and ongoing communication are carried out with the Departments Program Management Office (PMO), Project Reference Group (PRG) and Departments Technical Stakeholders Group (TSG) throughout the project. A summary of these meetings is provided in the following sections.

2.4.3. Program Management Office

Meetings have been held monthly with the PMO and will continue to do so throughout the life of the project.

2.4.4. Technical Stakeholders Group

Ongoing discussions have taken place with the Departments Technical Stakeholders Group including the Educational Facilities Standards and Guidelines (EFSG), ICT, Maintenance and Cleaning, Security, Work Health & Safety, Future Learning Unit, and Demountables unit. They have reviewed and commented on the design throughout the project design phases and will continue to do so. Their comments including the ICT, security and WHS requirements and EFSG changes have been implemented into the design.

2.4.5. PRG

A PRG for the project was established in December 2016 and has been providing input into the design. The PRG endorses all designs and staging plans and assist in communicating the project status to the school and its community. Members of the PRG include the Director Public Schools NSW, school representatives (including the principal, a parent and / or community representative who represents the interest of the teachers, a local community representative, asset management and the project team.

Details of PRG meetings which have occurred to date are summarised as follows:

- PRG Meeting No.01 – 28th November 2016
  Outlined the purpose of the PRG and discussed the Educational Design Principles.
- PRG Meeting No.02 – 7th December 2016
  PRG progressed review / endorsement of Education Design Principles and Site Analysis.
- PRG Meeting No.03 – 13th December 2016
  Endorsement of Education Design Principles. Presented two master plan options for Greystanes Public School, which was subsequently endorsed enabling progress with 3 Concept options.
- PRG Meeting No.04 – 8th February 2017
  PRG reviewed a Pedagogy Model and provided feedback in regards to additional needs of the school. Additionally, it was noted that site investigations encompassing services audits and survey works had commenced.
- PRG Meeting No.05 – 8th March 2017

  Presented 3 Concept Design options for this school. Following the discussion, the PRG endorsed Option B. Briefing and engagement of additional site consultants is underway.
- PRG Meeting No.06 – 3rd May 2017
  Presented 3 relationship diagram options for the Homebases for this school. Site investigation updates were provided.
- PRG Meeting No.07 – 17th May 2017
  Presentation of the Schematic Design options for the Staff / Administration and Homebases. Site investigation updates were provided.
- PRG Meeting No.08 – 31st May 2017
  PRG reviewed further developed floor plans for Staff / Administration and Homebases, incorporating the PRG's feedback. Site investigation updates were provided. Content for this school website provided for endorsement.
- PRG Meeting No.09 – 14th June 2017
  HDC presented high level FF&E options for the Homebases in order to open discussion about the typology of the furniture for consideration.

- PRG Meeting No.10 – 23rd August 2017
  Presented the updated Schematic Design plans, elevations and 3D perspectives for the Staff / Administration and Homebases, incorporating the PRG's feedback. It was noted that the Educational Planner engagement was ongoing. Additionally, material typology was investigated. Site investigation updates were provided.
- PRG Meeting No.11 – 20th September 2017
  PRG reviewed progressed Schematic Design plans, elevations and 3D perspectives for the Staff / Administration and Homebases.
- PRG Meeting No.12 – 18th October 2017
  PRG reviewed updated Schematic Design plans, elevations and 3D perspectives for the Staff / Administration and Homebases. Additionally, FFE typology and quantities were discussed.
- PRG Meeting No.13 – 15th November 2017
  HDC provided a presentation of the developed Homebases and Staff / Administration areas incorporating EFSG comments for internal discussion and consideration.

2.5. Regulatory and Authority Consultation

Pre-development application meeting with Council and consultation with other identified stakeholders has been carried out as required for the project and as per the SEAR's reissued on the 20th October 2017. A summary of this consultation is provided in the sections below.

2.5.1. Liaison with Council

A pre-DA meeting was held with Cumberland Council on 5th July 2017 and a formal response was received on 17th July 2017. Council raised the general requirements under Council planning policies which included tree protection and management, general considerations of the LEP & DCP including items such as privacy, height and setbacks, storm water issues and parking and traffic concerns.

The advice regarding the stormwater included for it to be designed to achieve compliance with Stormwater Management of HELP 2013. This has been considered and addressed in the design.

The landscape design and arborist report has considered the items raised under tree management and factors such as native plantings and screening. This has been done in consideration with the requirements of an operational school and children's safety.

The traffic engineering considerations included the requirements of a traffic impact assessment and plan and current parking considerations included in the DCP. A traffic assessment has been undertaken and further discussion was requested from Council regarding parking requirements. The response received from Council on this request was an email from the traffic engineer who indicated *"The council would like to be informed about the extent of staff car parking expected on-site and on-street to enable them to make an informed view on the proposal. It is expected that the DCP parking rates be provided unless good justification can be given for lesser provision."*

This has been addressed in the traffic assessment and management plan and through further discussions and consultation with TfNSW and RMS.

2.5.2. TfNSW and Roads and Maritime Services

A meeting with members of Transport for NSW and the Roads and Maritime Service occurred 9th November 2017. Overall the Department were supportive of the design and agreed that the Traffic

and Transport Assessment and Traffic Management Plan adequately addressed their concerns. Specific areas that were discussed were are follows:

- Access to the construction site: It was confirmed that rectification works will be undertaken to the access driveway once works had been completed.
- Separation of construction traffic from students, teachers and guardians: Adequate separation and management of construction traffic and school users was noted as a concern; however, the department understood that the proposed construction access was the only viable option and that the issue can be managed successfully through the Traffic Management Plan and the Preliminary Construction Management Plan requiring construction traffic and deliveries to be scheduled outside of peak drop off/pick up times.
- Traffic and public transport impacts: The report adequately assessed the impacts the school's increase on local traffic and transport, concluding it was unlikely to significantly impact the existing public and road network.
- Road safety around the school: Road safety in association with children travelling to and from the school was of high importance and the department were satisfied the recommendations of the Traffic and Transport Assessment satisfactorily addressed these concerns.

2.5.3. Sydney Water

Sydney water has been contacted, via phone, to discuss the project and if they had any further comments required to be considered before SSD lodgement. No additional comments or input has been received.

2.5.4. Government Architect's Office

The SEAR's was reissued on the 20 October 2017. The SEAR's required consultation during the preparation of the EIS with the Government Architect NSW (GA NSW). As part of this consultation the Project manager emailed the GA NSW on 31st October 2017 asking if they would like to discuss and provide comment on the Greystanes Public School project before lodgement of the SSD and provided the draft design quality statement, educational principles and plans.

The GA NSW response to this email was received on 15th November 2017 and covered the following:-

- *"At this stage we will not be able to review the project in detail (which we will review as a whole upon lodgment), however we are happy to advise on the development of the submission and in particular the approach to addressing the design excellence requirements of the Education SEPP."*

The Project Manager rang GA NSW after receiving this email and had a conversation covering the following:-

- The GA NSW advised they don't have the capacity right now to review and comment on plans but can advise on what should go in the application.
- It was indicated that GA NSW believed a meeting would be required and that meeting would require the Department of Education in attendance. No date or time frame could be given for when this could occur.
- A report of how the design principles have been meet is needed before the meeting and to be lodged with the application. The project manager indicated that this had already been provided in the email sent on the 31st October 2017. It was then reviewed during the phone

conversation and GA NSW indicated a meeting would no longer be required as the phone conversation and design principles statement could cover the need for further engagement.

- GA NSW advised that they were preparing a list of deliverables that are needed and that will be included in the SEAR's going forward. GA NSW stated they would send the list to the Project Manager after finishing the phone conversation. This was not forthcoming.

In addition to the original email and phone conversation, the GA NSW emailed a response on the 11th December 2017 with a letter outlining GA NSW "pre-lodgement advice". This was received after the SEAR's was issued and after the email & discussion outlined above which had indicated no further comment would be forthcoming.

To address the GA NSW letter an updated design report is to be submitted as part of the SSD. An attachment to this design report provided a formal response to the dot points raised in the letter by GA NSW. This response and design report is based on the GA NSW undertaking an 'advisory' role to the SSD.

2.5.5. Local Member

The local member is briefed on the project and the project status. The local member is supportive of the development and proposed facilities.

18.5 DEMOLITION WASTE MANAGEMENT SUB-PLAN (CDWMSP) CONDITION B19

Refer to B19 Folder CDWMSP

For the removal of hazardous materials, method of containment, control of emissions fibres and disposal at approved waste disposal facilities, see below:

18.6 ASBESTOS:

Refer:
Safe Work Australia:
Code of Practice – How to manage and control asbestos in the workplace
Model - Code of Practice – How to safely remove asbestos
VIC - Compliance Code - Managing Asbestos in Workplaces
NSW - https://www.safework.nsw.gov.au/hazards-a-z/asbestos/asbestos-at-work
WA - https://www.commerce.wa.gov.au/worksafe/asbestos-information-asbestos-workplace
ACT - https://www.accesscanberra.act.gov.au/app/answers/detail/a_id/50/kw/asbestos
QLD - https://www.worksafe.qld.gov.au/injury-prevention-safety/asbestos
NZ - https://worksafe.govt.nz/topic-and-industry/asbestos/working-with-asbestos/
Icon will request from the client a hazardous substances audit report (Part5/Part 6 audit) prior to commencement of works. Where none is available one will be commissioned.
The hierarchy of controls should be considered when assessing the presence of asbestos in the workplace:

ELIMINATION	Redesign works so asbestos does not need to be disturbed Isolation: Can the asbestos be encapsulated to eliminate disturbance
SUBSTITUTION	Can the asbestos be safely removed so work can proceed
ENGINEERING	Decontamination units used during works
ADMINISTRATION	Develop safe work procedures and train workers
PPE	last resort

The site induction process will include details of the location of asbestos as relevant. It will also reiterate the process to follow should any further suspect materials be found on site. Only those subcontractors and workers who are qualified and licensed and formally trained in accordance with relevant legislation, codes of practice and Australian Zealand Standards shall be involved in the asbestos removal process.

18.6.1ASBESTOS REGISTER

Australian Operations Only: Under State and Federal legislation, all sites where buildings or plant contain asbestos material are required to maintain an Asbestos Register where:

- The workplace is a building that was constructed before 1 January 2004, or;
- Asbestos has been identified at the workplace, or;
- Asbestos is likely to be present at the workplace due to previous use of the premises or site, or:
- Asbestos is likely to be present at the workplace from time to time.

Icon will obtain copies of Asbestos Registers from the Building Manager or client as required.
Where no Asbestos is identified, the Asbestos Register is to state that no asbestos is identified at the workplace if the person knows that no asbestos is identified or is likely to be present from time to time, at the workplace.
The Asbestos Register is to be reviewed and as necessary revised if:

- Further asbestos is identified at the workplace; or

- Asbestos is removed from, disturbed, sealed, or enclosed, at the workplace.

The Asbestos Register is to be made accessible to all staff, especially Health and Safety Representatives and workers carrying out work, intending to carry out work, or whom may have carried out work at the workplace where asbestos may be present.
Where Icon hands over the management or control of a workplace to another person, Icon will transfer the Asbestos Register for the workplace to that person.
Refer: Form 60 Asbestos Register

18.6.2 INSITU ASBESTOS

If asbestos is identified, or is likely to be present, on site but it is not part of the scope to be removed then an **Asbestos Management Plan** must be developed. This plan must include information about the following:

- The identification of asbestos (Example: A reference or link to the asbestos register for the workplace and signage and labelling);
- Decisions, and reasons for decisions, about the management of asbestos at the workplace (Example: Safe work procedures and control measures);
- Procedures for detailing incidents or emergencies involving asbestos at the workplace;
- Workers carrying out work involving asbestos.

The Asbestos Management Plan is to be made accessible to all staff, especially Health and Safety Representatives and workers carrying out work, intending to carry out work, or whom may have carried out work at the workplace where asbestos may be present.
The asbestos management plan is to be reviewed and revised where:

- There is a review of the asbestos register or a control measure;
- Asbestos is removed from, or disturbed, sealed or enclosed at, the workplace;
- A Health and Safety Representative requests a review where a circumstance referred to above affects or may affect the health and safety of a member of the work group represented by the health and safety representative, or the person with management and control of the workplace has not adequately reviewed the Asbestos Management Plan in response to the circumstance;
- At least once every 5 years.

18.6.3 ASBESTOS REMOVAL

An **Asbestos Removal Control Plan** (or equivalent per local legislative requirements) will be developed by the approved licensed contractor before asbestos removal work commences. Where asbestos is to remain in situ during the works, the site manager shall ensure that a procedure is documented to ensure that the material remains undisturbed or that workers are not exposed to health risks. All such areas will be signed appropriately, and all workers will be informed when they complete the site induction.
The asbestos removal control plan must include details of:

- how the asbestos removal will be carried out, including the method, tools, equipment and PPE to be used
- the asbestos to be removed, including the location, type and condition of the asbestos.

Specifications or drawings that are relevant to the asbestos removal can also be attached to the asbestos removal control plan to provide additional information about the asbestos.

18.6.4 PREPARING THE ASBESTOS REMOVAL CONTROL PLAN

When preparing the asbestos removal control plan, the licensed asbestos removalist should consult with the person who commissioned the work, the person with management or

control of the workplace (if not the same person), workers and their health and safety representatives.
For the same reasons, if licensed asbestos removal work is being carried out at domestic premises, the licensed asbestos removalist should consult with the person who commissioned the removal work, the owner or the occupier (if not the same person).

18.6.5 ACCESS TO THE ASBESTOS REMOVAL CONTROL PLAN

Once the asbestos removal control plan is prepared, a copy must be:

- Given to the person who commissioned the licensed asbestos removal work;
- Readily accessible to workers and their health and safety representatives.

Where air monitoring is required during asbestos removal it will be undertaken by a qualified and licensed person independent of the removal process with a clearance inspection certificate provided prior to the area being returned for normal use. All air monitoring equipment will be calibrated and service per the manufacturer's specifications.

18.6.6 ASBESTOS AWARENESS TRAINING (A.C.T. ONLY)

All Workers working on construction projects in the A.C.T. are required to have completed the VET course Asbestos Awareness [10314NAT] or other WorkSafe ACT recognised specific Asbestos Awareness training.
The WorkSafe ACT website defines the training requirement (*ref: WorkSafe ACT website - Mandatory Asbestos Awareness Training*).
The completion of recognised Asbestos Awareness training is to be verified as part of the Site Induction process.
Workers on A.C.T. construction projects are not permitted to commence working on site until proof of completion of such recognised training is provided to Icon.

18.6.7 LABELLING

All asbestos materials must be suitably labelled in accordance with the Code of Practice – How to manage and control asbestos in the workplace (Safe Work Australia).

18.7 HAZARDOUS MATERIALS

The following hierarchy of control should be considered prior to the introduction of any hazardous substance and dangerous goods into the workplace:

ELIMINATION	The first choice is always to eliminate the use of the hazardous chemical or substance. However, where elimination of the hazardous substance is not reasonably practicable, the Site Manager shall implement suitable control measures that will reduce the risk so far as is reasonably practicable.
SUBSTITUTION	Control measures to reduce the risk should be implemented in the following order of preference: - Substitution of the substance or chemical; - Isolation of the substance or chemical from people; - Engineering controls (such as mechanical ventilation).
ISOLATION	Can the process be enclosed, extraction systems etc?
ENGINEERING	Can the plant/machinery have additional filtering devices installed?
ADMINISTRATION	Where the above-mentioned control measures do not achieve a satisfactory reduction to the level of risk, the following additional controls must be considered for implementation together with substitution, isolation or engineering controls: - SDS's

	- Training - Administrative controls to limit the time/dose relations between the hazardous substance and individual;
PPE	The use of PPE does not control the hazard but reduces the potential of the worker. PPE shall be used in conjunction of other, higher forms of control. - Where a SDS requires specific PPE this shall be provided to the worker; - The safe use of the PPE shall be monitored and training and instruction provided to workers for the use of the PPE; - PPE shall at all times be maintained in good condition and replaced as required.

18.7.1ASSESSING RISK

A risk assessment using the SDS as a reference must be conducted for all "Dangerous Goods" and "Hazardous Substances". The risk assessment should consider particular controls required to manage:

- Appropriate storage and refuelling processes, including security requirements.
- Handling and transportation around site
- Safe use and application,
- Recycling and disposal,
- Requirements to manage spillage and release.
- Managing Dangerous Goods Manifests
- Conduct an assessment of the quantity of dangerous goods on site against the threshold quantities in legislation. Where thresholds are met, prepare a Manifest of dangerous goods and notify the regulator per the below.

Refer: Form 42 Hazardous Substance Risk Assessment

18.7.2 HAZARDOUS CHEMICALS MANIFEST

Hazardous Chemicals Manifest	A list that must be prepared of hazardous chemicals defined by the relevant safety legislation if those hazardous chemicals exceed the Manifest Quantity.
Manifest Quantity	The quantity of a hazardous chemical used, handled or stored at the workplace which is prescribed in the relevant safety legislation as the Manifest Quantity.
Placard Quantity	The quantity of a hazardous chemical used, handled or stored at the workplace which is prescribed in the relevant safety legislation as the Placard Quantity.

When working within operating facilities, the Project Manager will obtain a copy of the Client's Hazardous Chemicals Manifest.
Where chemicals are required to be stored on site as part of the project works and the quantities exceed the Regulated Manifest Quantity (refer states specific requirements), the Project Manager will ensure that a Hazardous Chemicals Manifest is prepared and that the Manifest is reviewed and kept up to date.
The Site Manager will ensure that, if the quantity of a hazardous chemical exceeds the Manifest Quantity, the regulator for the relevant safety legislation is notified and an emergency plan is prepared and given to the primary emergency services organisation.
Refer: Form 43 Dangerous Goods Manifest

18.7.3 SAFETY DATA SHEET

An SDS must be provided for each chemical registered on the Hazardous Substances Register. The contractor or user shall provide and review the SDS and must ensure that:

- The version of the SDS is current as per local legislated requirements;
- Not altered in any way (except by the importer or manufacturer in accordance with the relevant safety legislation) - a translation may be included by way of an attachment, but this must clearly state that it does not form part of the original SDS;
- Controls listed on the SDS shall be addressed in a SWMS.

18.7.4 CONTAINER INFORMATION

All chemical containers in the workplace must be suitable for their purpose and provided with information to allow people to use the substance safely. Information on the container must be legible, durable and clearly display the product name. Containers holding hazardous substances must be labelled in accordance with the relevant safety legislation and should generally include the following information:

- The product identifier;
- Name, address and contact phone number in Australia of the manufacturer or importer, who must reside in Australia;
- For each ingredient of the chemical - the identity and proportion disclosed in accordance with the relevant safety legislation;
- Any hazard pictogram consistent with the correct classification of the chemical;
- Any hazard statement, signal word and precautionary statement consistent with the correct classification of the chemical;
- Any information about the hazards, first aid and emergency procedures relevant to the chemical, not otherwise included in the hazard statement or precautionary statement referred to immediately above;
- The expiry date for the chemical if it has one, and;
- The word 'HAZARDOUS' clearly and prominently displayed.

The information or label shall remain on the container until its contents have been removed and the container has been completely cleaned free of the substance or the contents have been neutralised, cured or chemically deactivated.

18.7.5 ATMOSPHERIC & HEALTH MONITORING

Dependent on the level of risk, monitoring of substances and chemical may be undertaken to either determine the level of exposure of prescribed hazardous substances or monitor the effectiveness of controls implemented. Where such monitoring is required the Site Manager or delegated representative shall co-ordinate with appropriately qualified persons to undertake such monitoring.

18.7.6 EXISTING IN-SITU HAZARDOUS MATERIALS

Prior to any excavation, demolition or refurbishment works commencing on site a hazardous substance survey will be undertaken by a competent person, this will include but not be limited to:

- an assessment of any contaminated soil;
- the presence of any material containing or suspected of containing asbestos;
- light fittings containing PCBs;
- synthetic mineral fibres (SMFs); and
- lead paint.

Where the survey identifies the presence of hazardous materials/substances a risk assessment is to be undertaken and incorporated into the Project Risk Assessment.

Procedures shall be developed outlining how the material is to be safeguarded (where not being disturbed) or removed and/or treated in accordance with regulatory requirements. Procedures are to include any requirements for atmospheric monitoring and health surveillance monitoring. In the case of Asbestos the risk assessment and procedures are to be outlined in a Safe Work Method Statement and/or asbestos management plan prepared by the qualified subcontractor.
Procedures for the removal or treatment of hazardous substances are to be in accordance with the relevant Regulations and Codes of Practice for Hazardous Materials.
On completion of the removal or treatment of any hazardous material, a clearance certificate shall be obtained from a competent person to verify safe removal or treatment has been completed.
In the event of the discovery of any suspect material being found in a location that has not been previously identified by the hazardous substance/material survey, the Site Manager or Project Manager are to order a cessation of work in the immediate area where the material was discovered and seek advice from a competent person on the actions to be taken.
All identified hazardous material(s) will be removed in accordance with the legislative requirements and a written SWMS/JSEA which is to be provided to site management for review prior to any removal works commencing.
The Project Manager is to ensure the relevant contractor provides Icon with the following information:

- copies of all receipts for the removal and disposal of the hazardous materials;
- clearance certificates declaring the extent of removal of hazardous materials;
- copies of all air monitoring results;
- notification to any statutory authority; and
- removal by an appropriately licensed/registered vehicle.

18.7.7 SPILL KITS

A spill kit is available on site to immediately contain any substance spills. Spills will be reported by the Site Team for further investigation and/or formal reporting as per the Incident Management procedure.
Refer: PRO 008 Incident Management

18.7.8 CHEMICAL, FUEL OR REFRIGERANT LINES

Prior to works commencing on chemical, fuel or refrigerant lines the type of chemical/fuel/refrigerant is identified and systems (SWMS/JSEA) are put in place to:

- Prevent uncontrolled escape of chemical/fuel/refrigerant; and
- Identify handling and emergency control measures in accordance with relevant SDS, legislation and standards.
- Location of all services has been identified and documented and the relevant services have been disconnected or made safe by a suitably qualified person prior to working on or near chemical/fuel/refrigerant lines.
- Workers hold suitable qualifications and have been adequately instructed and trained in the safe work methods regarding work on chemical, fuel or refrigerant lines.
- The necessary PPE is available and being used to minimise risk of inadvertent contact.

18.7.9 CONTAMINATED / FLAMMABLE ATMOSPHERE

When works are to be undertaken in a contaminated or flammable atmosphere a SWMS/JSEA will be developed to ensure air quality and ventilation needs have been assessed and controlled, taking into account the nature of the work, duration of the exposure and the number of workers exposed. The SWMS/JSEA will contain the following specific information:

- Exposure levels will be identified and have been deemed to be within acceptable limits, in accordance with legislative requirements

- Emergency procedures specifically addressing and controlling the contaminated atmosphere.
- Continual monitoring of the atmosphere for changes in atmospheric contamination.
- Outlines the specific PPE to be used by workers to minimise the exposure to atmospheric contaminants in accordance with the relevant legislation.

18.7.10 INFORMATION, INSTRUCTION AND TRAINING

Employees who are required to use or are likely to be exposed to a hazardous substance or chemical, or dangerous good at the workplace are to be provided with adequate information, instruction and training on the safe use handling and storage of the substance or chemical.
Training may take the following format:

- Workers complete a review of the SDS relevant to the product in use. This can be done at the time that they sign into the relevant SWMS
- In some instances, training may involve a specialised consultant i.e. hygienist who will address the site, or relevant workers, to provide information regarding this specific site issue. In this instance an attendance register or toolbox meeting form can be used as a record of training.
- Suitable controls are to be addressed during SWMS/JSEA development using the Safety Data Sheet as a reference. Sign on into the SWMS can be used as a record of training.
- Addressed in site specific induction

Other method as determined by the site manager

B19. The Construction and Demolition Waste Management Sub-Plan (CDWMSP) must address but not be limited to, the following:
(a) Detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations.

Quantities and Type of Waste Generated:

- Excavated Material – total approximate material 1500m3
- Trees, shrubs, top soil – Total approximate material 100m3
- Building Material (during demolition of Zone C) – Total approximate 500m3
- Construction waste – Total approximate 4800m3

Proposed Locations for Disposal Locations:

- Benedict Recycling - 33 – 39 Riverside Rd Chipping Norton NSW 2170
- Bingo Recycling - 165 Woodpark Rd, Smithfield

Legislative Requirements:

General:

- Work Health and Safety Act 2011
- Work Health and Safety Regulations 2017
- Protection of the Environment Operations Act 1997

Contaminated Waste Management:

- Protection of the Environment Operations Act 1997
- Crown Lands Act 1989
- Contaminated Land – Guidance
- Hazardous Waste – Guidance

Air Quality and Dust Control:

- Protection of the Environment Operations Act 1997
- Protection of the Environment Operations (Clean Air) Regulations 2010
- Smoke Free Environment Act 2000
- Smoke Free Environment Regulation 2007
- Public Health Act 1991

Noise and Vibration:

- Protection of the Environment Operations Act 1997
- Protection of the Environment Operations (Nosie Control) Regulations 2008
- Noise – Guidance

Hazardous and Flammable Material Management:

- Work Health Safety Regulation 2011
- Dangerous Goods - Guidance

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Demolition & Waste Management Plan

781 Merrylands Road Greystanes

Public School

PROJECT: No. 781 Merrylands Road Greystanes

DEMOLISHER: MERCON GROUP Pty. Ltd.

MERCON GROUP PTY LTD

Address: 60 Mary St
Merrylands

Licence No. AD 211599
ABN 42 163 274 084

George Merhi

Mobile: 0405 145 100 Phone: 1300 MERCON

COMMENCEMENT DATE: TBC

MERCON GROUP WH&S and ENVIRONMENTAL POLICY

Mercon Group Pty Ltd management has a commitment to workplace health, safety and the environment throughout all it's project activities.

This is achieved through:

- complying with statutory requirements, codes, standards and guidelines;
- setting up objectives and targets with the aim of eliminating work related incidents in relation to our workplace activities, products and services; and
- Defining roles and responsibilities for all staff on occupational health, safety and environment. Strategies will include:
- ensuring workplace health, safety and environment management principles are included in all organisational planning activities;
- providing ongoing education and training to all of our employees;
- consulting with employees and other parties to improve decision-making on workplace health, safety and environment matters;
- ensuring incidents are investigated and preventative & corrective actions are communicated,
- distributing workplace health, safety and environment information, including this policy, to all employees and interested parties;
- providing enough resources to ensure workplace health, safety and environment is a foremost part of the organisation; and
- ensuring effective injury management and rehabilitation is provided to all employees.

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- respect for Client policy, personnel and property and its neighbours and the general public

George Merhi

Director _____ Date: 16/1/2019

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7. Site Preliminaries and Establishment
8. Programming and Sequencing of Works
9. Hazardous Materials - Asbestos
10. Emergency & Evacuation Response Plan
11. Sediment Control plan
12. Traffic Control Plan
13. Transport Handling & Stockpiling
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15. Odour Control plan
16. Noise & vibration control Plan
17. Environmental Monitoring Control Plan
18. Contingency Planning for works
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DEMOLITION WORK PLAN

1. Overview

Mercon Group Pty. Ltd. has prepared this demolition work plan for the implementation on;

The Demolition of the Ground Floor and Existing Tile Roof to the existing brick and tile dwelling, known as No. 781 Merrylands Road Greystanes . N.S.W.

2. Aim

The objective of this demolition work plan is to ensure that:

a. The environmental aspects and impacts related to the demolition at this project are identified, controlled and managed to ensure acceptable environmental outcomes during the demolition processes.

b. The demolition works are performed to provide Mercon Group and the Client with the certainty that all company standards, contractual, legislative, development conditions and occupational health & safety, environmental and community obligations are met during the course of demolition.

3. Scope

The Scope of this demolition work plan covers:

a. Environmental Impacts resulting from Demolition activities:

- Dust and Fumes
- Water Control – temporary services and usage
- Surface Water and Silt control
- Disposal of Site Materials
- Traffic Control
- Utilities & Public Services
- Noise
- Vibration
- Disposal of Waste

b. Long Term impacts that may be influenced by demolition:

- Social Environment and Public Amenity
- Local Flora and Fauna
- Cultural, heritage significance

c. Worker and Neighbourhood impacts influenced by demolition:

- Health & Safety

- Traffic Control

4. Legal and Statutory Obligations

This Demolition Work Plan has been compiled to be above mentioned scope and to comply with the following criteria:

- Conditions of Contract & associated documentation
- Conditions of Development Application Consent
- Workplace Health & Safety Act 2011 (as amended)
- Worplace Health & Safety Regulations 2011(as amended)
- NSW - Environment, Planning & Assessment Act 1979 (as amended)
- NSW - Environment, Planning & Assessment Regulations 2000 (as amended)
- Australian Standard AS 2601:2001 Demolition of Structures
- Australian Standard AS1892.5:1999 Portable Ladders Part 5, Selection, safe use and care
- Australian Standard AS1576:1995 Scaffolding
- Australian Standard AS4501:2008 Occupational Protective Clothing
- Australian Standard AS 2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites

Codes of Practice:

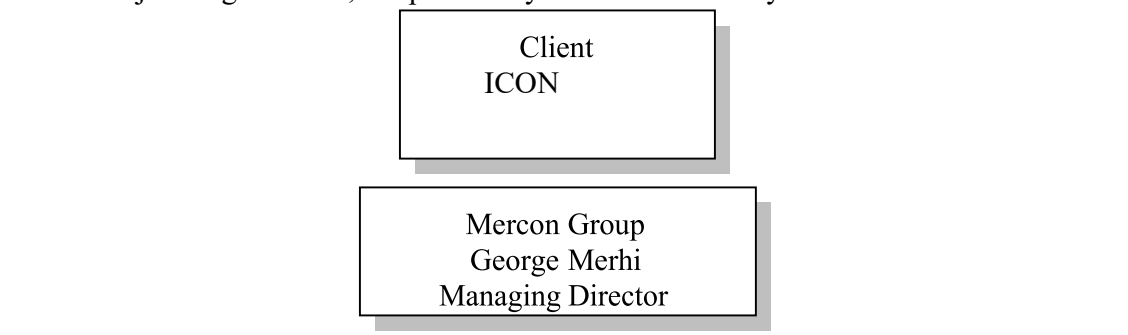
- How to safely remove Asbestos- Safe Work Australia
- Demolition Work – Safe Work Australia
- Preventing falls in Housing Construction – Safe Work Australia
- Safe Work on Roofs. Part 2 Residential – NSW Code of Practice
- Cutting & Drilling Concrete and other Masonry Products NSW Code of Practice
- Work near overhead power-lines - NSW Code of Practice
- Safe Working at Heights – NSW Guidance Notes
- Use of Ladders – NSW Guidance Notes
- Working with Asbestos – NSW Guidance Notes

5. Project Risk Assessment

It is Mercon Group Company procedure that prior to conducting any work on site that a comprehensive Workplace Health Safety and Environmental Risk assessment is carried out to identify all foreseeable risks and a Safe Work Method Statement SWMS document together with the proposed controls to manage the risks and the responsible parties.

Mercon Group shall induct all members of the site crew in Safe Work Method Statements SWMS to all significant and high risk activities performed during the demolition process.

6. Project Organisation, Responsibility and Accountability



The Mercon Works Manager shall direct and support the implementation of the demolition work plan at all levels of site activity and ensure that all the project objectives are addressed and results are regularly communicated to Mercon Managing Director.

The Mercon Site Supervisor shall report immediately any significant health & safety or environmental issues including notices, complaints deficiencies and re-sourcing issues to Mercon Works Manager.

The Mercon Site supervisor shall ensure that all planned control measures are established. Ensure through the site induction process all site employees are aware and understand all relevant health & safety and environmental issues relating to the site prior to their commencement of work on the Project. Report immediately any health & safety or environmental breaches or complaints to Mercon Works Manager for action.

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7. Site Preliminaries and Establishment

Prior to the commencement of any Demolition activities on site the following must be established in conjunction with the Client:

- Property and Public protection, Security Fencing, Hoardings
- Site Access and Egress (incl. Gates and crossovers),
- Vehicle Hardstand Areas, Wash-down Facilities etc.,
- Identification and Protection to the Trunk, Branches or Roots of any Protected Trees
- Health & Medical facilities including suitable first aid requirements,
- Emergency Contact details and Evacuation Area,
- Display of approved site working hours,
- Mercon Project Signage to street frontage and including the contact name and phone number in the event of an emergency,
- Silt, Drainage and Erosion controls required on site,
- Identification, Location and Termination (if necessary) of all site utilities and services within the site area and the surrounding public domain,
- Signed notification of the termination of all site utilities and services within the dwelling or work areas,
- Survey to identify the extent or presence of any contaminated or hazardous substances.
- A Dilapidation Report shall be conducted by the Client on adjoining properties in case any damage is sustained during the demolition works

8. Programming and Sequencing of Works

Works shall be programmed to minimise and consolidate work areas and remove like materials at the same time. All walls, beams, heads and the like shall not be removed prior to checking if load bearing and such loads adequately supported prior to removal. In the event that removal of any structural element may render the building unstable then the Client shall consult with the Structural Engineer prior to commencement of such works. Asbestos removal should be carried out prior to any other disturbance of material to avoid damage in place or cross contamination.

Due to this dwelling being close to the side boundaries the immediate neighbouring residents shall be informed, in advance, of any significant or high risk work to be carried out and approximate duration which may impact on their amenity.

9. Hazardous Materials – Asbestos

The above mentioned hazardous substance survey shall be conducted to confirm the location and extent of Asbestos Sheeting and such areas shall be clearly marked with spray paint. This area shall be completely sealed off as an exclusion zone and sign posted.

Asbestos removal shall be by the wet method and use of hand tools only. All removal, clean up, personal decontamination and clearance procedures shall be in accordance

with the SAFE WORK AUSTRALIA CODE OF PRACTICE. All Material shall be immediately wrapped in approved 100um black plastic and efficiently disposed at a licenced tipping facility.
The General Area must be barricaded and appropriately sign posted and all personnel in this immediate vicinity (including outside of sealed area) must be trained in Asbestos removal and wear the appropriate personal protection suit and breathing apparatus during the preparation and removal process.

Refer to ICON CEMP Section 15.1.1 for procedure.

10. Project Methodology

The aim is to demolish the existing single level residential structure.
The works involve removing:

The roof tiles & timber roof structure,
All masonry/ plaster board walls,
Timber flooring and joists,
Timber decking and timber cladding to rear,
Redundant Services,
Front Boundary Fence, Concrete Driveway and Paving,

Services and internal fittings:
Disconnect all services from residence and receive written confirmation from relevant trade or service provider. Remove all furniture, flooring coverings, doors, services and associated appliances, fittings, pipework, wiring or the like and thoroughly clean all internal surfaces of residual dust & dirt.
Asbestos:
Identify and remove any asbestos products by the wet method prior to commencing any demolition works. Provide isolation curtains to contain and seal off work areas. No other personnel apart from those actively engaged in asbestos removal process shall be allowed within the building, it's surrounds or load out areas during the asbestos removal process and until clearance certification has been received.
Roof Structure:
Drop Internal Ceiling material with use of aluminium scaffold. Install scaffold planks (or sheet flooring plywood) above ceiling joists locally for access to rafters, purlins and struts,
When tiles are sufficiently removed and safe to do so disassemble the roof pitch structure of battens, rafters, purlins and struts by hand or saw close to supporting members.

The excavator machine is to be used to remove the remainder of the structure down to the ground.

Masonry/ Plaster board Walls:
After removal of any windows or glazing, break front walls (for access) inward systemically in small segments in both height and width and clear away immediately to prevent large impacts or overloading the floor structure.

Flooring and Floor Joists:
Cut access into floor boards at convenient location to allow boards to be removed progressively across each room and when complete remove joists by disconnection or sawing adjacent to their supports. Aluminium Scaffold shall be used in areas where a fall of < 2 metres is possible. A similar procedure can be used for timber decking at rear.

Front Fence, Concrete Driveway, and paving:
With the use of an excavator and mechanical grab attachments lift elements and break into manageable segments to be loaded out and transported by tip truck and disposed responsibly to licenced recycler.

11. Emergency & Evacuation Response Plan

Mercon shall establish an emergency and evacuation plan. This Plan shall include as a minimum nomination of the person responsible in the event of an emergency, identify an evacuation muster station, and a contact list of all public utilities, Workcover, local medical facilities, police and the certifying authority.

12. Sediment Control Plan

The Client shall be responsible for all Site run-off collection. Prior to any run-off water being drained into the stormwater system it must be filtered by silt barriers, hay bales or filter socks to control suspended silt particles from entering the stormwater system or waterways.

13. Traffic Control Plan

A traffic control plan to council requirements shall be implemented to control all truck movements arriving or departing the site. This plan shall address any potential impact on traffic flows and neighbouring properties, including hours of operation, wash-down of departing trucks, maintaining the public domain free of dirt, debris & litter and for the use of traffic controllers during times of traffic movements or strategic operations.

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14. Transport, Handling & Stockpiling Plan

Trucks used for hauling demolition material shall enter and exit the site by the designated ingress and egress point. These trucks while on-site shall remain on hardstand areas and not come in contact with soils at anytime unless site conditions require it. All trucks shall be inspected prior to egress of the site to ensure that any demolition material is a securely loaded and covered.
Any accumulation of waste shall be placed in designated areas or bins for removal.
Any materials deemed to be resalable or reused shall be appropriately stockpiled for future access or if the condition is unsatisfactory then disposed of through relevant recycling companies.
Materials deemed to be contaminated or hazardous shall be treated in accordance with the relevant WH&S regulations and WorkCover Codes of Practice requirements. In all cases with hazardous materials, only relevant specialist personnel will be engaged for removal, treatment, safe handling and disposal at a licensed tipping facility.
Operating practices that prevent spillage from occurring such as re-fueling operating plant, responsibly loading of trucks, load covering, slow and careful driving and careful and attentive loading practices will be adopted. Mercon Site Supervisor shall be responsible to monitor and maintain these practices during demolition activities.

15. Dust Control Plan

Demolition shall be performed in such a way as to minimise the production of fugitive emissions emanating from the site. Suppression of dust will be of primary importance during all phases of demolition. The Demolition personnel shall conform to all WorkCover regulations for the handling of dust to ensure emissions are minimised and within regulation limits.
The following dust control measures shall be strictly adhered to:

- All loads of building debris leaving the site shall be securely covered with a tarpaulin
- Water Sprays will be used if required to suppress dust. The water shall be applied by use of a garden hose levelled at the ground surface wherever the surface has dried out and has the potential to generate visible levels of dust either by the operation of equipment or by the action of wind over the surface.
- Plastic Sheeting (VLDPE or PVC) or other dust mitigating measures shall be used to address dust generation over demolition faces as applicable: o During non working hours (at Areas currently worked on) o If dust is being generated from a given surface
  o If fugitive emissions have the potential to cause the ambient air quality to exceed EPA limits.

- The demolition areas exposed at any one time shall be limited wherever possible by working in a localised and progressive manner.
- All demolition equipment must have dust attenuation measures which makes the equipment suitable for use in urban areas.
- The Protective measures shall include covering feed openings with suitable curtains.

16. Odour Control Plan

When material is uncovered that generates odours, then following odour control measures shall be established:

- Plastic Sheeting (VLDPE or PVC) shall be used to cover stockpiles,
- Odour Suppressants such as “Biosolve” may be used to spray over the offending soils.

17. Noise & Vibration Control Plan

The demolition shall be performed in such a way as to minimise unnecessary noise and vibration. Regulatory Limits for noise and vibration will be strictly adhered to by applying the following controls:

- All equipment will be selected on the basis of its noise attenuation performance,
- All equipment will comply with regulatory standards for noise attenuation,
- Noisy equipment will be located in such away to limit the acoustic impacts,
- Stockpile areas will be positioned to account for their acoustic barrier properties but equally taking into consideration the noise generated during stockpile access,
- Attention will be given to siting of overnight parking locations to minimise start up and end of day disturbances,
- Hours of Operation will be strictly adhered to, including prevention of noise occurring from early arrival of equipment to site prior to agreed operating hours.

18. Environmental Monitoring Plan

An environmental monitoring program shall be initiated prior to the commencement of works on site and consist of the following components.

- Inspections

The following inspections will be conducted during demolition activities: o Plant & Equipment o Noise & Dust o Site Security o Tree Protection o Sedimentation and Site Drainage

o First Aid Facilities o Fire Fighting Equipment

- Odour Monitoring

Odour detection in the working environment will be performed primarily through personal observations by the Site supervisor. Local residents my contact the Site regarding information on the project and to advise if dust and/or odour nuisance is observed. The phone contact will be available during normal operational hours and the contact number will be displayed on the Mercon Signage.

- Noise Monitoring

There are no operational targets set for noise monitoring but in the event that noise or vibration was to become an issue the Site Supervisor will propose a noise monitoring program that shall be associated with the noisy activity.

- Emission Monitoring

Emissions Diesel and Petrol powered Plant and equipment working in partially covered areas which could pose a potential build up of carbon monoxide gases shall be monitored to assess the carbon monoxide levels during the work operation. Such work if carried out for long or sustained duration shall be performed with alternative powered Plant or Equipment.

- Traffic Disruptions

Any minor traffic disruptions shall be controlled by a traffic controller in accordance with the Traffic Management Plan. If any, Permits (Police, Local Council etc.) shall be applied for and approvals received, such approvals shall be available on site prior to any part road closure being made. Neighbours affected shall be informed by letterbox drop.

19. Contingency Planning For Works

During the demolition, conditions may arise which require a specific response to prevent or mitigate an environmental impact. In order to prepare for any contingency a range of pre-determined contingencies will be planned. The table shown below summarises anticipated problems, the resulting impacts they may cause and the proposed response actions to be taken in the course of such an event.

No Contingency plan will substitute for sound practice during any site activity. Accordingly, the Site Supervisor has the responsibility to monitor the works at all times and manage all potentially significant activities in a proactive manner. Records of all actions relating to protection measures, contingencies, events and impacts will be incorporated into the daily diary completed by the Site Supervisor.

Any non conformance shall be fully documented as soon as practical after the event even if it is prudent to attend to the corrective actions and close out the incident immediately.

Contingency Planning		
Anticipated Problem	Potential Impact	Corrective Action
Discharge of fuel/oil from plant or equipment	Contamination of surface waters and/or soils	Remove source, use adsorbent material to remove oil; make repairs or replacement as required
Excessive Dust	Nuisance Complaints; Eye Irritations	Use water sprays; provide curtaining or shade-cloth or stop dust generating activity until better dust control measures can be achieved.
Excessive Noise	Nuisance Complaints	Identify source and review noisy equipment, erect temporary acoustic barrier if possible; restrict usage to suitable times.
Excessively Wet Materials	Generation of turbid waters	Stockpile and dewater on site; or add absorbents.
Uncovering Contaminated Materials	Contaminated Material to be capped, contained or disposed	Sign Post and Seal off area; seek advice from specialist; dispose through an approved waste facility
Flooding by extreme rainfall event	Contamination of Stormwater and/or contact with	Sediment Filters installed on the sediment basin overflow.
	contaminated soils	Inspect adequacy of all silt protection in place. Divert water flows as required
Unknown Asbestos is observed in uncovering existing works	Health and Safety Issues	Sign Post and Seal off area; specialist removal & dispose through an approved waste facility
Unacceptable levels of volatile gases	Health and Safety Issues	Cover exposed soil stockpiles & excavation pits, Use mitigation agent (Biosolve)
Excessive Odours	Nuisance Complaint	Use of Odour Suppressants cover exposed stockpiles (Biosolve or SSIOO-D) and excavation pits
Equipment Failures		Maintain spare equipment and parts; keep rental options available; shut down affected operations until repairs or replacement is made

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17. Objectives and Targets

Objectives	Targets	Assessment/Record
To achieve minimal Lost Time	Zero Lost Time Injury Zero Lost Time Incidents	Record any injury in accordance with Mercon policy
No Complaints or disruptions to Client or Neighbours No harm to the environment	No Neighbourhood complaints No Client complaints No Pollution Incidents	Incident Reports Safety Inspections
Implementation and Maintenance of Safety & Environmental management Plans	No incidents or near misses	Incident reports
Ensure compliance in project safety inductions requirements	100 % Mercon employee site and work inductions	Mercon training Register SWMS Tool Box talks
To identify employee training needs and development	Regular Training Site Training & Awareness	Mercon Training register Toolbox Talks
Maintain compliance with OHS &E Legislation; OH&S regulations and DA conditions and Council ordinances	Zero Workcover prohibition & EPA or Council Infringement notices issued	Safety Inspections, Incident Reports, Infringements & Prohibition Notices
Identify all Site Specific OHS&E Risks	Implement & Maintain controls identified Site Specific OHS&E Risk Register	Maintain Current Site Specific BLS OHS 600 Risk Register. Inspections & Records of Controls in BLS OHS 600 Current Site Control Map Monthly Reports

WASTE MANAGEMENT PLAN

1. Purpose

   The purpose is to ensure that resources are conserved and waste is processed responsibly by minimizing waste generation and maximizing reselling reusing and recycling of materials.

2. Scope

   The scope is to address the waste management procedures for the demolition activities, undertaken during the proposed construction of the project.

3. Major Measures

   3.1 Materials Selection and Ordering

- Material Safety Data Sheets and Product Information are available, where required, to ensure that safe handling, storage and/or shelf life procedures are implemented.
- Assess the suitability of purpose for equipment purchased or hired.

3.2 Waste Recycling:

- Landfill waste generation from demolition activities on the site will be minimized, by resale, reused or recycled as applicable; Resale or reuse shall be determined by the condition of material after being retrieved as to its suitability.
- Dedicated and Secure containers will be provided on site for non-recyclable waste;
- Waste that can be recycled will be separated for removal off-site.

This will typically include:

- Concrete/Mortar/Floor & Wall Tiles
- Bricks
- Timber
- Steel/Copper
- Plaster/Plasterboard
- PVC
- Mixed Waste will be transported off site to a recycling depot where it will be further sorted for reuse and/or recycling;

4. Waste Management Principles

4.1 Educational, Training and Awareness

(a) Awareness and Knowledge of the Waste Management Plan (WMP)

Avoid – Reuse – Recycle – Dispose

Mercon aims to reduce the amount of waste to landfill by adopting the waste management hierarchy of avoid > reuse > recycle > dispose in the demolition processes. The following document outlines waste management procedures to be carried out to assist in reducing waste.

The first step is to ensure that all personnel involved are inducted, aware and understand the importance of the Waste Management
Principles including the social and monetary costs landfill disposal.

- Company & Site Induction's

To achieve the awareness of the Waste Management Principles to all personnel on site

- Coding or signage

Receptacles' can be colour coded or sign posted to assist in the identification of usage.

(b)Procedures of Waste Management Principles

The following approach will be adopted to waste management planning;

- Awareness by all personnel for construction waste and ongoing waste management on the site.
- Create an induction item to be incorporated in the Site Specific Induction.
- Engage a suitable waste management contractor.
- Include in Safe Work Method Statements SWMS
- Supply adequate bins and efficient and timely removal methods. Monitor feedback reports from waste management contractors.
- Upon completion of daily and specific activities leave site clean and free of debris or litter.

5. Waste Removal procedures

Demolition Phase

During the demolition phase, all materials will be catagorised and temporarily stored on site in relevant areas for re-sale, reuse, recycle or refuse for the removal by Mercon Truck or a waste management contractor engaged by Mercon.

6. Waste Management Contractor

All waste disposal shall be transported to a relevant licensed tipping facility. All truck movements shall be recorded and verification records established by the tipping facility shall be available on request.

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DEMOLITION PHASE

MATERIALS ON SITE			DESTINATION		
	Estimated		Reuse & Recycling		Disposal
Type of Material	Volume (m3)/(m2)	Wt (t)	On Site Proposed Methods	Off Site Proposed Methods	Landfill Site
CONCRETE/MORTAR FLOOR & WALL TILES	0m2 0m2	0t 0t		Recycling Plant	Nil
ROOF TILES	100m2	0t		Sell or Recycling Plant depending on condition Damaged Items to be placed with general waste for recycling	Nil
TIMBER Bearers, Joists, Rafters Flooring Stairs Windows Doors Cupboards, Vanities, Shelves		 0.5t 0t 0t 0.2t 0.2t 0t		Sell or Recycling Plant depending on condition Damaged Items to be placed with general waste for recycling	 Nil Nil Nil Nil Nil Nil
BRICKS Brick, Render, Paint (Lead Based), Clean Brick Rubble	0 No	4t 0t		Sell or Recycling Plant depending on condition Damaged Items to be placed with general waste for recycling	Nil
STEEL/COPPER Reinforcement Plumbing) Electrical)	0	 0t 0t 0t		Recycling Plant Damaged Items to be placed with general waste for recycling	Nil

PLASTER/PLASTERBOARD Ceilings, Walls	0m2	2t		Recycling Plant Damaged Items to be placed with general waste for recycling	TBA by waste management contractor
ASBESTOS	40m2			Trained Removalists in wet method and Responsibly packaged and disposed at licensed tipping facility	TBA by waste management contractor
GENERAL WASTE	0	5t		Recycling Plant	TBA by waste management contractor
GREEN WASTE	0	0		Chipped and used as soil stabilization	Landfill site

18.8 CONSTRUCTION SOIL AND WATER MANAGEMENT SUB-PLAN (CSWMSP) CONDITION B20

Refer to B20 Folder CSWMSP (4 Pages)

Management of Construction Works in Wet Weather

Icon will ensure that all details in JN Consulting Engineers Environmental Site Management plans are implement onsite prior to works commencing. This includes ESM 1 to 7 attached to this plan. This will include the following controls:

1. Vibration/cattle grids
2. Gravel pads
3. Wash out bays
4. Sandbag Traps
5. Sediment/Silt Fences
6. Silt Fences
7. Earthbanks
8. Sediment Basins

By implementing the correct controls in place prior to site works commencing, in the event of inclement weather the environmental effects to the site will be minimal. These controls will be reviewed each week on the Icon safety walk and within 3 days of a rain event. If required additional controls may need to be implemented including the use of spray on polymer which will assist with batters and steep slope stabilisation.

The Environmental Officer shall develop and comply with a schedule of inspections while the site is operating, as well as additional environmental inspections following a Significant Rain Event. The site will be inspected by the Environmental Officer or his representative and if required, corrective action will be taken.

Wet weather poses numerous risks for construction workers, so it is critical these are recognised and managed by both workers and employees on site. During inclement weather events, depending on their nature, works will normally cease until the Icon Site Manager deems the site safe in conjunction with the representatives of the safety committee.

There are no specific laws relating to working conditions in wet weather. However, Icon will review weather forecasts prior to undertaking any construction work so that appropriate measures can be taken to ensure worker safety and the correct controls are in place to protect the surrounding environment. It is important that work ceases if there is an assessment that the level of risk from the weather is not acceptable to any workers on site.

Where heavy rain is forecast, open trenches, excavations, scaffolding (support) and lift wells and pits may quickly become hazardous and need to be reviewed. Along with ensuring environmental controls are installed and in good condition.

When scheduling works, site management will consider weather forecasts and, where possible, reschedule specific tasks that are regularly affected by inclement weather. This includes tasks such as, but not limited to:

- Roofing;
- Working on bondek and steel decking;
- Concreting;
- Tasks using products that can emit vapours when exposed to heat;
- Working outdoors/earthworks.

Materials are not to be left stored onsite throughout the day, a laydown area will be provided in a level sectioned off area as determined by the Icon Site Manger.

03 March 2020

Icon Co (NSW) Pty Ltd
Level 2, 179 New South Head Road
EDGECLIFF NSW 2027

Responsive Engineering

Our Ref: CRPT-N0200031.02B

Dear Sir,

Re: Civil Services Design Statement

Project:	NSW Public School Project – Greystanes Public School (PS)
Client:	Icon Co (NSW) Pty Ltd
Address:	781 Merrylands Rd GREYSTANES WEST NSW 2145
Drawing Nos:	• 20161275 C001 NOTES & LEGEND-F • 20161275 C010 SITE PLAN STORMWATER-D • 20161275 C050 TYPICAL DETAILS - SHEET 1-F • 20161275 C051 TYPICAL DETAILS - SHEET 2-F • 20161275 C100 EXTERNAL & GROUND FLOOR CIVIL PLAN – ZONE A-G • 20161275 C110 ROOF STORMWATER PLAN – ZONE A-F • 20161275 C200 EXTERNAL & GROUND FLOOR CIVIL PLAN – ZONE B PART 1-F • 20161275 C201 EXTERNAL & GROUND FLOOR CIVIL PLAN – ZONE B PART 2-D • 20161275 C202 EXTERNAL & GROUND FLOOR CIVIL PLAN – ZONE B PART 3-E • 20161275 C210 FIRST FLOOR STORMWATER PLAN – ZONE B NORTH WING-F • 20161275 C211 FIRST FLOOR STORMWATER PLAN – ZONE B SOUTH WING-E • 20161275 C220 SECOND FLOOR STORMWATER PLAN – ZPNE B SOUTH WING-F • 20161275 C230 ROOF STORMWATER PLAN – ZONE B – NORTH WING-F • 20161275 C231 ROOF STORMWATER PLAN – ZONE B – SOUTH WING-D

Jones Nicholson confirm that the enclosed drainage design has been prepared in accordance with

- Institution of Engineers' publication "Australian Rainfall and Runoff" (2016);
- Cumberland Council Stormwater Drainage Policy 2010;
- Managing Urban Stormwater;
- AS3500.3 Plumbing and Drainage, Stormwater Drainage;
- National Construction Code (NCC) Plumbing Code of Australia (PCA) 2019,
- Education Facilities Standards and Guidelines (EFSG) sections:
    - DG95 Stormwater;

- DG96 Civil Works.

For and on behalf of Jones Nicholson Pty Ltd

Yours sincerely,

Luke Meredith

Civil Design Engineer

Master of (Civil) Engineering
Member of Institution of Engineers Australia

GREYSTANES PUBLIC SCHOOL

MERRYLANDS ROAD GREYSTANES NSW 2145

Job No. **161275**

ENVIRONMENTAL SITE MANAGEMENT

1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD"
2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM, SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.
4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. THE SUPERVISING ENGINEER MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.
6. ALL DISTURBED AREAS ARE TO BE SEEDED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.
7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.
9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.
10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
18. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS)
19. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM THE ENGINEER.
20. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
21. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH THE SUPERINTENDENTS REQUIREMENT.
22. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING
23. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY THE SUPERINTENDENT AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
24. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH 'R.T.A. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'
25. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

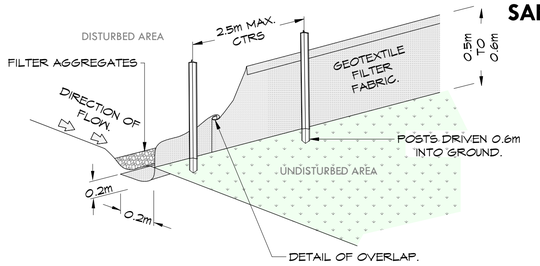
SAFETY IN DESIGN

THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

- JONES NICHOLSON'S ASSESSMENT DID NOT IDENTIFY ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN

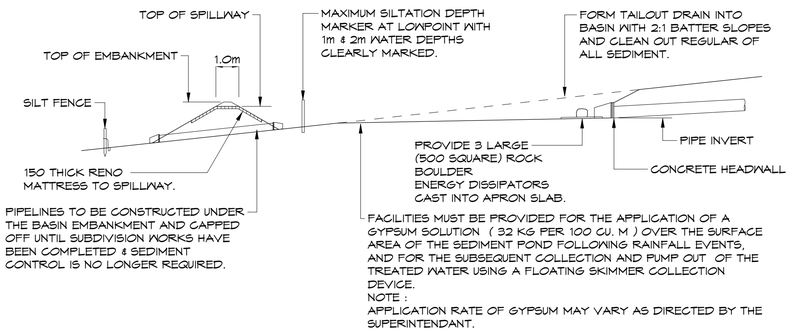
ENVIRONMENTAL SITE MANAGEMENT LEGEND

- PROPOSED BUILDING LINE
- PROPRIETARY SILT FENCE
- PROVIDE TEMPORARY CHAIN WIRE FENCING (HOARDING) ALONG THE SITE BOUNDARY.
- TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT. (SHAKER PAD)
- TEMPORARY FILTER TUBE WITH SAFETY BARRICADE TO KERB INLET PITS.
- NOMINATED DISPOSAL ROUTE FOR TRUCK MATERIAL TRANSPORTATION.
- TEMPORARY MASS CONCRETE FOOTPATH CROSSING.
- UNDISTURBED NON-TRAFFICABLE AREA
- EARTH BANK
- SURFACE INLET DRAINAGE PIT WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)
- TEMPORARY GEOTEXTILE WRAPPED HAY BALES/SAND BAGS
- STOCK MATERIALS
- SITE EQUIPMENT LOCATIONS



1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS IN GROUND 2.5m APART.
3. DIG A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.
7. AREA 0.6HA. MAX. SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 60m MAX.

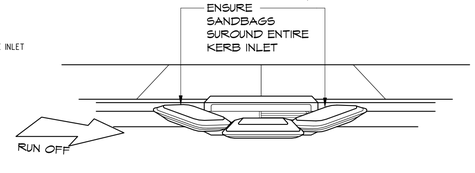
SEDIMENT FENCE



SEDIMENTATION BASIN DETAIL

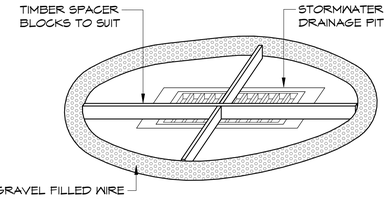
1. LOCATE STOCKPILE AT LEAST 5m FROM VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS A LOW FLAT ELONGATED MOUND.
3. WHERE THERE IS A SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT. (TO ALLOW AIR VENTILATION FOR FUTURE REUSE)
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
5. CONSTRUCT EARTH BANK ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE 1m TO 2m DOWNSLOPE OF STOCKPILE.

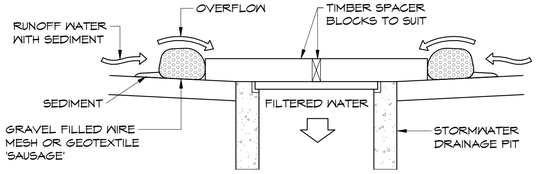
STOCK PILES



1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50MM GRAVEL.
3. FORM AN ELIPTICAL CROSS SECTION ABOUT 150mm HIGH X 400mm WIDE.
4. PLACE THE FILTER AT THE OPNEING OF THE KERB INLET LEAVING A 100mm GAP AT THE TOP TO ACT AS AN EMERGENCY SPILL WAY.
5. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.
6. FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER.
7. FIT TO ALL KERB INLETS AS SHOWN.

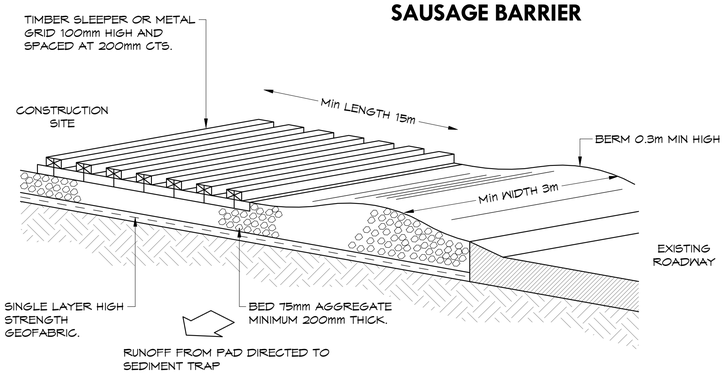
SANDBAG SEDIMENT INLET TRAP



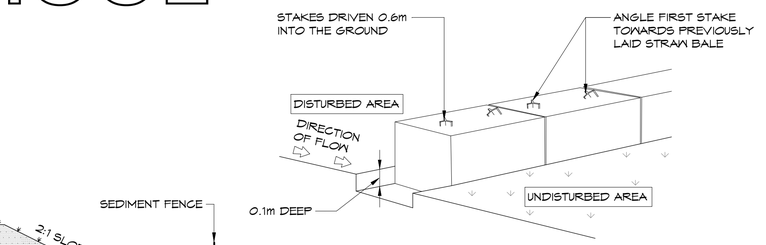


1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH ON THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.

SAUSAGE BARRIER



STABILISED SITE ACCESS (WITH SHAKER RAMP)



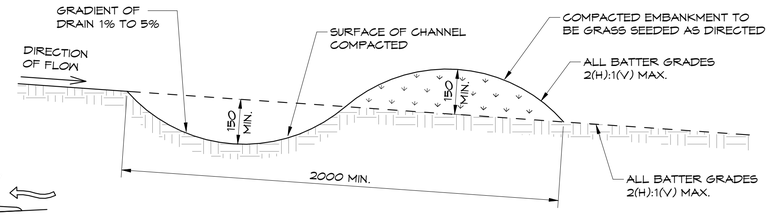
* DRAINAGE AREA 0.4HA MAX. SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 40m MAX.

STRAW BALE SEDIMENT FILTER

STRAW BALE CONSTRUCTION NOTES:

1. CONSTRUCT STRAW BALE FILTER AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE OR THE TOE OF A SLOPE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS TO BE PLACED PARALLEL TO GROUND.
3. MAXIMUM HEIGHT OF FILTER IS ON BALE.
4. ON SOFT MATERIALS EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2m STAR PICKETS. ANGLE THE FIRST STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE STAKES 600mm INTO THE GROUND AND FLUSH WITH THE TOP OF THE BALES.
5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER THE BALES SHOULD BE LOCATED 1.5 TO 2m DOWNSLOPE FROM THE TOE OF THE BATTER.
6. STRAW BALES TO BE WRAPPED IN APPROVED GEOTEXTILE FABRIC.

STRAW BALE SEDIMENT FILTER DETAIL

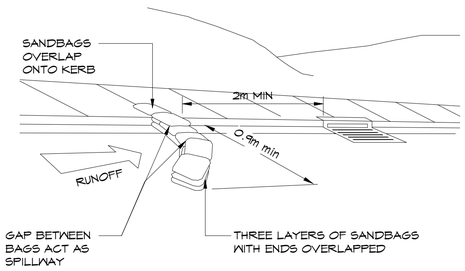


NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

GENERAL CONSTRUCTION NOTES

1. CONSTRUCT WITH GRADIENT OF BETWEEN 1% TO 5%
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE
3. DRAINS TO BE CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS-SECTION NOT V-SHAPED
4. EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE
5. PERMANENT OR TEMPORARY STABILISATION OF THE EARTH BANK TO BE COMPLETED WITHIN 10 DAYS OF CONSTRUCTION
6. ALL OUTLETS FROM DISTURBED LANDS ARE TO FEED INTO A SEDIMENT BASIN OR SIMILAR
7. DISCHARGE RUNOFF COLLECTED FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL SITE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED
8. COMPACT BANK WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN 5 DAYS
9. EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW

SITE MANAGEMENT - EARTH BANK



SANDBAG SEDIMENT TRAP DETAIL

AMDT	DATE	BY	DESCRIPTION
E	22.05.19	ELR	REVISED 100% DETAILED DESIGN
D	07.03.19	ELR	100% DETAILED DESIGN
C	03.12.18	ELR	80% DETAILED DESIGN
B	08.11.18	ELR	50% DETAILED DESIGN

NSW GOVERNMENT

JDH architects

CIVIL · STRUCTURAL · BUILDING SERVICES

JONES NICHOLSON CONSULTING ENGINEERS

WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

DESIGN : TH
DRAWN : KG
DATE : JULY 2017
DRG SIZE : A1
SCALE : As indicated
PROJECT MGR : AD

CIVIL DESIGN
EROSION SEDIMENT CONTROL NOTES & LEGEND

GREYSTANES PUBLIC SCHOOL
MERRYLANDS ROAD GREYSTANES NSW 2145
JDH ARCHITECTS

161275
ESM1 E

9 D.P.239269 | 1 D.P.782429 | 14 D.P.239301 | 15 D.P.239301 | 16 D.P.239301 | 17 D.P.239301 | 18 D.P.239301 | 19 D.P.239301 | 20 D.P.239301 | 21 D.P.239301 | 22 D.P.239301 | 23 D.P.239301 | 24 D.P.239301

PROVIDE TEMPORARY SILT FENCE BARRIER TO LOW SIDE OF RUNOFF AREAS. SITE SUPERINTENDENT TO MONITOR RAINFALL IMPACTS AND INSTALL HAYBALES AS REQUIRED (REFER DETAILS)

PROVIDE TEMPORARY SEDIMENT BASIN IN ACCORDANCE WITH BLUE BOOK. INDICATIVE LOCATION TO BE CONFIRMED BY CONTRACTOR AND SITE SUPERINTENDENT

PROVIDE FILTER FABRIC SEDIMENT TRAP OR FILTER TUBES (SANDBAGS) AROUND ALL EXISTING AND PROPOSED INLET PITS. TYPICAL.

EARTH BANK. REFER DETAILS

PROVIDE TEMPORARY SILT FENCE BARRIER TO LOW SIDE OF RUNOFF AREAS.

PROVIDE FILTER FABRIC SEDIMENT TRAP OR FILTER TUBES (SANDBAGS) AROUND ALL NEW AND EXISTING GRATED DRAINS. TYPICAL.

PROVIDE TEMPORARY CHAIN WIRE FENCE (HOARDING) AROUND WALKWAY

PROVIDE FILTER FABRIC SEDIMENT TRAP OR FILTER TUBES (SANDBAGS) AROUND ALL GRATED DRAINS. TYPICAL.

PROVIDE STOCKPILE. LOCATION TO BE CONFIRMED BY SUPERINTENDENT

EARTH BANK. REFER DETAILS

PROVIDE TEMPORARY SEDIMENT BASIN IN ACCORDANCE WITH BLUE BOOK. INDICATIVE LOCATION TO BE CONFIRMED BY CONTRACTOR AND SITE SUPERINTENDENT

INLET PIT TO BE COVERED WITH GEOTEXTILE AND BLOCKED DURING CONSTRUCTION

PROVIDE TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT (SHAKER PAD)

PROVIDE STOCKPILE. LOCATION TO BE CONFIRMED BY SUPERINTENDENT

PROVIDE TEMPORARY CHAIN WIRE FENCE (HOARDING) ALONG SITE BOUNDARY

PROVIDE TEMPORARY CHAIN WIRE FENCE (HOARDING) ALONG SITE BOUNDARY

PROVIDE TEMPORARY STANDBAG SEDIMENT TRAPS AROUND ALL KERB INLET PITS.

PROVIDE TEMPORARY STANDBAG SEDIMENT TRAPS. TYPICAL.

PROVIDE FILTER FABRIC SEDIMENT TRAP OR FILTER TUBES (SANDBAGS) AROUND ALL EXISTING AND PROPOSED INLET PITS. TYPICAL.

PROVIDE TEMPORARY SILT FENCE BARRIER TO LOW SIDE OF RUNOFF AREAS.

PROVIDE TEMPORARY STANDBAG SEDIMENT TRAPS AROUND ALL KERB INLET PITS.

PROVIDE TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT (SHAKER PAD)

ESM SITE PLAN

SCALE 1 : 250

AMDT	DATE	BY	DESCRIPTION
F	22.05.19	ELR	REVISED 100% DETAILED DESIGN
E	05.04.19	ELR	REVISED 100% DETAILED DESIGN
D	07.03.19	ELR	100% DETAILED DESIGN
C	03.12.18	ELR	80% DETAILED DESIGN

NSW GOVERNMENT

JDH architects

CIVIL · STRUCTURAL · BUILDING SERVICES

JONES NICHOLSON CONSULTING ENGINEERS

WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

DESIGN : TH
DRAWN : KG
DATE : JULY 2017
DRG SIZE : A1
SCALE : 1 : 250
PROJECT MGR : AD

CIVIL DESIGN
EROSION SEDIMENT CONTROL PLAN

GREYSTANES PUBLIC SCHOOL
MERRYLANDS ROAD GREYSTANES NSW 2145
JDH ARCHITECTS

161275
ESM2 F

18.9 BIODIVERSITY MANAGEMENT SUBPLAN (BMSP) CONDITION B21

Refer to folder B21 for Biodiversity Management Subplan.

GREYSTANES PUBLIC SCHOOL

Approved Alterations and Additions (SSD 8778)
Biodiversity Management Sub-plan

Prepared for:

Icon SI (Aust) Pty Ltd
Level 2, 179 New South Head Rd
EDGECLIFF NSW 2027

SLR Ref: 630.13067-R01
Version No: -v1.1
March 2020

PREPARED BY

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BASIS OF REPORT

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

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

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.13067-R01-v1.1	19 March 2020	David Martin	Fiona Iolini	Jeremy Pepper
630.13067-R01-v0.1	17 March 2020	David Martin	Fiona Iolini	Jeremy Pepper

CONTENTS

DOCUMENT REFERENCES

TABLES

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APPENDICES

GLOSSARY OF TERMS

Term/ Abbreviation	Definition
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BMSP	Biodiversity Management Sub-plan
CEMP	Construction Environmental Management Plan
Council	Cumberland Council
Critically Endangered Ecological Community	A critically endangered ecological community specified in Schedule 2 of the BC Act
DPE	Department of Planning and Environment (NSW)[1]
DPIE	Department of Planning, Industry and Environment
Restoration	To restore pre-existing indigenous ecosystems and ecological processes, maintaining and developing the capacity of a natural system to self-perpetuate
Project Site	Greystanes Public School - Lot 1 DP782352, Lot 1 DP539019 & Lot 1 DP76683
Threatened Species	A species specified in Schedule 1 of the BC Act.
Weed Infestation	An area considered to have a dominating weed population, or where rehabilitation would be significantly impacted by weed species

[1] Now known as DPIE

1 INTRODUCTION

1.1 Background

This Biodiversity Management Sub-plan (BMSP) has been prepared to accompany the Construction Environmental Management Plan (CEMP) for the construction of approved capital works at Greystanes Public School. The CEMP and accompanying BMSP are required in accordance with the Development Consent (dated 17 December 2018) for State Significant Development (SSD) 8778 and are to be approved by the Certifying Authority and submitted to the Planning Secretary prior to commencement of construction. Specifically, Condition B21 of the Development Consent requires the preparation of a 'Biodiversity Management Sub-Plan'. The elements of Condition B21 and where they are addressed in this Sub-plan are listed below in **Table 1**.

Table 1 Conditions of Consent B21 and Locations in BMSP

Clause of B21	Condition	Location in BMSP
a	provide information and maps that define the biodiversity values across the site	Chapter 2
b	outline priority investment area on-site where biodiversity will benefit from active management and restoration	Section 4.2
c	map potential areas for management of threatened and significant species	Figure 5
d	measures to minimise the loss of key fauna habitat, including tree hollows	Chapters 3 and 4
e	measures to minimise the impacts on fauna on site, including conducting fauna pre-clearance surveys prior to vegetation clearing, building/structure demolition;	Section 3.3
f	engagement of an appropriately qualified ecologist with experience in capturing native wildlife to be on site for all vegetation removal activities	Section 4.2
g	controlling weeds and feral pests	Section 4.4
h	an 'Unexpected Finds' Procedure detailing procedures and management measures to be implemented in the event that flora and fauna is uncovered in any area not identified in the updated Biodiversity Assessment Report (BAR);	Section 4.2 and Appendix C
i	measures to ensure biodiversity values not intended to be impacted are protected, including barriers and mapping of protected/ 'no-go' areas; and	Section 4.2
j	a program to monitor the effectiveness of the measures in the FFMSP [sic]	Chapter 5

In accordance with the requirements of the Condition, the BMSP has been specifically prepared in relation to:

- the construction phase of the project as a specialist sub-plan to the CEMP;

- areas within the site that will be subject to disturbance (including vegetation removal) during construction; and
- biodiversity values (specifically native vegetation and fauna habitats) to be retained on site.

1.2 The Project Site

The Project Site is Greystanes Public School, which comprises Lot 1 DP782352, Lot 1 DP539019 and Lot 1 DP76683 and is located at 781 Merrylands Road, Greystanes NSW (see **Figure 1**). Greystanes is a suburb in western Sydney and is within the Cumberland Local Government Area. The site is three hectares (ha) in area, and is bounded by residential development to the north, south, east and west (see **Figure 2**).

1.3 Project Description

The Greystanes Public School Upgrade (SSD 8778) is a State Significant Development and was determined under Part 4 (Division 4.1) of the NSW *Environmental Planning and Assessment Act 1979*. The development was approved by the NSW Minister of Planning on the 17 December 2018, subject to conditions.

Works to be undertaken as part of this approval include the following:

- demolition and removal of existing buildings (16 demountable classrooms, two covered outdoor learning areas (COLAs), Block G);
- refurbishment of part of Block A;
- removal of up to 30 trees;
- construction of a new 2/3 Storey Building (Block M);
- new one-storey Staff/Administration Building (Block L);
- new COLA; and
- landscaping and new hardstand surfaces (e.g. footpaths).

The layout of the existing school and the design of the approved development are presented in **Figure 3**.

1.4 Information Resources

Existing information on the flora and fauna of the Project Site and the locality, including relevant threatened biota was also obtained from:

- Regional vegetation mapping: *The Native Vegetation of the Sydney Metropolitan Area* – Version 3.0 (OEH 2016a).
- Relevant published literature on threatened biota (see References).
- The Project *Biodiversity Development Assessment Report (BDAR)* (SLR 2018).

A site inspection to inform the BMSP was undertaken by the report authors (David Martin and Fiona Iolini) on the 11th March 2020.

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Location Map

FIGURE 1

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309600

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BRADMAN ST

BRADMAN ST

LAWRY ST

MERRYLANDS RD

MERRYLANDS RD

TAYLOR ST

LEGEND

Contour 10m

Project Site

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GDA 1994 MGA Zone 56

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Project Site

FIGURE 2

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309600

6255000

RESIDENTIAL

BRADMAN ST

RESIDENTIAL

RESIDENTIAL

RESIDENTIAL

DP239289

DP789429

DP239301

STUDENT ENTRY

SECONDARY STUDENT ENTRY

S P23883

DP76883

DP539019

DP782852

BLOCK A

BLOCK B

BLOCK C

BLOCK D

BLOCK E

BLOCK F

BLOCK G

BLOCK J

BLOCK K

COLA

SPORT COURT

SPORTCOURT CONCRETE

CARPARK

VEHICLE ENTRY

MAIN ENTRY

STUDENT ENTRY

VEHICLE ENTRY

MERRYLANDS ROAD

RESIDENTIAL

RESIDENTIAL

LEGEND

- Existing Tree To Be Retained
- Existing Tree To Be Removed
- Existing Buildings On Site
- Existing Concrete / Bitumen
- Existing Buildings to be Demolished
- Existing COLA / Demountable Building to be Demolished
- Existing Demountable Building to be Temporarily Relocated During Construction
- Existing Building to be Refurbished
- Outline of Proposed New Building
- Existing Lawn
- Existing Playground / Sportcourt
- Existing Neighbouring Buildings
- Project Site

0 20 40 60 80 100 m

Scale:1:1,000
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Project Layout

FIGURE 3

1.5 Aims of the Plan

The aims of BMSP are to:

- minimise impacts on biodiversity values during construction;
- protect existing biodiversity values to be retained on site and avoid or minimise indirect impacts arising from construction activities;
- provide a framework for the maintenance and improvement of biodiversity values to be retained on site; and
- address the requirements of the Conditions of Consent, specifically Condition B21.

1.6 Staff Qualifications

The roles and qualifications of all staff involved in the preparation of this report are listed in **Table 2**.

Table 2 Staff Roles and Qualifications

Staff Name & Title	Qualifications and Training	Role
Jeremy Pepper Principal Ecologist	Bachelor of Science (Hons Class 1) University of NSW 1996 Cert II Bushland Regeneration, TAFE NSW Cert III Horticulture (Arboriculture), TAFE NSW BAM accredited assessor (#BAAS17104)	Project management and direction
Fiona Iolini Associate Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2007 Certificate of Native Plant Identification, Sydney University 2008 Eucalypt and Grass Identification Workshop (Van Klaphake) 2013 Cert III Conservation and Land Management, TAFE NSW 2015 BAM accredited assessor (#BAAS19042)	Project management, field assessment and report preparation
David Martin Project Ecologist	Master of Science (MSc), The University of Melbourne 2018 Bachelor of Environmental Science and Management, The University of Newcastle 2014	Field assessment and report preparation
Emily Mitchell CAD/GIS Technician	Bachelor of Development Studies, University of Newcastle 2008 Cert IV Spatial Information Services, TAFE NSW 2011 Master of Information Technology, University of Newcastle 2019	GIS data management and figure preparation

2 BIODIVERSITY VALUES

2.1 Flora and Vegetation

A total of 92 plant species were identified within the Project Site during the field assessments carried on the 29th September 2017 and on the 11th March 2020. These comprised 43 exotic species and 49 native species. At least eight of the native species appear to have been planted as ornamentals. A complete list of all plant species is presented in **Appendix A.**

One threatened tree species; *Eucalyptus scoparia* (Wallangarra White Gum) was identified within the Project Site at the time of the survey. The location of this species within the Project Site is presented in **Figure 3**. Wallangarra White Gum is listed as endangered under the NSW BC Act and vulnerable under the EPBC Act. The species is known to naturally occur within three localities near Tenterfield (NSW), and is not native to the Sydney Region, although it is commonly used in landscaping throughout the Sydney region. The highly modified nature of the site means it is unlikely to support any naturally occurring threatened flora species.

Three vegetation types were recorded as occurring within the Project Site (SLR 2018), these include:

- Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849).
- Exotic Grassland; and
- Exotic Urban Woody Vegetation.

The only native vegetation community identified was the Plant Community Type (PCT) *Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion* (PCT 849). This community is associated with *Cumberland Plain Woodland*, listed as a Critically Endangered Ecological Community (CEEC) under both the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The extent of each community previously mapped on the site (SLR 2018) is shown in **Table 3** and mapped on **Figure 4**.

Table 3 Vegetation Types within Greystanes Public School (SLR 2018)

Vegetation Type	Area (ha)
PCT 849 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain[#]	0.46
Exotic Grassland	0.72
Exotic Urban Woody Vegetation	0.52

[#]This vegetation is associated with the Cumberland Plain Woodland CEEC

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6255000

RESIDENTIAL

BRADMAN ST

D P239269

D P790430

D P239301

STUDENT ENTRY

SECONDARY STUDENT ENTRY

BLOCK K

BLOCK F

BLOCK E

BLOCK J

COLA

SYNTHETIC GRASS PLAYGROUND

CONCRETE COURTYARD

D P782352

BLOCK D

SPORTCOURT

BLOCK A

BLOCK H

BLOCK C

BLOCK G

BLOCK B

SPORTCOURT CONCRETE

D P539019

D P76883

RESIDENTIAL

D P239421

VEHICLE ENTRY

MAIN ENTRY

STUDENT ENTRY

VEHICLE ENTRY

MERRYLANDS ROAD

LEGEND

- Project Site
- Existing Buildings On Site
- Existing Concrete / Bitumen
- Existing Buildings to be Demolished
- Existing COLA / Demountable Building to be Demolished
- Existing Demountable Building to be Temporarily Relocated During Construction
- Existing Building to be Refurbished
- Outline of Proposed New Building
- Existing Lawn
- Existing Playground / Sportcourt
- Existing Neighbouring Buildings
- Eucalyptus scoparia (Wallangarra White Gum) (Endangered – BC Act, and Vulnerable - EPBC Act)

Vegetation Mapping

- PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion'
- Exotic Grassland
- Exotic Urban Vegetation
- Cumberland Plain Woodland CEEC (Vegetation Zone 1) Disturbance (0.085Ha)

0 20 40 60 80 100 m

Scale:1:1,000
GDA 1994 MGA Zone 56

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Source: Nearmap (January 2020)

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Site Vegetation Map

FIGURE 4

2.2 Weeds

A total of 43 exotic plant species have been recorded within the Project Site, including five species that are Priority Weed species within the Greater Sydney Local Land Services Region (DPIE 2020a). These include:

- *Olea europaea* subsp. *cuspidata* (African Olive);
- *Dolichandra unguis-cati* (Cat's Claw Creeper);
- *Anredera cordifolia* (Madeira Vine);
- *Rubus fruticosus* (Blackberry); and
- *Asparagus aethiopicus* (Asparagus 'Fern').

Most exotic species were found in relatively low abundance and cover throughout the Project Site, except for *Ehrharta erecta* (Panic Veldt Grass), which was a common groundcover species in managed areas such as the exotic grasslands and within the Cumberland Plain Woodland community.

2.3 Fauna

A total of 11 fauna species have been recorded on the Project Site, comprising nine species of birds, which are common species in urban areas, and two species of common reptiles. A complete list of all fauna species identified during the assessment is presented in **Appendix B**.

No threatened fauna species have been recorded on the Project Site.

Due to the ongoing management of the vegetation within the Project Site, many of the habitat features that are important for occupancy of fauna species are absent. These include the following:

- Aquatic habitat, which is required for both aquatic and amphibious species.
- Hollow-bearing trees, which are important for nesting birds and arboreal mammals.
- High native flora diversity, which is important for insects, foraging birds and mammals.
- Complex vegetation structure, which generally encourages occupancy of a diversity of fauna groups.
- Soft substrates, which are important for burrowing species such as reptiles and terrestrial mammals.
- Ground habitat features such as dense leaf litter, habitat logs or exfoliating rock. These features are generally important for terrestrial fauna diversity.

The available habitat for fauna species within the Project Site is therefore generally restricted to the limited number of mature native trees and shrubs that occur. Fauna species with the greatest potential to utilise the site are highly mobile species including bat and bird species. Microchiropteran ('microbat') species could also potentially forage on site and potentially utilise cavities within existing buildings, culverts and pipes in the locality.

3 MANAGEMENT APPROACH

3.1 Native Vegetation

The key impact of the construction activities on biodiversity values is the removal of 0.08 hectares of *PCT 849 - Grey Box-Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion*. Impacts to this vegetation also involve:

- Removal of native vegetation, including up to 30 native trees and 0.08 ha of PCT 849.
- Removal of Cumberland Plain Woodland threatened ecological community.
- Reduction in area of native vegetation cover across the site.
- Reduction in native plant diversity within the site.
- Potential for indirect impacts on planted *Eucalyptus scoparia* specimens within the site.
- Potential for indirect impacts on retained vegetation including through construction activities and invasion of weeds.

The aim of vegetation management during construction will be to minimise the risk of indirect impacts on retained vegetation and to enhance the diversity of native plant species within areas of retained Grey Box Forest Red Gum Woodland (PCT 849) within the site.

3.2 Weeds

Several species of priority weeds listed under NSW *Biosecurity Act 2015*, were observed within the school grounds during the March 2020 site inspection, including:

- Madeira Vine (*Anredera cordifolia*);
- Asparagus 'Fern' (*Asparagus aethiopicus*);
- Cat's Claw Creeper (*Dolichandra unguis-cati*);
- African Olive (*Olea europaea* subsp. *cuspidata*); and
- Blackberry (*Rubus fruticosus*).

All priority weeds are "*regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable*" (DPIE 2020). Additional regional recommendation measures apply to two of the species identified within the site as presented in **Table 4**.

Additionally, all priority weed species, except for the African Olive, are also listed as Weeds of National Environmental Significance (WONS). The National Weeds Strategy lists 32 introduced species as WONS and these species are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.

Management will aim to control and/or eradicate priority weeds from areas of retained vegetation within the site during and post-construction.

Table 4 Biosecurity Duty for Species with Regional Recommendation Measures

Species	Regional Recommendation Measures
Dolichandra unguis-cati Cat's Claw Creeper	Land managers prevent spread from their land where feasible. Land managers mitigate the risk of the plant being introduced to their land. Land managers reduce the impact on priority assets. The plant should not be bought, sold, grown, carried or released into the environment.
Olea europaea subsp. *cuspidata* African Olive	Whole region: The plant or parts of the plant are not traded, carried, grown or released into the environment. Core infestation area (includes the site): Land managers prevent spread from their land where feasible. Land managers reduce impacts from the plant on priority assets.

3.3 Fauna

The removal and demolition of buildings could affect roosting microbats; in the unlikely event that bats are roosting within the roof cavities of those buildings. Further potential impacts of the construction activities on biodiversity values include the following:

- Removal of habitat features including large hollow logs and 'bush rock'.
- Increased traffic and visitation within the Project Site which may facilitate the spread of weeds that could further degrade native vegetation.
- Pollution such as chemical spills from construction machinery may have adverse effects on native vegetation, fauna and downstream waterways (i.e. Prospect Creek occurs approximately one kilometre to the west, although there are no natural watercourses within the site).
- Ground disturbance by machinery during the construction phase may create dust and facilitate the movement of water-borne sediment. Sedimentation could adversely affect the surrounding vegetation.
- Erosion resulting from recent earthworks leading to the degradation of biodiversity values including vegetated areas which are to be retained.
- Increased noise by vehicles, machinery and increased human visitation may disrupt the natural behaviour of fauna species (if and where present) during the construction phase.
- Light spill from artificial lighting during the construction phase or operational phase may adversely affect the natural behaviour of nocturnal fauna species such as arboreal mammals, large forest owls and foraging microbats.

Conversely, construction activities will not impact on the following biodiversity values:

- Threatened species – no threatened species were recorded within the site and none are expected to occur, on other than a transient basis, given the lack of suitable habitats and resources, the urban context of the site and the nature and condition of the habitat present.
- Hollow bearing trees – no trees containing hollows (which are important for hollow dwelling fauna) were recorded within the site.
- Ground dwelling fauna habitats – no hollow logs, burrows, caves or other features for ground dwelling native fauna were recorded on the site.
- Watercourses and aquatic habitats – no watercourses or aquatic habitats are present.

3.4 Other Environmental Impacts

Other potential environmental impacts during construction include:

- Erosion and movement of soil and sediment resulting from earthworks on site which may lead to habitat degradation.
- Earthworks could result in dust impacts to native vegetation (i.e. smothering leaf and bark surfaces which may lead to reduced photosynthesis and/or poor tree health).
- Chemical spills resulting from vehicles and machinery in use during construction.
- Increased traffic and visitation within the Project Site which may facilitate the spread of weeds that could further degrade native vegetation.

3.5 Management Zones

Management zones have been identified to inform appropriate vegetation management within the Project Site and are shown in **Figure 5**. A description of each zone is provided in **Table 5**.

Table 5 Management Zones

Zone	Zone Description
Construction Zone	The area within the Project Site where vegetation clearing will occur for the development
Native Vegetation Zone A	The area within the Project Site where Cumberland Plain Woodland will be retained during and following the construction phase, and where appropriate revegetation and weed management should be implemented to increase the site's biodiversity value. The zone is a 'No Go Zone' during construction.
Native Vegetation Zone B	The area within the Project Site where high value native vegetation will be retained during and following the construction phase, and where appropriate revegetation and weed management should be implemented to increase the Project Site's biodiversity value. The zone is a 'No Go Zone' during construction.
Landscape Zone	The area contains a mix of planted native and non-native species of biodiversity value which is to be protected during works and can be enhanced through appropriate landscaping, maintenance and weed management.

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GDA 1994 MGA Zone 56

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Source: Nearmap (January 2020)

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Management Zones

FIGURE 5

4 MANAGEMENT ACTIONS

This chapter sets out the management measures to be implemented prior to and during construction to avoid or minimise impacts on biodiversity values.

4.1 Overview

Management actions to be implemented comprise:

- Establishment of 'No Go' areas within the site. No Go areas are areas of native vegetation (i.e. PCT 849) that lie outside of the construction footprint and are to be retained and conserved and protected in the long-term.
- Trees are to be felled in a way that will minimise impacts to surrounding vegetation.
- Weed control, including targeting removal of priority weeds.
- Revegetation, involving planting locally indigenous native plants in areas of retained native vegetation.

4.2 Vegetation Protection and 'No Go Zones'

'No Go Zones' are to be established within areas of biodiversity value, demarcated clearly and fenced off throughout the construction phase. 'No Go Zones' identified within the Project Site are mapped in **Figure 6**, along with existing and proposed protection fencing. No construction activities are to be carried out within these 'No Go Zones'; however, many of these areas will benefit from active management including weed control and restoration (detailed below). The following recommendations are to be implemented during vegetation clearing:

- Appointment of a suitably qualified 'Project Ecologist[2]' to the project, with contact details and qualifications to be submitted to Council prior to the commencement of site works. The Project Ecologist is to be present during all vegetation clearing operations.
- Areas of vegetation outside the development footprint are to be clearly demarcated with high visibility tape to prevent accidental clearing during the construction phase.
- Vegetation should be cleared in a way that will allow fauna species living in or near the clearing site enough time to move out of the area without additional human intervention.
- No clearing should occur during the early evening or at night, as this is when fauna species are most likely to be on the move.
- Habitat links must be maintained during clearing to allow fauna species to move safely from the site to adjacent areas.
- Clearing should begin in the area that is furthest from vegetation to be retained.
- The direction of clearing should also ensure that fauna species are directed away from threats such as roads, developed areas or disturbed areas (e.g. residential areas or cleared spaces > 100 m).
- Sequential clearing should not create an 'island' of habitat that is isolated from adjoining habitat by roads or cleared and disturbed areas.
- Felled trees should be cut and dismantled in the presence of a fauna ecologist and reinstated in suitable habitat as ground habitat features.

[2] Suitable qualifications include tertiary degree in Science, Applied Science, or Natural Resource Management.

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BRADMAN ST

LAWRY ST

BRADMAN ST

MERRYLANDS RD

MERRYLANDS RD

TAYLOR ST

LEGEND

- Project Site
- Proposed additional exclusion fencing
- Existing exclusion fencing
- No Go Zone
- Cumberland Plain Woodland (PCT 849)

0 25 50 75 100 m

Scale:1:1,000
GDA 1994 MGA Zone 56

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Source: Nearmap (January 2020)

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No Go Zones

FIGURE 6

If any suspected threatened flora species are identified within the Project Site during construction works, follow the Unexpected Finds Protocol in **Appendix C**.

4.3 Revegetation

4.3.1 Overview

Upon completion of the construction phase, it is recommended that the Native Vegetation Zones A and B are planted with a diversity of native trees, shrubs and groundcover species as detailed below. Revegetation within these areas must account for their current usage within the grounds of Greystanes Public School. Suppliers of tube-stock should ensure that all species are derived from local provenance. If possible, plants should be sourced from the Cumberland local government area. Plantings are to be protected by suitable plant guards to protect from grazing and trampling.

4.3.2 Native Vegetation Zone A

Areas mapped as 'Native Vegetation Zone A' are to be planted with a diversity of species characteristic of Cumberland Plain Woodland (PCT 849). See **Table 6** for a planting list including recommended planting densities.

Table 6 Recommended Planting List for Native Vegetation Zone A

Species Name	Common Name	Densities
Trees		
Eucalyptus moluccana	Grey Box	1/ 12m²
Eucalyptus tereticornis	Forest Redgum	1/ 12m²
Shrubs		
Acacia parramattensis	Parramatta Wattle	1/ 6m²
Bursaria spinosa	Blackthorn	1/ 6m²
Groundcover Plants		
Aristida vagans	Three-awn Speargrass	2 per m²
Arthropodium milleflorum	Pale Vanilla-lily	2 per m²
Austrodanthonia tenuior	A Wallaby Grass	2 per m²
Brunoniella australis	Blue Trumpet	2 per m²
Cheilanthes sieberi subsp. *sieberi*	Rock Fern	2 per m²
Cymbopogon refractus	Barbed Wire Grass	2 per m²
Desmodium gunnii	Slender Tick-trefoil	4 per m²
Dianella longifolia	Blueberry Lily	2 per m²
Dichelachne micrantha	Shorthair Plumegrass	2 per m²
Dichondra repens	Kidney Weed	4 per m²
Echinopogon caespitosus	Bushy Hedgehog-grass	2 per m²
Eragrostis leptostachya	Paddock Lovegrass	2 per m²
Euchiton sphaericus	Star Cudweed	4 per m²
Goodenia hederacea	Ivy Goodenia	4 per m²
Lomandra multiflora	Many-flowered Mat-rush	2 per m²
Microlaena stipoides var. *stipoides*	Weeping Grass	2 per m²
Opercularia diphylla	Stinkweed	4 per m²
Oxalis perennans		4 per m²
Paspalidium distans		4 per m²

Species Name	Common Name	Densities
Themeda australis	Kangaroo Grass	2 per m²
Wahlenbergia gracilis	Sprawling Bluebell	4 per m²

4.3.3 Native Vegetation Zone B

Areas mapped as 'Native Vegetation Zone B' are to be planted with a diversity of species characteristic of the vegetation community and suitable for the area's conditions. A planting list including recommended planting densities is included in **Table 7**.

Table 7 Recommended Planting List for Native Vegetation Zone B

Species Name	Common Name	Densities
Trees		
Angophora floribunda	Rough-barked Apple	1/ 8m²
Eucalyptus amplifolia subsp. *amplifolia*	Cabbage Gum	1/ 8m²
Eucalyptus tereticornis	Forest Redgum	1/ 8m²
Shrubs		
Acacia parramattensis	Parramatta Wattle	1/ 4m²
Bursaria spinosa	Blackthorn	1/ 4m²
Groundcover Plants		
Commelina cyanea	Native Wandering Jew	2 per m²
Desmodium gunnii	Slender Tick-trefoil	2 per m²
Dichondra repens	Kidney Weed	4 per m²
Echinopogon caespitosus	Bushy Hedgehog-grass	2 per m²
Entolasia marginata	Border Panic	2 per m²
Microlaena stipoides var. *stipoides*	Weeping Grass	2 per m²
Oplismenus aemulus	2 per m²	
Pratia purpurascens	Whiteroot	4 per m²
Solanum prinophyllum	Forest Nightshade	1 per 2m²
Veronica plebeia	Trailing Speedwell	2 per m²

4.3.4 Landscape Zone

Areas mapped as 'Landscape Zone' are areas containing a mix of planted native and non-native species to be retained during the construction phase. Plantings within these areas can contain a mix of species, including those representative of Cumberland Plains Woodland (PCT 849) detailed in the species list for 'Native Vegetation Zone A'.

4.4 Weeds

Weed control is to be conducted in all Management Zones (**Figure 5**). Weed control is to be achieved by a combination of hand removal and herbicide application. It is important that this is carried out by appropriately trained personnel using suitable herbicides which are approved for use during bush regeneration activities. Drift, drip or run-off to surface waters or non-target species is to be avoided. Consultation may be required with neighbouring landowners where weeds are entering across property boundaries. Weed control is to be carried out by a suitably qualified person (e.g. school groundskeeper with qualification in weed removal and herbicide application). Any vehicles, plant and equipment should be inspected and be free of weed propagules before they are permitted to access the site.

The biosecurity duty and control methods of priority weed species that have been identified within the site are presented in **Table 8**. These methods are in accordance with the legal requirements of the NSW *Biosecurity Act 2015*.

Table 8 Control Methods for Priority Weed Species

Species	Control Method as recommended by NSW Weed Wise (DPI 2020)
Anredera cordifolia Madeira Vine	Successful control of Madeira Vine requires all the tubers and bulbils to be removed or killed. Control activities are long-term and require regular follow-up for many years. Single control activities generally cause disturbance that results in vigorous regrowth and can lead to worse infestation levels unless dedicated follow-up occurs.
Asparagus aethiopicus Asparagus 'Fern'	The rate and spread of Asparagus 'Fern' can be minimised by preventing seed formation and controlling plants before flowering begins. Plants can be controlled by crowning - the practice of digging out the entire crown or corm (by severing the tough surrounding roots) that sits just below the surface of the soil and leaving the roots and watery tubers in situ. This helps to prevent unnecessary disturbance in sensitive areas, particularly coastal dune environments. Any small segment of the crown that is left behind can grow a new crown. Bag and burn the crown and any fruiting stems. Carefully spot spray or recrown any regrowth or seedlings. Care must be taken when applying herbicides to avoid damaging desirable species growing nearby. Large infestations may require spot spraying, and a penetrant should be used in coastal areas where Asparagus 'Fern' forms a waxy coating.
Dolichandra unguis-cati Cat's Claw Creeper	Dense infestations of Cat's Claw Creeper are very difficult to control due to its numerous lianas, abundant seed and ability to re-sprout from the tubers, sometimes for years. In selecting the most suitable control techniques it is essential to minimise adverse impacts on native vegetation and to encourage its subsequent recovery. The methods chosen should be adapted to the type of native vegetation invaded, stage in the restoration program, size and growth stage of the weeds and level of infestation. Weeding should proceed gradually as creation of large gaps can lead to further weed invasion. Follow up is essential. Regrowth should be treated before it reaches the foliage of the host tree, or the hanging ends of previously cut stems of Cat's Claw Creeper. Regrowth may require treatment for five or more years and ongoing monitoring is needed.
Olea europaea subsp. *cuspidata* African Olive	Successful weed control requires follow up after the initial efforts. This means looking for and killing regrowth or new seedlings. Using a combination of control methods is usually more successful. Aim to control plants before they fruit. Physical removal involves hand weeding - Pull out seedlings, removing all the roots. Chemical control involves use the cut and paint method on established plants up to 10 cm diameter. Use stem injection for plants with a stem >10 cm diameter. African Olive re-sprouts from the base if it is burnt or cut down. Re-spray new growth.

Species	Control Method as recommended by NSW Weed Wise (DPI 2020)
Rubus fruticosus Blackberry	Long term control of Blackberry is an ongoing process. A combination of control methods and follow up is needed. Physical control alone is rarely successful because it's hard to remove all the roots. Slashing can help make access through infestations but promotes regrowth. After slashing, use a follow-up control. Herbicides are the most reliable Blackberry control method. Use herbicides in combination with other control methods. There are many herbicides registered for use on Blackberry. A mixture of triclopyr + picloram used with or without aminopyralid gives the best long-term control. Spray healthy, actively growing plants with new leaves on the cane tips. Apply to both the outer and inner leaves. First year plants are easier to kill with herbicide. Well-established thickets may need more treatments. After slashing or burning, wait until plants have up to one metre of regrowth before applying herbicide. Some Blackberry species are more resistant to certain herbicides than others. Identify the species before choosing a herbicide.

4.5 Erosion Control

Mitigation measures to reduce soil erosion and pollutant run-off during construction activities should include:

- Installation of erosion and sediment control measures prior to any works.
- Regular inspection of erosion and sediment control measures, particularly following rainfall events, to ensure their ongoing functionality.
- Management of excavated materials to prevent sediment transfer.
- Avoiding stockpiling of materials adjacent to native vegetation, but instead use areas that are already cleared/ disturbed.
- Undertake maintenance of silt fences and other mitigation measures to isolate runoff.

Priority areas include those immediately surrounding future earthworks to be conducted within Construction Zone A, which have the potential to impact areas of biodiversity value on site.

Erosion and sediment control measures should be designed and installed following the *Guidelines for Erosion and Sediment Control on Building Sites* (DLWC 2001). Useful information can also be found within the Blue Book (Landcom, 2004).

4.6 Dust Control

Specific measures to minimise the generation of dust and associated impacts on adjacent natural environments should include:

- Setting maximum speed limits for all traffic within the Project Site to limit dust generation.
- Use of a water tanker (or similar) to spray unpaved access tracks during the construction phase if required.
- Application of dust suppressants or covers on soil stockpiles if required.

4.7 Chemical Spill Control

Specific measures to minimise the potential for chemical spills and associated impacts on adjacent natural environments should include the following:

- All chemicals must be kept in clearly marked bunded areas.
- Regularly inspect vehicles and mechanical plant for leakage of fuel or oil.

4.8 Traffic

Specific measures to minimise the impacts of increased traffic (vehicle or human) on biodiversity values within the Project Site include the following:

- The implementation of 'No Go Zones' as described in **Section 4.2** and mapped in **Figure 6** which prohibits the use of machinery, the movement of people and placement of materials/structures.
- The construction of exclusion fencing around 'No Go Zones' and the entirety of both Construction Zones to prevent student traffic into a construction zone.

4.9 Waste

The construction contractor is to ensure no rubbish is left on site throughout the construction phase. All efforts should be made to ensure rubbish doesn't enter areas mapped as 'No Go Zones' (**Figure 6**). If rubbish enters the 'No Go Zone' and is able to be removed without entering this area then this is the duty of the construction contractor. If the rubbish is out of reach, it is to be removed during weed control procedures carried out by a suitably qualified person (e.g. school groundskeeper/landscaper - as per **Section 4.4**).

5 MONITORING

As stipulated in the Conditions of Consent B21 (j) the following details the "program to monitor the effectiveness of the measures in the FFMSP [sic[3]]", including monitoring methods.

5.1 Monitoring

Monitoring will be conducted by a suitably qualified project ecologist as follows:

- Once during the construction phase.
- Once at the completion of the construction phase.
- Once one year following the completion of the construction phase.
- Beyond one year, the management of the site's biodiversity values will remain the responsibility of Greystanes Public School.

Monitoring Reports will document:

- Details of the works which have been undertaken during the previous survey period.
- Details on the suitability of vegetation protection measures implemented on the project site (e.g. 'no go zones').
- Details of the condition of retained vegetation within native vegetation management zones.
- Details of the suitability of revegetation works conducted within the management zones.
- Changes in weed densities and number of species across the Project Site, with a focus on priority weed species identified for management as part of this BMSP.
- Addition areas of weed infestation (especially of the previously identified priority weed species).
- The success and level of implementation of recommended mitigation measures detailed in this BMSP.
- Recommendations for additional works or activities which may be required during the ensuing survey period.

Monitoring is to include a random meander across the Project Site and the completion of photographic monitoring within each of the Construction Zones at the monitoring points identified in **Figure 5**, and detailed further in **Table 9**.

Table 9 Photo Monitoring Points

Photo Monitoring Point	Construction Zone	Coordinates (GDA 94, Zone 56)
Photo Monitoring Point 1 (see **Photo 1**)	Construction Zone A	-33.828595857, 150.942092443
Photo Monitoring Point 2 (see **Photo 2**)	Construction Zone B	-33.828408139, 150.940817051

[3] FFMSP (Flora and Fauna Management Sub Plan) refers to the BMSP (Biodiversity Management Sub Plan).

Photo 1 Photo Monitoring Point One

Photo 2 Photo Monitoring Point Two

5.2 Performance Standards

Performance standards include the following:

- No impact to retained trees and vegetation.
- No animal deaths or impacts to threatened species.
- Eradication of Priority weeds and reduced cover of other weeds identified within this report.

5.3 Monitoring Reports

Monitoring reports are to be prepared following the completion of monitoring events by the Project Ecologist and submitted to the construction contractor detailing the progress of the biodiversity management measures detailed in this BMSP. Any recommended additional actions are to be detailed in the report.

A final report certifying completion of the BMSP is to occur following the completion of the one-year post-construction phase monitoring event.

5.4 Risks and Contingency Measures

Due to the site's urban setting and exposure of site's vegetation to the elements various risks exist which may affect the success of implementation of measures detailed in this BMSP. These include the following:

- Adverse weather could damage or prevent establishment of tube-stock.
- Native or feral herbivores, such as kangaroos and rabbits, could damage or destroy tube-stock.

If any of the above events occur, any damaged tube-stock is to be replaced within six months.

6 PROJECT SCHEDULE

The project schedule is outlined **Table 10** including the timing and duration for each management action.

Table 10 Timing, Duration and Responsibility of Management Actions

Management Action	Timing	Duration	Responsibility
Vegetation protection	Prior to and during construction.	Entire length of construction works.	Principle Construction Contractor
Weed management	Prior to construction in the Construction Zone and following construction as needed based on results of monitoring inspections.	All primary weed control must be undertaken throughout the construction phase. Weed control is to continue throughout the first year following the completion of construction. Beyond one year, the management of weeds on site will remain the responsibility of Greystanes Public School.	Principle Construction Contractor
Revegetation	Following construction as needed based on results of monitoring inspections.	Revegetation areas are to be maintained by the construction contractor for a minimum of one year following the construction phase. Beyond one year, the management of the revegetation on site will remain the responsibility of Greystanes Public School.	Principle Construction Contractor
Erosion control	During and following construction, then as needed based on the results of monitoring inspections.	Within one week of construction works and then until the BMSP maintenance has ceased.	Principle Construction Contractor
Dust control	During construction,	Entire length of construction works.	Principle Construction Contractor
Chemical spill control	During construction.	Entire length of construction works.	Principle Construction Contractor
Monitoring and Reporting	Three events: one during construction, at completion and one-year post construction, as described in **Section 5.1**	Throughout construction phase until a minimum of one-year post construction.	Project Ecologist on behalf of the Principle Construction Contractor

REFERENCES

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APPENDIX A

Flora Species

Table A1 Flora Species List

Scientific Name	Common Name	Status
Alliaceae		
Allium triquetrum	Three-cornered Garlic	E
Amaranthaceae		
Amaranthus viridis	Green Amaranth	E
Anacardiaceae		
Schinus molle var. *areira*	Pepper Tree	E
Apiaceae		
Cyclospermum leptophyllum	Slender Celery	E
Apocynaceae		
Araujia sericifera	Moth Vine	E, HTE
Arecaceae		
Phoenix canariensis	Canary Island Date Palm	E
Asparagaceae		
Asparagus aethiopicus	Asparagus 'Fern'	E, HTE, PW, WONS
Asteraceae		
Bidens pilosa	Cobblers Peg	E, HTE
Cirsium vulgare	Spear Thistle	E
Conyza sp.	Fleabane	E
Hypochaeris albiflora	White Flatweed	E
Lactuca serriola	Prickly Lettuce	E
Sonchus oleraceus	Common Sowthistle	E
Taraxacum officinale	Dandelion	E
Basellaceae		
Anredera cordifolia	Madeira Vine	E, HTE, PW, WONS
Bignoniaceae		
Dolichandra unguis-cati	Cat's Claw Creeper	E, HTE, PW, WONS
Jacaranda mimosifolia	Jacaranda	E
Tecoma stans	Yellow Bells	E, HTE
Brassicaceae		
Lepidium bonariense	-	E
Casuarinaceae		
Casuarina cunninghamiana	River Oak	N
Casuarina glauca	Swamp Oak	N
Chenopodiaceae		
Einadia nutans subsp. *linifolia*	-	N
Einadia trigonos subsp. *trigonos*	Fishweed	N
Commelinaceae		
Commelina cyanea	-	N
Convolvulaceae		
Dichondra repens	Kidney Weed	N
Cunoniaceae		
Davidsonia jerseyana	Davidson's Plum	N, TS
Cyperaceae		
Carex inversa	-	N
Cyperus gracilis	Slender Flat-sedge	N
Fabaceae - Caesalpinioideae		
Gleditsia triacanthos	Honey Locust	E, HTE

Scientific Name	Common Name	Status
Fabaceae - Faboideae		
Indigofera australis	Native Indigo	N
Trifolium repens	White Clover	E
Fabaceae - Mimosoideae		
Acacia baileyana	Cootamundra Wattle	N
Acacia decurrens	Black Wattle	N
Acacia implexa	Hickory Wattle	N
Acacia parramattensis	Parramatta Wattle	N
Iridaceae		
Dietes grandiflora	Wild Iris	E
Juncaceae		
Juncus usitatus	Common Rush	
Lomandraceae		
Lomandra longifolia	Spiny Mat-rush	
Malvaceae		
Brachychiton populneus	Kurrajong	N
Modiola caroliniana	Red-flowered Mallow	E
Sida rhombifolia	Paddy's Lucerne	E
Meliaceae		
Melia azedarach	White Cedar	N
Moraceae		
Ficus rubiginosa	Port Jackson Fig	
Myrtaceae		
Angophora floribunda	Rough-barked Apple	N
Angophora subvelutina	Broad-leaved Apple	N
Backhousia citriodora	Lemon Myrtle	N
Backhousia myrtifolia	Cinnamon Myrtle	N
Callistemon hybrid	Bottlebrush	
Callistemon rigidus	Stiff Bottlebrush	N
Callistemon salignus	Willow Bottlebrush	N
Callistemon viminalis	Weeping Bottlebrush	N
Corymbia citriodora	Lemon-scented Gum	N
Eucalyptus crebra	Narrow-leaf Ironbark	
Eucalyptus microcorys	Tallowwood	N
Eucalyptus moluccana	Grey Box	N
Eucalyptus scoparia	Wallangarra White Gum	N, T
Eucalyptus tereticornis	Forest Red Gum	N
Kunzea ambigua	Tick Bush	N
Lophostemon confertus	Brush Box	N
Melaleuca bracteata	Black Tea-tree	N
Melaleuca linariifolia	Snow-in-Summer	
Melaleuca styphelioides	Prickly Paperbark	
Ochnaceae		
Ochna serrulata	Mickey Mouse Plant	E
Oleaceae		
Ligustrum lucidum	Large-leaf Privet	HTE
Olea europaea subsp. *cuspidata*	African Olive	E, PW, WONS,
Phormiaceae		
Dianella caerulea var. *caerulea*	Leafy Blue Flax Lily	N

Scientific Name	Common Name	Status
Phyllanthaceae		
Phyllanthus tenellus	Hen and Chicken	E
Pinaceae		
Pinus elliottii	Aleppo Pine	E,
Plantaginaceae		
Plantago lanceolata	Plantain	E
Poaceae		
Austrostipa pubescens	Tall Spear Grass	N
Bromus catharticus	Prairie Grass	E
Cenchrus clandestinus	Kikuyu	E
Cynodon dactylon	Common Couch	N
Digitaria sanguinalis	Summer Grass	E
Ehrharta erecta	Panic Veldtgrass	HTE
Eragrostis curvula	African Lovegrass	E
Eriochloa pseudoacrotricha	Early Spring Grass	N
Lolium sp.	Rye Grass	E
Paspalum dilatatum	Paspalum	E
Phyllostachys aurea	Fishpole Bamboo	E
Rytidosperma fulvum	Wallaby Grass	N
Stenotaphrum secundatum	Buffalo Grass	E
Proteaceae		
Banksia ericifolia	Heath-leaved Banksia	N
Banksia integrifolia	Coastal Banksia	N
Banksia spinulosa var. *collina*	Hill Banksia	N
Grevillea robusta	Silky Oak	N
Rosaceae		
Cotoneaster glaucophyllus	Cotoneaster	HTE
Photinia glabra	Japanese Photinia	E
Rubus fruticosus	Blackberry	E, PW, WONS,
Sapindaceae		
Dodonaea triquetra	Hop Bush	N
Dodonaea viscosa subsp. *cuneata*	Wedge-leaf Hop-bush	N
Solanaceae		
Solanum mauritianum	Wild Tobacco	E
Solanum nigrum	Black Nightshade	E
Ulmaceae		
Ulmus sp.	Elm	E
Xanthorrhoeaceae		
Xanthorrhoea sp.	Grass-tree	N

Key: N (Native), E (Exotic), THE (High Threat Exotic), PW (Priority Weed - Greater Sydney), WONS (Weed of National Significance), TS (Threatened Species listed under BC Act and/or EPBC Act). **Source:** Status (exotic/native/threatened species) and nomenclature according to PlantNET (RBGDT 2020), where available. High Threat Exotic weed status according to OEH 2017, Priority Weed and Weed of National Environmental Significance status according to DPI 2020.

APPENDIX B

Fauna Species

Table B1 Fauna Species List

Scientific Name	Common Name	Detected On Site
Cracticus torquatus	Grey Butcherbird	O
Strepera graculina	Pied Currawong	O
Cacatua galerita	Sulphur-crested Cockatoo	O
Eolophus roseicapilla	Galah	O
Vanellus miles	Masked Lapwing	O
Corvus coronoides	Australian Raven	O
Trichoglossus moluccanus	Rainbow Lorikeet	O
Manorina melanocephala	Noisy Miner	O
Threskiornis molucca	Australian White Ibis	O
Ctenotus robustus	Robust Skink	O
Lampropholis delicata	Dark-flecked Garden Sun Skink	O

Key: O (Observed on site during survey)

APPENDIX C

Unexpected Finds Protocol

GREYSTANES PUBLIC SCHOOL

BIODIVERSITY - UNEXPECTED FINDS PROTOCOL

The following document details protocols regarding what must be done if potential Biodiversity Values are unexpectedly encountered during construction activities undertaken at Greystanes Public School.

1 What is an unexpected find and where could it be?

An unexpected find is likely to comprise of any biodiversity value which has not already been considered as part of this Biodiversity Management Sub-Plan to be present within Greystanes Public School's urban environment. These including (but are not limited to):

- fauna; and
- threatened species.

2 Where is there a risk of encountering an unexpected find?

The higher risk activities for encountering unexpected finds within the Greystanes Public School include:

- during vegetation clearing;
- during the demolition of buildings and structures; and
- when undertaking earthworks.

However, unexpected finds may be encountered at any time during the construction phase such as a result of fauna entering the Project Site.

Higher risk areas for encountering unexpected finds within the Greystanes Public School include:

- vegetated areas on the Project Site;
- areas immediately adjacent to mapped Native Vegetation Zones A and B; and
- areas surrounding earthworks.

However, unexpected finds may be encountered anywhere within the Greystanes Public School site throughout the construction phase.

3 What to do if an unexpected find is encountered?

A flow chart demonstrating the requirements for managing unexpected finds is provided below. If these do not resolve the unexpected find contact the school to engage a suitably qualified wildlife expert for further advice.

GREYSTANES PUBLIC SCHOOL

BIODIVERSITY - UNEXPECTED FINDS PROTOCOL

The following document details protocols regarding what must be done if potential Biodiversity Values are unexpectedly encountered during construction activities undertaken at Greystanes Public School.

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- fauna; and
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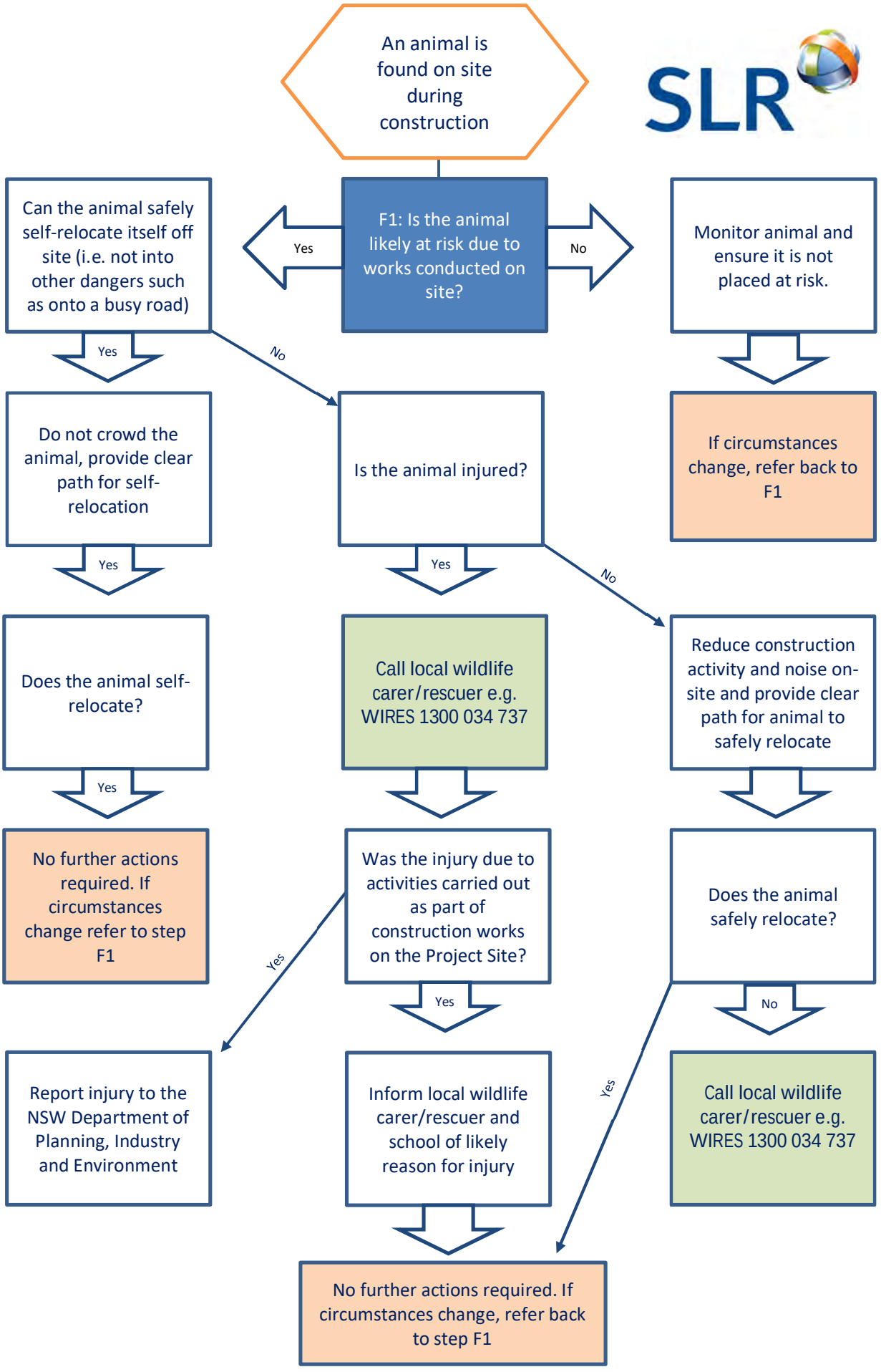
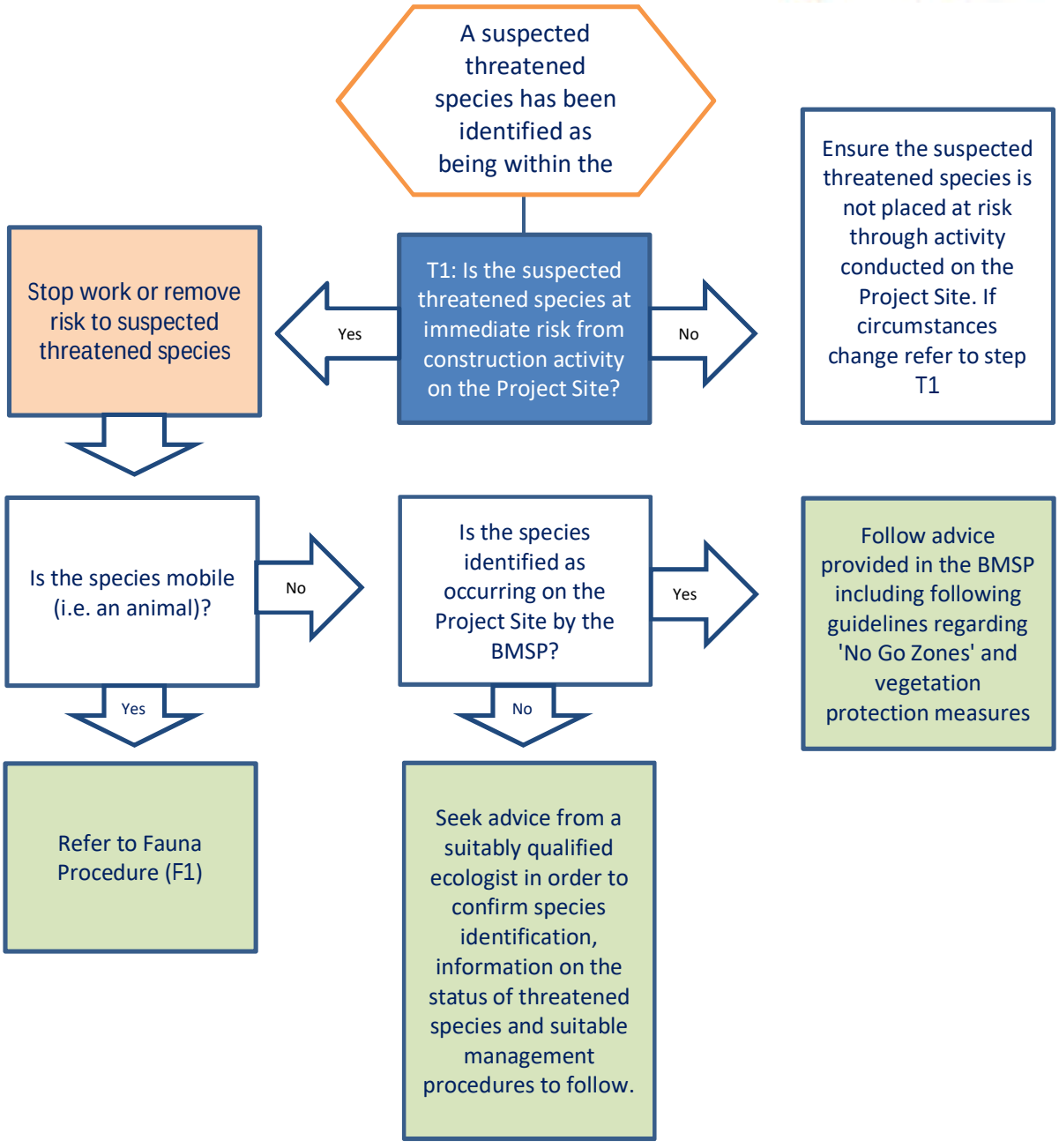
- vegetated areas on the Project Site;
- areas immediately adjacent to mapped Native Vegetation Zones A and B; and
- areas surrounding earthworks.

However, unexpected finds may be encountered anywhere within the Greystanes Public School site throughout the construction phase.

3 What to do if an unexpected find is encountered?

A flow chart demonstrating the requirements for managing unexpected finds is provided below. If these do not resolve the unexpected find contact the school to engage a suitably qualified wildlife expert for further advice.


An animal is found on site during construction
F1: Is the animal likely at risk due to works conducted on site?
Yes
No
Monitor animal and ensure it is not placed at risk.
If circumstances change, refer back to F1
Can the animal safely self-relocate itself off site (i.e. not into other dangers such as onto a busy road)
Yes
No
Do not crowd the animal, provide clear path for self-relocation
Yes
Does the animal self-relocate?
Yes
No further actions required. If circumstances change refer to step F1
Is the animal injured?
Yes
No
Call local wildlife carer/rescuer e.g. WIRES 1300 034 737
Was the injury due to activities carried out as part of construction works on the Project Site?
Yes
Yes
Report injury to the NSW Department of Planning, Industry and Environment
Inform local wildlife carer/rescuer and school of likely reason for injury
Reduce construction activity and noise on-site and provide clear path for animal to safely relocate
Does the animal safely relocate?
No
Yes
Call local wildlife carer/rescuer e.g. WIRES 1300 034 737
No further actions required. If circumstances change, refer back to step F1


A suspected threatened species has been identified as being within the
T1: Is the suspected threatened species at immediate risk from construction activity on the Project Site?
Yes
No
Stop work or remove risk to suspected threatened species
Ensure the suspected threatened species is not placed at risk through activity conducted on the Project Site. If circumstances change refer to step T1
Is the species mobile (i.e. an animal)?
No
Yes
Refer to Fauna Procedure (F1)
Is the species identified as occurring on the Project Site by the BMSP?
Yes
No
Follow advice provided in the BMSP including following guidelines regarding 'No Go Zones' and vegetation protection measures
Seek advice from a suitably qualified ecologist in order to confirm species identification, information on the status of threatened species and suitable management procedures to follow.

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18.10 FLOOD EMERGENCY RESPONSE SUB PLAN (FERSP)

Refer to folder B22 for Floor Emergency Response Sub Plan (13 Pages).

JONES NICHOLSON
CONSULTING ENGINEERS

FLOOD MANAGEMENT PLAN

FOR

NSW DEPARTMENT OF EDUCATION: GREYSTANES PUBLIC SCHOOL

781 MERRYLANDS ROAD, GREYSTANES NSW 2145

DATE: 17TH MARCH 2020

OUR REFERENCE: CRPT-20161275.03B

ENGINEER: TIM HOWE

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bsi. ISO 9001 Quality Management FS 594728 | ISO 14001 Environmental Management EMS 594729 | AS/NZS 4801 Occupational Health & Safety Management OHS 594730

OFFICE LOCATIONS
BRISBANE
GOLD COAST
SINGLETON
SYDNEY-CBD
SUTHERLAND
WOLLONGONG
MOSS VALE
NOWRA
GOULBURN

REVISION HISTORY

REVISION	DATE	BY	CHECKED	COMMENTS
A	29/06/18	TH	JB	Issued for submission
B	17/03/20	LAM	BA	Guidelines section added

TABLE OF CONTENTS

1 INTRODUCTION

Objective

The main objectives of an Emergency Flood Evacuation Plan are to:

- Assist in protecting staff, students and visitors of the school from the potential dangers arising from flooding;
- Ensure a planned and co-ordinated approach is taken to evacuation and/or flood management;
- Identify potential evacuation locations.

The plan covers the operation of staff, students and visitors of the school in times of flood and outlines the protocols so that emergency response measures can be implemented, so potential for flood damage and loss of life can be minimised.

Outcome

- To ensure the safety of staff, students and visitors;
- To ensure that staff, students and visitors are not left stranded without supplies during flooding;
- To ensure potential damage to the property and facility are minimised.

Guidelines

The following items outlines the guidelines that have been utilised in preparation of this report:

- JN has attempted to develop this flood management plan to address the provisions of the Floodplain Risk Management Guideline (OHE, 2007), however this reference material was unable to be sourced.
- JN has instead prepared this flood management plan based upon a suitable alternative to the Floodplain Risk Management Guideline (OHE, 2007), being the Floodplain Development Manual - NSW (Department of Infrastructure, Planning and Natural Resources, 2005) as well as industry standards and best practice.
- The provisions and responses outlined in this flood management plan should be adopted through the design, construction and operation of the proposed school and are generally in accordance with the guidance provided in the Floodplain Development Manual - NSW (Department of Infrastructure, Planning and Natural Resources, 2005).

2 BACKGROUND INFORMATION

Jones Nicholson has been engaged to complete a Flood Management Plan in relation to the proposed redevelopment works at Greystanes Public School.

Greystanes Public School has an area of approximately 3 hectares. The site fronts Merrylands Road to the south, and is bound by residential properties to the north, east and west. The site locality and proposed site plan are depicted in Figures 1 and 2 respectively.

Figure 1: Greystanes Public School – Site Locality

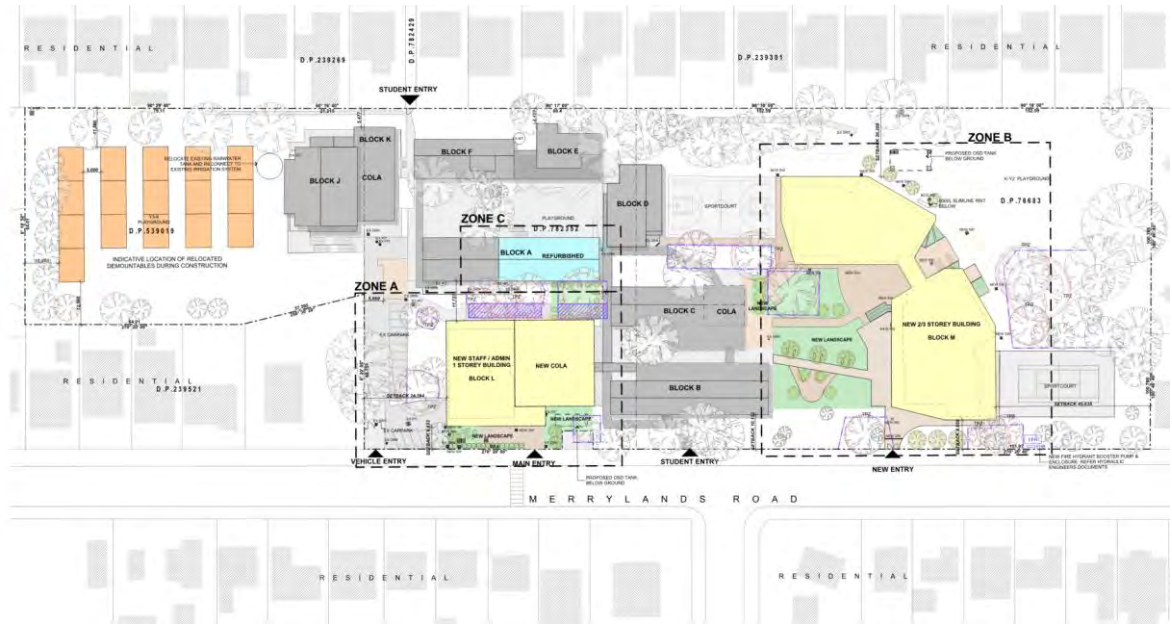


Figure 2: Greystanes Public School – Proposed Site Layout

The major redevelopment works focus on two separate areas, a new administration building and adjoining COLA structure is proposed to the south-west of the site and a new 3 storey learning classroom building is proposed to the east in the location of the existing demountables. In addition to this major redevelopment, Block A is being refurbished and large areas of soft landscape are proposed.

The site is located within the Prospect Creek catchment. The north-eastern corner of the site is identified as being affected by the 1% Annual Exceedance Probability (AEP) Flood, based on information available to Cumberland Council from the "Draft Prospect Creek Overland Flood Study", prepared by Lyall and Associates in March 2015. The site has been assessed as a medium flood risk category. The flood extent in relation to the proposed building layout is depicted in Figure 3, it is noted that the proposed floor level of 61.44m AHD is a minimum of 3 metres above the 1% AEP level.

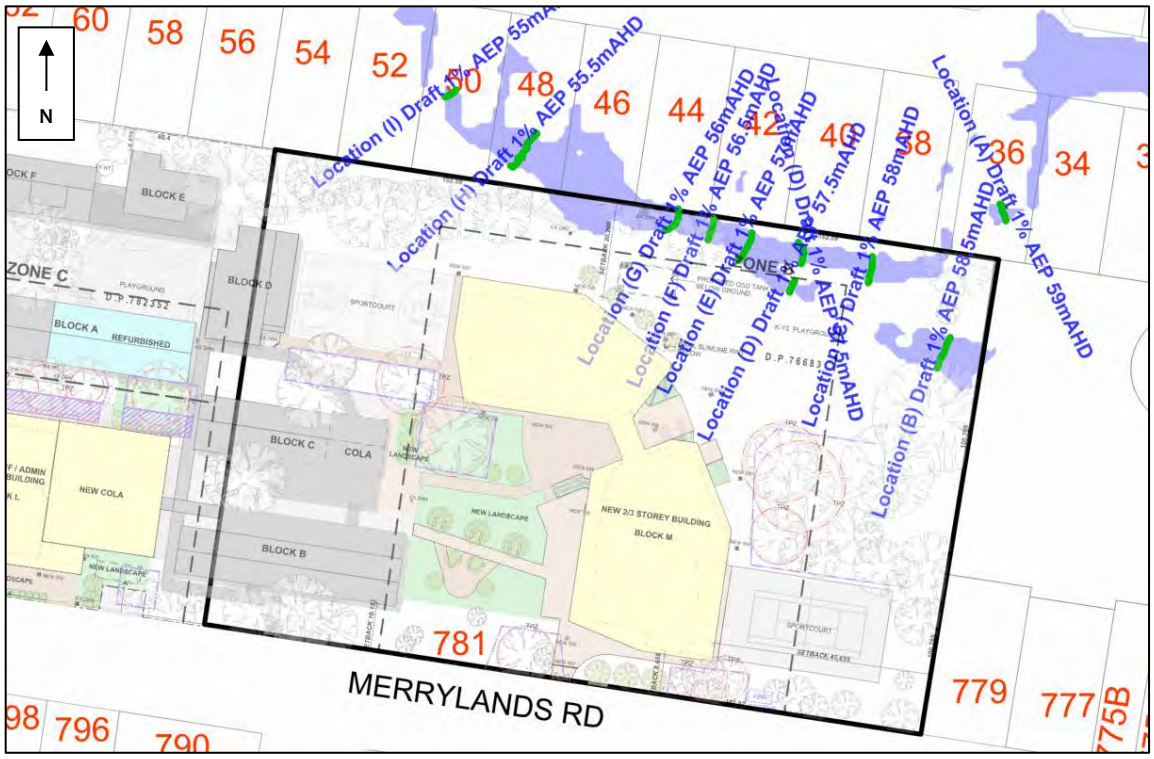


Figure 3: Greystanes Public School – Flood Extent

3 WARNING OF IMPEDING FLOOD

The Bureau of Meteorology provides flood advice, flood forecasting and warnings relevant to the local area which are conveyed to emergency service agencies.

The Bureau of Meteorology will advise on severe weather or thunderstorm warnings for the local area to the SES Local Controller. In addition to this, information will also be made available through media outlets to disseminate evaluation warnings.

Severe Weather Warnings

The Bureau of Meteorology issues Severe Weather Warnings whenever severe weather is occurring in an area or is expected to develop or move into an area. The warnings describe the area under threat and the expected hazards. Warnings are issued with varying lead-times, depending on the weather situation, and range from just an hour or two up to about 24 hours.

Severe Weather Warnings are issued for:

- Sustained winds of gale force (63 km/h) or more
- Wind gusts of 90 km/h or more

- Very heavy rain that may lead to flash flooding
- Abnormally high tides (or storm tides) expected to exceed highest astronomical tide
- Unusually large surf waves expected to cause dangerous conditions on the coast
- Widespread blizzards in Alpine areas

Flood Watch

A Flood Watch is issued by the Bureau of Meteorology if flood producing rain is expected to happen in the near future and flooding is expected to be above Minor level.

Preliminary Flood Warnings

These warnings usually predict which class of flooding (minor, moderate or major) will occur rather than providing quantitative forecasts. They are the first in a series of warnings and will typically be followed by more detailed flood warnings. These products are disseminated directly to media outlets by the BoM and are published on the BoM website.

Flood Warnings

These normally predict flood heights (in metres and centimetres at a gauge) which will be reached at a location at a specified time in the future. After the issuing of a Preliminary Flood Warning, Flood Warnings are renewed at frequent intervals until the relevant stream drops to below the minor flood level.

The local SES is responsible in covering operations for all levels of flooding within the council area and caters for both SES control of operations and where appropriate, the handover to the Local Emergency Controller (LECON).

Local Emergency Operations Controller (LECON)

- Mentor flood response operations
- Coordinate support to the SES local Controller if requested to do so
- As required by the SES Local Controller, evacuate persons at threat of inundation
- Control emergency operations
- Issue the 'all clear' when Emergency operations have been completed

NSW Police Service (Merrylands Patrols)

- Assist with the distribution of evacuation warnings
- Assist with the conduct of evacuations
- Conduct road control operations in conjunction with the Roads and Maritime Service (RMS) and Cumberland Council
- Ensure all evacuees are registered
- Secure evacuated area

NSW Fire Brigades (Merrylands Fire Station)

- Assist with the distribution of evacuation warnings
- Assist with the conduct of evacuations
- Carry out clean up operations, including the hosing down of flood affected premises

4 ACTIONS TO BE TAKEN

4.1 PREPAREDNESS

In preparation for any flood event the following items should be addressed:

- Education and training to staff on flood awareness and plan implementation is intrinsic to its successful operation. All members of staff are to be familiarised with this document.
- A permanent member of staff will be designated as the Site Flood Coordinator and is entrusted with the responsibility of monitoring flood activities and dissemination of evacuation warning as and when required.
- Signage is to be installed within the flood-prone north-eastern corner of the site notifying all staff, students and visitors that the area is subject to flooding – and that all persons should familiarise themselves with the emergency evacuation procedures.
- One designated person should attend the flood events and seminar held by the community in the Holroyd area to meet the local SES members and learn about flood safety. The event dates area found on the following website, http://www.floodsafe.com.au/local-flood-information-and-events/sydney-western-region. This person allocated the responsibility is to return and provide a presentation to the rest of the staff members after each session.
- The Flood Safe Guide for the local area is required to be distributed to every staff member with a copy kept in the group home. The Flood Safe Guide is a customised brochure addressing flooding in the local context.
- All new staff members are to be introduced to this plan as part of their induction by Facility Managers and made aware of the protocols to be employed during a flood event.
- All exit signs to be clearly visible at all times and not be obstructed or covered at any time. All exit signs are to be installed as per the relevant Australian Standards and requirements.

Alert

The Site Flood Coordinator will be vigilant at all times of severe thunderstorms, weather warning and continual rain. Staff are encouraged to check with warning from local radio, television or the SES Local Controller.

For flood help: SES 132 500

Local SES Controller: Local NSW SES Holroyd Unit located at 1 Foray Street, Guildford West. All calls to be placed through main SES line: 132 500

Emergency Contacts

The list below should be updated regularly.

Parties to Contact	Phone Number
Site manager	TBA
SES Holroyd Unit	132 500 (Emergency Help)
Bureau of Meteorology NSW Flood Warning Centre – Sydney Regional Office	1300 659 218 9296 1555 http://www.bom.gov.au/nsw/warnings/
Local Fire Brigade	000 (Emergency)
Police	000 (Emergency)
Cumberland Council	(02) 8757 9000
Sydney Water (Water and Sewer)	132 090
Endeavour Energy	131 003
RMS Traffic Enquiry	132 701

Emergency Kit

In order to be prepared for an evacuation, it is recommended an emergency kit be prepared and located on all levels so that it is readily available at all times.

Suggested items for inclusion in the emergency kit appropriate for the number of expected staff and visitors are:

- Portable radio and torch with fresh batteries
- Candles and waterproof matches or a gas lantern
- Reasonable stocks of fresh water and tinned food (with a can opener) or dried food
- First aid kit
- Good supplies of essential medication
- Strong shoes and rubber gloves
- Waterproof bag for warm clothing, toiletries and valuables
- List of emergency contact numbers
- Bedding or sleeping bags

The availability, capability and durability of resources should be regularly checked. An emergency kit maintenance checklist should be prepared and form a part of regular inspection program.

4.2 EVACUATION

Evacuation is the temporary movement (relocation) of people from a dangerous or potentially dangerous place to a safe location, and their eventual return. It is a proactive emergency management strategy that uses distance to separate people from danger created by a hazard.

The flood prone area at Greystanes Public School is localised to the north-eastern corner of the playground, away from all proposed and existing building. During heavy rainfall and at the first sign of any flooding, the north-eastern corner of the playground shall be established as 'out of bounds' to both students and staff, with witches hats used to cordon off the low lying area as indicated in 'Site Flood Management Plan' in Appendix A. The area shall be monitored by the Site Flood Coordinator.

Whilst the building is expected to remain well clear of floodwater, even in extreme events, it is recommended that rising flood waters be monitored by Site Flood Coordinator.

Actions, Responsibility & Procedures

Establish a line of communication with emergency services so updated warning information can be relayed to the evacuees. The local SES, Bureau of Meteorology, Police and Fire Brigade are listed in table above. These phone numbers should form a part of the flood evacuation kit and be kept in a location that is easily accessible.

Evacuation actions, responsibilities and procedures are outlined below:

Action	When	Who
Monitor local radio and TV for flood warning	During heavy rain and prior to predicted heavy ran	Designated Site Flood Coordinator
Monitor BOM and SES website	Daily	Designated Site Flood Coordinator
Review Site Flood Managment Plan	Weekly	All staff and visitors
Cordon off flood prone area of playground	After warning of flash flooding is made by BoM	Designated Site Flood Coordinator

Steps to follow during a flood event

- Obtain information from BOM, SES, radio stations and local observations to ensure occurrence of event
- Warn other staff of the pending flooding and the expected action
- Designated Site Flood Coordinator to inspect flood prone area to ensure no one is present
- Designated Site Flood Coordinator to cordon off flood prone area and establish as temporality 'out of bounds'

Maintenance Schedule

A maintenance schedule for the site is outlined below:

Items	Maintenance Activity	Interval	Who
Communications items (TV, radio, phone, Mobile, internet)	Check operation	Daily	Designated Site Flood Coordinator
Backup water supply	Check volume and water proofing	6 months	Qualified Installer
Backup power supply	Check function and fuel supply	6 months	Qualified Installer

4.3 RECOVERY

Recovering from a disaster will be easier if you are prepared. To help people recover, the NSW SES, NSW RFS and Fire & Rescue NSW have Recovery Kits available on their websites and in hard copy.

Disaster Recovery Centres may be established following some disasters. These can provide a range of welfare services including financial assistance, personal support, organising temporary accommodation and providing information and referrals.

SES Assistance with Recovery Functions

Concurrently with response operations, the SES is responsible for ensuring that the evacuation and immediate welfare of affected persons is coordinated. This requires early and close liaison with the Welfare Services Functional Area.

The SES will:

a. Provide information to flood-affected people on safety matters and the restoration of belongings which have been in contact with flood waters;

b. Provide impact information to recovery agencies;

c. Assist with clean-up operations after floods (if sufficient volunteers are available); and

d. Assist with the return of evacuees to their homes (if sufficient volunteers are available).

SES Controllers should brief the following on details of the flood operation:

a. Any Recovery Coordinating Committee;

b. The Welfare Services Functional Area; and

c. Relevant Emergency Management Committees

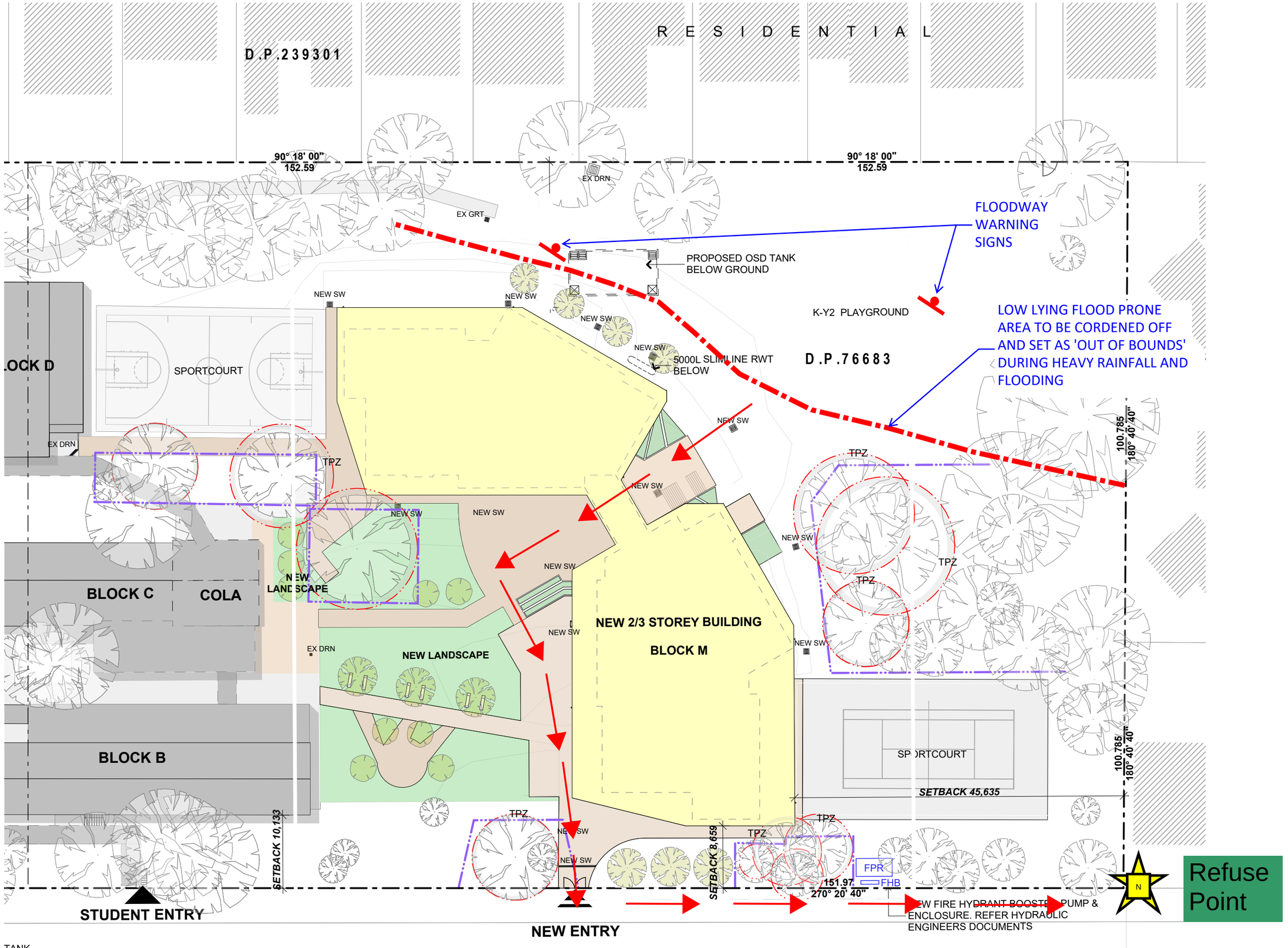
SES Controllers should participate in recovery committees as required

Disaster Welfare Services - 1800 018 444

After the flood event, the designated Site Flood Coordinator is required to check with the relevant authority that it is safe to enter the flooded area. Flooded areas pose health risks to residents and the following procedures should be followed after entering the residence:

- Have electrics and gas fixtures checked by qualified personnel prior to use
- Beware of snakes and spiders
- Beware of health risks from wading through muddy water
- Don't use food or drinks which have been in contact with floodwater
- Boil all water until supplies are declared safe to drink
- Report damaged utility lines to appropriate authorities
- Plan which items and areas should be cleaned first
- Use disinfectant for cleaning
- Wear shoes and gloves in any area which has been flooded

APPENDIX A – SITE FLOOD MANAGEMENT PLAN



JONES NICHOLSON PTY. LTD.
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SUTHERLAND - SUITE 45, 40-44 BELMONT STREET, SUTHERLAND NSW 2232
Ph. (02) 9521 3088
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WWW.JONESNICHOLSON.COM.AU
ABN: 51 003 316 032

DESIGN :	FLOOD MANAGEMENT PLAN
DATE :	21/06/18
SCALE :	N.T.S.
JOB No.	20161275
PROJECT NAME:	GREYSTANES PUBLIC SCHOOL

FLOOD MANANGEMENT PLAN

PROJECT	**Greystanes Public School**
ADDRESS	**Greystanes Public School – 781 Merrylands Road, Greystanes NSW 2145**
REVISION	**1**
ISSUE DATE	**10/02/20**

Table of Contents

1. REVIEW AND APPROVAL

1.1 REGISTER OF REVIEW

REV #	SECTION	DESCRIPTION OF AMENDMENTS	AMENDED BY
1	All	Project Commencement	NG / DO

1.2 APPROVALS

NAME	POSITION	SIGNATURE	DATE
Peter Parathyras	Construction Manager		
Damian O'Leary	Project Manager		

This plan has been developed using the below Master Template revision.

Master Template Rev No: 1	**Date: 19.2.19**

A copy of each superseded CMP is to be retained.

Revision 1 of this plan must be approved by the Construction Manager and Project Manager.

This plan must be reviewed by all Icon project personnel on this project. The Document Review and Sign On will be used for this purpose.

Refer: 76 Document Review and Sign On

2. ABBREVIATIONS

Note: The abbreviations below relate to the specific state of Icon operation

CA	Contract Administrator
CM	Construction Manager
CMP	Construction Management Plan
DIR	Directors
EPA	Environment Protection Authority or relevant state based environmental regulatory body
GM	General Manager
Icon	Icon Co (Aust) Pty Ltd, Icon Co (NSW) Pty Ltd, Icon Co (QLD) Pty Ltd, Icon SI (Aust) Pty Ltd, Cockram Construction Ltd, Cockram Construction QLD Pty Ltd
KPI	Key Performance Indicator
OM	Operations Manager
HSEM	Health and Safety Manager
PM	Project Manager
SM	Site Manager

3. INTRODUCTION

3.1 PURPOSE

The purpose of this FMP is to describe how flood emergency response during Construction will be managed.

3.2 SCOPE

The construction of the project as detailed in the contract encompasses the supply, delivery, and installation of the following;

- Erection of temporary fencing and barricades;
- Installation of temporary onsite office and amenity sheds;
- Removal of asbestos contaminated soils – friable & non-friable
- Removal of trees as per arborists report
- The erection of structural steel and concrete framed buildings;
- Installation of façade claddings and roofing sheeting;
- Installation of electrical and hydraulic services;
- Construction of sealed roads and car parks;
- Landscaping works

3.3 OBJECTIVES

The key objective of the FMP is to ensure that environmental impacts resulting from flooding of the construction site are minimised. To achieve this objective, the following measures will be undertaken:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise potential adverse impacts to the environment from flooding in the construction site.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements of this FMP.
- Follow correct procedures for monitoring, preparation and evacuation of construction areas prior to a flood event.
- Minimise and manage Construction impacts on flooding to avoid significant impacts to people and property.

4. RESPONSIBILTIES

The specific areas of responsibility of management personnel are defined below.

4.1 PROJECT MANAGER

The Project Manager has overall authority for all matters affecting the implementation and operation of the Project. With respect to the flood emergency response, the Project Manager has the following specific responsibilities

- Review the flood management plan;
- Assign flood emergency response responsibilities to site personnel;
- Ensure personnel are suitably trained and possess the necessary skills to carry out their designated responsibilities;
- Provide sufficient funds, equipment and materials to ensure that the flood management procedures are able to be achieved.

4.2 SITE MANAGER

The Site Manager has the authority for the implementation of the site construction activities. In the absence of the Site Manager, the site Foreman shall assume these responsibilities.

With respect to Flood emergency response, the Site Manager has the following specific responsibilities:

- Follow all procedures and plans relating to Flood emergency response.
- Establish weekly checks during wet weather in preparedness; equipment and resources required are available, as well as monitoring site sediment controls are in place.
- Ensure all construction materials, equipment, mobile plant that require moving to higher ground are moved.
- Ensure all site personnel are evacuated safely in the event of site closure due to flooding.
- Ensure all site amenities and offices are locked prior to evacuating site.
- Site assessment in conjunction with the Project Manager and Safety Manager to determine.
- Appropriate actions prior to recommencement of work
- Implementation of return to work actions.

5. TRAINING AND AWARNESS

Icon shall provide training and awareness to ensure personnel are informed and prepared for the unlikely event of a flood. Icon shall also:

- Ensure new starters and subcontractors are aware of the flood emergency response as part of the site induction

A record of training shall be maintained against the site employee to ensure that all persons employed on site have received the appropriate training.

6. PLAN FOR EMERGENCY

In the event that a flood should occur during the course of the project the following should be adhered to;

6.1 BEFORE A FLOOD

Before a flood once a flood warning has been issued carryout the following:

- Prepare the site;
- Ensure no building materials or chemicals are stored in area's at risk of flooding;
- Turn off electricity, secure generators and secure gas cylinders;
- Move any items in site offices you want to put in a higher spot;
- Put sandbags in the toilet bowl and over all drains; this will stop sewage back-flow;
- Get ready to move vehicles, plant & equipment, garbage to higher locations;
- Where minor flooding occurs in the works area set up temporary diversion or pumping of low flows around the works area;
- Obtain a copy of your local council's flood plan; it will show the location of problem areas, evacuation routes and relief centres;
- If you could be cut off by floodwaters, make preparations;
- Work out what the safest route to leave the site will be;
- Organise sandbags and sand; your local council is the best place to start;
- Tune in to your local radio station and keep listening for advice and warnings. You can find your local station on the radio frequency finder as well as listen online or via radio apps.

6.2 DURING A FLOOD

- Avoid driving, walking, swimming or playing in floodwater.
- If you are caught in floodwater, call for help immediately.
- If you have to walk through floodwater, do so very carefully — wear solid shoes and use a stick to check depth and current.

- Avoid drains, culverts and water that is knee-deep or higher.
- Stay well away from fallen powerlines — electrical current passes easily through water.
- Floodwater may contain sewage, so take precautions.
- Identify your nearest relief centre and the safest route to get there, but only go if you are sure it is safe.
- Let your immediate supervisor, family and friends know where you are and where you are going.
- Keep listening to your local radio station on a battery-powered radio, listen online or via radio apps for updates and instructions.
- Got information that could help others? Get in contact with your Local Radio station and tell them what you can see; reliable first-hand knowledge can help others in the community.

6.3 IF YOU NEED TO EVACUATE

- Lock all site amenities and storage containers;
- The Emergency Controller (Site Manager) or Deputy Emergency Controller (Site Foreman) will evacuate the site and will take the safest evacuation route out of the site to the emergency evacuation point;
- The Site Manager/Site Foreman will advise the safest route to leave site;
- During flooding the SES will advise through radio and the internet what roads are passable in the area;
- All site personnel will have secured and left the site by this time;
- Don't drive in water of unknown depth and current;
- Remember: Walking through floodwater is very dangerous.

6.4 AFTER A FLOOD

- Stay tuned to your local radio station on a battery-powered radio, listen online or via radio apps for official advice and warnings.
- Don't return to site until authorities have said it is safe to do so.
- Avoid entering floodwater — it is dangerous.
- If you must enter floodwaters, wear solid shoes and use a stick to check depth and current.
- Stay away from drains, culverts and water that is knee-deep or higher.
- Don't turn on the electricity until it has been checked by a professional; the same goes for appliances.
- Don't eat food which has been in floodwater.
- Boil tap water until supplies have been declared safe.
- Watch for trapped animals.
- Beware that venomous animals such as snakes & spiders may have been dislodged during the flood and taken refuge onsite.
- Beware of fallen powerlines.
- Take lots of photos of all damage for insurance claims.
- Let your immediate supervisor, family and friends know where you are.

6.5 ASSESSMENT OF DAMAGE AND REMEDIATION AFTER FLOOD

- Ensure that damage is assessed and reported when all clear is given to return to site.
- Remediate areas of damage, this includes clearing away of debris, sedimentation and blockage of uncompleted and temporary flood mitigation structures
- Debrief all key personnel and update / modify the flood emergency response plan, as required.
- Incorporating procedures to manage the effects of flooding on residential properties during construction;

7. NOTIFICATIONS

- The Site Manager / Project Manager are to declare the flood potential to the site and workers. When SES and BOM website identify flood warning for the area.
- The Site Manager / Project Manager are to declare the site is closed When SES declare imminent flood.
- The Site Manager / Project Manager is to declare the site reopened When SES have given the all clear.
- Environmental Protection and Biodiversity Conservation Act 1999
- The Project Manager will notify the client when the site is closed due to imminent flood and when the site is to reopen once SES have given the all clear.

7.1 EMERGENCY CONTACTS

Emergency Controller (Site Manager)	Wayne Goodwin – 0411 477 866	Wayne. Goodwin@icon.co
Deputy Emergency Controller (Site Foreman)	TBC	
NSW State Emergency Service (SES)	Phone: 132 500	www.ses.nsw.gov.au/
Bureau of Meteorology	Phone: 1300 659 211	www.bom.gov.au

8. LEGISLATION

The Following acts are applicable to the Flood Management Plan

- Environmental Planning and Assessment Act 1979 (EP&A Act).
- State Environmental Planning Policy (Infrastructure) (ISEPP) 2008
- State Emergency and Rescue Management Act 1989
- State Emergency Service Act 1989

9. APPENDIX A – COUNCIL FLOOD LETTER ADVICE

CUMBERLAND COUNCIL

12 March 2019

Our Reference SC7-08
Contact Rolyn Sario
Telephone 8757 9536

Freddie Gorman
Suite 208, 55 Miller Street
PYRMONT NSW 2009

Dear Sir/Madam

PROBABLE MAXIMUM FLOOD LEVELS AT NO 781 MERRYLANDS ROAD, MERRYLANDS
BEING LOTS 1 DP 76683

Council refers to your request dated 7 March 2019 requesting flood information at the above properties.

The above properties are shown to be affected by the Probable Maximum Flood (PMF), according to the information available to Council from the "Draft Prospect Creek Overland Flood Study" prepared by Lyall & Associates Pty Ltd in March 2015.

The PMF flood level relevant to the subject property has been determined (see the attached plan) to Australian Height Datum (AHD) as follows:

1. At location A - 60.0 mAHD
2. At location B - 59.5 mAHD
3. At location C - 59.0 mAHD
4. At location D - 58.5 mAHD
5. At location E - 58.0 mAHD
6. At location G - 57.0 mAHD
7. At location H - 56.6 mAHD
8. At location I - 56.0 mAHD
9. At location J - 55.5 mAHD
10. At location K - 55.0 mAHD

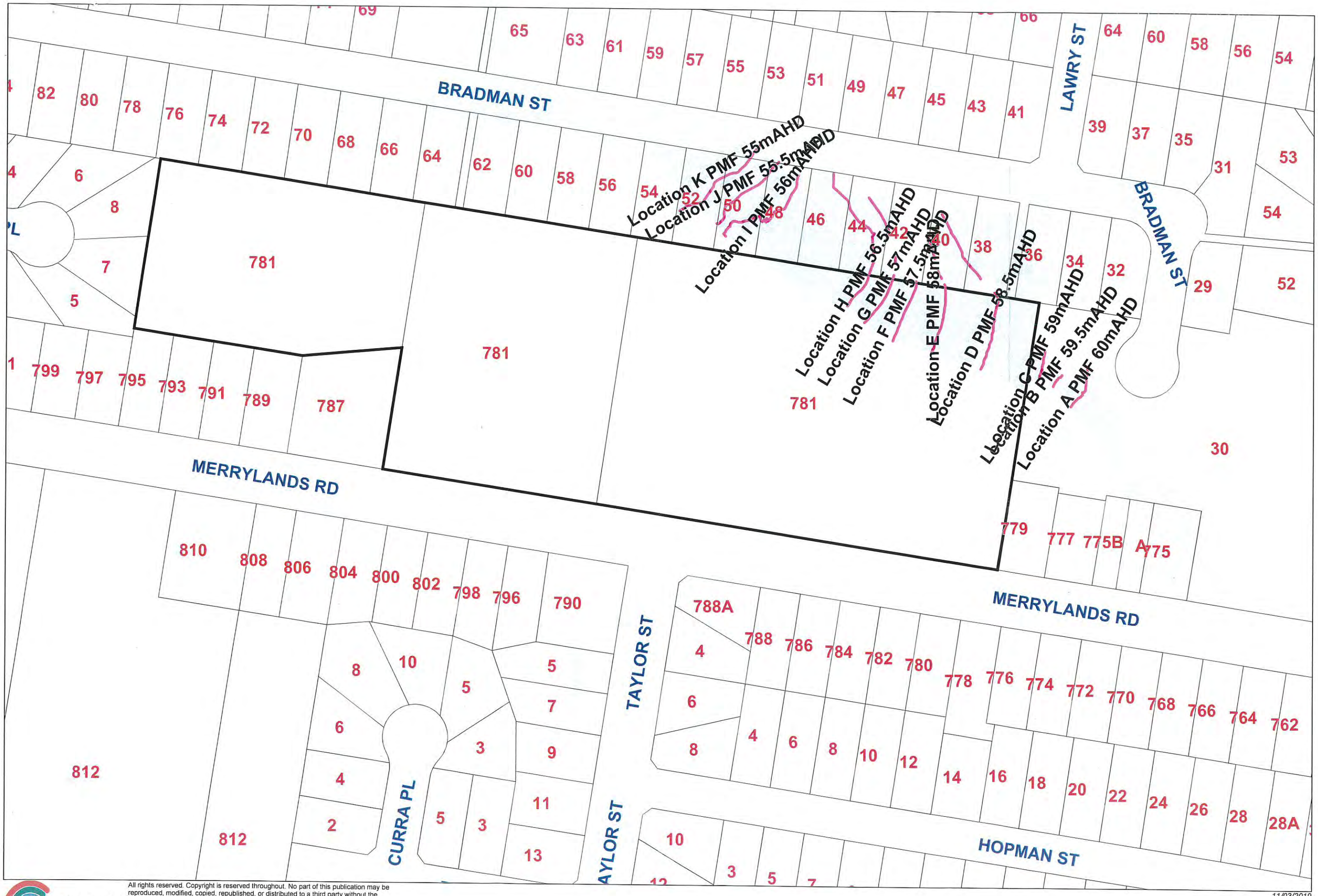
Flood levels are not static due to changing circumstances (e.g. revision of the flood model) and accordingly the above flood level is only valid for six months from the above date.

PMF levels are primarily used for evacuation purposes in the development of the property.

If you have any further enquiries regarding this matter please contact Council's Senior Stormwater Engineer, Mr Mark Evens on 8757 9538 or Council's Drainage Engineer, Mr Rolyn Sario on 02 8757 9536.

Yours sincerely,

SIVA SIVAKUMAR
MANAGER – ENGINEERING & TRAFFIC



11/03/2019

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CUMBERLAND COUNCIL

12 March 2019

Our Reference SC7-08
Contact Rolyn Sario
Telephone 8757 9536

Freddie Gorman
Suite 208, 55 Miller Street
PYRMONT NSW 2009

Dear Sir/Madam

FLOOD LEVELS AT NO 781 MERRYLANDS ROAD, GREYSTANES BEING LOT 1 DP 539019 & LOT 1 DP762352

Council refers to your request dated 7 March 2019, requesting flood information at the above properties.

According to the information available to Council, the above properties are not affected by the 1% Annual Exceedance Probability (AEP) flood event.

The 1% AEP flood level refers to a flood which has a 1% chance of being equalled or exceeded in any one year. It should be noted that a flood could occur that is more severe than the 1% AEP flood at any time.

Please note: These properties may be affected by runoff (surface flows) from upstream land.

FLOOD LEVELS AT NO 781 MERRYLANDS ROAD, GREYSTANES BEING LOT 1 DP 76683

Council refers to your request dated 7 March 2019 requesting flood information at the above property.

The above property is shown to be affected by the 1% Annual Exceedance Probability (AEP) flood, according to the information available to Council from the "Draft Prospect Creek Overland Flood Study" prepared by Lyall & Associates Pty Ltd in March 2015.

The 1% AEP flood level refers to a flood which has a 1% chance of being equalled or exceeded in any one year and this site has been assessed as a medium flood risk. It should be noted that a flood could occur that is more severe than the 1% AEP flood at any time.

The maximum 1% AEP flood level relevant to the subject property has been determined (see the attached plan) to Australian Height Datum (AHD) as follows:

1. At location A - 62.0 mAHD
2. At location B - 58.5 mAHD
3. At location C - 58.0 mAHD
4. At location D - 57.5 mAHD
5. At location E - 57.0 mAHD
6. At location F - 56.5 mAHD
7. At location G - 56.0 mAHD
8. At location H - 55.5 mAHD

The subject property has been identified as Flood Control lot. Under the SEPP (Exempt & Complying Development) 2008 Regulation 3.36C, a Complying Development Certificate must not be issued for, "*any part of a flood control lot unless that part of the lot has been certified, for the purposes of the issue of the relevant complying development certificate, by the council or a professional engineer who specialises in hydraulic engineering as not being any of the following:*

a) a flood storage area,
b) a floodway area,
c) a flow path,
d) a high hazard area,
e) a high risk area."

Council has determined that part of the flood control lies in two of the five items above – items *b* and *c* therefore; a CDC cannot be issued on this site. The identified flood items are represented by the darker area within the 1% AEP flood extent on the attached map. If the development is proposed within any part of this zone (dark blue area), a pre and post flood study must accompany the Development Application. Alternatively, if the development is proposed within the uncoloured and/or light blue areas (flood fringe zone), a CDC may be considered for this site. However, the surface flows must not be impeded (blocked) and the redevelopment shall allow the free movement of the flood around any proposed structure(s).

In all cases, flood level on adjacent properties shall not be increased. Supporting documentation is to accompany the development.

Minimum habitable floor levels shall be 0.5m above the flood level at the upstream side of the structure. Minimum non-habitable floor levels (garages, laundry, sheds, etc.) shall be 0.15m above the flood level at the upstream side of the structure. Interpolation between flood levels is allowed.

The relationship between these levels and the ground surface may be determined by a survey of the property undertaken by a Registered Surveyor.

It should be noted that where the development or redevelopment of the property is proposed, reference should be made to the relevant Development Control Plan with regard to flooding and drainage issues. Please include a copy of this letter and map with any Development Application that you may lodge with Council for the subject site.

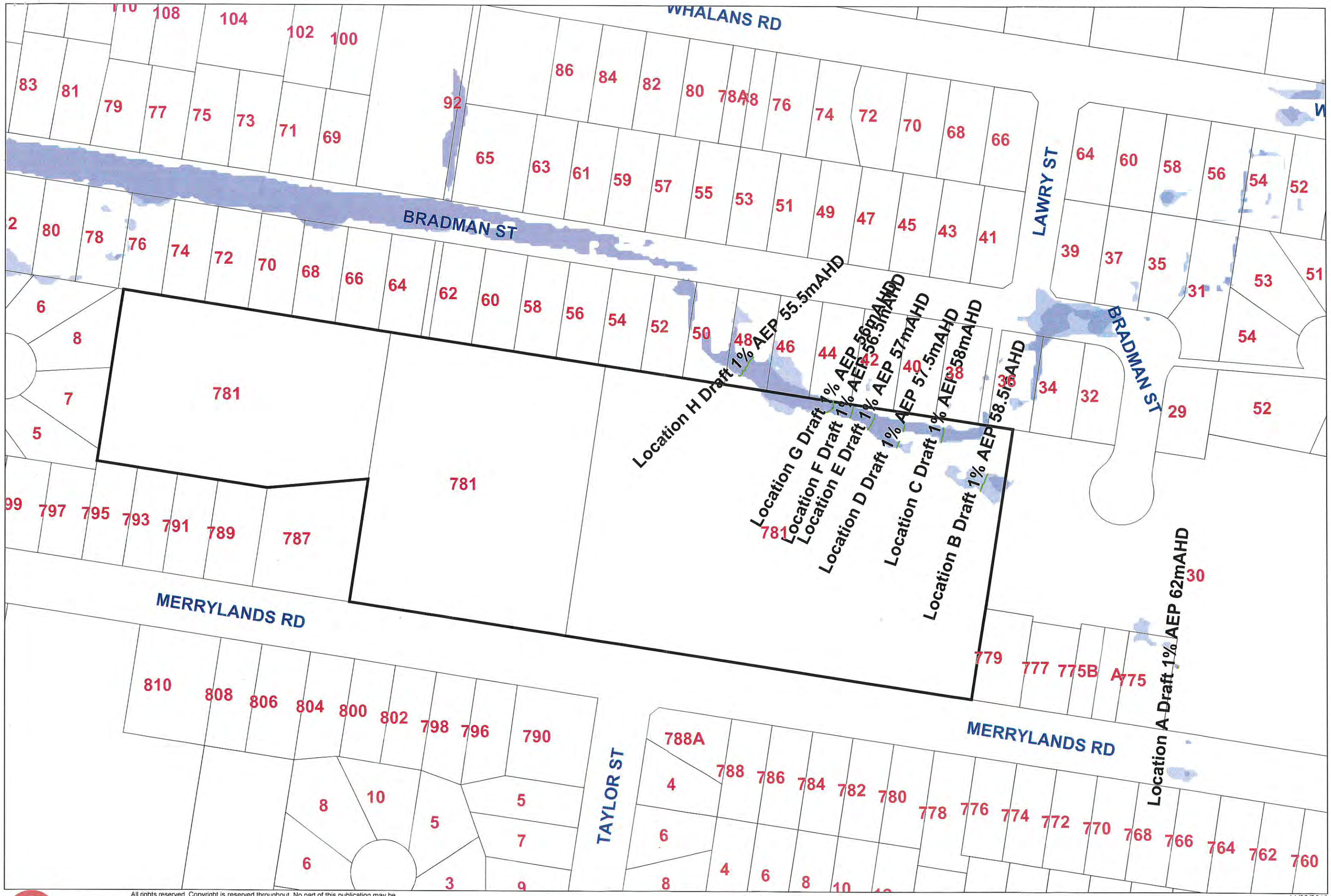
For modelling purposes, the models (pre and post development flood study) shall be calibrated to Council's 1%AEP Flood levels (or interpolated levels) at least 10 metres upstream and downstream from the property boundaries.

Flood levels are not static due to changing circumstances (e.g. revision of the flood model) and accordingly the above flood level is only valid for six months from the above date.

If you have any further enquiries regarding this matter please contact Council's Senior Stormwater Engineer, Mr Mark Evens on 8757 9538 or Council's Drainage Engineer, Mr Rolyn Sario on 02 8757 9536.

Yours sincerely,

SIVA SIVAKUMAR
MANAGER - ENGINEERING & TRAFFIC



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18.11 UNEXPECTED FINDS PROTOCOL - CONDITION B7 + HERITAGE PROCEDURES

An unexpected find is likely to comprise of any buried material which is not a typical soil material (i.e. fill, soil, rock) likely to be present at the site.

There could be many kinds of unexpected materials that could be encountered during excavation works including (but not limited to):

- Buried wastes
- Buried containers/drums
- Discoloured and odorous soils and groundwater/seepage
- Underground tanks
- Asbestos (asbestos finds are covered above in Section 14.1.1 & in conjunction with the Site Auditor and Hygienist)

Personnel undertaking works shall familiarise themselves with the location of possible contaminated soils and the type of contaminants, as well as the necessary safety measures, including, but not limited to adequate PPE; and Safety Health and Environmental Works Method Statement (SH&EWMS).

To minimise the risk of exposure of contaminants to human health and the environment, this protocol shall be implemented prior to the commencement of works within the contaminated area subject to this EMP. If any unexpected finds (such as asbestos, strong odours or heavily stained soils that are potentially contaminated) are encountered outside of the previously investigated areas during any future construction works, the activity shall cease immediately, and the Site Supervisor shall be notified. An Environmental Consultant shall be engaged to assess the risk of the unexpected finds and necessary actions undertaken. It is the responsibility of Icon to ensure that all adequate reports and previous data are provided to the sub-contractors or personnel involved in construction.

Any material identified as contaminated must be disposed off site, in line with applicable codes and guidelines, with the disposal location and results of testing submitted to the planning secretary, prior to its removal off site.

Heritage Procedures are listed in Section 15.12 above

18.12 JONES NICHOLSON ENGINEER EXTERNAL LIGHTING COMPLIANCE CERTIFICATE

10 February 2020

Responsive Engineering

Our Ref: ERTR- N0200031.01A

Dear Sir,

Re: Combined Services Design Statement

Project:	Greystanes Public School (PS)
Client:	Icon Co (NSW) Pty Ltd
Location:	781 Merrylands Road
	Greystanes NSW 2145

Pursuant to the provisions of clause A2.2 of the Building Code of Australia, I hereby certify that the above design is in accordance with normal engineering practice and meets the requirements of the Building Code of Australia, relevant Australian standards and relevant conditions of the development consent. In particular the design is in accordance with the following:

- Control of the Obtrusive Effects of Outdoor Lighting – AS4282-1997.
- Lighting for Roads and Public Spaces Part 3.1: Pedestrian Area (Category P) Lighting – Performance Design Requirements – AS1158.3.1-2005.
- Interior Lighting – AS1680.
- Emergency Escape Lighting and Exit Signs For Buildings Part 1: System Design, Installation and Operation – AS 2293.1-2005.
- Wiring Rules – AS3000-2018.
- BCA Section E Services and Equipment Parts E2.2, E4.2, E4.4, E4.5.
- BCA Section J Energy Efficiency Parts J6, J8.

I am an appropriately qualified and competent person in this area and as such state that the design and performance of the design systems comply with the above and which are detailed on the attached drawings list (refer to electrical transmittal).

Yours sincerely,

Senior Electrical Design Engineer