PEOPLE WHO BUILD

ADCO

ENVIRONMENTAL MANAGEMENT PLAN

RISK REGISTER

PROJECT NAME

NEW MARSDEN PARK PUBLIC SCHOOL

PROJECT NO.

CLIENT – SCHOOLS INFRUSTRUCTURE NSW

CLIENT PROJECT REFERENCE – SINSW00027/19

ADCO PROJECT NUMBER - 3429

VERSION CONTROL

Rev. No.	Issue Date	Approved By	Position	Details
R0	23/09/2019	Matthew Wilkinson	Construction Manager	Draft Tender Plan
R1	09/01/2020	Matthew Wilkinson	Construction Manager	Issued for Approval
R2	25/06/2020	Dean Israel	Project Manager	Issued for compliance with SSD Conditions
R3	22/07/2020	Dean Israel	Project Manager	Inclusion of DPIE Independent Audit Process

ADCO PROJECT PERSONNEL CONSULTATION AND SIGN OFF

We, the undersigned, confirm that we have been consulted on the contents of this document, read and understood the contents of this document, and agree to implement the requirements of this Plan on this project site

Name	Position	Signature	Date
Dean Israel	Project Manager		
Matthew Wilson	Contracts Administrator		
Paul Gower	Site Manager		
Scott Wilson	Senior Safety Manager		
Michael Brombal	HSE Adviser		

CONTENTS

INTRODUCTION

PURPOSE

ADCO Constructions (ADCO) implements an integrated safety and environmental management system on all projects. Our HSE (Health, Safety and Environment) Management System, documents the manner in which construction-related activities are required to be completed on ADCO project sites. This Management Plan provides information on how workplace health, safety and environment will be managed on this project to provide a safe, injury and incident free workplace for workers and the general community.

MANAGEMENT SYSTEM AND DOCUMENTATION

System documents which are referenced in this Plan or any associated Plan or Risk Register can be sourced by accessing the ADCO Constructions Intranet. (ADCO personnel only). Additional information can be obtained from the HSE Manager in each State.

ADCO PERSONNEL SIGN OFF

ADCO project personnel will be inducted into the requirements of this Plan and any associated Plan or Risk Register by the relevant Project Manager. Evidence of induction and discussion will be recorded within section ADCO Project Personnel Consultation and Sign off.

INFORMATION SUPPLY TO SUBCONTRACTORS

This Plan and any associated Plan or Risk Register (including any future revisions) will be supplied to subcontractors for review through the Aconex portal or another approved format.

PLAN REVIEW

This document will be reviewed on a periodic basis, not exceeding 6-monthly, to ensure its compliance to legislative and operational requirements of the. Project. Review and updates to this plan will initiate a change to the plan revision number and be recorded in the “Version Control’ section of the document. Superseded Plans will be marked as such and will be located within the Management Plan Folder located in the Site Office.

SITE FILING

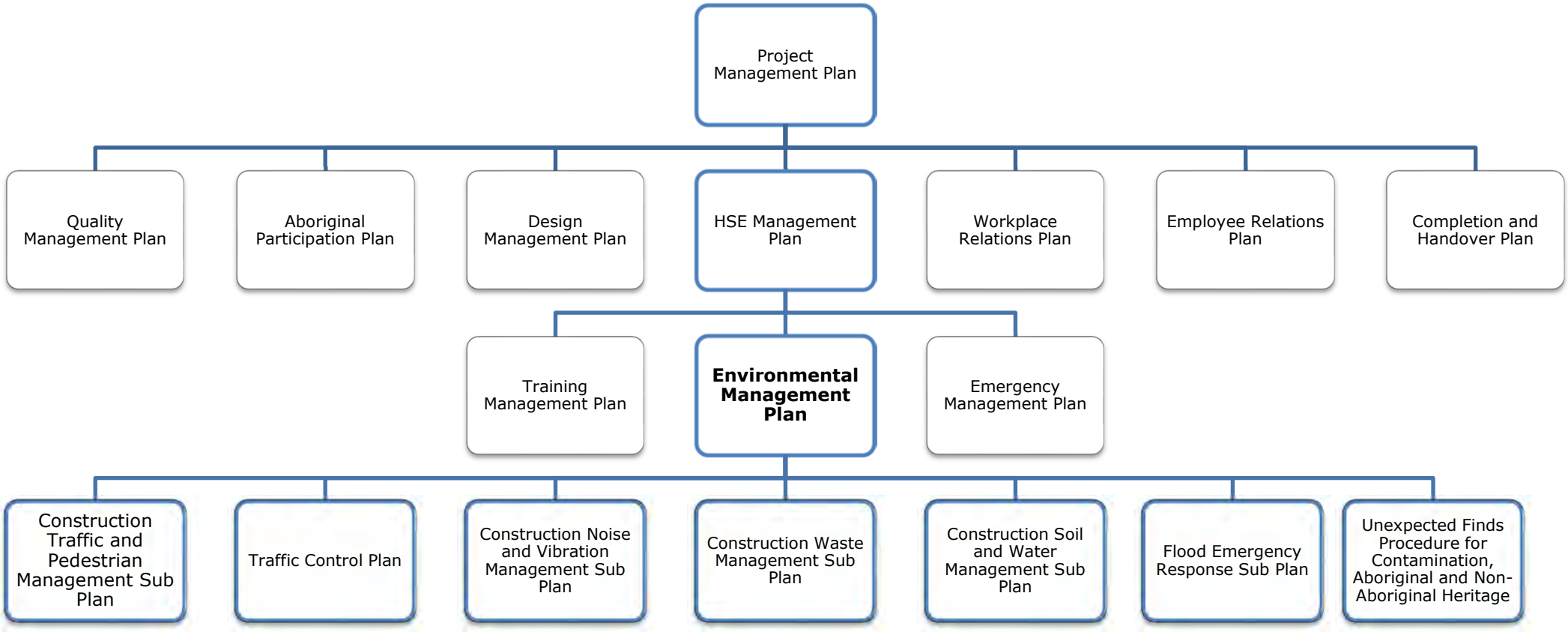
A hard copy of this Plan and any associated Plan or Risk Register (including any future revisions) will be held on site

PLAN ARCHIVING

Copies of this and superseded Project Management Plans and associated Risk Registers will also be maintained (archived) by ADCO for a period of at least 24 months following an update completion.

Below is the hierarchal link outlining the Environmental Management Plan with reference to ADCO's overarching Project Management Plan (PMP).

These plans are available on *The ADCO Way*



PRINCIPAL CONTRACTORS DETAILS

Name	State Address		ABN
ADCO Constructions Pty Ltd	Address	7-9 West Street	46 001 044 391
	Suburb	North Sydney	
	State	NSW	
	Phone	0284375000	

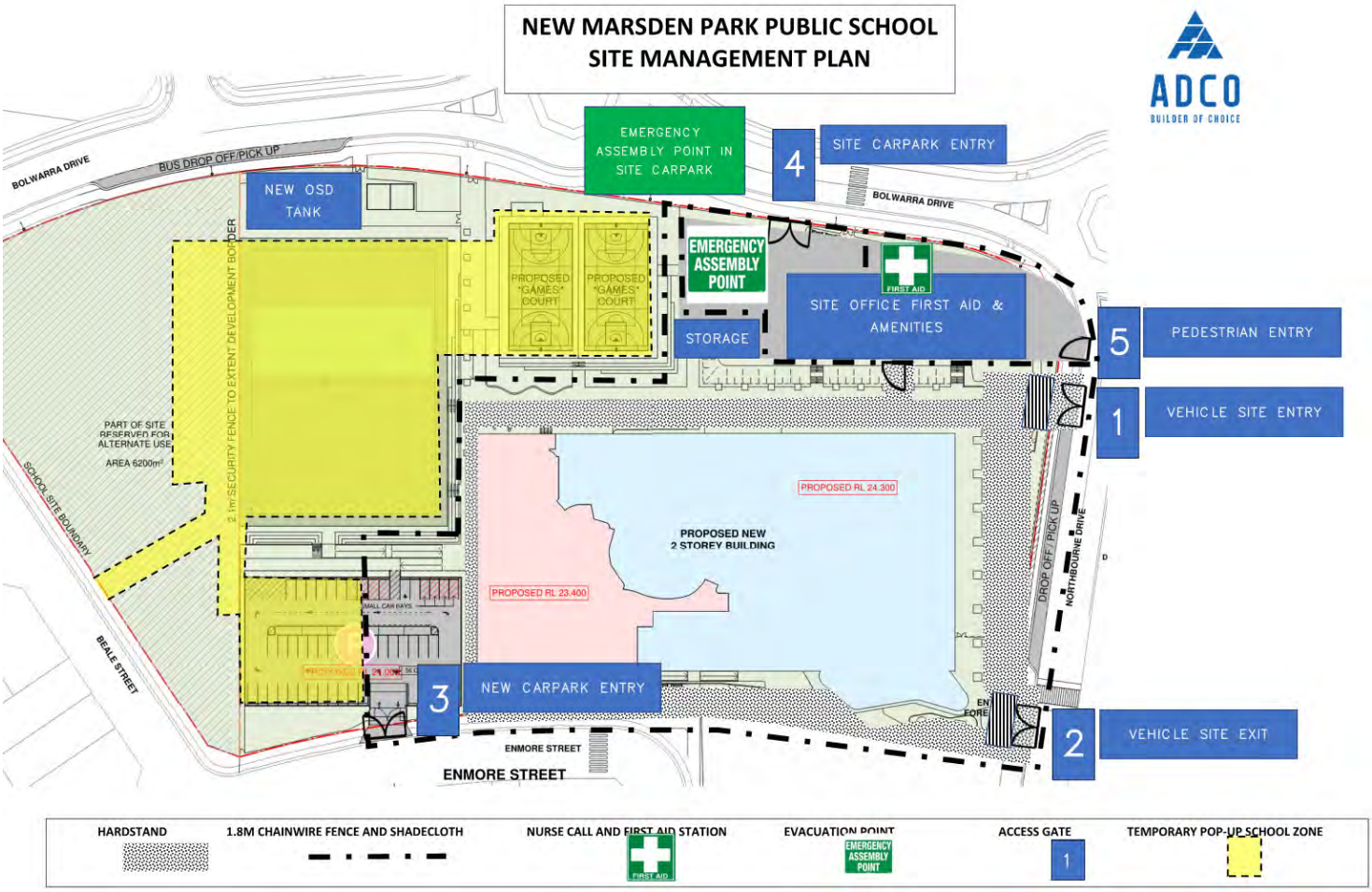
PROJECT INFORMATION

Project Description	The project can be described as the Design & Construction of a permanent consolidated two-storey courtyard building with capacity to accommodate 1,000 students. This new school building is to be comprised of the following: 40 teaching spaces, canteen, library, multipurpose hall, office and administration space, staff and student amenities, out of school hours care accommodation, multi-purpose sporting facilities and outdoor play spaces, associated site landscaping and public domain improvements, on-site parking spaces and a drop-off and pick-up area, construction of ancillary infrastructure and utilities as required, Ancillary and support spaces, Special education units, Bus Bay, Parent pick up / drop off area, Car parking areas, Covered Outdoor learning areas. In addition to the main works the project also includes the design and construction of a Temporary 'Pop-up' school to service the local community until the main permanent school is complete. The temporary school comprises of demountable classrooms connected by raised timber walkways, timber framed awnings, asphalt pavements and external works and services. Upon completion of the main school the Temporary school will be dismantles and the remaining playing field and external works will be completed.
Project Address	The site is legally described as Lot 2889 in Deposited Plan 1230906. This is the corner of Northbourne Drive (to the east) and a Bolwarra Drive (proposed future road to the north) within the Elara Estate, Marsden Park
Working Hours	7am – 6pm Monday to Friday inclusive

	8am – 1pm Saturdays No work may be carried out on Sundays or Public Holidays
24-hour Project Contacts	Project Manager – Dean Israel 0413 777 152 Site Manager – Paul Gower 0413 425 089
Project Duration	Milestone 1A - Early Works Phase: February – May 2020 Milestone 1B – Temporary School : July 2020 – January 2021 Milestone 2 – Main School: July 2020 – July 2021 Milestone 3 – Temporary School Decant and External Works: July 2021 – December 2021
Baseline Site Conditions	The site has been prepared by Western Earthmoving Pty Ltd (WEM) as part of the Stocklands developed Elara Estate, Marsden Park. Bulk earthworks operations comprised of filling with site won and imported material. Imported materials generally comprised clayey gravel, crushed sandstone and ripped shale mixtures. Detailed description and certification of filling works can be found in reports prepared by Network Geotechnics for WEM and provided to ADCO for their records. Refer to Annexure I

AERIAL VIEW

SITE ESTABLISHMENT PLAN



Site Establishment Plan is subject to change throughout project delivery. Any changes will be communicated to workers through project consultative forums.

SITE REQUIREMENTS

OBJECTIVES AND TARGETS

Environmental Management	On all projects, ADCO will manage construction activities and operations are conducted in a manner which, so far as is practicable, minimises any impact upon natural or heritage protected environments. In general, construction activities will seek to: Minimise land disturbance. Where required (e.g. DA conditions), restore the area to pre-disturbed conditions. Protect flora and fauna ecosystems. Implement controls to prevent the pollution of surface and ground water quality. Implement air quality control measures (e.g. dust suppression, contained work area). Implement waste control / management strategies including (where practicable) recycling, recovering and re-using resources from waste. Implement noise and vibration reduction strategies (where practicable). Ensure compliance with all laws, regulations and rules pertaining to the environment that are applicable to the site.
Incident Management	Zero reportable incidents. All incidents are reported to ADCO site management immediately on occurrence. Incidents investigated within two hours of notification. Corrective actions are implemented according to the ADCO risk management time frame. Incident reports are completed within 7 days of occurrence. Incident reports are closed out within 28 days of occurrence. Preventative actions implemented across the project and noted in Incident Reports.
Waste Management	A form of waste minimisation, recycling and reuse program is established and promoted throughout the project period. Where waste minimisation is a requirement of project compliance (e.g. green star), waste strategies are included in the site induction program.

	Work activities are monitored for compliance through the Weekly Site Inspection.
Fauna and Flora Management	Where fauna and flora minimisation is a requirement of project compliance, work activities are completed with consideration and protection of the same. Management requirements are included in the site induction program. Work activities are monitored for compliance through the Weekly Site Inspection.
Air and Water Quality Management	Work activities are completed with nil to minimal impact on air and water quality in and around the site. Mitigation strategies (e.g. dust suppression, nominated trade waste wash off areas and refuelling locations) are identified for the project and per work activity (i.e. SWMS). Management requirements are included in the site induction. Work activities are monitored for compliance through the Weekly Site Inspection.
Cultural Heritage Management	Where heritage management is a requirement of project compliance, work activities are completed with due consideration and protection Management requirements are included in the site induction program. Work activities are monitored for compliance through the Weekly Site Inspection.
Employee Health and Wellbeing	Work activities which may impact on employee health and well-being are identified at project design / tender / commencement / construction stages. Information and management requirements are included in the site induction program. Work activities are monitored for compliance through the Weekly Site Inspection.

TRAINING REQUIREMENTS

Based on construction and project information identify any additional training that is required for the works:

Environmental Activities

LEGAL AND OTHER REQUIREMENTS

COMPLIANCE

- Legislative:
  Risks, hazards and controls on this project will be implemented in accordance with legislation, Codes of Practice and Standards applicable in this State. Legislation, Codes of Practice and Standards which will be applied to this project are noted in the Environmental Risk Register.

- Planning Consent:
  Compliance with this plan and the associated sub plans is in accordance with the development consent conditions for the State Significant Development No 9809 issued 17/06/20

IDENTIFICATION

The identification and assessment of environmental risks (aspects and impacts) that could eventuate during construction of the project will be completed by ADCO at any / all of the following project stages:

- Design
- Tender
- Project planning
- Project construction

Aspects and impacts will be assessed relative to:

- The potential to cause the discharge or release of pollutants to water, air, or land.
- The impact on flora, fauna or heritage.
- The potential to impact on the surrounding neighbourhood (e.g. noise, vibration).

The identification, assessment and risk mitigation of environmental risks is documented in the Risk Register (Environmental).

MONITORING

Actions taken to mitigate environmental risks must be reviewed for ongoing compliance by the Project Manager, Site Manager and HSE Adviser. Verification of monitoring should be noted on the Weekly Site Inspection form

RISK AND HAZARD MANAGEMENT

The Project Manager, Site Manager and HSE Adviser are responsible for ensuring that all site personnel comply with environmental risk mitigation requirements.

NOISE AND VIBRATION

ADCO will implement working hours that are compliant with legislative requirements. To ensure that plant and equipment used throughout construction is the quietest reasonably available ADCO Constructions will:

- Ensure that Plant is inspected at first entry to site and then at regular intervals. Refer to Procedure: Operating Plant (mobile plant).
- Where practicable, position Plant / equipment (e.g. start-up, parking, refuelling) away from noise-sensitive areas and security sensitive areas.
- Where practicable, avoid simultaneous operation of noisy Plant /or equipment.
- Ensure that Plant / equipment is serviced as per the manufacturer's instruction and maintained in good working order.

- Ensure that Plant / equipment is switched off when not in use.
- Where practicable, select alternative Plant or equipment to complete the activity.

The ADCO Project team will ensure compliance to noise management controls through:

- Carrying out works within approved Construction Hours.
- Regular inspections (documented in the Weekly Site Inspection) and completion of corrective actions where required.
- Inclusion of noise and vibration awareness and control requirements through consultative forums.
- The use of the daily Pre-Start Meeting to discuss awareness, control compliance and requirements.
- Ensuring, so far as is practicable, that personnel involved in or working near noise generating activities on the construction site, wear PPE applicable to the activity.
- Ensuring, that signage advising of the hazard/s are posted in visible locations around the work activity area.
- Where construction activities may result in noise / vibration impacts Facility, notification will be provided to the affected parties.

DUST

ADCO will prevent any nuisance occurring through the discharge of dust, dirt, water, fumes and the like on to persons or property. Strategies to be implemented to prevent dust generation and potential nuisance includes but is not limited to:

- Restrict vehicle movements to designated routes.
- Apply water sprays to earthwork locations as required during periods of dry weather, strong winds or dust generating activities.
- In the event that excavated materials will be stockpiled, onsite stockpile management practices will be carried out. These include water sprays and locating stockpiles away from public and residential properties as much is reasonably practicable.
- Minimise dust generating construction activities during periods of high winds or adverse weather.
- Cease relevant construction activities should they be found to be generating excessive dust until effective control measures are implemented.
- As required, implement regular sweeping (including road sweeping) and cleaning activities.
- Monitor and manage the incidence of dust deposition from construction activities and construction vehicles.
- Daily and Weekly visual monitoring of dust and dust management controls will be carried out by the Site team..
- Ensure that subcontract personnel adopt work methods to include dust minimisation practices.
- Implement corrective action in response to diminished air quality as a consequence of construction activities or vehicles.
- Restrict construction traffic to designated / sign posted traffic routes.
- No burning off will occur on the site.
- Site amenities areas will have nil dust generating activities that will require additional dust management strategies in place.

WASTE

Waste categories / types on the project will consist of:

1. Solid Waste;
2. Liquid Waste; and
3. Food waste.

Waste management of the project will consist of co-mingled bins to collect waste material. All waste (excluding hazardous waste) will be collected in a single waste bins onsite and will be separated into different waste streams at an offsite recycling facility. The project will manage waste by:

- Designating waste storage areas.
- Waste storage areas will be located in accessible areas for both vehicles and personnel to allow for easy access for collection and transport.
- Waste bins will be maintained in good condition to prevent leaks and spills.
- Defective containers will not be used for waste storage or transport.
- Hazardous waste will be contained and separated from other waste categories.
- If applicable – Material contaminated by spills i.e. fuel, oil, lubricants etc. will be stored in sealed containers and disposed of at an approved facility.
- Generate a Waste Management Report detailing percentage waste recycled and waste to landfill to determine if construction targets have been achieved
- Actively encouraging Contractors and Suppliers to use non-toxic or recycled products and recycled packaging.
- Encouraging Contractors and Suppliers to reduce the amount of packaging materials brought on to site.
- Ensuring that all persons working on our projects are made aware of their responsibility for achieving a green working environment.

Food waste will be managed to prevent birds and vermin accessing the waste.

- Lidded food waste bins will be located in the site amenities areas i.e. offices / lunchrooms.
- Designated food waste bins will be emptied on a daily basis.
- Food waste bins are to be kept covered
- Food waste will be contained in bags which will be secured / tied when emptied
- Work areas are to be kept free of rubbish and other debris at all times.
- No food waste to be deposited directly into external construction waste skips.
- Active rodent control established on the site i.e. baits around site perimeter.

MATERIALS STORAGE

Construction material required to carry out project works will be stored within designated storage areas within the site compound. Prior to any delivery of materials, mobile plant or tools, subcontractors to consult with ADCO Site Management on the following:

- Permissible items permitted on site including DG/Hazardous Substances.
- Storage areas for trades / materials / substances / Plant.

- Permits or pre- entry inspections including documentation (e.g. Safety Data Sheets, Validation Certificates etc.) required for Plant, tools or substances.
- Hazardous substances and flammable goods to be stored in an approved lockable storage cage. Subcontractors to provide their own lockable cages.
- Pre- delivery inspections to ensure that materials are in accordance with SHE requirements.
- Items found not to be conforming are to be secured and removed from site.

In relation to the storage of substances the following applies:

- Documentation (SWMS and current SDS) to be supplied to and approved by ADCO prior to the storage and use of such items on site.
- Register for substances to be maintained on site by user company and supplied to ADCO on request.
- Substances and containers to be compliant and correctly labelled.
- Substances only to be stored in approved locations on site. No storage within shipping containers permitted.
- Bunds to be of sufficient size and capacity to accommodate substances stored in the event of a spill.
- Persons using the substance to have knowledge of, and training in the use of the substance.
- "DANGER" signage to be placed in visible positions to warn of dangers (flammable substances).
- Fire suppression equipment to be located with the substances.
- Spill management requirements to be implemented.

HAZARDOUS SUBSTANCES AND DANGEROUS GOODS

ADCO will have appropriate measures in place to use and store hazardous substances / dangerous goods to prevent accidental or intentional release to the natural environment leading to environmental harm, including impacts to air and water. The following management protocols will be implemented and monitored for implementation on a daily basis:

- Maintaining a limit of 250 litres of each substance on site at any one time. Note: Any requirement to use or store more than this quantity, requires a ATW Permit issued.
- Subcontractors providing a site-specific SWMS detailing the work activities, risks and control measures. (No work will proceed until ADCO Constructions has accepted the SWMS).
- Current MSDS for each substance will be available for reference. MSDSs are to be Australian and issued within the previous 5 years. MSDS information will be located in the Site Office.
- Current Register for such substances as used on the site. (The Register detailing the nature, quantity and location of all hazardous material must be maintained and regularly updated).
- Ensuring that the substances and their containers are correctly labelled and contained.
- Storing the substances in a manner which complies with the Code (and with AS 1940, AS 4332 and any other applicable legislation or standards) and which does not endanger the work area or storage area of other subcontractors or ADCO Constructions. (i.e. not stored in the back of containers).
- Erection of appropriate warning/emergency panel signage to warn of the location of the substance.
- Ensuring that the substances are safe from use or access by other parties.
- Completing regular inspections of vehicles, containers, bunding and equipment to check for any leaks or spills.
- Providing appropriate fire suppression equipment.
- Providing details for ensuring that at the completion of the works, all residual stocks of substances are guaranteed to be removed from the construction area.

REFUELLING

The following management protocols will be implemented to ensure that target performance is achieved:

- Fuels, oils and chemicals are to be stored in accordance with the relevant Standards and all appropriate measures taken to ensure that environmental performance is being fulfilled
- Regular inspections of vehicles, containers and equipment to be completed to check for any leaks or spills.
- Ensure that appropriate storage facilities and fire suppression, spill management is used.
- Ensure that containers are correctly labelled and that minimal quantities are stored on site.
- Where possible, request substitution of substance with less harmful substances.
- Major servicing of machinery to be completed off site.
- Refuelling to occur in a designated area and not within 30m of a water body.
- Hoses to be fitted with a stop valve
- Spill response kit to be readily available during refuelling activities.

SEDIMENT CONTROL AND WATER QUALITY

To control the risk of erosion or sediment impacting on the natural environment, ADCO will:

- Install erosion and sediment control devices to mitigate and manage the impact of excess soils on nearby roads, surface water quality, air quality, fauna and flora.
- Erosion and sedimentation controls to be monitored on a weekly basis or immediately following a rainfall event.
- Ensure that the handling and placement of excavated material is in accordance with WMS, Client instructions, EPA requirements etc.
- Complete daily inspections of stockpiles, excavated areas and control methods for erosion and sediment management.
- Residue to be disposed of in an appropriate manner.

ADCO Constructions will ensure that all drains and gutters leading to the storm water system within the Site have sediment control measures installed to prevent sediment entering into the drainage system and waterways.

Entering Site

- Identify vulnerable locations on site and install control devices to halt or alter course of water.
- Inspections prior to a major weather event.

Exiting Site

- Identify vulnerable drains, low points and stormwater runoff points.
- Install control devices (i.e. silt fencing, bunding, diversion devices, sand bags, etc).
- Daily inspections and maintenance of control

FOREIGN OBJECT DAMAGE

All materials handling and storage on the Site will be in accordance with the Site Management Plan, WHS Management Plan and Environmental Management Plan.

Site Compound

- Area to be fully contained.
- Appropriate storage containers based on the nature of the product being stored will be provided and located in a designated area.
- Containers must be closed except for when personnel are accessing or working within the container.
- Items within containers must be secured.
- Waste must be placed into supplied receptacles fitted with lids.
- Waste lids are to be closed at all times.
- Material or equipment stored external to site sheds or containers must not have any fittings, fixtures or wrapping which could come loose and cause a hazard.
-

Work Areas

- Material or equipment transported to the work area must be secured to ensure that no fittings, fixtures or wrapping could come loose and cause a hazard during transportation
- Work areas are to be maintained with a high standard of housekeeping at all times and must be free of loose material, packaging, debris etc. at the close of each shift.

HAULAGE

To ensure that no fuel, lubricant, mud, dirt, stones or other materials is spilled, or other materials is spilled or deposited onto roads or footpaths resulting in damage, loss, injury or nuisance ADCO will:

General

- Install control measures (i.e. water spraying, rumble grids, road sweepers) which limit the opportunity for dust, noise or spillage to occur.
- Limit site speed Limits.
- Loads to be covered prior to leaving the site.
- Daily inspections of control measures to be conducted and immediately rectified as required.
- Work activity requirements to be included in the Site Induction.

Traffic Management / Movement

- Comply with any approved Traffic Management Plan for external site traffic management.
- Where practicable, co-ordinate deliveries and site activities with out of peak traffic hours.
- Monitor traffic flows and implement corrective actions in response to traffic impacts as a consequence of construction activities.
- Daily inspections of control measures to be conducted and immediately rectified as required.
- Work activity requirements to be included in the Site Induction.
- If required under planning, inform local community about the timing and scale of construction traffic impacts.

GROUNDWATER MANAGEMENT

The risk to existing groundwater conditions from construction activities is considered neglible based on a). geotechnical investigations undertaken and b). proposed groundworks and foundation system

Based on the Geotechnical report reference ADC 3849 – GEOAA dated 22 January 2020 prepared by Compaction and Soil testing Services Pty Ltd groundwater seepage was not encountered in their test bore holes which ranged in depth from 6.0 – 7.0m from the existing surface levels.

The proposed foundations are screw piles which are expected to be installed to a depth of 6.0m. Screw piles have been selected due to their low impact on existing ground conditions, and therefore there is no anticipated impact from construction activities on the groundwater

Furthermore, we note the following

- Stormwater management and surface run-off of water will be managed in accordance our Construction Soil and Water Management Sub Plan found in Annexure D
- The storage of hazardous materials and chemicals will be managed in accordance with the procedure detailed on page 14 of this CEMP
- The are no known contaminants onsite however in the event of a discovery the Unexpected Finds Procedure will be executed as details in Annexure H

SITE COMPOUND REMOVAL

The site compound including hoardings and barriers will be removed from the north east corner following Handover of the main building and to allow the remaining landscaping works to be undertaken.

Perimeter sediment control measures will remain in place until such time as the final ground finish is installed such as concrete paths, mass planted areas or natural turf. We do not anticipate any adverse environmental impacts as a result of the removal of site sheds, fencing or barriers.

Roads and Footpaths

- Protect footpaths, kerbs and roads from damage through (e.g.) use of metal plates, restriction of heavy vehicles, prohibition for storing equipment or material on roads and footpaths etc.
- Daily inspections of control measures to be conducted and immediately rectified as required.
- Work activity requirements to be included in the Site Induction.

COMPLAINT MANAGEMENT

Complaints can be raised for issues such as, but not limited to:

- Noise
- Vibration
- Dust
- Pollution
- Harassment
- Perceived safety or environmental management issues.
- Breaches of legislation, SSD/DA conditions

A person wishing to register a complaint with ADCO directly through verbal or consultative forums.

Information relating to complaints is documented on the ADCO Constructions Complaints Form. Complaints are registered on the Register - Project Complaints.

Complaints must:

- Immediately - Be reviewed and Investigated by the Project Manager, Site Manager and/or HSE Adviser.
- 48 Hours - Be actioned by the Project Manager, Site Manager and/or HSE Adviser. Actions to be noted on the form. This includes a response (email or verbal) to the person generating the complaint.

In general, the below recommended actions should be followed:

- Respond to the complainant in an objective, polite and courteous manner.
- Engage with the complainant to correctly understand the complaint.
- Seek clarification and confirm the issues, relevant information, and outcomes sought (i.e. summarise the main points).
- Clarify the application of any relevant legislation, policies or procedures.
- Resolve the complaint and acknowledge the complainant.
- If the complaint cannot be resolved within a reasonable time frame, advise the complainant about the complaints process and indicative response.
- Take reasonable action to prevent similar complaints in the future.

INCIDENT MANAGEMENT

REPORTING

The reporting of all incidents is mandatory on ADCO project sites.

Workers are advised at the site induction that all incidents – irrespective of type or severity – must be reported to the Site Manager or HSE Adviser immediately upon occurrence.

MANAGEMENT

All incidents will be recorded by the Site Manager or HSE Adviser.

- Environmental incidents will be recorded in the Incident Report located on HammerTech.

INVESTIGATION

Incidents recorded in an Incident Report must be investigated by the Site Manager and HSE Adviser. The investigation is intended to:

- Collate information / documentation associated with the incident.
- Identify non-conformances leading to the incident.
- Identify corrective and preventative action to mitigate recurrence of the incident.
- The extent to which additional positions (e.g. Project Manager, HSE Manager, Construction Manager) are involved in the investigation of an incident is dependent on the severity and complexity of the incident and the requirements for participation are noted within the ADCO Corporate HSE Management System.

NOTIFICATION

Where an incident is notifiable under the WHS/ Environmental legislation of the state in which it occurred, notification to the regulator will be made by any of the following positions: HSE Manager, Construction Manager, State Manager.

MONITORING

The Project Manager, Site Manager and HSE Adviser are responsible for ensuring that actions (corrective / preventative) arising out of an incident investigation are implemented and monitored for compliance.onitoring and review

MONITORING AND REVIEW

MONITORING

Progress against project targets is monitored by the project team (Project Manager, Site Manager, HSE Adviser) through:

- Regular daily visual inspections of work activities.
- Completion of the Weekly Site Inspection report.
- Close out of identified actions for non-conformances.

REVIEW

Confirmation of achievement of project targets is reviewed through:

- Project audits.
- Other internal or external audits (e.g. client, FSC).
- HammerTech Reporting
- A reduction in incident and non-conformances across the State and nationally.

INSPECTIONS

ADCO will complete daily and weekly workplace inspections to review and confirm compliance to approved work practices and controls.

- Regular daily visual inspections of work activities and work areas will be completed by the Site Manager, HSE Adviser and Health and Safety Representative (if applicable)
- Formal inspections will be completed by the Project Manager, Site Manager, HSE Adviser using the Weekly Site Inspection form.

The inspection is required to reflect the project's level of compliance to:

- Control measures required per active work permits.
- Accepted subcontractor SWMS for high risk work activities.
- General site conditions.

INTERNAL AUDITS

Project audits completed by the HSE Manager are a formal a review of project compliance against select criteria of the Corporate HSE Management System.

Applicable projects are required to be audited against national and project criteria listed on the Audit Report which is located in HammerTech.

The level of compliance to the requirements of the Corporate HSE System is determined by the audit score achieved. Any corrective action (e.g. non-conformances) identified in the audit must, depending on the level of risk associated with the non-conformance, be addressed by the site team within a maximum of seven working days of receipt of the audit report.

Corrective actions and supporting evidence must be attached to the Audit Report in HammerTech.

EXTERNAL SSD COMPLIANCE AUDITS

In accordance with the NSW Government document *Independent Audit – Post Approval Requirements (May 2020)* document independent audits will be conducted to obtain an independent and objective assessment of the environmental performance and compliance status of the project.

The frequency of the audits is set out in table 1 of section 2 of the beforementioned document.

Table 1 - Audit frequency

Phase	Initial Independent Audit	Ongoing Independent Audit Intervals
Construction	Within 12 weeks of the commencement of construction	At intervals, no greater than 26 weeks from the date of the initial Independent Audit or as otherwise agreed by the Secretary.
Operation	Within 26 weeks of the commencement of operation	At intervals, no greater than 3 years or as otherwise agreed by the Secretary.
Closure / Rehabilitation	Within 52 weeks from notifying of suspension/ceasing of operations	At intervals no greater than 1 year or as otherwise agreed by the Secretary.

The timeframes in Table 1 include completion of all activities required in undertaking an Independent Audit.

The scope of the Independent Audit wilt include:

1. An assessment of compliance with:
    a. CoC applicable to the phase of the development that is being audited i.e. Construction
    b. All documentation prepared to satisfy the CoC. including an assessment of the implementation of Construction Environmental Management Plans and sub- plans
    c. All environmental licences and approvals applicable to the development (excluding environmental protection licences issued under the Protection of the Environment Operations Act 1997)
2. An assessment of the environmental performance of the development, including but not limited to, an assessment of:
    a. the physical extent of the development in comparison with the approved boundary, and any potential off-site impacts
    b. Incidents. non-compliances and complaints that occurred or were made during the audit period

c. The performance of the development having regard to agency policy and any particular environmental issues identified through consultation carried out when developing the scope of the audit

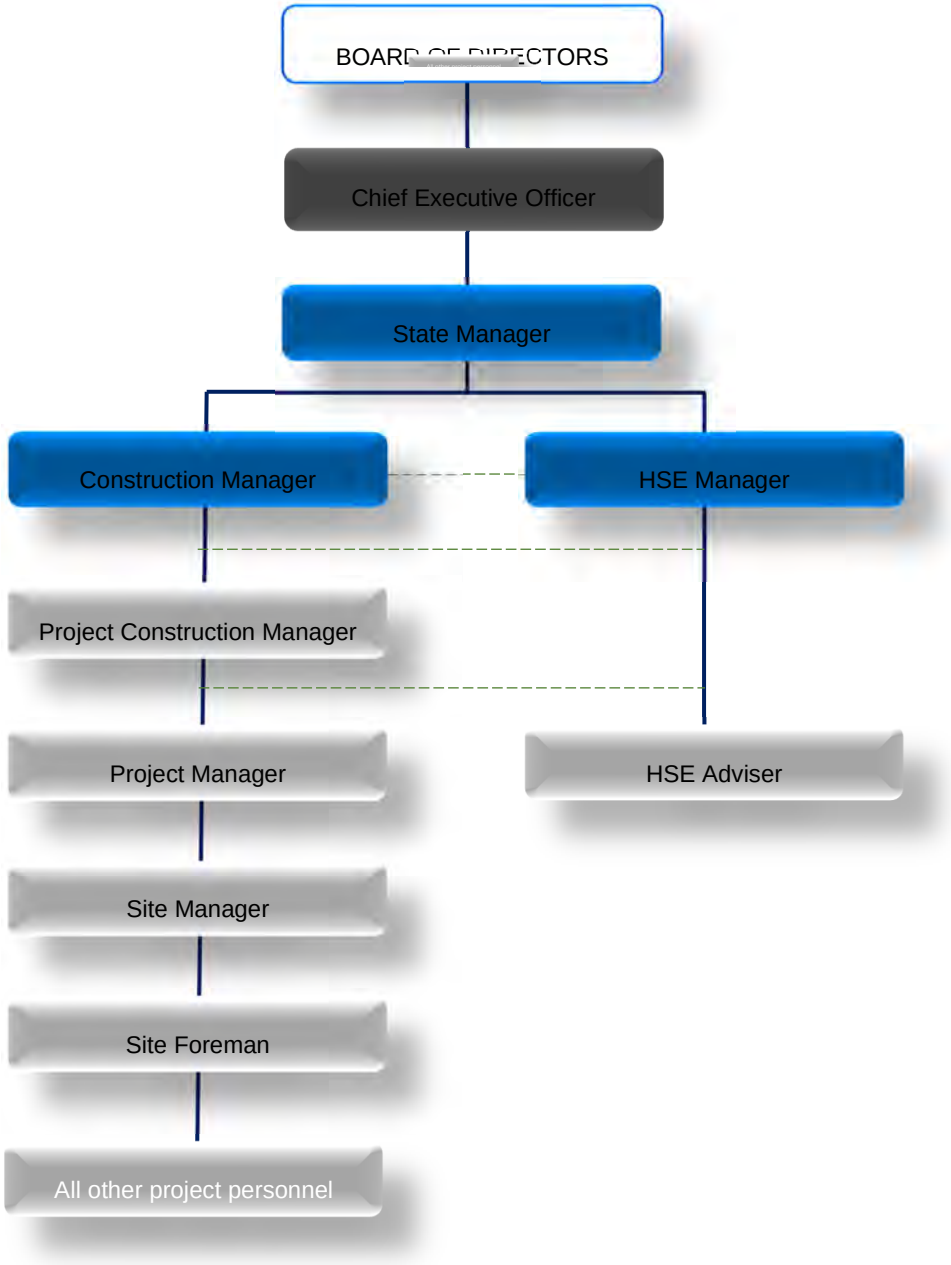
3. The status of implementation of previous independent audit findings, recommendations and actions (if any)

4. A high-level review of the project's environmental management system (ems) (if any), including assessment of any third-party certification, the type nature and scope of the systems having regard to the nature and scale of the development, the implementation of the systems. and any key deficiencies identified

5. A high-level assessment of whether Construction Environmental Management Plans and sub-plans are adequate

6. Any other matters considered relevant, taking into account relevant regulatory requirements and legislation and knowledge of the development's past performance.

PROJECT MANAGEMENT STRUCTURE



Chief Executive Officer

Neil Harding

State Manager

John Basilisco

Construction Manager

Matthew Wilkinson

HSE Manager

Phil Provenzano

Project Manager

Dean Israel

HSE Adviser

Michael Bromell

Site Manager

Paul Gower

Site Foreman

Dylan Gower

POSITION DESCRIPTION

Chief Executive Officer	Provide commitment, leadership and direction in the development, implementation and management of the Corporate Management Systems, including but not limited to: / Development of a corporate strategic plan incorporating safety, environment, quality and health management risks and controls. / An assessment of the effectiveness of the Corporate Management Systems. (e.g. review of incidents and non-conformances to identify non-conformance trends and areas of improvement to the Corporate Management Systems.) / Full management obligations including continual improvement of the Corporate Safety, Environment and Quality Management Systems. / Ensure that appropriate resources are allocated to ensure compliance legislative requirements and the requirements of the Corporate Management Systems. / Ensure that resources are competent to deliver the requirements of the Corporate Management Systems.
State Manager	Ensure that: / Corporate Management Systems are implemented at all levels in the State. / Appropriate resources are allocated to project teams to ensure compliance legislative requirements and the requirements of the Corporate Management Systems. / Project operations are in compliance with applicable state or federal legislation. / A review of the safety, environment, quality and health management performance of the State is completed regularly to identify non-conformances, trends and areas of improvement.
Construction Manager	Ensure that: / Corporate Management Systems are implemented on projects within the State. / HSE requirements have been identified and accounted for during project tender processes. / Project operations are in compliance with applicable state or federal legislation. / Appropriate resources are allocated to project teams to ensure compliance legislative requirements and the requirements of the Corporate Management Systems. / Project team personnel have received training to fulfil their duties and responsibilities with the Corporate Management Systems. / A review of the safety, environment, quality and health management performance of the State is completed regularly to identify non-conformances, trends and areas of improvement.
Health, Safety & Environment (HSE) Manager	Ensure that: / Legislative requirements for HSE management are implemented and maintained on project sites. / The requirements of the Corporate HSE Management System are implemented on project sites. / Where required, project HSE requirements and risks are identified during project tender and/or trade tender processes and incorporated into project management plans. / Reviews of HSE performance are completed on all projects to ensure compliance with legislative and corporate requirements.

Project Manager	Ensure that: / HSE requirements are identified and assessed during trade tender evaluations. / In conjunction with the HSE Manager, project management plans are developed and implemented on projects. / Resources are allocated to implement and maintain the HSE requirements on the project. / ADCO project personnel have received training to fulfil their HSE responsibilities. / Project personnel are aware of current HSE legislation and their obligations. / HSE performance on the project is reviewed and non-compliant activities by employees and subcontractors are addressed.
Site Manager	Ensure that: / Legislative requirements for HSE management are implemented and maintained on the project site. / The requirements of project HSE Management Plans are implemented and managed on the project. / The requirements of the Corporate Management Systems are implemented and managed on the project. / Any issues which may arise over HSE requirements (legislative or Corporate) are managed on site. / Employees and subcontractors complete their work in compliance with legislative and Corporate Management System requirements. / Open lines of communication and consultation are maintained with the HSE Adviser and other parties (i.e. subcontractors, employee representatives) to ensure that the site operates in a safe manner and in compliance with regulatory and corporate requirements. / HSE performance on the project is reviewed and non-compliant activities by employees and subcontractors are addressed.
HSE Adviser	Ensure that: / Legislative requirements for HSE management are implemented and maintained on project sites. / The requirements of the Corporate Management Systems are implemented on project sites. / HSE performance on the project is reviewed and non-compliant activities by employees and subcontractors are addressed.
Health and Safety Representative (HSR)	In general: / Participate in risk and hazard identification and control. / Participate in incident investigations and management. / Participate in workplace inspections (e.g. with the Committee, with the project team). / Participate in project consultative forums. (e.g. HSE Committee) / Consult with and represent workers (i.e. work group) in health and safety issues.

All Other Project Personnel	All personnel are responsible for actively promoting and complying with Safety, Health and Environmental Management requirements as determined / advised / required by ADCO. Activities that all personnel are required to participate in include, but are not limited to: / Attend pre-start meetings. / Conduct pre-start tasks analysis. / Adhere to all permit requirements. / Report all hazards, near misses and incidents (including injuries). / Immediately stop any "at risk behaviour" identified during daily work activities. / Attend safety presentations and toolbox meetings. / Assist in achieving project HSE objectives and targets.

ENVIRONMENTAL RISK REGISTER

Refer to Workplace Safety Australia to assist in the identification of Legislation and Codes of Practice that apply to ADCO operations and project / site activities undertaken. Applicable Legislation and Codes of Practice are to be identified in the reference section below.

Refer to Workplace Safety Australia for a detailed register of applicable Australian Standards. Access to Australian Standards is available through SAI Global

REFERENCE LEGISLATION

Acts and Regulations –

/ Environment Protection and Biodiversity Conservation Act 1999
/ Environmental Protection and Biodiversity Conservation Regulations 2000
/ Environmental Protection Act 1994
/ Environmental Protection Regulation 2008
/ Contaminated Land Act 1991
/ Protection of the Environmental Operations (POEO) Act 1997
/ Protection of the Environmental Operations (Clean Air) Regulation 2002
/ Protection of the Environmental Operations (Waste) Regulation 2005
/ Protection of the Environmental Operations (General) Regulation 2009
/ Contaminated Land Management Act 1997
/ Waste Avoidance and Resource Recovery Act 2001
/ Contaminated Land Management Regulation 2008
/ Environmental Protection Act 1997
/ Environmental Protection Regulation 2005
/ Environmental Protection Act 1970
/ Environmental Protection Act 1993
/ Environmental Protection Regulation 2009
/ Environmental Protection Act 1986
/ Environmental Protection Regulation 1987
/ Environmental Protection (Noise) Regulations 1997
/ Contaminated Sites Act 2003
/ Contaminated Sites Regulations 2006

Policy -

- Environmental Protection (Waste Management) Regulation 2000
- Environmental Protection (Air) Policy 2008
- Environmental Protection (Waste Management) Policy 2000
- Plant Protection Regulation 2002
- Environmental Protection (Noise) Policy 2008
- Nature Conservation Act 1992
- Environmental Protection (Water) Policy 2009
- General Environmental Protection Policy 2007
- Contaminated Sites 2009
- Noise 2010
- Hazardous Material 2010
- Air 1999
- Water Quality 2008
- State Environment Protection Policy (Ambient Air Quality) 1999
- State Environment Protection Policy (Groundwater's of Victoria) 1997
- Industrial Waste Management Policy (Waste Acid Sulphate Soils) 1999
- State Environment Protection Policy (Air Quality Management) 2001.
- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) 1989
- State Environment Protection Policy (Prevention and Management of Contamination of Land) 2002
- State Environment Protection Policy (Waters of Victoria) 1988
- Code of Practice for the Building and Construction Industry – Stormwater Pollution Prevention 1999

Cultural Heritage -

- The Native Title Act 1993 (Cth)
- Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)
- Aboriginal Cultural Heritage Act 2003
- Torres Strait Islander Cultural Heritage Act 2003
- Queensland Heritage Act 1992
- National Parks and Wildlife Amendment (Aboriginal Ownership) Act 1996
- Heritage Act 1977
- Aboriginal Land Rights Act 1983
- Heritage Objects Act 1991
- Heritage Act 2004
- Aboriginal Heritage Act 2006
- Aboriginal Heritage Regulations 2007
- Aboriginal Heritage Act 1988
- Heritage Act 1994
- Heritage Places Act 1993
- Aboriginal Heritage Act 1972

HSE System References

Procedure

- Environmental Management

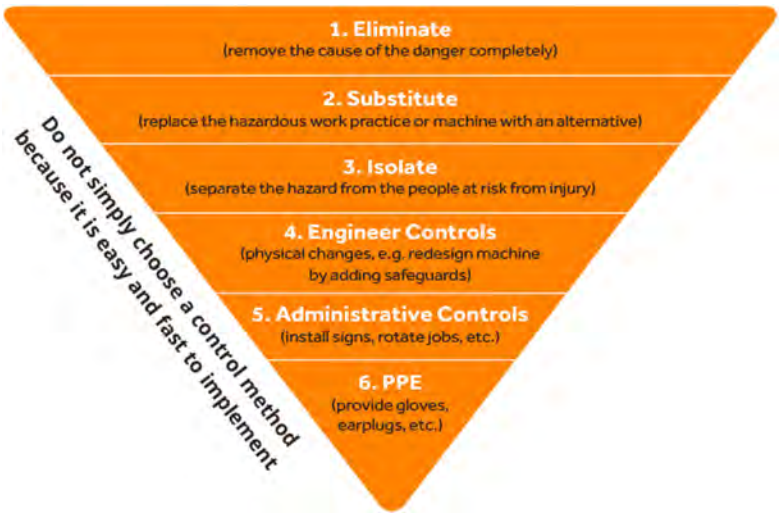
General Requirements

- Erosion and Sediment Management
- Air Quality Management
- Water Quality Management
- Noise and Vibration Management
- Contaminants
- Heritage Management
- Waste Management
- Spills Management
- Fauna and Flora Protection
- Potable Water Management
- Non-potable Water Management

RISK ASSESSMENT FRAMEWORK

Risk controls are implemented by ADCO and subcontractor companies through any or all of: SWMS, Authority to Work Permits, Risk Assessments, consultation mechanisms, engineering approvals, etc.

HIERARCHY OF CONTROL



1. Eliminate

Can the risk or hazard be eliminated or removed?

2. Substitute

Can the activity or product be substituted by something else (a substance or a process) that has less potential to cause injury or damage?

3. Isolate

Removing or separating workers from a particular hazard where possible

4. Engineer

Engineering control is a control measure that is physical in nature including mechanical device or process

5. Admin Control

Will an administrative change (i.e. by upgrading training, changing rosters) reduce the risk?

6. Personal Protective Equipment (PPE)

Can personal protective equipment (gloves, goggles, etc.) or clothing be worn to safe-guard against the hazard?

RISK MATRIX

(P) PROBABILITY - A measure of the chance of the occurrence			CONSEQUENCE (C) - The outcome or impact of an event			
			1	2	3	4
		SAFETY	Permanent disability or death.	Serious bodily injury.	Hospitalisation resulting in LTI.	External medical treatment. No LTI.
		ENVIRONMENT	Toxic release off site with detrimental environmental impact	Offsite release contained with outside treatment/assistance. Minimal detrimental environmental impact.	On site release contained with outside treatment/assistance. No detrimental environmental impact.	On site release contained. No environmental impact
	Expected to occur in most circumstances.	ALMOST CERTAIN	E	E	H	M
	Probably occur at some time.	LIKELY	E	H	M	M
	May occur at some time.	POSSIBLE	H	H	M	L
	Not likely to occur in normal circumstances.	UNLIKELY	H	M	M	L

ACTION TIME FRAME			
EXTREME (E)	HIGH (H)	MEDIUM (M)	LOW (L)
IMMEDIATE action required	Action **IN THE SAME SHIFT**.	Action in < **48 HOURS**.	Action **AS AGREED**.
Involvement and approval of Construction Manager / SHE Manager National SHEQ Manager required.	Construction Manager / SHE Manager to be advised of actions to be taken, prior to continuation.	Site Manager and S&E Adviser to review and agree on actions to be taken, prior to continuation.	SWMS review by contractor supervisor. Observation by ADCO.

In accordance with the Standard, impacts resulting in a residual risk rating of (E) Extreme or (H) High will be defined as “Significant”. Communicating impacts falling into these categories will be undertaken through the following but not limited to; induction process, contractor meeting and client meetings.

PROJECT RISKS – ENVIRONMENTAL

ESTABLISHMENT AND USE OF PROJECT OFFICES

Description

Project operations, Use of consumables - paper, cups, cutlery, Use of electricity – Lighting, Air-conditioning, Heating

IR	Potential Risks	Actions and Controls	RR
M	/ Increase in environmental impact and associated cost with disposal / recycling	/ Where possible; use electronic devices for communications. / Where possible; use recycled paper. / Lights only to be turned on as required. / Use long life globes (low voltage where possible) / Switch off all lights on departure from site each day except for emergency access paths in accordance AS4282-2019 / Doors to be closed when cooling / heating is used. / General waste to be disposed of in appropriate designated waste facilities. / Use environmentally friendly cleaning products for amenities cleaning. / In the event of after hours works e.g. concrete pour face temporary lights away from residential / sensitive environments (North facing towards Bolwarra Ave / Community consultation if after hours	L

VEGETATION CLEARING / REVEGETATION

Description

Clearing of vegetation (trees / shrubs) in accordance with planning / building approvals.

IR	Potential Risks	Actions and Controls	RR
H	/ Decrease in air and water quality. / Build-up of sediment in water systems from land run off.	Clearing / Clearing methods to follow approved (DA or other) procedures. / Trees (including root zones where possible) to be retained will be identified with visible	M

			warning tape (at 900 mm above ground) to ensure that workers are aware of their presence and they are not inadvertently damaged. / Limited disturbance of ground covers to excavation areas. / No burning off-on site. / Stockpile excavated material into areas which have no impact on the eco system. / Stockpiles to be vegetated (where practicable) to improve soil stability. / Vegetative material brought to site to meet appropriate standards and be free of debris, seeds, etc. / Noxious or banned vegetative material to be segregated and removed from site. / Appropriate control measures to be installed to ensure containment of disturbed areas and stockpiles. / Dust mitigation to be implemented as required. / Daily inspections and inspections following a major weather event (i.e. storm, high wind). / Work activity locations to be identified on the Traffic Movement Plan. / Environmental management requirements will be included in the Site Induction.	
	/ Introduction of invasive species		Revegetation / Vegetative material brought to site to meet appropriate standards and be free of debris, seeds, etc. / Landscaping, so far as is practicable is to be completed as soon as possible after disturbance in accordance with the approved landscaping plans. / Revegetated areas to be excised to prevent unauthorised access or damage by animals, unauthorized persons or workers. / Areas of revegetation are to be inspected monthly by an accredited horticulturist to ensure that no weed infestation has occurred / Noxious or banned vegetative material prohibited from being brought to the project site.	

EROSION AND SEDIMENT MANAGEMENT

Description

Construction works potentially impacting on the surrounding environment through the erosion of ground.

IR	Potential Risks	Actions and Controls	RR
H	/ Dust emissions degrade air quality. / Degradation of water from contamination of watercourses through silt and sediment build-up. / Sediment impacting on the external environment / public areas.	General / Determine control methods to mitigate against erosion and sediment creation. / Identify areas susceptible to erosion and sediment impacts and if required - Install erosion and sediment control devices to mitigate and manage the impact of excess soils on surface water quality, air quality, fauna and flora. / Complete inspections of stockpiles, excavated areas and control methods for erosion and sediment management. / Wheel wash / rumble grid etc. to be implemented to minimize tracking of soil into public areas. / Erosion and sedimentation controls to be monitored regularly and immediately rectified as required. / Erosion and sedimentation controls to be immediately inspected following a severe weather event. / Environmental management requirements will be included in the Site Induction.	M
	/ Contamination of watercourses. / Potential dust emission which degrade air quality	Stockpile management / Topsoil stockpiles to be located on flat areas, clear of drainage lines and at significant distance away from waterways, roads, and slopes of greater than 10%. / Stockpiles to be located at least 3 metres from tree drip lines. / Stockpiled materials not to be placed inside VPO areas or within 5 metres of retained trees. / Stockpiled materials not to be placed within 5 metres of waterways or stormwater inlets.	M

			/ Clean topsoil and friable subsoil to be stockpiled separately and re-spread in areas to be revegetated / Weed infested topsoil to be stockpiled separately and removed from site or re-spread in a manner which mitigates the spread or re-introduction of weeds. / Install bunding/silt fencing around stockpiles to prevent against water runoff. / Dampen stockpiles by means of water sprays to management dust emissions. / Where practicable, vegetate stockpiles to improve soil stability. / Limit the height and volume of stockpiles so that control measures can be implemented. / Stockpiles and control measures to be monitored regularly and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	

FAUNA AND FLORA MANAGEMENT

Description

Impact on nearby flora and fauna

IR	Potential Risks		Actions and Controls	RR
M	/ Loss, damage or harm to local and/or protected flora and fauna. / Environmental pollution		/ Manage in accordance with requirements of an applicable Act and/or DA requirements. / Where required, ADCO to engage a competent person to spot / manage Act / DA requirements. / Where applicable, complete a dilapidation / aerial survey of existing retained or removed plant to form a baseline comparison during construction works. / Implement approved protection controls around flora to be preserved or fauna to be protected. / Utilise accredited Spotters to assist with fauna identification and relocation. / Utilise accredited Personnel to identify and relocate protected species.	**L**

			/ Daily inspections of control measures to be conducted and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	

CULTURAL HERITAGE

Description

Archaeological artefacts, spilted finds.

IR	Potential Risks		Actions and Controls	RR
M	/ Construction activities damage or destroy archaeological artefacts or heritage listed items.		/ Prior to the commencement of the project, determine heritage / cultural significance of the project site. / Where required, ADCO to engage a competent person to develop an applicable management plan. / Approved management plan requirements to be included in site induction. / Report all finds to Site Management immediately. / Identified locations to be noted on the Traffic Movement Plan. / Where required, information on Cultural Heritage Management to be posted on site notice boards.	L

AIR QUALITY

Description

Dust generation, Plant emissions

IR	Potential Risks		Actions and Controls	RR
H	/ Erosion of soil. / Discomfort to site personnel and neighbouring properties or persons. / Breach of legislation or development conditions		/ Monitor and manage the incidence of dust from construction activities / vehicles. / Minimise dust generating construction activities during periods of high winds or adverse weather. / Ensure that contract personnel adopt work methods to include dust minimisation practices.	M

			/ Apply water sprays as required during periods of dry weather, strong winds or dust generating activities. / As required, implement regular sweeping (including road sweeping) and cleaning activities. / Vegetate, cover and/or dampen stockpiles. / Mobile plant on site to be in good working order. / Daily inspections of control measures to be conducted and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	

WATER QUALITY

Description

Potential for impact on water quality within the area due to poor construction practices

IR	Potential Risks	Actions and Controls	RR
M	/ Deterioration of ground or storm water quality. / Increased disposal costs. / Increased housekeeping requirements to maintain the site in a clean and tidy condition. / Environmental pollution into waterways, roads etc. / Flora / Fauna impact due to contaminated water.	/ Where required, prior to major surface disturbances, install drainage structures for waterways, catch drains to intercept flow. / If required in approval conditions - monitor water quality and implement a testing regime (i.e. pH, solids, etc) where degrade water quality is suspected. / Identify vulnerable locations on site and install control devices to halt or alter course of water. (e.g. sand bags, hay bales, spoon drains etc.) / Take all reasonable and practicable measures to minimise the potential for the release of contaminants to surface waters that could adversely affect the environment. / Conducted a site inspection after significant weather events to check status of control measures / Ensure work areas as listed above are bunded. / Daily inspections of control measures to be conducted and immediately rectified as required.	L

			/ Environmental management requirements will be included in the Site Induction.	

NOISE AND VIBRATION

Description

Noise and Vibration attributed to building and construction activities

IR	Potential Risks	Actions and Controls	RR
E	/ Noise pollution. / Discomfort to site personnel and adjoining neighbours and properties.	/ Review equipment on an ongoing basis to ensure condition and suitability for use. / Plant, equipment and machinery to be fitted with noise reducing attachments (i.e. mufflers). / Plant, equipment and machinery to be maintained in accordance with manufacturers specifications. / Works (so far as is practicable) to be completed during approved work hours (i.e. per DA, Council or EPA conditions). / As applicable (e.g. condition of licence, complaint management), install noise and vibration monitors to measure and record discomfort levels. / Investigate noise complaints or causes of excessive noise and implement control measures as required to manage noise emissions. / Daily inspections of control measures to be conducted and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	M

WASTE MANAGEMENT

Description

Waste generated from building and construction activities

IR	Potential Risks	Actions and Controls	RR
E	/ Environmental pollution into waterways, roads etc. / Contamination of ground soil, sewerage systems and storm water systems. / Health hazards to site personnel and other non-construction personnel. / Increased housekeeping and waste removal requirements and costs.	General / Provide waste bins to accommodate construction waste (i.e. concrete, paint, plaster). / Where practicable, install waste bins for separate waste streams. / Ensure that regulated or contaminated waste is disposed of licensed disposal locations by licensed contractors. / All materials, packaging etc is to be made secure at all times and to be disposed of using allocated sealed waste bins. / No debris to be dropped/left outside of the waste skips. / Waste bins to be located in a suitable location with minimal impact from environmental conditions i.e. wind. / Include waste minimisation requirements in Subcontract Agreements, trade requirements and during trade tendering. / Daily inspections of control measures to be conducted and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	M
	/ Discomfort to site personnel and neighbouring properties or persons. / Health hazards to site personnel and other non-construction personnel.	Odour management / Waste bins to be kept covered preventing odour and secured at all times. / Work areas are to be kept free of rubbish and other debris at all times. / No food waste to be deposited in external construction waste skips. (i.e. to prevent bird access)	

HAZARDOUS SUBSTANCES AND DANGEROUS GOODS

Description

Use of Hazardous Substances and Dangerous Goods

IR	Potential Risks	Actions and Controls	RR
H	/ Contamination of ground, air or water from spillage or leakage.	/ Comply with the requirements of applicable legislation and Australian Standards. / Ensure that appropriate storage facilities are used. / Ensure that appropriate fire suppression and spill management is provided. / Ensure that containers are correctly labelled and that minimal quantities are stored on site. / Ensure that refuelling is completed in approved locations. / Where possible, request substitution of substance with less harmful substances. / Manage spills or leakage in a manner which inhibits further contamination. / Advise relevant personnel or authorities of reportable incidents. / Include substances management in the project Emergency Plan. / Ensure that substances use/storage has been included in worker SWMS. / Ensure that site personnel comply with the conditions of use of such substances. / Daily inspections of control measures to be conducted and immediately rectified as required. / Environmental management requirements will be included in the Site Induction.	M

HAULAGE

Description

Access and Egress of vehicles throughout project delivery.

IR	Potential Risks	Actions and Controls	RR
H	/ Potential dust emission which degrade air quality. / Exhaust emissions which exceed accepted standards. / Noise generation. / Fuel/oil spills which impact on environment quality.	General / Install control measures (i.e. water spraying, rumble grids, road sweepers) which limit the opportunity for dust, noise or spillage to occur. / Limit site speed Limits. / Loads to be covered prior to leaving the site. / Daily inspections of control measures to be conducted and immediately rectified as required. / Work activity requirements to be included in the Site Induction.	L
	/ Impact on other road users due to uncontrolled traffic management into/out of the site. / On site congestion, hazards or incidents due to uncontrolled haulage routes.	Traffic Management / Movement / Comply with any approved Traffic Management Plan for external site traffic management. / If required under planning, inform local community about the timing and scale of construction traffic impacts. / Where practicable, co-ordinate deliveries and site activities with out of peak traffic hours. / Monitor traffic flows and implement corrective actions in response to traffic impacts as a consequence of construction activities. / Daily inspections of control measures to be conducted and immediately rectified as required. / Work activity requirements to be included in the Site Induction.	M

	/ Degradation of surfaces and kerbs due to excessive force or weight of heavy vehicles and plant. / Impact on the safety of pedestrians and other road users from obstructions and degradation of surfaces.		Roads and footpaths / Protect footpaths, kerbs and roads from damage through (e.g.) use of metal plates, restriction of heavy vehicles, prohibition for storing equipment or material on roads and footpaths etc. / Daily inspections of control measures to be conducted and immediately rectified as required. / Work activity requirements to be included in the Site Induction.	**M**

FOREIGN OBJECT DAMAGE

Description

Adverse impact from loose or windborne material

IR	Potential Risks		Actions and Controls	RR
H	/ Loose or windborne material		Site Compound / Within the site compound all material and equipment to be secured or securely stored. / Containers to be closed except for when personnel are accessing or working within the container. Items within containers to be secured. / Waste to be placed into supplied receptacles and with cover nets or lids fastened. / Material or equipment stored external to site sheds or containers must not have any fittings, fixtures or wrapping which could come loose and cause a hazard.	**M**
	/ Loose or windborne material		Work areas / Material or equipment transported to the work area must be secured to ensure that no fittings, fixtures or wrapping could come loose and cause a hazard during transportation / Work areas to be maintained with a high standard of housekeeping at all times and	

			must be free of loose material, packaging, debris etc at the close of each shift.	

*

ANNEXURE A

CONSTRUCTION TRAFFIC AND PEDESTRIAN MANAGEMENT SUB PLAN (CTPMSP) AND TRAFFIC CONTROL PLAN (TCP)

TRAFFIC AND PEDESTRIAN MANAGEMENT PLAN

CONSTRUCTION OF NEW PRIMARY SCHOOL AT MARDSEN PARK NSW

Document Preparation & Control	Document Review
Lisa Hayes Traffic Manager – Dunwood	Ciaran Wright Director – Dunwood
Document Approval	**Signature**
Client: ADCO CONSTRUCTIONS PTY LTD	
Blacktown City Council:	

CONTROL SHEET – SUMMARY UPDATES

Document Status	Brief Description or Section Revised	Date	Revision No
Draft Submission		24/06/2020	0.0
Draft revision		01/07/2020	1.0
Authorised TMP Revision 1	Addition to DA Conditions Driver Code of Conduct pg18,19	02/07/2020	2.0
	Successive Work activities pg14		
	Review and Monitor of Traffic Conditions		
	Emergency or Uncommon disruption Notification Plan pg19		
SSD Revision	Revised 'General conditions and content'	04/07/2020 08/07/2020 27/07/2020	3.0 4.0 6.0
	Appendix with Council and Council Consultation		
Traffic & Pedestrian plan	Minor amendments	21/07/2020	5.0

TABLE OF CONTENTS

Foreword:

The attached documents; Daily Traffic & Pedestrian Management Checklist ,Traffic & Pedestrian Management Plans & SWMS address logistic of traffic management during the construction of the school development.

The undertaking by Dunwood to provide traffic & Pedestrian Management affirms consideration of safety and environment for all, during the period of development.

Please note the TMP do not infer control measures for traffic on Richmond Road which are outside the perimeter of approved work zones.

Should any upgrades (or repairs) of associated road network be undertaken in concurrent timeline as construction, all traffic management measures for such works, shall fall under the jurisdiction of Blacktown City Council or its authorising entity.

Traffic Management Requirement Report

The attached documents: Traffic & Pedestrian Management plans / SWMS / & checklists address the Conditions, approval requirements for this project and contracted works. The objective of the attached is to ensure that construction traffic ingress and egress, is managed effectively and that adjacent properties and road network are not affected.

Dunwood Traffic department shall provide recommendations in compliance with Blacktown City Council and RMS standards: 1742.03 Thereby, providing appropriate management of traffic and minimising impact to motorists, residents and the emergency services.

Dunwood will ensure that planned works adhere to and comply with, the proposed Site Management Plan and Development Approval (Adco Constructions) requirements for; Management of movement of construction vehicles (Plant and Equipment) to the proposed project via transport corridor. Specifically, this Plan shall recognise, be consistent with and comply with the traffic configuration of the local road network as it exists at varying stages, during the proposed project.

In addition to the Traffic Management requirements, this Plan shall comply with:

- the requirements of relevant authorities, including RMS, NSW Police, State Emergency Services, Blacktown City Council .;
- Roads Act (NSW) and all other applicable legislative requirements;
- certificates, licenses, consents, permits and approvals, including in respect of working hours; and
- all other parts of the proposed construction Contract.

In accordance with the General Conditions of the proposed construction Contract, this plan shall:

- detailed traffic management procedures for the site;
- provide traffic management plan detailing impact to existing traffic patterns (vehicular and pedestrian) and changes to general transport, routes and services required;
- ensure the appropriate notification of relevant emergency services prior to implementing any traffic modifications (such as temporary road closures or changes to road access);
- provide plan of action to ensure safety of public vehicle road users, cyclists and construction personnel of both Adco Constructions and its subcontractors;
- advise changes to traffic usage patterns as well as special events or traffic embargoes;
- detail management of maintenance requirements, emergencies and incidents;
- coordinate traffic & Pedestrian management procedures and plans with sub-contractors and/or parties;
- consider impacts on residents and/or commercial enterprises on traffic routes (including traffic movements);
- detail objectives for spoil management & transportation from/to site;
- detail roles and responsibilities of personnel and subcontractors;
- update Traffic Management Requirement Report as required, or at the direction of Blacktown City Councill or RMS.

Traffic & Pedestrian Management Plan

INTRODUCTION

Adco Constructions is the Managing Contractor for the New Marsden Park Primary school

This CTMP seeks to outline optimum management of traffic & Pedestrians associated with construction.

The CTMP addresses the Conditions of Approval requirements for this project,

The objective of the Plan is to ensure that traffic control elements, management of works within construction site, logistics of construction traffic, access issues and spoil removal are managed with minimal impact to environment, motorists and residents. The TMP is to ensure that it complies with the requirements of all authorities including (but not limited to) RMS, Blacktown City Council requirements, STA, Police, and Emergency services.

PURPOSE

The scope and purpose of this Traffic & Pedestrian Management Plan is to ensure that Adco Constructions complies with DA and Contract requirements regarding traffic management at stages of; pre-commencement, during and completion of construction; Maintaining minimal impact to traffic flow during works; and compliance to 'work area evacuation' in case of emergency.

PROJECT INFORMATION

-Construction of Primary school ;

The main elements of the work in respect to traffic management include provision for:

- Maintaining local traffic.
- Management of traffic accessing construction site;
- Management of works and construction traffic within site;
- Ingress /egress of deliveries
- Safe transportation of between Work Areas for all workers

CONDITIONS OF USE & ACKNOWLDGEMET OF RECEIPT

This Traffic Management Plan is issued as a commercially confidential document and always remains the property of Dunwood Management.

If a Controlled Copy of this Plan has been issued to Adco Constructions, acknowledgement of its receipt is to be notified to the Project Manager within seven days to ensure the receipt of amendments.

Please note that Dunwood Traffic Management accepts no liability for the implementation or execution of this TCP, unless undertaken by authorised Dunwood personnel. Also, all Traffic Control plans are copyright property of Dunwood and are not transferable; unless authorised by Dunwood in writing.

TCP Complies with Australian Standards 1742-3 and RMS Traffic Control at Work Sites Manual V5.0

Project Management Contact List

The following list provides contact details of project management team:

Name	Position Title	Contact Details
Lisa Hayes	Traffic Manager Dunwood	0403 481 769
Ciaran Wright	Director – Dunwood	0427 174 330
Dean Israel	Project Manager -ADCO	0413 777 152

Distribution Control & Approval of this Plan

CONDTIONS OF USE

This Traffic Management Plan is issued as a commercially confidential document.

CHANGES AND APPROVAL

APPROVAL OF PLAN

Approval of Plan and Record of Issue will be via the Project Manager.

REVIEW BY PROJECT MANAGER

Project Manager will review and provide comment on the Plan.

MANAGING MASTER PLAN

The master/most current version of the Plan is available electronically. Adco Constructions project team members will have access to this plan via Dropbox Link.

CHAGES OF PLAN

All minor changes to the Plan may be made by Adco Constructions. Where TMP changes impact on the general concept of the plan, then a further revision of the Plan will be prepared and reissued by Traffic Manager – Dunwood.

ISSUE OF PLAN

The Project Manager will ensure the Approved Plan is available to RMS/Authorizing bodies, site contractors and site personnel.

DISTRIBUTION POLICY

The team members, who have been issued with this plan, will be sent amendments as they occur, and it is their responsibility to discard superseded pages and insert new pages.

FURTHER TRAINING AND INDUCTION TO PLAN

If required, further training & induction to the Plan; this will be conducted by an authorised person; and a record of induction will be completed by the employee/contractor/inductee.

Relationship with Other Plans

This Traffic Management Plan forms part of the overall Construction Management Plan.

General Conditions and Content

The checklist detailing the verification process to ensure these requirements has been met in this Traffic Management Plan for the Conditions of Approval is detailed below.

CONDITIONS & CONTENT	WHERE ADDRESSED
SSD Condition B14: A Construction and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety ad efficiency of the road network and address, but not be limited to, the following:	
(a) Be prepared by a suitably qualified and experienced person(s):	Page 36
(b) Be prepared in consultation with Council and TfNSW	Page 35
(c) detail the measures that are to be implemented to ensure road safety and network Efficiency during construction of potential impacts on general traffic, cyclists and Pedestrians and bus services;	Pages 15-17
(d) Detail heavy vehicle routes; include location of all proposed work zones;	Page 21
(e) Details of the haulage routes and the construction hours;	Page 12 & 15
(f) Details of estimated number and type of construction vehicle movements including morning and afternoon peak and off peak movements for each stage of construction	Page 15
(g) Details of the construction program highlighting details of peak construction activities and proposed construction staging and	Page 13
(h) details of the measures that are to be implemented to mitigate the potential impacts associated with the construction of stage 2 while stage 1 is in operation including	Page 11

CONDITIONS & CONTENT	WHERE ADDRESSED
scheduling truck movements outside drop-off and pick-up times for the temporary school	
SSD Condition B15: A Traffic Control Plan (TCP) must be repared to aceive the objective of ensuring safety and efficiency of the road network and address, but not limited to, the following:	
(a) be prepared by a suitably qualified and experienced person(s) and satisfy the requirements of AS1742.3-2009;	Each TC references the author and accreditation/ Lic. number
(b) be prepared in consultation with Council	Page 31 of CTPMSP
(c) detail the traffic control devices and facilities (i.e barricades, signs, lights etc);	TCPs 001-004, 006
(d) Ensure suitably qualified and experienced persons(s) undertaking the control of traffic through or around work sites on Council controlled roads;	Note
(e) The coordination, communication and cohesion between adjacent traffic control systems shall be addressed by the applicant and must satisfy all the requirements of AS 1742.03-2009	Note
(f) Where the TCP may change during the course of construction to facilitate new works, a revised traffic control plan shall be prepared and certified by a suitably qualified and experiences person(s) to prepare a Work Zone Traffic Management Plan. This plan must satisfy all the requirements of AS174203-2009 and the current version of the RMS Traffic control at work sites Manual and shall be submitted to Council prior to implementation	Note

Construction staging, proposed sequence of works & timing

The worksite locations described below are extracted from the Project Management Plan- Construction Staging.

The Construction site is completely enclosed with access point for construction vehicles and plant

STAGE 1

Construction will commence with the site office and Temp school construction -December 2020

STAGE 2

Permanent School construction

Peak traffic is expected during this stage and specifically the structural phase of the main building. A high volume of truck movements for deliveries of steel reinforcement, formwork materials and concrete and associated personnel will be experienced from August to December 2020 .

At a similar time, the temporary school also be installed with the peak period for this component being September - October 2020

Stage 3

Temp school removal & sports field construction, & complete remaining playing fields July 2021 - December 2021

Final landscaping construction July 2021

Stage 2 will commence while stage 1 is in operation, however after consultation and reviewing the program, there

Will be not any disruption to school traffic, the entry to the school is on Beale St while our construction site access is on

Northbourne, Therefore there is no impact associated with both stages in operation

The site is located at the corner of Northbourne Drive (to the east) and Bolwarra Drive (to the north) within Elara Estate in Marsden Park and is legally described as Lot 2889 in DP 1230906. Elara Estate is being developed by Stockland as a master planned community comprising of over 4000 homes, a neighbourhood retail precinct and a community centre within the Marsden Park Precinct of Sydney's North West Growth Area. The site is presently vacant and site preparation works are proposed to be carried out by the Applicant under Blacktown City Council (Council) development applications (DA) and through a Part 5 assessment via a Review of Environmental Factors (REF).

The proposed Marsden Park New Primary School site is currently a greenfield site located within the Marsden Park Precinct approximately 40 km to the north-west of the Sydney CBD. The site is located to the west of Northbourne Drive and approximately 400 m to the west of Richmond Road, as shown in Figure 1-1 (end of document). The site also has frontage along

Beale Street and Enmore Street to the west and south respectively. The site is located within the Blacktown City Council Local Government Area.

Adco Constructions shall continue to undertake all precautionary measures to ensure safety of site personnel and project inspectors and the conclusion of works.

Proposed Programme

The approximate programme for implementation of each work area is as follows:

Working hours

Day	Hours	Activity
Monday - Friday	0700 - 1800	Construction
Saturday	0800 - 1300	Construction
Sunday	No Work	
Public Holidays	No Work*	
By Exception		The site managers approval is required for work outside Of the normal construction hours listedabove. No person is permitted to work on site alone or without at least one member of ADCO site management team I attendance

Note: *Site works shall be planned to allow for shut-down during public holidays.

Managing Cumulative Impacts

SUCCESSIVE WORK ACTIVITIES

The Construction delivery vehicles are to be staged so that there is no cueing on main routes / roads or any other surrounding roads. Any large amounts of deliveries will need to be organised in advance to reduce any cumulative congestion impacts attributed to traffic.

The Site Manager & Nominated Traffic Manager on site are responsible for monitoring traffic conditions. In the event that construction traffic impacts do have a negative impact on the road network, Dunwood Recruitment shall liaise with BCC to solve the problem.

The construction team and its subcontractors are aware and conscious that residential impact is to be minimal. Although the program of works indicates that there are concurrent activities in all sections of the program, the activities are staged successively, and as such, cumulative impacts of the construction are not expected to be significant.

REVIEW AND MONITORING OF TRAFFIC CONDITIONS

Dunwood Traffic team & Adco Constructions Supervisor are responsible for monitoring traffic conditions. In the event that construction traffic does have a negative impact on traffic flow and associated road network, Adco shall liaise with Dunwood traffic team, Blacktown City Council and RMS for reactive planning.

NOITFICATION PLAN

Dunwood traffic and Adco will notify the public and local residents and businesses 24-36 hrs prior to any closures, may be required by letter-drop to residents and business within perimeter of construction site.

COUNCIL AND RMS NOTIFICATION

Any significant alterations to work staging, planning and/or significant impact to RMS or Council authorisation will be notified by Adco Construction Site Manager. There are no Road Occupancy Licence requirements on this project.

Work Area Assessment & Impacts

This section details the individual requirements for the work area,

It is anticipated that at the height of the project up to 20+ additional heavy vehicle movements per day would be experienced. Typically, however, an additional 10 heavy vehicle movements per day would be anticipated during working hours, peak time being between 10:00 – 14:00 daily

The number of truck movements is considered

low and would fall within typical fluctuations of daily traffic movements and therefore not adversely alter the existing operation of the road network.

However, to minimise any potential impacts on the performance and safety of the local road network from construction vehicles:

1. All deliveries will be within the approved work hours, with emphasis made on deliveries to be outside peak periods of road network activity where possible in order to reduce the impacts on traffic flows and safety to drivers.
2. Deliveries of materials to the site will be staggered over the course of a working day so that any queuing of vehicles occurs within the work site. The access road to the site from

Northbourne Drive will need to provide sufficient capacity to accommodate queued vehicles within the site boundaries and construction vehicles are not expected to tailback and impede traffic flow on the adjoining road network (i.e. Donnelly and Blackstone Streets).

It is noted that the proposed works will occur within a newly developed residential area that may have construction activities operating parallel to the school construction. Within the context of the broader road network, construction traffic activity associated with the proposed school will be spread throughout each day. It is therefore unlikely to cause notable impacts to the operation of the road network. Should there be a backup of heavy vehicles entering the site, these vehicles are to be queued within the site.

During school operation hours, limited access will be available for truck movements ingress and egress to minimise the impact of school users.

Implementation of Traffic Management

This Traffic Management Plan shall be a working document for the duration of the Contract, and read in conjunction with Vehicle Movement Plan, Site Safety Management Plan and Traffic Control Plans. Any amendments to TMP shall be documented.

A review of VMP and TCP will be completed to reflect any necessary adjustments. Brief characteristics of each document are as follows;

Traffic Management Plan – Management of contract conditions and safety of site personnel in relation to site access.

Vehicle Movement Plan - Movement of construction traffic, through and around work site.

Safety & Environmental Management Plan – Policies, work methods, audit forms relating to provision of Traffic Control

Traffic Control Planning – Control measures and Direction for vehicles, cyclists and pedestrians, and their movement along the existing road network.

- Adco Constructions objective is to maintain access and existing traffic movement requirements at property accesses and intersecting road, according to TMP and TCP.

- Two-way access shall be maintained at all times for traffic in both directions with minimum lane widths of 3.2meters.

- Adco Constructions shall be responsible for the safe movement of work traffic and workers into and out of the compound, working area, in accordance with RMS G10.

- Provision for the safe movement of all traffic into and out of the site shall be in accordance with the requirements of RMS G10.

Traffic Management During Construction

INGRESS & EGRESS – CONSTRUCTION VEHICLES

Construction materials, plant and equipment would be transported by trucks into and out of the Work Areas. Transport vehicles are expected to include excavators, tippers (under 5t), truck and bogies, semi-trailers (over 5t), passenger vehicles, and small plant.

Construction traffic will consist mainly of Light vehicles defined as under 5 tonne, & heavy vehicles defined as over 5 tonne , we have estimated at the height of the project an additional 15-20 heavy vehicles movements per day would be experienced.

We have estimated the following movements during stages outlined:

Stage 1 AM peak: 3 x heavy vehicles & 3x light vehicles

Stage 1 PM peak: 2 x heavy vehicles & 2 x light vehicles

Stage 1 Off peak: 3 x heavy vehicle & 2 x light vehicles

Stage 2 AM peak: 10x heavy vehicles including concrete trucks & 7 x light vehicles

Stag 2 PM peak: 10 x heavy vehicles including concrete trucks & 7 x light Vehicles

Stage 2 off peak: 7 x heavy vehicles including concrete trucks & 6 x light vehicles

Stage 3 AM peak: 1 x heavy & 2 light vehicles

Stage 3 PM peak: 2 x light vehicles

Stage 3 Off peak: 1 x heavy & 3 x light vehicles

While stage 1 & 2 are in progress we had looked at truck movements and its affects, after reviewing the layout, roads and site visits we have noted there should be no disruption to school traffic as the entrance for the school is on Beale street while the construction site access is on Northbourne, no NNMPS construction Traffic will be allowed past Enmore st / Beale street section to avoid any potential disruption However this will be monitored during peak times and changes will be made should this change i.e no truck movements will occur during school drop off and pick up times. Please refer to map on page 33.

All construction traffic will enter via Northbourne Dr as per TCP 004.

All vehicles will enter and leave site in a forward direction

All Vehicles will approach the site from Northbourne drive and turn left into the site (under direction of TC on busy days)

All vehicles will exit the site turning right only

All vehicles will be accepted directly into the site with no vehicles staging on the public roadways

All suppliers and subcontractors will be issued with the project Traffic management plan with directional maps to be issued to all delivery drivers prior to dispatch. Traffic controllers will be onsite for major operations e.g concrete pours and large deliveries as structural steel.

Traffic control to be onsite for busy days currently anticipated to be concrete pouring assisting with construction vehicles entry / exit using stop slow and guidance

HEAVY VEHICLE QUEUEING

All Heavy vehicle queuing will be minimal

TRUCK VOLUMES

Assessment of traffic volumes is difficult as little information is available for this area.

It is anticipated that at the height of the project up to 15-20 additional heavy vehicle movements per day would be experienced.

ACCESS TO ADJOINING PROPERTIES

Access to residents or businesses sharing boundaries with worksite will be provided by site traffic control or traffic signage indicating path of through travel. Access would be maintained at all times wherever practicable.

TRAFFIC DIVERSIONS

There are no foreseeable reasons for road closures. However, if at times a temporary or intermittent closure is necessary; traffic and cyclist shall be diverted to alternate side of road or routes of travel under guidance of traffic control and permits from Council and or RMS to do so.

PEDESTRIANS

Pedestrians are expected to use existing footpaths which are present in all directions around the work areas. In the case of impact to pedestrian or cyclist pathways being blocked or interrupted due to site works; traffic controllers will be engaged to facilitate safe passage for pedestrians and cyclists. All alternative facilities and locations for pedestrians and cyclists will be clearly signposted,

USE OF CRANE & LIFTING EQUIPMENT

Should lifting equipment be required, notification and permits application will be submitted to Council. If crane is to be positioned on road; and impede traffic flow, notification will be distributed to affected residents, businesses, public transport and emergency services.

EMERGENCY

Traffic Control and Adco Constructions Management team will ensure the route of travel to Safe Zone, is cleared for all site personnel and contractors. All plant and equipment will remain in work zone during this period. The provision of alternative facilities and locations for pedestrians and cyclists – Particular regard shall be given to the peak traffic times being school hours

IMAPCT ON PUBLIC TRANSPORT

School bus stop will not be affected by the proposed works Drop off and pickup areas will not be affected.

Residents and commercial enterprises in the vicinity of the work area will be notified of the changes in accordance with Section 0 of this Plan.

Minimal impact to public transport route, however STA and other regional bus services and Taxi Services shall be notified of proposed works and any significant changes durign the period of works.

CYCLIST ACCESS

Due to the vicinity there is currently no cyclist provisions however traffic control will be onsite to assist and use the same route as pedestrians

SITE PERSONNEL PARKING

Parking will be provided onsite where possible for employees, subcontractors and site visitors.

TRAFFIC MITIGATION DURING CONSTRUCTION

The Construction site is completely enclosed with two access points for construction vehicles and plant. Any unforeseen queueing will be redirected by traffic control

The performance of traffic control measures will be monitored by observation to assess its performance. If the measures taken to control traffic perform inefficiently, appropriate changes will be implemented to maximise efficiency. This will be done in conjunction with Blacktown city Council, Adco Constructions and Dunwood

If any operational problems are experienced, consideration will be given to use traffic controllers to manage traffic congestion.

TRAFFIC CONTROL REQUIREMENTS

All site ingress and egress points will require Traffic Control in accordance with the RMS Guideline *Traffic Control at Work Sites,* and *Australian Standard 1742.3*.

The main ingress and egress points for this Work Area are within the boundaries of Blacktown City Council road perimeter.

Safe and simple traffic control for all road users shall be provided at all site access points in accordance with standard requirements.

TCP's are to be developed/ modified and kept up to date with site requirements during the life of the Detail Construction Traffic

Management Plan can be coordinated with the onsite staging requirements. TCP's are to be developed by authorised Roads and Maritime accredited personnel prior to the commencement of construction.

During construction, the contractor (Dunwood Recruitment)shall each morning, prior to work commencing, ensure all

signage is erected in accordance with the TCP and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required.

Any variation to the layout of the TCP on site is to be recorded and certified by authorised Roads and Maritime accredited personnel. The associated TCP road signage will inform drivers of works activities in the area including truck movements in operation.

DRIVER CODE OF CONDUCT

It is the responsibility of all persons who are required to drive into the worksite *(including construction employees, sub-contractors, delivery drivers, and others*); to ensure they enter and exit the worksite with caution and care. As the site is governed by NSW Department of Education regulations; All persons entering, walking or driving, into and out of the worksite must do so in with full consideration of safety, courtesy and RMS road rules.

- Minimise the impacts of earthworks and construction on the local and regional road network conditions
- Minimise conflict with other users
- Minimise road traffic noise
- Ensure truck drivers follow specified routes

PROVISION FOR OTHER USERS

As the Construction site is completely enclosed with access points on Northbourne dr . General road users shall not be affected by the project (*road users include, but are not limited to cyclists, emergency vehicles and heavy vehicles*). The requirements are detailed below:

- No cycle route shall be affected by the project
- Provision for cyclists has been assessed as per the RMS's Traffic Management at Worksites Manual.
- Emergency vehicles shall have unimpeded access during the construction phase.
- Heavy and articulated vehicles may travel through during construction phase.

Note: Where access is unavoidable, both travel path and pedestrian paths to be managed by onsite Traffic Control Contractor inside exclusion times.

At times, contracted works may impact on access of local residents to road network; in this event, traffic controllers will be engaged to facilitate safe through travel.

EMERGENCY or UNCOMMON DISRUPTION NOTIFICATION PLAN

In the event of emergency Adco Constructions shall notify all emergency response stakeholders and advise of the nature of emergency, site locations and potential impact to traffic flow. The notification is to be prepared by Adco or Link TMT; and communicated to Traffic Live NSW, RMS or local police station (traffic division).

http://m.livetraffic.rta.nsw.gov.au

www.service.nsw.gov.au/transaction/report-traffic-incident

call to RMS 131700; and local radio station for broadcast of 'potential congestion'

EMERGENCY RESPONSE PROCEDURE

In the event of the event of emergency and management of incidents, the Project Emergency Controller shall make direct contact with the relevant emergency services as required.

Any incident or emergency on site; (or one that is contained within the streets associated with construction work), the site 'Emergency Response Procedures' will be initiated by Site Manager.

Note: The site and traffic conditions pertaining to works on the project will be constantly monitored by the Project Manager. Any incidents occurring on the road or within the work zone and or affecting the smooth running of road traffic will be notified to Blacktown City Council.

For details of primary contacts for this project, please refer to Project Management Plan.

Review and Monitoring of Traffic Conditions

Monitoring of traffic flow and the effective operation of egress and ingress shall be maintained by Project Manager. The Project Manager is responsible for the traffic management subcontract and will liaise with the subcontractor to gain an understanding of any arising traffic management concerns.

The Project Manager is responsible for the coordination of the activities of work crews on site during installation, inspection, testing, commissioning and servicing and subsequently has an understanding of the operations across the worksite that make up the works under the project.

Reports of any traffic conditions which may be of concern will be reported back to the representatives from BLACKTOWN CITY COUNCIL as required.

Lane, Geometry and Signage Arrangements

The temporary road signage can be viewed in Traffic Control Plans.

No further changes are proposed (either by number or width) nor intersection geometry.

Car Parking (temporary) on site

Site Compound – On Site

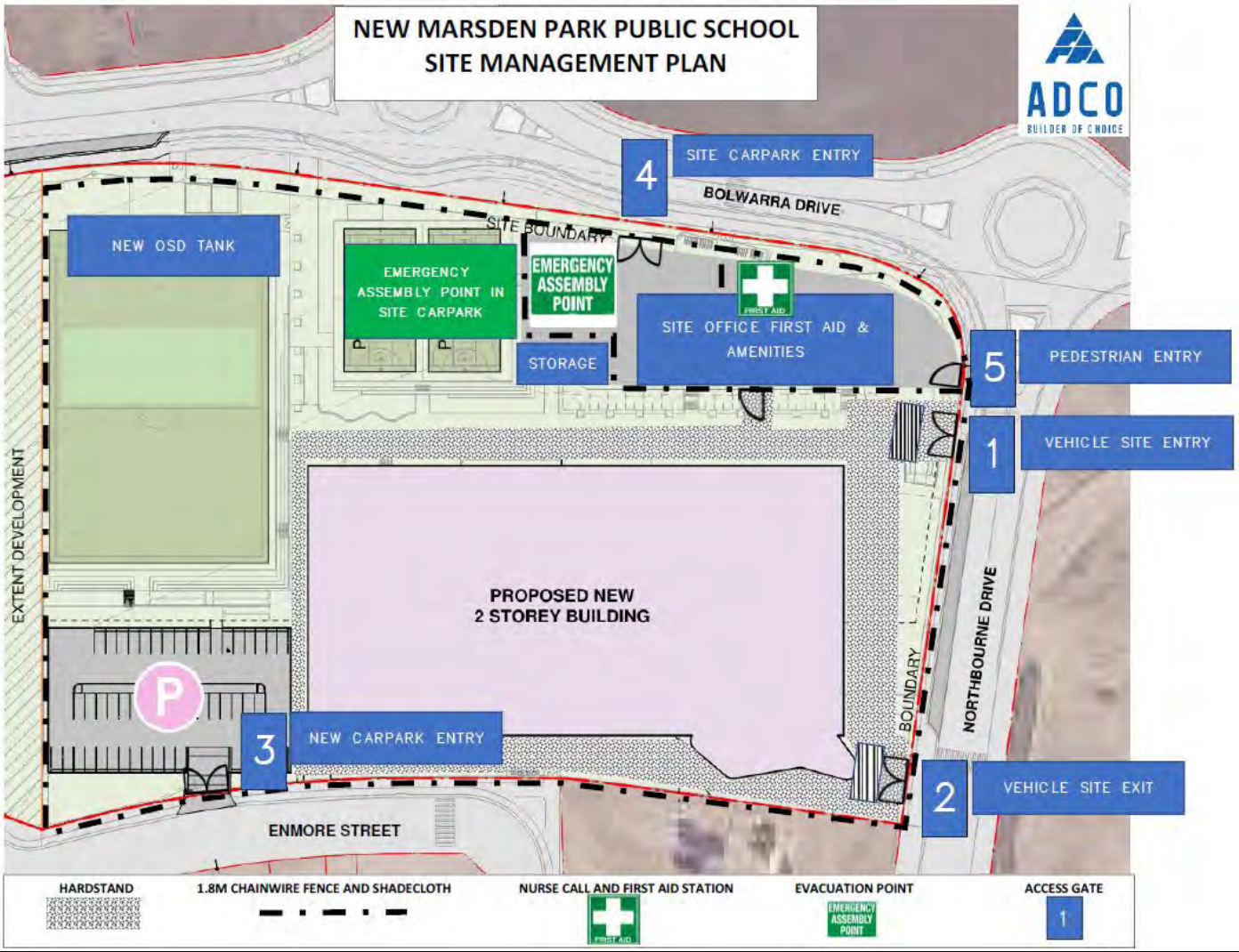
Stockpile Site – On Site

Traffic Control Plans

Any amendments to Traffic plans shall be documented, amended and signed off by Lisa Hayes. Any changes that occur on site can be modified by trained personnel, updates sent to lisa Hayes for update and control. Once approved the Traffic plans will be sent to the site supervisor and Project manager for distribution

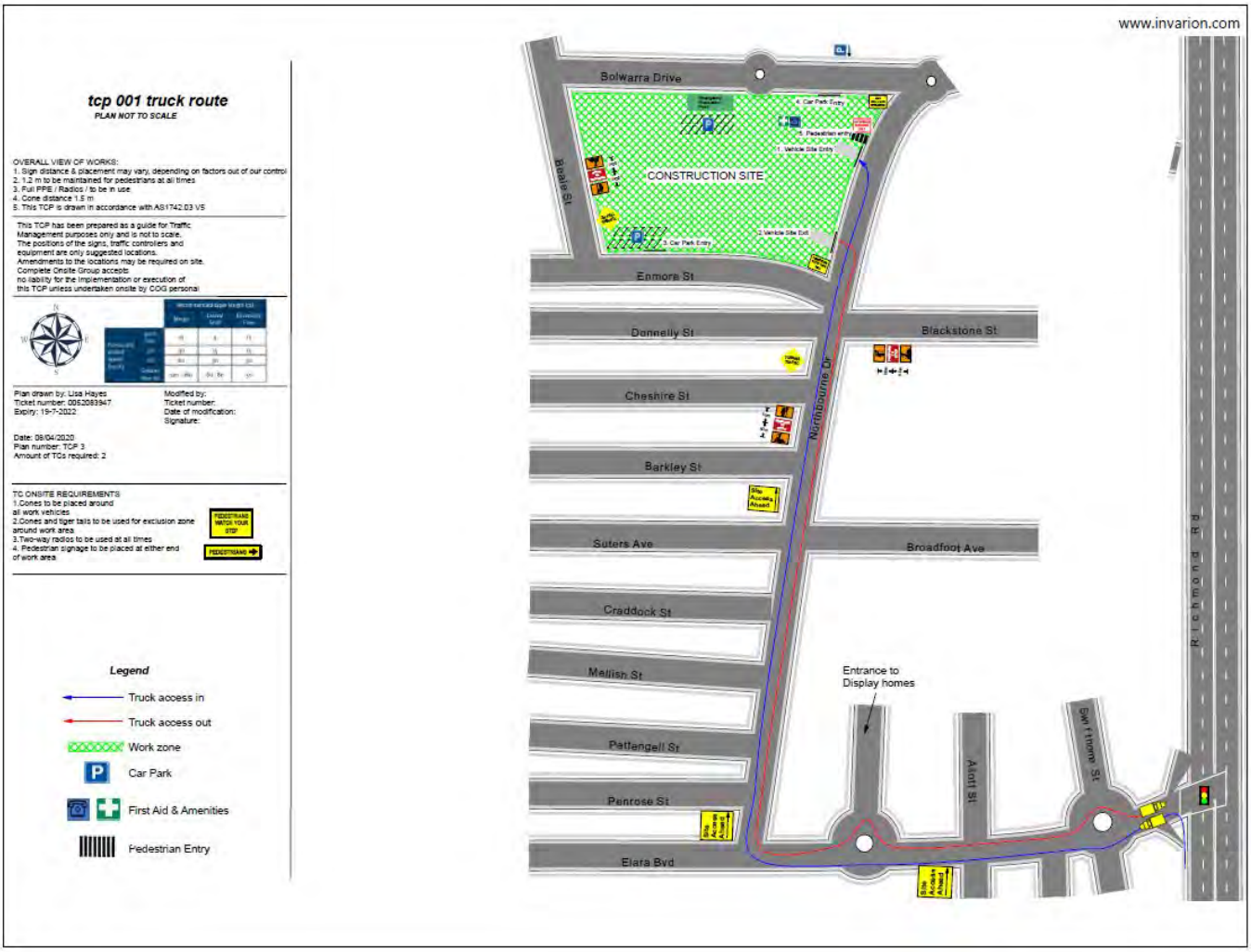
TCP 001 – Truck Access Route- this will only be used when traffic control is on site
TCP 002 - Overview
TCP 003 – Overview
TCP 004 – Site Entry / Exit
TCP 005 – Hospital Route
TCP 006 – Pedestrian Mgt Plan

SITE MANAGEMENT PLAN

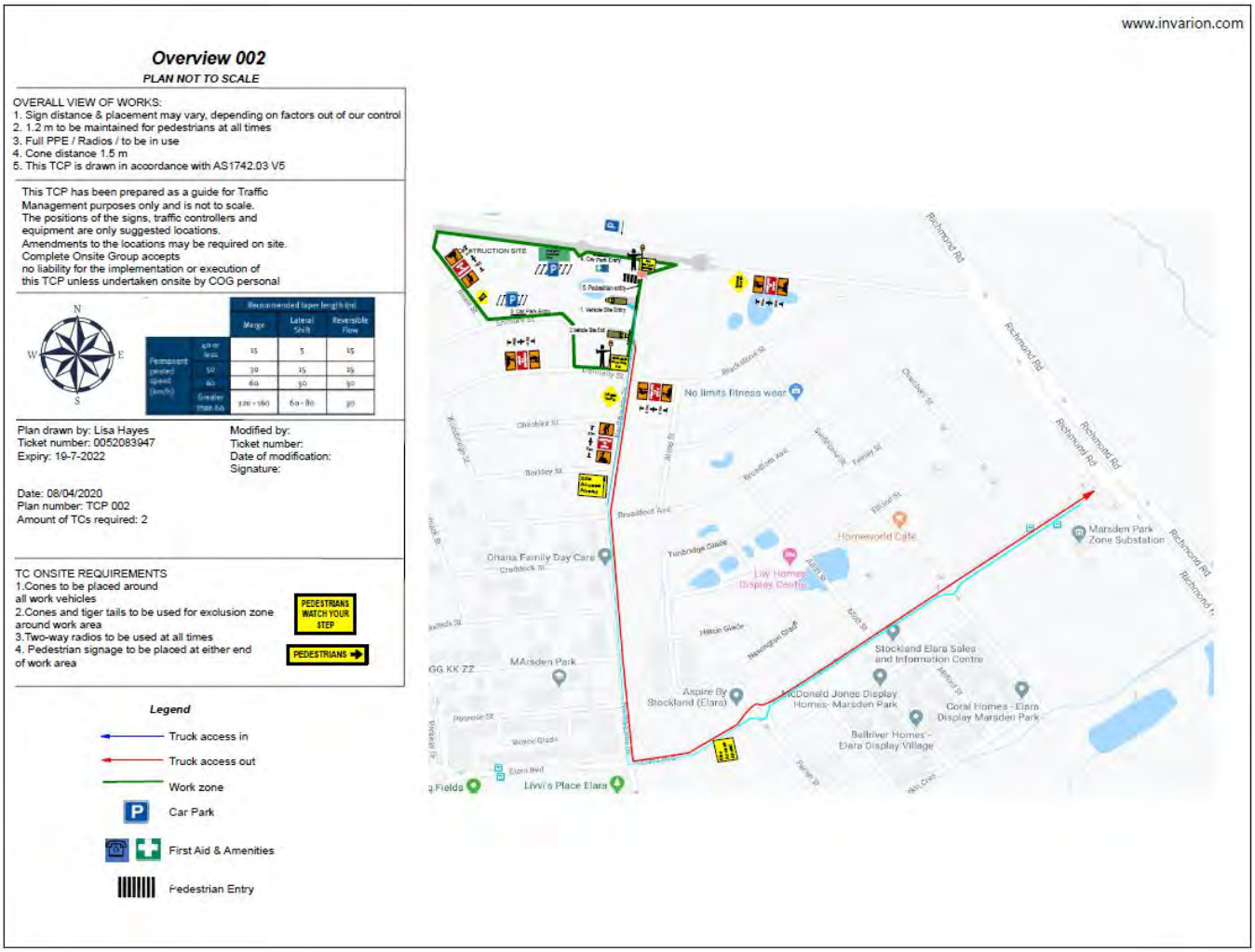


– Signage to be displayed only when busy days are orgainised under the direction or ADCO

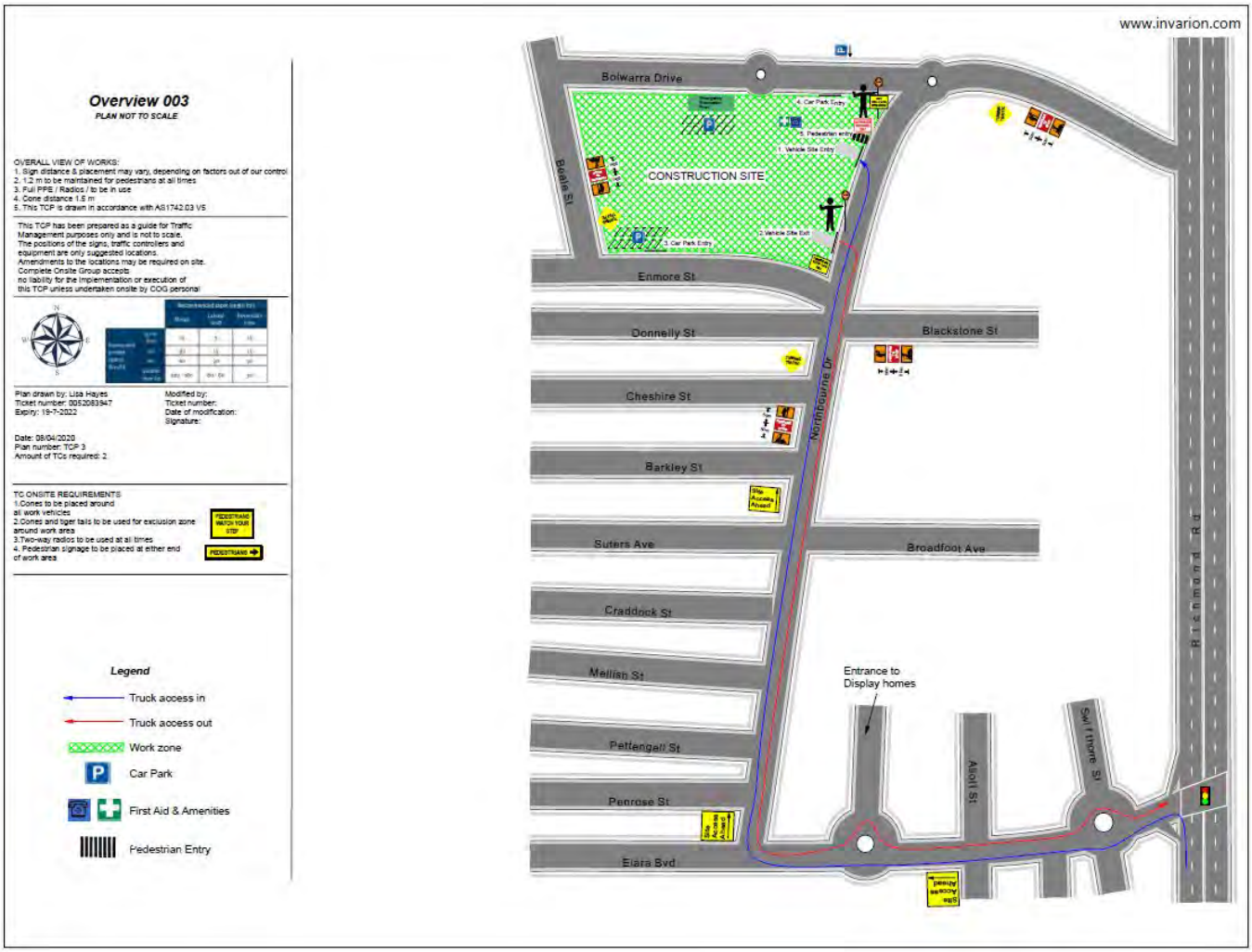
TCP 001 Truck route



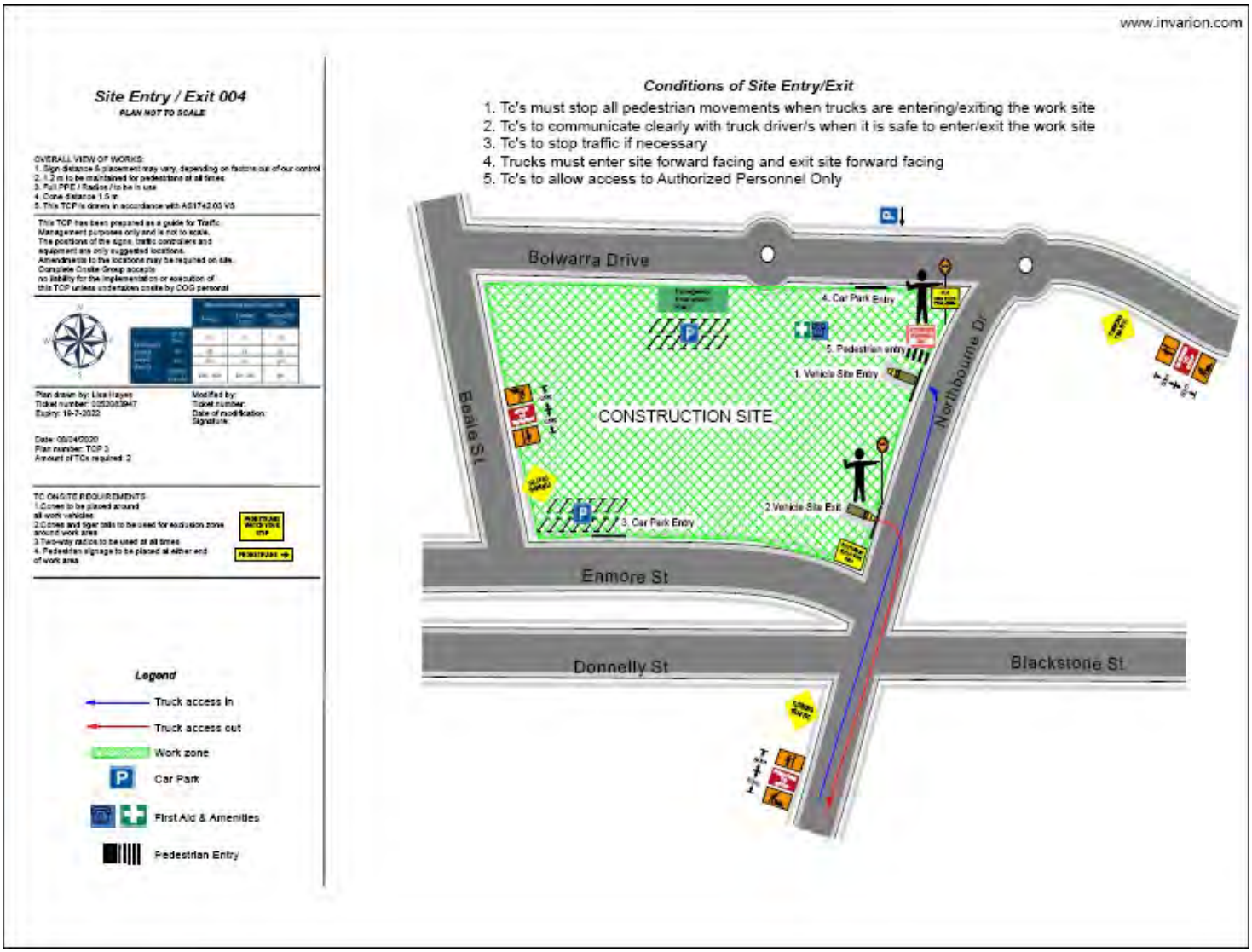
TCP 002


www.invarion.com
Overview 002
PLAN NOT TO SCALE
OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5
This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale.
The positions of the signs, traffic controllers and equipment are only suggested locations.
Amendments to the locations may be required on site.
Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal
Recommended taper length (m)
Merge
Lateral Shift
Reversible Flow
Permanent posted speed (km/h)
40 or less
50
60
Greater than 60
15
30
60
120 - 160
5
15
30
60 - 80
15
25
30
80
Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022
Modified by:
Ticket number:
Date of modification:
Signature:
Date: 08/04/2020
Plan number: TCP 002
Amount of TCs required: 2
TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area
PEDESTRIANS WATCH YOUR STEP
PEDESTRIANS
Legend
Truck access in
Truck access out
Work zone
Car Park
First Aid & Amenities
Pedestrian Entry
No limits fitness wear
Homeworld Cafe
Marsden Park Zone Substation
Ohana Family Day Care
Lay Homes Display Centre
MArsden Park
Stockland Elara Sales and Information Centre
Aspire By Stockland (Elara)
McDonald Jones Display Homes- Marsden Park
Coral Homes - Elara Display Marsden Park
Bellriver Homes - Elara Display Village
Livvi's Place Elara
Richmond Rd

TCP 003


www.invarion.com
Overview 003
PLAN NOT TO SCALE
OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5
This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal
Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022
Modified by:
Ticket number:
Date of modification:
Signature:
Date: 08/04/2020
Plan number: TCP 3
Amount of TCs required: 2
TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area
PEDESTRIANS WATCH YOUR STEP
PEDESTRIANS
Legend
Truck access in
Truck access out
Work zone
Car Park
First Aid & Amenities
Pedestrian Entry
Bolwarra Drive
CONSTRUCTION SITE
Buckle St
Enmore St
Donnelly St
Blackstone St
Cheshire St
Northbourne Dr
Barkley St
Suters Ave
Broadfoot Ave
Craddock St
Mellish St
Entrance to Display homes
Pettengall St
Penrose St
Elara Blvd
Aloft St
Swiftmore St
Richmond Rd

TCP 004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Site Entry / Exit 004
PLAN NOT TO SCALE
Conditions of Site Entry/Exit
1. Tc's must stop all pedestrian movements when trucks are entering/exiting the work site
2. Tc's to communicate clearly with truck driver/s when it is safe to enter/exit the work site
3. Tc's to stop traffic if necessary
4. Trucks must enter site forward facing and exit site forward facing
5. Tc's to allow access to Authorized Personnel Only
Bolwarra Drive
Beale St
Northbourne Dr
Enmore St
Donnelly St
Blackstone St
CONSTRUCTION SITE
4. Car Park Entry
5. Pedestrian entry
1. Vehicle Site Entry
2 Vehicle Site Exit
3. Car Park Entry
Legend
Truck access in
Truck access out
Work zone
Car Park
First Aid & Amenities
Pedestrian Entry

TCP 005

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OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

		Recommended taper length (m)		
		Merge	Lateral Shift	Reversible Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

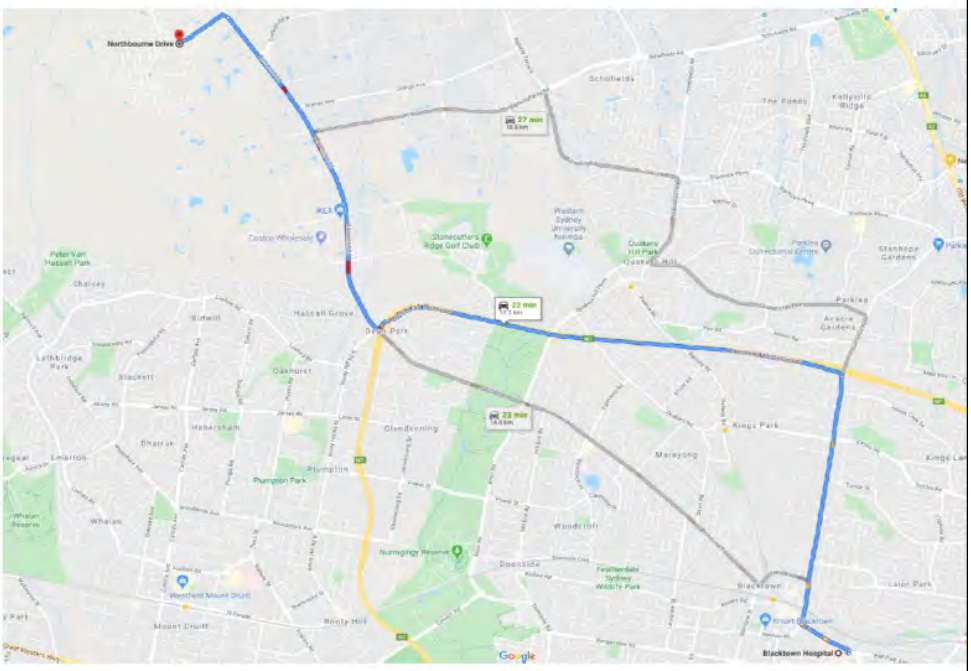
Modified by:
Ticket number:
Date of modification:
Signature:

Date: 26/02/2020
Plan number: TCP 5

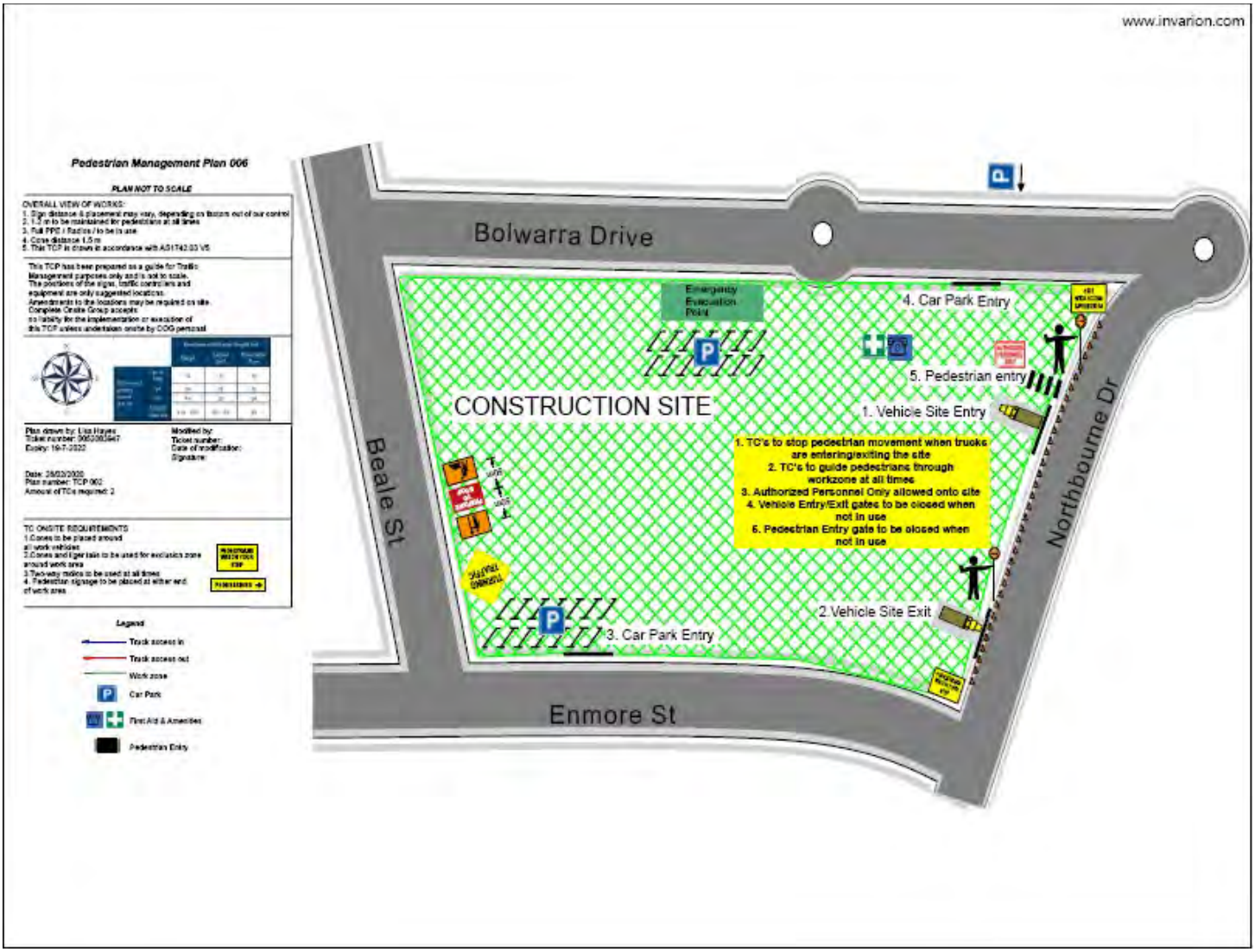
TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

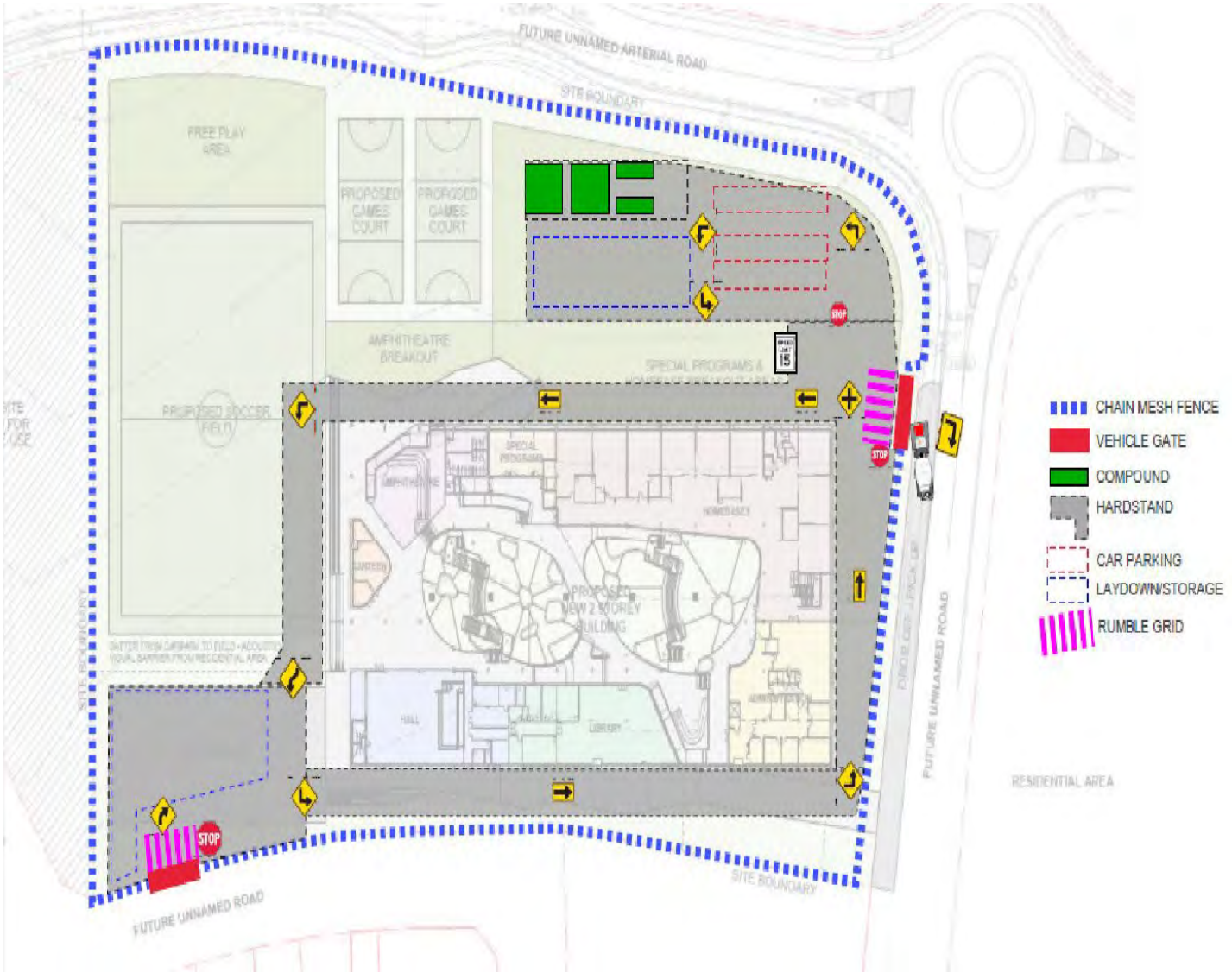
PLAN NOT TO SCALE

NEAREST HOSPITAL ROUTE FROM NORTHBOURNE DR 005

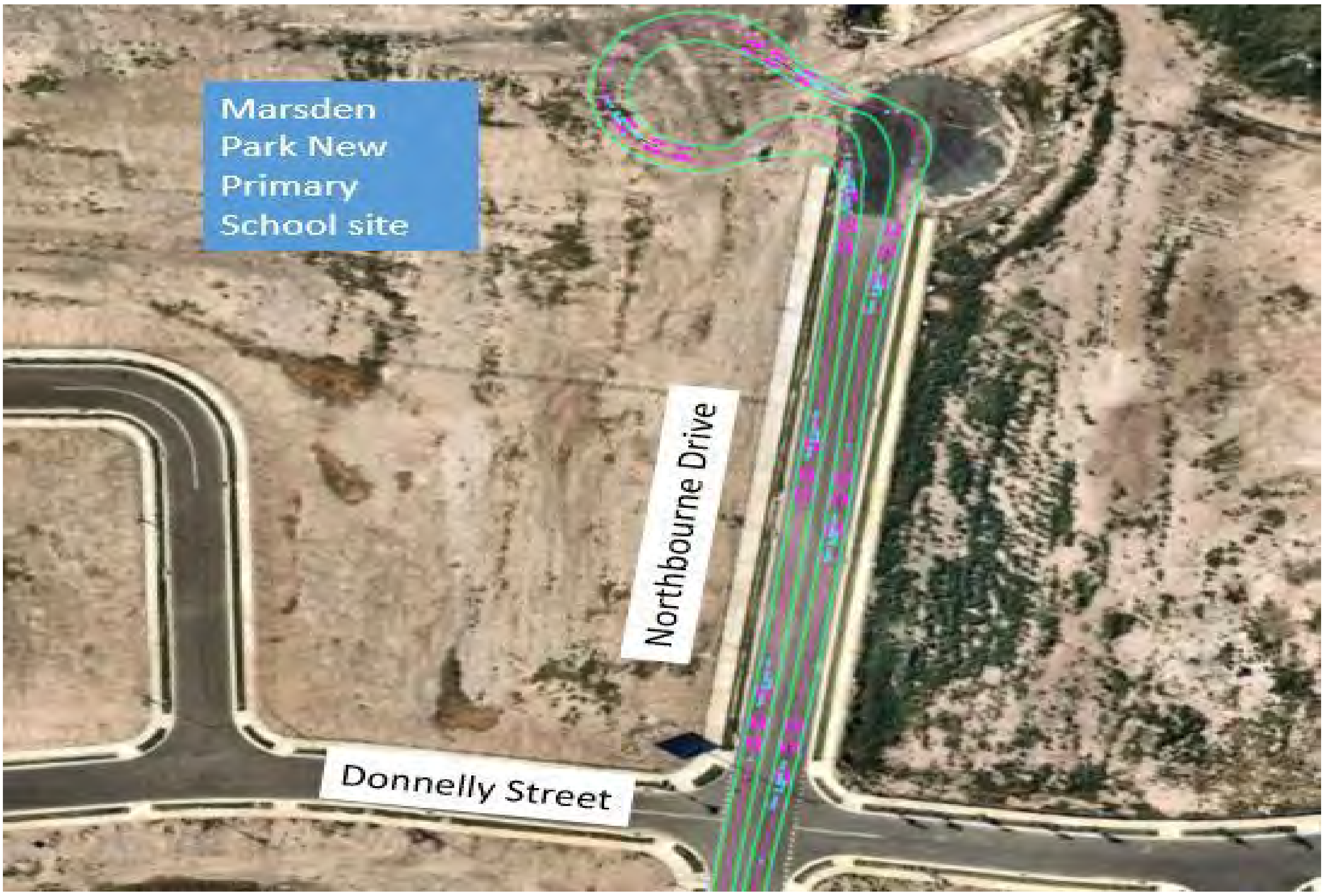


TCP 006


www.invarion.com
Pedestrian Management Plan 006
PLAN NOT TO SCALE
Bolwarra Drive
Beale St
Northbourne Dr
Enmore St
CONSTRUCTION SITE
Emergency Evacuation Point
4. Car Park Entry
5. Pedestrian entry
1. Vehicle Site Entry
2.Vehicle Site Exit
3. Car Park Entry
1. TC's to stop pedestrian movement when trucks are entering/exiting the site
2. TC's to guide pedestrians through workzone at all times
3. Authorized Personnel Only allowed onto site
4. Vehicle Entry/Exit gates to be closed when not in use
5. Pedestrian Entry gate to be closed when not in use
Legend
Truck access in
Truck access out
Work zone
Car Park
First Aid & Amenities
Pedestrian Entry


FUTURE UNNAMED ARTERIAL ROAD
SITE BOUNDARY
FREE PLAY AREA
PROPOSED GAMES COURT
PROPOSED GAMES COURT
AMPHITHEATRE BREAKOUT
SPECIAL PROGRAMS & ADMINISTRATION
PROPOSED SOCCER FIELD
PROPOSED NEW 2 STOREY BUILDING
HALL
LIBRARY
STOP
FUTURE UNNAMED ROAD
SITE BOUNDARY
FUTURE UNNAMED ROAD
RESIDENTIAL AREA
CHAIN MESH FENCE
VEHICLE GATE
COMPOUND
HARDSTAND
CAR PARKING
LAYDOWN/STORAGE
RUMBLE GRID

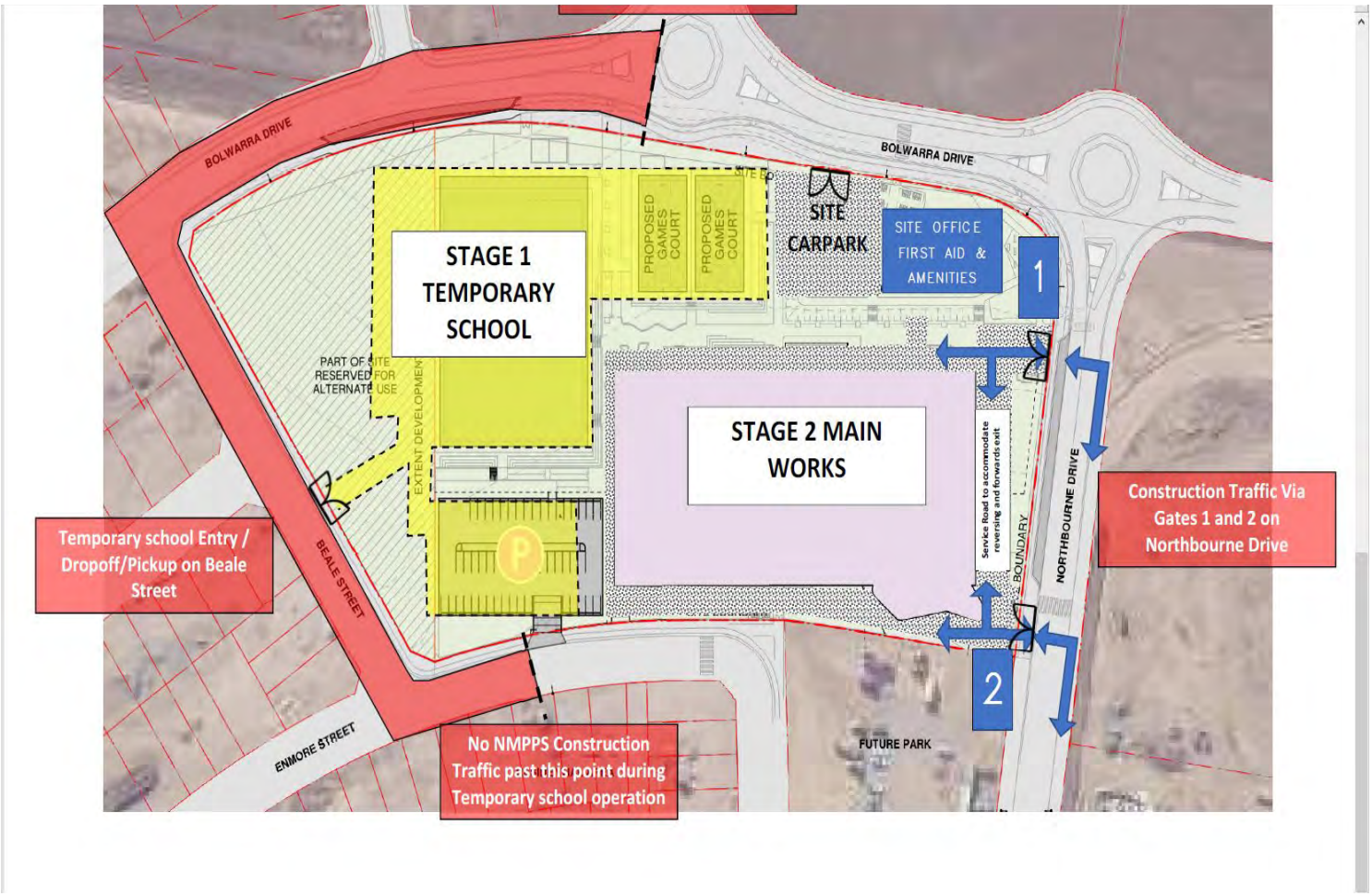
Marsden Park New
Primary School site
Richmond Road
Elara
Boulevard
Northbourne
Drive



Marsden
Park New
Primary
School site
Northbourne Drive
Donnelly Street

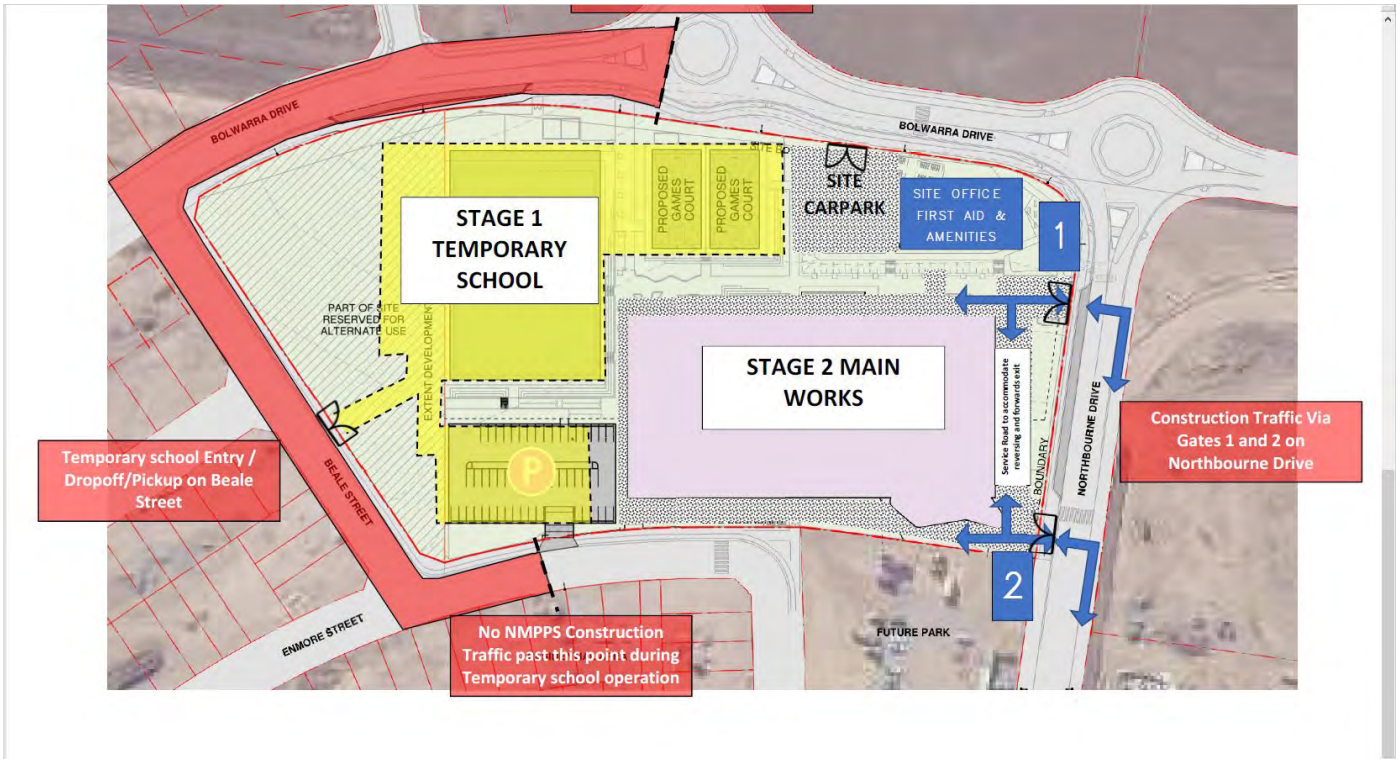

To site
From site
Marsden Park New Primary School site
Northbourne Drive
Richmond Road
Richmond Rd
Elara Boulevard
Stockland Elara Sales and Information Centre
Livvi's Place Elara
Simonds Homes Marsden Park
Flores
Wear tions
Beale St
Eades Street
Blanch St
Bloomfield Street
Atkinson Street
Barkley Street
Suters Ave
Craddock Street
Renton Street
Mellish Street
Pettengell Street
Penrose Street
Elara Blvd
Melaleuca St
Parkway Drive
Sylan Street
Floribunda Parade
Blackstone Street
Winder St
Chambers Street
Broadfoot Ave
Swifthorne Avenue
Donald Street
Alsop Street
Newington Glade
Parish Street
Watkin Cres


Project Gate
CAUTION
LOOK OUT FOR CONSTRUCTION TRAFFIC
CONSTRUCTION ZONE SPEED LIMIT 10 MPH
CAUTION
LOOK OUT FOR CONSTRUCTION TRAFFIC
Northbourne Drive
Through Roundabout
Through Roundabout
Giveway - Right Turn
Bus Stop
Bus Stop
Traffic Lights
Elara Blvd
Bus Stop
Exit Left of Richmond Rd


BOLWARRA DRIVE
BOLWARRA DRIVE
SITE CARPARK
SITE OFFICE FIRST AID & AMENITIES
1
PROPOSED GAMES COURT
PROPOSED GAMES COURT
STAGE 1 TEMPORARY SCHOOL
PART OF SITE RESERVED FOR ALTERNATE USE
EXTENT DEVELOPMENT
STAGE 2 MAIN WORKS
Service Road to accommodate reversing and forwards exit
BOUNDARY
NORTHBOURNE DRIVE
Construction Traffic Via Gates 1 and 2 on Northbourne Drive
Temporary school Entry / Dropoff/Pickup on Beale Street
BEALE STREET
2
ENMORE STREET
No NMPPS Construction Traffic past this point during Temporary school operation
FUTURE PARK

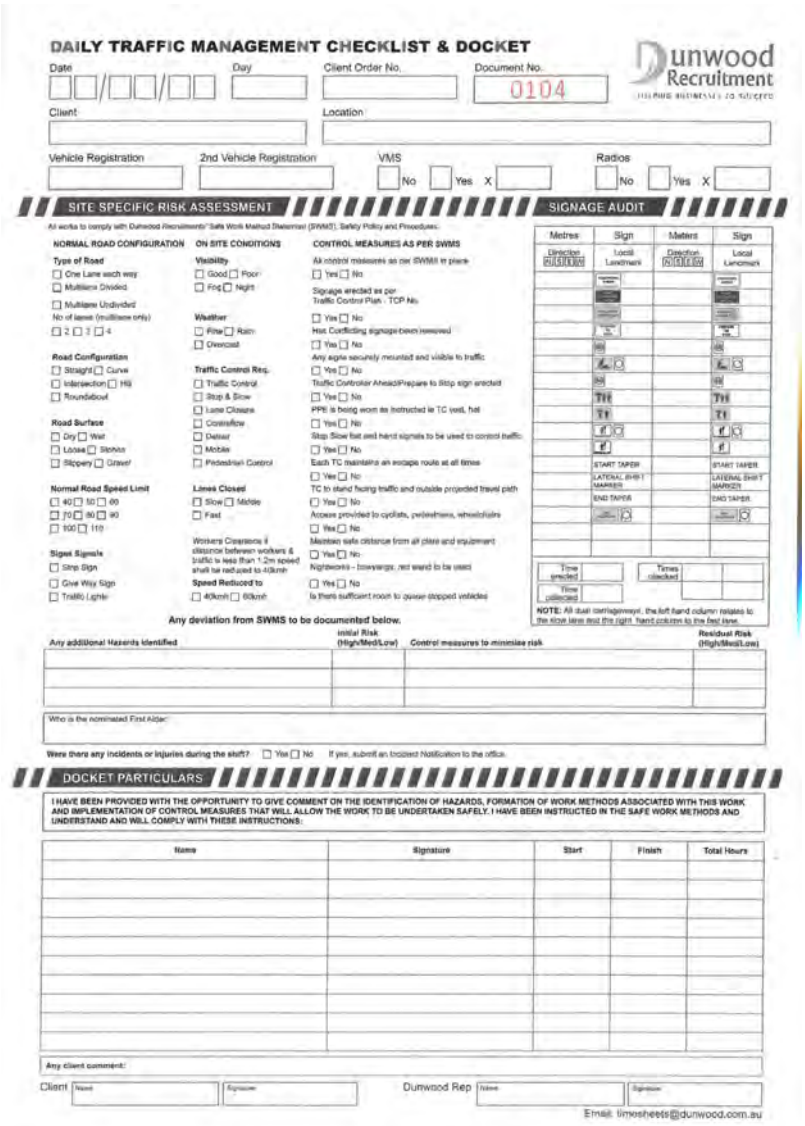
MARSDEN PARK PUBLIC SCHOOL
SSD CONDITION COMPLIANCE

SSD No:	9808
SSD Condition No.:	B21 (c)
SSD Condition wording:	**Construction Parking** B21. Prior to the commencement of construction of Stage 1 and Stage 2, evidence of compliance of construction parking and access arrangements with the following requirements must be submitted to the Certifier: (a) all vehicles must be able to enter and leave the Site in a forward direction; (b) the swept path of the longest construction vehicle entering and exiting the site in association with the new work, as well as manoeuvrability through the site, is in accordance with the latest version of AS 2890.2; and (c) the safety of vehicles and pedestrians accessing adjoining properties and the temporary school in Stage 1 has been addressed.
How is the condition proposed to be addressed:	Referring to the attached diagram – ***SSD 9809-Condition B21-Site Management Plan-Construction Parking Rev A***, the primary access to the construction site will be via Gates 1 and 2 located on Northbourne Drive. Pedestrian Entry including Parent Drop off and Pick-up to the Temporary School will be via Beale Street on opposite side of the site. No construction traffic associated with ADCO's works for this Project will access Beale Street. All subcontractors and suppliers will be provided with the beforementioned diagram Please note Northbourne Drive north of Donnelly Street and Bolwarra Drive East of Beale have security gates restricting access as they are part of the Stockland Elara Estate construction zone. No public access to these areas is currently available.



Daily site checklist

Part of the daly requrement rior to ocmmencing daily activites on site are the following documents:



DAILY TRAFFIC MANAGEMENT CHECKLIST & DOCKET

Dunwood Recruitment

Date / / Day Client Order No. Document No. 0104

Client Location

Vehicle Registration 2nd Vehicle Registration VMS No Yes X Radios No Yes X

SITE SPECIFIC RISK ASSESSMENT

All works to comply with Dunwood Recruitments' Safe Work Method Statement (SWMS), Safety Policy and Procedures.

NORMAL ROAD CONFIGURATION

Type of Road
- One Lane each way
- Multilane Divided
- Multilane Undivided

No of lanes (multilane only) 2 3 4

Road Configuration
- Straight Curve
- Intersection Hill
- Roundabout

Road Surface
- Dry Wet
- Loose Slippery
- Slippery Gravel

Normal Road Speed Limit
- 40 50 60
- 70 80 90
- 100 110

Signal Signals
- Stop Sign
- Give Way Sign
- Traffic Lights

ON SITE CONDITIONS

Visibility
- Good Poor
- Fog Night

Weather
- Fine Rain
- Overcast

Traffic Control Req.
- Traffic Control
- Stop & Slow
- Lane Closure
- Contraflow
- Detour
- Mobile
- Pedestrian Control

Lanes Closed
- Slow Mobile
- Fast

Workers Clearance if distance between workers & traffic is less than 1.2m speed shall be reduced to 40km

Speed Reduced to
- 40km 60km

CONTROL MEASURES AS PER SWMS

All control measures as per SWMS in place Yes No

Signage erected as per Traffic Control Plan - TCP No.

Yes No

Has Conflicting signage been removed Yes No

Any signs securely mounted and visible to traffic Yes No

Traffic Controller Ahead/Prepare to Stop sign erected Yes No

PPE is being worn as instructed ie TC vest, hat Yes No

Stop Slow bat used hand signals to be used to control traffic Yes No

Each TC maintains an escape route at all times Yes No

TC to stand facing traffic and outside projected travel path Yes No

Access provided to cyclists, pedestrians, wheelchairs Yes No

Maintain safe distance from all plant and equipment Yes No

Nightworks - lowvisvests, red wand to be used Yes No

Is there sufficient room to queue stopped vehicles

SIGNAGE AUDIT

Metres Direction	Sign Local Landmark	Meters Direction	Sign Local Landmark
	START TAPER		START TAPER
	LATERAL SHIFT MARKER		LATERAL SHIFT MARKER
	END TAPER		END TAPER

Time erected Time collected Times checked

NOTE: All dual carriageways, the left hand column relates to the slow lane and the right hand column to the fast lane.

Any deviation from SWMS to be documented below.

Any additional Hazards identified	Initial Risk (High/Med/Low)	Control measures to minimise risk	Residual Risk (High/Med/Low)

Who is the nominated First Aider:

Were there any incidents or injuries during the shift? Yes No If yes, submit an Incident Notification to the office.

DOCKET PARTICULARS

I HAVE BEEN PROVIDED WITH THE OPPORTUNITY TO GIVE COMMENT ON THE IDENTIFICATION OF HAZARDS, FORMATION OF WORK METHODS ASSOCIATED WITH THIS WORK AND IMPLEMENTATION OF CONTROL MEASURES THAT WILL ALLOW THE WORK TO BE UNDERTAKEN SAFELY. I HAVE BEEN INSTRUCTED IN THE SAFE WORK METHODS AND UNDERSTAND AND WILL COMPLY WITH THESE INSTRUCTIONS:

Name	Signature	Start	Finish	Total Hours

Any client comment:

Client Name Signature Dunwood Rep Name Signature

Email: timesheets@dunwood.com.au

SWMS – on request

Consultation record

Blacktown City Council

TfNSW

Identified Party to Consult:	Blacktown City Council
Consultation type:	Verbal and email – email confirmation of receipt attached
When is consultation required?	Prior to commencement, During construction and when any changes arise throughout the project
Why	Section 5.1 & 6
When was consultation scheduled/held	Started in 19/06/2020 via email with guidance on where to send the final document and Plans Numerous phone calls over the next 3 weeks to assist with the process
When was consultation held	Initially 19/06/2020 and final 01/07/2020 Approval given 07/07/2020
Identify persons and positions who were involved	Abdu Noor – Senior Traffic management Officer
Provide the details of the consultation	Introduction to project Presentation of CTMP Plans Projected Traffic management
What specific matters were discussed?	Traffic management plans Truck access Local access Pedestrian routes
What matters were resolved?	No issues raised
What matters are unresolved?	n/a
Any remaining points of disagreement?	n/a
How will SINSW address matters not resolved?	

This CTMP is based on the information that was obtained from numerous sources.

.

This plan is presented by Lisa Hayes on behalf of Dunwood Recruitment .

Signed Lisa Hayes

Lisa Hayes Traffic
Traffic Manager

Dunwood

Elizabeth Creswell

From: Elizabeth Creswell
Sent: Friday, 17 July 2020 2:39 PM
To: Dean Israel; Billy.Yung@transport.nsw.gov.au; development.sydney@transport.nsw.gov.au
Cc: Matthew Wilson; Matthew Wilkinson; Dean Israel; Emma Bunn; Jeremy Stott; Hussein Najdi; Rachel Gray
Subject: RE: Att Malgy Coman - New Marsden Park Public School - SSD Condition B14 CTPMSP
Attachments: SSD 9809 - Condition B14 B15 B20 - CTPMSP and TCP.pdf

Good Afternoon Billy and Malgy,

Just to confirm that, as no comment was received on the attached Construction Traffic and Pedestrian Management Plan (CTPMP) by the below-mentioned date, we intend to proceed with works on the basis of the plan from Monday 20 July 2020.

I note that the telephone discussion between Billy Yung (Senior Transport Planner, TfNSW) and Dean Israel (Project Manager, ADCO Constructions), confirmed that TfNSW would be unlikely to provide comment but that the CTPMP should be submitted to Malgy Coman via email. The plan was emailed accordingly on 8th July 2020, with follow up as per below correspondence, and we trust that it did not raise any concerns.

Should you have any need to discuss the plan in the future, please contact me anytime on 0418 592 825.

Regards

Elizabeth Creswell
Senior Design Manager

ADCO Constructions Pty Ltd
Level 2, 7-9 West Street, North Sydney NSW 2060
T 02 8437 5000 **M** 0418 592 825
W www.adcoconstruct.com.au

From: Dean Israel <deani@adcoconstruct.com.au>
Sent: Friday, 10 July 2020 12:23 PM
To: Billy.Yung@transport.nsw.gov.au; development.sydney@transport.nsw.gov.au
Cc: Matthew Wilson <matthew@adcoconstruct.com.au>; Elizabeth Creswell <ecreswell@adcoconstruct.com.au>
Subject: RE: Att Malgy Coman - New Marsden Park Public School - SSD Condition B14 CTPMSP

Good Afternoon Billy and Malgy,

Just following up my email below, if you do have any comments regarding our proposed traffic management plans can you please respond by COB Monday 13 July.

Thank you

Dean Israel
Project Manager

ADCO Constructions Pty Ltd
Level 2, 7-9 West Street, North Sydney NSW 2060
T 02 8437 5000 **M** 0413 777 152
W www.adcoconstruct.com.au

From: Dean Israel
Sent: Wednesday, 8 July 2020 8:38 AM
To: Billy.Yung@transport.nsw.gov.au; development.sydney@transport.nsw.gov.au
Cc: Matthew Wilson <matthew@adcoconstruct.com.au>; Elizabeth Creswell <ecreswell@adcoconstruct.com.au>
Subject: Att Malgy Coman - New Marsden Park Public School - SSD Condition B14 CTPMSP

Good Morning Billy (and Malgy),

As per our phone conversation yesterday please find attached the proposed Construction Traffic and Pedestrian Management Plan to satisfy condition B14 of the SSD consent for the New Marsden Park Public School. The project is located on the northern outskirts of the Stocklands Elara development on the corner of Northbourne and Bolwarra Drive Marsden Park.

For your information the relevant SSD condition states:

B14. A Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following:

- *(a) be prepared by a suitably qualified and experienced person(s);*
- ***(b) be prepared in consultation** with Council and **TfNSW;***
- *(c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services;*
- *(d) detail heavy vehicle routes;include location of all proposed work zones;*

(e) *details of the haulage routes and the construction hours;*

(f) *details of estimated number and type of construction vehicle movements including morning and afternoon peak and off-peak movements for each stage of construction;*

(g) *details of the construction program highlighting details of peak construction activities and proposed construction staging; and*

(h) *details of the measures that are to be implemented to mitigate the potential impacts associated with the construction of Stage 2 while Stage 1 is in operation including scheduling truck movements outside drop-off and pick-up times for the temporary school.*

We provide this plan to you to provide TfNSW an opportunity to review and comment as required. Should you wish to discuss any component of the plan, please contact me directly on 0413 777 152.

Dean Israel
Project Manager

ADCO Constructions Pty Ltd
Level 2, 7-9 West Street, North Sydney NSW 2060
T 02 8437 5000 **M** 0413 777 152
W www.adcoconstruct.com.au

Education
School Infrastructure

Post Approval Consultation Record – SSD Condition B14 (b) CTPMSP

Identified Party to Consult:	Transport for NSW
Consultation type:	Phone Call and Email correspondence
When is consultation required?	Prior to the start of construction
Why	Refer SSD conditions B14 (b)
When was consultation scheduled/held	Tuesday 07/07/20 abd Wednesday 08/07/20
When was consultation held	As above
Identify persons and positions who were involved	Billy Yung Senior Transport Planner – Transport NSW Phone Conversation and Email Malgy Coman Development Officer – Transport NSW Mohammad Irfan Network & Safety Officer – RMS Left Phone Message
Provide the details of the consultation	07/07/20 Tried Calling Mohammad Irfan from RMS as he was a contact for a previous SSD project with a similar condition. Left a voice message 07/07/20 Phone Conversation with Billy Yung explaining the project and the SSD condition. He did not expect there would be much feedback needed but suggested I email the CTPMSP to himself and his colleague Malgy Coman for review 08/07/20 Email correspondence to Billy Yung and <algy COman submitted the proposed CTPMSP
What specific matters were discussed?	Project Scope Surrounding roads and construction of the Estate SSD condition needing to eb complied with
What matters were resolved?	Who to submit the plan to within TfNSW
What matters are unresolved?	Not Applicable
Any remaining points of disagreement?	None
How will SINSW address matters not resolved?	

Dean Israel

From: Ciaran Wright <ciaran@dunwood.com.au>
Sent: Tuesday, 7 July 2020 3:45 PM
To: Dean Israel
Subject: FW: SSD Marsden Park Project
Attachments: Marsden Park - Condition B14 B19.pdf

Ciaran Wright
NSW Operations Manager

Dunwood Recruitment
HELPING BUSINESSES TO SUCCEED

105 Regent Street, Chippendale, Sydney, NSW 2008
Australia
Mob: +61 (0)427 147 330
Direct: 1300 438 404
Email: ciaran@dunwood.com.au
Web: www.dunwood.com.au

From: priscilla waters <cillawaters@gmail.com>
Sent: Tuesday, 7 July 2020 3:37 PM
To: Ciaran Wright <ciaran@dunwood.com.au>
Subject: Fwd: SSD Marsden Park Project

Hi

Please see below email from council granting approval

Priscilla
0424 289 132

Begin forwarded message:

> **Subject: Fwd: SSD Marsden Park Project**
>
> Priscilla
> 0424 289 132
>
> Begin forwarded message:
>
> > **From:** Abdun Noor <Abdun.Noor@blacktown.nsw.gov.au>
> > **Date:** 7 July 2020 at 2:21:09 pm AEST
> > **To:** priscilla waters <cillawaters@gmail.com>
> > **Subject: FW: SSD Marsden Park Project**

Hi Priscilla

The attached CTMP appear to be satisfactory, given that it is developed by an accredited TCP designer.
The applicant must have appropriate insurances before implementing the TCP.
The applicant will be liable to any damage to public lives or properties which may results from implementing this TCP.
Council will not be liable for any damage to public lives or properties which may results from implementing this TCP.

Regards,

Abdun Noor
Senior Traffic Management Officer

9839 6336
Abdun.Noor@blacktown.nsw.gov.au
PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

Follow us on social media

From: Abdun Noor
Sent: Wednesday, 1 July 2020 8:27 AM
To: Catherine Potloka <Catherine.Potloka@blacktown.nsw.gov.au>
Subject: FW: SSD Marsden Park Project

Cath
Please enter in TRIM.

Abdun Noor
Senior Traffic Management Officer

9839 6336
Abdun.Noor@blacktown.nsw.gov.au
PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

Follow us on social media

From: priscilla waters <cillawaters@gmail.com>
Sent: Tuesday, 30 June 2020 6:25 PM
To: Abdun Noor <Abdun.Noor@blacktown.nsw.gov.au>
Subject: SSD Marsden Park Project

Hi there

can you point us in the right direction regarding who is the best person to send the attached to for approval for our client ADCO

your email address was supplied by ADCO but we are unsure if you are the correct person contact

thank you

Priscilla Waters

0424289132

Dunwood

ANNEXURE B

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT SUB PLAN (CNVMSP)

MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

Marsden Park Public School

Construction Noise & Vibration Management Sub-Plan

SYDNEY
9 Sarah St
MASCOT NSW 2020
(02) 8339 8000

ABN 11 068 954 343
www.acousticlogic.com.au

Project ID	20200038.3
Document Title	Construction Noise & Vibration Management Sub-
Attention To	ADCO Constructions Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	6/07/2020	20200038.3/0607A/R0/AW	AW		AW
1	16/07/2020	20200038.3/1607A/R1/AW	AW		AW
2	27/07/2020	20200038.3/2707A/R2/AW	AW		AW

TABLE OF CONTENTS

1 INTRODUCTION

Acoustic Logic Consultancy has been engaged to prepare a Noise and Vibration Management Sub-Plan for the new Marsden Park Public School to satisfy consent conditions for SSD 9809. This report addresses conditions B13(c), B16, C3-8, C10 & C13-18.

The issues which will be addressed in this report are:

- Identification of the noise and vibration standards which will be applicable to this project.
- Identification of potentially impacted nearby development.
- Identify likely sources of noise and vibration generation and predicted noise levels at nearby development.
- Formulation of a strategy to comply with the standards identified and mitigation treatments in the event that compliance is not achievable.

2 SITE DESCRIPTION

We note that this report does not address early works which have already been completed on the site. This assessment applies only to construction works. We note that a temporary school is proposed to be constructed to be used from January 2021, whilst construction of the main school building is completed.

Refer to Figures 1, 2 & 3 for detail.

The development involves the construction a new two storey school building and associated works including provision of additional car parking spaces and landscaping. Excavation and construction works anticipated are as follows:

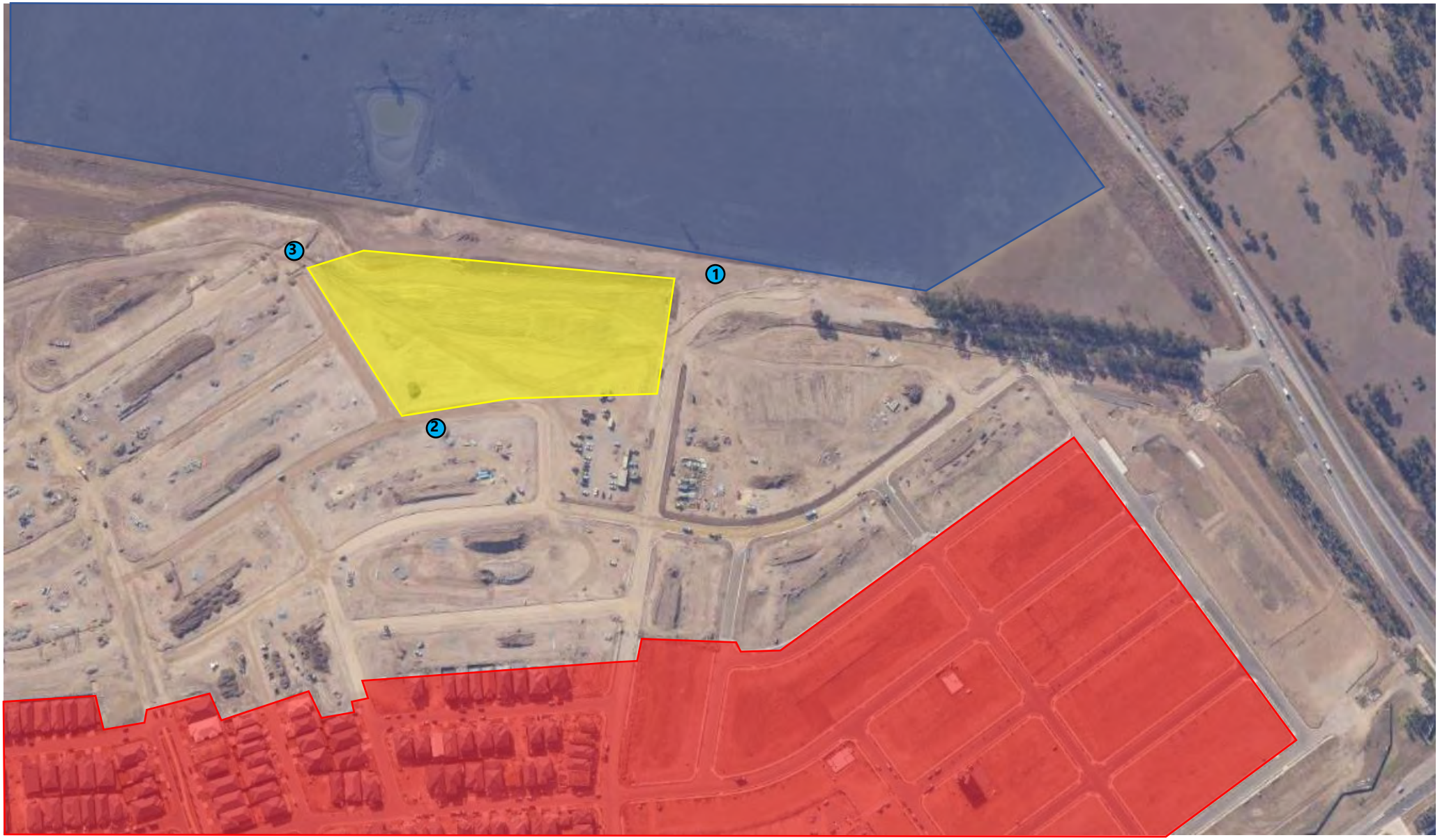
- Minor excavation not completed as part of early works, primarily related to pavements and external roadways.
- Screwed piling of foundations. All ground works are currently scheduled to extend for approximately 8 weeks.
- Use of mobile cranes;
- Erection of building structure (powered hand tools for formwork, concrete pump, vibrators). Concrete pumping is generally planned to be located at the perimeter of the site, as indicated in Figure 2.
- Façade/roof construction (powered hand tools)
- Landscaping (front end loaders etc).
- Internal fit out of school buildings.

In accordance with Condition C3, hours of work are as follows:

- Monday to Friday: 7am – 6pm
- Saturday: 8am – 1pm
- Sundays or Public Holidays: No work.

2.1 RECEIVER LOCATIONS

Based on the site investigations, it will be existing single dwelling houses located with earlier stages of the Stockland Elara development which will be most noise affected. We note that the site is currently only sparsely occupied.



Proposed Site Boundaries

Existing Residential Receivers

Figure 1 – Site Survey and Unattended Measurement Locations

Unattended Noise Monitor

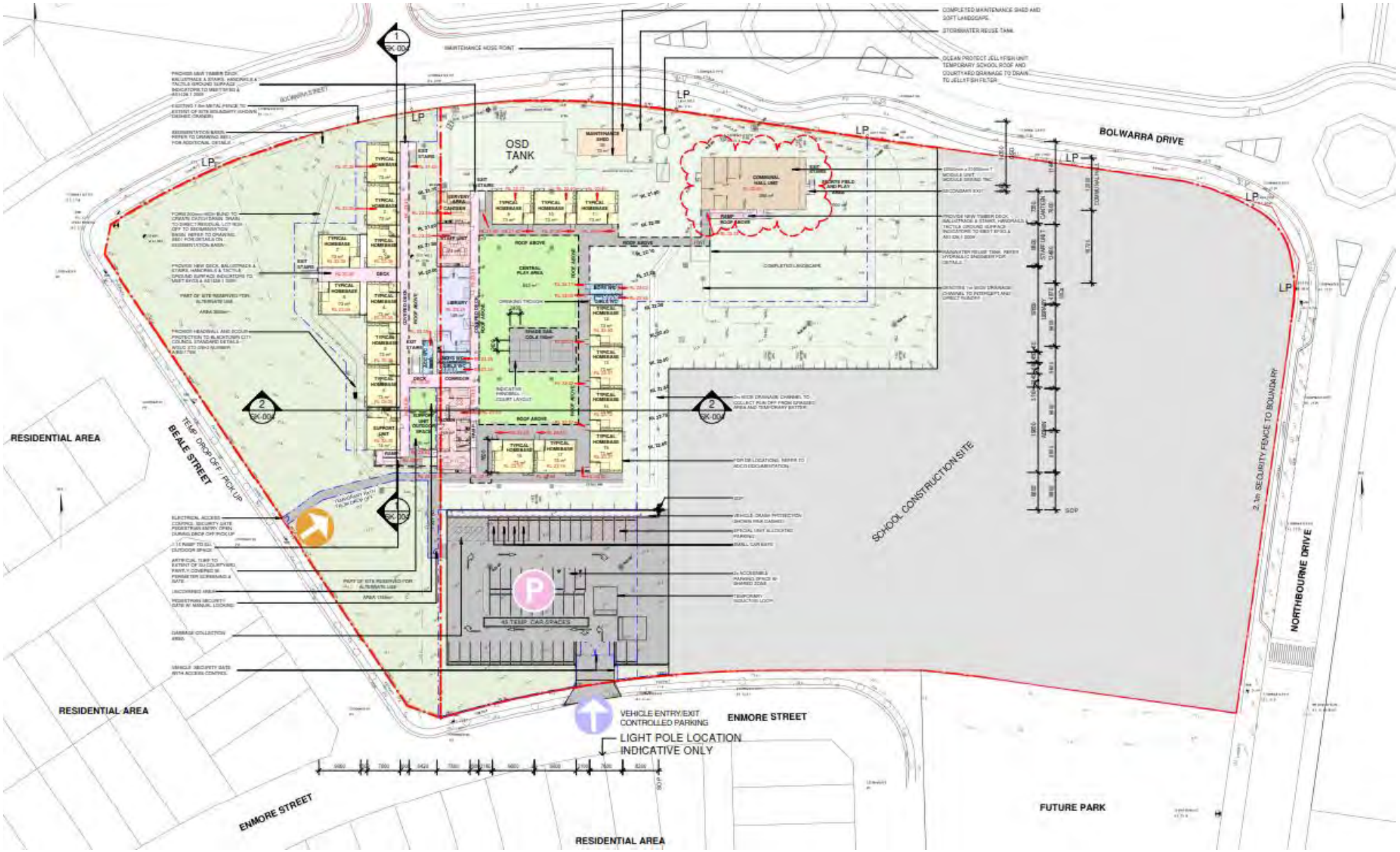


Figure 2 – General Layout of Temporary School

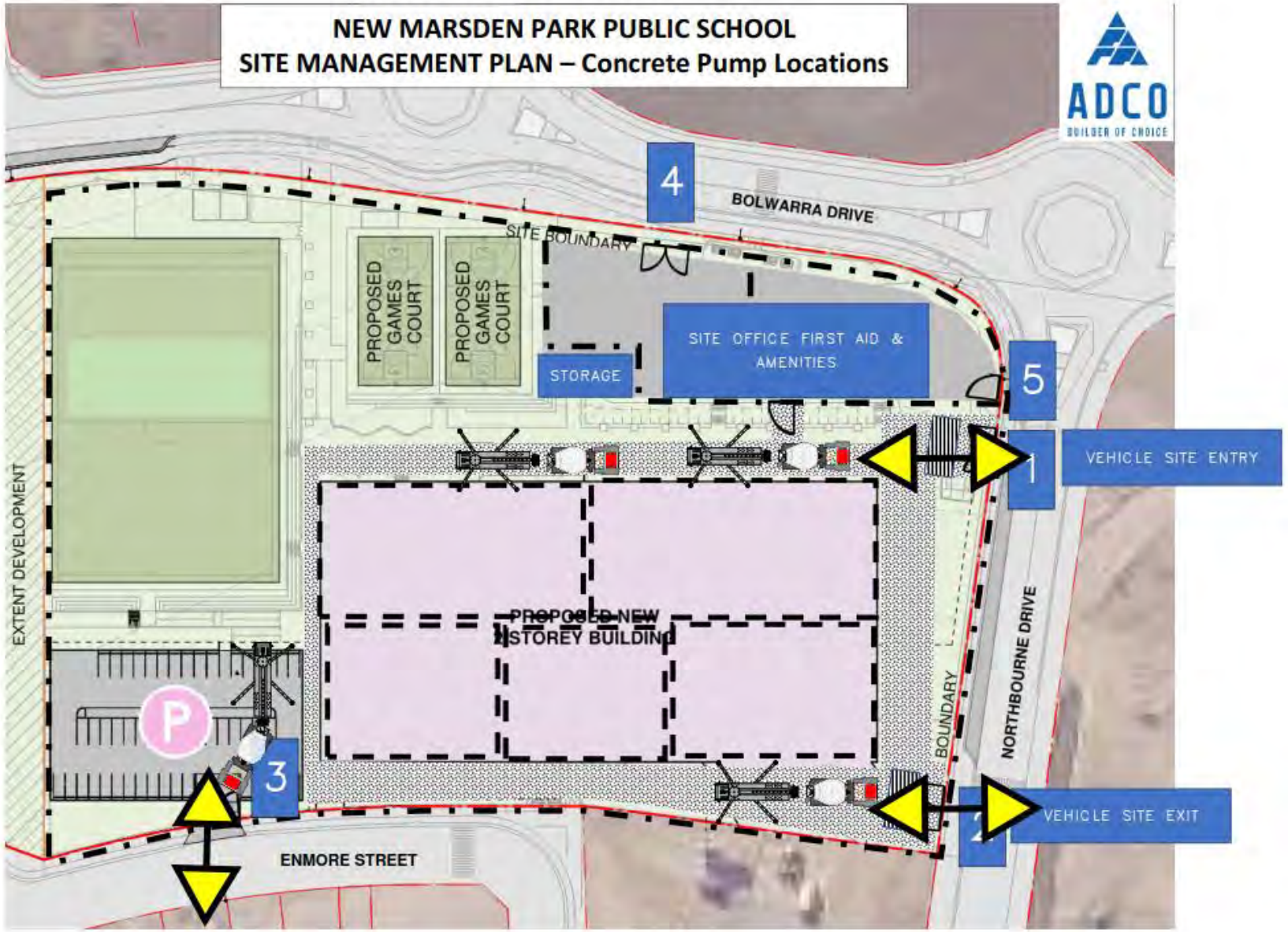


Figure 3 – Site Plan and Proposed Location of Major Plant During Construction of Main School Building

3 BACKGROUND NOISE MEASUREMENT

Long term unattended and attended background noise measurements were undertaken at project approval stage and presented in the approved acoustic report (*New Marsden Park Public School,* Revision 1, August 2019). Measured noise levels are presented in the table below.

Table 1 – Measured Background Noise Levels, dB(A) L_{90}

Location	Period/Time	Background noise level dB(a) L_{90}
Monitoring Location 3 (North West)	Day (7am to 6pm)	36

4 CONSENT CONDITIONS

4.1 CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

B13. *Prior to the commencement of construction, the Applicant must prepare a Construction Environmental Management Plan (CEMP) to the Certifier and provide a copy to the Planning Secretary for Stage 1 and 2. The CEMP must include, but not be limited to, the following:*

…

(c) Construction Noise and Vibration Management Sub-Plan (see condition B16)

B16. *The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following:*

(a) be prepared by a suitably qualified and experienced noise expert;

(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

(c) hours of construction in accordance with conditions C3 to C8

(d) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

(e) include strategies that have been developed with the community for managing high noise generating works;

(f) describe the community consultation undertaken to develop the strategies in condition B23(d); and

(g) include a complaints management system that would be implemented for the duration of the construction; and

(h) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with condition B12(d).

(i) detail the measures to be implemented to mitigate the potential noise impacts associated with the construction of Stage 2 while Stage 1 is in operation

4.2 CONSTRUCTION HOURS

C3. *Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:*

(a) between 7am and 6pm, Mondays to Fridays inclusive; and

(b) between 8am and 1pm, Saturdays.

No work may be carried out on Sundays or public holidays.

C4. *Notwithstanding condition C3, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:*

(a) between 6pm and 7am, Mondays to Fridays inclusive, and

(b) between 1pm and 4pm, Saturdays.

C5. *Construction activities may be undertaken outside of the hours in condition C3 if required:*

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) where a variation is approved in advance in writing by the Planning Secretary or her nominee if appropriate justification is provided for the works.

C6. *Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.*

C7. *Written notification of works must be submitted to Council prior to the commencement of any engineering works required by this consent. This must be submitted a minimum 5 business days prior to the commencement of engineering works.*

C8. *Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:*

(a) 9am to 12pm, Monday to Friday;

(b) 2pm to 5pm Monday to Friday; and

(c) 9am to 12pm, Saturday.

With regard to C8, we note that the nominated activities are not proposed as part of the construction.

4.3 CONSTRUCTION TRAFFIC

C10. *All construction vehicles (excluding worker vehicles) are to be contained wholly within the site, except if located in an approved on-street work zone, and vehicles must enter the site before stopping, unless directed by traffic control.*

4.4 CONSTRUCTION NOISE LIMITS

C13. *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 CNVMP.*

C14. *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 C3.*

C15. *The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use of 'quackers' to ensure noise impacts on surrounding noise sensitive receivers are minimised.*

4.5 VIBRATION CRITERIA

C16. *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 for 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).

C17. *Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C16*

C18. *The limits in conditions C16 and C17 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B16 of this consent.*

5 NOISE AND VIBRATION CRITERIA

5.1 EPA INTERIM CONSTRUCTION NOISE GUIDELINE (DECC, 2009)

The EPA Interim Construction Noise Guideline (ICNG) assessment requires:

- Determination of noise generation goals (based on ambient noise monitoring).
- Review of operational noise levels at nearby development.
- If necessary, recommendation of noise controls strategies in the event that compliance with noise emission goals is not possible.

EPA guidelines adopt differing strategies for noise control depending on the predicted noise level at the nearest residences:

- *"Noise affected" level*. Where construction noise is predicted to exceed the "noise effected" level at a nearby residence, the proponent should take reasonable/feasible work practices to ensure compliance with the "noise effected level". For residential properties, the "noise effected" level occurs when construction noise exceeds ambient levels by more than 10dB(A)$L_{eq(15min)}$.
- "*Highly noise affected level"*. Where noise emissions are such that nearby properties are "highly noise effected", noise controls such as respite periods should be considered. For residential properties, the "highly noise effected" level occurs when construction noise exceeds 75dB(A)$L_{eq(15min)}$ at nearby residences.

In addition to the above goals for residential receivers, the ICNG nominates a Management Level of 45dB(A) $L_{eq(15min)}$ internally for School Classrooms.

A summary of relevant construction noise management levels is presented below. In order to present a conservative assessment, the lowest daytime rating background noise level determined from monitoring has been used as a basis for calculation of the 'Noise Affected Level'.

Table 2 – Noise Management Levels - Residential

Location	"Noise Affected" Level - dB(A)$L_{eq(15min)}$	"Highly Noise Affected" Level - dB(A)$L_{eq(15min)}$
Residents South of Site	46	75

Table 3 – Noise Management Levels – Other Receivers

Location	Noise Management Level - dB(A)$L_{eq(15min)}$
School Receivers	45 internally

If noise levels exceed the criteria identified in the tables above, reasonable and feasible noise management techniques will be reviewed.

5.2 VIBRATION

As required by consent conditions C19, vibration caused by construction at any residence or structure outside the subject site will be assessed with reference to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures; and*

- For human exposure to vibration, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006)..

5.2.1 Structure Borne Vibrations (Building Damage Criteria)

German Standard DIN 4150-3 (1999-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1999-02) are presented in Table 4.

It is noted that the peak velocity is the value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 4 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

	TYPE OF STRUCTURE	PEAK PARTICLE VELOCITY (mms^{-1})			
		At Foundation at a Frequency of			**Plane of Floor of Uppermost Storey**
		< 10Hz	**10Hz to 50Hz**	**50Hz to 100Hz**	**All Frequencies**
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
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 (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

Surrounding residences would be considered a Type 2 structure.

5.2.2 Assessing Amenity

The NSW EPA document "*Assessing Vibration: A Technical Guideline*" provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings and is used in the assessment of vibration impact on amenity.

Relevant criteria are presented below.

Table 5 – EPA Recommended Vibration Criteria

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	Time	Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices		0.02	0.04	0.4	0.8	0.56	1.1
Workshops		0.04	0.08	0.8	1.6	1.1	2.2
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices		0.64	1.28	13.0	26.0	18.0	36.0
Workshops		0.64	1.28	13.0	26.0	18.0	36.0

6 NOISE & VIBRATION ASSESSMENT AND RECOMMENDATIONS

6.1 ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE SOURCES

The following section details the main works expected for the construction of Marsden Park Primary School. The noise levels presented in the below table are derived from the following sources, namely:

- Table A1 of Australian Standard 2436-2010.
- Data held by this office from other similar studies.

Noise levels take into account correction factors (for tonality, intermittency where necessary).

For Main Building Works

For this project, the most significant sources of noise or vibration generated during construction will be building structure works. The following table presents assessment noise levels for typical construction equipment expected to be used during the construction of the proposal.

Table 6 – Sound Power Levels of the Typical Equipment (Main Works)

Equipment / Process	Sound Power Level dB(A)
Screwed Piling Rig	110
Concrete Pump	110
Trucks	100
Crane (mobile)	100
Powered Hand Tools	95-100

During Temporary School Operation

The temporary school is expected to be completed by January 2021 and operate for two terms until main building works are completed (June 2021). During this time, construction noise impacts to the temporary school will need to be considered.

It is expected that the primary construction activities during this time will be internal fitout and landscaping works. Further, we note that internal fitout will generally be conducted once the façade has been installed, which will reduce potential noise impacts. The following table presents assessment noise levels for typical construction equipment expected to be used during the operation of the temporary school.

Table 7 – Sound Power Levels of the Typical Equipment (Temporary School Operation)

Equipment / Process	Sound Power Level dB(A)
Bobcat (External Landscaping)	95
Powered Hand Tools	95-100

During Temporary School Removal

Once the main school building is occupied, it will be required to remove all temporary demountable building and remediate the site. The expected duration of these works is July 2021 – December 2021, being two school terms. The following table presents assessment noise levels for typical construction equipment expected to be used during the operation of the temporary school.

Table 8 – Sound Power Levels of the Typical Equipment (Temporary School Removal)

Equipment / Process	Sound Power Level dB(A)
Crane (mobile)	100
Trucks	100
Bobcat (External Landscaping)	95
Powered Hand Tools	95-100

The noise levels presented in the above table are derived from the following sources, namely:

- Table A1 of Australian Standard 2436-2010.
- Data held by this office from other similar studies.

Noise levels take into account correction factors (for tonality, intermittency where necessary).

6.2 NOISE IMPACT ASSESMENT

The predicted noise levels during excavation and construction will depend on:

- The activity undertaken.
- The distance between the work site and the receiver. For many of the work areas, the distance between the noise source and the receiver will vary depending on which end of the site the work is undertaken. For this reason, the predicted noise levels will be presented as a range.
- Depending on the management level adopted, noise emission are predicted to either external areas (property boundaries/building facades) or internal areas. Where noise levels are predicted to internal areas, the NSW EPA Interim Construction Noise Guideline suggests that a reduction from external noise levels to internal spaces of 10 dB(A) is a conservative estimate. This recommended reduction has been used to calculate the internal noise levels internally where school receivers are considered.

Predicted noise levels are presented below.

Table 9 – Predicted Noise Generation to Residential Receivers South of Site

Activity	Predicted Level dB(A) $L_{eq(15min)}$ (External)	Comment
Screwed Piling Rig	52 – 56	Exceeds 46dB(A) Noise Affected Management Level, but below Highly Noise Affected Management Level at all times. Refer Discussion and Recommendations (Sections 0 & 6.5)
Concrete Pump	52 – 56	
Trucks	42 – 46	Below Noise Affected Management Level at all times
Crane (mobile)	42 - 46	
Powered Hand Tools	42 – 46	

Table 10 – Predicted Noise Generation to Temporary School

Activity	Predicted Level dB(A) $L_{eq(15min)}$ (Internal)	Comment
Bobcat (External Landscaping)	34 – 45	Below Noise Affected Management Level at all times
Powered Hand Tools	39 – 50 (When used Externally) <25 – 30 (When used behind closed façade)	Marginal exceedance of internal noise management level when works take place externally close to western boundary. Meet requirements when used internally Refer Discussion and Recommendations (Sections 0 & 6.5)

Table 11 – Predicted Noise Generation to Main School (Temporary School Removal)

Activity	Predicted Level dB(A) $L_{eq(15min)}$ (Internal)	Comment
Crane (mobile)	39 – 48	Marginal exceedance of internal noise management level when works take close to western boundary. Refer Discussion and Recommendations (Sections 0 & 6.5)
Trucks	39 – 48	
Bobcat (External Landscaping)	32 – 43	Below Noise Affected Management Level at all times
Powered Hand Tools	39 – 48 (When used Externally) <25 – 30 (When used behind closed façade)	Marginal exceedance of internal noise management level when works take place externally close to western boundary. Meet requirements when used internally Refer Discussion and Recommendations (Sections 0 & 6.5)

6.3 DISCUSSION – NOISE

For noise impacts to residential receivers external to site

Proposed equipment to be used during groundworks phase of the development (screwed piling, concrete pump) is expected to exceed noise management limits. Noise impacts to surrounding receivers is expected during this time, however we note the following;

- Only shallow groundworks are required to be undertaken, as there are no basement levels proposed for the school. In total, it is scheduled for all groundworks to be completed within 8 weeks;
- Concrete truck/pumping activities are intended to be scheduled, and as such a notification process will be possible to assist surrounding receivers to manage noise impacts. Additionally, concrete pours are generally intermittent (occurring over the course of a single day), and so respite is provided to any noise affected residents between each pour (typically 1-2 weeks apart).
- The duration of the excavation and structural works of the development will be of a relatively short duration. Once complete, noise impacts from general construction activities are expected to be reduced.

For noise impacts to school buildings associated with the temporary school (both during operation and removal)

A marginal exceedance is expected during some activities, particularly external works (crane, trucks, external handtools). We note that an internal noise level is referred to for school receivers refers, and that the above tables assume that windows and doors to classrooms are open. In the event that facades were to be closed, noise levels would be below the 45dB(A) management level at all times.

Further, all classrooms are proposed to be air conditioned, which would allow for a comfortable internal environment if the façade was to be closed during short term noisy works. Notwithstanding the above, it is recommended that an open line of communication be established with future school management to minimise any potential noise impacts resulting from construction.

6.4 DISCUSSION – VIBRATION

There are no significant sources of vibration envisaged. Given the distance from nearby receivers, vibration impacts on all receivers is expected to be within the recommended levels detailed in Section 4.5.

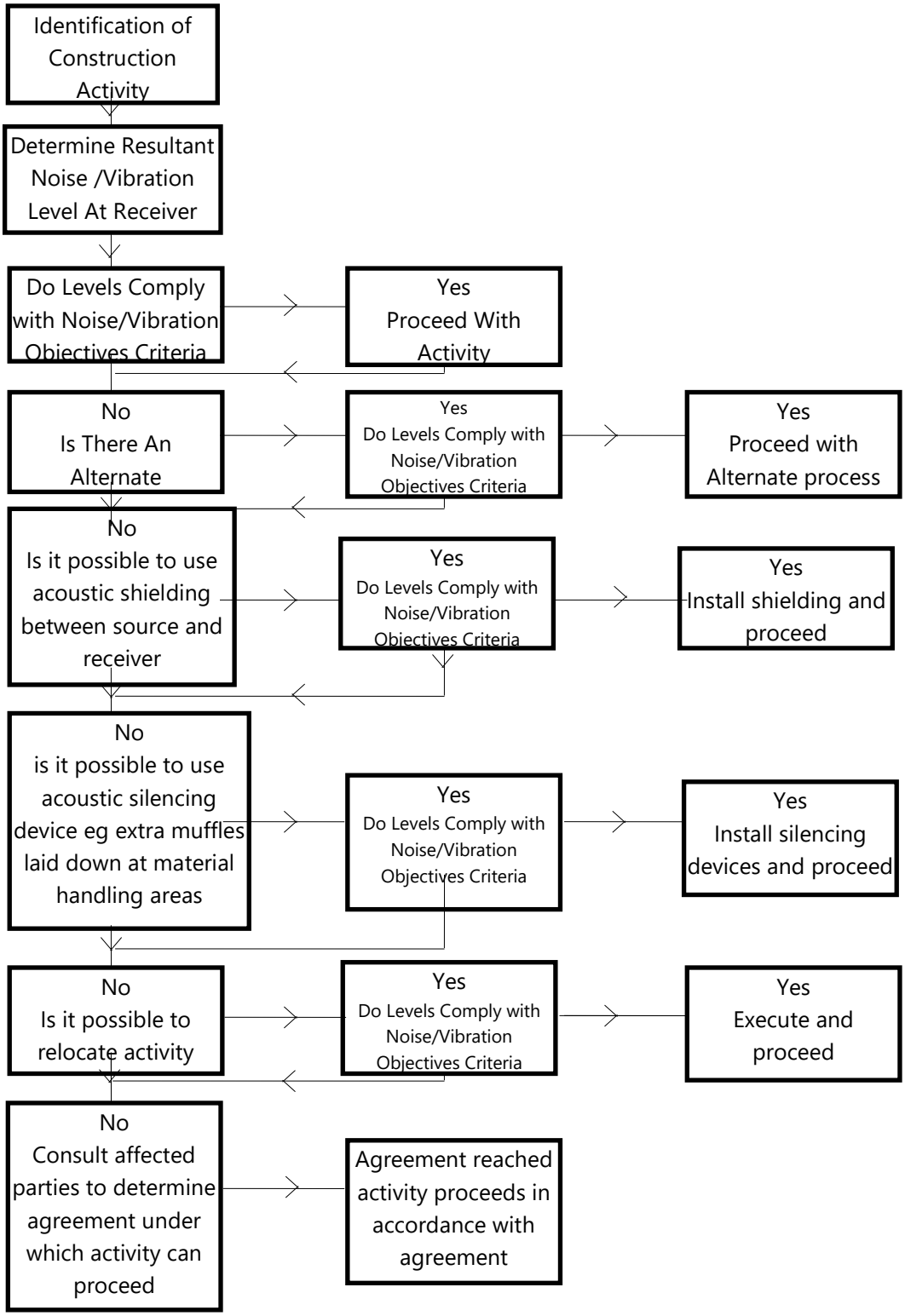
6.5 RECOMMENDATIONS

In light of the above, we recommend:

- Community consultation/notification - Notification (leaflet or similar) of nearby residents is recommended, detailing the duration of groundworks and schedule of planned concrete pours. Given that occupation of lots is generally sporadic throughout the site, it may be more effective to place any communication on a community notice board.
- An open line of communication should be maintained with the school to ensure they are aware of the upcoming construction program in order to organise any sensitive activities (exams etc.)
- Consolation should be undertaken with school to advise on the timing and duration of excavation and dates for concrete pours. Noting that the classrooms are air conditioned, leaving windows closed may be possible during class times when high noise producing plant (excavation/piling/concrete pump) is in use.
- Materials handling/vehicles:
    - Trucks and bobcats to use a non-tonal reversing beacon (subject to OH&S requirements) to minimise potential disturbance of neighbours.
    - Avoid careless dropping of construction materials into empty trucks.
    - Trucks, trailers and concrete trucks (if feasible) should turn off their engines during idling to reduce noise impacts (unless truck ignition needs to remain on during concrete pumping).
- Complaints handling - In the event of complaint, the procedures outlined in Section 8 should be adopted.
- With regard to ongoing noise monitoring during construction:
    - Noise impacts associated with the construction are expected to be mitigated through appropriate management and community consultation. As such, specific monitoring of noise is not considered to be required to determine effectiveness at this stage.
    - If strong community reaction is experienced due to construction noise impacts, noise measurements may be taken at identified receivers to quantify the noise impact and develop appropriate management/mitigation strategies (Refer Sections 7 - 9).

7 CONTROL OF CONSTRUCTION NOISE AND VIBRATION – PROCEDURAL STEPS

The flow chart presented below illustrates the process that will be followed in assessing construction activities.



8 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

8.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

In order for any construction noise management programme to work effectively, continuous communication is required between all parties which may be potentially impacted upon, Adco and the regulatory authority. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation processes is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to the Complaints Register which will be used to address any construction noise related problems should they arise.

8.2 DEALING WITH COMPLAINTS

Should ongoing complaints of excessive noise or vibration criteria occur immediate measures shall be undertaken to investigate the complaint, the cause of the exceedances and identify the required changes to work practices. In the case of exceedances of the vibration limits all work potentially producing vibration shall cease until the exceedance is investigated.

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

If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:

- The name and address of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and the time and date the noise was heard;
- The name of the employee who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation;
- Required remedial action, if required;
- Validation of the remedial action; and
- Summary of feedback to the complainant.

A permanent register of complaints should be held.

All complaints received should be fully investigated and reported to management. The complainant should also be notified of the results and actions arising from the investigation.

The investigation of a complaint shall involve where applicable;

- Noise measurements at the affected receiver;
- An investigation of the activities occurring at the time of the incident;
- Inspection of the activity to determine whether any undue noise is being emitted by equipment; and
- Whether work practices were being carried out either within established guidelines or outside these guidelines.

Where an item of plant is found to be emitting excessive noise, the cause is to be rectified as soon as possible. Where work practices within established guidelines are found to result in excessive noise being generated then the guidelines should be modified so as to reduce noise emissions to acceptable levels. Where guidelines are not being followed, the additional training and counselling of employees should be carried out.

Measurement or other methods shall validate the results of any corrective actions arising from a complaint where applicable.

8.3 CONSULTATION ALREADY CONDUCTED

Community Consultation has been undertaken with an online focus, due to the restrictions associated with the legislated restrictions around social distancing. An information package outlining the construction activities, and what mitigation measures have been implemented to reduce noise and vibration levels propagating beyond the site boundaries, has been provided to the community via the following mediums:

- Project Update distributed via letterbox drop – refer Appendix A
- Information board via SI website

Consultation has been undertaken by providing the community the above mentioned information and providing FAQs. SINSW has sought feedback from the community via email or phone on the mitigation strategies proposed by the contractor, in line with the consent requirements. The Community was provided 7 days to comment.

Feedback received at the end of the 7 days has been incorporated in the CNVMSP and CEMP where practical and appropriate. The community was also be updated on how feedback has been received by the project team.

8.4 CONTINGENCY PLANS

Where non-compliances or noise complaints are raised the following methodology will be implemented.

1. Determine the offending plant/equipment/process
2. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
3. Implement additional acoustic treatment in the form of localised barriers, silencers etc. where practical.
4. Selecting alternative equipment/processes where practical
5. If necessary, setup noise/vibration and dust monitoring devices at locations representing the nearest noise/vibration and dust affected receivers and provide data for each complain time period. Analysis is required to determine suitable mitigation measures.

Complaints associated with noise/vibration generated by site activities shall be recorded on a Complaint Form. The person(s) responsible for complaint handling and contact details for receiving of complaints shall be established on site prior to construction works commencing. A sign shall be displayed at the site indicating the Site Manager to the general public and their contact telephone number.

9 ADDITIONAL NOISE AND VIBRATION CONTROL METHODS

In the event of complaints, there are a number of noise mitigation strategies available which can be considered.

The determination of appropriate noise control measures will be dependent on the particular activities and construction appliances. This section provides an outline of available methods.

9.1 SELECTION OF ALTERNATE APPLIANCE OR PROCESS

Where a particular activity or construction appliance is found to generate excessive noise levels, it may be possible to select an alternative approach or appliance. For example; the use of a hydraulic hammer on certain areas of the site may potentially generate high levels of noise. Undertaking this activity using bulldozers, ripping and/or milling machines will result in lower noise levels.

9.2 ACOUSTIC BARRIER

Given the position of adjacent development, it is unlikely that noise screens will provide significant acoustic benefit for commercial or residential receivers, but will provide noticeable improvement for those on ground level.

The placement of barriers at the source is generally only effective for static plant. Equipment which is on the move or working in rough or undulating terrain cannot be effectively attenuated by placing barriers at the source.

Barriers can also be placed between the source and the receiver.

The degree of noise reduction provided by barriers is dependent on the amount by which line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15dB(A) can be effected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8dB(A) may be achieved. Where no line of sight is obstructed by the barrier, generally no noise reduction will occur.

As barriers are used to provide shielding and do not act as an enclosure, the material they are constructed from should have a noise reduction performance that is approximately 10dB(A) greater than the maximum reduction provided by the barrier. In this case the use of a material such as 10mm or 15mm thick plywood (radiata plywood) would be acceptable for the barriers.

9.3 MATERIAL HANDLING

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dB(A).

9.4 TREATMENT OF SPECIFIC EQUIPMENT

In certain cases it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

9.5 ESTABLISHMENT OF SITE PRACTICES

This involves the formulation of work practices to reduce noise generation. A more detailed management plan will be developed for this project in accordance to the construction methodology outlining work procedures and methods for minimising noise.

9.6 COMBINATION OF METHODS

In some cases it may be necessary that two or more control measures be implemented to minimise noise.

10 CONCLUSION

A noise and vibration assessment has been undertaken of the proposed construction works to be undertaken for the new Marsden Park Public School to address consent conditions B13(c), B16, C3-8, C10 & C13-18.

Potential noise and vibration impacts on nearby development have been assessed. Provided that the mitigation techniques recommended in sections 6.4, 7, 8 & 9 of this report are adopted, noise and vibration impacts on the nearby noise sensitive receivers are expected to be acceptable.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Alex Washer

APPENDIX A – COMMUNITY CONSULTATION NEWSLETTER

Artist impression of the new primary school in Marsden Park on Northbourne Drive

Marsden Park new primary school

Project update

July 2020

Investing in our schools

The NSW Government is investing $6.7 billion over four years to deliver more than 190 new and upgraded schools to support communities across NSW. In addition, a record $1.3 billion is being spent on school maintenance over five years. This is the largest investment in public education infrastructure in the history of NSW.

The NSW Department of Education is committed to delivering new and upgraded schools for communities across NSW. The delivery of these important projects is essential to the future learning needs of our students and supports growth in the local economy.

Project overview

A project is underway to deliver a new primary school in Marsden Park to support the growing community. The school will include:

- 40 flexible learning spaces
- a library, hall, canteen and covered outdoor learning area (COLA)
- core facilities, including administration and staff facilities.

The new school is designed to accommodate up to 1,000 students from Kindergarten to Year 6 and will be located on Northbourne Drive, Marsden Park in the Elara Estate.

Progress summary

The detailed design of the new primary school is underway. Site establishment and early works are nearing completion in preparation for main works construction.

A temporary school on the site will be ready for Day 1 Term 1 2021.

Accelerated assessment

As part of the NSW Government's Planning System Acceleration Program, the assessment of the State Significant Development (SDD) application for this project was fast tracked by the Department of Planning, Industry and Environment (DPIE). The SSD application is now approved. The tender to appoint the main construction works contractor has been awarded to ADCO Construction.

Keeping you updated

We are committed to working together with our school communities and other stakeholders to deliver the best possible learning facilities for students. We will keep the local school community and residents informed with project update newsletters, information sessions and website updates.

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

Managing construction impacts

Main works construction will start in early August 2020, starting with excavating and installing footings and foundations for the school buildings.

As part of the consent to carry out the work, the main contractor is required to develop a Construction Environmental Management Plan to outline how it will manage construction impacts to nearby local residents. These impacts include noise, vibration and vehicle movements.

You can view the consent conditions, including those required for managing construction impacts via the project webpage at: schoolinfrastructure.nsw.gov.au/projects/m/marsden-park-new-primary-school

Your feedback

Let us know what you think about how we propose to manage construction activities listed in the table below.

Provide your feedback via email or phone by Wednesday 15 July 2020.

- Email: schoolinfrastructure@det.nsw.edu.au
- Phone: 1300 482 65

Activity	Consent condition and proposed activities
General	**Proposed actions** ▪ Noise levels on site will not exceed the noise control guidelines that are outlined in the EPA Environmental Noise Control Manual for construction and demolition works. ▪ We will provide advance notice of work to the local community, particularly when we anticipate high noise generating works. ▪ Trucks will be well maintained and only use approved truck routes to and from the site. ▪ Buildings for the temporary school that will be installed on site are being manufactured off site. Transporting them to site will require special wide load and length vehicles. We will provide advance notice of the proposed route and after hours timing of this to the local residents.
Construction	**Consent condition:** procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009). **Consent condition:** noise reducing work practices to be implemented. **Proposed actions:** ▪ Noise levels for general activities will only occur within approved standard work hours: a) Between 7:00am and 6:00pm Monday to Friday b) Between 8:00am and 1:00pm Saturday c) No work may be carried out on Sundays or public holidays unless approved by the Department of Industry, Planning and Environment. ▪ Work will occur within approved standard work hours. ▪ Workers and contractors are regularly trained to use equipment in ways to minimise noise. ▪ Avoid the use of radios or stereos outdoors where neighbours can be affected. ▪ Avoid the overuse of public address systems. ▪ Avoid shouting and minimise talking loudly or slamming vehicle doors. ▪ Develop a one-page summary of the consent conditions for the site noticeboard for workers to quickly reference this information.

Activity	Consent condition and proposed activities

Construction	**Consent condition:** measures to be implemented to manage high noise generating works such as rock breaking or sheet piling, in close proximity to the closest homes.
	
	Proposed actions:
	▪ If high noise generating works are planned, neighbours should be notified of this before work starts.
	▪ If rock breaking activities are required, effective equipment should be chosen, and respite periods for local residents should be put in place. Rock breaking hours will be strictly limited to approved hours of:
	  ▪ 9:00am to 12:00pm, Monday to Friday
	  ▪ 2:00pm to 5:00pm, Monday to Friday
	  ▪ 9:00am to 12:00pm, Saturday.
	▪ For high noise generating works, if complaints are received, work will be managed to reduce the impact to local residents by implementing shorter time periods, or alternating with quieter work methods were practical.

Artist impression of the new primary school in Marsden Park

Frequently asked questions

Why has the planning approval for this project been fast tracked?

Three schools, including Marsden Park new primary school, are among the second wave of projects that have had their assessments fast tracked.

This will mean the projects can get underway sooner and the overall construction pipeline can continue to grow.

Does this mean the usual checks and community consultation will be waived to fast track the projects?

The assessment process is being accelerated, not changed. The usual planning rules and policies will apply, and all projects will be assessed under the Environmental Planning and Assessment Act 1979.

Will the community still get to have a say on projects that are being fast tracked?

All of the projects being fast tracked have completed the substantive planning work and are post the exhibition and community consultation phase. School Infrastructure NSW will continue to engage and inform the community throughout the project.

Due to the need to meet requirements under Public Health Orders, a range of digital engagement tools will be used to communicate with the community and stakeholders to seek any comment or feedback. This will include digital project updates, online sharing of information session material, the School Infrastructure NSW website, community information line and mailbox.

Will street parking be impacted during construction?

There will be minimal impacts to street parking as there will be parking available on site for workers. The impact of our project on the local community is considered in our planning. We work with councils and the community to identify issues and put in place mitigation measures.

What steps will be taken to control noise and dust impacts?

The contractor will implement dust and noise control measures. Dust and noise are minimised with hoarding, shade cloth and spraying water.

How will traffic be managed?

Traffic management will be in place where required for the safety of the local community and workers. Traffic controllers will be used to manage entry and exit of vehicles to and from the construction site as necessary. Vehicles will give way to pedestrians at all times.

When will enrolments be accepted?

Information about enrolments for the new school will be available in the coming months.

For general information on how to enrol in NSW public schools, please visit: education.nsw.gov.au/public-schools/going-to-a-public-school/enrolment.

How can I find out which school enrolment catchment I live in?

New catchment boundaries for the Marsden Park area were put in place for the start of 2020. This included separating the Marsden Park Public School catchment (see map below). For a closer look, visit School Finder at education.nsw.gov.au/school-finder

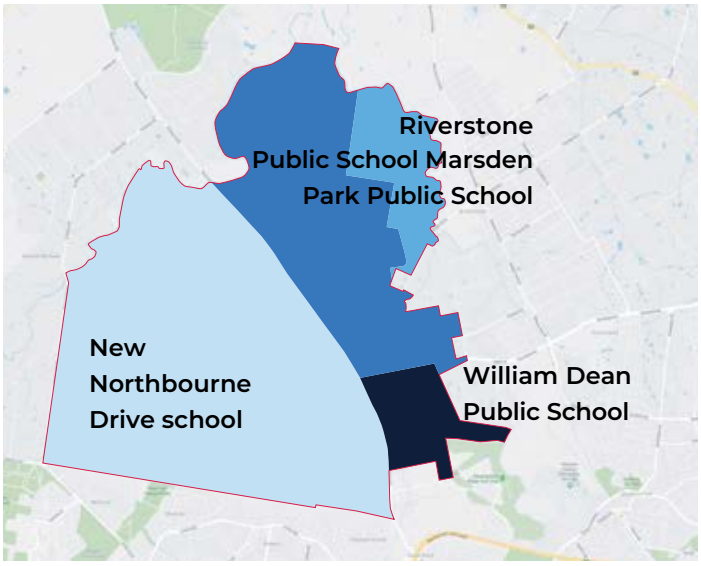
From Term 1, 2021, students living in the catchment for the new primary school at Northbourne Drive will enrol at the temporary school and then transition to the new permanent facility, when it opens. Marsden Park Public School on Garfield Road West will continue to accept enrolments for both catchments for the rest of 2020.

Students living in the Northbourne Drive catchment who enrol at Marsden Park Public School during 2020 will transition to the new primary school site in 2021.

It is the Department of Education's practice to review catchment boundaries as demographic information changes.

Keeping you updated

We will continue to keep you updated and provide more information about the construction timetable and new temporary school in the coming months.



MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

20200038.3/2707A/R1/AW

7/07/2020

ADCO Constructions Pty Ltd
Level 2
7-9 West Street
NORTH SYDNEY NSW 2060

Attn: Elizabeth Creswell

Marsden Park Public School - SSD 9809 Condition B16

This letter presents a review of Condition B16 of SSD9809, which requires a Construction Noise and Vibration Management Sub-Plan be prepared as part of the Construction Environment Management Plan for the site. The specific requirements of the condition and how they have been addressed in the CNVMSP prepared by Acoustic Logic (doc ref: 20200038.3/0607A/R0/AW) are detailed below.

B16. The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced noise expert;

Refer attached CV.

(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

Noise management levels for all surrounding receivers have been determined with reference to the Interim Construction Noise Guideline (Section 5.1), noting that the Department of Environment and Climate Change (DECC) has been replaced by the NSW EPA.

Noting these are management levels (rather than targets or criteria to be achieved), recommendations have been provided to minimise noise impacts to surrounding residents. As described in the ICNG, reasonable and feasible mitigation measures have been proposed where predicted noise level exceed the 'Noise Affected Management Level.' Refer section 6.3 & 6.5 for predicted noise levels and recommendations.

(c) hours of construction in accordance with conditions C3 to C8

Refer Section 2 and 4.2

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(d) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

Whilst bored piling is proposed to be undertaken, it would not be considered to be in close proximity to sensitive receivers. Noise levels generated by construction predicted to be below the 'Highly Noise Affected Management Level' at all times.

Refer Section 6.2 and 6.3

(e) include strategies that have been developed with the community for managing high noise generating works;

Refer Section 8.3.

(f) describe the community consultation undertaken to develop the strategies in condition B23(d); and

Refer Section 8.3.

(g) include a complaints management system that would be implemented for the duration of the construction; and

Refer Section 8 generally, and 8.2 specifically

(h) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with condition B12(d).

Noise impacts associated with the construction are expected to be mitigated through appropriate management and community consultation. As such, specific monitoring of noise is not considered to be required to determine effectiveness at this stage. If strong community reaction is experienced due to construction noise impacts, noise measurements may be taken at identified receivers to quantify the noise impact and develop appropriate management/mitigation strategies.

(i) detail the measures to be implemented to mitigate the potential noise impacts associated with the construction of Stage 2 while Stage 1 is in operation

Refer section 6.3 & 6.5 for predicted noise levels and recommendations.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Alex Washer

Qualifications & Experience
Bachelor of Engineering (Mechanical) – 2018

2017 - current	Project Engineer, Acoustic Logic Consultancy
2007 – 2017	Foreman/Project Manager, Moves Adds & Changes Pty Ltd

Outline of Experience

Beginning at ALC in 2017, Alex has developed experience in a variety of areas of noise and vibration measurement and assessment. Having worked in the building and construction industry for over 10 years, Alex has extensive experience with construction practices and projects.

Since working at Acoustic Logic, Alex has been involved in building certification/compliance, detailed assessment of acoustic impacts from building/operational use, application of statutory codes and requirements & acoustic design of buildings and mechanical systems.

Project Experience

A sample of projects Alex has been or is currently involved with as a Project Engineer include the following:

The Ribbon Hotel – IMAX, Commercial & Hotel Development

Rouse Hill Town Centre – Residential/Retail Town Centre Expansion

University of Wollongong – Western Building – Specialty Performance Spaces

Newmarket, Randwick – Residential Development

York & George – Residential Development

Concord Hospital – Public Hospital Expansion

Waitara Public School – School Expansion

ANNEXURE C

CONSTRUCTION WASTE MANAGEMENT SUB PLAN (CWMSP)

PEOPLE WHO BUILD

ADCO

WASTE MANAGEMENT PLAN

PROJECT NAME

NEW MARSDEN PARK PUBLIC SCHOOL

PROJECT NO.

CLIENT – SCHOOLS INFRUSTRUCTURE NSW
CLIENT PROJECT REFERENCE – SINSW00027/19

ADCO PROJECT NUMBER - 3429

VERSION CONTROL

Rev. No.	Issue Date	Approved By	Position	Details
R0	14/01/2020	Matthew Wilkinson	Construction Manager	Initial Plan
R1	25/06/2020	Dean Israel	Project Manager	SSD amendments

ADCO PROJECT PERSONNEL CONSULTATION AND SIGN OFF

We, the undersigned, confirm that we have been consulted on the contents of this document, read and understood the contents of this document, and agree to implement the requirements of this Plan on this project site

Name	Position	Signature	Date
Matthew Wilkinson	Construction Manager		
Dean Israel	Project Manager		25/06/2020
Matthew Wilson	Contracts Administrator		
Paul Gower	Site Manger		
Scott Wilson	Senior HSE Adviser		
Michael Brombal	HSE Adviser		

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WASTE MANAGEMENT PLAN

GENERAL

PRINCIPAL CONTRACTORS DETAILS

Name	State Address		ABN
ADCO Constructions Pty Ltd	Address	Level 2, 7-9 West Street	46 001 044 391
	Suburb	North Sydney	
	State	NSW	
	Phone	02 8437 5000	

PROJECT INFORMATION

Project Description	The project can be described as the Design & Construction of a permanent consolidated two-storey courtyard building with capacity to accommodate 1,000 students. This new school building is to be comprised of the following: 40 teaching spaces, canteen, library, multipurpose hall, office and administration space, staff and student amenities, out of school hours care accommodation, multi-purpose sporting facilities and outdoor play spaces, associated site landscaping and public domain improvements, on-site parking spaces and a drop-off and pick-up area, construction of ancillary infrastructure and utilities as required, Ancillary and support spaces, Special education units, Bus Bay, Parent pick up / drop off area, Car parking areas, Covered Outdoor learning areas. In addition to the main works the project also includes the design and construction of a Temporary 'Pop-up' school to service the local community until the main permanent school is complete. The temporary school comprises of demountable classrooms connected by raised timber walkways, timber framed awnings, asphalt pavements and external works and services. Upon completion of the main school the Temporary school will be dismantles and the remaining playing field and external works will be completed.
Project Address	The site is legally described as Lot 2889 in Deposited Plan 1230906. This is the corner of Northbourne Drive (to the east) and a proposed future road (to the north) within the Elara Estate, Marsden Park

Project Duration	Milestone 1A - Early Works Phase: February – May 2020 Milestone 1B – Temporary School : July 2020 – January 2021 Milestone 2 – Main School: July 2020 – July 2020 Milestone 3 – Temporary School Decant and External Works: July 2021 – December 2021
Separable Portions	Nil

WASTE MANAGEMENT PLAN

INTRODUCTION

PURPOSE OF THIS PLAN

This Management Plan has been produced for the following purposes:

- Compliance to legislation.
- Establishment of objectives for the project.
- Identification of risks and the control measures to be used to mitigate such risks.
- Subcontractor management requirements.
- Other EHS management requirements as required for this project.

PROJECT WASTE MANAGEMENT

ON SITE MANAGEMENT

General	/ Waste products will be recycled wherever possible. / Waste bins will be provided and emptied regularly to ensure that the site is kept clean. / General construction waste will be stored in skip bins at a nominated area on site. / Waste that is unsuitable for recycling will be disposed of to an approved landfill site. / No burning of rubbish, wood or other materials is allowed on site. / Tipping dockets will be obtained and a register of removed materials maintained.
Solids and liquids	/ Disposal of solid and liquid waste will be by an approved contractor to an approved location. / Liquid waste will be stored in impervious bunded containers at a nominated location on site.
Concrete	/ A concrete wash out area will be nominated on site. / Concrete washout will be recycled where possible and used on site to stabilise access or for fill material.
Contaminated	/ Contaminated materials identified on site will be managed on site and disposed of off-site by a licensed contractor. / Contaminated soil is to be loaded directly into trucks and removed to an approved landfill site. / Contaminated materials will be managed and disposed of by a licensed contractor.
Stockpiles	/ Stockpiles will be in areas approved by the Site Manager. / Stockpiles will be managed to prevent pollution.
Sewer	/ All waste from ablution blocks and lunch sheds will be connected to the main sewer system by a licensed contractor. / All waste from portable ablution blocks will be disposed of by a licensed liquid waste transporter to an approved facility.

WASTE CONTRACTOR/S	During the construction of the project, removal and recycling of waste will be provided by BINGO. Waste removed from site will be transported to an approved waste or recycling facility. All waste removed from site will be tracked through waste documents and/or monthly waste reports provided by the contractor.	
WASTE MATERIAL	Concrete and masonry product	/ Concrete waste generated during demolition will be recycled / Concrete wash out will be used for access paths and road where possible. All other concrete waste will be placed in designated skips on site. / Excess concrete will be returned to the supplier. / Masonry recovered during demolition will be recycled where possible by the demolition contractor. / Masonry off cuts from construction may be reused on site for temporary access ways or placed in designated skip bins for recycling.
	General waste	/ All general waste generated on site including food scraps will be placed in the bins provided in the amenities buildings. / Such waste will be removed from site by an approved contractor.

Excavated material	/ Normal excavation methods will be used by the approved contractor. / Work areas will have identification barriers to prevent unauthorised access. All personnel will be required to follow the safety management plan while conducting excavations works. / Any contaminated soil to be removed will be tested prior to removal directly to waiting trucks. Contaminated material will be transported by the most direct route to an approved treatment/landfill facility. / The transport of all materials from the site will conform to the requirements of the EPA, Local Councils, RTA and other relevant authorities. / Where contaminated material is to be stockpiled the area is to be designated by the approved consultant or site manager. Protective barriers are to be in place to warn and protect workers on site. / Trucks removing material from site will have the loads securely covered to prevent spillage. Drivers are required to ensure that no materials are tracked onto the road. All traffic leaving the site is to use the designated wash down bay to remove mud, dust and other debris. / Materials to be removed from site may include: - General waste including organic material, concrete and other hard waste - Imported fill material - Topsoil - Landfill waste - General fill - Unsuitable material - Contaminated material
Green waste	/ Green waste generated as a result of tree felling, mulching or top soil removal will be: / Removed from site and transported to an accredited waste facility.
Glass, paper, plastic and cardboard	/ During the construction of the project, such products will be placed in designated bins for recycling.
Plasterboard	/ During the construction of the project, such products will be placed in designated bins for recycling.
Polystyrene	/ During the construction of the project, such products will be placed in designated bins for recycling.

Steel and aluminium	/ Where practicable, such products recovered during the demolition process will be recycled. During the construction of the project, such products will be placed in designated bins for recycling.
Timber	/ Timber recovered during the demolition process will be assessed on site by the demolition contractor and recycled where possible / Timber will be used and cut in the most economical fashion where ever possible. / Timbers for formwork, temporary structures and handrails will be reused and maintained at full lengths wherever possible. / Rainforest timbers and Australian high conservation timbers will not be used on this project.

WASTE MANAGEMENT TARGETS

The following provides a list of estimated targets for waste products generated on this project, (Based on historical data from previous similar projects)

MATERIAL TYPE	Estimated Volume (CUM)	Estimated % Recycled	Disposal Location
Soil, Sand	15	25%	Just Skip Bins Camelia License Recycling Facility (EPL12700)
Concrete, Brick, Asphalt, Tiles	800	95%	
Recyclable Paper/Cardboard	15	90%	
Recyclable Plasterboard	30	90%	
Recyclable timber and green waste	650	90%	
Metal / Steel	275	95%	Sell and Parker Blacktown Licensed Metal recycling facility (EPL 11555)
General (Residual) Waste	250	0%	Bingo Industries Licensed Facility Eastern Creek
Project targets for Recycled and Non-Recycled waste			
Landfill: Recycled Waste		15% 85%	

ANNEXURE A - JUST SKIP BINS DISPOSAL FACILITIES

JUST SKIP BINS
1800 626 388

30th June 2020

ADCO Constructions Pty Limited
Northbourne Drive,
Marsden Park, NSW, 2756

By Email: deani@adcoconstruct.com.au

Dear Dean,

Confirmation of Disposal

This letter is to confirm that metal waste received from ADCO Constructions Pty Limited from their Marsden Park Public School Project is tipped at Sell and Parker licensed metal facility in Blacktown (EPL 11555).

Yours Faithfully

John Scarlis

Just Skip Bins Pty Ltd
ABN 34 623 417 676

39 Grand Avenue
Camellia NSW 2142

Ph: 1800 626 388
E: accounts@justskipbins.com.au

30 June 2020

Just Skip Bins Pty Ltd
39 Grand Avenue
Camellia NSW 2142

By Email: maree@justskipbins.com.au

Dear Maree

Confirmation of Disposal

This letter is to confirm that waste received from ADCO Constructions Pty Ltd from their Marsden Park Public School Project is tipped at our licensed recycling facility in Camellia (EPL 12700).

The waste is recycled in accordance with the POEO Act.

Yours faithfully

Harry Scarlis

KLF Holdings Pty Ltd
16 Grand Avenue
Camellia NSW 2142

Phone: (02) 9898 9178
Facsmile: (02) 9898 9300

info@klfholdings.com.au
www.klfholdings.com.au

1 July 2020

Just Skip Bins Pty Ltd
39 Grand Avenue
Camellia NSW 2142

By Email: maree@justskipbins.com.au

Dear Maree

Confirmation of Disposal

This letter is to confirm that waste received from ADCO Constructions Pty Ltd from their Marsden Park Public School Project is tipped at our licensed recycling facility in Camellia (EPL 12700).

The waste is recycled in accordance with the POEO Act. All residual general waste is transported to Bingo Industries' licensed facility at 1 Kangaroo Avenue, Eastern Creek NSW 2766 for further processing/landfill.

Yours faithfully

Harry Scarlis

KLF Holdings Pty Ltd
16 Grand Avenue
Camellia NSW 2142

Phone: (02) 9898 9178
Facsmile: (02) 9898 9300

info@klfholdings.com.au
www.klfholdings.com.au

ANNEXURE B – ADCO ASBESTOS MANAGEMENT PROCEDURE

PROCEDURE
ASBESTOS MANAGEMENT

ADCO

PLANNING

PURPOSE

This procedure has been developed to provide guidance on **Asbestos Management**.

The procedure is not conclusive as alternative requirements may apply nationally. It is recommended that further guidance is obtained from your State Regulatory Authority or through www.safeworkaustrialia.gov.au

DEFINITIONS

Asbestos	Asbestos is a naturally-occurring mineral found in rock, sediment or soil. It has strong fibres that are heat resistant and have good insulating properties. You can't see asbestos fibres with the naked eye and because they are very light, they can be blown long distances by the wind. Because of its durable properties asbestos building products have been used for many years prior to it being classified as unsafe and a carcinogen product.
Friable Asbestos	Friable asbestos is a material containing asbestos that when dry, it may be crushed or pulverised into powder form using your hand or plant. This material poses a higher risk of exposing people to airborne asbestos fibres.
Non Friable / Bonded Asbestos	Non-friable or bonded asbestos products are solid in nature and you generally can't crumble them in your hand—the asbestos has been mixed with a bonding compound such as cement. If non-friable asbestos is damaged or degraded it may become friable and will then pose a higher risk of fibre release.
Naturally Occurring Asbestos	Occurs in some rocks and soils as a natural mineral. With few exceptions, (like road building and maintenance in naturally occurring asbestos areas), the risk of exposure associated with naturally occurring asbestos is very low.

SAFETY ESSENTIALS

The project team are required to review the ADCO Safety Essentials to ensure that all mandatory risk management requirements are understood and completed prior to commencement or works, during the works and upon completion of the works.
Refer to ADCO – Safety Essentials

PROJECT RISK REGISTER AND MANAGEMENT PLANS

The Project Risk Registers/Management Plans developed by the **Project Manager** at the start of the project, provides project-specific information pertaining to identified high risk works, risks and control measures.

- The Risk Registers/Management Plans must be reviewed by the site team to familiarise themselves with identified high risk works to be undertaken.
- For the life of the project, the Risk Registers/management Plans should be reviewed on a regular basis and kept up to date with changes to scope and identified high risk works.
- Copies of the Risk Register and Safety Management Plan must be made available to all workers and interested parties.

Refer to Procedure: Performance Management

SITE PLANNING

Prior to commencing any work, the project team and relevant subcontractor must discuss and agree on the following, but not limited to:

- Hazardous Material Report / Asbestos Register
- Provision of an Asbestos Management Plan
- Assessor/Hygienist
- Sequence of work
- Method of removal, encapsulation or remediation
- Monitoring of work
- Impact on workers or public
- Decontamination for personnel and plant
- Disposal methods and approved tipping facility
- Air monitoring
- Inspections, clearance certificates
- Consultation and communication
- Legal and other requirements

Hazardous Materials Report

Prior to commencing any work such as Demolition, Asbestos Removal or any other construction work, a Hazardous Material Report which includes an Asbestos Register must be prepared for the intended project.

The Hazardous Material Report should include; but is not limited to the following:

- Any hazardous materials in the workplace (e.g. lead, asbestos, SMF, PCB's)
- Details of any asbestos known to be in the workplace (e.g. location, type, condition)
- Results of any analysis that confirms a suspect material at the workplace.
- Details of inaccessible areas.
- Photographs or drawings to visually show the location of the asbestos in the workplace.

Verification of competency of the person completing the report.

- The Report must be obtained by the **Project Manager / Site Manager** for review prior to commencing any work.
- The report must be completed by a competent person (Licensed Asbestos Assessor)
- Any testing and sampling must be in accordance with NATA specifications.

A copy of the Report must be kept on site and made available to interested parties

Asbestos Register

A person with management or control of a workplace must ensure an **Asbestos Register** is prepared and kept at the workplace. The register must be maintained to ensure the information in the register is up to date.

Note: A register is not required to be prepared when:

- The workplace is a building that was constructed after 31 December 2003, and
- No asbestos has been identified at the workplace, and
- No asbestos is likely to be present at the workplace from time to time.

However, if asbestos is identified, a person with management or control of a workplace must ensure a register is prepared for the workplace.

A person with management or control of a workplace must ensure an asbestos register is reviewed where necessary if:

- The asbestos management plan is reviewed
- Further asbestos or ACM is identified at the workplace
- Asbestos is removed from or disturbed, sealed or enclosed at the workplace, or refurbishment or demolition work is to be undertaken.

The register should be reviewed at least once every five years to ensure it is kept up to date.

Asbestos Management Plan

A person who has management or control of the workplace must ensure that an **Asbestos Management Plan (AMP)** is prepared if asbestos has been identified.

The asbestos management plan must:

- Identify the location of asbestos and any naturally occurring asbestos.
- Include decisions—and reasons for them—about the management of asbestos at the workplace, for example safe work procedures and control measures.
- Outline procedures for incidents and emergencies involving asbestos.
- Be maintained with up-to-date information.
- Be reviewed at least every five years or when requested by a health and safety representative, or when asbestos is removed, disturbed, sealed or enclosed, or when changes to a control measure are made or when the plan is no longer adequate.
- Be accessible to any worker or who has carried out or intends to carry out work at the workplace and any health and safety representatives who represent workers at the workplace.
- Provide information, consultation and training responsibilities to workers carrying out work involving asbestos.

Other information that could be included in the asbestos management plan includes:

- An outline of how asbestos risks will be controlled, including consideration of appropriate control measures.
- Identify those with responsibilities and their responsibility under the asbestos management plan.
- Air monitoring procedures at the workplace, if required.
- Disposal requirements.
- Appointment of the Asbestos Assessor.

Plan must be obtained by the **Project Manager / Site Manager** for review prior to commencing any work.

General notes:

- Where the activity involves removal of more than 10m^2 of (ANY TYPE) of Asbestos, a AMP inclusive of a SWMS is required for the works.
- The AMP must be prepared by a licenced asbestos removalist.
- Where the activity involves removal of less than 10m^2 of non-friable Asbestos, an AMP is not required. However, a detailed SWMS is required.

A copy of the AMP must be kept on site and made available to interested parties.

REGULATORY PERMITS AND NOTIFICATIONS

The **Project Manager** must ensure relevant permits have been acquired and are current for the intended works.

- Check with your State Regulatory Authority for notification and permit requirements.
- Contact: www.safeworkaustrialia.gov.au or the relevant State Regulatory Authority.
- Evidence of notification or permits must be kept on site and made available to interested parties.

CONTRACTOR COMPETENCY

Licenced Asbestos Assessor

A licenced Asbestos Assessor must be appointed for the asbestos works.

The purpose of the Assessor is to:

- Manage air monitoring requirements
- Identify potential asbestos and ACM
- Assess the risk of exposure to airborne asbestos
- Suggest measures to minimize or eliminate the risk of exposure
- Prepare an Asbestos Management Plan, or review existing plan if required
- Prepare an Asbestos Register for your site, or review your current register
- Be present and monitor air quality and procedures during asbestos work
- Conduct clearance inspections
- Provide clearance certificates

A copy of the Assessors licence must be verified, kept on site and made available to interested parties.

Contractor Licence

Prior to commencing any work, the subcontractor must provide written proof that they are currently licenced with the **State Regulatory Authority**.

- Note: check with your State Regulatory Authority for licence requirements.
- Contact: www.safeworkaustrialia.gov.au or the relevant State Regulatory Authority.

A copy of the Contractor licence must be verified, kept on site and made available to interested parties.

Note: Ensure the nominated supervising person is noted on the contractor's licence

Worker Competency

Prior to commencing any work, the subcontractor must provide evidence of competency for his supervisor's managing the works.

- CPCCBC4051A - Supervise Asbestos Removal

Prior to the start of work, the contractor must provide evidence of competency for his workers.

- CPCCDE3015A – Removal friable asbestos (Class A)
- CPCCDE3014A – Removal of non-friable asbestos (Class B)

A copy of all competencies must be verified, kept on site and made available to interested parties.

REVIEW AND APPROVAL

Prior to any works, all associated documentation relevant to the high-risk work must be reviewed, approved and regularly revised by the **Project Manager / Site Manager.**

Any concerns or issues must be raised immediately with the subcontractor and addressed. Where concerns or issues cannot be resolved, these must be elevated to the **Construction Manager**.

CHECKLIST COMMENCEMENT

Prior to commencing any work, the PLANNING section of the activity checklist must be completed and authorised by the **Project Manager**. If the **Project Manager** is unavailable to approve the PLANNING section of the checklist, the **Construction Manager** must complete and approve in their absence.

Activity Checklist – Asbestos Management
Refer to Procedure: Permit Management

SITE ACTIVITY MANAGEMENT

WORK AREA INSPECTION

Prior to commencing any work, the **Site Manager** together with the subcontractor supervisor must complete an inspection of the work area. The purpose of the inspection is to:

- Review the work area.
- Agree on the work activity, work schedule, risks and control measures.
- Review emergency procedures
- Obtain information required to complete the relevant Checklists and ATW Permit

CHECKLIST COMPLETION

Prior to commencing any work, the SITE ACTIVITY MANAGEMENT section of the activity checklist must be completed and authorised by the **Site Manager** prior to issuing an Authority to Work Permit. If the **Site Manager** is unavailable to approve the SITE ACTIVITY MANAGEMENT section of the checklist, the **Project Manager** or **Construction Manager** must complete and approve in their absence.

Activity Checklist – Asbestos Management
Refer to Procedure: Permit Management

AUTHORITY TO WORK PERMIT

Prior to commencing the work activity, an Authority to Work Permit must be issued by the **Site Manager** for the intended works.
Refer to Procedure: Permit Management

CONSULTATION

Information relating to the work and control measures must be provided to subcontract workers at site induction and through any other forms of consultation utilised on the project.
Refer to Procedure: Consultation and Communication

MONITORING REQUIREMENTS

MONITORING

The **Site Manager** must ensure that controls measures have been established and maintained for the duration of the works.

Monitoring should include:

- Compliance to SWMS methodology and controls
- Compliance to Permit condition
- Compliance to the Asbestos Management Plan
- Compliance to any additional agreed control measures
- Compliance to work activity PPE etc.

Observations should be recorded in the *Weekly Site Inspection* or other inspection formats.

Non – Compliance issues must be addressed in accordance with system requirements.
Refer to Procedure: Subcontractor Management
Refer to Procedure: Performance Management

Air Monitoring

Air monitoring involves the sampling of airborne fibres to assess exposure and the effectiveness of control measures.

- Friable Asbestos – Mandatory requirement
- Non-friable Asbestos –Recommended

Air Monitoring:

- Must be completed before, during and after the work by a competent person (Asbestos Assessor)
- Results should be posted on site and discussed with relevant / interested parties e.g. workers, HSE Committees etc
- Results are to be filed and archived for 30 years.

Waste Management

Material containing asbestos:

- Must not accumulate in work areas and should be collected and bagged/binned by the end of each shift.
- Must be sealed in double-lined, heavy-duty plastic sheeting ((200 µm minimum thickness) or double bagged before placement in a designated and excised waste skip.
- Must be labelled ASBESTOS

Waste skips used for the storage and disposal of asbestos waste must:

- Be placed in the asbestos removal work area or separately fenced.
- Be lined with plastic (min 200 µm thickness).
- Carry labels on the exterior warning of the ASBESTOS.

Waste Transport

Some states require operators of vehicles transporting hazardous waste to be licensed;

- QLD/VIC: Contaminated waste > 250kg in any load requires that the transport vehicle be licensed by a regulatory authority (i.e. EPA).
- NSW: Any load of >10m^2 of asbestos sheeting or 100kg of asbestos waste must be notified on-line to the EPA by the waste transporter.
- WA: No licence required

A copy of all licences must be kept on site

Copies of all waste disposal / tipping dockets must be obtained by the **Project Manager** or **Site Manager** and filled.

Health Surveillance

Working with asbestos has the potential for the following diseases if controls and precautions aren't established as detailed below.

The licenced subcontractor must arrange and pay for health checks by a medical practitioner for all workers or workers who may be exposed to asbestos during the removal process.

All health repots for asbestos must be kept for 40 years. worker must receive a copy of their health report.

Contact: www.safeworkaustrialia.gov.au or the relevant State Regulatory Authority for health surveillance requirements.

Asbestosis: Asbestosis is a chronic chest disease caused by inhalation of high concentrations of asbestos fibres. The condition can develop 10 to 20 years after initial exposure.

Lung Cancer: Lung cancer of the bronchial tubes, lungs and alveoli can develop after exposure to asbestos. Those who have been exposed to asbestos and who have smoked run a much greater risk of getting lung cancer.

Mesothelioma: Mesothelioma is a cancer of the lung lining. It can result from low-level exposure to asbestos and can take 30 to 45 years to develop after initial exposure.

Pleural Disease: Inflammation and irritation of outer lining of the lung, the pleura. The pleura stiffens and thickens and can fill with fluid. This thickening can restrict breathing.

Presence of Asbestos

A person with management or control of a workplace must ensure the presence and location of:

- all asbestos or ACM identified at the workplace is clearly indicated, and
- all asbestos or ACM assumed to be at the workplace, including where the asbestos is inaccessible, is clearly indicated.

If reasonably practicable, the presence and location of the asbestos or ACM must be indicated by a label. However, it may be more appropriate to use signs.

Decontamination Units

As directed by the Hazardous Material Report or risk assessment, a decontamination unit may be required for workers and equipment.

A decontamination unit is a transportable shower unit with a series of separate "cleaning" compartments which personnel proceed through to remove contaminants / pollutants they may have been exposed to during their work.

- The unit must be installed prior to the start of works
- Ensure it is fit for purpose
- Is connected and functional

Decontamination units may vary from size and design pending supplier or subcontractor preference.

Encapsulation

As directed by the Hazardous Material Report or risk assessment, the Asbestos affected areas may require partial or full encapsulation.

Asbestos encapsulation refers to the treatment of asbestos containing materials with sealants. These sealants then surround the asbestos fibres, thus preventing them from being released. The bridging encapsulant used in this method creates a membrane that penetrates the asbestos containing material and binds itself with the fibres.

Asbestos encapsulation may also mean creating a plastic "bubble" wrap around a building or area where asbestos is to be removed

Sampling ACM

A person with management or control of a workplace may identify asbestos or ACM by arranging for a sample of material to be analysed.

A sample must only be analysed by:

- NATA-accredited laboratory accredited for the relevant test method
- Laboratory approved by the regulator, or
- Laboratory operated by the regulator

Any sample taken should be sealed within a container, or double bagged using heavy duty plastic (200 µm thickness polyethylene), and appropriately labelled.

Once the results of the sampling are known, the person with management or control of the workplace must ensure the asbestos register is updated.

Personal Protective Equipment

Ensure all workers or other persons within the asbestos work zone are correctly protected and using prescribed PPE.

All protective equipment must meet Australian Standards.

PPE must be discarded as contaminated waste

Unexpected Finds

Any suspected ACM found during works which was not originally identified must be managed and controlled by:

- Stopping all work in the immediate area
- Establishing an exclusion zone around the affected area
- Erecting asbestos warning signs
- Covering the suspected material
- Keeping the material damp or wet
- Arranging for the material to be inspected and tested
- Advising all workers of the potential danger and control measure

Once material has been confirmed as asbestos, the **Site Manager** must ensure correct removal and disposal arrangements are arranged and undertaken.

Exclusion Zones

Exclusion zones are typically established / demarcated and or managed by;

- Solid barricades such as hoarding, barriers (concrete or water filled), crowd fencing, fixed fencing, temporary fencing, power webbing etc.
- Exclusion zones must be clearly sign posted to warn of dangers.
- Exclusion zones should have clear entry/exit points.
- As required, exclusion zones may require the assistance of spotters.

Work at Height

Refer to Procedure – Work at Height

Traffic Management and Movement

Refer to Procedure - Traffic Management

Operational Plans

The **Site Manager** is required to update project operational plans to reflect site operational conditions *(Traffic Movement Plan, Services Plan, Evacuation Plan etc.*

Refer to Procedure: Working around live services
Refer to Procedure: Traffic Management / Movement
Refer to Procedure: Emergency Management

End of Shift Inspection	At the end of each shift / close of each day, the Site Manager is required to review / inspect the work area to confirm that required control measures are in place and, that the work area is safe / secure. Observations should be recorded in the *Weekly Site Inspection* *Refer to Procedure: Performance Management*

ACTIVITY COMPLETION

WORK AREA REVIEW

At the end of each shift / close of each day / completion of work activities for which the Permit was issued, the Site Manager and Subcontractor Supervisor is required to review / inspect the work area to confirm that required control measures are in place and that the work area is safe / secure, and no further hazards / risks exist.

CLEARANCE CERTIFICATION

A Clearance Certificate is a document issued by a licensed Asbestos Assessor to confirm that:

- There is no visible asbestos residue remaining in the removal area or in the surrounding area.
- The work area is deemed to be free of airborne contaminants.

A Clearance certificate is required for all asbestos removal work on completion of the asbestos removal work (i.e. for each work area) and prior to any other works being permitted in the removal areas.

Clearance Certificates must be made available to any person who has access to the project site and posted on the site notice board.

DOCUMENTATION CLOSE OUT

After completion of the work, the Site Manager is required to close out the Permit.
Refer to Procedure: Permit Management

ADDITIONAL INFORMATION

LEGISLATION REFERENCE

National	www.safeworkaustrialia.gov.au
Victoria, Western	Refer to State Legislation
Code of Practice	How to Management and Control Asbestos in the workplace – Code of Practice 2018
Australian Standards	*AS2601-2001 - The Demolition of Structures*

EXAMPLES

Asbestos Fire Retardant

Asbestos Roof Sheeting

Asbestos Piping

Asbestos Popcorn Ceiling

Asbestos - Air monitoring

Asbestos - Register / Removal Plan

Asbestos – Waste Management

Asbestos - Identification

Asbestos - Sampling

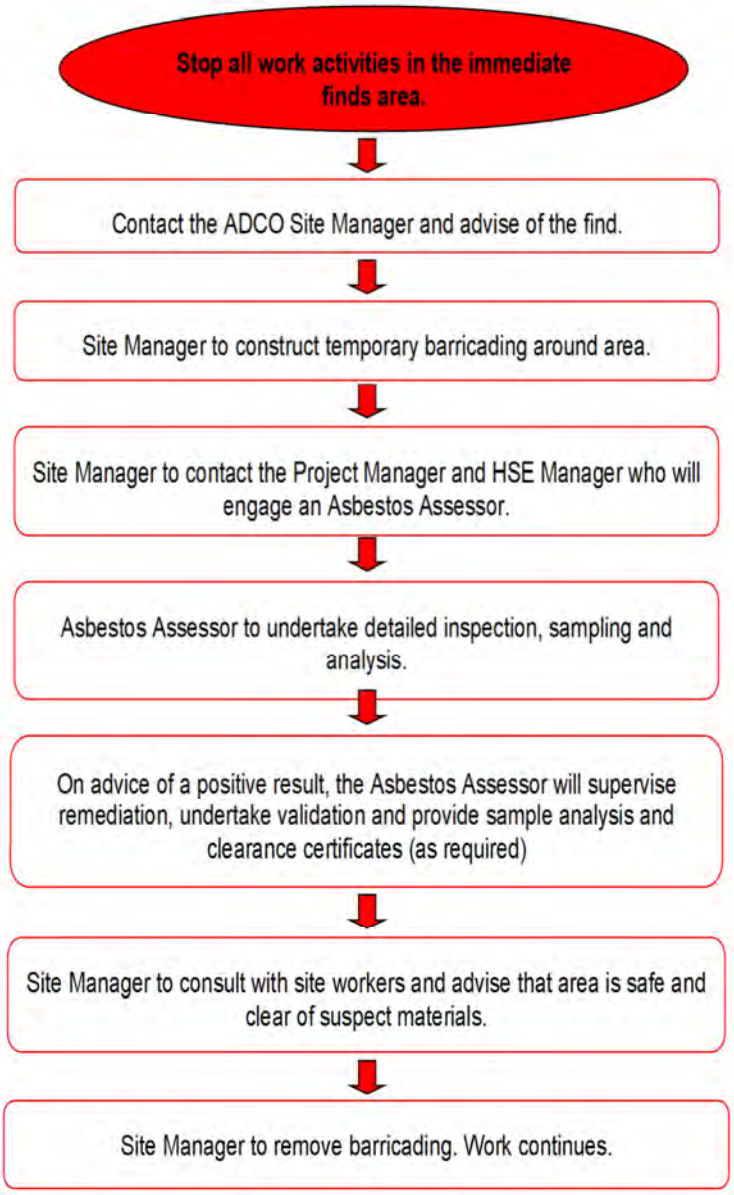
Asbestos - Encapsulation

ACM - Unexpected finds

PPE - Personal protective equipment

Unexpected Finds Protocol

ACTIONS TO BE FOLLOWED WHEN SUSPECT MATERIALS ARE FOUND



ANNEXURE D

CONSTRUCTION SOIL AND WATER MANAGEMENT SUB PLAN (CSWMSP)

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CONSTRUCTION SOIL & WATER MANAGEMENT PLAN

PROPOSED PRIMARY SCHOOL MARSDEN PARK, NSW

STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSD 9809)

Revision 1
July 2020

HENRY & HYMAS
SUITE 2.01, 828 PACIFIC HIGHWAY
GORDON NSW 2072
Our Ref: 19D28
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Project Verification

Project Title	Marsden Park Primary School
Document Title	CONSTRUCTION SOIL & WATER MANAGEMENT PLAN
Project Number	19D28
Description	CONSTRUCTION SOIL & WATER MANAGEMENT PLAN for STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSD 9809)
Client contact	Elizabeth Creswell ADCO

	Name	
Prepared By	Nicholas Wetzlar	
Checked by	Andrew Francis	
Issued by	Nicholas Wetzlar	
File Name	19D28 CSWMSP	

Document History

Date	Revision	Purpose	Recipients	Format	Checked
03/07/2020	CC	Construction Certificate	Ms Elizabeth Creswell	PDF	A.F

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Table of Contents

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Preface

This Soil and Water Management Plan (SWMP) has been written in accordance with the requirements of "Managing Urban Stormwater – Soils and Construction, 4th Edition (2004)" by Landcom. This SWMP shall be applied to the construction activities carried out for the development site.

It is the Contractor's responsibility to design the sedimentation and erosion control plan for the site such that it is accordance with this Soil and Water Management Plan and Blacktown City Council Construction Engineering Guide to Development (2005) and Civil Works Specification for Control of Erosion and Sedimentation.

The Development

This Soil and Water Management Plan (SWMP) has been prepared for ADCO Constructions PTY LTD to supplement the State Significant Development Application (SSD-9809) for the proposed Marsden Park Primary School. The site is located in a rapidly changing context on the northern extent of a master-planned urban release area as part of the larger North West Growth Centre (Marsden Park Precinct) – the Elara Stockland Residential Community. The site comprises an area of 2.2Ha for the construction of a two-storey enclosed courtyard building with capacity to accommodate a maximum of 1,000 students as well as necessary carparking and ancillary infrastructure, playing fields, landscaping and public domain improvements.

The school is proposed to be delivered in three stages. The first may include the construction of a temporary school facility. The school at this stage is expected to cater for approximately 500 students during any given time. The second stage comprises of the permanent two storey enclosed multipurpose building. The second stage includes the completion of sporting facilities, outdoor play areas, landscaping, carpark and public domain works e.g. drop-off and pick up-areas. The final stage, stage 3, includes the decommissioning of the temporary school and the finalisation of landscaping within the temporary school region. The date and duration of construction relative to each stage are listed below:

- Milestone 1B – Temporary School July 2020 – January 2021
- Milestone 2 – Main School July 2020 – June 2021
- Milestone 3 – Decant Temp school and complete remaining external works July 2021 – December 2021

The topography of the un-development site can be described as a slight fall to the north with grades that range generally around 2-3%. The site falls and is drained by the stormwater system in the road to the north (Bolwarra Drive), which later drains to a temporary water management basin constructed as part of the Clydesdale Precinct Stage 2. Regionally, the proposed site is located on within the South Creek catchment.

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Civil Engineering Drawings

This report is intended to be read in conjunction with the following civil engineering design drawings:

DRAWING SCHEDULE

19D28_CC_C000	COVER SHEET, DRAWING SCHEDULE & LOCALITY SKETCH
19D28_CC_C010	NOTES
19D28_CC_C050	TEMPORARY SCHOOL PLAN - SHEET 1 OF 2
19D28_CC_C051	TEMPORARY SCHOOL PLAN - SHEET 2 OF 2
19D28_CC_C100	GENERAL ARRANGEMENT PLAN
19D28_CC_C101	DETAIL PLAN - SHEET 1 OF 4
19D28_CC_C102	DETAIL PLAN - SHEET 2 OF 4
19D28_CC_C103	DETAIL PLAN - SHEET 3 OF 4
19D28_CC_C104	DETAIL PLAN - SHEET 4 OF 4
19D28_CC_C105	EXTERNAL ROADWORKS - SHEET 1 OF 5
19D28_CC_C106	EXTERNAL ROADWORKS - SHEET 2 OF 5
19D28_CC_C107	EXTERNAL ROADWORKS - SHEET 3 OF 5
19D28_CC_C108	EXTERNAL ROADWORKS - SHEET 4 OF 5
19D28_CC_C109	EXTERNAL ROADWORKS - SHEET 5 OF 5
19D28_CC_C110	ROADWORKS DETAIL SHEET
19D28_CC_C200	STORMWATER MISCELLANEOUS DETAILS & PIT LID SCHEDULE
19D28_CC_C201	STORMWATER MISCELLANEOUS DETAILS
19D28_CC_C209	OSD TANK PLAN
19D28_CC_C210	OSD TANK SECTIONS AND DETAILS
19D28_CC_C211	JELLY FISH DETAILS AND SECTION
19D28_CC_C212	STORMWATER TANK PLAN, SECTION AND DETAILS
19D28_CC_C250	STORMWATER CATCHMENT PLAN
19D28_CC_C251	DETAIL CATCHMENT PLAN
19D28_CC_C300	RETAINING WALL PLAN
19D28_CC_C305	RETAINING WALL DETAILS - RW1 LONGSECTION
19D28_CC_C310	RETAINING WALL DETAILS - SHEET 1 OF 2
19D28_CC_C311	RETAINING WALL DETAILS - SHEET 2 OF 2
19D28_CC_C500	PAVEMENT PLAN
19D28_CC_C501	PAVEMENT DETAILS
19D28_CC_BE01	BULK EARTHWORKS PLAN
APPLICABLE DRAWINGS TO SUB PLAN BELOW	
19D28_CC_SE01	**SEDIMENT & EROSION CONTROL PLAN**
19D28_CC_SE02	**SEDIMENT & EROSION CONTROL TYPICAL SECTIONS & DETAILS**
19D28_CC_SE03	**SEDIMENT & EROSION CONTROL PLAN - STAGE 2**

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Sediment and Erosion Control

Sediment and erosion control measures are to be implemented on-site to ensure that site run-off is appropriately treated of sediments in accordance with Blacktown City Council requirements.

On site run-off is proposed to be treated through the following measures:

- Appropriately sized sediment basins to ensure that sediments are stored and contained in a rain event. Contractor to manage, flocculate, clean and pump out basins as required. Details provided in following chapters.
- Catch drains to ensure that flows are directed to the sediment basins.
- Haybale filters to catch sediments within the catch drains.
- Mesh and gravel inlet filters around existing pits to ensure sediment cannot discharge into existing stormwater systems.
- Sediment fence along the boundary to ensure sediments are captured before conveyed through to adjacent properties or the public road.

General Instructions

1. The Soil and Water Management Plan (SWMP) is to be read in conjunction with the architectural plans, engineering plans, and any other plans or written instructions that may be issued in relation to the development at the subject site.

2. Contractors shall ensure that all soil and water management works are undertaken as instructed in this specification and constructed following the guidelines stated in “Managing Urban Stormwater – Soils and Construction, 4th Edition (2004)” by Landcom.

3. The Contractor shall ensure that all subcontractors are informed of their responsibilities in minimising the potential for soil erosion and pollution to downslope areas.

Site Constraints and Characteristics

1. The following design parameters have been assessed for the site:

Constraint	**Value**	**(Source)***
Rainfall Erosivity (R-factor)	2500	Appendix B - Map 10
Length/Slope Gradient Factor, LS	0.695 (solved by linear interpolation)	Appendix A - Table A1
Soil Erodibility (K-factor)	0.038	Appendix C - Table 20
Erosion Control Practice Factor (P-Factor)	1.3 (Compacted)	Appendix A - Table A2
Cover Factor (C-Factor)	1.0 (During Earthworks)	Appendix A - Figure A5

Calculated Soil Loss, A (RUSLE equation)	85.83 t/Ha/yr	A = R K LS P C
Soil Hydrologic Group	C	Appendix C Table 20
80th Percentile 5-day Rainfall Event	24.6mm (Blacktown)	Table 6.3a

* (Landcom Managing Urban Stormwater Manual Reference)

2. The sediment basin sizing has been conducted on a rate per hectare basis and has been sized in accordance with the requirements of the Landcom manual "Managing Urban Stormwater - Soils and Construction", for Type **D** soils. The disturbed area within this catchment at any one time should be limited to an area for which each sediment basin can manage.

Sediment Basin Sizing Calculation for Type D Soil:

	TOTAL
Volumetric Runoff Coefficient, Cv	0.51 (App. F Table F2)
80th percentile 5 Day total rainfall depth, R	24.6mm
Catchment Area, A	1.0 Ha (Unit Area)
Settling Zone Volume (per hectare) 10 Cv A R	**125.46 m^3**
Disturbed Catchment Area	1.0 Ha (Unit Area)
R K LS P C	85.83 t/Ha/yr
Sediment Storage Zone Volume (0.5 x Settling Zone)	**62.73 m^3**

* (Landcom Managing Urban Stormwater Manual Reference)

3. Since it is likely that construction will take more than six months, the basins have been sized to accommodate the 80th percentile of 5 day continuous storm. The total volume of the basins required is given in m^3 per hectare of disturbed area. Note: this is in accordance with direction provided in Blacktown City Council's Engineering Guideline (2005).

4. The non-disturbed portion of the catchment outside of operating area is to bypass the basins by means of lined catch drains.

Basin Management

1 The captured stormwater in the settling zone should be drained to meet the minimum storage capacity required within a five (5) day period following rainfall, provided the acceptable water quality (NFR) and turbidity have been achieved.

2 Chemical flocculent such as gypsum may be dosed to aid settling within 24 hours of conclusion of each storm. The applied dosing rates should achieve the target quality within 36 to 72 hours of the storm event.

3. Further details for basin management provided in Chapter 6 of Landcom's 'Blue-book'.

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Land Disturbance Conditions

1. Where practicable, the soil erosion hazard shall be kept as low as possible. Limitations to access are to be in accordance with the following table:

Land use	Limitation
Access Areas	Access is to be limited to the designated all weather roads.
Truck Wash Down Bay	Any truck exiting out of the site shall be thoroughly cleaned and limit the exportation of clay and sediment on public roads.

Construction Sequence

Works shall be undertaken in the following sequence:

1. Install sediment fencing and cut drains to meet the requirements of the SWMP. Waste collection bins shall be installed adjacent to site office.

2. Construct stabilised site access in location nominated by the Contractor and in accordance with Blacktown City Council's Construction Specification for Control of Erosion and Sedimentation. Blacktown City Council standard drawing A(BS)115M(c).

3. Construct sediment basin(s) for disturbed areas in accordance with the rate per hectare provided in the SWMP. Install risers and two pegs in the floor of the basin and have them marked to show the top of the sediment storage zone. Ensure the basin is cleared of sediment once the design capacity is reached. For stage two construct high level outlet to stage 1 stormwater system, refer chapter 'management of residual lot'. Jellyfish is not to be 'online' until stage 2 is 90% constructed. This can be achieved by constructing the diversion pier late stage.

4. Redirect clean water around the construction site.

5. Install sediment control protection measures at all natural and man-made drainage structures. Maintain until all the disturbed areas are stabilised.

6. Bunds shall be provided during construction to ensure that stormwater runoff does not enter open pits, manholes or shafts refer to civil drawings for details.

7. Clear and strip the work areas. Minimise the damage to the grass and low ground cover of non-disturbed areas.

8. Any disturbed areas, other than building pad areas, shall immediately be covered with site topsoil within 7 days of clearing. Building pad areas shall be covered with bitumen emulsion as specified.

9. Maintain sediment and erosion control measures until such stage that the site earthworks are finalised.

Erosion Control Requirements

1. Clearly visible barrier fencing shall be installed at the discretion of the site superintendent to ensure traffic control and prohibit unnecessary site disturbance. Vehicular access to the site shall be limited to only that essential for construction work and shall enter the site only through the stabilised access points.

2. Soil materials shall be replaced in the same layers they are removed from the ground i.e. all subsoils are to be buried and topsoil is to be respread on the surface at the completion of works.

3. All disturbed areas are to be stabilised within 14 working days of the completion of land shaping. All disturbed areas are to be protected so that the land is permanently stabilised within six months. Topsoil and revegetation will not be required for this site.

4. The long term ground cover factors for the construction works is not to exceed the following limits :

Land	**Maximum C-factor**	**Remarks**
Waterways and other areas of concentrated flows, post construction	0.05	Applies after ten working days of completion of formation and before concentrated flows are applied. Foot and vehicular traffic is prohibited in this area and 70% ground cover is required.
Stockpiles, post construction	0.10	Applies after ten working days from completion of formation. 60% ground cover is required.
All lands, including waterways and stockpiles, during construction.	0.15	Applies after 20 days of inactivity, even though works may be incomplete. 50% ground cover is required.

Sediment Control Conditions

1. Proprietary silt fencing shall be installed by the Contractor in accordance with their approved Sediment and Erosion Control Plan and elsewhere at the discretion of the site superintendent to contain coarser sediment fractions as near as possible to their source.

2. Sediment removed from any trapping device shall be relocated where further pollution to downslope lands and waterways cannot occur.

3. Stockpiles shall be located by the Contractor in accordance with their approved Sediment and Erosion Control Plan and elsewhere at the discretion of the site superintendent. Where stockpiles are to be in place longer than 30 days they shall be stabilised by covering with mulch or with temporary vegetation.

4. Water shall be prevented from entering the permanent drainage system unless it is sediment free. Drainage pits are to be protected in accordance with the Contractor's approved Sediment and Erosion Control Plan.

5. Temporary sediment traps at pits shall be retained until after lands they are protecting are completely rehabilitated.

Site Maintenance Requirements

1. Waste bins are to be provided for all construction refuse. They are to be emptied at least weekly and refuse is to be disposed in accordance with the site manager's recommendations.

2. The site manager shall inspect the site at least weekly and shall;

    1) Ensure that all drains are operating effectively and shall make any necessary repairs;

    2) Remove any spilled material from area subject to runoff or concentrated flow;

    3) Remove trapped sediment where the capacity of the trapping device falls below 60%;

    4) Inspect the sediment basins after each rainfall event and/or weekly. Ensure that all sediment is removed once the sediment storage zone is full (refer to pegs installed in basins in accordance with the SWMP). Ensure that outlet and emergency spillway works are maintained in a fully operational condition at all times.

    5) Ensure rehabilitated lands have effectively reduced the erosion hazard and initiate upgrading or repair as appropriate;

    6) Construct additional erosion or sediment control works as may be appropriate to ensure the protection of downslope lands and waterways;

    7) Maintain erosion and sediment control measures in a fully functioning condition at all times until the site is rehabilitated;

    8) Remove temporary soil conservation structures as the last activity in the earthworks program.

Wet Weather Plan/Strategy

Pre-Storm

- Site Manager to walk site immediately before/ at the beginning of a storm event to ensure all sediment and erosion control measures are in place

- All machinery and equipment to be stored under cover and outside of any overland flow paths

Post Storm

- Site manager to review excavated batters on site and assess to batter destabilization and signs of erosion.
- Contractor to inspect/clean/pump out sediment basin as required.
- Contractor to inspect/clean/ haybale filters as required.
- Contractor to inspect/clean/ mesh and gravel inlet filters as required.
- Contractor to inspect sediment fence along boundary

Management of Residual Lot

Due to the complex nature of earthworks and staging during the construction of the development the sediment and erosion basin in the residual lot is proposed to managed in a three-stage process, see below (refer to drawings in Appendix B):

- Construction stage: Run-off from the lot (and temporary additional run-off from school site) is directed to the sediment and erosion control basin which is appropriately maintained, flocculated and dewatered to the access road in-ground drainage system, refer above for details. The high-level outlet is to be constructed 250mm below the spillway of the basin however is to be covered with a sealed lid preventing water from draining during this construction stage. When the temp school is active there will likely be no sediments directed to the basin, in which case it is possible the sediment basin can be temporary filled if site conditions dictate. However, when the temp school is decommissioned the basin will need to be recommissioned to capture sediments from the field construction.
- Undeveloped residual lot stage (temp school is decommissioned and playing filed is established): Once vegetation has been established and the site is protected against scour and erosion the residual lot will drain to the basin and will be drained via the high-level outlet within the decommissioned sediment and erosion basin connected to pit Y-1. The high-level outlet sealed lid is to replaced with a surcharge style grated lid.
- Developed residual lot stage: Stormwater will be captured by the Lot's stormwater drainage system and will drain via the stormwater stubs connections provided (high-level outlet removed and cut back) and drain via Y-1 to road stormwater system. Basin is to removed following the residual lot development.

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State Significant Development Application (SSDA) Consent Conditions

Except of SSDA conditions of consent:

B18. The Applicant must prepare a Construction Soil and Water Management Plan Sub-Plan (CSWMSP) and the plan must address, but not be limited to the following:

(a) be prepared by a suitably qualified expert;

(b) be consistent with Council's sediment and erosion controls policies listed in Blacktown City Council's Engineering Guide to Development (2005) and Civil works specification;

(c) describe all erosion and sediment controls to be implemented during construction, including as a minimum, measures in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'. The erosion and sediment controls must be consistent with the Council approved *Bulk Earthworks Modifications Plan* for the site (Council Reference MOD-20-00079);

(d) provide a plan of how all construction works will be managed in wet-weather events (i.e. storage of equipment, stabilisation of the Site);

(e) detail all off-Site flows from the Site; and

(f) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 1-year ARI and 1 in 5-year ARI.

Henry & Hymas offer the following comments in regards to the above conditions:

a) This Construction Soil and Water Management Plan has been prepared by Nicholas Wetzlar, a senior engineer for Henry & Hymas with over 8 years of experience in the industry. The plan has been reviewed and approved by Andrew Francis, Director of Civil department within Henry & Hymas (refer to CV included in Appendix C).

b) This sediment and erosion control plan and strategy has been prepared in accordance with Council's requirements. Councils standard details applicable to the proposed control plan and strategy are shown in Appendix C. The standard details shown on Council's standard drawings (included for reference) are equal and comparable in design and function to those shown on civil engineering design drawings 19D28_CC_SE01 (E), 19D28_CC_SE02 (E), 19D28_CC_SE03 (B). Council's Engineering Guideline (2005) and Civil Works Specification reference works to be constructed in accordance with Landcom's 'Blue Book', refer below.

c) All sediment and erosion controls described within this report and the sediment and erosion control pans included in Appendix B (refer civil engineering design drawings 19D28_CC_SE01 (E), 19D28_CC_SE02 (E), 19D28_CC_SE03 (B)) have been designed in accordance with measures listed in the Landcom's "Blue-Book'. Specifically sizing of basins and other Sediment and erosion measures have been undertaken in accordance with Chapter 6.3 Sediment Control of Landcom's "Blue-Book'.

d) Refer to the section *Wet Weather Plan/Strategy* for details summarizing the action required to be taken immediately before, during and after wet weather events.

e) Refer to the sediment and erosion control drawings included within Appendix B of this report for flow path and discharge point details.

f) **Stormwater flows:**
During storms up to the 1 in 20-year ARI event (which is greater in magnitude to both the 1 in 1, and 1 in 5-year event), run-off induced stormwater flows will be directed to the sediment basins via catch drains. The sediment and erosion control infrastructure directing the run-off induced stormwater flows to the basin have been designed to accommodate the 1 in 20 ARI storm events.

Stormwater is discharged from the basin to the inground stormwater network after been appropriately flocculated and managed prior to discharge. Storm events in excess of the basin's design capacity (as sized and designed under industry documentation – Landcom's "Blue-book") will be drained via a high-level outlet in the basin which connects to the stormwater system.

In storm events greater than the 1 in 20-year ARI event, run-off induced stormwater flows will similarly flow to the sediment basin via catch drains. It is expected that the downstream in-ground pipe network will not have been sized to convey the 1 in 100-year flows, and it is likely that captured and controlled stormwater flows will overtop pits and basins and be conveyed through the site as overland flow in a safe and controlled matter. In both stages of construction, the overland flow will ultimately be directed to Bolwarra Drive and will be safely conveyed to the downstream temporary channel as part of the wider subdivision stormwater management system.

Flooding Flows:
As part of due diligence investigations for the proposed development, it was identified through the use of Blacktown City Council's BLEP 2015 Maps online that the site is located within the Low Flood Risk Precinct. Although the development is located in the low risk flood plain, the proposed development is only subject to mainstream flooding in extremely rare flood event such as the probable maximum flood (PMF).

The lowest corner portion adjacent to the northern boundary of the site current sits at 21.16m AHD. From a review of the Hawkesbury-Nepean Valley Regional Flood Study 2019, Volume 3: Map Book Part B: Flood extents, depths and contours, it was determined that the site remained outside of the floodplain up to and in excess of the 0.1% AEP (1 in 1000 year) event. Moreover, it is likely the construction intensive portion of the site would not be subject to flooding unless an the 1 in 2000-year to 1 in 5000-year event occurs. Given the extremely unlikely likelihood of inundation in comparison to the relatively short period/duration of construction, sediment and erosion control measures were designed to prioritise the appropriate management sediments from the site, with considerations for flooding only applied where effectiveness of the system would not compromise.

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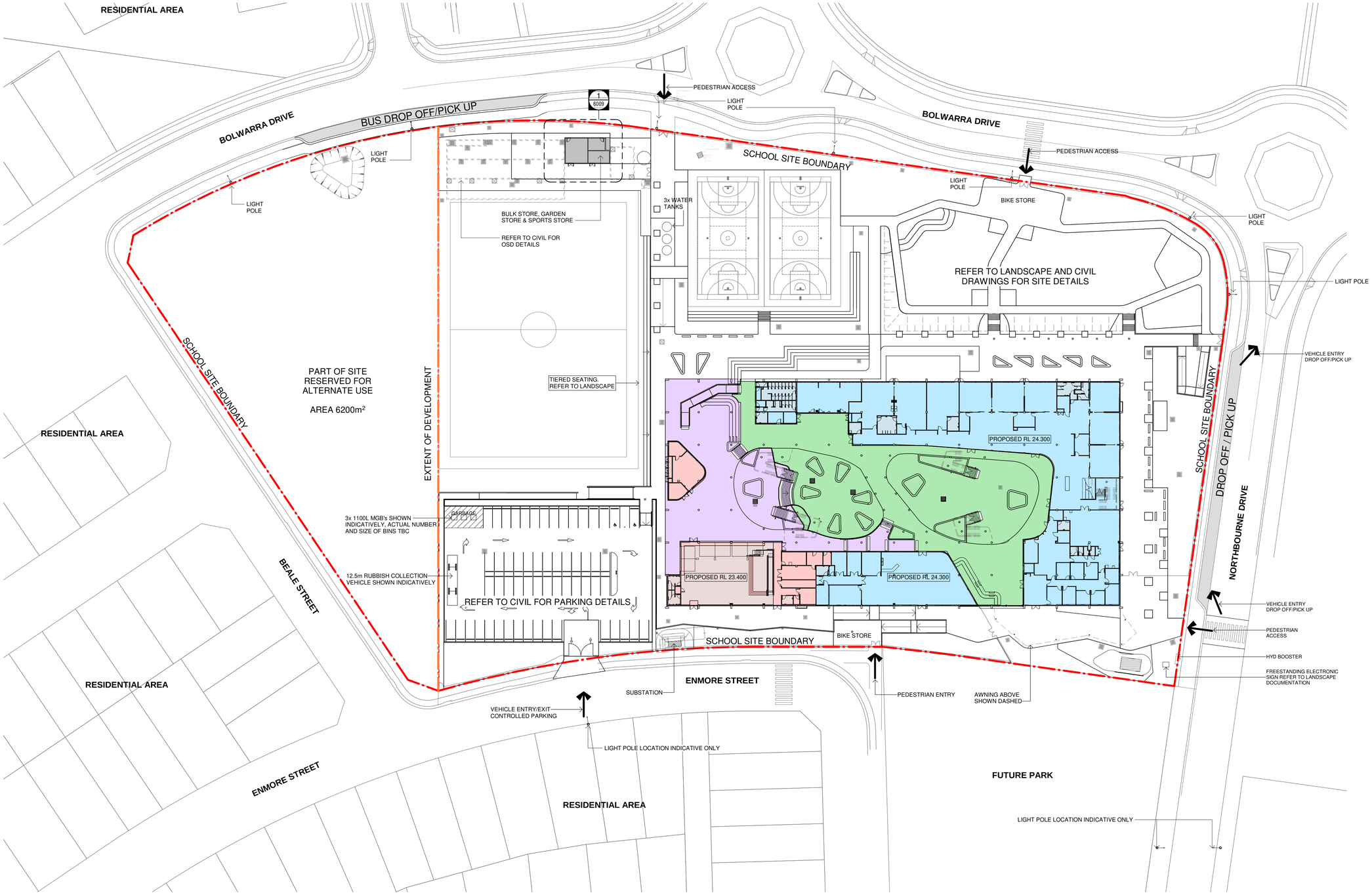
Appendix A – Architectural Concept Plans – Site Plan

NBRSARCHITECTURE.



1 SITE PLAN/
1 : 500

CIVIL DESIGN LEVELS UPDATED

NOTE: FOR BUILDING SET-OUT
REFER TO DRAWING 0500

Issue

No.	Date	Description	Chkd
5	10/03/2020	SCHEMATIC AMENDMENTS	EK
6	12/03/2020	REVISED LAYOUT TO SUIT GARBAGE TRUCK	EK
7	26/03/2020	REVISED SITEPLAN	EK
8	01/04/2020	TIERED SEATING AND RAMPS UPDATED	AH
9	23/04/2020	DRAFT DETAILED DESIGN PACKAGE	EK
10	15/05/2020	DETAIL DESIGN ISSUE	EK
11	10/06/2020	UPDATED RET. WALL & RAMP	EK

DETAILED DESIGN

- LEVEL 1 **RL 23.400**
- LEVEL 1 COURTYARD
- UPPER LEVEL 1 **RL 24.300**
- UPPER LEVEL 1 COURTYARD

Drawing Title
SITE PLAN

Project
MARSDEN PARK PUBLIC SCHOOL

at

Architect
NBRSARCHITECTURE.
Sydney
61 2 9922 2344 nbrsarchitecture.com

Nominated Architects:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197

ABN 16 002 247 565

Date 24/06/2020 4:04:20 PM
Scale 1 : 500 @ A1

Drawing Reference
19154-NBRS-A-0100

Revision
11

0 1 2 3 4 5 6 7 8 9 10

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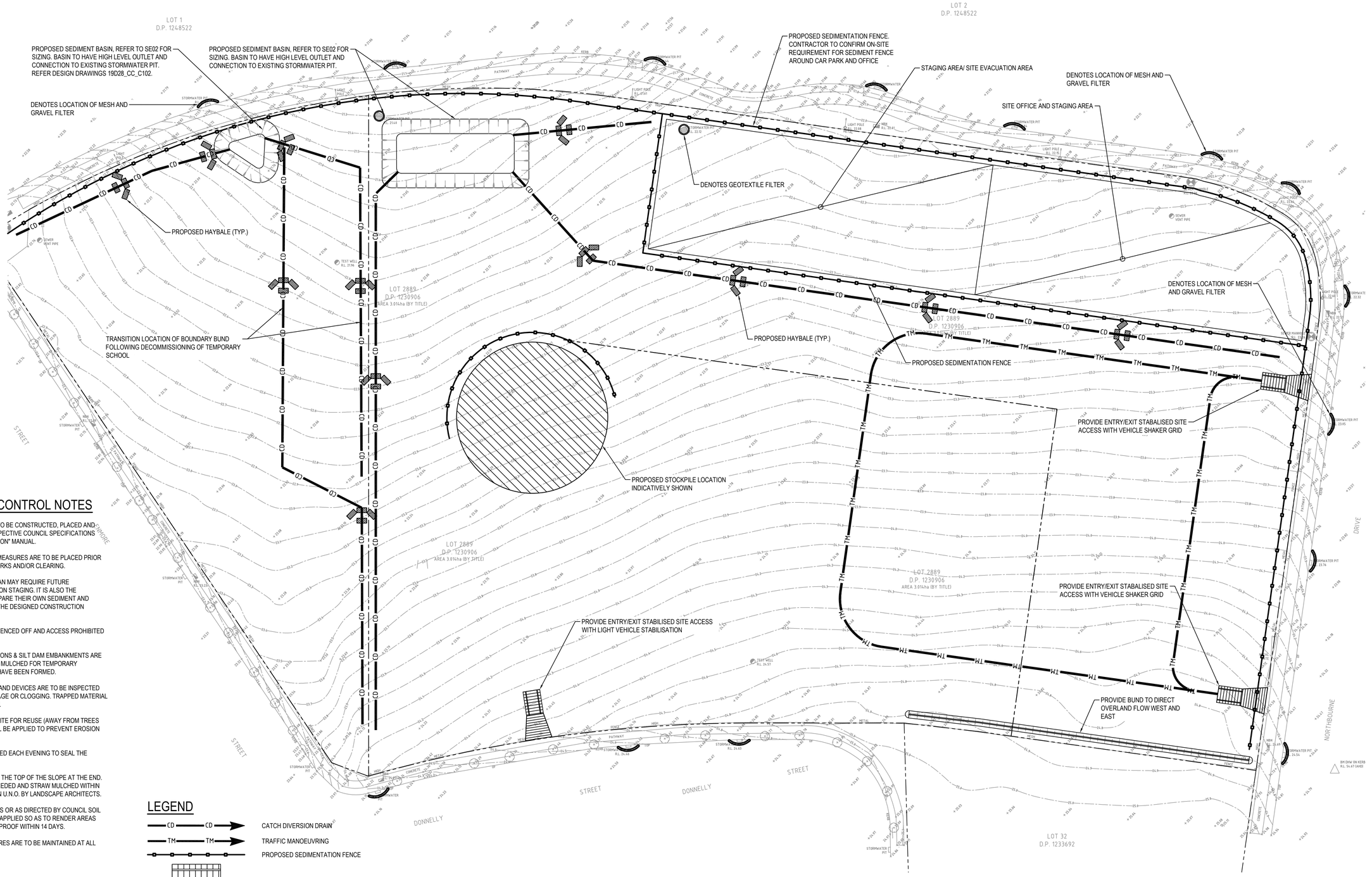
Appendix B – Civil Engineering Design Drawings



SEDIMENT & EROSION CONTROL NOTES

- ALL SEDIMENT CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH RESPECTIVE COUNCIL SPECIFICATIONS AND LANDCOM'S "SOIL AND CONSTRUCTION" MANUAL.
- ALL PERIMETER & SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP IN EARTH WORKS AND/OR CLEARING.
- THE SEDIMENT & EROSION CONTROL PLAN MAY REQUIRE FUTURE ADJUSTMENT TO REFLECT CONSTRUCTION STAGING. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO PREPARE THEIR OWN SEDIMENT AND EROSION CONTROL PLAN WHICH SUITS THE DESIGNED CONSTRUCTION STAGING.
- FILTRATION BUFFER ZONES ARE TO BE FENCED OFF AND ACCESS PROHIBITED TO ALL PLANT AND MACHINERY.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS & SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED & MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE LOCATION.
- ALL TOPSOIL IS TO BE STOCKPILED ON SITE FOR REUSE (AWAY FROM TREES AND DRAINAGE LINES). MEASURES SHALL BE APPLIED TO PREVENT EROSION OF THE STOCKPILES.
- ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO SEAL THE EARTHWORKS.
- ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND STRAW MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION U.N.O. BY LANDSCAPE ARCHITECTS.
- UPON COMPLETION OF ALL EARTHWORKS OR AS DIRECTED BY COUNCIL SOIL CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.
- EROSION AND SILT PROTECTION MEASURES ARE TO BE MAINTAINED AT ALL TIMES.

LEGEND

- CD CD — CATCH DIVERSION DRAIN
- TM TM — TRAFFIC MANOEUVRING
- PROPOSED SEDIMENTATION FENCE
- PROPOSED VEHICLE SHAKER GRID
- PROPOSED STABILISED SITE ACCESS
- PROPOSED STOCKPILE LOCATION
- PROPOSED HAYBALE FILTER

0 8 16 24 32 40m
8 6 4 2
SCALE 1:400

SEDIMENT & EROSION CONTROL PLAN

SCALE 1:400

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
D	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	IK	NW	18.05.2020
C	ISSUED FOR CONSTRUCTION	IK	NW	23.04.2020
B	ISSUED FOR CONSTRUCTION	IK	NW	27.03.2020
A	ISSUED FOR CONSTRUCTION	IK	NW	25.03.2020

Client: ADCO CONSTRUCTIONS PTY LTD
Architect: NBRS ARCHITECTURE

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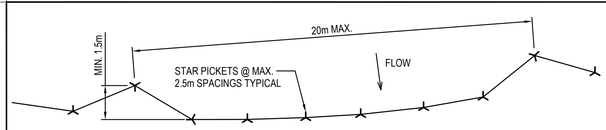
Project: MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

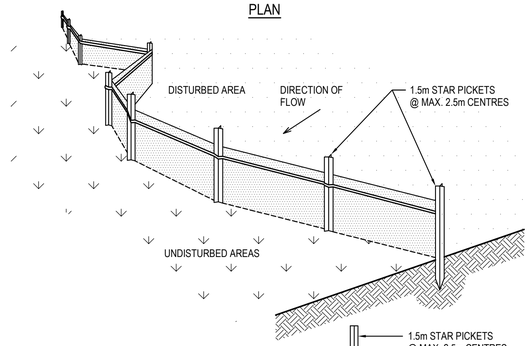
Title: SEDIMENT & EROSION CONTROL PLAN

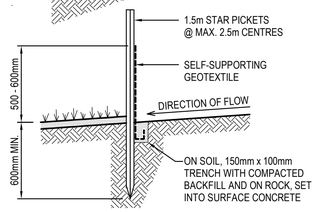
Drawn	Designed	Date
I.Khachab	N.Wetzlar	MARCH 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:400

Drawing number: 19D28_CC_SE01
Revision: D



PLAN





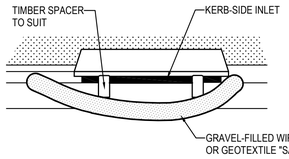
SECTION DETAIL

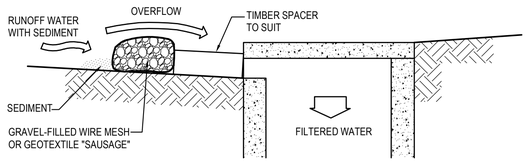
SEDIMENT FENCE

N.T.S.

SEDIMENT FENCE CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. 3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND @ 2.5m INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. 4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. 5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP. 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



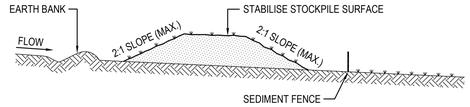


MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:

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

MESH & GRAVEL INLET FILTER

N.T.S.



STOCKPILE CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

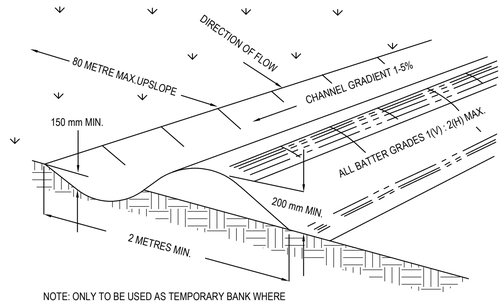
STOCKPILES

N.T.S.

CONSTRUCTION SEQUENCE

WORKS SHALL BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:

1. INSTALL SEDIMENT FENCING AND CUT DRAINS TO MEET THE REQUIREMENTS OF THE SEDIMENT AND EROSION CONTROL PLAN. WASTE COLLECTION BINS SHALL BE INSTALLED ADJACENT TO SITE OFFICE.
2. CONSTRUCT STABILISED SITE ACCESS IN ACCORDANCE WITH LOCAL COUNCIL'S REQUIREMENTS.
3. REDIRECT CLEAN WATER AROUND THE CONSTRUCTION SITE.
4. INSTALL SEDIMENT CONTROL PROTECTION MEASURES AT ALL NATURAL AND MAN-MADE DRAINAGE STRUCTURES. MAINTAIN UNTIL ALL THE DISTURBED AREAS ARE STABILISED.
5. CLEAR AND STRIP THE WORK AREAS. MINIMISE THE DAMAGE TO THE GRASS AND LOW GROUND COVER OF NON-DISTURBED AREAS.
6. ANY DISTURBED AREAS, OTHER THAN BUILDING PAD AREAS, SHALL IMMEDIATELY BE COVERED WITH SITE TOPSOIL WITHIN 7 DAYS OF CLEARING. BUILDING PAD AREAS SHALL BE COVERED WITH BITUMEN EMULSION AS SPECIFIED.
7. APPLY PERMANENT STABILISATION TO SITE (LANDSCAPING).



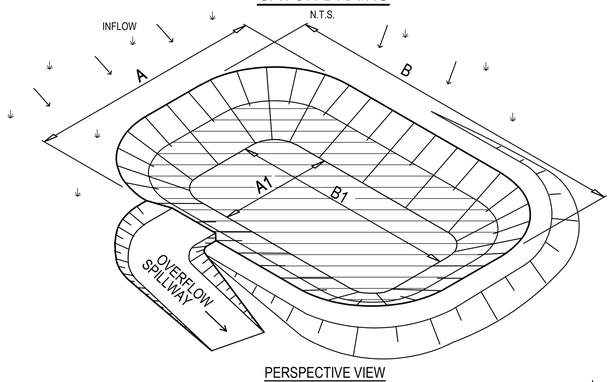
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAC.UPSLOPE LENGTH IS 80 METERS.

CATCH DRAIN CONSTRUCTION NOTES:

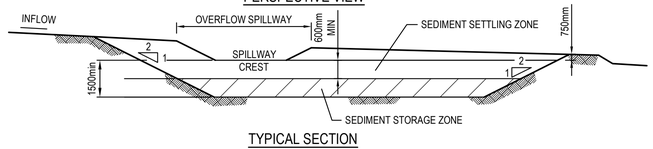
1. CONSTRUCT ALONG GRADIENT AS SPECIFIED.
2. MAXIMUM SPACING BETWEEN BANKS SHALL BE 80 METRES.
3. DRAINS TO BE OF PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
4. EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
5. CONSTRUCTION IS OF A TEMPRORARY NATURE AND SHALL BE COMPACTED AT THE END A DAYS WORK OR IMMEDIATELY PRIOR RAIN.
6. ALL OUTLETS FROM DISTURBED LANDS ARE TO FEED INTO SEDIMENT BASIN OR SIMILAR.
7. DISCHARGE RUNOFF COLLECTED FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL AISTE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED.
8. COMPACT WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
9. EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

CATCH DRAINS

N.T.S.



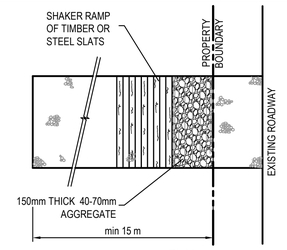
PERSPECTIVE VIEW



TYPICAL SECTION

TYPE 'D' & 'F' SEDIMENTATION BASIN

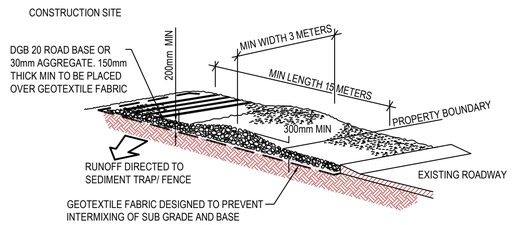
N.T.S.



PLAN

STABILISED SITE ACCESS WITH SHAKER RAMP

N.T.S.



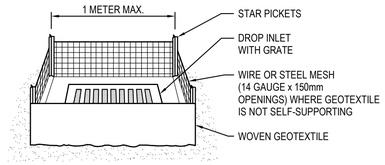
GEOTEXTILE MAY BE A WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

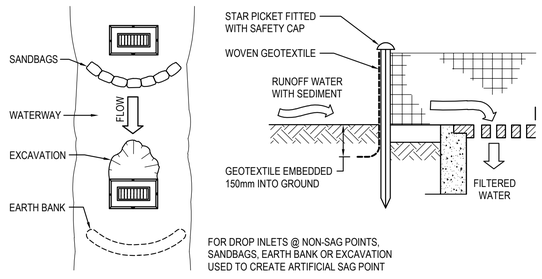
STABILISED SITE ACCESS WITH SHAKER RAMP

N.T.S.

NOTES:

1. THIS DEVICE IS TO BE LOCATED AT ALL EXITS FROM CONSTRUCTION SITE.
2. THIS DEVICE IS TO BE REGULARLY CLEANED OF DEPOSITED MATERIAL SO AS TO MAINTAIN A 50mm DEEP SPACE BETWEEN PLANKS.
3. ANY UNSEALED ROAD BETWEEN THIS DEVICE AND NEAREST ROADWAY IS TO BE TOPPED WITH 100mm THICK 40-70mm SIZE AGGREGATE.
4. ALTERNATIVELY, THREE(3) PRECAST CONCRETE CATTLE GRIDS (AS MANUFACTURED BY "HUMES CONCRETE MAY BE USED. 1, 2 & 3 ABOVE ALSO APPLY.





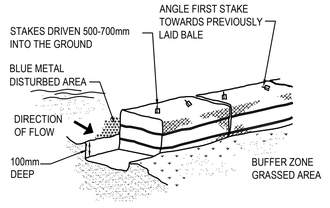
FOR DROP INLETS @ NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION USED TO CREATE ARTIFICIAL SAG POINT

GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.
2. PICKET SPACING TO BE MAXIMUM 1.0m.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILES UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER

N.T.S.



HAYBALE BARRIERS

N.T.S.

F

SEDIMENT BASIN SIZING

1. THE SEDIMENT BASIN SHALL BE CONSTRUCTED ON A RATE PER HECTARE BASIS AND HAS BEEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE LANDCOM MANUAL "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", FOR SEDIMENTATION **TYPE D** SOILS. THE DISTURBED AREA WITHIN THIS CATCHMENT AT ANY ONE TIME SHOULD BE LIMITED TO AN AREA FOR WHICH EACH SEDIMENT BASIN CAN HANDLE. EACH BASIN SHALL BE SIZED IN ACCORDANCE WITH THE TABLE BELOW.

SEDIMENT BASIN SIZING TYPE D SOILS	
VOLUMETRIC RUNOFF COEFFICIENT, CV	0.51 (APPENDIX F - TABLE F2)
75TH PERCENTILE 5 DAY TOTAL RAINFALL DEPTH, R	24.6 mm
CATCHMENT AREA, A	1 Ha (UNIT AREA)
SETTLING ZONE VOLUME (PER HECTARE) 10 CV A R	**125.46 m³**
DISTURBED CATCHMENT AREA	1 Ha (UNIT AREA)
R K LS P C	85.83 m³
SEDIMENT STORAGE VOLUME (PER HECTARE)	**62.73 m³ (0.5 X SETTLING ZONE VOLUME)**

* (LANDCOM MANAGING URBAN STORMWATER MANUAL REFERENCE)

2. THE FOLLOWING DESIGN PARAMETERS HAVE BEEN ASSESSED FOR THE SITE:

CONSTRAINT	VALUE	(SOURCE)*
RAINFALL EROSIVITY (R-FACTOR)	2500	APPENDIX B
LENGTH/SLOPE GRADIENT FACTOR, LS	0.695	APPENDIX A - TABLE A1
SOIL ERODIBILITY (K-FACTOR)	0.038	(ASSUMED BASED ON SOIL TYPE)
EROSION CONTROL PRACTICE FACTOR (P-FACTOR)	1.3 (COMPACTED)	APPENDIX A - TABLE A2
COVER FACTOR (C-FACTOR)	1.0 (DURING EARTHWORKS)	APPENDIX A - FIGURE A5
CALCULATED SOIL LOSS, A (RUSLE EQUATION)	85.83 t/Ha/YR	A = R K LS P C
SOIL HYDROLOGIC GROUP	GROUP C	(ASSUMED BASED ON SOIL TYPE)
SEDIMENT TYPE	TYPE D	(ASSUMED BASED ON SOIL TYPE)
80TH PERCENTILE 5-DAY RAINFALL EVENT	24.6 mm (BLACKTOWN)	TABLE 6.3A

* (LANDCOM MANAGING URBAN STORMWATER MANUAL REFERENCE)

BASIN MANAGEMENT

1. THE CAPTURED STORMWATER IN THE SETTLING ZONE SHOULD BE DRAINED TO MEET THE MINIMUM STORAGE CAPACITY REQUIRED WITHIN A FIVE (5) DAY PERIOD FOLLOWING RAINFALL, PROVIDED THE ACCEPTABLE WATER QUALITY (NFR) AND TURBIDITY HAVE BEEN ACHIEVED.
2. CHEMICAL FLOCCULENT SUCH AS GYPSUM MAY BE DOSED TO AID SETTLING WITHIN 24 HOURS OF CONCLUSION OF EACH STORM. THE APPLIED DOSING RATES SHOULD ACHIEVE THE TARGET QUALITY WITHIN 36 TO 72 HOURS OF THE STORM EVENT.
3. INSPECT THE SEDIMENT BASINS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL (REFER TO PEGS INSTALLED IN BASINS IN ACCORDANCE WITH THE SWMP). ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

SOWING SEASON	SEED MIX
AUTUMN/WINTER	OATS@40KG/Ha + JAPANESE MILLET@10kg/Ha
SPRING/SUMMER	OATS@20kg/Ha + JAPANESE MILLET@20kg/Ha

NOTE : THESE PLANT SPECIES ARE FOR TEMPORARY REVEGETATION ONLY. THEY WILL ONLY PROVIDE PROTECTION FROM EROSION FOR SIX MONTHS. WHERE THE LOTS ARE TO BE LEFT UNDEVELOPED FOR A LONGER PERIOD, THE CONTRACTOR SHALL SEEK ADVICE FROM THE SITE SUPERINTENDENT AS TO MORE APPROPRIATE REVEGETATION METHODS.

REVEGETATION IN ACCORDANCE WITH THE ABOVE TABLE WILL BE ENHANCED BY ADDING LIME AT A RATE OF 4kg/TONNE OF TOPSOIL AND 7.5kg/TONNE OF SUBSOIL.

4. THE LONG TERM GROUND COVER FACTORS FOR THE CONSTRUCTION WORKS IS NOT TO EXCEED THE FOLLOWING LIMITS:

LAND	MAXIMUM C-FACTOR	REMARKS
WATERWAYS AND OTHER AREAS OF CONCENTRATED FLOWS, POST CONSTRUCTION	0.05	APPLIES AFTER TEN WORKING DAYS OF COMPLETION OF FORMATION AND BEFORE CONCENTRATED FLOWS ARE APPLIED. FOOT AND VEHICULAR TRAFFIC IS PROHIBITED IN THIS AREA AND 70% GROUND COVER IS REQUIRED.
STOCKPILES, POST CONSTRUCTION	0.10	APPLIES AFTER TEN WORKING DAYS FROM COMPLETION OF FORMATION. 60% GROUND COVER IS REQUIRED.
ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION.	0.15	APPLIES AFTER 20 DAYS OF INACTIVITY, EVEN THOUGH WORKS MAY BE INCOMPLETE. 50% GROUND COVER IS REQUIRED.

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
F	CONSTRUCTION - CONSTRUCTION SOIL & WATER MANAGEMENT PLAN	IK	NW	30.06.2020
E	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	26.06.2020
D	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	IK	NW	18.05.2020
C	ISSUED FOR CONSTRUCTION	IK	NW	23.04.2020
B	ISSUED FOR CONSTRUCTION	IK	NW	27.03.2020
A	ISSUED FOR CONSTRUCTION	IK	NW	25.03.2020

Client: ADCO CONSTRUCTIONS PTY LTD

Architect: NBRS ARCHITECTURE

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Facsimile +61 2 9417 8337
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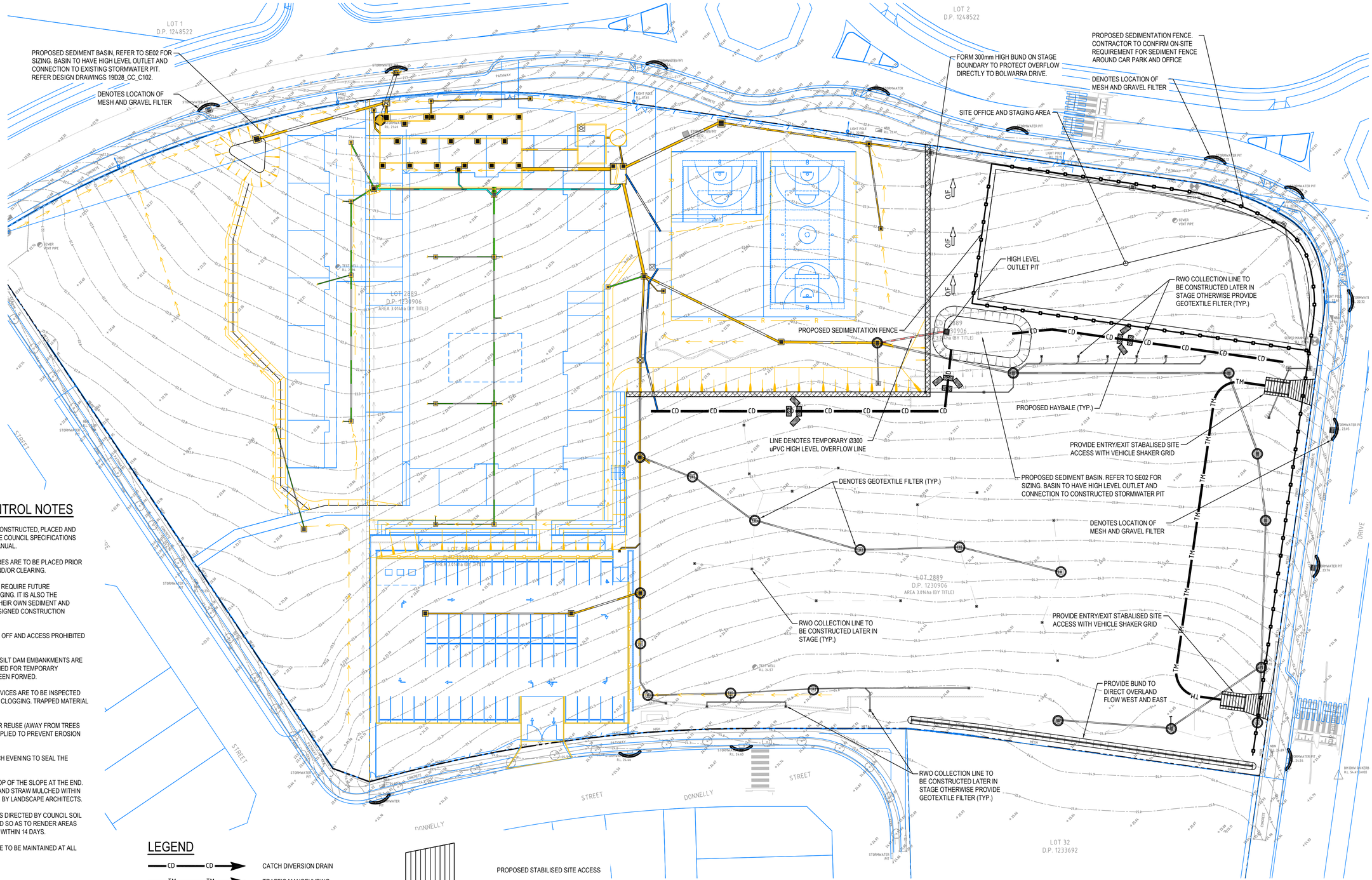
Web www.henryandhymas.com.au
henry&hymas

Project: MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title: SEDIMENT & EROSION CONTROL TYPICAL SECTIONS & DETAILS

Drawn	Designed	Date
I.Khachab	N.Wetzlar	MARCH 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	N.T.S.

Drawing number: 19D28_CC_SE02
Revision: F



SEDIMENT & EROSION CONTROL NOTES

- ALL SEDIMENT CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH RESPECTIVE COUNCIL SPECIFICATIONS AND LANDCOM'S "SOIL AND CONSTRUCTION" MANUAL.
- ALL PERIMETER & SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP IN EARTH WORKS AND/OR CLEARING.
- THE SEDIMENT & EROSION CONTROL PLAN MAY REQUIRE FUTURE ADJUSTMENT TO REFLECT CONSTRUCTION STAGING. IT IS ALSO THE CONTRACTORS RESPONSIBILTY TO PREPARE THEIR OWN SEDIMENT AND EROSION CONTROL PLAN WHICH SUITS THE DESIGNED CONSTRUCTION STAGING.
- FILTRATION BUFFER ZONES ARE TO BE FENCED OFF AND ACCESS PROHIBITED TO ALL PLANT AND MACHINERY.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS & SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED & MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE LOCATION.
- ALL TOPSOIL IS TO BE STOCKPILED ON SITE FOR REUSE (AWAY FROM TREES AND DRAINAGE LINES). MEASURES SHALL BE APPLIED TO PREVENT EROSION OF THE STOCKPILES.
- ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO SEAL THE EARTHWORKS.
- ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND STRAW MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION U.N.O. BY LANDSCAPE ARCHITECTS.
- UPON COMPLETION OF ALL EARTHWORKS OR AS DIRECTED BY COUNCIL SOIL CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.
- EROSION AND SILT PROTECTION MEASURES ARE TO BE MAINTAINED AT ALL TIMES.

LEGEND

- CD — CD — CATCH DIVERSION DRAIN
- TM — TM — TRAFFIC MANOEUVRING
- PROPOSED SEDIMENTATION FENCE
- STAGE 1 DESIGN WORKS
- STAGE 2 DESIGN WORKS
- PROPOSED VEHICLE SHAKER GRID
- PROPOSED STABILISED SITE ACCESS
- GEOTEXTILE INLET FILTER
- PROPOSED MESH & GRAVEL INLET FILTER
- PROPOSED HAYBALE FILTER

0 8 16 24 32 40m
8 6 4 2
SCALE 1:400

SEDIMENT & EROSION CONTROL PLAN

SCALE 1:400

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
A	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	26.06.2020

Client: ADCO CONSTRUCTIONS PTY LTD
Architect: NBRS ARCHITECTURE

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Web www.henryandhymas.com.au
henry&hymas

Project: MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title: SEDIMENT & EROSION CONTROL PLAN
STAGE 2

Drawn	Designed	Date
I.Khachab	N.Wetzlar	MARCH 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:400

Drawing number: 19D28_CC_SE03
Revision: A

Appendix C – CV – Andrew Franics

CURRICULUM VITAE

Name & Position:

Andrew James Francis – Director

Personal and Contact Details:

135 David Road
Castle Hill NSW 2154
Work: 02 9417 8400
Mobile: 0423 222 338
Email: afrancis@hhconsult.com.au

Career Overview

I have been in my current role as Director and Civil Manager since 2008 during which time I have furthered my knowledge of civil engineering, remaining abreast of current engineering advancements particularly in the areas of Water Sensitive Urban Design and pavement technology. I have also established numerous client relationships which has allowed the civil department at Henry & Hymas to triple its turnover in the past 10 years.

I started with Henry & Hymas in 2005 in the role as Senior Civil Engineer where I was involved in the design and construction management of numerous large scale industrial subdivisions and retail facilities.

Prior to starting with Henry & Hymas, I spent four years at Cardno as a Civil Engineer and Senior Civil Engineer during which time I was involved in numerous subdivision and residential projects as well as several sports field facilities.

I started my career in 1998 at Coolamon Shire Council and moved to Fairfield City Council in late 1999 during which time I was involved in all aspects of road design including survey, geometric design, stormwater design and pavements. I spent a total of four years in local government.

Education:

1997 – Completed Bachelor of Civil Engineering at the University of NSW

Thesis:

Roundabouts: A Comparison between the NAASRA Guide and the AUSTROADS Guide

Computer Skills

DRAINS/ILSAX, Circly, RAT-HGL, RAFTS, HEC-RAS, Civilcad, AutoCAD, Microsoft Word and Excel

Experience

July 2008 –present	Civil Manager and Director (since 2011) at Henry & Hymas
April 2005 – June 2008	Senior Civil Engineer at Henry & Hymas
November 2001 – March 2005	Civil Engineer and Senior Civil Engineer at Cardno (formerly Young Consulting Engineers)
November 1999 – November 2001	Civil Design Engineer at Fairfield City Council
January 1998 – November 1999	Assistant Engineer at Coolamon Shire Council

Duties Performed

Management of Civil Department

Business development

Staff and project programming

Cost planning and invoicing

Liaising with clients, consultants and internal staff

Human resources and staffing

Negotiating with Councils and Stage Government Authorities

Providing Expert Witness testimonies in the Supreme Court and Land and Environment Court

Site and subdivision masterplanning

Pavement design and detailing

Bulk earthworks and site grading

Stormwater design

Water Sensitive Urban Design (WSUD)

Flood modelling and flood studies

Preparation of Technical Specifications, Contract and Tender documentation

Construction Project Management

Site attendance and surveillance

Significant Projects

Numerous retirement villages including:

- Anglicare The Ponds - 14 Ha retirement village including roads, stormwater, ILUs and RACF
- Anglicare Glenhaven - 10 Ha retirement village including roads, stormwater and ILUs
- Anglicare Warriewood - 3 Ha retirement village including roads, stormwater and ILUs
- OPAL Aged Care - Bathurst - Multi storey RACF including roads and stormwater

Numerous industrial sites and subdivisions including:

- Erskine Park Estate, Eskine Park – 50 hectare industrial subdivision (Goodman International)
- M7 business Hub, Eastern Creek – 160 hectare industrial subdivision (Goodman International)
- Coles National Distribution Centre, Eastern Creek (Goodman International)
- EC3, Wonderland Drive, Eastern Creek - 60 hectare Industrial subdivision (Frasers Property)
- ECQ, Rooty Hills Road South, Eastern Creek - Industrial subdivision (Frasers Property)

Numerous retail developments including:

- Narellan Town Centre, Narellan (Dart West)
- Woolworths Prestons - Shopping centre and associated carparking and stormwater
- Woolworths Bulli - Shopping centre and associated carparking, stormwater and flooding
- Coles Crows Nest - Retail and multi unit residential development

Numerous schools and education facilities including:

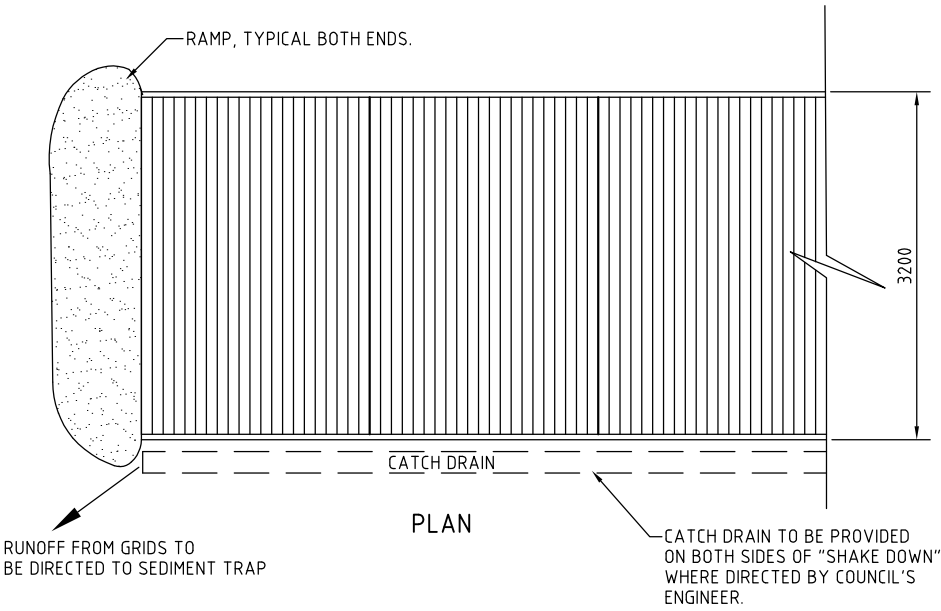
- St Benedicts and St Justins, Oran Park (Catholic Education Office Wollongong)
- St Lukes, Marsden Park (Catholic Education Office Parramatta)
- North Kellyville Public School, North Kellyville (NSW Department of Education)

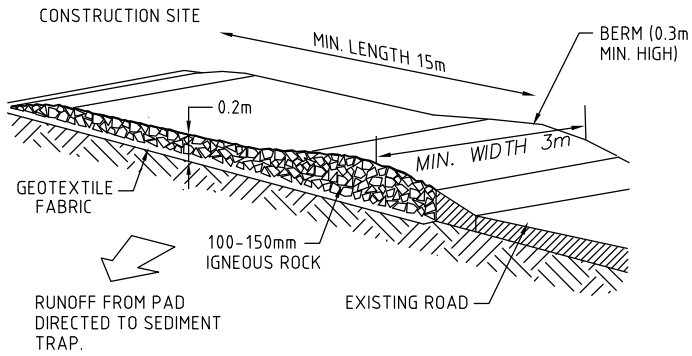
Referees

Ray Kusturin – Director – Henry & Hymas – 0414 789 037

henry&hymas

Appendix D – Blacktown City Council Standard Drawings





RUMBLE ALTERNATIVE

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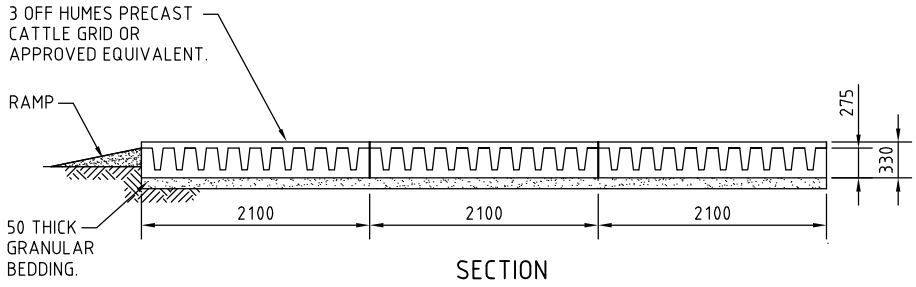


CATTLE GRID ALTERNATIVE

NOT TO SCALE

NOTES.

1. EXCAVATE AREA APPROX. 3.3m WIDE BY 2.2m LENGTH. THE FLOOR OF THE EXCAVATION MUST BE FLAT, WITHOUT HIGH POINTS. AN EXCAVATED DEPTH OF 100mm ACCOMODATES A BEDDING LAYER 50mm THICK AND GRID SET DOWN OF 50mm. THE LATTER MINIMISES SILT UP OF GRID AND SLOWS TRAFFIC DOWN.

2. BEDDING MATERIAL SHALL BE SAND OR OTHER SUITABLE APPROVED MATERIAL. BEDDING MATERIAL SHALL BE EVENLY RAKED OVER FLOOR OF EXCAVATION TO A DEPTH SLIGHTLY MORE THAN 50mm. ENSURE BEDDING IS LEVEL IN BOTH DIRECTIONS.

3. LOWER CATTLE GRID ONTO THE PREPARED BASE. ENSURE THAT NO PART OF THE UNIT IS SITTING ON ANY HIGH POINTS.

4. BACKFILL AND COMPACT AROUND GRID. GRADE EXCAVATED ROAD MATERIAL UP TO GRID ON EACH SIDE TO FORM A RAMP. IF DEPRESSIONS OCCUR ON THESE RAMPS WITH USE, ADD ADDITIONAL MATERIAL.

REV	DATE	DESCRIPTION	CHECKED	APP.
C	05/04	PROJECT TITLE REVISED		
B	SEP'02	REVISED AND REDRAWN	-	-

PLAN NOT TO SCALE
LONG SECTION: HORIZ
VERT
CROSS SECTIONS

SURVEYED	N/A
DESIGNED	N/A
CADD	K.P.
VERIFIED	-
DATE	-

APPROVED

Blacktown City Council

PROJECT TITLE: CONSTRUCTION TRAFFIC "SHAKE DOWN"

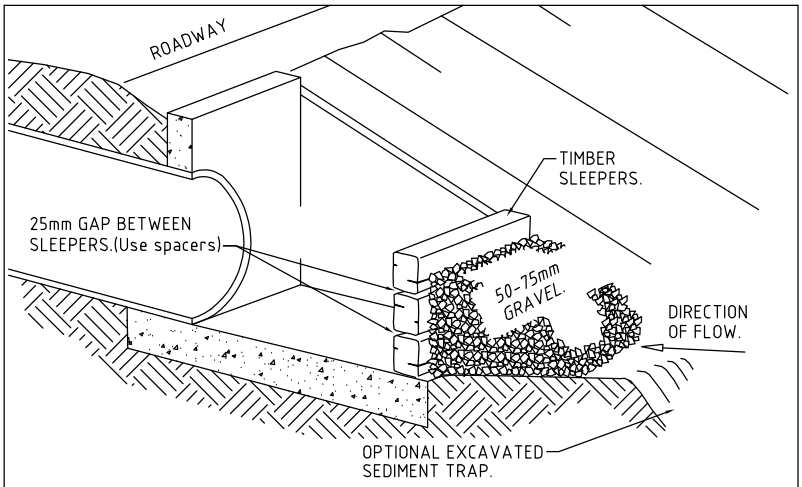
CAD FILE: A(BS)115M.DWG

SHEET TITLE: DETAILS

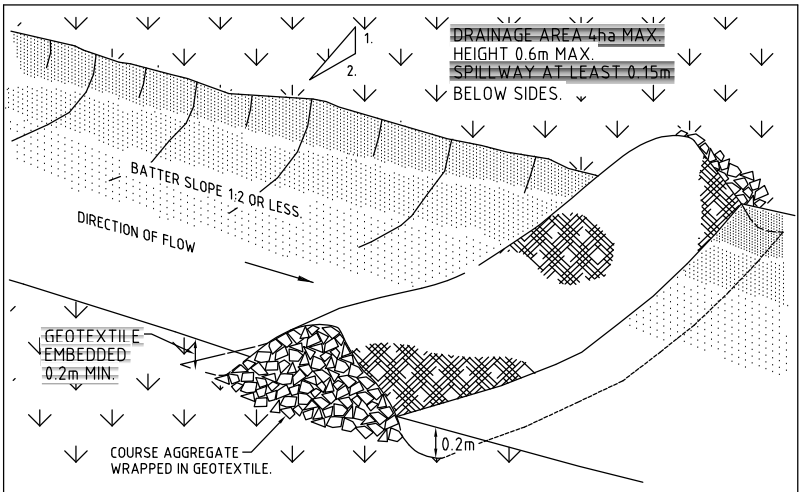
PLAN No: A(BS)115M

SHEET 1 OF 1 SHEETS

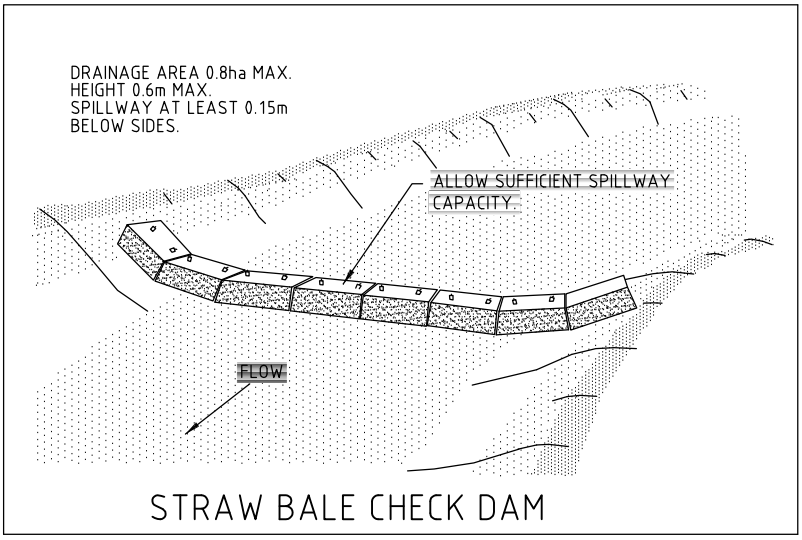
REV C



CULVERT ENTRY SEDIMENT TRAP



ROCK CHECK DAM



STRAW BALE CHECK DAM

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

Blacktown City Council

TITLE: CHANNEL CHECK DAMS AND CULVERT INLET PROTECTION

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CADD K.P.	OF
VERIFIED	1 SHEETS

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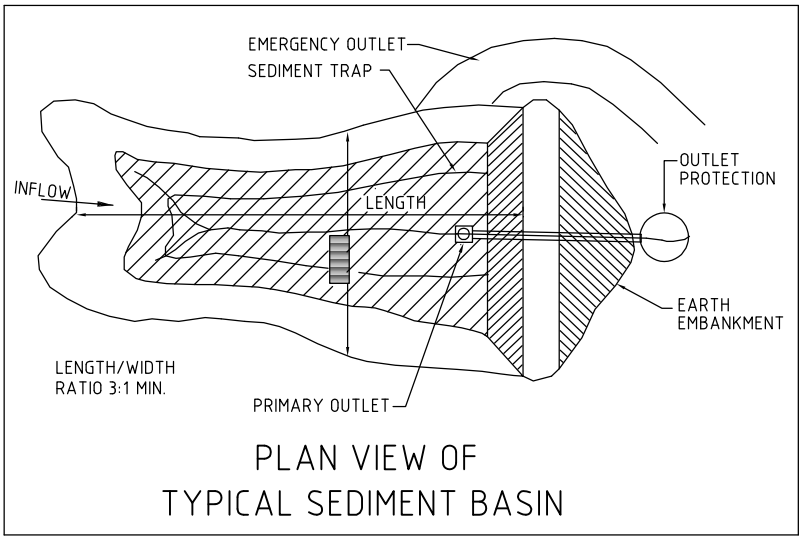
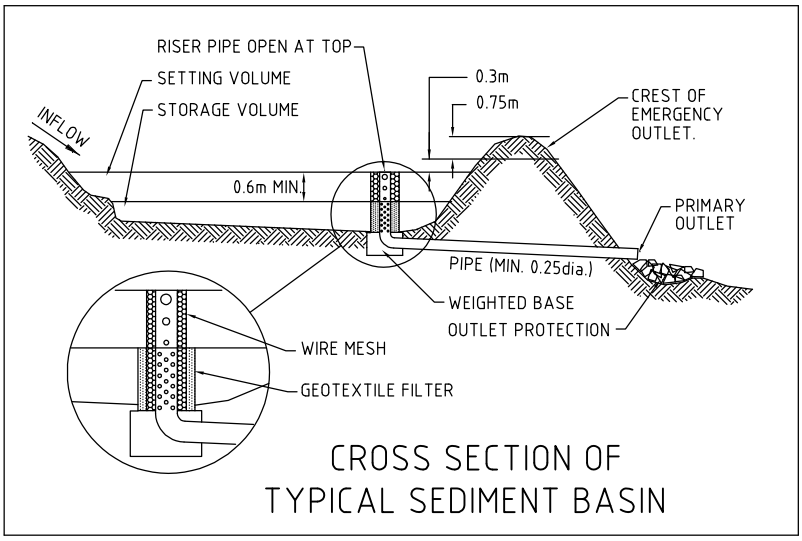


PLAN VIEW OF
TYPICAL SEDIMENT BASIN



CROSS SECTION OF
TYPICAL SEDIMENT BASIN

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

Blacktown City Council

TITLE: SEDIMENT BASIN

CAD FILE:	PLAN No:	SCALE	DATE	REV
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VERIFIED ##	1 SHEETS

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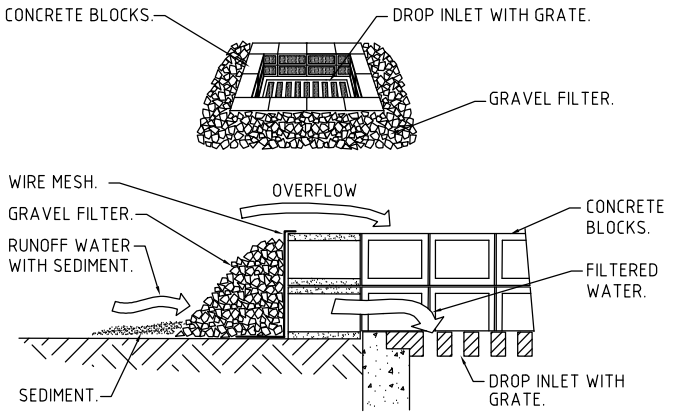
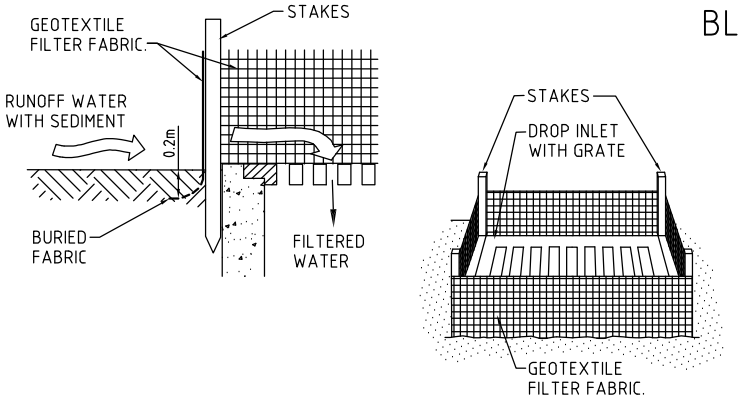


BLOCK AND GRAVEL DROP INLET SEDIMENT TRAP



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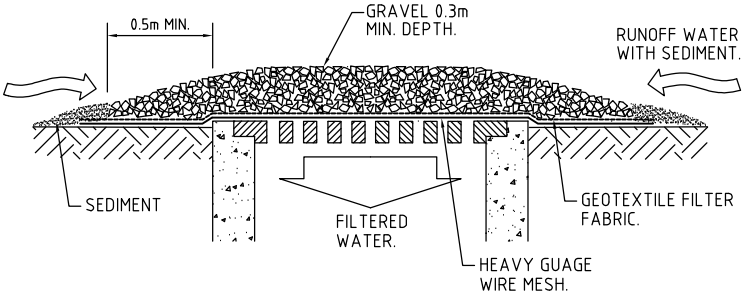
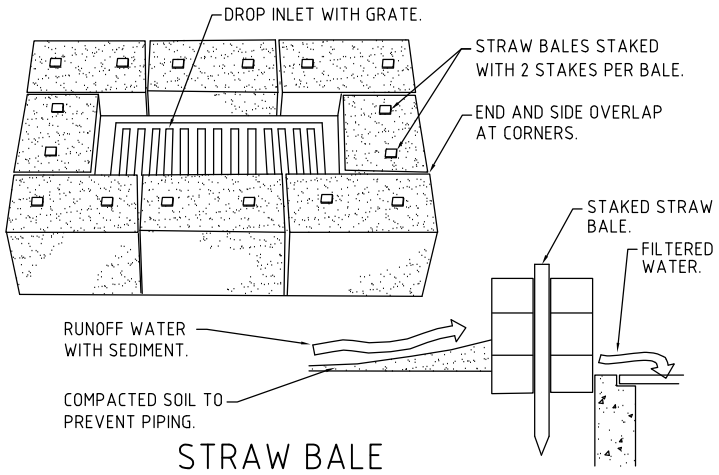


WIRE MESH AND GRAVEL DROP INLET SEDIMENT TRAP



STRAW BALE DROP INLET SEDIMENT TRAP

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

Blacktown City Council

TITLE: SEDIMENT TRAPS FOR SURFACE INLET PITS

CAD FILE:	PLAN No:	SCALE	DATE	REV
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CADD: K.P.	OF
VERIFIED: ##	1 SHEETS

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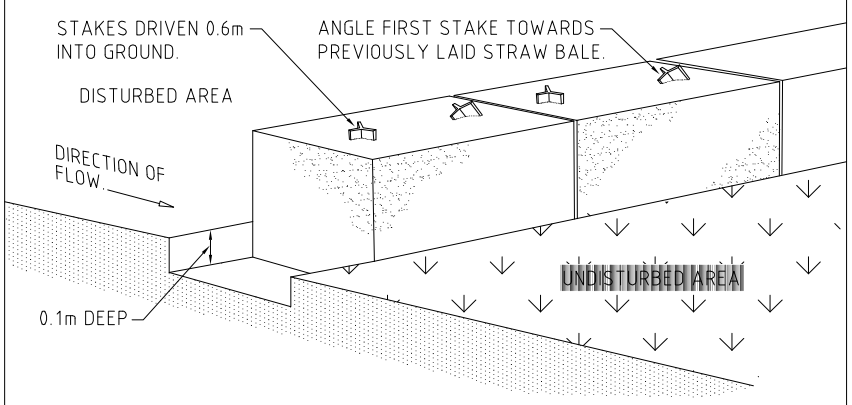

STRAW BALE SEDIMENT FILTER

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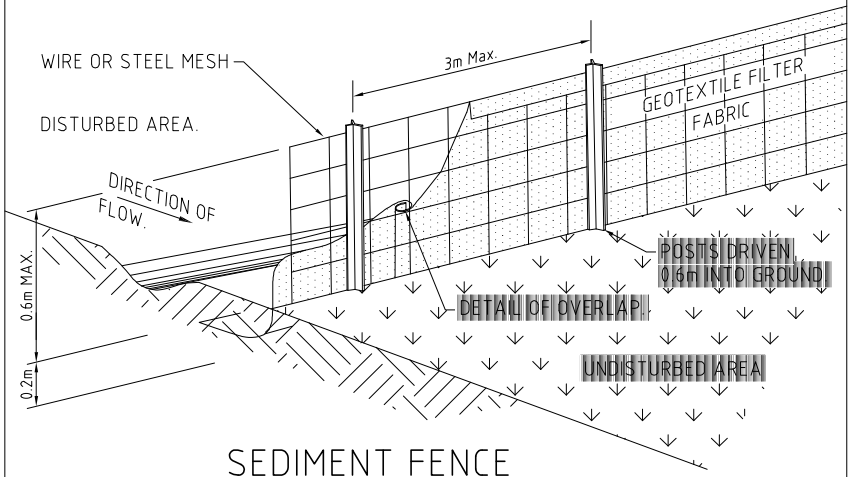
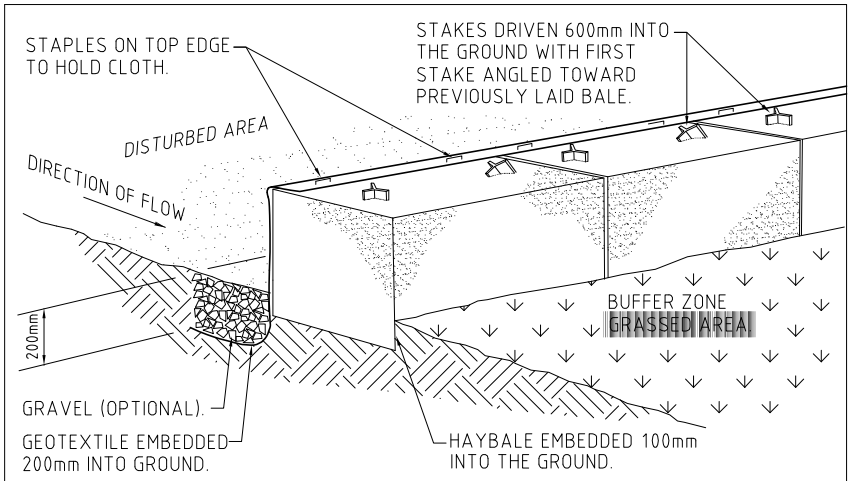


SEDIMENT FENCE



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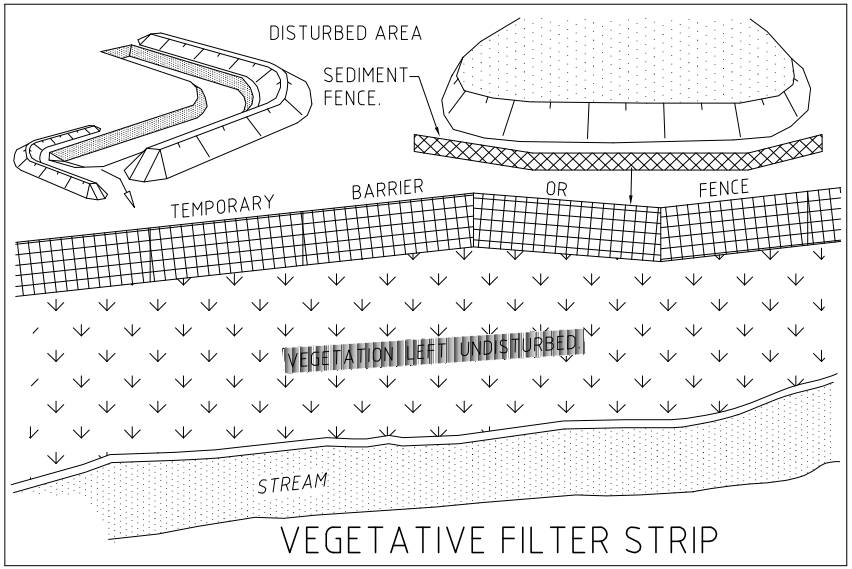

VEGETATIVE FILTER STRIP

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

PLAN Not to Scale
LONG SECTION: HORIZ
VERT
CROSS SECTIONS

SURVEYED N/A
DESIGNED N/A
CADD K.P.
VERIFIED
DATE

APPROVED

Blacktown City Council

PROJECT TITLE: SEDIMENT FENCE AND FILTERS

CAD FILE: A(BS)121MSEDF&F

SHEET TITLE:

PLAN No: A(BS)121M

SHEET 1 OF 1 SHEETS

REV B

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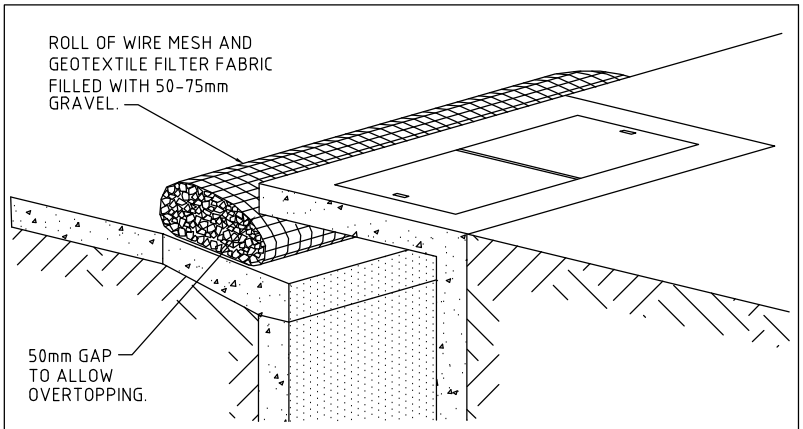
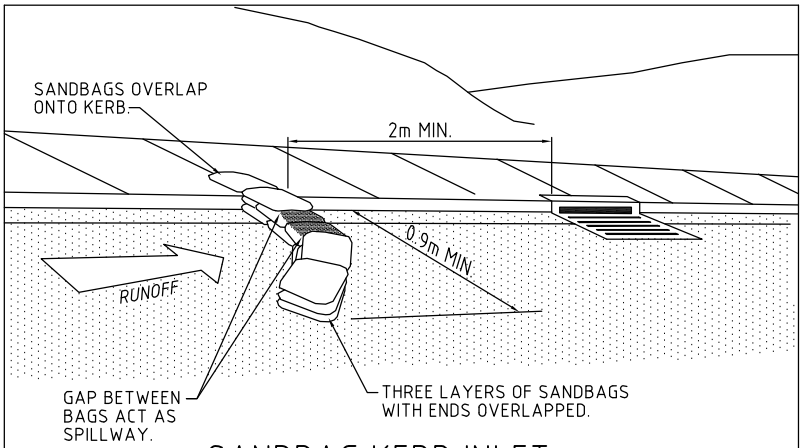


PORTABLE GRAVEL KERB INLET
SEDIMENT TRAP



SANDBAG KERB INLET
SEDIMENT TRAP

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

Blacktown City Council

TITLE: SEDIMENT TRAPS FOR KERB INLETS

CAD FILE:	PLAN No:	SCALE	DATE
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DESIGN	CADD	VERIFIED
N/A	K.P.	##

SHEET 1 OF 1 SHEETS

REV B

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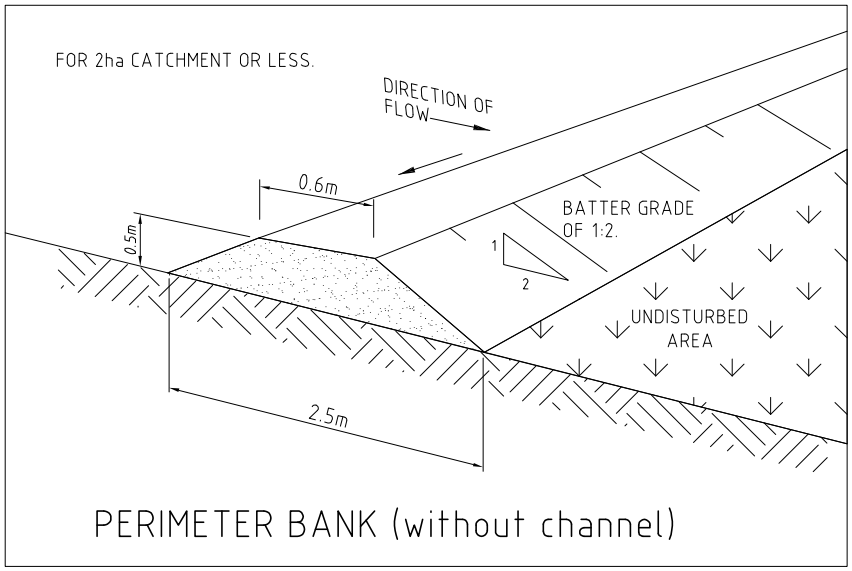
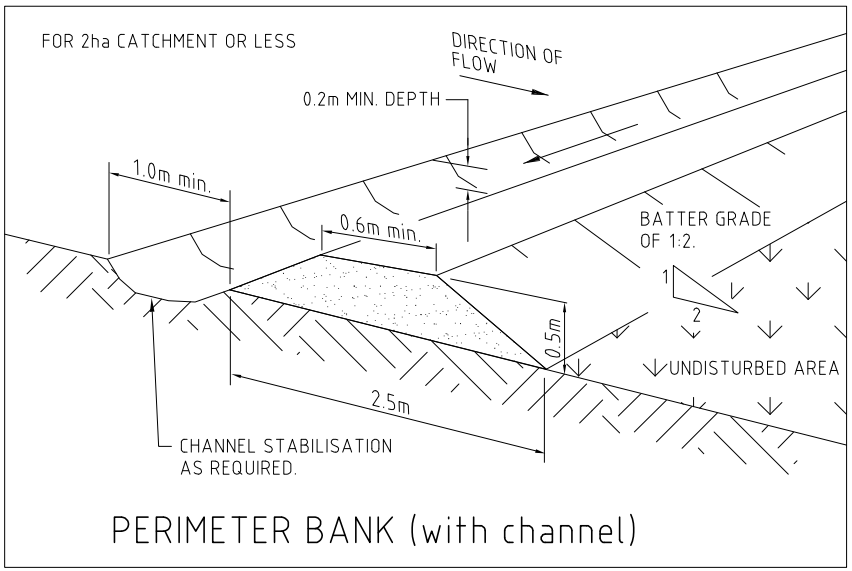


PERIMETER BANK (without channel)



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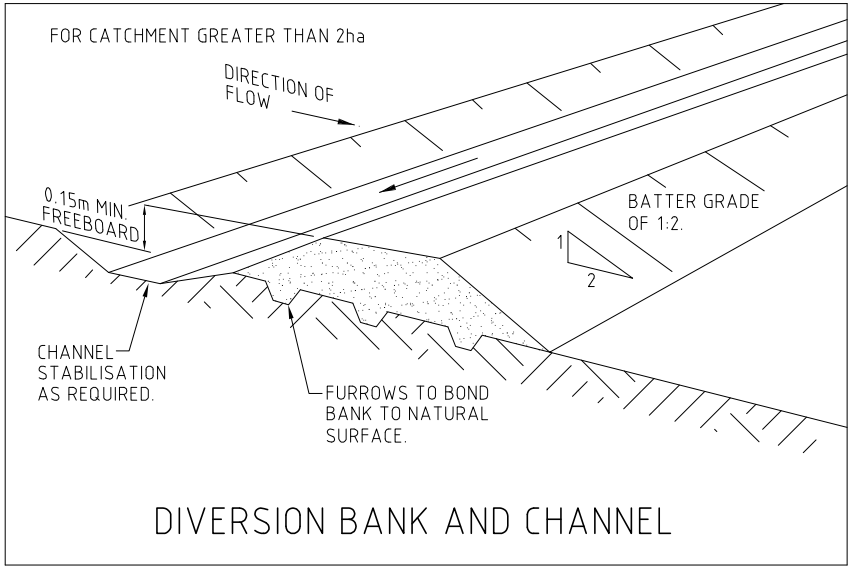
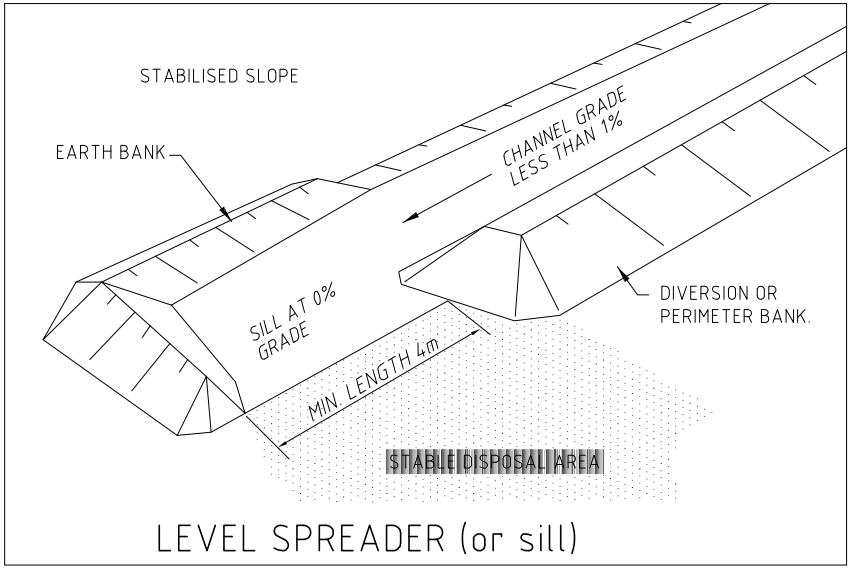


DIVERSION BANK AND CHANNEL



LEVEL SPREADER (or sill)

REV	DATE	DESCRIPTION	CHECKED	APP.
B	7/03	REVISED AND REDRAWN		

PLAN NOT TO SCALE
LONG SECTION: HORIZ
VERT
CROSS SECTIONS

SURVEYED N/A
DESIGNED N/A
CADD K.P.
VERIFIED
DATE

APPROVED

Blacktown City Council

PROJECT TITLE: PERIMETER AND DIVERSION BANKS

CAD FILE: A(BS)123MPERIM&DIVBNK

SHEET TITLE:

PLAN No: A(BS)123M

SHEET 1 OF 1 SHEETS

REV B

I:\IT'S-SHARE\acad_drawings\STD-DRAWINGS\A(BS)123MPerim&DivBank.dwg

ANNEXURE E

FLOOD EMERGENCY RESPONSE SUB PLAN (CTPMSP)

H&H Consulting Engineers Pty Ltd *(trading as Henry & Hymas)*
ABN 77 091 243 355 ACN 091 243 355

Address
:\P[L ˘ ˘ ˜˘˜ 7HJPÄJ /PNO^H` .VYKVU 5L^

Telephone +61 2 9417 8400
Facsimile +61 2 9417 8337

Email LTHPS'OOJVUZ\S[JVT H\
Web ^^^ OOJVUZ\S[JVT H\

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Flood Emergency Response Sub-Plan (FERSP) – Construction Stage

PROPOSED PRIMARY SCHOOL MARSDEN PARK, NSW

STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSD 9809)

Revision 1
July 2020

HENRY & HYMAS
SUITE 2.01, 828 PACIFIC HIGHWAY
GORDON NSW 2072
Our Ref: 19D28
Tel: (02) 9417 8400 Fax: (02) 9417 8337
E-mail: email@hhconsult.com.au

sydney • brisbane

henry&hymas

Project Verification

Project Title	Marsden Park Primary School
Document Title	Flood Emergency Response Sub-Plan
Project Number	19D28
Description	Flood Emergency Response Sub-Plan for STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSD 9809)
Client contact	Elizabeth Creswell ADCO

	Name	
Prepared By	Nicholas Wetzlar	
Checked by	Andrew Francis	
Issued by	Nicholas Wetzlar	
File Name	19D28 FERSP	

Document History

Date	Revision	Purpose	Recipients	Format	Checked
07/07/2020	CC	Construction Certificate	Ms Elizabeth Creswell	PDF	A.F

Preface

This Flood Emergency Response Sub-Plan (FERSP) has been prepared for Schools Infrastructure NSW (SINSW) to supplement the State Significant Development Application (SSD-9809) for the proposed Marsden Park Primary School.

The FERSP has been prepared to address the response to flooding during the construction phases of the proposed school site, and detail the strategies of employees and contractors working at the construction site.

The appropriate responses following commissioning of the school, including the temporary school, are addressed in Flood Management Plan (FMP) prepared by Henry & Hymas Consultants submitted as part of the development application process. The responses between the two plans (FMP & FERSP) differ greatly due the vulnerable nature of the patrons of the school when compared to those employed/working at the construction site.

Due to the nature of the occupants of the proposed primary school the development is classified as vulnerable institution and as such a different response strategy is warranted. During the school construction the nature of the occupants of construction site is more similar to that of a commercial development and as such a different response strategy is proposed and detailed in the report following.

This FERSP has been written in consideration of the Floodplain Risk Management Guidelines (EESG) which include reference to the following applicable guidelines:

- SES Requirements from the FRM Process (2007) by the Department of Environment & Climate Change.
- Flood Emergency Response Planning Classification Of Communities by the Department of Environment & Climate Change.
- Reducing Vulnerability of Buildings to Flood Damage, Guidance On Building In Flood Prone Areas prepared for the Hawkesbury-Nepean Floodplain Management Steering Committee.
- Business FloodSafe Toolkit and Plan prepared by State Emergency Service.
- Managing Flood Risk through Planning opportunities, Guidance On Land Use Planning In Flood Prone Areas prepared for the Hawkesbury-Nepean Floodplain Management Steering Committee.

Also reviewed in the creation of the FERSP are several reports discussing flooding around the construction site, and the greater region in general. These will be periodically introduced and addressed throughout the report where necessary. The main reports relating to the flooding for the development and the wider catchment are listed below:

- (BCCLFP2010) Blacktown City Local Flood Plan a sub-plan of Blacktown City Local Disaster Plan (displan) November 2010.
- (HNVRFS2019) Hawkesbury-Nepean Valley Regional Flood Study 2019.
- (HNFP2015) Hawkesbury Nepean Flood Plan and relevant subplans September 2015.

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Table of Contents

1 Introduction

This Flood Emergency Response Sub-Plan (the Plan) has been prepared for Schools Infrastructure NSW (SINSW) to supplement the State Significant Development Application (SSD-9809) for the proposed Marsden Park Primary School. The construction site is located in a rapidly changing context on the northern extent of a master-planned urban release area as part of the larger North West Growth Centre (Marsden Park Precinct) – the Elara Stockland Residential Community. The site comprises an area of 2.2Ha for the construction of a two-storey enclosed courtyard building with capacity to accommodate a maximum of 1,000 students as well as necessary carparking and ancillary infrastructure, playing fields, landscaping and public domain improvements. Architectural Concept Plan is provided by NRBS dated June 2020 refer Appendix D for full size.

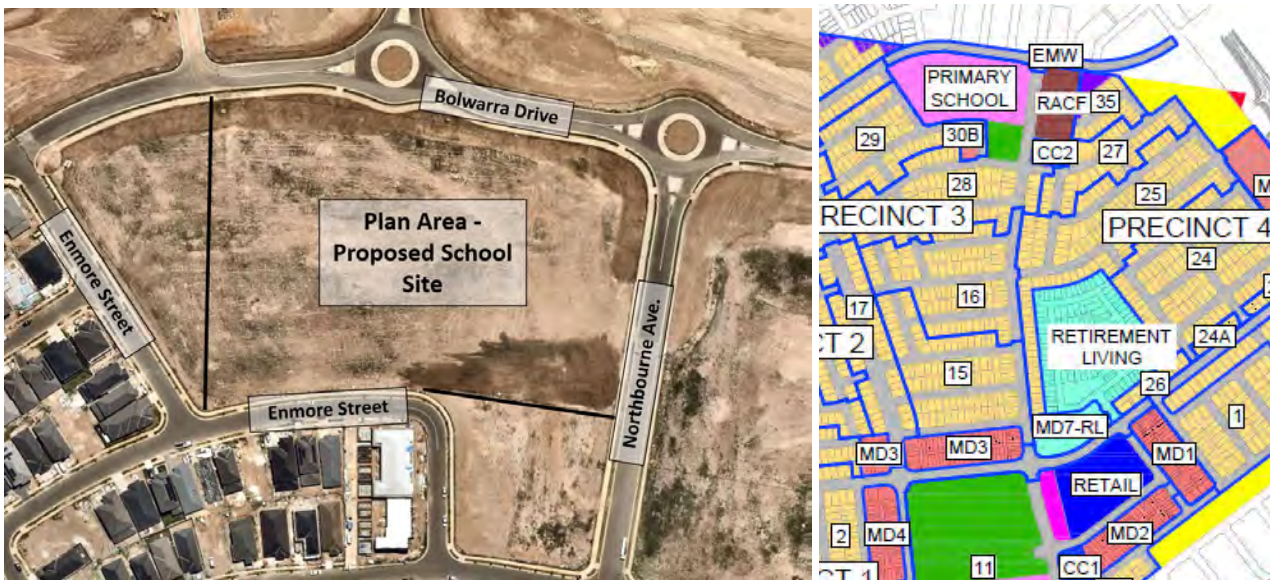


Figure 1: Proposed Development Site (Near Maps Feb 2020) (left) & Extract from Stockland Elara Master Plan (right)

The topography of the un-development site can be described as a slight fall to the north with grades that range generally around 2-3%. The site falls and is drained by the stormwater system in the Bolwarra Road to the north, which later drains to a temporary water management basin constructed as Clydesdale Subdivision Precinct 2. Regionally, the proposed site is located on within the South Creek catchment.

The proposed development is located within Stages 27-32 of the Elara Subdivision which was submitted for Development Application in June 2017 and was designed by Cardno (Development Application number DA-16-05045). For reference, to the north of the development lies the future street (Bolwarra Drive) to be completed as part of Stage 2 of the Clydesdale Precinct works. These works are currently under construction and were designed by J.Wyndam Prince.

As part of due diligence investigations for the proposed development, it was identified through the use of Blacktown City Council's BLEP 2015 Maps online that the site is located within the Low Flood Risk Precinct (refer Figure 2 for excerpt and Appendix A for a full-size copy).

For reference Low Flood Risk Precinct is defined as: all within the floodplain, i.e. within the extent of the probable Maximum Flood (PMF) but not identified as either high risk or medium risk precinct. Therefore, the Low Flood Risk Precinct is all the land between the 100 year and PMF flood extents.

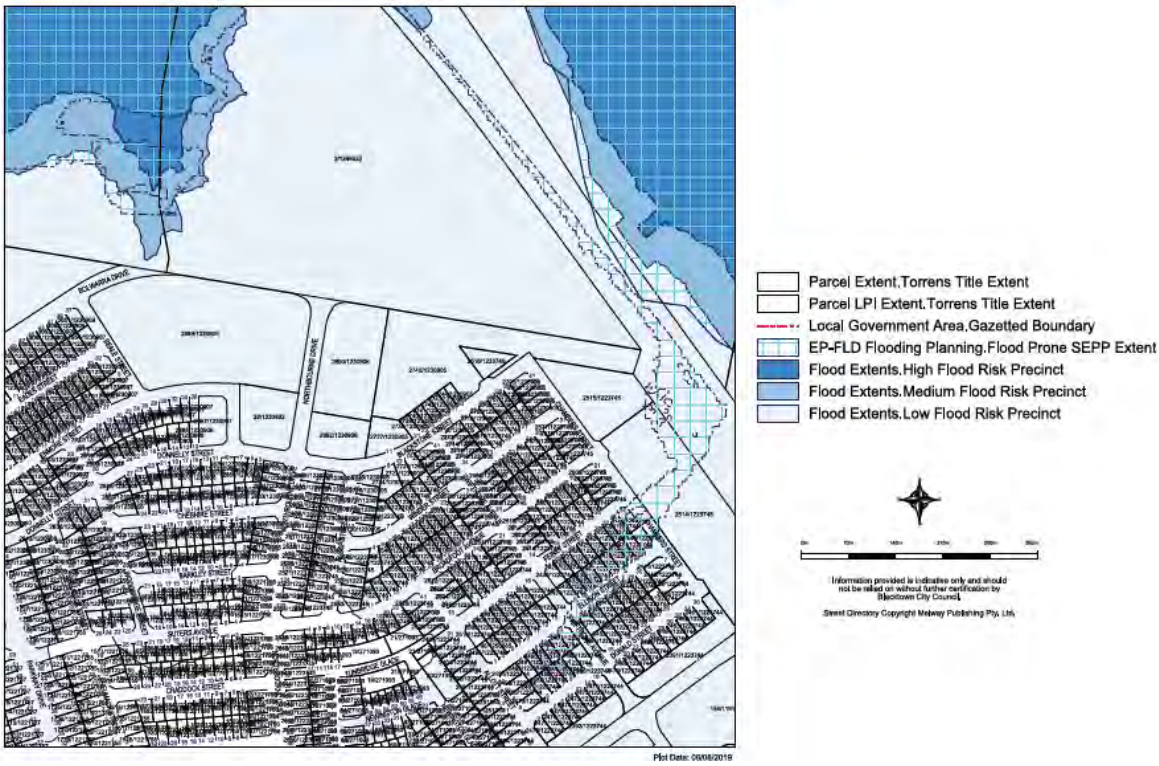


Figure 2: Excerpt of Blacktown City Council's BLEP 2015 Maps online – Flood planning layer

Following SSDA lodgement, subsequent submissions from Planning, Industry & Environment (dated 28/11/19), identified the need to provide a more in-depth analysis into the development and its relationship with the regional flood plain. In satisfaction of the submission the applicant provided a detailed Flood Management Plan as part of the return to submission (RTS) phase of the SSDA. The report was prepared by Henry & Hymas Engineers in February 2020. Due to the sensitive nature of the development and its future occupants, the Probable Maximum Flood (PMF) was adopted as the critical storm for the detailed flood assessment.

The Flood Management Plan proposed for the operation of the school stated the core concept of the emergency response philosophy is to provide a tiered response which matches the constraint of the school whilst responding to nature of flooding in region. The responses are shown in order of preferability starting from 1 (most preferred) to 3 (least preferred):

1. Closure of the School: Ensure the students and staff enrolled/employed at the school are not present during major flood event such as the PMF flood event.
2. Early release of students and return to care: Facilitate the early release and return to appropriate care of students in the unlikely event, a major flood occurs without school closure.
3. Emergency evacuation: Ensure evacuation routes are available and assessable in the very unlikely event school closure has not occurred and students have not been returned to care.

The Flood Management Plan was peer reviewed by BMT commercial who confirmed the plan detailed an appropriate flood emergency response for the proposed development to manage flood risk. The peer reviewed also confirmed the data and strategies presented were up to date and suitable for use.

The site is located within the Elara subdivision and the flood information submitted as part of the subdivision Development Application (DA-16-05045) was reviewed to determine the context of the flood within the greater development. Reporting and design plans prepared by Cardno generally supported and validated flood information provided by Blacktown City Council flood information portal. The Pedestrian Evacuation Plan prepared by Cardno indicates the site is well above the 100-year

mainstream flood levels from South Creek of 17.30m AHD with freeboard (refer Appendix B).

Several reports discussing flooding around the proposed development, and general region, are available and were referred to in the preparation of the Flood Management Plan. These will be periodically introduced and addressed throughout the report where necessary. The main reports relating to the flood management for the development are listed below:

- (BCCLFP2010) Blacktown City Local Flood Plan a sub-plan of Blacktown City Local Disaster Plan (displan) November 2010.
- (HNVRFS2019) Hawkesbury-Nepean Valley Regional Flood Study 2019.
- (HNFP2015) Hawkesbury Nepean Flood Plan and relevant subplans September 2015.

2 Construction Overview

The construction site comprises an area of approximately 2.2Ha with which centers around the construction of a two-story multipurpose school building with a footprint of 6,550m² as well as associated car parking and landscaping facilities. The proposal is to construct a public school which will cater for 1,000 primary school students upon competition.

The school is proposed to be delivered in three stages. The first includes the construction of a temporary school facility. The school at this stage is expected to cater for approximately 500 students during any given time. The second stage comprises of the permanent two storey enclosed multipurpose building. The second stage includes the completion of sporting facilities, outdoor play areas, landscaping, carpark and public domain works e.g. drop-off and pick up-areas. The final stage, Stage 3, includes the decommissioning of the temporary school and the finalisation of landscaping within the temporary school region. The date and duration of construction relative to each stage are listed below:

- Stage 1: Milestone 1B – Temporary School July 2020 – January 2021
- Stage 2: Milestone 2 – Main School July 2020 – June 2021
- Stage 3: Milestone 3 – Decant Temp school and complete remaining external works July 2021 – December 2021

An Site Management Plan showing the proposed layout of the construction site during these stages is shown in Figure 3 and Figure 4, a full-size drawing is provided in Appendix C.

Work hours (including delivery of materials to and from the site) are noted in the conditions of consent and are limited to:

- between 7am and 6pm, Mondays to Fridays inclusive; and
- between 8am and 1pm, Saturdays.
- No work may be carried out on Sundays or public holidays.

During peak construction period it is estimated 120 persons will be present at the site.

Civil Engineering design drawings showing the location of paths and accessway internal and from the development can be found in Appendix E.

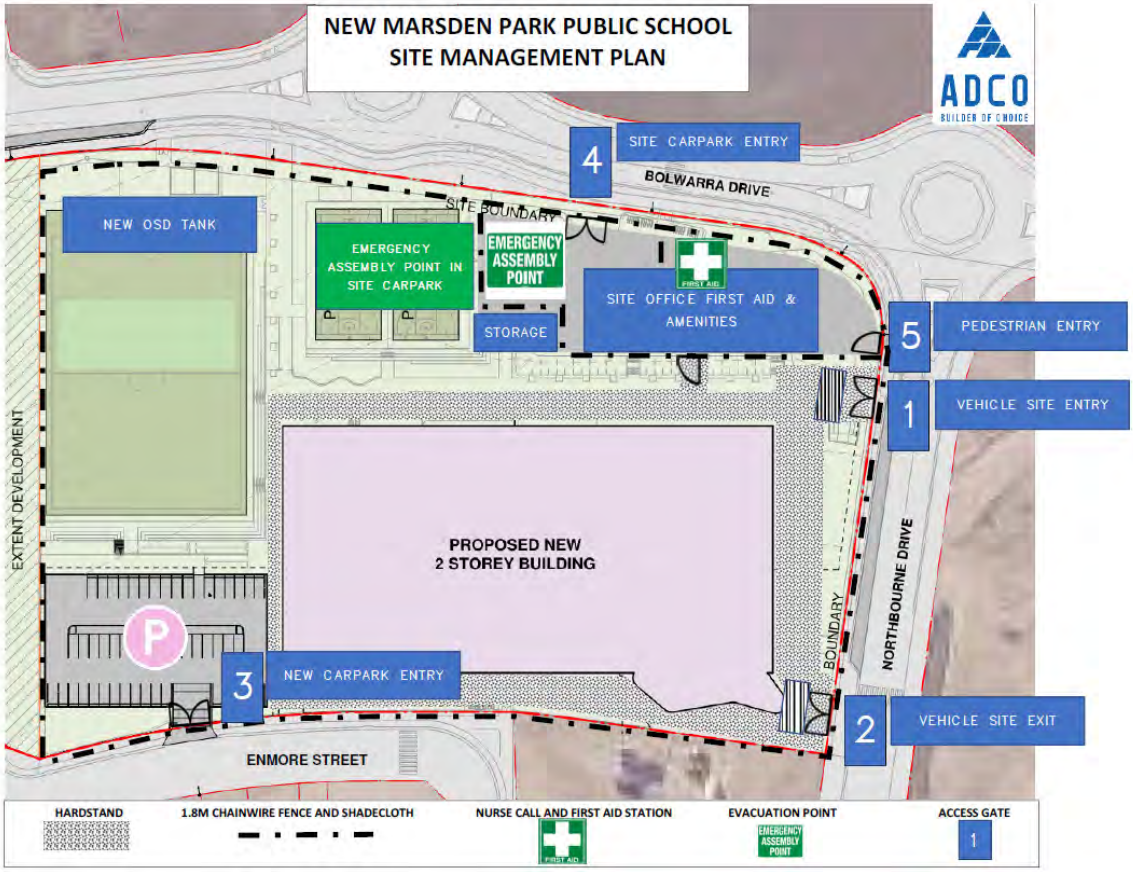


Figure 3: Site Mangement plan during construction of the temporary school, ADCO Constructions.

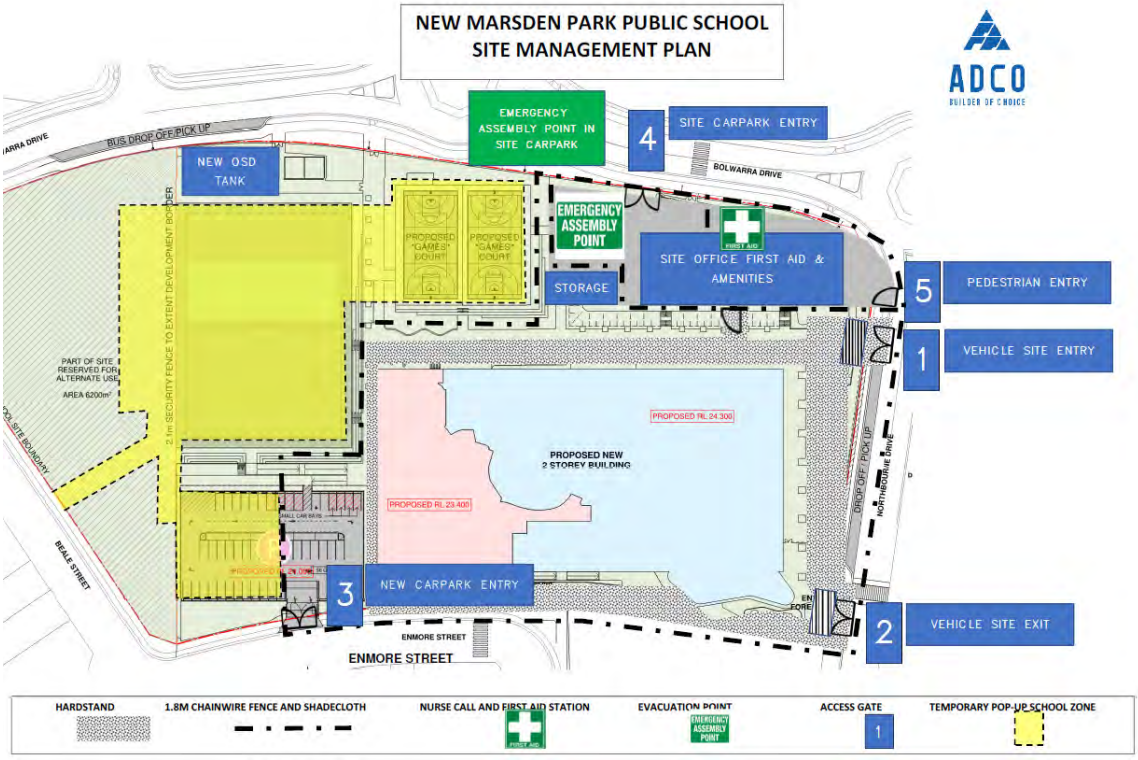


Figure 4: Site Mangement plan following construction of the temporary school, ADCO Constructions.

3 Flood Context

The site is located in one of the four main identifiable flood plains of the Hawkesbury Nepean Valley area, the Richmond/Windsor/Wilberforce floodplain. The Hawkesbury Nepean Valley has a rather unique feature that dramatically affects the behaviour of floods in the region. The lower reaches of the Hawkesbury Nepean Valley are characterised as narrow angulating sandstone gorges with the upper and middle reaches gentle and wider flood plains. The topography of the lower reaches acts as choke point and causes the floodwaters to back up into the flood plain (HNFP2015). This natural feature causes flood levels well above those typically expected especially in more extreme flood events such as the probable maximum flood (PMF).

The HNFP2015 comments on the PMF as “the largest flood event that could conceivably occur at a particular location, usually estimated from the probable maximum precipitation. The PMF defines the extent of flood liable land, that is, the floodplain. It is difficult to define a meaningful Annual Exceedance Probability (AEP) for the PMF but is commonly understood to be in order of 10,000 to 10,000,000 years.”

The context and rarity of the flood should also be noted, with the BCCLFP2010, indicating Probable Maximum Precipitation (PMP) in the Hawkesbury-Nepean Valley and the resulting PMF is estimated to have one in 100,000 chance each year of occurring. The HNFP2015 attributes, a similar, and comparatively rare recurrence interval for the event and notes the event as a 1 in 45,000 chance each year.

3.1 Flood Mapping, Levels and Data

As the site is subject to backwater flooding from the Hawkesbury Nepean floodplain during the PMF event, and preferred by Council Drainage Engineers the regional flood study prepared for Infrastructure NSW, the Hawkesbury-Nepean Valley Regional Flood Study 2019 (HNVRFS2019), was reviewed to ascertain key information regarding the flood inundation.

Due to the scale of the study, a limited number of key points of interest were produced to output detailed data regarding the time to rise, rate of rise, and time to subsidence (as well as further more detailed information). The closest location for which detailed data from the study was produced is on South Creek at Richmond Road crossing, which when considering the size of the Hawkesbury Nepean watershed, lies in relatively close proximity to the proposed development (approx. 1321m). The location of the site in relation to the proposed development can be seen in Figure 5 adjacent. Considering the site is subject to potential backwater flooding from the Hawkesbury River, the site’s location downstream of the proposed development is ideally situated to represent the development, with any data relating to the rise of the floodwater having an inherent inbuilt conservatism. For the purpose of the FERSP data recorded at the South Creek, Richmond Road crossing will be deemed representative of the development.

Figure 5: Location of the data point in relation to the development

The lowest corner portion adjacent to the northern boundary of the site current sits at 21.16m AHD. From a review of Volume 3: Map Book Part B: Flood extents, depths and contours, it was determined that the lowest reaches of the site remained outside of the floodplain up to and in excess of the 0.1% AEP (1 in 1000 year) event (refer below Figure 6 and Map HNVRFS2019 pg36 of Appendix F). The 0.1% AEP flood level at the closest data point to the development was recorded to be 20.6m AHD. Further review of the Map Book determined:

- The site was partially inundated in the 0.05% AEP event (1 in 2000 year). Refer Map HNVRFS2019 pg. 57 of Appendix F. The 0.05% AEP flood level at the closest data point to the development was recorded to be 21.7m AHD.
- The main region of construction, the main school building structure remains flood immune in the 0.02% AEP event (1 in 5000 year). Refer Map HNVRFS2019 pg84 of Appendix F. The 0.05% AEP flood level at the closest data point to the development was recorded to be 22.6m AHD.

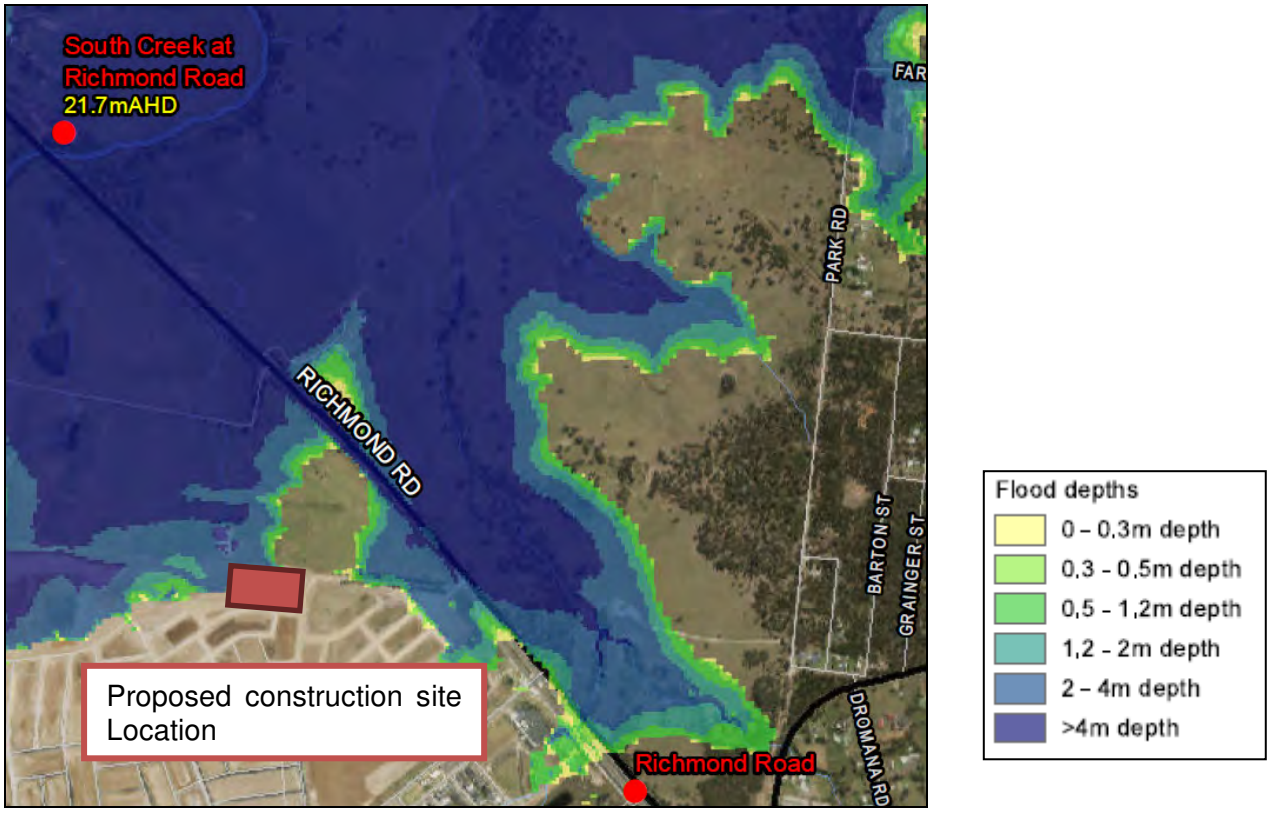


Figure 6: 0.05% (1 in 2000 year) AEP Flood Extent and Depths. HNVRFS2019, Volume 3: Map Book.

Further review of the flood mapping data provided in the HNVRFS2019 flood study confirmed the site would be further inundated during a PMF flood event. The PMF flood level provided in HNVRFS2019 flood study for the closest data point to the development was recorded to be 26.7m AHD, slightly higher than that of the PMF provided and confirmed by Blacktown City Council flood mapping online tool. Additionally, it should be noted both the local and regional flood plan presents a PMF level of 26.4m at Windsor Gauge. Proposed PMF flood event levels for each of the relevant reports and data sets are presented below:

The Probable Maximum Flood (PMF) level provided by Blacktown City Council = 26.1m AHD
The Probable Maximum Flood (PMF) level provided by HNVRFS2019 = 26.7m AHD
The Probable Maximum Flood (PMF) level provided by HNFP2015 & BCCLFP2010 = 26.4m AHD

For the basis of this FERSP, the most conservative PMF flood level of 26.7m AHD is adopted. The HNVRFS2019 flood extent and depth mapping displaying the adopted PMF flood event is displayed below, in Figure 7 and Appendix F. It should be noted all proposed PMF flood levels, given the proposed floor level of RL 23.40m AHD, significant inundation of the ground floor would occur.

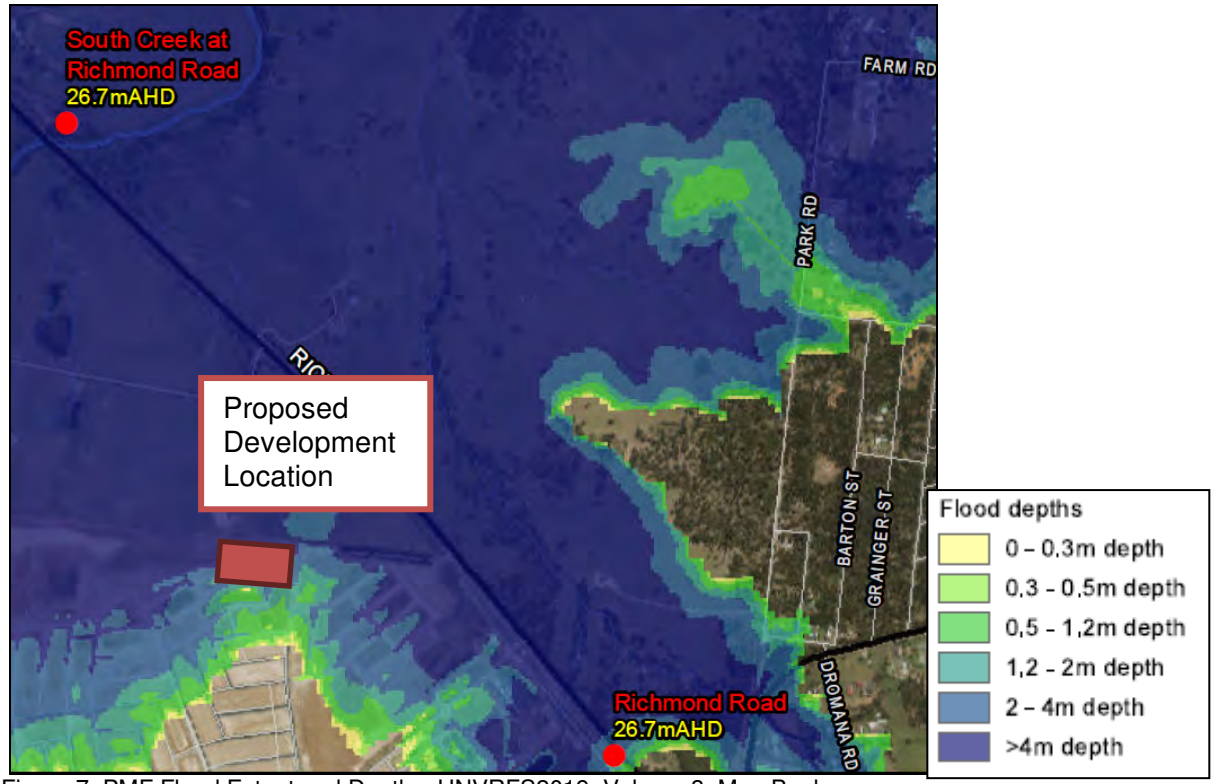


Figure 7: PMF Flood Extent and Depths. HNVRFS2019, Volume 3: Map Book.

In line with the recommendations of the Flood Emergency Response Planning Classification of Communities as part of the Floodplain Risk Management Guidelines, the emergency response planning classification was review for the PMF and 20 and 100 year average recurrence interval (ARI) events

During the PMF storm event, from review of the preliminary flow chart of emergency response classification from the Flood Emergency Response Planning Classification of Communities as part of the Floodplain Risk Management Guideline the emergency response classification was assessed as:

Overland Refuge Area on High Flood Island or High Trapped Perimeter Area

During the 20-year and 100-year ARI storm event, from review of the preliminary flow chart of emergency response classification from the Flood Emergency Response Planning Classification of Communities as part of the Floodplain Risk Management Guideline the emergency response classification was assessed as:

Not Flood Effected.

3.2 Potential Hazard

Flood hazard represents the impact that flooding would have on people, vehicles and buildings and is usually represented by a combination of depth and velocity of the floodwaters. Considering the most conservative PMF level available of 26.7m AHD, the primary mode of flooding and the proposed finished floor level (RL 23.40m AHD) it is understood the hazard class of floodwaters around the development, under the technical flood risk management guideline: flood hazard, is either H5 -*Unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure* or H6 - u*nsafe for vehicles and people. All building types vulnerable to failure.*

3.3 Rate of Rise and Duration

The rate of rise as presented in the regional flood plan during the PMF event is 0.5m/hour with the possibility of 0.7m/hour for more condensed PMF storm events i.e. 24hr PMF. This is generally supported in the HNVRFS2019 with rate of rise plots presented for the nearest data point having an upper limit during extreme flood events of up to 0.49m/hour. Considering a conservative regular water level at the creek crossing location of approx. 7.4m AHD the following rate of rise to key site locations is estimated:

Lowest Reaches of Site – **North-West Corner of Site**
Reduced Level = 21.16m AHD
Rate of rise applied = 0.7m/hour
Rise height = 13.76m

Minimum duration =19.66Hrs

Site Office – **North-East corner of site**
Reduced Level = Approx 22.2m AHD
Rate of rise applied = 0.7m/hour
Rise height = 14.8m

Minimum duration = 21.14Hrs

Main works – **Main school structure**
Reduced level = 23.4m AHD
Rate of rise applied = 0.7m/hour
Rise height = 16m

Minimum duration = 22.85Hrs

For the basis of this Flood emergency response sub-plan the conservative rate and rise and duration of **0.7m/hour** and **19.66hrs** from flood commencement to inundation were adopted.

4 Emergency Response Philosophy

This FERSP recognises that protection of life is of critical and upmost importance. In order of importance, the protection of all lives takes priority, with the comfort of employees and contractors second and the protection of the property is third.

Under the Flood Emergency Response Planning Classification Of Communities (part of the Floodplain Risk Management Guidelines) the emergency response planning (ERP) classification for each relevant flood event was classified as follows:

- 20-year and 100-year ARI storm event – **Not flood affected**
- During the PMF storm event - **Overland Refuge Area on High Flood Island or High Trapped Perimeter Area**

As such, Table 1 - Response Required for Different Flood ERP Classifications from the documented Flood Emergency Response Planning Classification Of Communities was reviewed to determine the necessary response required during the **PMF event only.**

Classification	Response Required		
	Resupply	Rescue/Medivac	Evacuation
High Flood Island	Yes	Possibly	Possibly
Low Flood Island	No	Yes	Yes
Area with Rising Road Access	No	Possibly	Yes
Areas with Overland Escape Routes	No	Possibly	Yes
Low Trapped Perimeter	No	Yes	Yes
High Trapped Perimeter	Yes	Possibly	Possibly
Indirectly Affected Areas	Possibly	Possibly	Possibly

Table 1: Table 1 - Response Required for Different Flood ERP Classifications from Flood Emergency Response Planning Classification of Communities.

A description of the two classifications provided by the assessment of the emergency response planning (ERP) in the Flood Emergency Response Planning Classification Of Communities document are provided below:

High Flood Island (HFI). The flood island includes enough land higher than the limit of flooding (i.e. above the PMF) to cope with the number of people in the area. During a flood event the area is surrounded by floodwater and property may be inundated. However, there is an opportunity for people to retreat to higher ground above the PMF within the island and therefore the direct risk to life is limited. The area will require resupply by boat or air if not evacuated before the road is cut. If it will not be possible to provide adequate support during the period of isolation, evacuation will have to take place before isolation occurs.

High Trapped Perimeter (HTP) Area. The inhabited or potentially inhabited area includes enough land to cope with the number of people in the area that is higher than the limit of flooding (i.e. above the PMF). During a flood event the area is isolated by floodwater and property and may be inundated. However, there is an opportunity for people to retreat to higher ground above the PMF within the area and therefore the direct risk to life is limited. The area will require resupply by boat or air if not evacuated before the road is cut. If it will not be possible to provide adequate support during the period of isolation, evacuation will have to take place before isolation occurs.

As the requirement to evacuate as described in the Flood Emergency Response Planning Classification Of Communities document is inexplicit, the applicant proposes that a core concept of the emergency response philosophy is to provide a tiered response which matches the constraint of the construction site and subdivision whilst responding to nature of flooding in region. The responses are shown in order of preferability starting from 1 (most preferred) to 3 (least preferred):

1. Pre-emptive closure of the site (day before): Ensure the employees and contractors working at the school are not present during major flood events in excess of the 1 in 1000-year ARI flood event.
2. Early Closure of site (day of): Facilitate the early closure of site in the unlikely event major flood events occur without satisfactory notification to allow for closure of the site the day before.
3. Emergency evacuation: Ensure evacuation routes are available and assessable in the very unlikely event the construction site has not been closed during a sudden and unexpected flood event and employees are still working on-site.

Each core concept of the emergency response philosophy will be further discussed in subsequent sections of the report. In all instances the emergency response philosophy rejects vertical evacuation and shelter in place responses of the employees and contractors of the construction l to shelter in place in the upper flood free level.

The applicant's emergency response philosophy rejects vertical evacuation and shelter in place on-site as a viable response strategy for a number of factors, namely:

- Time Available: As previously discussed, the Hawkesbury Nepean flood plain has a unique type of backwater flooding. The comparative slow process of backwater flooding provides ample forecasting and reaction time which is able to ensure in most instances' employees and contractors will not be placed at risk i.e. outside of the flood plain.
- Flood conditions: Assessing the depth of the flood adjacent to the main two storey school building places the flood hazard category during the PMF event as H5 or H6. These flood hazard note the potential flood impact on any temporary building or site office structure. As such the structural adequacy of the potential shelter-in-place location cannot be guaranteed and a shelter-in-place/vertical evacuation strategy cannot be supported.
- Location: The Elara subdivision as currently constructed, and due to the layout of the immediate road system, has the potential to become isolated from major evacuation routes during the PMF event. This aspect of the flooding could potentially inhibit resupply and medical evacuation during the PMF event. As such to minimise risk shelter-in-place/vertical evacuation cannot be supported.
- Utilities: The severity of the storm will have a detrimental effect on local infrastructure and likely diminish the constructions sites functionality. Services such as water, electricity and sewerage are expected to be unavailable for a prolonged period of time. For instance, the HNFP2015 predicts the following impact on local services following a PMF level flood event In the Richmond/Windsor/Wilberforce floodplain:
    - All electrical supply to the flood area and surrounds lost for up to 3 months or more.
    - Telecommunication services will be cut to some areas for between 2 to 4 weeks. After this would be reliant on emergency generator power for 3 to 5 months more.
    - Sewerage treatment plants will be inoperable and raw sewerage will be discharged into the river. Estimated 6 months to repair system. This poses a hazardous environment to high care residents of the development.
    - There may be no gas supplies west of the river for around 3 months.
    - Loss of water to some areas. Pump stations flood water still available under restrictions.

5 Response

The response section of the report aims to present a response strategy for the employees and contractors of the proposed construction site that adheres to the governing local and regional flood plans and responds to unique flooding characteristics of the flood area. The response section will detail the three main responses strategies; Pre-emptive closure of site, early closure of site.

5.1 Pre-emptive Closure of Site (Day Before)

The primary response strategy, site closure, is simply to close the site when the instance of major flooding is likely. Employees and contractors working at the construction site will remain at home. If evacuation orders are provided by the SES, the employees and contractors, with their families will be evacuated as per the procedures outline in their regional and local flood plan.

The key to the site closure strategy is the timing of the dissemination flooding information. If notification is received well advance of site operating hours or within sufficient time to disseminate information to its employees and contractors prior to leaving for work the strategy completely mitigates the scenario of evacuating persons during major flood events.

Considering the attention provided to a major flooding event of magnitude between the 1 in 1000-year ARI and PMF event as well as the extensive response time available (min 19.6 hours since flood commencement) it is understood the school closure scenario could easily be implemented in the nearly every major of flood cases. This is well supported by the SES documented 'Provision and Requirements for Flood Warning in New South Wales' which suggest the Windsor flood gauge has a target warning lead time of more than 16 hours for major/peak flood events such as the 1 in 1000 ARI flood event that would inundate the construction site. Further information regarding flood gauge warning times is provided in subsequent chapters.

Additionally, due to the proceeding extreme rainfall and extreme winds brought by the 1 in 1000-year ARI storm event it is very likely the site would not safely proceed with construction activities and would be closed regardless.

5.2 Early Closure of Site (Day of)

In the unlikely event the Pre-emptive Closure of Site response strategy cannot be facilitated the Early Closure of Site response strategy will be enabled. The Early Closure of Site strategy, in summary, is dismissal of employees and contractors from the site in an orderly manner via predetermined evacuation routes that may or not be active at the time of closure. Similarly, with the Pre-emptive Closure of Site response the employees will be returned home and evacuated with their families, if required.

Given the regional stage of the response and to the discretion of the SES regional commander employees and contractors will be allowed to return home (or beyond the floodplain) via their vehicles, pedestrian route, and access public transport. However, given the likely disruption to the transportation network due to earlier flood impacts, it is likely the route from the Marsden park region will be closely monitored by the SES. As employees and contractors leave the site, they will be cross referenced against the sign in' register to confirm no employees or contractors remain on- site. The Flood Warden (discussed in subsequent chapters) should remain onsite until all employess and contractors present have been dismissed.

Volume 3 of HNFP2015 notes inbound traffic will be allowed into the area until the NSW SES Sydney Western Region Incident Controller determine that inbound traffic ceases. At that time access to the

route is being denied to all traffic except emergency vehicles and buses being used for evacuation and supporting services. As the evacuation route will be in operation prior to the decision to evacuate the construction site, as a result of lower-lying areas (such as Windsor and Bligh Park) been evacuated first, it is possible inbound traffic for private vehicles could be halted at the entrance. This could cause refusal or delays in the provision of private transportation to the site, eliminating the possibility of friends and family picking-up employees and contractors.

5.3 Emergency Evacuation

The following response strategy, emergency evacuation, is proposed under the assumption:

1. Adequate response time was not provided to Pre-emptive close the site.
2. Adequate response time was not provided to close the site and safely dismiss employees and contractors on the day of the flood event.

The proposed evacuation procedures and routes are detailed in the governing flood plans for the development are listed below:

- (BCCLFP2010) Blacktown City Local Flood Plan a sub-plan of Blacktown City Local Disaster Plan (displan) November 2010
- (HNFP2015) Hawkesbury Nepean Flood Plan and relevant sub plans September 2015

The emergency evacuation strategy will consider two possible routes of evacuation:

- Option 1: Pedestrian Evacuation to local high-ground outside extent of PMF flood plain.
- Option 2: Vehicular Evacuation beyond the Elara subdivision to neighbouring schools or crisis centres outside of the PMF flood plain.

The HNFP2015 states in Chapter 2 of roles and responsibilities the SES, *response is to control and coordinate flood operations in the Hawkesbury Nepean valley in accordance with the NSW State Flood Plan, including: coordinate the evacuation and immediate welfare of people at risk and provide immediate welfare of people at risk.*

The preferable mode evacuation strategy will need to take into account up-to-date reporting on local conditions and constraints as well as available resources at the time of event. This decision and preference of evacuation strategy is further discussed below.

5.3.1 Option 1 - Pedestrian Evacuation to Local High ground

It is generally understood by Blacktown City Council that flood management plans cannot wholly rely on the provision of transport from the SES or other authorities during extreme events. Additionally, the evacuation plan cannot wholly really on the provision and use of transportation vehicles that will be required to traverse floodwaters to access the development and deliver residents from the Elara development. If absolutely necessary, and failing the implementation of earlier preferred strategies, evacuees can follow the subdivision pedestrian evacuation route to the proposed evacuation point.

As ordered by the Flood Warden, Employees and contractors will be advised to proceed, or be taken to, the nearest accessible evacuation centre/shelter, which initially be established at the direction of the SES Blacktown Local Controller and SES Mount Druitt Local Controller, but managed as soon as possible by Welfare Services. The nearest publicly accessible location beyond the PMF flood event is the Sporting Complex located south of the development on Northbourne Avenue adjacent to St Luke's School or St Luke's School itself. For the purpose of the study it is assumed the evacuation/shelter point will be located at the Sporting Complex or St Luke's as they are both above the PMF flood level and are likely to have sufficient space and sanitation facilities as well as adequate first aid and medical facilities if required.

As per the recommendations of the BCCLFP (2010) under the direction of the SES (or other

emergency authorities), employees and contractors will assemble in the emergency assembly zone noted in both stages of construction as the site carpark. At this location employees and contractors present will be cross referenced against the 'sign-in 'register to ensure all are present. Following confirmation everyone is accounted for, employees and contractors will walk the short evacuation route to the proposed evacuation center/shelter (or neighboring evacuation shelter) as determined by SES). Once the evacuation strategy is activated it will likely be very late into the flood event, and as such employees and contracts should not try and drive home as floodwaters may be encountered. The proposed route for the purpose of this study is that of the subdivision planning drawing for flood evacuation. A full size drawing of the route is shown in Appendix B with a excert of the plan shown below. It should be noted that grades from the development access point to the extent of the PMF floodplain and beyond are below 5%, generally between 1-2%, disabled compliant and support the evacuation of disabled and high-care persons if needed.

Figure 6: Proposed Evacuation Route (Near maps 2019, Base plan – Cardno drawing)

5.3.2 Option 2 - Vehicular Evacuation Beyond Subdivision

Proposed evacuation routes for Hawkesbury Nepean flood plan are detailed in Volume 3 of the HNFP2015 - Hawkesbury-Nepean valley: NSW SES Flood Evacuation routes, Traffic and transportation arrangement. Map 1 shows the regional evacuation routes within the Hawkesbury Nepean Valley and is included in Appendix G.

The proposed evacuation route for the development considering its location within South Creek B (Marsden Park) sector is the Blacktown/Richmond Road evacuation route. The route is shown yellow in Figure 9 below. The exit point for route is located at the intersection of Richmond Road and Quakers Hill Parkway. From this point normal traffic management arrangements apply.

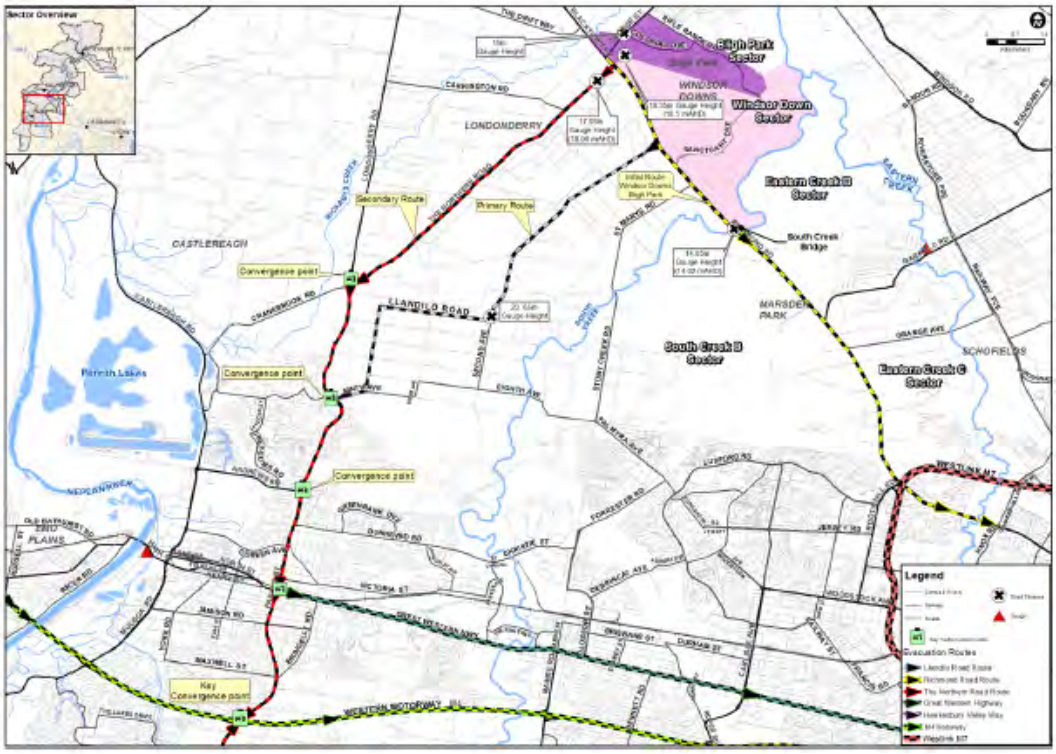


Figure 9: Evacuation route: Richmond/ Blacktown Route, HNFP2015

The designated flood evacuation route is one of several main flood evacuation routes for the Windsor Downs and Londonderry flood evacuation sectors. As with many of the flood evacuation routes in the Hawkesbury Valley, the proposed route is potentially subject to inundation from rising floodwaters as flood events progressively become more extreme. Volume 3 of the HNFP2015 notes as a result of the low point at South Creek Bridge crossing the lower portion of the route is cut by mainstream flooding at a level of 14.05m at the Windsor Gauge. However this does not affect the proposed evacuation route of the development as the Elara Subdivision is located south of the bridge and proceeds south towards Blacktown municipality. To provide context, 14.05m at the Windsor gauge is representative of a flood event between the 2% and 5% AEP (1 in 50 and 1 in 20 chance per year respectively).

As the flood evacuation route is the primary route for the lower-lying areas of the floodplain, an in-depth investigation was undertaken to ascertain if any locations of the proposed evacuation route are subject to flooding following the closure of the lower portion of the flood evacuation route. The investigation noted a single location where rising floodwater inundated the proposed evacuation route. From Volume 3: Map Book of the HNVRFS2019, the next low point subject to flooding in the Richmond/Windsor/Wilberforce floodplain is immediately following egress from the Elara subdivision at

the intersection of Elara Boulevard and Richmond Road. Inundation of the egress path was determined to occur at some event between the 0.1% AEP and 0.05% AEP event between the flood levels 20.6m AHD and 21.7m AHD respectively, refer Figure 10 and 11 below. A review of levels of Richmond Road validates the flood maps with the lowest road level measured in this area reading approx. 21.20m AHD. A review of Hazard Maps in the 0.05% AEP flood event shows the flood hazard category as H3 & H4, in both instances unsafe for vehicles and people. It should be noted the egress location from the Elara subdivision is approximately 1.4km into the evacuation route when coming from the proposed development.

Following the Elara Subdivision egress path, investigation of HNVRFS2019 flood mapping did not determine any further locations of inundation on the designate flood route. It should be noted past Richmond Road alternative routes via the Westlink M7 area available which open potential evacuation to other locations.

Figure 10 & 11: 0.1% AEP Flood extent and Level (left), 0.05% AEP Flood Extent and Level (right), HNVRFS2019.

6 Decision on Response Strategy

Under regional and local state plans the decision on and implementation of the response strategy (excluding evacuation) will be managed by ADCO project management team (Flood Warden) in consultation with and at the discretion of the State Emergency Service

The preferable mode response strategy will need to take into account up-to-date reporting on local conditions and constraints as well as available resources at the time of event. The information required to determine the route and method of the evacuation is readily accessible to the SES, as such having the SES coordinate the response strategy is supported. Understanding the decision on the preferred strategy will be controlled by the SES, the following section presents recommendations on the decision to evacuate based on the context of flooding in the area and in the response of the nature and needs of the employees and contractors of the school construction site.

As previously proposed the hierarchy of response strategies is a tiered response which increases in reactive effort and mobilisation as the imposing risk of the flood increases. The responses are shown in order of preferability starting from 1 (most preferred) to 3 (least preferred):

1. Pre-emptive Closure of Site (day before): Ensure the employees and contractors working at the school are not present during major flood events in excess of the 1 in 1000-year ARI flood event.
2. Early Closure of site (day of): Facilitate the early closure of site in the unlikely event major flood events occur without satisfactory notification to allow for closure of the site the day before.
3. Emergency evacuation: Ensure evacuation routes are available and assessable in the very unlikely event the construction site has not been closed during a sudden and unexpected flood event and employees are still working on-site.

One issue that often arises in relation to flooding and response is at what point in time a strategy should be implemented. In order to determine a suitable point to react and to monitor the progression of the flood event a datum time is required. On this background, the BCCLFP2010 designates that the “Start Time” will be based on the time the Hawkesbury River reached, or is expected to reach, a prescribed level (6m) on the Windsor Gauge. At this point numerous supporting plans will be requested to be activated, these include traffic and transport procedures. From review of the Windsor data point location in the regional flood study the time taken to reach this level during a PMF event (absolute worst-case scenario) could possibly be up to 11.52 hours. However, it is accepted that due to the severity of the flood event, and forecasting in the regional watershed, that start datums and supporting emergency plans will be activated well in advance of this duration. This assumption is well supported by the SES documented ‘Provision and Requirements for Flood Warning in New South Wales’ which suggest the Windsor flood gauge has a target warning lead time of more than 16 hours for major/peak flood events such as the 1 in 1000 ARI flood event that would inundate the construction site. A small exert of the Provision of and Requirements for Flood Warning for the Windsor flood gauge is shown below in Figure 12. A full-size table is provided in Appendix I.

Bureau number	AWRC number	Gauge Name	Station owner	Gauge type	Flood classification (m)			Flood Warnings provided by the Bureau	Target warning lead time		70% of peak forecasts within	Local Flood Advice provided by NSW SES
					Minor	Moderate	Major		Time	Trigger height		
567044	212426	Windsor (PWD)*	NSW Office of Environment and Heritage	Automatic	5.8	7.0	12.2	Quantitative	6hrs if peak>16	9.6m	+/- 0.3 m	
									15hrs if peak>16	13.7m		
									12-18 hrs	Peak		
67095	212903	Windsor+		Manual	5.8	7.0	12.2				+/- 0.3 m	

Figure 12: Provision of and Requirements for Flood Warning for the Windsor flood gauge

To provide a highly conservative estimate for a shortest possible reaction time the slowest rate of rise at Windsor gauge noted in HNVRFS2019 was taken. Once datum time for plan activation was established the fastest rate of rise time as taken from the South Creek Gauge to determine the shortest possible time for inundation. The resultant shortest possible reaction time from activation of emergency plans and dissemination of flood advise until site inundation is 8.14 hours.

The preferred strategies listed above can now be evaluated in terms of reaction time from the conservative estimate:

1. Pre-emptive Closure of Site (day before): It is generally accepted upon activation of the datum time and emergency plans that sufficient information/forecasting is available to determine the magnitude and duration of the storm. Given the extensive reaction time it is highly probable in most instances the site can be temporary closed following the activation of the plan. Based on the information provided to the SES and available for ADCO management team at the activation of the plan and a decision can be made to close the site or not.
2. Early Closure of site (day of): Assuming forecasting on the severity of the storm have been updated and the construction site was not initially closed the SES or ADCO management team may move to begin the early closure of the site. This is most likely to occur if start times and plan activation occurs during site construction hours or immediately preceding the start of work.
3. Emergency evacuation: Response times in relation to emergency evacuation, especially vehicular evacuation from the Elara Subdivision and HNV catchments is complex and dependent on possible routes and different time scenarios. The Vehicular Evacuation Response will be covered in a separate section below.

7 Vehicular Evacuation Response – Detail Plan

To provide context evacuations for the Blacktown Municipality will be conducted on two levels:

- Level 1: Evacuations of areas inundated or at threat of isolation by floods less than about the 15.0m level at the Windsor Gauge. The SES Local Controller controls these evacuations. To give this context when comparing the 15.0m level to the probabilities noted in Volume 2 of the HNFP2015 the probability of this event is comparable to the 2% AEP (1 in 50 chance per year) at 15.7m AHD.
- Level 2: Evacuations of areas threatened by floods of higher levels. It is expected that if such evacuations are required, the Hawkesbury Nepean Flood Emergency Sub Plan will be activated and evacuations throughout the valley will be co-ordinated centrally from the SES Sydney Western Region Headquarters. The evacuation for this proposed development will fall under Level 2 evacuation.

River Level m AHD	% AEP (Chance per year)
0.5 -1m	Normal levels
1-11m	33.3% (1 in 3)
11-12.5m	10% (1 in 10)
13m	7.14 % (1 in14)
14m	4.54% (1 in 22)
16m	1.67% (1 in 60)
17.3m	1% (1 in 100)
18.6m	0.5% (1 in 200)
20.1m	0.2%(1 in 500)
22m	0.07% (1 in 1,500)
26.4m	0.002% (1 in 45,000)

Table 1: %AEP (Chance per year) compared with river level at Windsor Bridge Gauge.

HNVRFS2019 flood mapping was investigated to determine a relationship between the local flooding data point (South Creek) and the Windsor Gauge. For floods in excess of 20% AEP event flood levels at the two locations were recorded to be equal. This is a result of the governing flood mode been backwater flooding, on this basis, it is comparable and possible to link the river level at Windsor bridge gauge directly to the flood level encroaching on the proposed egress from Elara subdivision as water levels at the two locations will rise equally during a given event. As a result of this link the decision to evacuate can be primarily based on when the Hawkesbury River reached, or is expected

to reach, a prescribed level on the Windsor flood gauge. This is an ideal arrangement as the Windsor Gauge will be heavily monitored by emergency services, is automatic (with manual backup), provides forecasting service to upstream and downstream gauges and is synchronised with the Bureau of Meteorology and NSW SES via flood intelligence cards. Example %AEP storm events in relation to Hawkesbury river levels at Windsor bridge gauge are presented in Table 2 above.

The Elara Subdivision's main egress path becomes inundated at RL 21.20m AHD, the rate of rise as presented in the HNFP2015 during the PMF event is 0.5m/hour with the possibility of 0.7m/hour for larger storm events. This is generally supported in the HNVRFS2019 with rise of rate plots presented for the nearest data point having an upper limit during extreme flood events of up to 0.49m/hour. Utilising a conservative estimate of 0.7m/hour for a given rate of rise a connection between the time until the egress path becomes inundated, and Windsor gauge levels can be established, this is presented in tabular form below, refer Table 3.

Hours until inundation of egress path (hrs)	Estimate level at Windsor Gauge M (AHD)
0	21.2
1	20.5
2	19.8
3	19.1
4	18.4
5	17.7
6	17
7	16.3
8	15.6
9	14.9
10	14.2
11	13.5
12	12.8
13	12.1
14	11.4
15	10.7
16	10
17	9.3
18	8.6
19	7.9
20	7.2

Table 3: Relationship between Windsor Gauge and time remaining until inundation of egress path.

As noted in the local flood plan, the decision to evacuate will be controlled by the SES, if the SES were to issue evacuation of the construction site when the 1% AEP peak flood level was reached on the Windsor Gauge, the total time for evacuation past the egress point would be reduced to a minimum of approximately 5.6 hours. It should be noted the egress location from the Elara subdivision is approximately 1.4km from the proposed development.

7.1 Evacuation Warning & Order Delivery

The BCCLFP2010 - Section 3.20.18 notes, the SES will advise the community of the requirements to evacuate. The SES will issue an Evacuation Warning when the intent of an SES Operations Controller is to warn the community of the need to prepare for a possible evacuation. A sample warning with the information delivered provided in Appendix H.

During the period where an evacuation warning has been issued, the ADCO management team (Flood Warden) is to coordinate with the SES to prepare the employees and contractors to evacuate.

The BCCLFP2010 - Section 3.20.18 notes, the SES will issue an Evacuation Order when the intent of the SES Operations Controller is to instruct a community to immediately evacuate in response to an imminent threat. A sample evacuation order is provided in Appendix H.

Evacuation warnings will be disseminated via a wide variety of mediums including television and radio broadcasting, fax, internet, public announcements as well as warnings and updated distributed to media outlets and emergency services. Of particular interest to the development is the early warning network, which when subscribed will send alerts to mobile devices and door knocking teams.

In regards to door knocking teams, the BCCLFP2010 notes in section 3.20.24-26, Sector Command Centres, where established, will distribute Evacuation Warnings and Orders via Emergency Service personnel in doorknock teams to areas under threat of inundation. Field teams conducting doorknocks will record and report back the following information to their Sector Commander: Addresses and locations of houses doorknocked and/or evacuated, the number of occupants: details of support required (such as transport, medical evacuation).

7.2 Withdrawal

As noted in the BCCLFP2010, evacuations will generally be done in stages starting from the lowest areas and moving progressively to higher areas. Upon reception of evacuation, the South Creek Sector B Sector commanders will manage the evacuation of the subdivision and its occupants up until the entrance to the designated regional road evacuation route.

7.3 Return

Once it is considered safe to do so, the SES Local Controller will authorise the return of evacuees to their normal or alternative place of residence. The decision will made in consultation with the Health Services Functional Area.

In the event that the construction site is damaged by the flood and the building is unable to be worked in, employees and contractors are to remain off-site. The final decision to return to the construction site will be at the discretion of ADCO management team and will consider the following.

- Access to facility is to be confirmed.
- Sewerage systems and sanitation systems are functional.
- Suitable contamination testing is performed and confirmed safe.
- Plumbing, electrical and gas services are functional.

Cleaning and repairs are to be carried out as required depending on the extent of flood damage.

8.0 Dissemination Orders for SES flood information and warning

The Sydney Western Region Headquarters distributes SES Flood Bulletins, SES Evacuation Warnings and SES Evacuation Orders to the numerous regional media outlets and agencies a List of these have been provided in Appendix J.

The Flood Warden (a designated member of the ADCO management team) are required to monitor the Bureau of Meteorology for severe weather forecasts. Also, the State Emergency services, Blacktown Council and local radio should also be monitored and contacted if required.

The Flood Warden is required to subscribe to, or be aware of, the following warning products:

- Severe Thunderstorm Warnings
- Regional Severe Thunderstorm Warnings
- Flood Watches
- Flood Warnings
- Local Flood Advices
- Flood Bulletins
- NSW SES Evacuation Warnings
- NSW SES Evacuation Orders

9.0 Awareness Training for Employees and Contractors.

In order to coordinate the response to a flood event, a Flood Warden should be on duty at all times. The selection of these is at the discretion of management, however in the interest of interfacing emergency response plans, it would be ideal if the role of fire warden and flood wardens were undertaken by the same people. Two phases need to be undertaken to ensure the effective training of staff;

- Induction training
- Ongoing training/drills

Induction Training of All employees and contractors.
As part of work site induction induction training, awareness of the risk of flooding and control measures is essential. All employees and contractors should be aware of the following:

- Role of Flood Wardens as outlined in the Flood Emergency Response Sub-Plan (FERP).
- How to visually identify a dangerous water level onsite from inside the building.
- Location of the assembly area and evacuation location.
- Their responsibilities in a flood situation.
- Emergency supplies required to be kept onsite in the assembly area at all times.

Induction Training of Flood Wardens
In addition to the general employee induction, flood wardens need training in the following areas;

- Emergency management policies in the Blacktown Areas.
- Testing and routine maintenance of flood dissemination protocols.
- Safe operation procedure of evacuation

Ongoing Training of All employees
Formal training / refreshers for employees shall be undertaken at least once per year

- Half Yearly Flood Response drills simulating a extreme flood event 1 in 1000 year flood and above.
- Updates to flood levels as they become available.
- Safety observations to be raised as part of monthly OH & S review.

Ongoing Training of Flood Warden
Formal training / refreshers for Wardens shall be undertaken at least once per year and shall be coordinated with community officials.

- Updates of emergency management policies in the Blacktown Council and Hawkesbury Nepean Catchment as they become available.
- Testing and routine maintenance of flood warning system refresher.
- Safe operation procedure of the evacuation.

Discussion of safety observations that are raised as part of monthly OH & S review

10.0 Responses to State Significant Development Consent Conditions.

This section of the report has been provided to demonstrate how the Flood Emergency Response Sub-Plan demonstrates adherence with the development consent conditions provided by Minister for Planning and Public Spaces. Relevant condition, condition B19, is provided below In black with responses provided by the Author of the report in blue:

The Flood Emergency Response Sub-Plan (FERSP) must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced person(s) in consultation with the SES;

Flood Emergency Response Sub-Plan has been prepared by Nicholas Wetzlar, a senior engineer for Henry & Hymas with over 8 years of experience in the industry. The plan has been reviewed and approved by Andrew Francis, Director of Civil department within Henry & Hymas with over 20 years industry experience.

Evidence of consultation with the SES has been provided in Appendix K

(b) address the provisions of the *Floodplain Risk Management Guidelines* (EESG);

Following the recommendations of Flood Emergency Response Planning Classification Of communities document (a part of the Floodplain Risk Management Guideline) an assessment of emergency response planning (ERP) classification for the development in the 20-year, 100-year and PMF ARI storm events was undertaken. The assessment found the site during each of the flood events listed below held the following flood ERP Classifications:

20-year ARI and 100-year ARI storm event – **Not flood affected**
During the PMF storm event - **Overland Refuge Area on High Flood Island or High Trapped Perimeter Area**

Based on the flood ERP Classifications provided by the of Flood Emergency Response Planning Classification Of communities document and recommendations of other Floodplain Risk Management Guidelines the Flood Emergency Response Sub-Plan was formed and is presented.

(c) include details of:

i) the flood emergency responses for both construction phases of the development;

Flood emergency responses for both construction phases of the development are provided in Chapter 4 & 5.

ii) predicted flood levels;

Predicted flood levels for all relevant storm events are presented in Chapter 3.

iii) flood warning time and flood notification;

Flood warning times and flood notification are presented in Chapters 3, 7 & 8.

iv) assembly points and evacuation routes;

Details of assembly points and evacuation routes are provided in Chapters 3 and 5.

v) evacuation and refuge protocols; and

Details of evacuation and refuge protocols are provided in Chapters 5, 6 and 7.

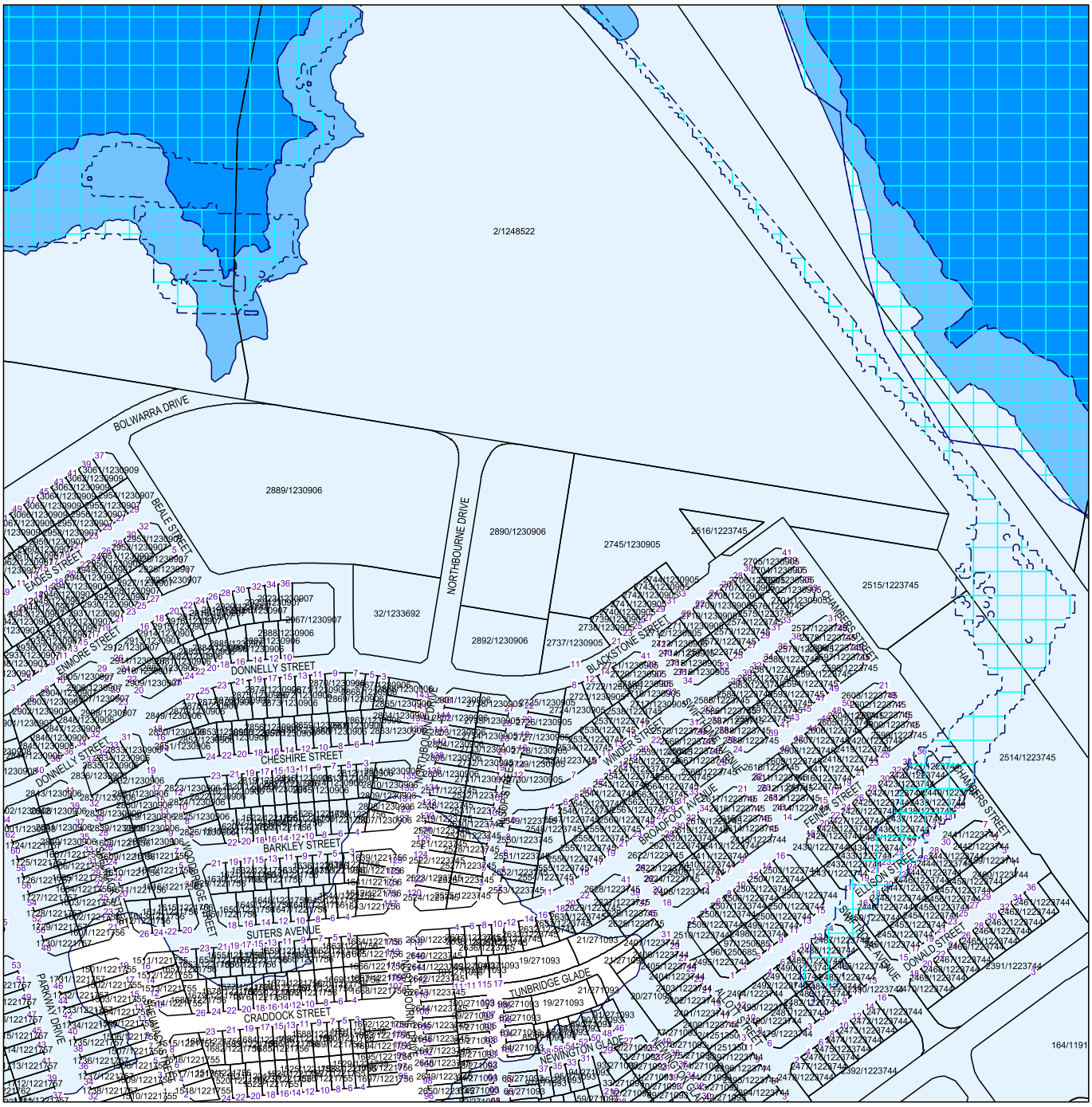
vi) awareness training for employees and contractors.

Details of awareness training for employees and contractors is provided in Chapter 9.

11.0 List of Appendices

- Appendix A – Blacktown City Council's BLEP 2015 Maps online.
- Appendix B – Pedestrian Evacuation Plan, CARDNO Drawing - CardnoUT-CV-ST07-1051.
- Appendix C – Construction Site Management Plans
- Appendix D– Architectural site plan dated, June 2020, Prepared by NBRS architecture.
- Appendix E – Site plan 19D28_SDDA_C101-C104, dated July 2020 prepared by Henry & Hymas Engineers.
- Appendix F – Excerpts of Hawkesbury-Nepean Valley Regional Flood Study, prepared for Infrastructure NSW.
- Appendix G – Evacuation Routes, BCCLFP2010.
- Appendix H – Sample Evacuation Orders and Warnings, HNFP2015
- Appendix I – Provision of and requirement for flood warning – Windsor Gauge.
- Appendix J - Dissemination Options for SES Flood Information and Warning Products.
- Appendix K – Guide for Consultation and evidence of consultation with the SES.

Appendix A – Blacktown City Council's BLEP 2015 Maps online.



Plot Date: 06/08/2019

LEGEND

- Parcel Extent.Torrens Title Extent
- Parcel LPI Extent.Torrens Title Extent
- Local Government Area.Gazetted Boundary
- EP-FLD Flooding Planning.Flood Prone SEPP Extent
- Flood Extents.High Flood Risk Precinct
- Flood Extents.Medium Flood Risk Precinct
- Flood Extents.Low Flood Risk Precinct

0m 70m 140m 210m 280m 350m

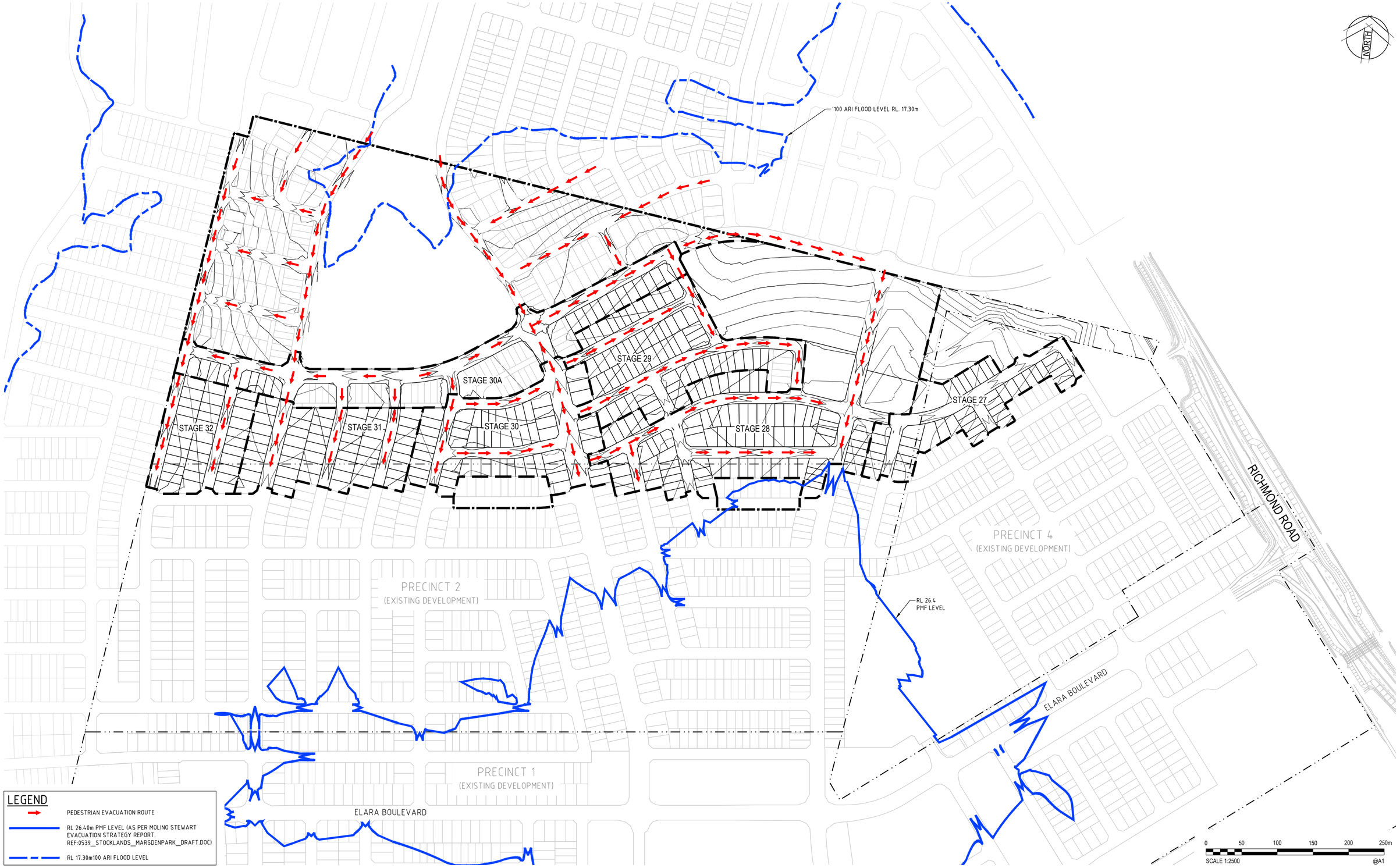
Information provided is indicative only and should not be relied on without further certification by Blacktown City Council.

Blacktown City Council

Plotted by: admingis

NOTE: Do not scale from this map. Use D.P. information for accurate dimensions. Please contact Council to purchase Aerial Photo map.

Appendix B – Pedestrian Evacuation Plan, CARDNO Drawing - CardnoUT-CV-ST07-1051.



Rev.	Date	Description	Des.	Verif.	Appd.
1	22/09/2016	PRELIMINARY ISSUE FOR CLIENT REVIEW	KW		

Stockland Elara

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St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	BML	22/09/2016
Checked	KW	22/09/2016
Designed	KW	22/09/2016
Verified	RPL	22/09/2016
Approved	KRW	22/09/2016

Client: STOCKLAND

Project: ELARA
STAGES 27-32
DEVELOPMENT APPLICATION

Title: PEDESTRIAN EVACUATION PLAN

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DATUM	DATE	Scale	Size
AHD	22/09/2016	1:2500	A1

Drawing Number: CardnoUT-CV-ST07-1051

Revision: 1

Appendix C – Construction Site Management Plans

NEW MARSDEN PARK PUBLIC SCHOOL
SITE MANAGEMENT PLAN

ADCO BUILDER OF CHOICE

EMERGENCY ASSEMBLY POINT IN SITE CARPARK

4 SITE CARPARK ENTRY

BOLWARRA DRIVE

BUS DROP OFF/PICK UP

NEW OSD TANK

PROPOSED "GAMES" COURT

PROPOSED "GAMES" COURT

EMERGENCY ASSEMBLY POINT

FIRST AID

SITE OFFICE FIRST AID & AMENITIES

STORAGE

5 PEDESTRIAN ENTRY

1 VEHICLE SITE ENTRY

2.1m SECURITY FENCE TO EXTENT DEVELOPMENT BORDER

PART OF SITE RESERVED FOR ALTERNATE USE

AREA 6200m²

SCHOOL SITE BOUNDARY

PROPOSED RL 24.300

PROPOSED NEW 2 STOREY BUILDING

PROPOSED RL 23.400

SMALL CAR BAYS

DROP OFF / PICK UP

NORTHBOURNE DRIVE

BEALE STREET

PROPOSED RL 24.000

3 NEW CARPARK ENTRY

2 VEHICLE SITE EXIT

ENMORE STREET

ENMORE STREET

HARDSTAND	1.8M CHAINWIRE FENCE AND SHADECLOTH	NURSE CALL AND FIRST AID STATION	EVACUATION POINT	ACCESS GATE	TEMPORARY POP-UP SCHOOL ZONE
		FIRST AID	EMERGENCY ASSEMBLY POINT	1	

NEW MARSDEN PARK PUBLIC SCHOOL
SITE MANAGEMENT PLAN

ADCO BUILDER OF CHOICE

4 SITE CARPARK ENTRY

BOLWARRA DRIVE

SITE BOUNDARY

NEW OSD TANK

EMERGENCY ASSEMBLY POINT IN SITE CARPARK

EMERGENCY ASSEMBLY POINT

FIRST AID

SITE OFFICE FIRST AID & AMENITIES

STORAGE

5 PEDESTRIAN ENTRY

1 VEHICLE SITE ENTRY

EXTENT DEVELOPMENT

PROPOSED NEW
2 STOREY BUILDING

BOUNDARY

NORTHBOURNE DRIVE

3 NEW CARPARK ENTRY

ENMORE STREET

2 VEHICLE SITE EXIT

HARDSTAND

1.8M CHAINWIRE FENCE AND SHADECLOTH

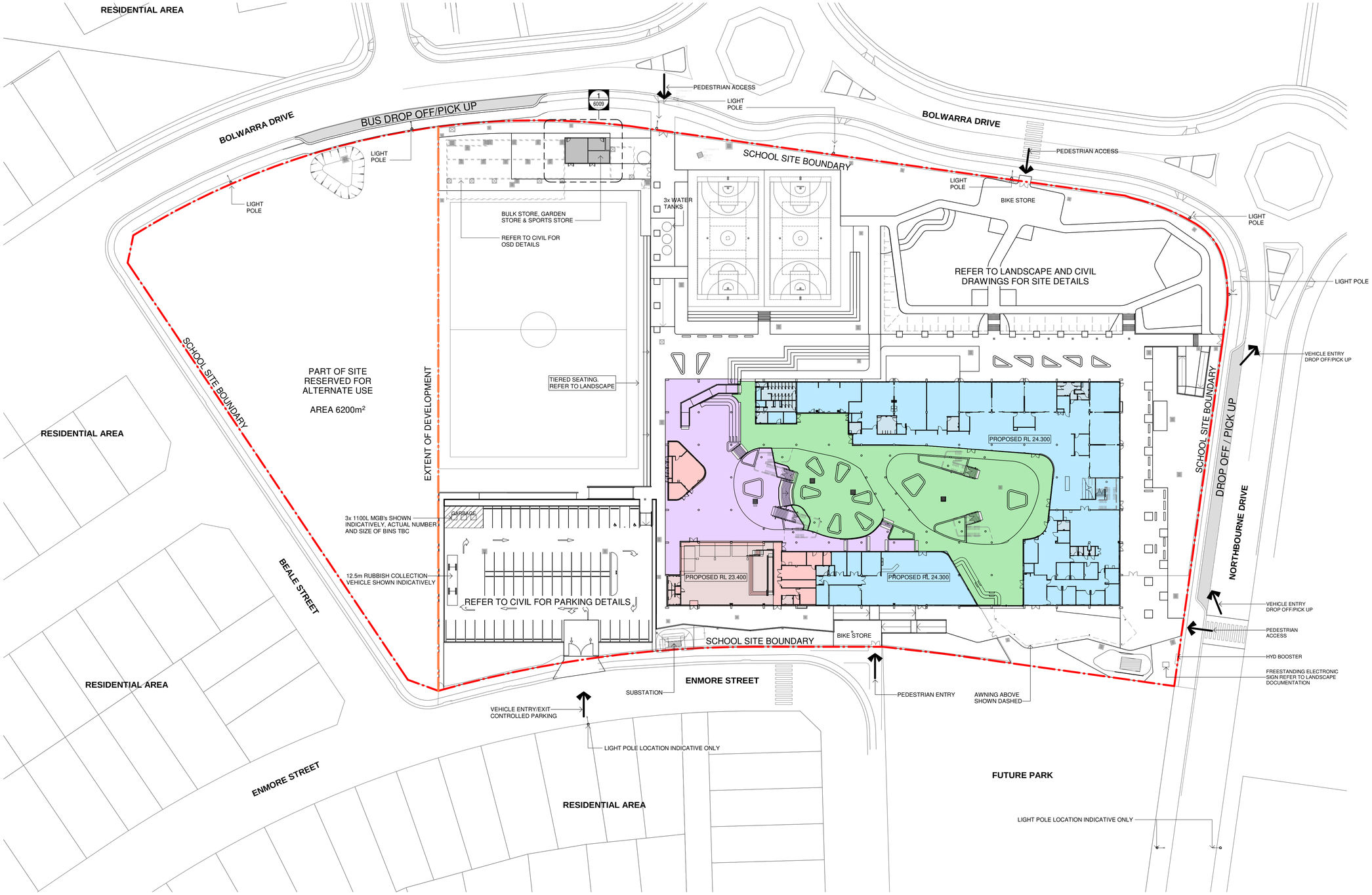
NURSE CALL AND FIRST AID STATION

EVACUATION POINT

ACCESS GATE 1

Appendix D– Architectural site plan dated, June 2020, Prepared by NBRS architecture.

NBRSARCHITECTURE.



1 SITE PLAN/
1 : 500

CIVIL DESIGN LEVELS UPDATED

NOTE: FOR BUILDING SET-OUT
REFER TO DRAWING 0500

Issue

No.	Date	Description	Chkd
5	10/03/2020	SCHEMATIC AMENDMENTS	EK
6	12/03/2020	REVISED LAYOUT TO SUIT GARBAGE TRUCK	EK
7	26/03/2020	REVISED SITEPLAN	EK
8	01/04/2020	TIERED SEATING AND RAMPS UPDATED	AH
9	23/04/2020	DRAFT DETAILED DESIGN PACKAGE	EK
10	15/05/2020	DETAIL DESIGN ISSUE	EK
11	10/06/2020	UPDATED RET. WALL & RAMP	EK

DETAILED DESIGN

- LEVEL 1 **RL 23.400**
- LEVEL 1 COURTYARD
- UPPER LEVEL 1 **RL 24.300**
- UPPER LEVEL 1 COURTYARD

Drawing Title
SITE PLAN

Project
MARSDEN PARK PUBLIC SCHOOL

at

Architect
NBRSARCHITECTURE.
Sydney
61 2 9922 2344 nbrsarchitecture.com

Nominated Architects:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197

ABN 16 002 247 565

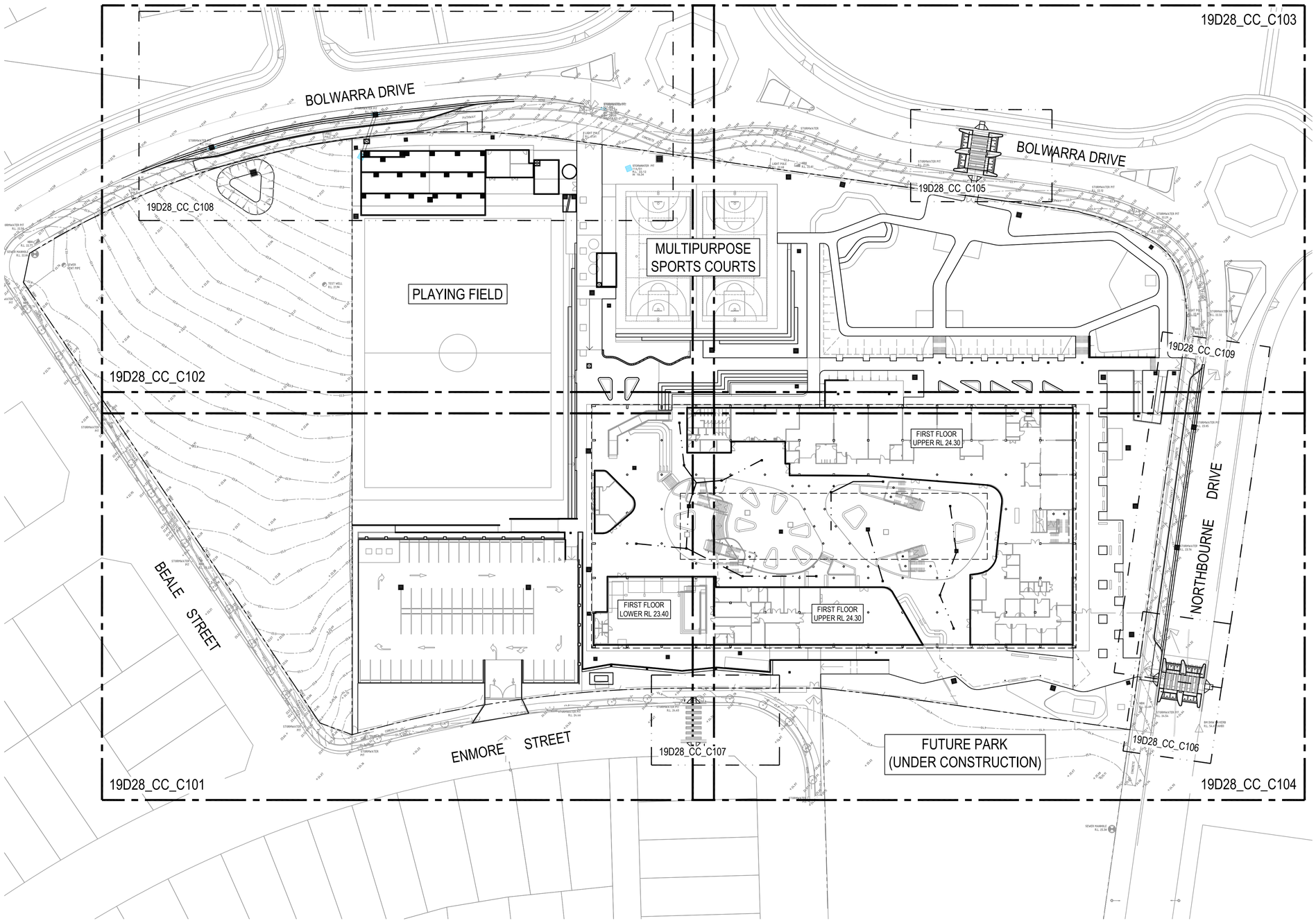
Date 24/06/2020 4:04:20 PM
Scale 1 : 500 @ A1

Drawing Reference
19154-NBRS-A-0100

Revision
11

0 1 2 3 4 5 6 7 8 9 10

Appendix E – Site plan 19D28_SDDA_C101-C104, dated July 2020 prepared by Henry & Hymas Engineers.



LEGEND

- EXISTING BOUNDARY
- PROPOSED JUNCTION PITS
- PROPOSED SURFACE INLET PITS
- A-1 — LINE LETTER / PIT NUMBER — PROPOSED PIT TAG
- 40.125 / Ø425RCP / 20.450m / 1.5% / 39.818 — STORMWATER UPSTREAM INVERT RL. / STORMWATER PIPE DIAMETER & CLASS / STORMWATER PIPE LENGTH / STORMWATER PIPE GRADE / STORMWATER DOWNSTREAM INVERT RL.
- PROPOSED GRATED DRAIN
- PROPOSED STORMWATER PIPE
- STORMWATER LINE TO BE MADE REDUNDANT FOLLOWING CLOSURE OF TEMPORARY SCHOOL
- PROPOSED LOW FLOW STORMWATER PIPE
- SS — SS — PROPOSED SUBSOIL LINE
- EXISTING STORMWATER PIPE
- PROPOSED BATTER LINE
- 22.7 — EXISTING CONTOURS
- 22.80 — PROPOSED CONTOURS
- RL24.300 — PROPOSED SPOT LEVEL
- 22.30 — EXISTING SPOT LEVEL
- TW 24.300 — PROPOSED TOP OF WALL LEVEL
- BW 23.300 — PROPOSED BOTTOM OF WALL LEVEL
- RWO — 300 SQ RAINWATER OUTLET WITH Ø150mm OUTLET PIPE
- KO — PROPOSED KERB ONLY
- BKO — BLACKTOWN CITY COUNCIL KERB ONLY
- BBK — PROPOSED BACK TO BACK KERB
- DD — PROPOSED DISH DRAIN
- PROPOSED STORMWATER SWALE
- RW — PROPOSED RETAINING WALL
- R — PROPOSED RIDGE LINE
- FP — SS — PROPOSED FLUSHING POINT (FP)
- SS — IR — SS — PROPOSED INTERMEDIATE RISER (IR)
- DP — PROPOSED DOWNPIPE LOCATION (DP)
- PROPOSED DOWNPIPE COLLECTION LINE
- PROPOSED LIMIT OF WORK

GENERAL ARRANGEMENT PLAN

SCALE 1:500

0 10 20 30 40 50m
10 8 6 4 2
SCALE 1:500

FOR CONSTRUCTION CERTIFICATE

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
04	ISSUED FOR CONSTRUCTED CERTIFICATE	IK	NW	26.06.2020
03	ISSUED FOR DETAILED DESIGN SUBMISSION	IK	NW	18.05.2020
02	ISSUED FOR FINAL COORDINATION	IK	NW	23.04.2020
01	ISSUED FOR FINAL COORDINATION	IK	NW	27.03.2020

Client: ADCO CONSTRUCTIONS PTY LTD
Architect: NBRS ARCHITECTURE

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Email email@hhconsult.com.au
Web www.henryandhymas.com.au
henry&hymas

Project: MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW
Title: GENERAL ARRANGEMENT PLAN

Drawn	Designed	Date
I.Khachab	N.Wetzlar	JAN 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:500

Drawing number: 19D28_CC_C100
Revision: 04

FOR CONTINUATION REFER TO DWG 19D28_CC_C102

ON HOLD

PROVIDE 1m WIDE GRADED SWALE. REFER TO DETAIL ON C201

DENOTES TOE OF 1 IN 5 BATTER

EXISTING BOUNDARY

PROPOSED RETAINING WALL REFER C300 SERIES.

PROVIDE OVERLAND FLOW ROUTE TO RELIEVE CAR PARK TO FOOTPATH FIELD WESTERN DRAINAGE SWALE

PROPOSED INTERNAL BOUNDARY DETAILS BY PROJECT ARCHITECT

FOOTPATH TO FALL INTO CAR PARK. MAX. 2.5%

DENOTES WHEEL STOPS, REFER DETAILS BY PROJECT ARCHITECT

FOOTPATH

PROVIDE VEHICLE CRASH BARRIER

CONNECT LANDSCAPING SUBSOIL TO PIT B-4, TRENCH FEEDER LINE IN DRAINAGE TRENCH 300uPVC

IL21.506 Ø300 20m 1% IL21.306

IL22.19 Ø225 10.8m 1% IL22.09

CONNECT 100% OF ROOF AREA TO RAINWATER TANK. REFER HYDRAULIC ENGINEER'S DRAWINGS FOR CONTINUATION

LINE DENOTES EXTENT OF ROOF OVER

IL22.36 Ø225 15.0m 1% IL22.21

IL21.805 Ø300 27.9m 1% IL21.526

IL22.975 Ø300 14.8m 1% IL21.827

IL22.295 Ø225 30m 1% IL21.995

PROVIDE VEHICLE CRASH BARRIER. REFER DETAIL ON C310

IL22.114 Ø225 10.6m 1% IL22.008

FIRST FLOOR LOWER RL 23.40

IL22.247 Ø225 11.3m 1% IL22.134

IL22.438 Ø225 17.1m 1% IL22.267

IL22.627 Ø225 17m 1% IL22.458

PROVIDE SUBSOIL DRAINAGE BEHIND KERB. REFER TO DETAIL ON DWG C201

PROVIDE HEAVY DUTY VEHICLE CROSSOVER IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL REQUIREMENTS. REFER STANDARD DRAWING A(BS)1035 (1 OF 2)

PROPOSED ELECTRICAL SUBSTATION DETAILS BY OTHERS. REFER RETAINING WALL DETAIL ON C310

RWO 300SQ

300mm WIDE SPOON DRAIN MIN 1% FALL. REFER TO DETAIL ON C201

PROVIDE 300SQ RWO TOP OF WALL AT SPOON DRAIN LOW POINT CONNECT RWO TO PIT B-8 BY Ø150uPVC, MINIMUM 2% FALL

PROPOSED PEDESTRIAN CROSSING. REFER C107 FOR DETAILS

FOR CONTINUATION REFER TO DWG 19D28_CC_C104

BEALE STREET

ENMORE STREET

DONNELLY STREET

ENMORE

STREET

DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
E	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	30.06.2020					
D	CONSTRUCTION - CONSTRUCTION CERTIFICATE	BH	BH	26.06.2020					
C	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	BH	BH	10.06.2020					
B	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	IK	NW	18.05.2020					
A	ISSUED FOR CONSTRUCTION	IK	NW	30.04.2020					
02	ISSUED FOR FINAL COORDINATION	IK	NW	23.04.2020					
01	ISSUED FOR FINAL COORDINATION	IK	NW	27.03.2020					

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Architect
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Web www.henryandhymas.com.au

henry&hymas

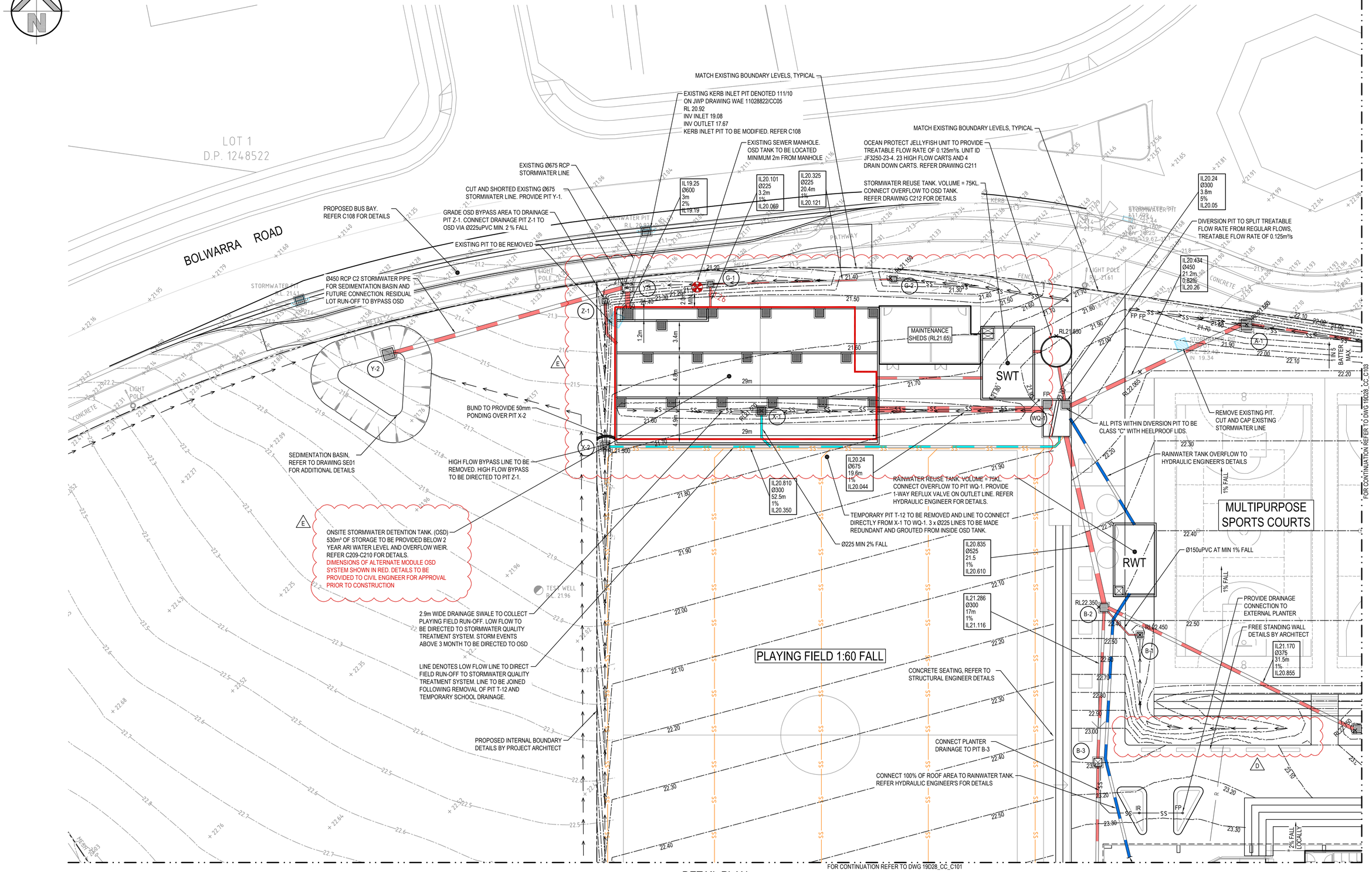
Project
MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title
DETAIL PLAN
SHEET 1 OF 4

Drawn	Designed	Date
I.Khachab	N.Wetzlar	JAN 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:200

Drawing number
19D28_CC_C101

Revision
E



DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
E	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	02.07.2020
D	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	30.06.2020
C	CONSTRUCTION - CONSTRUCTION CERTIFICATE	BH	BH	26.06.2020
B	ISSUED FOR DETAILED DESIGN SUBMISSION	IK	NW	18.05.2020
A	ISSUED FOR CONSTRUCTION	IK	NW	30.04.2020
02	ISSUED FOR FINAL COORDINATION	IK	NW	23.04.2020
01	ISSUED FOR FINAL COORDINATION	IK	NW	27.03.2020

Client: ADCO CONSTRUCTIONS PTY LTD

Architect: NBRS ARCHITECTURE

Suite 2.01
828 Pacific Highway Gordon NSW 2072
Telephone +61 2 9417 8400
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Email email@hhconsult.com.au
Web www.henryandhymas.com.au
henry&hymas

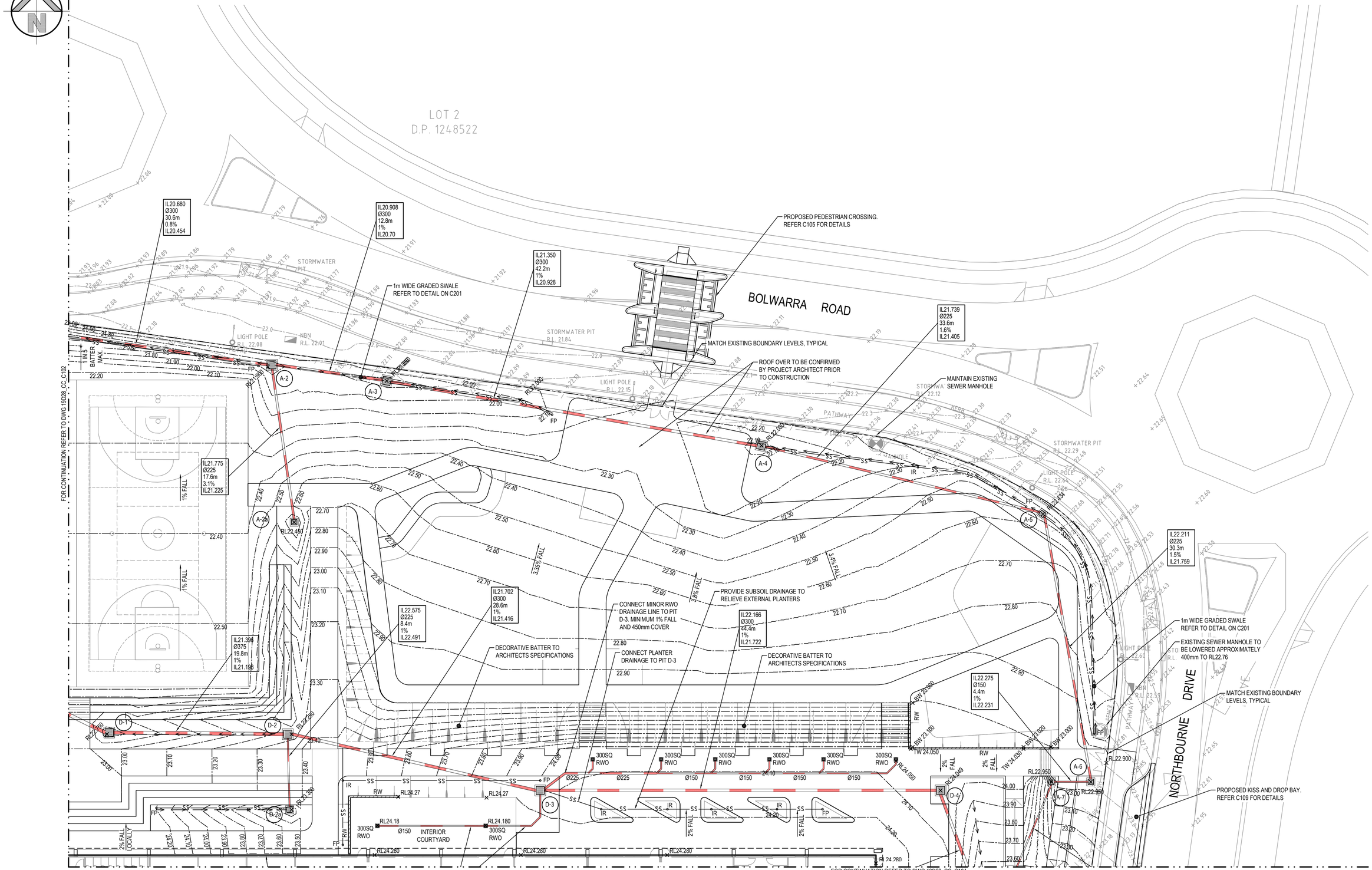
Project: MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title: DETAIL PLAN
SHEET 2 OF 4

Drawn	Designed	Date
I.Khachab	N.Wetzlar	JAN 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:200

Drawing number: 19D28_CC_C102

Revision: E



DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
D	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	30.06.2020
C	CONSTRUCTION - CONSTRUCTION CERTIFICATE	BH	BH	26.06.2020
B	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	IK	NW	18.05.2020
A	ISSUED FOR CONSTRUCTION	IK	NW	30.04.2020
02	ISSUED FOR FINAL COORDINATION	IK	NW	23.04.2020
01	ISSUED FOR FINAL COORDINATION	IK	NW	27.03.2020

Client
ADCO CONSTRUCTIONS PTY LTD

Architect
NBRS ARCHITECTURE

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828 Pacific Highway
Gordon NSW 2072

Telephone +61 2 9417 8400
Facsimile +61 2 9417 8337
Email email@hhconsult.com.au
Web www.henryandhymas.com.au

henry&hymas

Project
MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title
DETAIL PLAN
SHEET 3 OF 4

Drawn	Designed	Date
I.Khachab	N.Wetzlar	JAN 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:200

Drawing number
19D28_CC_C103

Revision
D


FOR CONTINUATION REFER TO DWG 19D28_CC_C103
FOR CONTINUATION REFER TO DWG 19D28_CC_C101
ON HOLD
FIRST FLOOR
UPPER RL 24.30
LINE DENOTES APPROXIMATE LOCATION OF BUILDING STEP
REFER STRUCTURAL DRAWINGS FOR RETAINED BUILDING EDGE
Ø150uPVC AT MIN 1% FALL
LINE DENOTES EXTENT OF ROOF OVER
EMERGENCY OVERFLOW TO BE DIRECTED FROM INTERNAL COURTYARD OVER PIT C-0
PROPOSED KISS AND DROP BAY. REFER C109 FOR DETAILS
Ø150uPVC AT MIN 2% FALL
PROVIDE SUBSOIL DRAINAGE
DENOTES HIGH POINT IN SWALE
PROVIDE Ø150uPVC STUB CONNECTION FOR NEIGHBOURING ROOF DRAINAGE
MATCH EXISTING BOUNDARY LEVELS, TYPICAL
PROPOSED PEDESTRIAN CROSSING. REFER C106 FOR DETAILS
RAMP GRADING BY PROJECT ARCHITECT
MECH ZONE UNDER COORDINATION
PROVIDE 1m WIDE GRADED SWALE. REFER TO DETAIL ON C201
MATCH EXISTING BOUNDARY LEVELS, TYPICAL
ROOF OVER TO BE CONFIRMED BY PROJECT ARCHITECT PRIOR TO CONSTRUCTION
Ø150 uPVC MIN 2% FALL
PROVIDE 300SQ RWO TOP OF WALL AT SPOON DRAIN LOW POINT
DENOTES LINE OF ROOF OVER
NORTHBOURNE DRIVE
ENMORE STREET
LOT 32
D.P. 1233692

DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m
4 3 2 1

SCALE 1:200

FOR CONSTRUCTION

SURVEY INFORMATION
SURVEYED BY LCG
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM191370

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
E	CONSTRUCTION - CONSTRUCTION CERTIFICATE	BH	BH	26.06.2020					
D	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	BH	BH	11.06.2020					
C	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	BH	BH	10.06.2020					
B	ISSUED FOR DETAILED DESIGN SUBMISSION/CONSTRUCTION	IK	NW	18.05.2020					
A	ISSUED FOR CONSTRUCTION	IK	NW	30.04.2020					
02	ISSUED FOR FINAL COORDINATION	IK	NW	23.04.2020	G	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	02.07.2020
01	ISSUED FOR FINAL COORDINATION	IK	NW	27.03.2020	F	CONSTRUCTION - CONSTRUCTION CERTIFICATE	IK	NW	30.06.2020

Client
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henry&hymas

Project
MARSDEN PARK PUBLIC SCHOOL
NORTHBOURNE DR MARSDEN PARK NSW

Title
DETAIL PLAN
SHEET 4 OF 4

Drawn	Designed	Date
I.Khachab	N.Wetzlar	JAN 2020
Checked	Approved	Scale @A1
N.Wetzlar	A.Francis	1:200

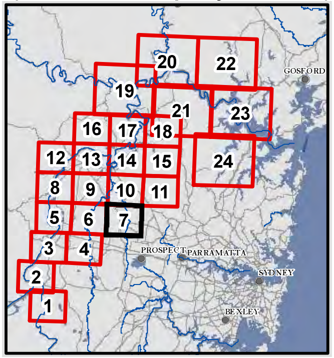
Drawing number: 19D28_CC_C104
Revision: G

Appendix F – Excerpts of Hawkesbury-Nepean Valley Regional Flood Study, prepared for Infrastructure NSW.

Hawkesbury-Nepean Valley Regional Flood Study

Final Report (July 2019)
Volume 3: Map Book - Part B

FLOOD EXTENTS, DEPTHS AND CONTOURS
1 in 2,000 AEP flood (0.05% chance per year flood)



Legend

- Key reporting locations and flood level

Flood depths

- 0 - 0.3m depth
- 0.3 - 0.5m depth
- 0.5 - 1.2m depth
- 1.2 - 2m depth
- 2 - 4m depth
- >4m depth

Flood contours (m AHD)

- Flood Level Contours at 1 metre interval
- Flood Level Contours at 0.2 metre interval

0 750 1,500
Metres (1:28,000 at A3)

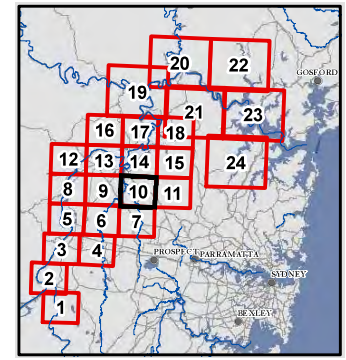
Notes:
This map was prepared by Infrastructure NSW based on the Hawkesbury-Nepean Valley Regional Flood Study (WMAwater, Final Report July 2019) using LiDAR dated May 2017 (dated 2011 downstream of Wisemans Ferry).
The mapped flood information represents Hawkesbury-Nepean mainstream regional flooding including backwater effects, but does not include local catchment flooding or local overland flooding.
Flood behaviour information is subject to change as a result of new data, methods and technology.
The mapped flood information excludes the impacts of climate change and implementation of potential flood mitigation measures.
Any flooding information within the banks of rivers or streams should not be used for any assessment (other than flood extents) without detailed investigation.
Flood depths are indicative only. To determine the depth of flooding at a particular location, the flood level should be compared to a surveyed ground level.
Aerial photography: 2016 NSW Spatial Services

Hawkesbury-Nepean Valley Regional Flood Study

Final Report (July 2019)
Volume 3: Map Book - Part B

FLOOD EXTENTS, DEPTHS AND CONTOURS

Probable Maximum Flood (PMF)



Legend

- Key reporting locations and flood level

Flood depths

- 0 - 0.3m depth
- 0.3 - 0.5m depth
- 0.5 - 1.2m depth
- 1.2 - 2m depth
- 2 - 4m depth
- >4m depth

Flood contours (m AHD)

- Flood Level Contours at 1 metre interval
- Flood Level Contours at 0.2 metre interval

0 750 1,500

Metres (1:28,000 at A3)

Notes:

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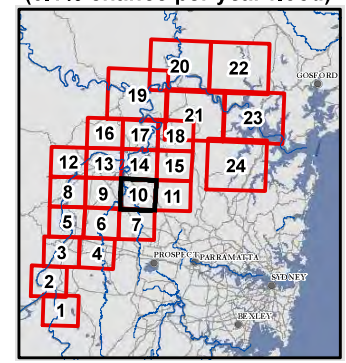
Aerial photography: 2016 NSW Spatial Services

Hawkesbury-Nepean Valley Regional Flood Study

Final Report (July 2019)
Volume 3: Map Book - Part B

FLOOD EXTENTS, DEPTHS AND CONTOURS

1 in 1,000 AEP flood
(0.1% chance per year flood)



Legend

- Key reporting locations and flood level

Flood depths

- 0 - 0.3m depth
- 0.3 - 0.5m depth
- 0.5 - 1.2m depth
- 1.2 - 2m depth
- 2 - 4m depth
- >4m depth

Flood contours (m AHD)

- Flood Level Contours at 1 metre interval
- Flood Level Contours at 0.2 metre interval

0 750 1,500

Metres (1:28,000 at A3)

Notes:

This map was prepared by Infrastructure NSW based on the Hawkesbury-Nepean Valley Regional Flood Study (WMAwater, Final Report July 2019) using LiDAR dated May 2017 (dated 2011 downstream of Wisemans Ferry).

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Any flooding information within the banks of rivers or streams should not be used for any assessment (other than flood extents) without detailed investigation.

Flood depths are indicative only. To determine the depth of flooding at a particular location, the flood level should be compared to a surveyed ground level.

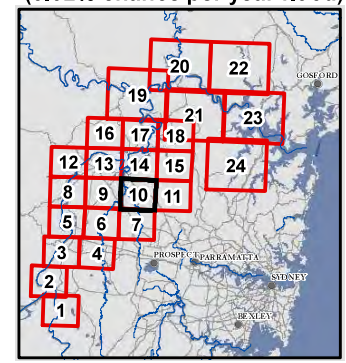
Aerial photography: 2016 NSW Spatial Services

Hawkesbury-Nepean Valley Regional Flood Study

Final Report (July 2019)
Volume 3: Map Book - Part B

FLOOD EXTENTS, DEPTHS AND CONTOURS

1 in 5,000 AEP flood
(0.02% chance per year flood)



Legend

- Key reporting locations and flood level

Flood depths

- 0 - 0.3m depth
- 0.3 - 0.5m depth
- 0.5 - 1.2m depth
- 1.2 - 2m depth
- 2 - 4m depth
- >4m depth

Flood contours (m AHD)

- Flood Level Contours at 1 metre interval
- Flood Level Contours at 0.2 metre interval

N

0 750 1,500

Metres (1:28,000 at A3)

Notes:

This map was prepared by Infrastructure NSW based on the Hawkesbury-Nepean Valley Regional Flood Study (WMAwater, Final Report July 2019) using LiDAR dated May 2017 (dated 2011 downstream of Wisemans Ferry).

The mapped flood information represents Hawkesbury-Nepean mainstream regional flooding including backwater effects, but does not include local catchment flooding or local overland flooding.

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Any flooding information within the banks of rivers or streams should not be used for any assessment (other than flood extents) without detailed investigation.

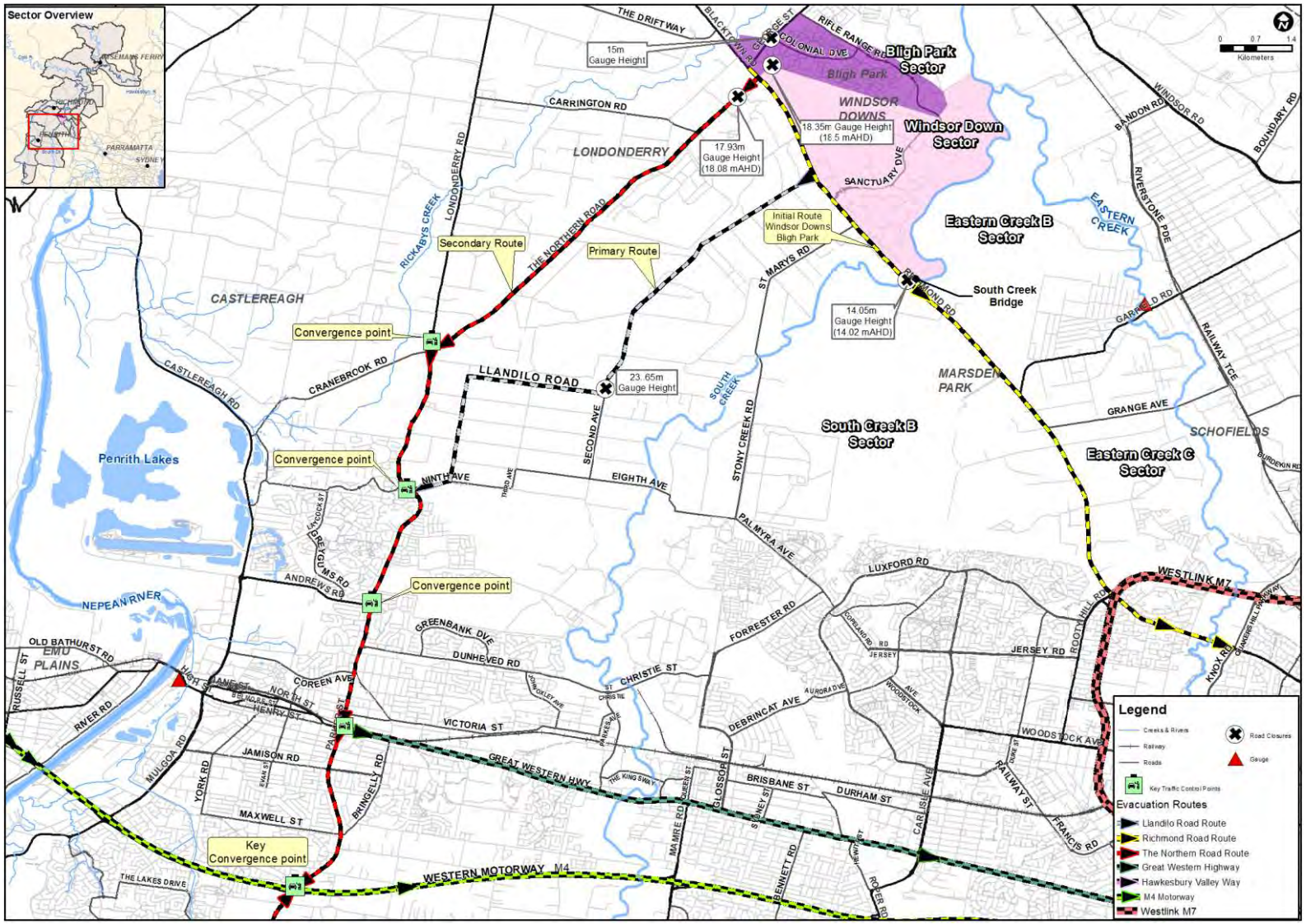
Flood depths are indicative only. To determine the depth of flooding at a particular location, the flood level should be compared to a surveyed ground level.

Aerial photography: 2016 NSW Spatial Services

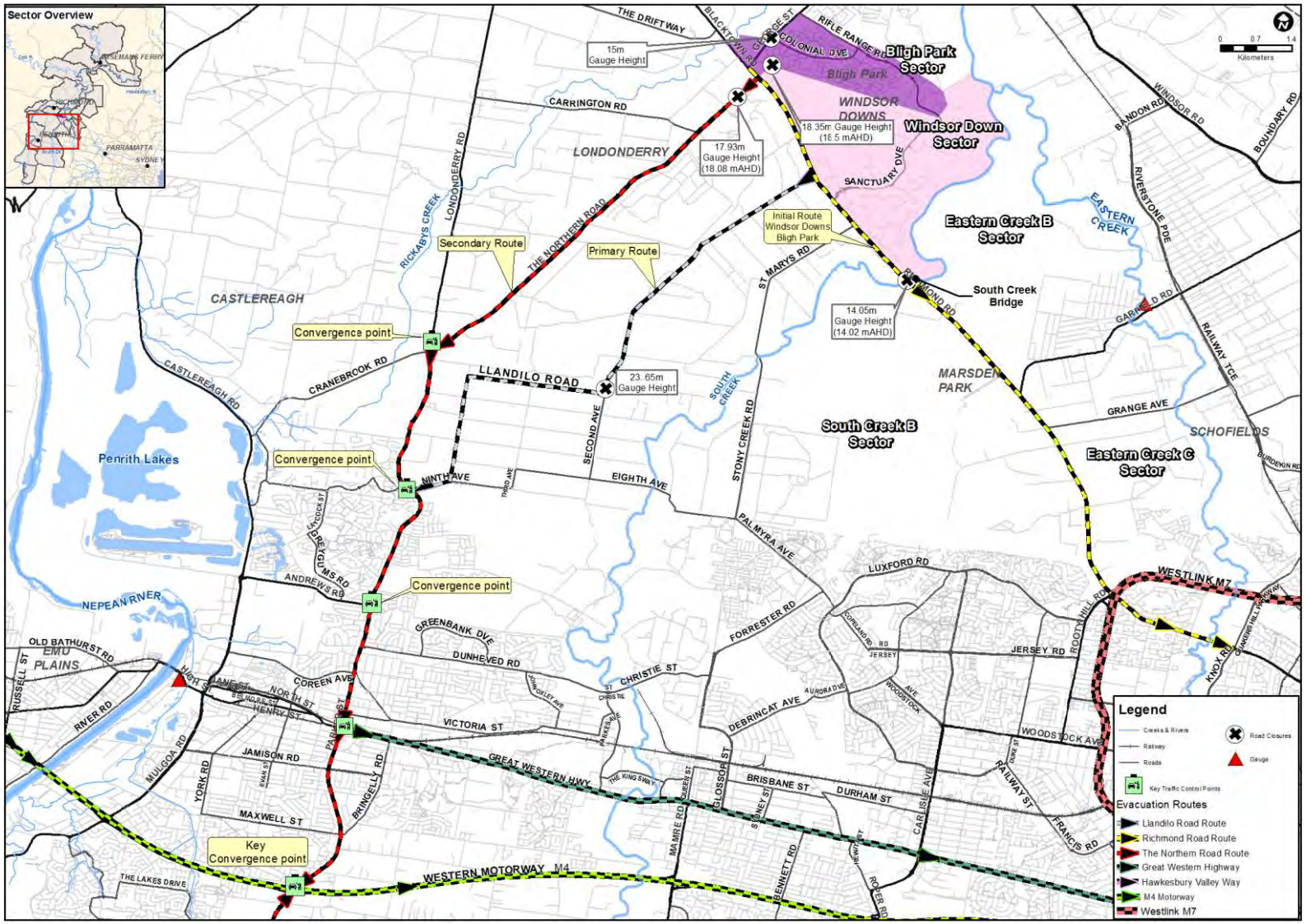
SES NSW STATE EMERGENCY SERVICE

NSW GOVERNMENT

Appendix G – Evacuation Routes, BCCLFP2010.



Map 7: Bligh Park and Windsor Downs – Evacuation Routes



Map 7: Bligh Park and Windsor Downs – Evacuation Routes

Appendix H – Sample Evacuation Orders and Warnings, HNFP2015

Flood Evacuation Order

[name] SES Region Headquarters

[Enter address]
> @

> @

Issued *[day] [date]* at *[time in civilian format (am,pm)]*

Radio stations are asked to immediately broadcast this message and repeat it.

Use of the Standard Emergency Warning Signal (SEWS) with this message is authorized.

Flood Evacuation Order for [Enter locations]

As a result of the flood level predicted by the Bureau of Meteorology for [***location***] at [***date/time***] the State Emergency Service is directing residents within the nominated areas to evacuate within the next [***number***] hours.

Do not delay your evacuation. Roads will be congested or closed. You could become trapped and need rescue. Remaining in flooded areas is dangerous and may place your life at risk.

You can choose to go to friends or relatives. Alternatively, evacuation centres will be established at [***location/s***] where you can obtain temporary accommodation and other help.

Delete as required {If you don't have a car, buses may operate where possible on normal routes. Special transport can also be provided on request if necessary, telephone [***telephone number***]}

As you evacuate you should:

- Take your important documents, mementos and photos
- Take your spare clothing and medicines
- If possible, check to see if your neighbours need help
- Turn off the electricity and gas
- Don't walk ride or drive through floodwater
- Continue to listen to a local radio station for updates

For emergency assistance telephone the SES on 132500

SES web site: www.ses.nsw.gov.au

This Flood Evacuation Order remains current until the All Clear has been issued

Flood Evacuation Warning

[name] SES Region Headquarters

[Enter address] **Telephone: (02)**
[########]

Fax: (02)

[########]
Issued *[day] [date]* at *[time in civilian format (am,pm)]* **Email: [#########]**

Radio stations are asked to immediately broadcast this message and repeat it.

Use of the Standard Emergency Warning Signal (SEWS) with this message is authorized.

Flood Evacuation Warning for [Enter location/s]

Authorised By: [(name and operational position title)]

As a result of the flood level predicted by the Bureau of Meteorology for [***location***] at [***date/time***] the State Emergency Service recommends that residents within the nominated areas should prepare to evacuate within the next [***number***] hours.

Residents should monitor the situation and be prepared to evacuate when instructed to do so. A Flood Evacuation Order will be issued by the SES if evacuation is required.

You can choose to go to friends or relatives. Alternatively, evacuation centres will be established at [***location/s***] where you can obtain temporary accommodation and other help.

To prepare for possible evacuation you should:

- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. You may be able to place light weight items in the roof space.
- Collect together medicines, personal and financial documents, mementos and photos
- If possible, check to see if your neighbours need help
- Make arrangements for care of pets or other animals, or take your pets with you when you evacuate
- Take three days' supply of clothing and medicines
- Find out where to turn off the electricity and gas
- Continue to listen to a local radio station for updates

Don't walk ride or drive through floodwaters – this is the main cause of death and injury during floods

For emergency assistance telephone the SES on 132 500

Web site: www.ses.nsw.gov.au

(QG 6(6)ORRG (YDEXDWLRQ ·DUQLQJ

[Enter next update and currency details]

Appendix I – Provision of and requirement for flood warning – Windsor Gauge.

Bureau number	AWRC number	Gauge Name	Station owner	Gauge type	Flood classification (m)			Flood Warnings provided by the Bureau	Target warning lead time		70% of peak forecasts within	Local Flood Advice provided by NSW SES
					Minor	Moderate	Major		Time	Trigger height		
67093	212202	Wallacia Weir *	WaterNSW	Automatic	5.0	8.7	11.0	Quantitative	12 hrs	> 5.0 m	+/- 0.3 m	
567047	212201	Penrith *	WaterNSW	Automatic	3.9	7.9	10.4	Quantitative	6 hrs 8 hrs	>8.9 m >11.3m	+/- 0.3 m	
063282	212902	North Richmond Bridge+		Manual	4.3	8.4	11.0	Quantitative	6hrs 15hrs	>16m >18m	+/- 0.3 m	
567098	212200	North Richmond (WPS) *	WaterNSW	Automatic	3.8	7.9	10.5	Quantitative	6hrs 15hrs	>16m >18m	+/- 0.3 m	
567044	212426	Windsor (PWD)*	NSW Office of Environment and Heritage	Automatic	5.8	7.0	12.2	Quantitative	6hrs if peak>16 15hrs if peak>16 12-18 hrs	9.6m 13.7m Peak	+/- 0.3 m	
67095	212903	Windsor+		Manual	5.8	7.0	12.2				+/- 0.3 m	
63280	212406	Sackville *	Water NSW NSW Office of Environment and Heritage	Automatic	4.6	7.3	9.7	Quantitative	18 hrs	>4.6	+/- 0.3 m	
67094	212407	Lower Portland*	NSW Office of Environment and Heritage	Automatic	4.6	6.1	7.6	Quantitative	18 hrs	>4.6	+/- 0.3 m	
63288	212908	Putty Road		Manual	2.7	5.7	10.7	Quantitative	12 hrs	>5.7	+/- 0.3 m	

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Appendix J - Dissemination Options for SES Flood Information and Warning Products.

Annex D
Dissemination Options for SES Flood Information and Warning Products

The Sydney Western Region Headquarters distributes SES Flood Bulletins, SES Evacuation Warnings and SES Evacuation Orders to the following regional media outlets and agencies:

Television Stations

ABN Channel 2
ATN Channel 7
TCN Channel 9
Channel 10 NSW
SBS TV
Sky News Australia
NHK Sydney (Japan Broadcasting Corporation)

Commercial Radio Stations

2CH
2UE
2GB
2SM
702 ABC Sydney
Radio National
SBS Radio Sydney
96.1 The Edge FM
Mix 106.5 FM
Nova 96.9 FM
2 Day FM
Triple J (National)
Triple M Sydney
WS FM 101.7
Hawkesbury Radio 89.9 FM

Newspapers and other Print Media

News Limited
Fairfax Limited
Sydney Morning Herald
The Australian
Daily Telegraph
Sunday Telegraph
Sun Herald

Other Agencies

All other agencies listed under this plan will be sent flood bulletins.

Appendix K – Guide for Consultation and evidence of consultation with the SES.

Education
School Infrastructure

Post Approval – Consultation

Consultation needs to be meaningful, done with courtesy and respect and be well documented. These are people/ organisations that we need to be building meaningful relationships with.

Conditions of all consent can require consultation with a range of stakeholders. Consultation in the post approval world needs to be well documented to satisfy the condition requirements.

Examples include Council, service providers (eg. Electricity gas etc.), consult with local bus provider and TfNSW.

Read each condition carefully, any reference to consult triggers consultation.

Typically on State Significant Development, there will be a specific consultation condition as to how this piece can be appropriately addressed.

Consultation is not:

- A token gesture
- Done at the end of the piece of work,
- An email to the relevant stakeholder with no response;
- A meeting with the stakeholder with no meeting minutes.

Consultation is:

- Meaningful
- Done prior to the requirement,
- Captures an outcome,
- Identifies matters resolved,
- Identifies matters unresolved,
- Any disagreements are disclosed; and
- How we are going to address unresolved matters?

How to capture all the relevant details on consultation requirements? Any consultation requirement in a condition is required to be accompanied with the following table:

Education
School Infrastructure

Post Approval Consultation Record

Identified Party to Consult:	State Emergency Service
Consultation type:	Teleconfrence
When is consultation required?	Prior to construction commencement in relation to
Why	Condition B19 of SSDA 9809 relating to preparation of Construction Stage - FERSP
When was consultation scheduled/held/attempted	
When was consultation held	10/07/20 – 3:20pm
Identify persons and positions who were involved	Nicholas Wetzlar- Senior Civil Engineer, Henry and Hymas Consulting Engineers Sally Perry – Manager of Planning and Engagement Metro, State Emergency Service.

Provide the details of the consultation. What specific matters were discussed?	• General introduction of development – Construction stage only.
	• Current response
	• Relevant SES flood plan to prepare FERSP in accordance with:
	  • Local Plan: (BCCLFP2010) Blacktown City Local Flood Plan a sub-plan of Blacktown City Local Disaster Plan (displan) November 2010.
	  • Regional Flood Plan: (HNFP2015) Hawkesbury Nepean Flood Plan and relevant subplans September 2015.
	• If ambiguities between the two plans are encountered data in the regional plan should trump that of the local
	• Latest release of the regional plan for the Hawkesbury Nepean Catchment (release in June) should be used as a basis to form the FERSP. Information (evacuation routes) and data should be adopted from the latest plan.
	• Where specific detail for the Blacktown region is required, the local plan should be utilised.
	• NW introduced the Hawkesbury-Nepean Valley Regional Flood Study 2019 prepared for Infrastructure NSW as data was taken an applied from the FERSP. It was determined the Flood Study should only be applied in instances where the results or finding did not conflict and were more conservative than those in the regional and local SES plans.
	• An assessment under the Floodplain Risk Management Guideline (2007) should be undertaken to determine the type of response require relative to the emergency response planning (ERP) classification of the flood region presented. It was noted that the Floodplain Risk

	Management Guideline (2007) is broad tool that should be used only when not conflicting with the local or regional flood plan. • For formation of the Schools FERSP, The State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 should be reviewed and applied in conjunction with the local and regional plans for formation of the FERSP.
What matters were resolved?	Relevant plan to be reviewed during for the formation of the FERSP were resolved. Process to determine emergency response planning (ERP) classification and appropriate response was resolved.
What matters are unresolved?	Nil
Any remaining points of disagreement?	Nil
How will SINSW address matters not resolved?	Nil

CURRICULUM VITAE

Name & Position:

Andrew James Francis – Director

Personal and Contact Details:

135 David Road
Castle Hill NSW 2154
Work: 02 9417 8400
Mobile: 0423 222 338
Email: afrancis@hhconsult.com.au

Career Overview

I have been in my current role as Director and Civil Manager since 2008 during which time I have furthered my knowledge of civil engineering, remaining abreast of current engineering advancements particularly in the areas of Water Sensitive Urban Design and pavement technology. I have also established numerous client relationships which has allowed the civil department at Henry & Hymas to triple its turnover in the past 10 years.

I started with Henry & Hymas in 2005 in the role as Senior Civil Engineer where I was involved in the design and construction management of numerous large scale industrial subdivisions and retail facilities.

Prior to starting with Henry & Hymas, I spent four years at Cardno as a Civil Engineer and Senior Civil Engineer during which time I was involved in numerous subdivision and residential projects as well as several sports field facilities.

I started my career in 1998 at Coolamon Shire Council and moved to Fairfield City Council in late 1999 during which time I was involved in all aspects of road design including survey, geometric design, stormwater design and pavements. I spent a total of four years in local government.

Education:

1997 – Completed Bachelor of Civil Engineering at the University of NSW

Thesis:

Roundabouts: A Comparison between the NAASRA Guide and the AUSTROADS Guide

Computer Skills

DRAINS/ILSAX, Circly, RAT-HGL, RAFTS, HEC-RAS, Civilcad, AutoCAD, Microsoft Word and Excel

Experience

July 2008 –present	Civil Manager and Director (since 2011) at Henry & Hymas
April 2005 – June 2008	Senior Civil Engineer at Henry & Hymas
November 2001 – March 2005	Civil Engineer and Senior Civil Engineer at Cardno (formerly Young Consulting Engineers)
November 1999 – November 2001	Civil Design Engineer at Fairfield City Council
January 1998 – November 1999	Assistant Engineer at Coolamon Shire Council

Duties Performed

Management of Civil Department

Business development

Staff and project programming

Cost planning and invoicing

Liaising with clients, consultants and internal staff

Human resources and staffing

Negotiating with Councils and Stage Government Authorities

Providing Expert Witness testimonies in the Supreme Court and Land and Environment Court

Site and subdivision masterplanning

Pavement design and detailing

Bulk earthworks and site grading

Stormwater design

Water Sensitive Urban Design (WSUD)

Flood modelling and flood studies

Preparation of Technical Specifications, Contract and Tender documentation

Construction Project Management

Site attendance and surveillance

Significant Projects

Numerous retirement villages including:

- Anglicare The Ponds - 14 Ha retirement village including roads, stormwater, ILUs and RACF
- Anglicare Glenhaven - 10 Ha retirement village including roads, stormwater and ILUs
- Anglicare Warriewood - 3 Ha retirement village including roads, stormwater and ILUs
- OPAL Aged Care - Bathurst - Multi storey RACF including roads and stormwater

Numerous industrial sites and subdivisions including:

- Erskine Park Estate, Eskine Park – 50 hectare industrial subdivision (Goodman International)
- M7 business Hub, Eastern Creek – 160 hectare industrial subdivision (Goodman International)
- Coles National Distribution Centre, Eastern Creek (Goodman International)
- EC3, Wonderland Drive, Eastern Creek - 60 hectare Industrial subdivision (Frasers Property)
- ECQ, Rooty Hills Road South, Eastern Creek - Industrial subdivision (Frasers Property)

Numerous retail developments including:

- Narellan Town Centre, Narellan (Dart West)
- Woolworths Prestons - Shopping centre and associated carparking and stormwater
- Woolworths Bulli - Shopping centre and associated carparking, stormwater and flooding
- Coles Crows Nest - Retail and multi unit residential development

Numerous schools and education facilities including:

- St Benedicts and St Justins, Oran Park (Catholic Education Office Wollongong)
- St Lukes, Marsden Park (Catholic Education Office Parramatta)
- North Kellyville Public School, North Kellyville (NSW Department of Education)

Referees

Ray Kusturin – Director – Henry & Hymas – 0414 789 037

ANNEXURE F

DRIVER CODE OF CONDUCT

If any operational problems are experienced, consideration will be given to use traffic controllers to manage traffic congestion.

TRAFFIC CONTROL REQUIREMENTS

All site ingress and egress points will require Traffic Control in accordance with the RMS Guideline *Traffic Control at Work Sites,* and *Australian Standard 1742.3*.

The main ingress and egress points for this Work Area are within the boundaries of Blacktown City Council road perimeter.

Safe and simple traffic control for all road users shall be provided at all site access points in accordance with standard requirements.

TCP's are to be developed/ modified and kept up to date with site requirements during the life of the Detail Construction Traffic

Management Plan can be coordinated with the onsite staging requirements. TCP's are to be developed by authorised Roads and Maritime accredited personnel prior to the commencement of construction.

During construction, the contractor (Dunwood Recruitment)shall each morning, prior to work commencing, ensure all

signage is erected in accordance with the TCP and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required.

Any variation to the layout of the TCP on site is to be recorded and certified by authorised Roads and Maritime accredited personnel. The associated TCP road signage will inform drivers of works activities in the area including truck movements in operation.

DRIVER CODE OF CONDUCT

It is the responsibility of all persons who are required to drive into the worksite *(including construction employees, sub-contractors, delivery drivers, and others*); to ensure they enter and exit the worksite with caution and care. As the site is governed by NSW Department of Education regulations; All persons entering, walking or driving, into and out of the worksite must do so in with full consideration of safety, courtesy and RMS road rules.

- Minimise the impacts of earthworks and construction on the local and regional road network conditions
- Minimise conflict with other users
- Minimise road traffic noise
- Ensure truck drivers follow specified routes

PROVISION FOR OTHER USERS

As the Construction site is completely enclosed with access points on Northbourne dr . General road users shall not be affected by the project (*road users include, but are not limited to cyclists, emergency vehicles and heavy vehicles*). The requirements are detailed below:

- No cycle route shall be affected by the project
- Provision for cyclists has been assessed as per the RMS's Traffic Management at Worksites Manual.
- Emergency vehicles shall have unimpeded access during the construction phase.
- Heavy and articulated vehicles may travel through during construction phase.

Note: Where access is unavoidable, both travel path and pedestrian paths to be managed by onsite Traffic Control Contractor inside exclusion times.

At times, contracted works may impact on access of local residents to road network; in this event, traffic controllers will be engaged to facilitate safe through travel.

EMERGENCY or UNCOMMON DISRUPTION NOTIFICATION PLAN

In the event of emergency Adco Constructions shall notify all emergency response stakeholders and advise of the nature of emergency, site locations and potential impact to traffic flow. The notification is to be prepared by Adco or Link TMT; and communicated to Traffic Live NSW, RMS or local police station (traffic division).

http://m.livetraffic.rta.nsw.gov.au

www.service.nsw.gov.au/transaction/report-traffic-incident

call to RMS 131700; and local radio station for broadcast of 'potential congestion'

EMERGENCY RESPONSE PROCEDURE

In the event of the event of emergency and management of incidents, the Project Emergency Controller shall make direct contact with the relevant emergency services as required.

Any incident or emergency on site; (or one that is contained within the streets associated with construction work), the site 'Emergency Response Procedures' will be initiated by Site Manager.

Note: The site and traffic conditions pertaining to works on the project will be constantly monitored by the Project Manager. Any incidents occurring on the road or within the work zone and or affecting the smooth running of road traffic will be notified to Hornsby Shire Council.

For details of primary contacts for this project, please refer to Project Management Plan.

Review and Monitoring of Traffic Conditions

Monitoring of traffic flow and the effective operation of egress and ingress shall be maintained by Project Manager. The Project Manager is responsible for the traffic management subcontract and will liaise with the subcontractor to gain an understanding of any arising traffic management concerns.

The Project Manager is responsible for the coordination of the activities of work crews on site during installation, inspection, testing, commissioning and servicing and subsequently has an understanding of the operations across the worksite that make up the works under the project.

Reports of any traffic conditions which may be of concern will be reported back to the representatives from BLACKTOWN CITY COUNCIL as required.

Lane, Geometry and Signage Arrangements

The temporary road signage can be viewed in Traffic Control Plans.

No further changes are proposed (either by number or width) nor intersection geometry.

Car Parking (temporary) on site

Site Compound – On Site

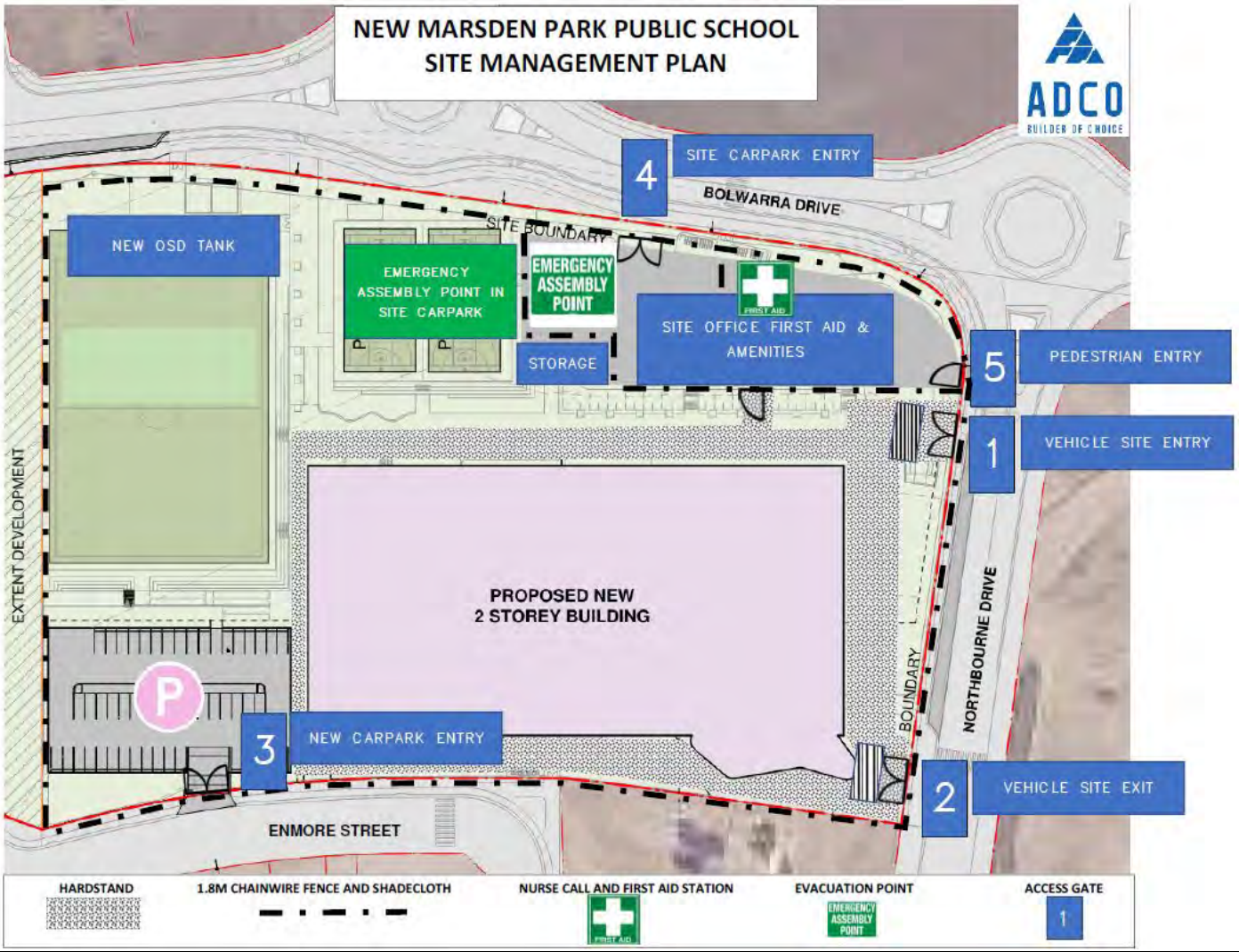
Stockpile Site – On Site

Traffic Control Plans

Any amendments to Traffic plans shall be documented, amended and signed off by Lisa Hayes. Any changes that occur on site can be modified by trained personnel, updates sent to lisa Hayes for update and control. Once approved the Traffic plans will be sent to the site supervisor and Project manager for distribution

TCP 001 – Truck Access Route- this will only be used when traffic control is on site
TCP 002 - Overview
TCP 003 – Overview
TCP 004 – Site Entry / Exit
TCP 005 – Hospital Route
TCP 006 – Pedestrian Mgt Plan

SITE MANAGEMENT PLAN



tcp 001 truck route

PLAN NOT TO SCALE

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

		Recommended taper length (m)		
		Merge	Lateral Shift	Revers/ble Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

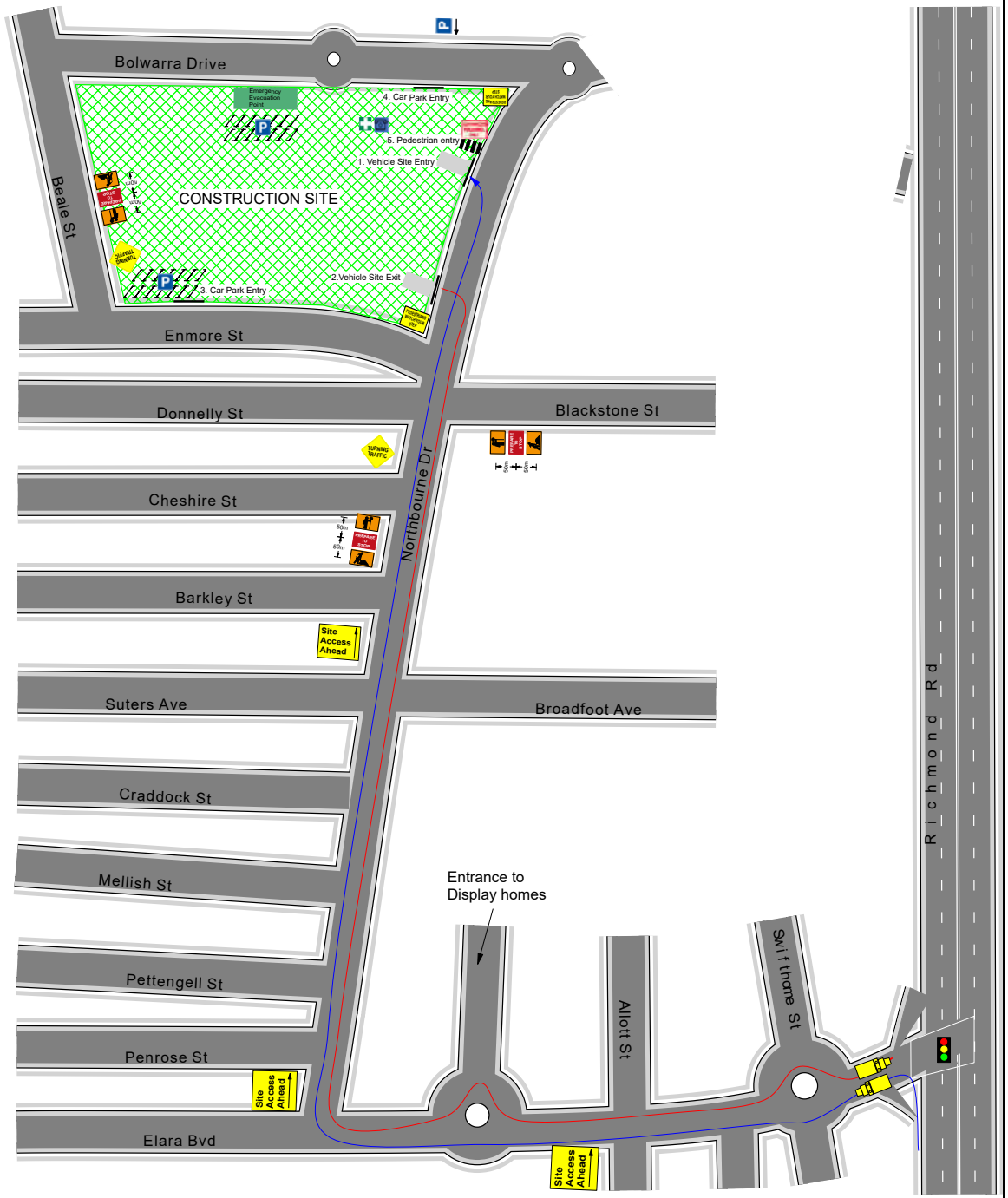
Modified by:
Ticket number:
Date of modification:
Signature:

Date: 08/04/2020
Plan number: TCP 3
Amount of TCs required: 2

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

Legend

- Truck access in
- Truck access out
- Work zone
- Car Park
- First Aid & Amenities
- Pedestrian Entry



Overview 002

PLAN NOT TO SCALE

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

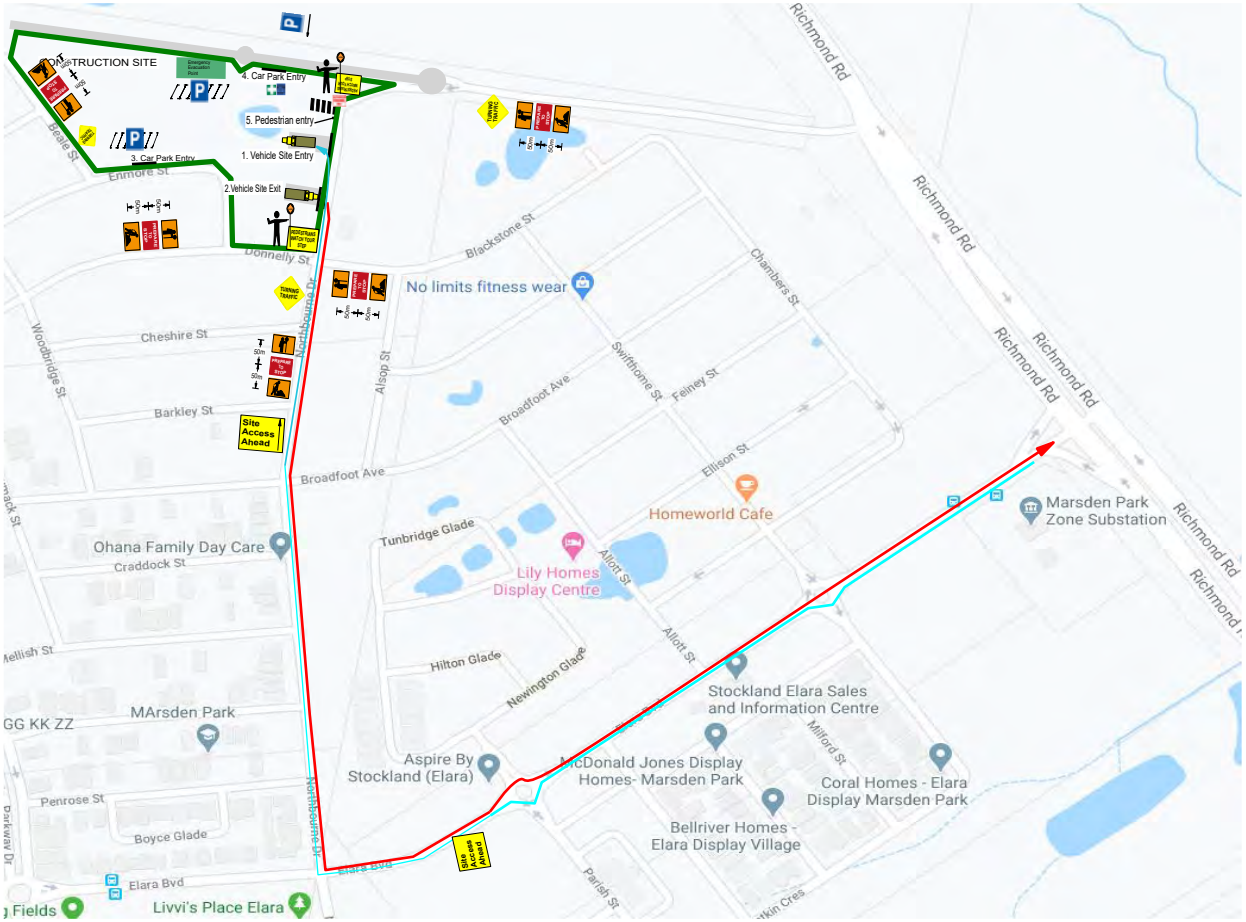
		Recommended taper length (m)		
		Merge	Lateral Shift	Reversible Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

Modified by:
Ticket number:
Date of modification:
Signature:

Date: 08/04/2020
Plan number: TCP 002
Amount of TCs required: 2

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area



Legend

- Truck access in
- Truck access out
- Work zone
- Car Park
- First Aid & Amenities
- Pedestrian Entry

Overview 003

PLAN NOT TO SCALE

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

		Recommended taper length (m)		
		Merge	Lateral Shift	Revers/ble Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

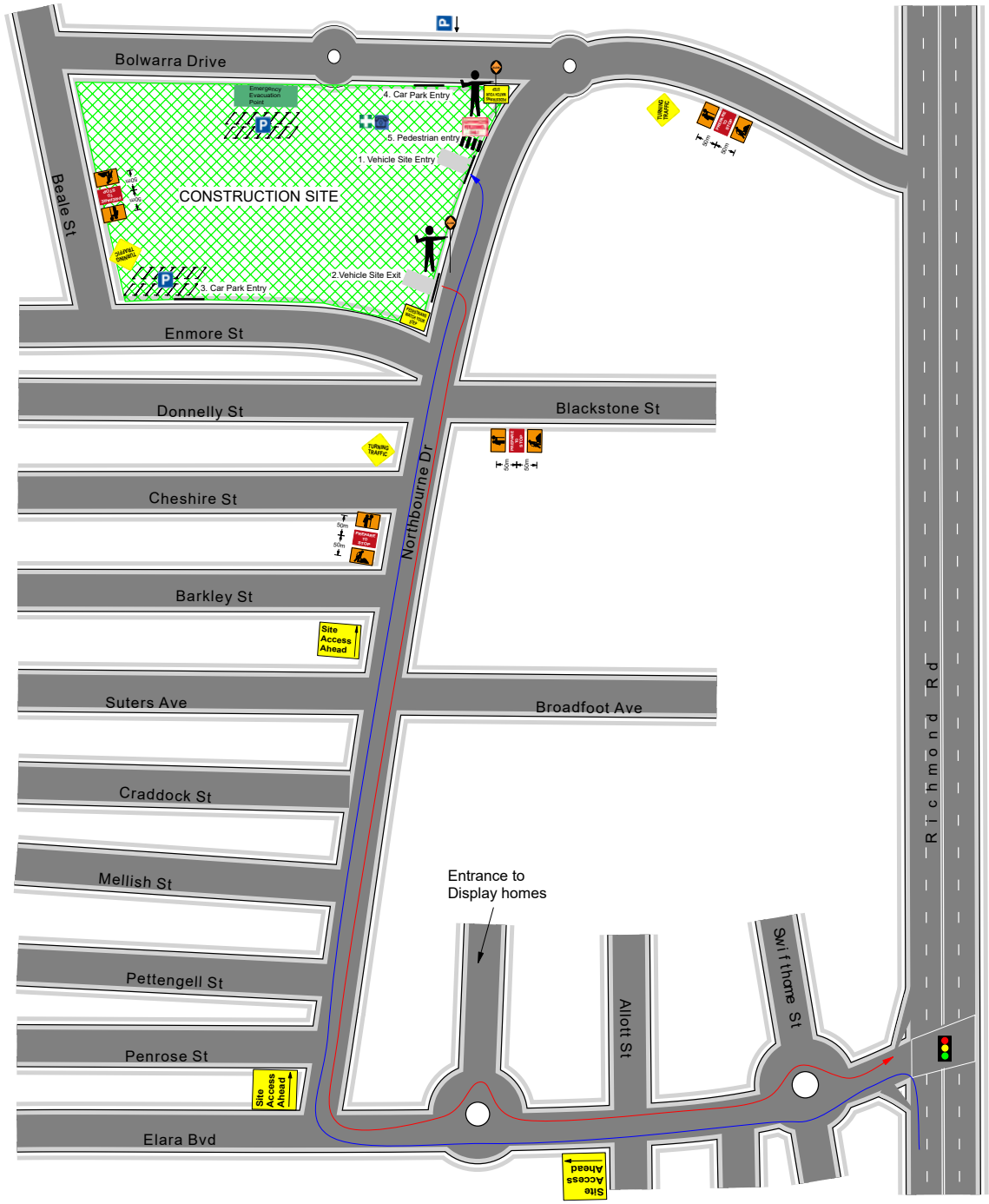
Modified by:
Ticket number:
Date of modification:
Signature:

Date: 08/04/2020
Plan number: TCP 3
Amount of TCs required: 2

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

Legend

- Truck access in
- Truck access out
- Work zone
- Car Park
- First Aid & Amenities
- Pedestrian Entry



Site Entry / Exit 004

PLAN NOT TO SCALE

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

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Permanent posted speed (km/h)	Recommended taper length (m)		
	Merge	Lateral Shift	Reversible Flow
40 or less	15	5	15
50	30	15	15
60	60	30	30
Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

Modified by:
Ticket number:
Date of modification:
Signature:

Date: 08/04/2020
Plan number: TCP 3
Amount of TCs required: 2

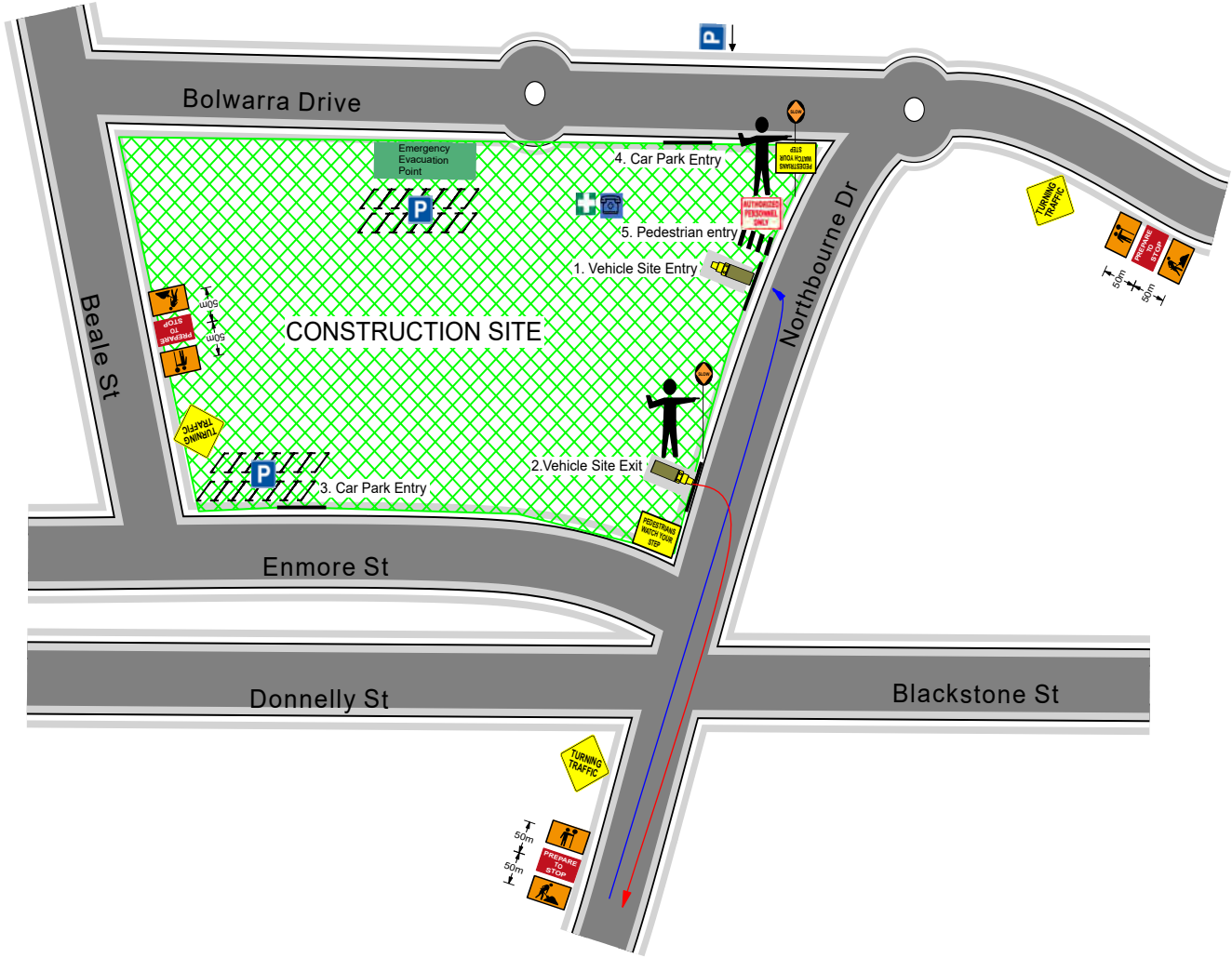
TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

Legend

- Truck access in
- Truck access out
- Work zone
- Car Park
- First Aid & Amenities
- Pedestrian Entry

Conditions of Site Entry/Exit

1. Tc's must stop all pedestrian movements when trucks are entering/exiting the work site
2. Tc's to communicate clearly with truck driver/s when it is safe to enter/exit the work site
3. Tc's to stop traffic if necessary
4. Trucks must enter site forward facing and exit site forward facing
5. Tc's to allow access to Authorized Personnel Only



NEAREST HOSPITAL ROUTE FROM NORTHBOURNE DR 005

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

N
W E
S

		Recommended taper length (m)		
		Merge	Lateral Shift	Reversible Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

Modified by:
Ticket number:
Date of modification:
Signature:

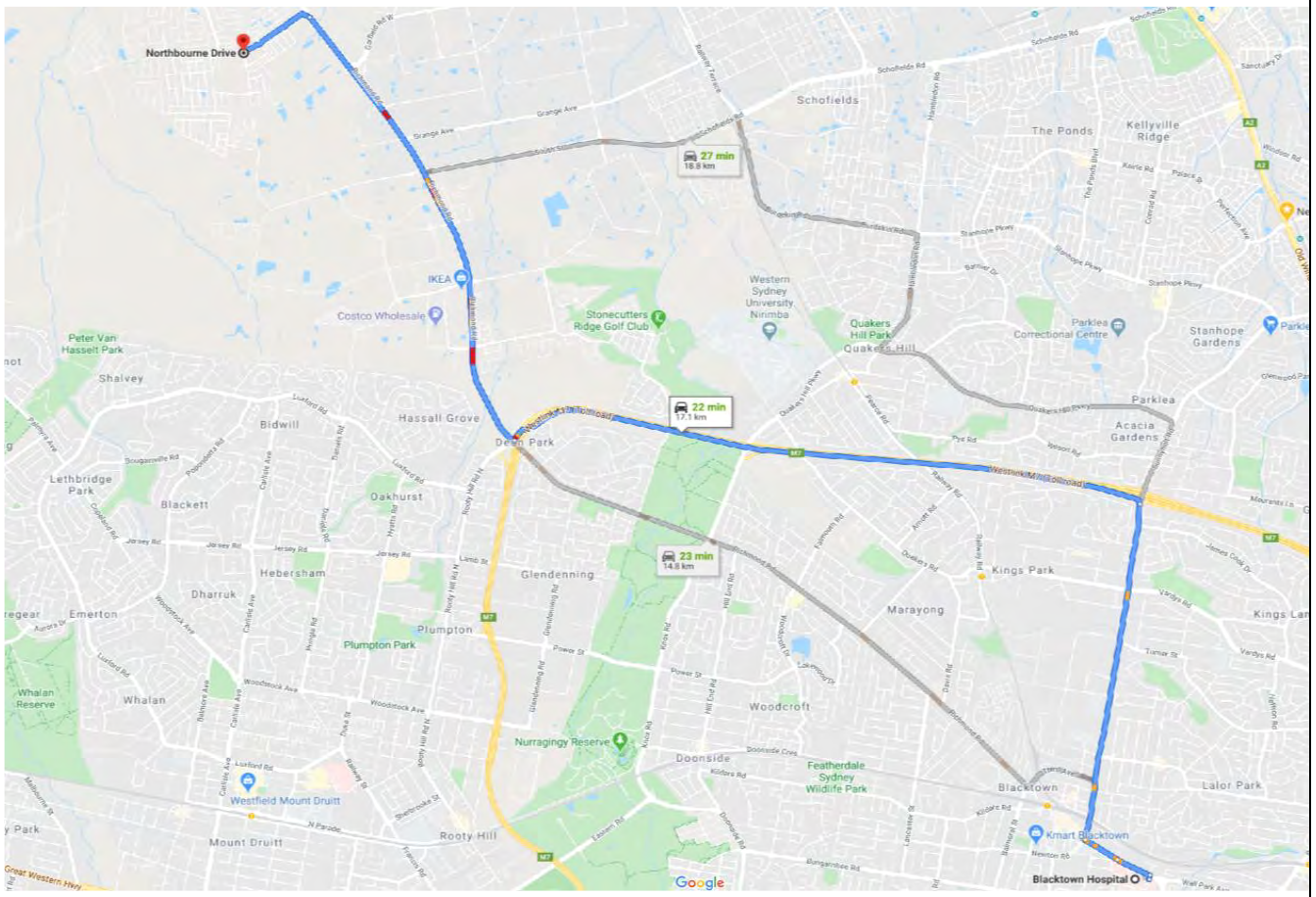
Date: 26/02/2020
Plan number: TCP 5

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

PEDESTRIANS WATCH YOUR STEP

PEDESTRIANS →

PLAN NOT TO SCALE



Pedestrian Management Plan 006

PLAN NOT TO SCALE

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal

		Recommended taper length (m)		
		Merge	Lateral Shift	Reversible Flow
Permanent posted speed (km/h)	40 or less	15	5	15
	50	30	15	15
	60	60	30	30
	Greater than 60	120 - 160	60 - 80	30

Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

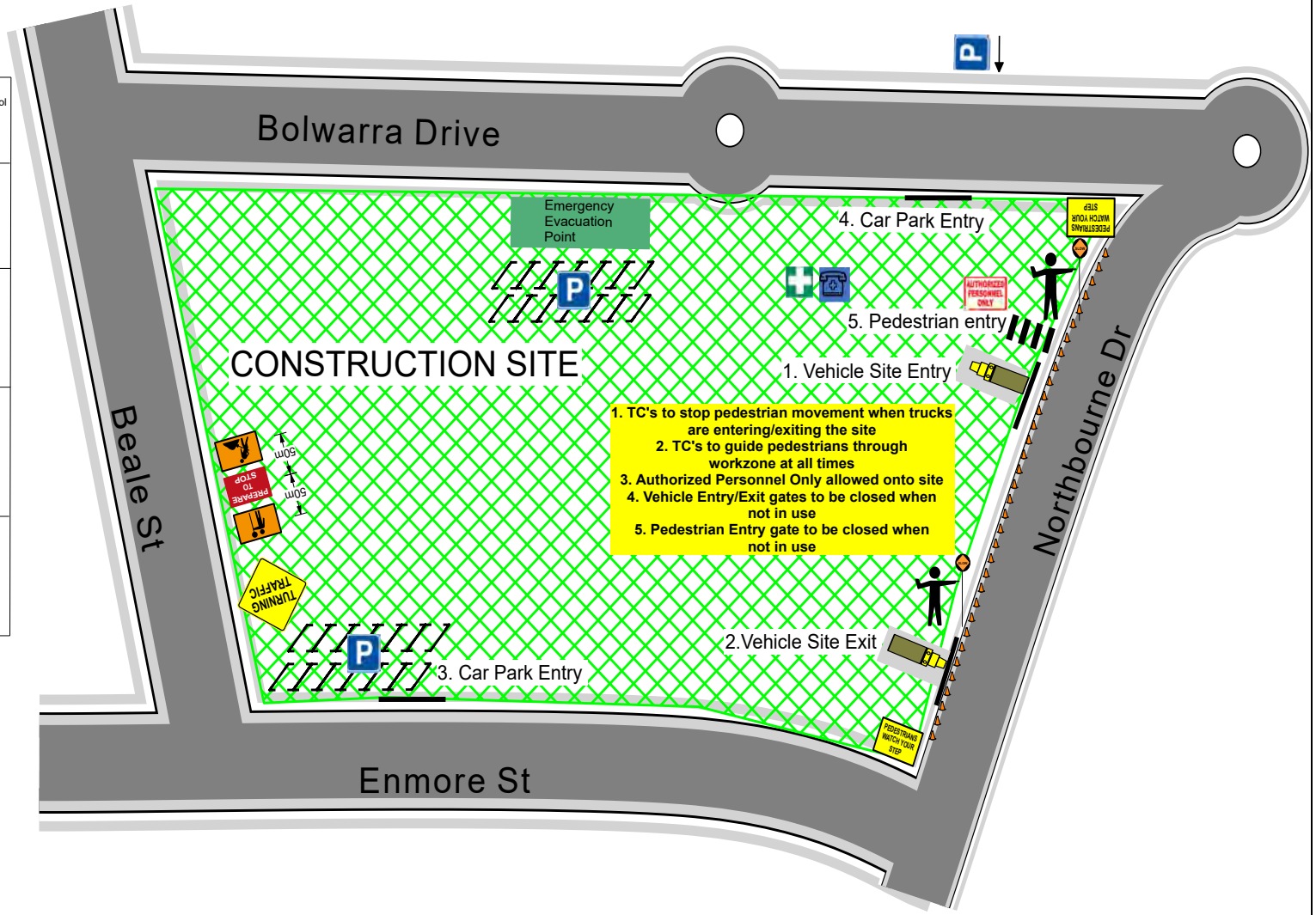
Modified by:
Ticket number:
Date of modification:
Signature:

Date: 26/02/2020
Plan number: TCP 002
Amount of TCs required: 2

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

Legend

- Truck access in
- Truck access out
- Work zone
- Car Park
- First Aid & Amenities
- Pedestrian Entry

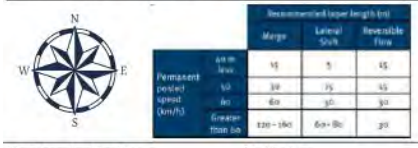


TCP 001 – Sgnage to be displayed only when busy days are orgainised under the dirEction or ADCO

TRUCK SITE ACCESS ROUTE 001 - this TCP is only to be used when TC is on site under the direction of ADCO

OVERALL VIEW OF WORKS:
1. Sign distance & placement may vary, depending on factors out of our control
2. 1.2 m to be maintained for pedestrians at all times
3. Full PPE / Radios / to be in use
4. Cone distance 1.5 m
5. This TCP is drawn in accordance with AS1742.03 V5

This TCP has been prepared as a guide for Traffic Management purposes only and is not to scale. The positions of the signs, traffic controllers and equipment are only suggested locations. Amendments to the locations may be required on site. Complete Onsite Group accepts no liability for the implementation or execution of this TCP unless undertaken onsite by COG personal



	Merge	Lateral Shift	Reversible Flow
Permanent posted speed (km/h) 60 or less	15	5	15
70	30	75	45
80	60	90	90
Greater than 80	120 – 160	60 × 80	90

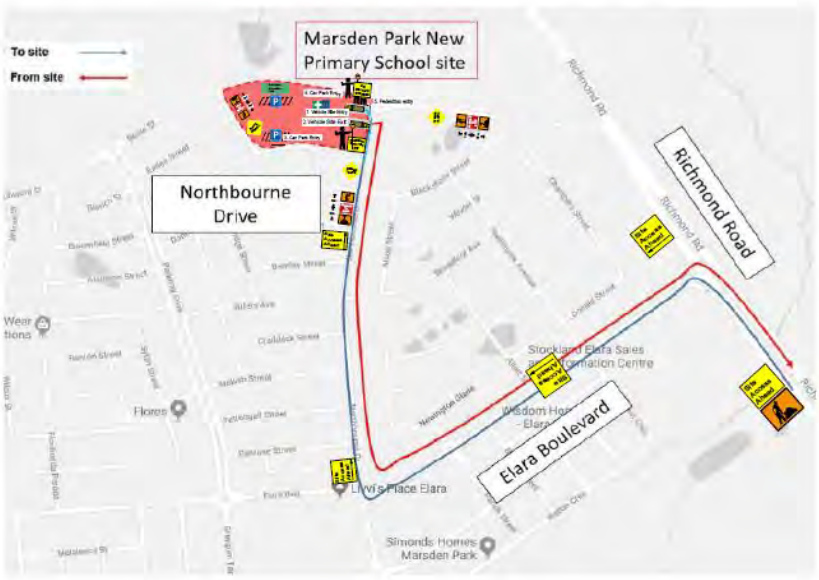
Plan drawn by: Lisa Hayes
Ticket number: 0052083947
Expiry: 19-7-2022

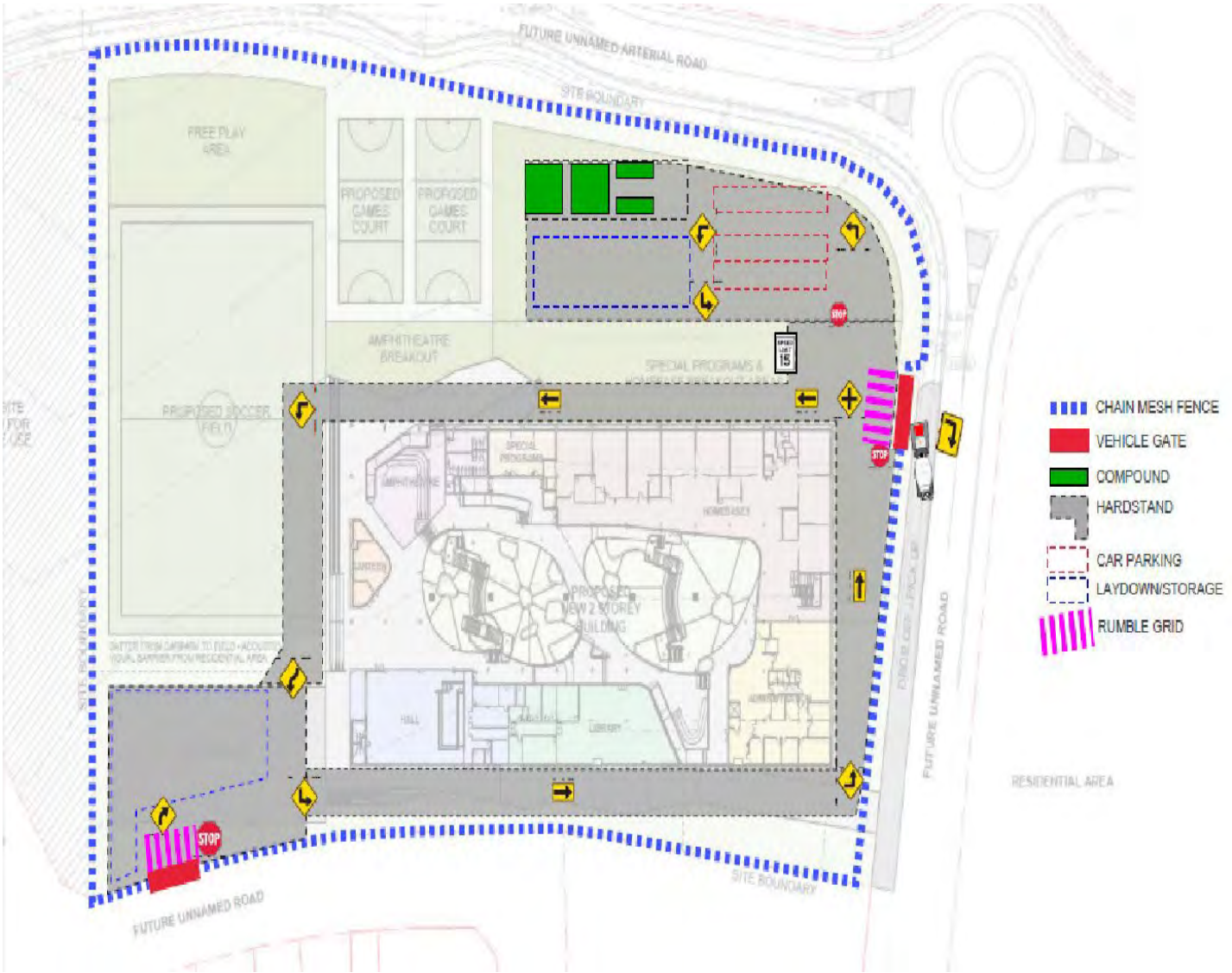
Modified by:
Ticket number:
Date of modification:
Signature:

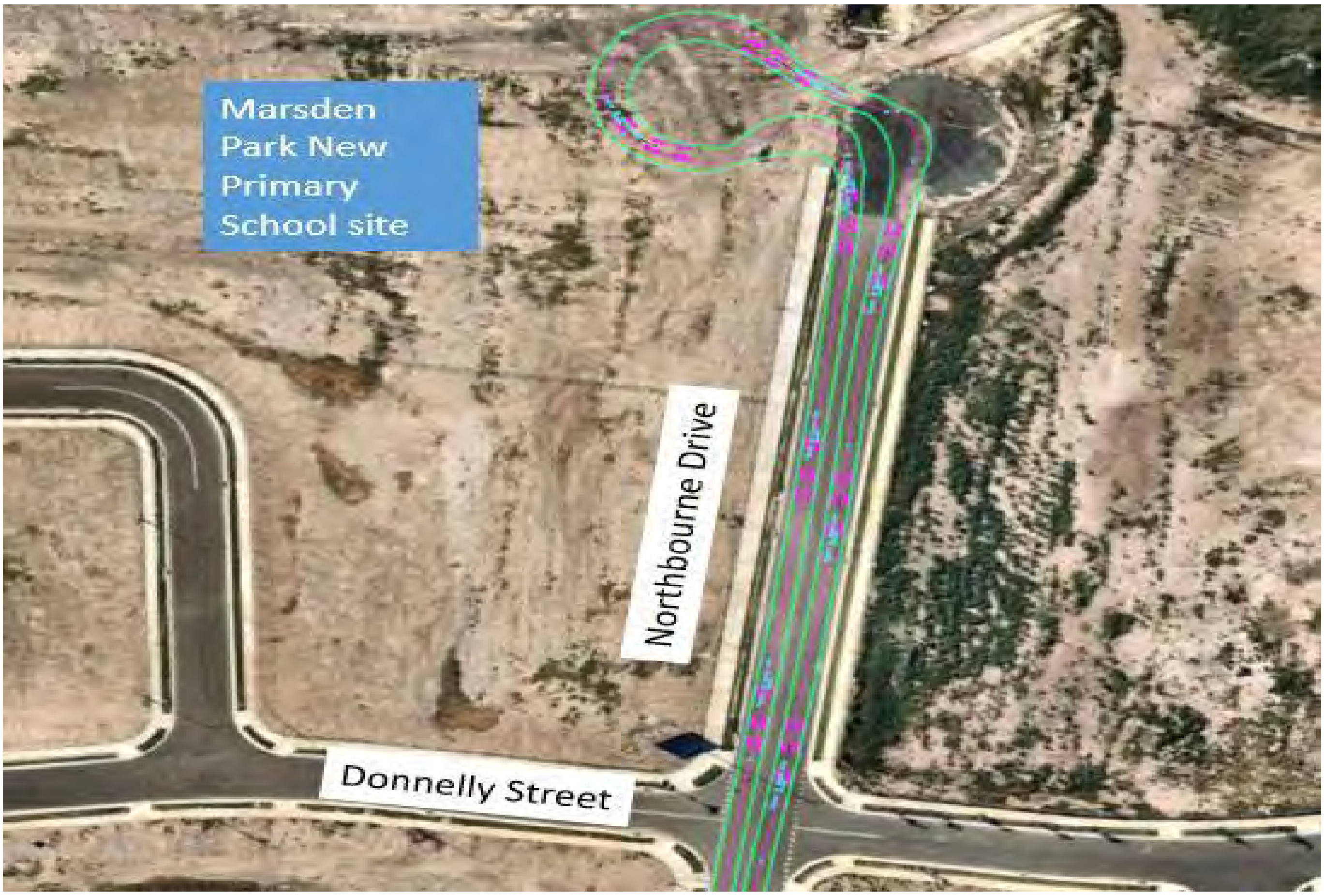
Date: 08/04/2020
Plan number: TCP 001 - Truck Access
Amount of TCs required: 2
Set up type: Truck Access to Construction site

TC ONSITE REQUIREMENTS
1.Cones to be placed around all work vehicles
2.Cones and tiger tails to be used for exclusion zone around work area
3.Two-way radios to be used at all times
4. Pedestrian signage to be placed at either end of work area

PLAN NOT TO SCALE




FUTURE UNNAMED ARTERIAL ROAD
SITE BOUNDARY
FREE PLAY AREA
PROPOSED GAMES COURT
PROPOSED GAMES COURT
AMPHITHEATRE BREAKOUT
SPECIAL PROGRAMS & ADMINISTRATION
PROPOSED SOCCER FIELD
PROPOSED NEW 2 STOREY BUILDING
HALL
LIBRARY
STOP
FUTURE UNNAMED ROAD
SITE BOUNDARY
FUTURE UNNAMED ROAD
RESIDENTIAL AREA
CHAIN MESH FENCE
VEHICLE GATE
COMPOUND
HARDSTAND
CAR PARKING
LAYDOWN/STORAGE
RUMBLE GRID




To site
From site
Marsden Park New Primary School site
Northbourne Drive
Richmond Road
Richmond Rd
Elara Boulevard
Stockland Elara Sales and Information Centre
Livvi's Place Elara
Simonds Homes Marsden Park
Flores
Wear tions
Beale St
Eades Street
Blanch St
Bloomfield Street
Atkinson Street
Barkley Street
Suters Ave
Craddock Street
Renton Street
Mellish Street
Pettengell Street
Penrose Street
Elara Bvd
Melaleuca St
Parkway Drive
Sylan Street
Floribunda Parade
Blackstone Street
Winder St
Chambers Street
Broadfoot Ave
Swifthorne Avenue
Donald Street
Alsop Street
Newington Glade
Parish Street
Watkin Cres


Project Gate
CAUTION
LOOK OUT FOR CONSTRUCTION TRAFFIC
CONSTRUCTION ZONE SPEED LIMIT 10 MPH
CAUTION
LOOK OUT FOR CONSTRUCTION TRAFFIC
Northbourne Drive
Through Roundabout
Through Roundabout
Giveway - Right Turn
Bus Stop
Bus Stop
Traffic Lights
Elara Blvd
Bus Stop
Exit Left of Richmond Rd

ANNEXURE G

UNEXPECTED CONTAMINATION AND HERITAGE FINDS PROTOCOL

PEOPLE WHO BUILD

ADCO

UNEXPECTED AND HERITAGE FINDS PROTOCOL

NEW MARSDEN PARK PUBLIC SCHOOL

PROJECT NO.

CLIENT – SCHOOLS INFRUSTRUCTURE NSW
CLIENT PROJECT REFERENCE – SINSW00027/19

ADCO PROJECT NUMBER - 3429

REVISION NO

0

VERSION CONTROL

Rev. No.	Issue Date	Approved By	Position	Details
0	25/06/20	Dean Israel	Project Manager	SSD Compliance

ADCO PROJECT PERSONNEL CONSULTATION AND SIGN OFF

We, the undersigned, confirm that we have been consulted on the contents of this document, read and understood the contents of this document, and agree to implement the requirements of this Plan on this project site

Name	Position	Signature	Date
Matthew Wilkinson	Construction Manager		
Dean Israel	Project Manager		25/06/20
Matthew Wilson	Contracts Administrator		
Paul Gower	Site Manger		
Scott Wilson	Senior HSE Adviser		
Michael Brombal	HSE Adviser		

CONTENTS

INTRODUCTION

MANAGEMENT SYSTEM AND DOCUMENTATION

System documents which are referenced in this Plan or any associated Plan or Risk Register can be sourced by accessing the ADCO Constructions Intranet. (ADCO personnel only). Additional information can be obtained from the HSE Manager in each State.

ADCO PERSONNEL SIGN OFF

ADCO project personnel will be inducted into the requirements of this Plan and any associated Plan or Risk Register by the relevant Project Manager. Evidence of induction and discussion will be recorded within section ADCO Project Personnel Consultation and Sign off.

INFORMATION SUPPLY TO SUBCONTRACTORS

This Plan and any associated Plan or Risk Register (including any future revisions) will be supplied to subcontractors for review through the Aconex portal or another approved format.

PLAN REVIEW

This document will be reviewed on a periodic basis, not exceeding 6-monthly, to ensure its compliance to legislative and operational requirements of the. Project. Review and updates to this plan will initiate a change to the plan revision number and be recorded in the “Version Control’ section of the document. Superseded Plans will be marked as such and will be located within the Management Plan Folder located in the Site Office.

SITE FILING

A hard copy of this Plan and any associated Plan or Risk Register (including any future revisions) will be held on site

PRINCIPAL CONTRACTORS DETAILS

Name	State Address		ABN
ADCO Constructions Pty Ltd	Address	Level 2, 7-9 West Street	46 001 044 391
	Suburb	North Sydney	
	State	NSW	
	Phone	02 8437 5000	

PROJECT INFORMATION

Project Description	The project can be described as the Design & Construction of a permanent consolidated two-storey courtyard building with capacity to accommodate 1,000 students. This new school building is to be comprised of the following: 40 teaching spaces, canteen, library, multipurpose hall, office and administration space, staff and student amenities, out of school hours care accommodation, multi-purpose sporting facilities and outdoor play spaces, associated site landscaping and public domain improvements, on-site parking spaces and a drop-off and pick-up area, construction of ancillary infrastructure and utilities as required, Ancillary and support spaces, Special education units, Bus Bay, Parent pick up / drop off area, Car parking areas, Covered Outdoor learning areas. In addition to the main works the project also includes the design and construction of a Temporary 'Pop-up' school to service the local community until the main permanent school is complete. The temporary school comprises of demountable classrooms connected by raised timber walkways, timber framed awnings, asphalt pavements and external works and services. Upon completion of the main school the Temporary school will be dismantles and the remaining playing field and external works will be completed.
Project Address	The site is legally described as Lot 2889 in Deposited Plan 1230906. This is the corner of Northbourne Drive (to the east) and a proposed future road (to the north) within the Elara Estate, Marsden Park

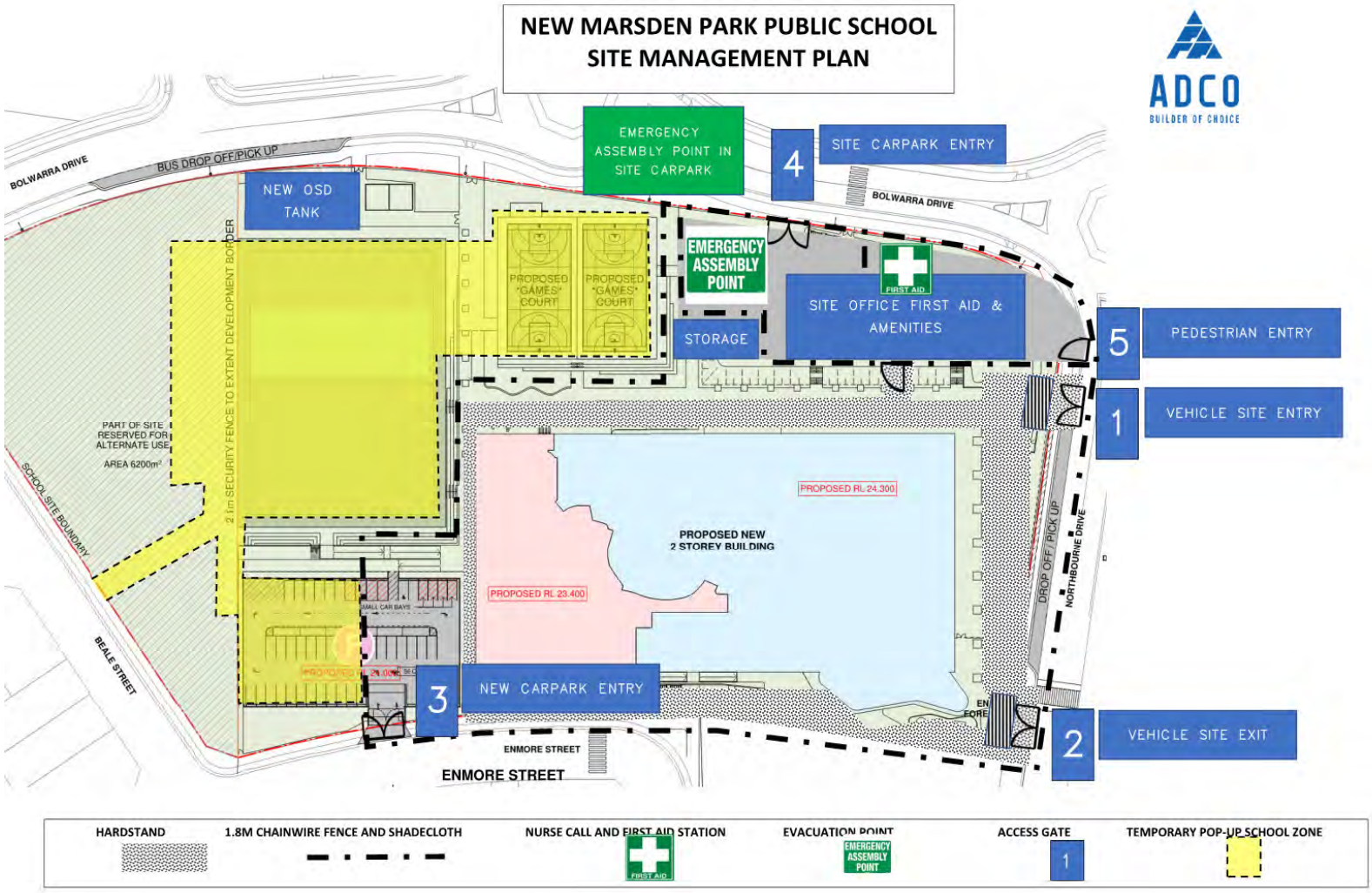
PROGRAM	
Project Duration	Milestone 1A - Early Works Phase: February – May 2020 Milestone 1B – Temporary School : July 2020 – January 2021 Milestone 2 – Main School: July 2020 – July 2020 Milestone 3 – Temporary School Decant and External Works: July 2021 – December 2021
Separable Portions	Nil

-

SITE VIEW

Site Establishment Plan is subject to change throughout project delivery. Any changes will be communicated to workers through project consultative forums.

SITE ESTABLISHMENT PLAN



SITE REQUIREMENTS

SITE ACCESS

Main Site Vehicle Entry Location	Northbourne Drive – Gate 1
Visitor Entry Locations	Northbourne Drive – Gate 5
Main Vehicle Entry Location	Northbourne Drive – Gate 1
Secondary Vehicle Entry Point	Northbourne Drive – Gate 2
Site Carpark Entry Point	Bolwarra Drive – Gate 4

WORK HOURS

Working Hours	**7am – 6pm Monday to Friday inclusive** **8am – 1pm Saturdays** **No work may be carried out on Sundays or Public Holidays**

CONTACTS

24-hour Project Contacts	Project Manager – Dean Israel 0413 777 152 Site Manager – Paul Gower 0413 425 089

OVERVIEW

ADCO Constructions (ADCO) implements an integrated safety and environmental management system on all projects, which are known as The ADCO Way. Our HSE (Health, Safety and Environment) Management System, documents the manner in which construction-related activities are required to be completed on ADCO project sites. This Management Plan provides guidance to site personnel in the event that an unexpected find is encountered on site.

An unexpected find can be defined as:

- Any unanticipated archaeological discovery;
- Buried or surface asbestos containing materials;
- Buried waste materials;
- Septic or Underground Storage Tanks;
- Animal burial pits;
- Discoloured and odorous soils and groundwater/seepage.

GENERAL PRINCIPALS FOR ASBESTOS CONTAINING MATERIALS (ACM)

ADCO's principles of asbestos management have been adapted from general principles published in the Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)]. These principles are summarised below:

- Consideration should be given to the removal of ACM during any renovations, refurbishments or maintenance work in preference to other control measures such as encapsulation, enclosure and sealing.
- The WHS Regulation requires all ACM within the construction area to be labelled.
- Where ACM is identified or presumed, the locations and type of ACM are to be recorded in the ACM Register located within the Asbestos management plan folder.
- A risk assessment must be performed on all identified or presumed ACM.
- Control measures must be established to prevent exposure to airborne asbestos fibres and should take into account the results of risk assessments conducted for the identified or presumed ACM.
- All workers and contractors on site must be advised of the ACM Register at time of induction, and as requested, permitted access to the register for their review
- Only competent persons should undertake the identification of ACM.
- All workers and contractors on site where ACM are present or presumed to be present, and all other persons who may be exposed to ACM as a result of being on the premises, must be provided with full information on the occupational health and safety consequences of exposure to asbestos and appropriate control measures. The provision of this information should be recorded.
- Reasonable steps must be taken to identify all possible locations of ACM within the site.
- Once a risk assessment has been completed and controls established, a SWMS is to be developed and submitted to ADCO's site management team for approval

UNEXPECTED HERITAGE FINDS (UHF)

An Unexpected Heritage Find can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under relevant legislation such as the NPW Act or Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- Aboriginal or European stone artefacts, shell middens, burial sites, engraved rock art, scarred trees;
- Remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts;
- Remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls;
- Artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes;
- Archaeological human skeletal remains.

TRAINING

Asbestos and Heritage Awareness Training

Asbestos awareness training provides participants with a general overview of asbestos including history and background; asbestos types and properties; common asbestos situations; health effects; risk in perspective and management of asbestos, conducted by an ADCO person.

Asbestos and Heritage Removal Training

This course is typically provided by an external registered training organisation (RTO) to personnel who intend to remove bonded ACM, pre-requisite for obtaining a WorkCover recognised licence

Further information on training required for staff can be found in ADCO's *National Training Matrix*.

PROCEDURE IN THE EVENT OF AN UNEXPECTED FIND

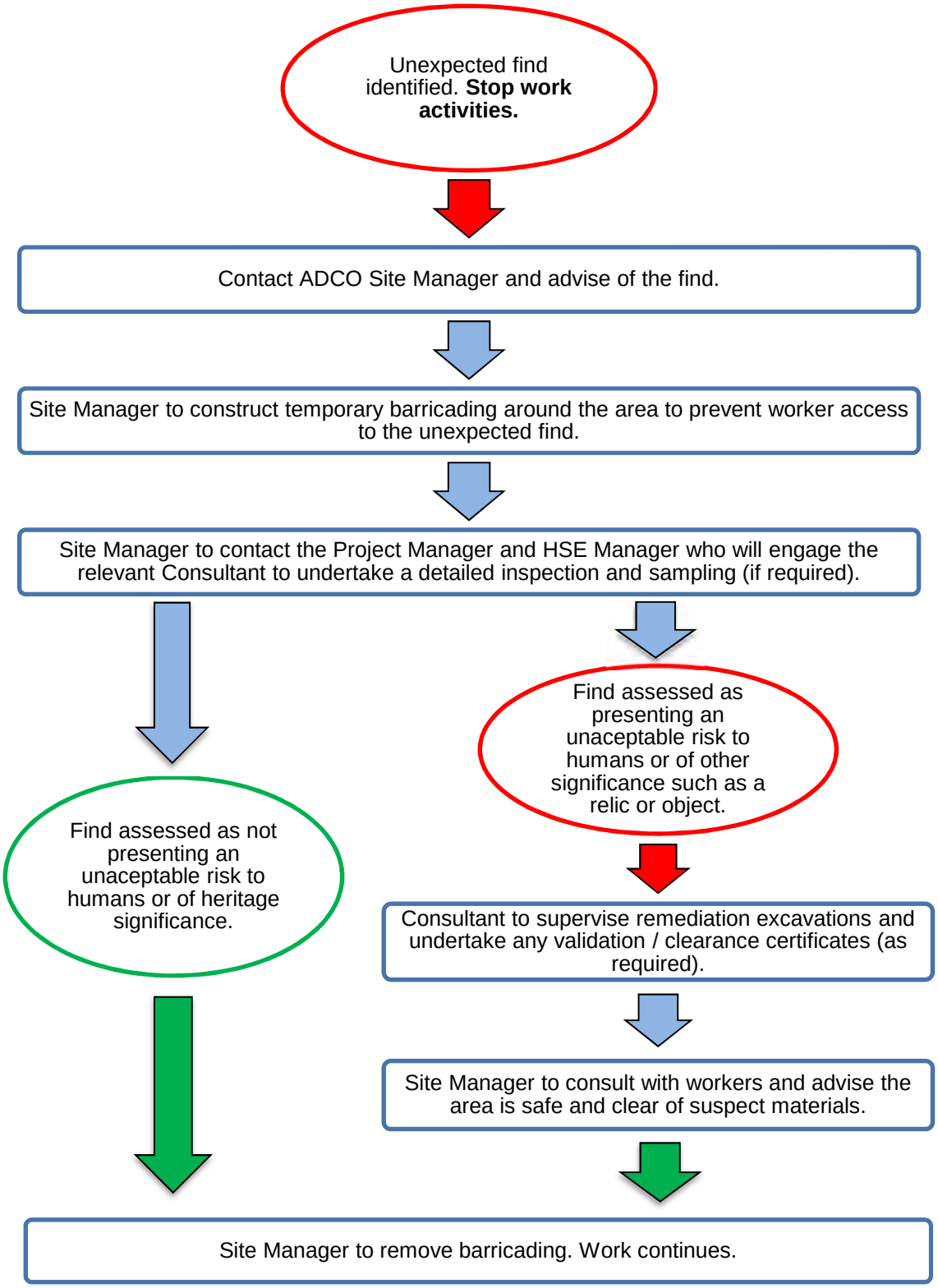
Should an unexpected find of potential contamination be encountered during the works, the following procedure (Steps 1 to 13) should be followed with reference to the Incident Response Flow Chart.

It must additionally be ensured that implemented procedures are in accordance with other adopted site documentation, such as the Environmental Management Plan, Health and Safety Management Plan and The ADCO Way.

1. Stop work in the potentially contaminated area as soon as it is safe to do so and move to a designated meeting point or safe area. Excavation will cease in the vicinity of the discovery.
2. Contact the ADCO Site Manager.
3. A suitable person must assess the potential risk to human health and the environment posed by the unexpected find and asses if evacuation or emergency services need to be contacted. A suitably experienced environmental consultant should undertake an assessment of any unexpected finds and determine any further actions required e.g. sampling and/or validation of material, potential for remediation and/or management.
4. Site Manager to delineate an exclusion quarantine zone around the area using fencing and or appropriate barriers and signage.
5. Project Manager or HSE Manager to arrange inspection by external Environmental / Heritage Consultant to assess the unexpected find and provide advice as follows:
   - Preliminary assessment of the find and need for immediate management controls (if any).
   - What further assessment and/or remediation works are required and how such works are to be undertaken in accordance with contaminated site regulations and guidelines.
   - Preparation of a remedial action plan for large scale contamination or specification for smaller or minor volumes of material (if necessary).
   - Remediation works required (where applicable).
   - Validation works required following remediation works (if applicable).
6. Works are not to recommence in the affected area until appropriate advice has been obtained from the environmental consultant or suitably qualified person and they have provided clearance. Excavation will not recommence until the extent of the contamination has been assessed and, if necessary, a remedial action plan (RAP) has been prepared.
7. Air monitoring requirements are to be advised by an Environmental Consultant.
8. If it is deemed safe to do so, the environmental consultant will provide clearance for words to proceed in the affected area. If it is not considered to be safe, works must remain on hold until appropriate assessment, remediation and / or validation measures have been actioned.
9. Excavated material from remedial activities will be separated from other materials and stockpiled for assessment. Sampling of the materials will be undertaken in accordance with the relevant guidelines or professional judgement where justification is applied. Samples will be analysed for a range of analytes as required for beneficial reuse or offsite disposal
10. For materials requiring offsite disposal, laboratory results will be assessed to determine the appropriate waste classification of the material in accordance with the NSW EPA Waste Classification Guidelines (2014). Depending on the classification, materials will be transported to an appropriate waste facility that is licensed to accept waste of the relevant classification or beneficially reused if appropriate

11. A waste tracking system recording the volume of material, waste classification / beneficial reuse status, removal documentation and truck and receiving landfill facility det aids must be recorded to ensure all waste is accounted for and disposed or appropriately in accordance with NSW EPA requirements.
12. Any unexpected finds must be documented, and records of volumes and types of materials identified removed from the site must be kept on fire.
13. Keep a record of the unexpected find. The record must include exact location of the find. Documentation on the removal of any contaminated materials from the site must be kept on file
    a. Volume of material removed,
    b. The type (classification) of material,
    c. Licensed facility that the material was disposed to,
    d. Receipt documentation from the licensed facility confirming volume received.

INCIDENTS RESPONSE FLOW CHART



LEGAL AND OTHER REQUIREMENTS

COMPLIANCE

Risks, hazards and controls on this project will be implemented in accordance with legislation, Codes of Practice and Standards applicable in this State. Legislation, Codes of Practice and Standards which will be applied to this project are noted in the Environmental Risk Register.

IDENTIFICATION

The identification and assessment of environmental risks (aspects and impacts) that could eventuate during construction of the project will be completed by ADCO at any / all of the following project stages:

- Design
- Tender
- Project planning
- Project construction

Aspects and impacts will be assessed relative to:

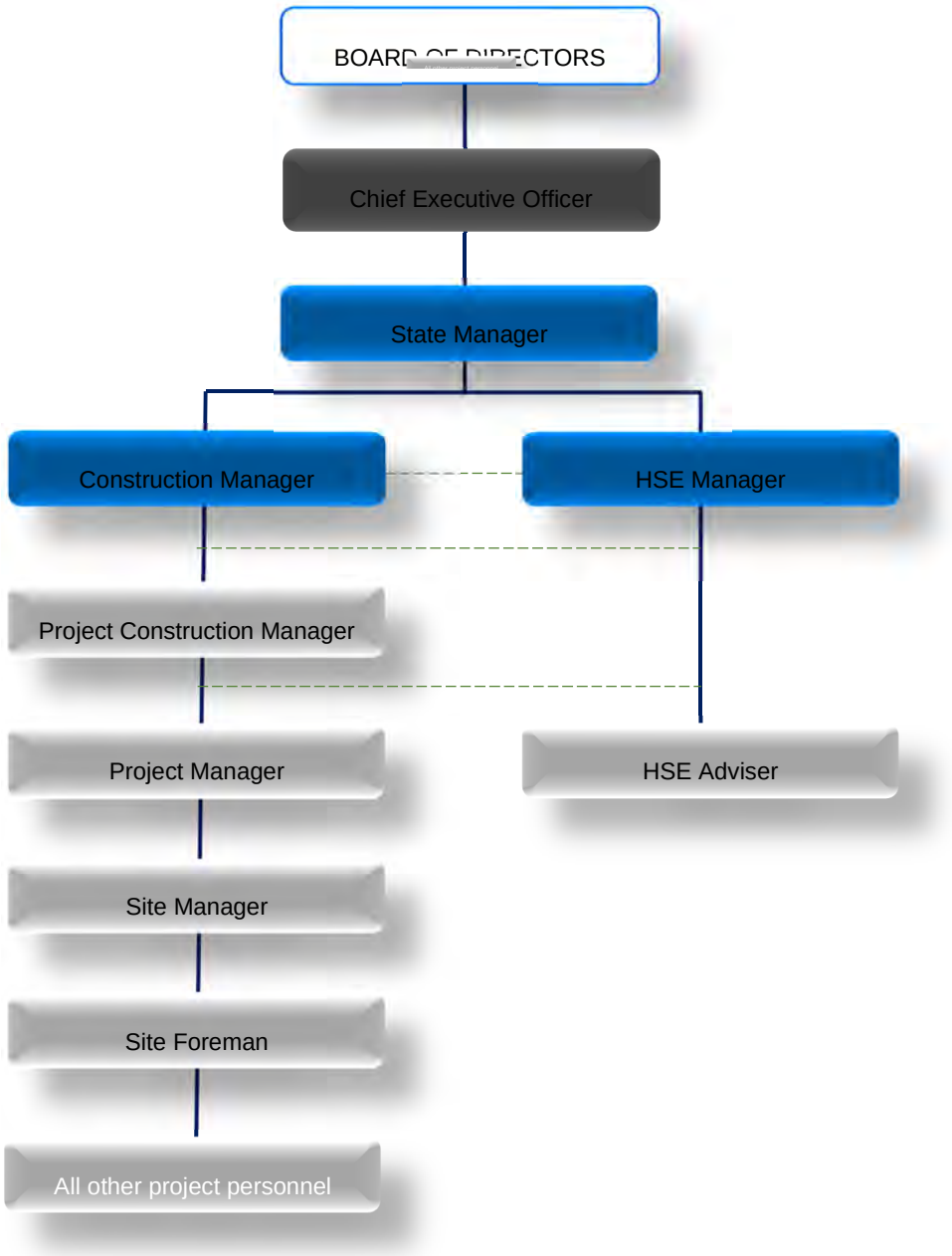
- The potential to cause the discharge or release of pollutants to water, air, or land.
- The impact on flora, fauna or heritage.
- The potential to impact on the surrounding neighbourhood (e.g. noise, vibration).

The identification, assessment and risk mitigation of environmental risks is documented in the Risk Register (Environmental).

MONITORING

Actions taken to mitigate environmental risks must be reviewed for ongoing compliance by the Project Manager, Site Manager and HSE Adviser. Verification of monitoring should be noted on the Weekly Site Inspection form

PROJECT MANAGEMENT STRUCTURE



Chief Executive Officer

Neil Harding

State Manager

John Basilisco

Construction Manager

Matt Wilkinson

HSE Manager

Phil Provenazano

Project Manager

Dean Israel

HSE Adviser

Michael Brombal

Site Manager

Paul Gower

Site Foreman

Dylan Gower

ORGANISATIONAL RESPONSIBILITIES

The Project Manager, Site Manager and HSE Adviser are responsible for ensuring that all site personnel comply with environmental risk mitigation requirements.

Person / Party	Responsibility
Construction Manager (CM), Project Manager (PM)	/ Ensure all staff and contractors are aware of and comply with the plan. / Project management / Identification and bringing to the attention of appropriate staff, any suspect material / Ensure all contractors working on asbestos are aware of and meet the requirement of the plan.
Site Manager (SM), Health Safety and Environmental Coordinator (HSE)	/ Obtain from Subcontractor, copy of WorkCover Notification (Requirement of ADCO Asbestos removal permit) / Ensure project personnel (including contractors) are inducted / Surveying, identification and arranging for sampling of suspected asbestos containing materials by competent persons. / Training and awareness / Manage the asbestos works program and removal program / Respond to incidents / Document preparation, recording and filing / Manage asbestos inspection contractor
Contractors (C) and Trades Staff (TS)	/ Not to impact on an ACM without complying with the plan / To bring to the attention of the SM/HSE any suspect material / Refer to the plan for guidance to identify, manage, and remove asbestos / Apply for Asbestos Permit to Work when performing asbestos removal work that requires notification. / Undergo ADCO Contractor Induction / Develop a site specific asbestos removal control plan, SWMS AND Risk Assessment prior to performing the asbestos removal work

ENVIRONMENTAL RISK REGISTER

Refer to Workplace Safety Australia to assist in the identification of Legislation and Codes of Practice that apply to ADCO operations and project / site activities undertaken. Applicable Legislation and Codes of Practice are to be identified in the reference section below.

Refer to Workplace Safety Australia for a detailed register of applicable Australian Standards. Access to Australian Standards is available through SAI Global

REFERENCE LEGISLATION

Acts and Regulations –

- Environment Protection and Biodiversity Conservation Act 1999
- Environmental Protection and Biodiversity Conservation Regulations 2000
- Environmental Protection Act 1994
- Environmental Protection Regulation 2008
- Contaminated Land Act 1991
- Protection of the Environmental Operations (POEO) Act 1997
- Protection of the Environmental Operations (Clean Air) Regulation 2002
- Protection of the Environmental Operations (Waste) Regulation 2005
- Protection of the Environmental Operations (General) Regulation 2009
- Contaminated Land Management Act 1997
- Waste Avoidance and Resource Recovery Act 2001
- Contaminated Land Management Regulation 2008
- Environmental Protection Act 1997
- Environmental Protection Regulation 2005
- Environmental Protection Act 1970
- Environmental Protection Act 1993
- Environmental Protection Regulation 2009
- Environmental Protection Act 1986
- Environmental Protection Regulation 1987
- Environmental Protection (Noise) Regulations 1997
- Contaminated Sites Act 2003
- Contaminated Sites Regulations 2006

Policy -

- Environmental Protection (Waste Management) Regulation 2000
- Environmental Protection (Air) Policy 2008
- Environmental Protection (Waste Management) Policy 2000
- Plant Protection Regulation 2002
- Environmental Protection (Noise) Policy 2008
- Nature Conservation Act 1992
- Environmental Protection (Water) Policy 2009
- General Environmental Protection Policy 2007
- Contaminated Sites 2009
- Noise 2010

- Hazardous Material 2010
- Air 1999
- Water Quality 2008
- State Environment Protection Policy (Ambient Air Quality) 1999
- State Environment Protection Policy (Groundwater's of Victoria) 1997
- Industrial Waste Management Policy (Waste Acid Sulphate Soils) 1999
- State Environment Protection Policy (Air Quality Management) 2001.
- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) 1989
- State Environment Protection Policy (Prevention and Management of Contamination of Land) 2002
- State Environment Protection Policy (Waters of Victoria) 1988
- Code of Practice for the Building and Construction Industry – Stormwater Pollution Prevention 1999

Cultural Heritage -

- The Native Title Act 1993 (Cth)
- Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)
- Aboriginal Cultural Heritage Act 2003
- Torres Strait Islander Cultural Heritage Act 2003
- Queensland Heritage Act 1992
- National Parks and Wildlife Amendment (Aboriginal Ownership) Act 1996
- Heritage Act 1977
- Aboriginal Land Rights Act 1983
- Heritage Objects Act 1991
- Heritage Act 2004
- Aboriginal Heritage Act 2006
- Aboriginal Heritage Regulations 2007
- Aboriginal Heritage Act 1988
- Heritage Act 1994
- Heritage Places Act 1993
- Aboriginal Heritage Act 1972

HSE System References

Procedure

- Environmental Management

General Requirements

- Erosion and Sediment Management
- Air Quality Management
- Water Quality Management
- Noise and Vibration Management
- Contaminants
- Heritage Management
- Waste Management
- Spills Management
- Fauna and Flora Protection
- Potable Water Management
- Non-potable Water Management

ANNEXURE A – ADCO HERITAGE GENERAL REQUIREMENTS

CULTURAL HERITAGE

DESCRIPTION

Cultural heritage is our window to the past.

Heritage includes tangible culture (e.g. buildings, monuments, landscapes, books, works of art, and artefacts), intangible culture (e.g. folklore, traditions, language, and knowledge), and natural heritage (e.g. culturally significant landscapes).

Our heritage is inherited from past generations, maintained by present generations and for the benefit of future generations.

Aboriginal cultural heritage includes physical and spiritual sites, places, objects, stories, oral histories, flora, fauna and documents relating to Aboriginal occupation before and after European contact.

Aboriginal cultural heritage consists of physical (tangible) or non-physical (intangible) elements and includes items made and used in traditional societies (e.g. stone tools, art sites and ceremonial or burial grounds) as well as historical elements (e.g. old mission buildings, massacre sites).

LEGISLATION

In additional to Federal legislation, all State and Territory governments have broad responsibilities for recognising and protecting Australia's heritage. Heritage laws protect, preserve, present, and transmit the Australian's natural, cultural, and historical heritage.

HERITAGE INFORMATION

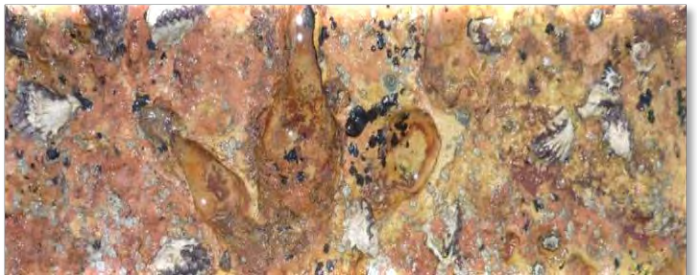
Heritage places are identified and grouped (by type) into so that they can be provided with protection and management to ensure the continuing of heritage values. Heritage places are grouped as follows:

World Heritage sites

World Heritage sites are places that are important to and belong to everyone, irrespective of where they are located. They have universal value that transcends the value they hold for a particular nation and are identified according to the World Heritage Convention.

The World Heritage Convention aims to promote cooperation among nations to protect heritage from around the world that is of such outstanding universal value that its conservation is important for current and future generations.

www.environment.gov.au/heritage/places/world-heritage-list



Dinosaur track, NT

Heritage is **all the things that make up Australia's identity** - our spirit and ingenuity, our historic buildings, and our unique, living landscapes. Our heritage is a **legacy from our past**, a living, integral **part of life today**, and the stories and places we **pass on to future generations**.

National Heritage

The National Heritage List is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation.

www.environment.gov.au/heritage/places/national-heritage-list

Flinders Street Station, VIC

Shearers Shack, SA

Indigenous heritage

Aboriginal and Torres Strait Islander heritage is an important part of Australian heritage as evidence of the occupation of Australia by Aboriginal and Torres Strait Islander people dates back more than 60,000 years.

As well as historically important, Indigenous heritage is of continuing significance, creating and maintaining continuous links with the people and the land. Places that hold great meaning and significance to Indigenous people include:

- places associated with Dreaming stories depicting the laws of the land and how people should behave
- places that are associated with their spirituality
- places where other cultures came into contact with Indigenous people
- places that are significant for more contemporary uses.

www.environment.gov.au/heritage/about/indigenous-heritage

Commonwealth heritage

Commonwealth Heritage comprises natural, Indigenous and historic heritage places on Commonwealth lands and waters or under Australian Government control.

The Commonwealth Heritage List is a list of natural, Indigenous and historic heritage places owned or controlled by the Australian Government.

www.environment.gov.au/heritage/places/commonwealth-heritage-list

Warwick Post Office, QLD

Jervis Bay Botanical Gardens, NSW

SITE MANAGEMENT

Construction activities most likely to cause impacts to heritage buildings or areas include, but are not limited to:

- Flora clearing activities.
- Trenching and excavation work activities (e.g. vibration).
- Dust emissions from general work activities.
- Damage by plant / equipment / substance operation or storage on or near heritage sites.

Potential or actual heritage issues are normally identified during the planning / development approval period of a project and the required controls are generally noted in the Development Approval (DA).

Where heritage management requirements are noted in a DA, the information and controls must be:

- Incorporated into the Project Plan and the Environmental Risk Register.
- (as required) Detailed in a stand-alone Management Plan (e.g. Cultural Heritage Plan).
- Provided to relevant subcontractors for consideration in their pricing and their SWMS.
- Provided to workers through site consultative processes.
- Monitored for compliance during the completion of the project.

MANAGING UNEXPECTED FINDS

An **'unexpected heritage find'** is "any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under relevant legislation".

The range of potential archaeological discoveries can include but are not limited to:

- Aboriginal stone artefacts, shell middens, burial sites, engraved rock art, scarred trees.
- Remains of infrastructure including buildings, footings, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls.
- Artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes.

When a "find" is identified in a work area:

1. All work in the find area must be stopped and the find must be reported to the Site Manager.
2. The Site Manager must establish a 'no-go zone' for at least 10 metres around the find. (e.g. fencing, hi viz mesh, solid barricades) where practical. No interference, including works, ground disturbance is allowed in the zone.
3. The Site Manager must notify the Project Manager.
4. The Project Manager to contact a heritage Adviser and arrange for the Adviser to assess the find.
5. Subject to assessment, work may recommence at a set distance from the item. Existing protective barriers may need to be adjusted.
6. To recommence work in the find area, the Project Manager must obtain written clearance from the Adviser including any additional project/heritage approvals/determinations.
7. Where required, the Project Manager / State SHE Manager will be required to update the Project Risk Register (environmental) to reflect the find and any additional conditions / controls.
8. The Site Manager or S&E Adviser will be required to incorporate any changes to the PMP into: the site induction presentation; (as required) the Traffic Movement Plan and the Pre-Start Meeting.

ANNEXURE H

WASTE CLASSIFICATION

Not currently applicable

ANNEXURE I

NETWORK GEOTECHNICS SITE REPORTS

Network Geotechnics

Mt Kuring-Gai
12/9-15 Gundah Rd
Mt Kuring-Gai NSW 2080
T: (02) 8438 0300
F: (02) 8438 0310

Wollongong
1/140 Industrial Rd
Oak Flats NSW 2529
T: (02) 4257 4458
F: (02) 4257 4463

E: admin@netgeo.com.au
W: www.netgeo.com.au
ABN: 35 069 211 561

G09/1696-N DS: RJK

11 July 2016

Western Earthmoving Pty Ltd
PO Box 233
SEVEN HILLS NSW 1723

Attention: David Gardner

By Email: dgardner@wem.com.au

Dear Sir,

Re: Bulks Earthworks Report
Marsden Park Residential Subdivision
Precinct 2 and 3, Marsden Park

As requested, Network Geotechnics Pty Ltd (NG) has carried out inspections and testing during fill operations at the above site from March 2015 to April 2016. Earthworks consisted of raising low lying land in Precinct 2 and 3 to project design levels.

Prior to fill placement, stripped surfaces over the entire fill area were inspected by a Geotechnician and/or Geotechnical Engineer from NG. All inspected areas were assessed to be free of uncontrolled fill, topsoil, vegetation and other deleterious material and were visually assessed to be suitable to receive fill.

Density Test No's 1 to 225 and 232 to 1653 (1647) and associated laboratory compaction tests were carried out between 18 March 2015 and 30 April 2016. Testing was carried out generally in accordance with Level 1 requirements of AS3798-2007 "Guidelines on earthworks for commercial and residential developments". Test locations are shown on attached Drawing No. G09/1696-1 (Rev 11, Sheets 1 to 4). Results are summarised in the following table.

Table 1: Density Test Result Summary

Description	No.	%	Average Field MC (%)	Average Hilf Density Ratio	Average Moisture Ration (%)	Average Optimum MC (%)
All Tests	1647	-	16.1	102.7	95.1	16.9

All of the 1647 tests had compaction meeting or exceeding the project specification of 95% Standard. Of these, 68% had placement moisture within the project specification range of ±2% from Standard Optimum Moisture Content. A further 15% of tests had placement moisture only 0.5% wetter or drier, which is assessed to be a minor non conformance of no engineering significance.

All but 3 tests of the 17% of tests placed outside the range of ±2.5% from Standard Optimum Moisture Content were on the dry side. This non-conformance is assessed to be of no practical significance as the Gravelly CLAY fills (ripped shale typically) are of sufficiently low reactivity that post placement moisture adjustment will not influence final AS2870 Classification.

Bulk earthworks operations comprised filling with site won and imported materials from various sources. During earthworks, site won Gravelly CLAY, Sandy CLAY and CLAY was mixed, placed and compacted as fill layers over approved stripped surfaces generally in areas deeper than 1.5m. Site won fill materials were sourced from site stockpiles and placed from 18 March 2015 to 10 June 2015. Excess Clayey SILT topsoil material was placed as compacted fill in non residential areas such as footpaths.

Imported fill materials generally comprised Clayey GRAVEL, Crushed Sandstone and Ripped Shale mixtures which were sourced from various locations within the Sydney Basin and placed from 27 May 2015 to 30 April 2016. The following import statistics are shown in the following table:

Table 2: Imported Fill Statistics

Description	No.
Total Truck Count	64,304
Estimated Volume of import (10m^3 per truck)	643,040
Density tests carried out prior to import	77
Field density tests carried out during import period	1,570
Volume of imported fill per field density test	431m^3

The Quality of the imported materials assessed by NG is summarised on the Report G09/1270-FF dated 3 March, 2016 and should be read in conjunction with Marsden Park Import Protocol Checklist (V4, dated 15/5/2015) and Cardno Earthworks Specification Revision C.

Test frequency was in accordance with AS3798-2007 “Guidelines for earthworks for commercial and residential developments” and on average one field density test was performed for about 450m³ of fill placed. Testing was carried out in accordance with AS1284-5.8.1, 5.7.1 and 2.1.1 and the results are attached.

Our observations and measurements indicate that the fill was generally placed in layers of about 0.25m thickness and that thorough and uniform compaction was given to each layer.

In view of the above, compacted fill covered by this report is assessed to meet the “controlled fill” requirements of AS2870-2011 “Residential Slabs and Footings” and the Level 1 requirements of AS3798-2007 to comply with Blacktown City Council and project specifications.

References

1. AS3798-2007 “Guidelines for Earthworks and Residential Developments”.

Limitations

This report has been prepared for Western Earthmoving Pty Ltd in accordance with NG's proposal dated G09/1534 dated 21 October 2014 under NG's Terms of Engagement.

The report is provided for the exclusive use of Western Earthmoving Pty Ltd for the specific development and purpose as described in the report. The report may not contain sufficient information for developments or purposes other than that described in the report.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. The conclusions drawn in the report are based on interpolation between boreholes or test pits. Conditions can vary between test locations that cannot be explicitly defined or inferred by investigation.

The report, or sections of the report, should not be used as part of a specification for a project, without review and agreement by NG, as the report has been written as advice and opinion rather than instructions for construction.

The report must be read in conjunction with the attached Information Sheets and any other explanatory notes and should be kept in its entirety without separation of individual pages or sections. NG cannot be held responsible for interpretations or conclusions from review by others of this report or test data, which are not otherwise supported by an expressed statement, interpretation, outcome or conclusion stated in this report. In preparing the report NG has necessarily relied upon information provided by the client and/or their agents.

We trust these comments are sufficient to meet your present requirements. Please do not hesitate to contact the undersigned should you have any queries.

For and on behalf of
Network Geotechnics Pty Ltd

Report prepared by:

David Smith
Geotechnical Engineer

Reviewed by:

Richard King
Principal Geotechnical Engineer

Encl General Notes
Site Plan and Density Test Locations (Drawing No G09/1696-1 Rev 11 (4 Sheets)
Laboratory Test Results, Test No. 1 to 225 and 232 to 1653

General Notes About This Report

INTRODUCTION

These notes have been prepared by Network Geotechnics Pty Ltd (NG) to help our Clients interpret and understand the limitations of this report. Not all sections below are necessarily relevant to all reports.

SCOPE OF SERVICES

This report has been prepared in accordance with the scope of services set out in NG's proposal under NG's Terms of Engagement, or as otherwise agreed with the Client. The scope of work may have been limited by a range of factors including time, budget, access and/or site constraints.

RELIANCE ON INFORMATION PROVIDED

In preparing the report NG has necessarily relied upon information provided by the Client and/or their Agents. Such data may include surveys, analyses, designs, maps and plans. NG has not verified the accuracy or completeness of the data except as stated in this report.

GEOTECHNICAL AND ENVIRONMENTAL REPORTING

Geotechnical and environmental reporting relies on the interpretation of factual information based on judgment and opinion and is far less exact than other engineering or design disciplines.

Geotechnical and environmental reports are for a specific purpose, development and site as described in the report and may not contain sufficient information for other purposes, developments or sites (including adjacent sites) other than that described in the report.

SUBSURFACE CONDITIONS

Subsurface conditions can change with time and can vary between test locations. For example, the actual interface between the materials may be far more gradual or abrupt than indicated and contaminant presence may be affected by spatial and temporal patterns.

Therefore, actual conditions in areas not sampled may differ from those predicted since no subsurface investigation, no matter how comprehensive, can reveal all subsurface details and anomalies.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations can also affect subsurface conditions and thus the continuing adequacy of a geotechnical report. NG should be kept informed of any such events and should be retained to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

GROUNDWATER

Groundwater levels indicated on borehole and test pit logs are recorded at specific times. Depending on ground permeability, measured levels may or may not reflect actual levels if measured over a longer time period. Also, groundwater levels and seepage inflows may fluctuate with seasonal and environmental variations and construction activities.

INTERPRETATION OF DATA

Data obtained from nominated discrete locations, subsequent laboratory testing and empirical or external sources are interpreted by trained professionals in order to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions in accordance with any relevant industry standards, guidelines or procedures.

SOIL AND ROCK DESCRIPTIONS

Soil and rock descriptions are based on AS 1726 – 1993, using visual and tactile assessment except at discrete locations where field and / or laboratory tests have been carried out. Refer to the accompanying soil and rock terms sheet for further information.

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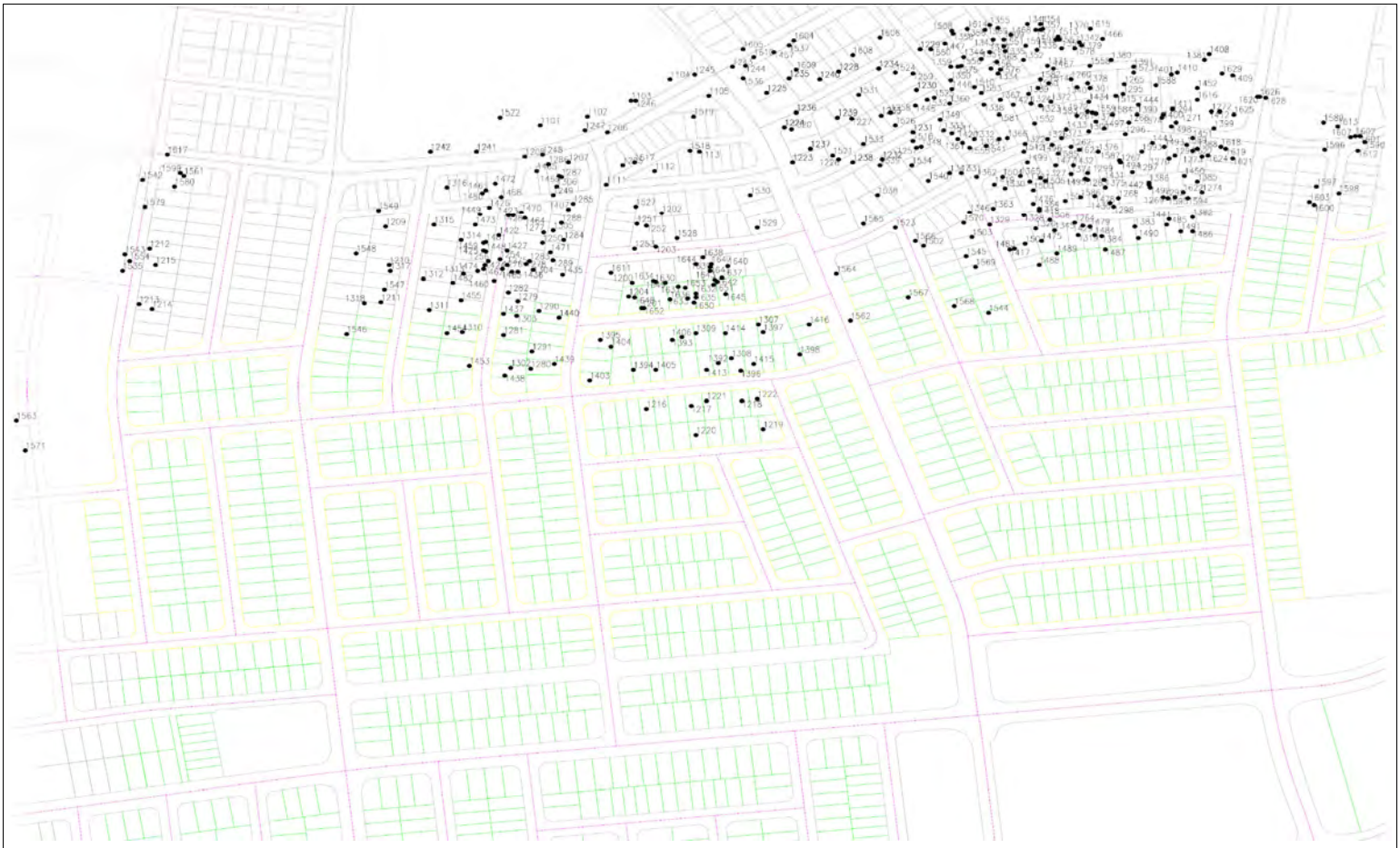
FURTHER ADVICE

NG would be pleased to further discuss how any of the above issues could affect a specific project. We would also be pleased to provide further advice or assistance including:

- Assessment of suitability of designs and construction techniques;
- Contract documentation and specification;
- Construction control testing (earthworks, pavement materials, concrete);
- Construction advice (foundation assessments, excavation support).



	LEGEND:
●	APPROXIMATE LOCATION OF REPORTED DENSITY TESTS
	DENSITY TESTS 801 TO 1200 TAKEN BETWEEN THE DATES OF 28/10/2015 TO 30/04/2016

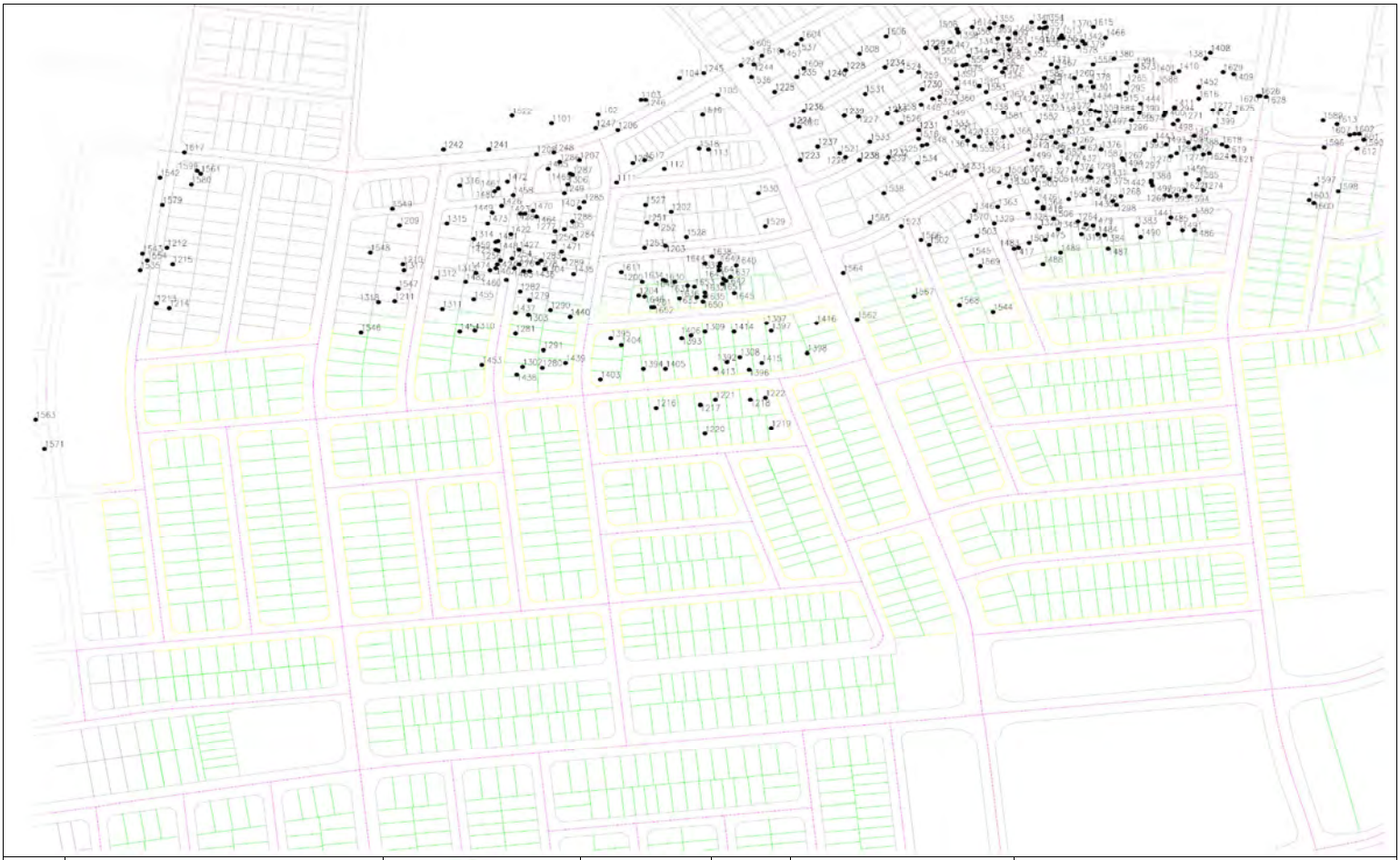
Network Geotechnics Pty Ltd

12/9-15 Gundah Road
Mt Kuring-Gai NSW 2080
T: (02) 8438 0300
F: (02) 8438 0310
engineering@netgeo.com.au

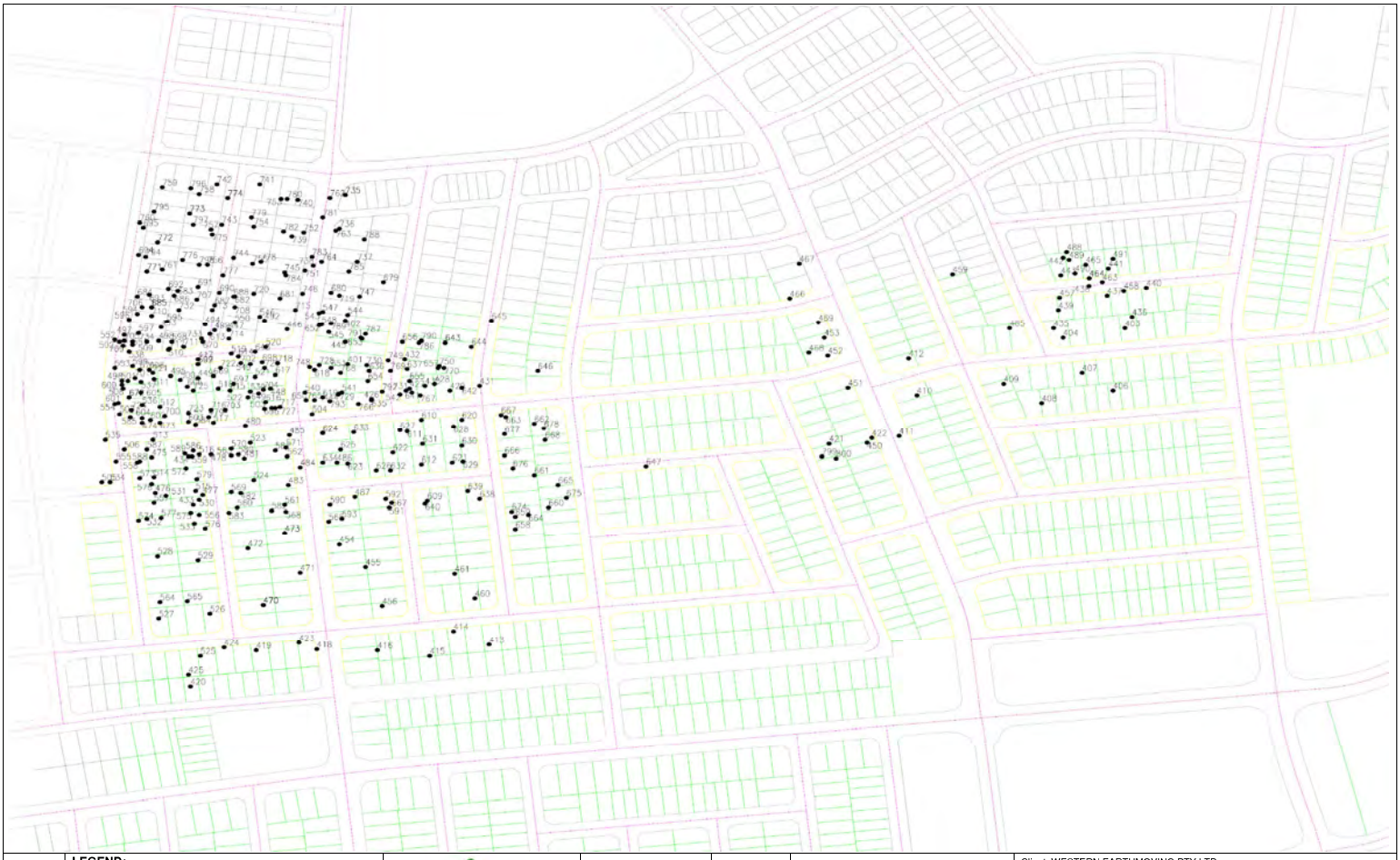
N

Scale: A3 - NOT TO SCALE		Client: WESTERN EARTHMOVING PTY LTD	
Date: 27/06/2016		Project: MARSDEN PARK ELARA RESIDENTIAL SUBDIVISION	
Drawing: DS		Location: PRECINCT 2-3, MARSDEN PARK	
Drawing No: G09/1696-1	Rev: 11	Sheet: 4 OF 4	**DENSITY TEST LOCATION PLAN**

Document No. R21.0



	LEGEND:	Network Geotechnics Pty Ltd	12/9-15 Gundah Road Mt Kuring-Gai NSW 2080 T: (02) 8438 0300 F: (02) 8438 0310 engineering@netgeo.com.au	N	Scale: A3 - NOT TO SCALE		Client: WESTERN EARTHMOVING PTY LTD	
●	APPROXIMATE LOCATION OF REPORTED DENSITY TESTS				Date: 27/06/2016		Project: MARSDEN PARK ELARA RESIDENTIAL SUBDIVISION	
	DENSITY TESTS 801 TO 1200 TAKEN BETWEEN THE DATES OF 16/09/2015 TO 28/10/2015				Drawing: DS		Location: PRECINCT 2-3, MARSDEN PARK	
					Drawing No: G09/1696-1	Rev: 11	Sheet: 3 OF 4	**DENSITY TEST LOCATION PLAN**



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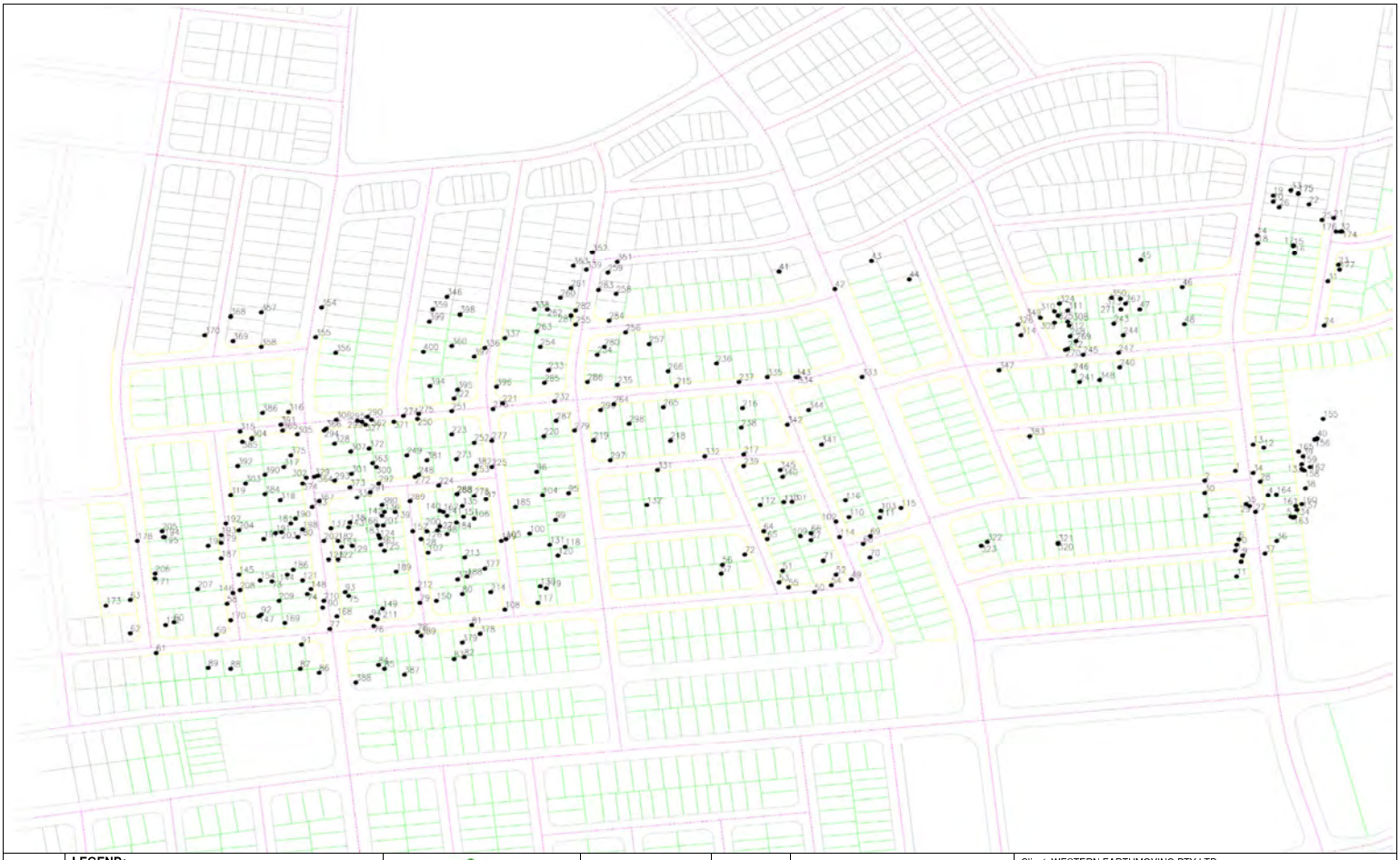
●	APPROXIMATE LOCATION OF REPORTED DENSITY TESTS				Date: 27/06/2016		Project: MARSDEN PARK ELARA RESIDENTIAL SUBDIVISION	
	DENSITY TESTS 401 TO 800 TAKEN BETWEEN THE DATES OF 29/07/2015 TO 16/09/2015				Drawing: DS		Location: PRECINCT 2-3, MARSDEN PARK	
					Drawing No: G09/1696-1	Rev: 11	Sheet: 2 OF 4	**DENSITY TEST LOCATION PLAN**



	LEGEND:	Network Geotechnics Pty Ltd	12/9-15 Gundah Road Mt Kuring-Gai NSW 2080 T: (02) 8438 0300 F: (02) 8438 0310 engineering@netgeo.com.au	N	Scale: A3 - NOT TO SCALE		Client: WESTERN EARTHMOVING PTY LTD	
●	APPROXIMATE LOCATION OF REPORTED DENSITY TESTS				Date: 27/06/2016		Project: MARSDEN PARK ELARA RESIDENTIAL SUBDIVISION	
	DENSITY TESTS 1 TO 225 AND 232 TO 400 TAKEN BETWEEN THE DATES OF 18/03/2015 TO 29/07/2015				Drawing: DS		Location: PRECINCT 2-3, MARSDEN PARK	
					Drawing No: G09/1696-1	Rev: 11	Sheet: 1 OF 4	**DENSITY TEST LOCATION PLAN**

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